Oregon
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January 17, 2023

Via Electronic Filing

OREGON PUBLIC UTILITY COMMISSION ATTENTION: FILING CENTER
PO BOX: 1088
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RE: Docket No. PCN 5 – In the Matter of IDAHO POWER COMPANY'S,
Petition for Certificate of Public Convenience and Necessity.

Attached for filing are the following:
PCN 5 Staff Opening Testimony Exhibits 100 - 302 Redacted

Exhibits 100, 103, 200 and 204 are confidential, encrypted and serve to parties who have signed Protective Order no: 22-309

/s/ Kay Barnes
Oregon Public Utility Commission
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CERTIFICATE OF SERVICE

PCN 5

I certify that I have, this day, served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-001-0180, to the following parties or attorneys of parties.

Dated this 17th day of January, 2023 at Salem, Oregon

/s/ Kay Barnes

_____

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CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 100

Opening Testimony

REDACTED
January 17, 2023

OVERVIEW

Q. Please state your name, occupation, and business address.

A. My name is Sudeshna Pal. I am a Senior Energy Policy Analyst employed in the Energy Resources and Planning Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My witness qualification statement is found in Exhibit Staff/101.

Q. Did you prepare any exhibits for this docket?

A. Yes. I prepared the following exhibits:

- Exhibit Staff/101 – Witness Qualification Statement
- Exhibit Staff/102 – Non-Confidential Data Request Responses and Other Supporting Evidence
- Exhibit Staff/103 – Confidential Data Request Responses
- Exhibit Staff/104 – Summary of Public Comments
- Exhibit Staff/105 – BPA Presentation Slides and Letter to the Region
- Exhibit Staff/106 – PacifiCorp 2021 IRP, Chapter 9, p271-272
- Exhibit Staff/107 – Idaho Power 2021 IRP, Appendix D
- Exhibit Staff/108 – Standard Data Request Responses

Q. How is Staff's testimony organized?

A. Staff's testimony separates the examination of this petition into four broad categories. These are:

1) Whether the petition adequately meets filing requirements as described in OAR 860-025-0030.

2) If the project for which the Certificate of Public Convenience and Necessity (CPCN) is requested is necessary, practicable, safe, and justified in the public interest based on the criteria as described in OAR 860-025-0035(1).

3) Consideration of the effects of the project on Environmental Justice Issues; and

4) Whether the Commission may make findings of compatibility with Statewide Planning Goals and compliance with land use regulations as described in OAR 860-025-0040.

I present the following issues in my testimony:

The remaining topics are addressed in the testimony of Staff witnesses Yassir Rashid (Staff/200) and Charles Lockwood (Staff/300).

Q. What is the purpose of your testimony?

A. My testimony reviews and analyzes Idaho Power's petition to be granted a CPCN for the proposed Boardman to Hemingway (B2H) transmission line, a 290-mile, 500 kV AC transmission line project. I provide a general background for the case, discuss if the petition has adequately met filing requirements, if

the proposed project will be in the public interest based on resource need and justification as demonstrated by the petitioner. I also provide testimony relevant to findings on compliance with Statewide Planning Goals and land use regulations.

Staff Witness Yassir Rashid addresses the necessity, in terms of system reliability needs; safety; and practicability for the Project in his testimony (Staff/200).

Staff Witness Charles Lockwood presents testimony on the impacts of this project on environmental justice issues (Staff/300).

Q. What is a CPCN?

A. Any person providing electric utility service that proposes to construct an overhead transmission line, for which condemnation of an interest in land will be necessary, must apply for a Certificate of Public Convenience and Necessity or CPCN. As described in Oregon Revised Statute (ORS 758.015), if the OPUC issues a CPCN, the Commission's order can be used as evidence in any condemnation proceeding that the transmission line is a public use and necessary for public convenience. Thus, a CPCN is a prerequisite to initiating condemnation proceedings for land or an interest in land necessary for construction of the transmission line. If condemnation is not necessary, a CPCN is not required.

Q. What does the petitioner need to demonstrate in order for the Commission to grant a CPCN?

A. The petitioner must demonstrate that the transmission line meets the criteria of necessity, justification, safety and practicability, and that the project is compliant with land use requirements. Staff uses guidance from CPCN rules OAR 860-025-0030, OAR 860-025-0035 and OAR 860-025-0040 to evaluate the petition.

Q. How did you analyze IPC's Petition?

A. Staff reviewed the Petition and its supporting testimony, evaluated IPC's responses to Staff's data requests and considered Energy Facilities and Siting Council's (EFSC) final order granting a site certificate for this project. Members of Staff in the Commission's Safety and Energy Resource and Planning Divisions collaborated to analyze IPC's filing. Staff participated in a virtual workshop with IPC on December 8, 2022, to have a deeper discussion on issues from the petition that Staff and stakeholders had identified at that time. Staff also attended one in-person public hearing in LaGrande, Oregon, on November 16, 2022, and one virtual public hearing on December 5, 2022, and read all public comments submitted to the Commission. Staff has attached a summary of those comments in Exhibit Staff/104.

Q. What additional resources do you use in your analysis?

A. Staff issued data requests to PacifiCorp (PacifiCorp or PAC), soon after the Company intervened in this docket, but has yet to receive responses to those requests. PacifiCorp is a majority owner in this project. Staff will be evaluating these data responses when PacifiCorp provides them. Any findings from these responses will be addressed in future testimony in this docket.

Q. Have you reached any initial conclusions based on the evidence that Idaho Power presented in this docket?

A. Yes, although my conclusions may change based on additional discovery and review of testimony presented by other parties. Initially, I have concluded the following:

- Idaho Power has demonstrated a need for additional capacity to serve its growing customer load as well as a region wide need for a transmission line like B2H. As explained in Staff/200, the Company has not proved that B2H is required to meet reliability needs of its system, but this is not a required finding to demonstrate necessity given Staff's initial conclusion above.
- Based on evidence provided by Idaho Power, Staff is unable to conclude whether the B2H project is justified or not. The Company has not provided adequate information on total costs of this project. The Company has not provided adequate evidence in support of noise mitigation efforts.
- The justification issue will be revisited after Staff has received the information it needs, and Staff will provide a recommendation on justification in its rebuttal testimony.
- Staff will also consider other parties' testimony prior to making a recommendation on issuance of a CPCN to the petitioner.

ISSUE 1: BACKGROUND

Q. How does the Commission determine whether a CPCN should be granted?

A. When a CPCN petition is filed, the Commission is required to:[1]

> [G]ive notice and hold a public hearing on such petition. The commission, in addition to considering facts presented at such hearing, shall make the commission's own investigation to determine the necessity, safety, practicability and justification in the public interest for the proposed transmission line and shall enter an order accordingly.

The Commission revised its filing requirements and adopted criteria for evaluating a CPCN petition in a Commission rulemaking process, docketed as AR 626.

The AR 626 rulemaking process resulted in changes to existing CPCN petition filing requirements under OAR-025-0030 and adoption of new rules under OAR-025-0035 and OAR-025-0040, for necessity, safety, practicability, justification, and land use considerations. The rulemaking process and outcomes are discussed in AR 626, Commission Order 22-351, dated September 26, 2022. The current petition filed by Idaho Power in the PCN5 docket will be evaluated following the current rules that were established in AR 626 process and in effect when the CPCN petition was filed.

[1] ORS 758.015(2).

Q. What is Staff's role?

A. Staff's role is to provide a recommendation to the Commission either supporting or opposing the issuance of the CPCN for the transmission line presented in the petition. Staff's recommendation is based on a thorough investigation of the petitioner's filings in the docket. Staff evaluates the petition using guidance from the CPCN rules OAR-025-0030, OAR-025-0035 and OAR-025-0040. These rules and criteria will be discussed in greater detail as needed in the rest of Staff's testimony. Staff's analysis of the petition also considers environmental justice issues and public comments received in various stages of this proceeding.

Q. Please provide some background concerning the petitioner and discuss the reason for the petition for CPCN.

A. The petitioner is Idaho Power Company (IPC or Idaho Power or the Company), an investor-owned electric utility subsidiary of the parent company IDACORP Inc., both headquartered in Boise, Idaho. Idaho Power serves over 610,000 residential and business customers in Idaho and Eastern Oregon. Idaho Power is a vertically integrated utility meaning it is responsible for electric generation, transmission, and distribution.

Q. Please explain why Idaho Power has filed a petition for CPCN.

A. Idaho Power is proposing to build an approximately 290 mile long 500 kV alternating current transmission line connecting a planned Longhorn substation, four miles east of Boardman, Oregon, and the Company's existing

Hemingway substation in Owyhee County, Idaho. This proposed transmission line is referred to as Boardman to Hemingway or B2H.

The proposed route of the B2H project includes federal, state and private lands. Because Idaho Power does not hold an easement for each interest in private land along the proposed route, condemnation of an interest in such land would be necessary in order to build and operate the transmission line. The CPCN is a prerequisite for Idaho Power to initiate condemnation proceedings to take an interest in private land.

Q. How many parcels of land will require condemnation if Idaho Power does not negotiate an easement interest with the respective owners?

A. In Idaho Power/200/Barretto/28, the Company identified a need to acquire 168 outstanding easements. In the Supplemental testimony filed by Idaho Power on December 30, 2022, the Company states that it has executed an additional 22 easement option agreements and identified and removed 34 parcels on the landowner list that do not contain any project features and hence would not require an easement option.[2] The Company also stated that it now has a total of 51 parcels under contract, which will not require condemnation.[3] On the basis of this update, Staff concludes that there are (168 minus 22 minus 34 = 112) 112 outstanding parcels for which Idaho Power would be seeking condemnation of easement interests.

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[2] See Idaho Power/300/Barretto/5.
[3] Id.

Q. Please describe the proposed transmission project.

A. As described above, B2H is approximately 290 miles long, 500 kV transmission line with a capacity rating of 1000-1050MW. The line will connect the proposed Longhorn substation, near Boardman, Oregon, and Idaho Power's existing substation Hemingway, in Owyhee County, in southern Idaho.

The B2H project has a long history, going back more than sixteen years. The project was first identified in Idaho Power's 2006 Integrated Resource Plan (IRP), a long-term resource acquisition plan that Commission-regulated utilities in Oregon need to file with the Commission every two years. However, multiple entities share interest in the B2H project.

Q. Who were initially expected to be the owners of the B2H project?

A. The project has been jointly owned by Idaho Power, PacifiCorp, and Bonneville Power Administration (BPA) (parties). According to a Permit Funding Agreement initially executed on January 12, 2012, among the parties, Idaho Power has a 21.21 percent, PacifiCorp a 54.55 percent and BPA a 24.24 percent ownership in the B2H transmission project.

Q. Please explain how the ownership structure of the B2H transmission project has evolved since 2012.

A. On January 18, 2022, after a two year long negotiation period, the parties executed a Non-Binding Term Sheet that includes BPA's transitioning out of ownership and Idaho Power acquiring BPA's share which would leave Idaho Power owning 45.45 percent of the B2H project. BPA would instead use B2H to obtain transmission service from Idaho Power to serve its customers.

PacifiCorp, a six-state investor-owned utility, also serving parts of Oregon and Idaho, still owns 54.55 percent of the project.[4]

Though the Term Sheet is non-binding, BPA has initiated a public process that is on-going to review the proposal before its final decision to enter negotiated agreements. BPA has expressed its support for the Term Sheet, stating it means it will receive firm transmission for its Southeast Idaho Load Service customer load using only one wheel of transmission, not two, and avoid the complexity and foregone revenue with the previously contemplated asset exchange and joint ownership structure.[5] This explanation indicates that BPA continues to support construction of the B2H line, but has sought to avoid the issues raised by joint ownership of land and assets by federal and non-federal parties. Idaho Power's petition for a CPCN assumes a 45.45 percent ownership share, which is consistent with the Term Sheet and BPA's interest in avoiding joint ownership with private entities.[6]

Q. Why has PacifiCorp not applied for a CPCN for the B2H project?

A. As explained above, Idaho Power, PacifiCorp and BPA have agreed on a Non-Binding Term Sheet for the B2H project. The B2H project ownership structure is discussed in greater detail in the description of this project below. According to the Construction Funding Agreement related to Real Property Ownership of

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[4] Idaho Power/203/Barretto SDR 2 Attachment 1
[5] Exhibit Staff/105, Pal/28
[6] Idaho Power/203/Barretto SDR 2 Attachment 1

the project (excluding the Longhorn substation) (see, 3.d(7) in the Term Sheet), "IPC will acquire rights of way, grants, easements, or other interests in real property necessary to construct, operate and maintain the B2H transmission line and grant to PAC perpetual and sufficient rights of access, to be set forth in the Ownership and Operation Agreement".[7] Therefore, Idaho Power is the only party that has petitioned for CPCN.

Q. Please provide some background to the selection of the route for which the Company has applied for the CPCN.

A. As described in Idaho Power's petition, the route selection process was initiated around 2008 when Idaho Power began a yearlong comprehensive public process to gather public inputs on site selection. Idaho Power states:

> Through the Community Advisory Process (CAP), the Company 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. A considerable number of routes through western, central, and eastern Oregon, and southern Washington were considered to connect Hemingway and the Boardman area. Attachment 3 is a map of the routes considered during this timeframe.
>
> Ultimately, the route recommendation from the CAP was the route Idaho Power brought into the National Environmental Policy Act (NEPA) process as the proponent recommended route… Throughout the NEPA process, Idaho Power continued to work with landowners, stakeholders, and jurisdictional leaders on route refinements and to balance impacts to various natural resources with impacts to farmers and ranchers. The BLM considered the Company's proposed route, along with a few other alternative routes, in the NEPA process…Ultimately, the route selected through

[7] Idaho Power/203/Barretto SDR 2 Attachment 1

> the BLM-led NEPA process, based on the BLM's analysis and public input, led to a singular route, (the BLM preferred route).
>
> The route Idaho Power submitted in its EFSC application, a separate and distinct process from the NEPA process, is very similar in most areas to the BLM's selected route.

The final route for which Idaho power is seeking a CPCN includes the Morgan Lake Alternative as a route segment. The Company explained:

> In the EFSC application, Idaho Power's proposed route in Union County ran parallel to an existing 230-kV transmission line along the hillside west of the City of La Grande. That route was referred to as the Mill Creek Route. In that area, Idaho Power proposed the Morgan Lake Alternative as an alternative to the Mill Creek Route, providing a route that was farther from and not visible from the City of La Grande. Based on feedback Idaho Power received from the local community and given EFSC approved both routes, Idaho Power has decided to develop the Morgan Lake Alternative and not the Mill Creek Route.[8]

Q. Is there any other background information on this petition that is considered in Staff's testimony?

A. Yes. The B2H project has received strong opposition from local landowners and others, including members of the organization STOP! B2H (STOP). Several of these interested parties along with STOP are intervenors in the PCN 5 docket. Staff's investigation considers the issues that were brought forward in this docket by these intervenors and other interested parties. Staff will refer to prior comments in its testimony and provide a summary of public comments that were submitted at the Commission throughout this process.

[8] PCN5 Idaho Power's Petition for Certificate of Public Convenience and Necessity, Nov. 9, 2022, 1 of 4, pages 16-17.

ISSUE 2: FILING REQUIREMENTS

Q. How did Staff evaluate the adequacy of the filed petition?

A. Staff evaluated whether Idaho Power has provided information according to requirements in ORS 860-025-0030.

Q. What is Staff's finding on the adequacy of the filing?

A. Staff's finding is that the Petition meets all filing requirements adequately except one in which Idaho Power provided materials related to the filing requirement, but it is not adequate for the purpose of Staff's analysis. Staff recognizes that the ultimate purpose of filing requirements is to have resources that will enable a comprehensive analysis of the petition by Staff. Staff discusses the following filing requirement, which Idaho Power addressed in its petition, but Staff which believes has not been adequately addressed to aid a comprehensive analysis of the petition.

Q. What filing requirement does Staff believe was not adequately met?

A. OAR 860-025-0030 (2) (d) (A) –(F) require that Petitions under ORS 758.015 must contain *an estimate of both already incurred and forecasted costs of developing the transmission line project* including costs of currently required and future easement or other interests in parcels of land, transmission facilities, indirect and overhead costs, and any other direct and indirect costs.

Q. Why does Staff believe that the filing requirements was not adequately met?

A. Staff has two reasons to believe that the filing requirements were not met adequately for the purpose of Staff's analysis.

First, the petitioner provides incurred cost estimates only for *OAR 860-025-0030(2)(d)(B): Other parcels of land and interests therein acquired or to be acquired.* Second, no estimates are available for incurred costs in any other category described in the filing requirement.

Q. What estimates did the petitioner provide for already incurred costs of the project?

A. The petitioner provided estimates of already incurred cost according to OAR 860-025-0030(2)(d)(B). This includes cost to Idaho Power for the B2H project easements and other interests amounting to approximately **[Begin Confidential]** [redacted] **[End Confidential]** out of a total estimated right-of-way costs of the B2H project on a system basis of approximately **[Begin Confidential]** [redacted] **[End Confidential].**[9]

Q. What is the other reason that Staff believes the filing requirement was not met adequately for Staff's analysis?

A. The second reason is:

OAR 860-025-0030 (2) (d) (F) states that petitions filed under *ORS 758.015* must contain,

> An estimate of both already incurred and forecasted costs of developing the transmission line project, including, explanation of the foregoing cost estimates as needed to enable a full understanding of their basis and derivation.

[9] PCN5 Confidential Idaho Power's Petition for Certificate of Public Convenience and Necessity, September 30, 2022, p 22.

Although the petitioner has provided information on forecasted cost estimates, it was not, in Staff's view, adequate to enable a full understanding of their basis and derivation. Staff understands this was the first petition filed under the new CPCN rules and will discuss this issue at length below.

Q. What forecasted cost estimates did the petitioner provide in the filing?

A. The petitioner provided a summary of cost breakdowns for its share of the project cost in Exhibit Idaho Power/200, Barretto/25. The breakdown identified Direct costs, Overheads, Contingency, Allowance for Funds Used During Construction and Property tax amounts that add up to the total cost share of the petitioner. The petitioner also included an annual estimate of operations and maintenance expenses for Idaho Power's system. One of the components of Direct Cost, namely Idaho Power's share of total right-of-way costs, was also reported in this Exhibit. Subsequently, the Company filed a Supplemental Direct testimony on December 30, 2022, with updates on cost estimates for B2H.

Q. Does Staff believe that the reported forecasted cost estimates are adequate for purposes of Staff's review?

A. No. As will be discussed in detail in the Justification section, Staff will evaluate justification of issuing a CPCN by examining costs and benefits. That would require an understanding of both monetary and non-monetary costs and benefits to the extent possible.

Staff's understanding of the monetary cost of B2H is incomplete without having visibility into the basis and derivation of the cost estimates provided by

Idaho Power in the petition. Staff will also be considering the total monetary cost of B2H, as opposed to only considering the petitioner's share, since total benefits from this project must be weighed against total costs of the project. Staff believes that while Idaho Power has filed a high-level derivation of Idaho Power's share of costs, for the purpose of Staff's analysis, these are partial estimates, not total.

Q. What information does Staff need to fully understand the basis and derivation of B2H cost estimates?

A. Staff needs adequate information on PacifiCorp's share of costs as well to understand the total cost of the B2H project. In addition, Staff has identified some discrepancies in cost information provided in IPC testimony and those provided in workpapers. Therefore, Staff is still not able to fully understand the basis and derivation of B2H cost estimates.

Q. Has Staff taken any action to address this concern?

A. Yes, Staff has issued data requests to the Company asking for workpapers with a detailed derivation of these cost estimates. Staff has also requested information on how the cost components have changed in value over the last five years, to understand if reported cost estimates are reasonable in the light of changes in economic conditions. Staff has also issued data requests to Intervenor PacifiCorp for its share of cost and benefits estimates. Staff believes the responses to these data requests may fill in the information missing from the petition. While this is less than ideal, Staff again notes that this was the

first petition filed under the revised CPCN filing requirements. Staff will issue data requests on estimates of all costs that have already been incurred.

ISSUE 3: NECESSITY

Q. How did Staff analyze the necessity of this project?

A. The Commission considers whether a project is necessary in the public interest under the criteria set forth in OAR 860-025-0035(1). Staff finds the criteria in OAR 860-025-0035(1)(a) and (e) to be particularly relevant to determining necessity:

> (a) Whether the transmission line will meet a demonstrated need for transmission of additional capacity or improved system reliability that enables the petitioner to provide or continue to provide adequate and reliable electricity service.
>
> (e) The Commission may also consider other factors it deems relevant to the statutory criteria.

Staff testimony addresses necessity in two parts. My testimony includes an analysis of whether B2H will meet a *demonstrated need for transmission of additional capacity*. Yassir Rashid's testimony will delve into *system reliability needs, either of which is sufficient*. In either case, Staff testimony evaluates if a need has been shown to exist and if meeting that need with B2H is in the public interest.

Q. How did the petitioner demonstrate need for transmission of additional capacity that will be met by the B2H transmission line?

A. In the Petition, Idaho Power has stated that B2H is intended to meet growing energy and capacity needs on its system, integrate cheaper electricity from energy markets into IPC's system, and provide affordable energy to IPC's customers.

Idaho Power forecasts its residential customer growth to be 1.9 percent per year for 2021-20040, and its commercial customer growth to be 1.8 percent per year.[10] This, included with industrial and large load customer growth, is forecasted to add 13,330 customers per year on Idaho Power's system contributing to a summer peak load growth by 55 MW and energy demand growth by 30 aMW per year over the next twenty years.[11]

Idaho Power has demonstrated a need for this transmission line in the Integrated Resource Plans (IRPs) it has been filing since 2009 with both Oregon and Idaho Public Utility Commissions.[12] Idaho Power has explained how other entities, namely PAC and BPA, have signed a Non-Binding Term Sheet along with Idaho Power regarding permitting, construction, and utilization of B2H. The Company has also provided evidence of regional and national studies that recognize B2H as a necessary resource needed to integrate renewable resources that will replace fossil fuel generation as Oregon and other states transition to a clean energy future. I discuss these studies in more details below.

Q. What is an IRP?

A. An IRP is a long-term resource acquisition plan that investor-owned utilities are required to file, consistent with the Commission's planning guidelines with the

[10] PCN 5, Idaho Power's Petition for CPCN, 3 of 4, November 9, 2022, Attachment 13, p.29-39 of 63.
[11] PCN 5, Idaho Power's Petition for CPCN, 1 of 4, November 9, 2022, p.2.
[12] PCN 5, Idaho Power's Petition for CPCN, 1 of 4, November 9, 2022, p.3.

Commission every two years in Oregon.[13] The rule requires the utility to develop a least-cost least-risk portfolio, also referred to as the "preferred portfolio" of supply side and demand side resources. The utility presents an action plan to acquire resources to build the preferred portfolio. The IRPs are filed at the Commission for its acknowledgement.

Q. How has B2H been addressed in the IRPs filed by Idaho Power?

A. B2H has been in Idaho Power's IRP since 2006 when it was first identified as a resource in the preferred portfolio. The Commission provides a decision on acknowledgement of the preferred portfolio and the Company's near-term action plan in building towards the preferred portfolio. Acknowledgement of the preferred portfolio means "that the Commission finds that the utility's preferred portfolio is reasonable at the time of acknowledgement."[14] It does not imply pre-approval of any proposed resource acquisitions or transmission projects nor guarantee cost recovery in rates.

For B2H, acknowledgment means that, at the time of the acknowledgment decision, inclusion of this resource, in combination with other demand and supply side resources, in the preferred portfolio was reasonable.

Q. What is the significance of an IRP Acknowledgement Order in the context of the CPCN Petition?

A. OAR 860-025-0035(2) states:

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[13] OAR 860-027-0400.
[14] In the Matter of Idaho Power Company, 2017 Integrated Resource Plan, Docket LC 68, Order No.18-176 (May 23, 2018).

In evaluating a petition under this rule, the Commission will give due consideration to related regulatory reviews and permitting approvals as pertinent to the proposed transmission line, if the transmission line has already been acknowledged or approved by regulatory or permitting authorities.

Thus, although the IRP acknowledgment decision and the Commission's review of a CPCN petition are based on different considerations and criteria, the IRP decision can be used to inform evaluation of a CPCN but is not a substitute for CPCN analysis.

Q. How did Staff use Idaho Power's IRP in their analysis of the Necessity of this transmission project?

A. Staff considered the Idaho Power 2021 IRP[15] to the extent it supports Idaho Power's energy and capacity needs. Staff also relied on past IRP orders from both Oregon and Idaho Public Utility Commissions to evaluate a demonstrated need for the transmission line.

Q. Please explain how the IRP's information on system load impacts your analysis.

A. With projected energy and capacity needs growing this supports the need for new resources for which transmission maybe required. Acknowledgement of the B2H transmission line in preferred portfolios in the IRPs is indicative of a reasonable load resource balance analysis and the resulting portfolio selection that includes B2H with the information available at the time the IRP was created.

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[15] PCN 5 – Idaho Power Company's Petition for CPCN, November 9, 2022, Attachment 14.

Q. When was Idaho Power's 2021 IRP created?

A. Idaho Power's most recent 2021 IRP that the Company uses as evidence in the CPCN was filed at the Commission on December 30, 2021.

Q. When did the Commission acknowledge the IRP?

A. This IRP was acknowledged by the Commission at a public meeting on December 6, 2022, though the order memorializing that decision has yet to be issued.[16]

Q. Does Staff believe that 2021 IRP Acknowledgement is sufficient to demonstrate the necessity for B2H or otherwise justifies the project?

A. No. Staff is not using the IRP Acknowledgment decisions or Orders as the final evidence on necessity or justification of this project.

Q. Which part of Idaho Power's most recent IRP filing did you evaluate in support a necessity finding for B2H?

A. Attachment 13 of the CPCN petition includes Idaho Power's 2021 IRP, Appendix A: Sales and Load Forecast, which provides figures depicting historical and forecasted growth in system load and system peak for the Company.[17]

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[16] See Oregon Public Utility Commission Minutes of a Special Public Meeting, December 6, 2022, available here: https://oregonpuc.granicus.com/DocumentViewer.php?file=oregonpuc_14197d89ee58f6f5573651663e629fa7.pdf&view=1 (Last visited January 12, 2023)

[17] PCN 5 – Idaho Power Company's Petition for CPCN, November 9, 2022, Attachment 13.

Q. What did you observe from that section of the IRP?

A. The Company's system load has increased consistently across residential, commercial, industrial, and irrigation customers since 1990. In the 2021 IRP, Idaho Power forecasts a system load increase at an average rate of 1.4 percent between 2021-2040. Historical summer and winter system peaks also show an upward trend since 1985. The average growth rate of summer peak is forecasted to be 1.4 percent and that of winter peak forecasted to be 1.5 percent over 2021-2040.

Q. Has Idaho Power demonstrated a need for B2H as soon as it is energized in 2026?

A. Yes. In response to DR 19, Idaho Power states that B2H's 750 MW of West to East capacity will be immediately used by the Company to serve native customer usage in the summer months. It hopes that PacifiCorp will fully utilize the 300 MW West-to East ownership capacity during summer months for economic energy purchases/transfers from the Pacific Northwest. The Company expects the immediate east-to-west utilization to occur in the fall and winter depending on hydro and load conditions.

Q. Will B2H be used beyond the immediate need of serving Idaho Power's customer load?

A. Yes. The Company expects to make further upgrades on the system over the next ten years adding to B2H's current estimated capacity. They also point out that,

> A project to add a 230-kilovolts ("kV") switching station at Pallette Junction in Oregon could potentially increase the system capacity by at least 300 MW when coupled with the B2H project. For east-to-west capacity the addition of the Gateway West 500-kV segments across Southern Idaho to Hemingway will remove a capacity bottleneck between Midpoint and Hemingway that could allow the post-B2H Idaho to Northwest path capacity to increase by 1,000 MW from 3,400 MW to approximately 4,400 MW. East-to-west capacity utilization on the path is expected to grow over the next ten years as more variable energy resources such as wind and solar are added to the Intermountain West region.[18]

Idaho Power's Petition also explains that apart from the need to meet forecasted peak demand growth, a 2026 in service date is needed to fill in the resource loss that will result from the Company's exit from the coal plant Valmy Unit 2, which is planned for 2025, and to facilitate the Company's ability to exit from the Jim Bridger Unit 3 coal plant by the end of 2025. The Company states that if B2H is not in service by 2026, it will need to acquire an additional 350 MW of capacity at the minimum to support its Valmy exit, or up to 550 MW if the Company's Jim Bridger 3 exit is realized in 2025 as well.[19]

Q. How did Staff evaluate the seasonal capacity utilization as explained by Idaho Power in the response to Staff DR 19?

A. Staff considered the draft 2022-2023 Local Transmission Plan that Idaho Power filed with FERC.[20]

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[18] Exhibit Staff/108, Pal/1.
[19] PCN 5 – Idaho Power Company's Petition for CPCN, p.12.
[20] See p.17, 2022-2023 Local transmission plan: http://www.oasis.oati.com/ipco/ (Last visited January 12, 2023).

Q. What transmission capacity needs are shown in the local transmission plan?

A. The plan shows the following transmission capacity needs: 500MW from the Northwest to Idaho and 250MW from the Northwest to BPA Southeast Idaho (SEID) in summer 2026, and 200 MW from NW to Idaho and 550MW from NW to BPA SEID in winter 2026. The plan also presents a 2042 projection of transmission capacity need (TCN) and compares that with total transfer capability (TTC) of the critical paths with and without B2H. One of the critical paths is the Idaho to Northwest Path (Path 14). The need analysis shows 2042 TCN for Path 14 West to East to be 1950 MW, compared against 2042 TTC (with B2H) of 2250 MW and TTC (without B2H) of 1200 MW, creating a deficit of 750 MW (1950 minus 1200 = 750 MW) in the “without B2H” scenario. This analysis helps demonstrate the additional capacity need on Path 14 that will be met with B2H.

Q. What additional studies did staff analyze when determining if B2H is necessary

A. Staff evaluated information from PacifiCorp’s most recent IRP (LC 77), BPA publications and other studies.

Q. Please discuss your findings from PAC 2021 IRP.

A. PacifiCorp’s most recent IRP (LC 77), regional transmission plans, and other national studies identifying B2H as a regionally significant project.

PacifiCorp's 2021 IRP showed that the B2H transmission line "provides more flexibility and increased load-serving capability in central Oregon."[21] B2H is included in the preferred portfolio as a line that enables 600 MW of interconnection with 600 MW of TTC, interconnecting proxy solar plus storage resource from Borah-Populous to Hemingway. The Commission acknowledged PacifiCorp's 2021 IRP, including its preferred portfolio and action items related to B2H.[22]

Q. What did you conclude from analyzing information from BPA?

A. In addition, BPA has stated its goal to secure a "long-term, cost effective and reliable solution for meeting contractual obligations for delivering firm federal power to public power customers in Southeast Idaho,"[23] and using Boardman to Hemingway transmission services for that purpose. As discussed earlier, BPA, Idaho Power, and PacifiCorp signed a non-binding term sheet on January 18, 2022. According to the Term Sheet, paragraph 3(b)1, BPA will enter two 20-year Network Integration Transmission Service (NITS) agreements with Idaho Power to serve its Southeast Idaho customers' loads. In a Letter to the Region, published on January 19, 2022, BPA explains its role in the B2H project. BPA explains that it has a need for long-term firm transmission and power service to the Southeast Idaho Load Service (SILS) customers. While BPA has been serving these customers successfully since 2016 by providing

[21] Exhibit Staff106, Pal/2
[22] See Docket LC 77, Order No. 22-178.
[23] Exhibit Staff/105, slide 5, BPA B2H Workshop Presentation, February 8, 2022.

near-term firm transmission and power services, the agency acknowledges the high cost and risk of relying on temporary short-term solutions.[24]

Q. What did you evaluate from other studies?

A. Idaho Power also provides evidence from existing and ongoing studies on the need for new high voltage transmission lines to integrate resources like wind and solar energy to the grid. For instance, a Net Zero America study from Princeton University concludes that the electricity transmission system in the US has to expand by 60 percent by 2030 in order to achieve net-zero emissions by 2050.[25] In a report sponsored by the Americans for a Clean Energy Grid, B2H is identified as an "AC project to allow Wyoming wind delivered via Gateway West to fully reach the Pacific Northwest". The report identifies B2H as one of the 22 transmission projects that will increase the current transfer capacity of the entire US transmission system by about 11-12 percent. These transmission lines are expected to add 8,000 miles of new transmission, which will raise current transmission of 24,000 miles by three percent. The three percent increase in transmission lines leading to a 12 percent increase in transmission capacity reflects use of high-voltage lines, which can deliver power over long distances.[26]

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[24] Exhibit Staff/105.
[25] PCN5 Idaho Power/100/Ellsworth/35/Lines 6-8.
[26] Michael Goggin, et al., AMERICANS FOR A CLEAN ENERGY GRID, *Transmission Projects Ready to Go: Plugging into America's Untapped Renewable Resources* at 5 (Apr. 2021), available at https://cleanenergygrid.org/wp-content/uploads/2021/09/Transmission-Projects-Ready-to-Go.pdf (last visited Jan. 9, 2023).

Additionally, Idaho Power provided several Biennial Transmission Reports (2007 – 2009) from the Northern Tier Transmission Group (NTTG) in response to Staff DR 5.[27] These reports identify B2H as a resource that could meet expected service area load growth and transmission service requests. The line would also increase import capability from the Northwest to Idaho by approximately 800 MW.

Q. Are there any stakeholder concerns regarding the necessity of this project?

A. Yes, in public comments, commenters have expressed that this project is not needed for Idaho Power's customers.

Q. How does Staff respond to such concerns?

A. Staff has evaluated all available evidence to consider whether the project is necessary in the public interest under the criteria in OAR 860-025-0035(1) and presents its conclusion below. However, Staff looks forward to a deeper understanding of all perspectives on the necessity of this project based on other parties' testimonies.

Q. What is Staff's conclusion regarding necessity of the B2H transmission line?

A. Staff has not reached a final conclusion at this time and looks forward to further evaluating the public comments and other testimony that will be filed in this docket.

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[27] Idaho Power/203/Barretto SDR 5

ISSUE 4: JUSTIFICATION

Q. What does justification mean in the context of a CPCN?

A. In the context of a CPCN petition, the project must be shown to be justified in the public interest.

Q. How did Staff evaluate IPC's justification for the proposed project?

A. The Commission considers whether a project is justified in the public interest under the criteria set forth in OAR 860-025-0035(1). Staff finds the criteria in OAR 860-025-0035(1)(d) and (e) to be particularly relevant to determining justification:

> (d) Whether petitioner has justified construction of the proposed transmission line as in the public interest, as compared with feasible alternatives for meeting the identified need, considering the public benefits and costs of the project, as they relate to the interests in land proposed to be condemned, petitioner's existing facilities and equipment, petitioner's Oregon customers, and other considerations that may be relevant to the public interest. Other such considerations include, but are not limited to, the benefits and costs to other Oregon utilities, their customers, and all Oregonians, the value of connections to regional and interregional electricity grids and to a petitioner's non-Oregon service territories, and all Oregonians.
>
> (e) The Commission may also consider other factors it deems relevant to the statutory criteria.

In reviewing the justification for the proposed project, Staff attempted to address all tangible and intangible benefits of the project and compare those against tangible and intangible costs. Staff considered the benefits and costs for Oregonians, as well as any broader regional benefits and costs. Starting with Staff's initial conclusion that the line is necessary, Staff examined whether construction of the transmission line is justified, given the available alternatives

to meet that need. Staff then reviewed whether Idaho Power made every attempt to limit the impact on individual landowners and comply with the public interest.

Q. What resources did Staff rely upon to conduct the investigation on justification in the public interest of this project?

A. Staff reviewed Idaho Power's petition; Direct Testimony of Jared Ellsworth and Lindsay Barretto; Idaho Power's responses to Staff data requests; and public comments. Staff has issued several data requests to PacifiCorp to support justification but has not received any responses at the time of writing this testimony. Staff hopes to receive and evaluate PacifiCorp's responses and present those in future Staff testimony, as may be appropriate.

Q. Are there any other remarks Staff would like to make before presenting the findings on benefits and costs?

A. Yes, Staff clarifies that the analysis presented in this testimony does not fully reflect all information that Staff will consider for a comprehensive understanding of benefits and cost issues. For example, discovery is still ongoing and additional testimony will be filed by intervenors. Therefore, Staff's conclusion regarding justification is subject to change as Staff receives further updates on these issues.

Q. Did Staff perform a purely monetary cost-benefit study?

A. No. A useful cost-benefit study for a project such as B2H needs to do more than compare expected costs and revenues that are readily available. The cost-benefit study needs to include harder to quantify factors such as threats to

endangered species, increased accessibility to renewables from outside Oregon as well as the expected revenues and costs.

Q. If Staff cannot accurately quantify each benefit and harm in a cost-benefit analysis, is that analysis still useful?

A. Yes. Even if a cost-benefit analysis does not allow for a dollar-to-dollar comparison, it should nonetheless be useful in detecting if benefits are overstated, and costs are understated. Wherever monetary costs and benefits are available for this project, Staff would ensure that it has full visibility and understanding of cost and benefit components, derivations of cost/benefit aggregates, and notifications of any updates to such cost and benefit amounts by the Company.

Q. Please explain some of the monetary benefits that would be realized from B2H for Idaho Power's customers.

A. Staff studied the following to understand the monetary benefits to Idaho Power's customers: 1. Avoided generation resources that would result from having B2H in service and hence save customers the expense associated with including the cost of acquiring generation resources in electricity rates, 2. Wheeling revenues.

Q. What generation resources can be avoided once B2H is in service?

A. In response to Staff DR 14, Idaho Power stated, "Idaho Power's share of the B2H project will increase the Company's access to the Pacific Northwest [(PNW)] hub by 500 megawatts ("MW"), allowing the Company to avoid 500 MW of capacity equivalent resources indefinitely." Idaho Power supported this

with its portfolio analysis in the 2021 IRP, which showed that "under planning conditions, the 2021 IRP preferred portfolio (the base with B2H portfolio) is approximately $270 million more cost-effective than the best portfolio that did not include the B2H project."[28]

Q. Does the $270 million amount accurately capture the value of avoided generation benefits?

A. No. Staff is not convinced that the avoided generation benefits have been accurately captured in the $270 million amount, because it does not reflect the most updated cost of the B2H project. Staff agrees that access to PNW markets could result in potential customer savings by avoiding expensive generation resource buildouts to serve load needs, Staff has concerns around the net present value of benefits of $270 million ($266 million to be exact) that is reflected in the 2021 IRP and that Idaho Power has presented as supporting evidence.

Q. What wheeling revenue benefits will be realized from B2H by Idaho Power customers?

A. In response to Staff DR 57, Idaho Power states that "the estimated OATT revenues or revenue credit from non-native load customers including any changes in point-to-point reservations with BPA and PAC, for the first full year of OATT revenues with B2H in service is $17.6 million."[29] Increases in B2H project cost, all else equal, will increase the amount of this credit. Similarly, all

[28] Exhibit Staff/108, Pal/2
[29] Exhibit Staff/102, Pal/1

else equal, if there is a net increase in OATT volumes, the credit will also go up. Increase in native load will drive the credit down. The Company assures, and Staff agrees, that transmission line retirements are extremely rare.[30] As such, OATT revenues will be generated so long as B2H is in service, which it is expected to be for an indefinite amount of time. Wheeling revenues will result in direct benefits to Idaho Power customers.

Q. Are there any other monetary benefits resulting from this project?

A. Idaho Power has identified positive economic impacts of the project in terms of job creation and increased annual property tax benefits. B2H is designed to pass through five Eastern Oregon counties, namely, Morrow, Umatilla, Union, Baker, and Malheur. Idaho Power projects a total estimated property tax benefit of approximately $5.8 million from the B2H project. The tax benefit figures for the specific counties are provided in the 2021 IRP Appendix D.[31]

Q. Please explain some of the non-monetized benefits that Idaho Power believes will result from the B2H transmission line?

A. Idaho Power provided an extensive discussion on B2H benefits and values in its 2021 IRP Appendix D.[32] Staff provides Appendix D here as Exhibit Staff 107 and summarizes the description of various benefits as explained by the Company:

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[30] Exhibit Staff/102, Pal/1
[31] Exhibit Staff/107

1. Capacity Benefits – increased capacity to serve Idaho Power's customer demand (also discussed earlier under Necessity). B2H will alleviate the constraint that currently exists on the Idaho to Northwest line. PNW power plants will benefit from selling energy to Idaho Power.
2. Clean energy future – B2H will enable renewable integration into the system that will help Idaho Power reach its clean energy goal and benefit its customers and the region.
3. Leverage Regional Diversity – Idaho Power explains that as different utilities on the east and west side of the entire Northwest experience significant diversity in winter and summer peaks, they could complement each other through exporting and importing power based on the seasonal, sub seasonal, and even daily load needs. B2H could be key to sharing installed generation capacity.
4. Four Corners and Mid-C markets access – B2H will enable two diverse connections to these two major market hubs. Idaho Power believes this diversity would be valuable in a low carbon future. While Mid-C will bring in low-cost power from the Pacific Northwest, Four Corners will enable interconnection of wind and solar resources.
5. Grid Reliability/Resiliency – B2H can enhance reliability of regional transmission systems as well as grid resilience. Idaho Power provides examples of hypothetical scenarios of transmission disturbances in which the loss of the Hemingway-Summer Lake 500 kV could trigger major contingencies, during which having a second transmission line can have

a significant value. High voltage transmission lines like B2H also increases the grid's ability to recover from unexpected disturbances.

6. Contingency Reserves – Idaho Power plans to make more market purchases using B2H. This would reduce its contingency reserve obligation as Idaho Power would potentially be less reliable on internal generation resources.
7. Reduced Electrical Losses – Idaho Power used various seasonal WECC power flow base cases to simulate flow conditions on existing 230-kV lines that run parallel to B2H between the Northwest and the Treasure Valley, Idaho area, with and without B2H. These included peaks and off-peak summer and winter, and seasonal light and heavy Northwest export cases. Power losses with B2H, as opposed to without B2H, were lower in six out of seven cases.[33]
8. Flexibility – B2H is viewed as an alternative to supply side resources that could economically serve customers across the region. Specifically, when B2H owners are not using the line, B2H capacity will be available for PNW utilities to access southern and eastern markets.
9. Energy Imbalance Market (EIM) – Idaho Power explains that B2H is critical to the realization of EIM benefits. B2H will increase transmission capacity between Idaho Power and EIM participants and enable

[33] Exhibit Staff/102, Pal/2.

integration of variable energy resources, manage congestion, and help maintain reliability.

10. Complements All Resource Types – Idaho Power explains that large transmission lines could move around the most economic resources based on demand and availability and could serve as a complement to a diverse set of resources in the region.

Q. Does Staff believe there are non-monetary benefits from B2H?

A. Yes. However, Staff is concerned about the timing of the realization of certain benefits, for instance, integration of renewables.

Q. Will B2H help Idaho Power achieve their clean energy goal?

A. Staff does not know this will be the case with any certainty. Idaho Power has a goal to use 100 percent clean energy to serve its customers by 2045.[34] It is unclear when or how B2H will enable that.

Q. Will B2H help Oregon achieve its clean energy goal?

A. This is also not clear. In response to DR 13 Idaho Power did not provide a definite explanation on the role of B2H in helping Oregon achieve its clean energy goal.[35]

Q. What other concerns does Staff have regarding renewable integration?

A. Staff also questioned the capability of B2H in renewable integration from the Intermountain West, e.g., wind in Wyoming and solar in Arizona in the absence of construction of specific Gateway West segments. In response to Staff DR

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[34] Idaho Power/100, Ellsworth/50/Line 7
[35] Exhibit Staff/108, Pal/3.

71[36], Idaho Power expressed its belief that B2H will help integrate renewables via the EIM, which is more efficient in the presence of greater transmission connectivity. The Company had identified a need to connect 700 MW of wind and 1405 MW of solar between 2021-2040 and believes that integration will happen upon B2H energization. However, the Company has not performed any Variable Energy Resource (VER) integration study to quantify these benefits. The Company also suggests that B2H will provide additional connectivity between the NW and Idaho without Gateway West, and therefore will provide benefits on a stand-alone basis.[37] But Idaho Power has not clearly articulated a timeline for when some of these benefits will materialize relative to the 2026 energization date of B2H.

Q. Please explain if there are any additional benefits that would be realized by Oregonians from the B2H transmission line?

A. The regional and system wide benefits discussed above would benefit Oregonians. B2H will also provide local electrical service benefits to parts of Eastern Oregon served by Idaho Power, PAC, and BPA. A more detailed discussion on benefits to PAC and BPA are discussed below.

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[36] Staff Exhibit 102, Pal/3
[37] Id

Q. Please explain the benefits that would be realized by other Oregon utilities and their customers from the B2H transmission line?

A. **PAC Benefits:** Idaho Power has stated that B2H will provide PAC with an additional 300 MW west-to-east capability and 600 MW east-to-west capability. PAC is to be the majority owner of this project. Therefore, Staff believes that it needs a better understanding of benefits of B2H to PAC customers, and specially, PAC's Oregon customers. Staff will address this issue after it has received responses to pending data requests from PAC.

BPA Benefits: BPA released a Letter to the Region on January 18, 2022, describing BPA's role in the B2H project and the change in ownership of structure of the project. In the letter BPA also provides an extensive discussion on the benefits to BPA and the region that would be realized because of B2H. As discussed in the Necessity section, BPA would benefit from B2H in meeting its SILS and replace near-term firm transmission service with long-term firm to reduce risks to customers.[38]

Q. Are there alternative means to provide the benefits described above without constructing the B2H transmission line?

A. Yes, there are other resources which could provide similar benefits without the B2H project. These include Public Utility Regulations Policies Act projects, power purchase agreements, generation resources including hydro, coal, gas, demand side resources like energy efficiency and demand response, and

[38] Exhibit Staff/105

market purchases using existing transmission lines. While these resources may possibly provide the same benefits to Idaho Power's system, they may or may not generate the same regional benefits including benefits for PAC and BPA, in the same way that B2H would.

Q. What is Staff's conclusion regarding overall benefits of the B2H project?

A. Staff understands there are significant regional benefits associated with the B2H transmission line, which will be realized over a long period of time. However, it is critical to weigh these benefits against costs and negative impacts from the transmission line to accurately estimate the net benefits of the project. Staff has not reached a definite conclusion on the potential net benefits including both tangible and intangible benefits. A detailed discussion on B2H costs and impacts follows.

Q. For Staff's analysis, what is included in the cost of the B2H project?

A. Staff addresses both tangible or monetized and intangible or non-monetized costs of B2H.

Q. How did Staff evaluate monetized costs of this project?

A. For the monetized costs, Staff tried to fully understand total costs of the project that went into IRP analyses of B2H project owners and those that were provided in the PCN 5 petition, since the latter have been updated. The cost used in Idaho Power's 2021 IRP are relevant in the current discussion because these costs were used to compare B2H against other resource alternatives, and to establish that the resource portfolio with B2H was the least cost portfolio. Idaho Power has repeatedly used the findings from the 2021 IRP

portfolio cost analysis to support the justification of the project in its CPCN petition.

Q. What other monetary impacts did Staff evaluate?

A. Staff also considers the NPV and rate impact to Oregon customers to evaluate the monetized impact of B2H on customers.

Q. Does Staff have a full understanding of the monetary impacts of B2H?

A. No. At the time of writing this opening testimony Staff only has partial knowledge on the total impact on Oregon customers because Idaho Power did not present information concerning PacifiCorp customers with its petition.

Q. How did Staff evaluate the intangible or non-monetized costs of this project?

A. The intangible costs are captured in the negative impacts this transmission line may have on the local environment including landscape, wildlife, cultural and historical resources, protected land and animal species, and landowners who are facing condemnation and other impacts, for instance, corona noise from the transmission line. Staff considered if Idaho Power looked at alternative transmission routes and related impacts and if the chosen route minimizes those impacts. Staff considered Public Comments regarding negative impacts and Idaho Power's efforts to address those concerns. Staff further elaborates on B2H costs below.

Q. How did Idaho Power finalize cost estimates for B2H?

A. Idaho Power affirmed that cost estimates were reviewed by BPA and PAC and calibrated against the costs these companies had when building various

transmission projects between 2013-2016. A list of these transmission projects is provided in Idaho Power's response to Staff DR 40; however, no cost estimates for these reference projects have been made available to Staff.[39]

Q. What concerns does Staff have regarding the 2021 IRP B2H Preferred Portfolio cost estimate?

A. Staff has various concerns regarding the cost estimate used in the 2021 IRP Preferred Portfolio. As mentioned earlier, this cost estimate is critical in determining cost effectiveness of the preferred portfolio compared to other portfolios. Staff concerns regarding the cost estimates include the following: calibration data, discrepancies in cost estimates, cost effectiveness estimates.

Q. What is Staff's concern with calibration data?

A. Staff has no visibility into costs that BPA and PAC used to verify B2H cost estimates for Idaho Power. Even in the absence of visibility, Staff realizes that the transmission projects use for comparison were constructed between 2013-2016, which suggests that the cost estimates could be outdated compared against 2021 prices. For example, Staff does not have information on what assumptions about material costs were used and how that has changed over time. Staff is only aware that IPC used a 10 percent detailed design package,

Q. What is a detailed design package?

A. It is a metric Idaho Power uses to indicate the extent to which information on details of the transmission line design is available, to estimate 2021 IRP

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[39] Exhibit Staff/102, Pal/4

Preferred Portfolio cost of B2H. As more information on design details become available, the detailed design percentage increases and proportion of contingency costs B2H estimated costs reduces. The assumptions on detailed design package and costs have been updated in the PCN 5 application, as will be discussed below.

Q. What discrepancy in cost estimates did Staff find?

A. Idaho Power/100/Ellsworth/29 presents estimates of B2H cost components for the 2021 IRP. Idaho Power also provided Staff the cost estimates for the 2021 IRP with the addition of a 20% cost contingency in its December 30 filing in the PCN5 docket. Ellsworth testimony identifies two additional capital costs, $96.5 related to B2H transmission upgrades and $46.8 million for Southern Idaho upgrades. This amounts to a total of ($96.5 plus $46.8) $143.3 million.

In Idaho Power/301/Barretto/1, the July 2021 IRP Plus 20% Contingency Estimate for Idaho Power's 45.45% B2H project share cost fails to account for this additional $143.3 million. The 45.45% IPC share (including 20% cost contingency) is reported to be [BEGIN CONFIDENTIAL] [redacted] [END CONFIDENTIAL]. If Staff adds the missing additional capital cost amount to this cost estimate, B2H project cost for the 2021 IRP would be [BEGIN CONFIDENTIAL] [redacted] [END CONFIDENTIAL].

Q. How does the cost discrepancy impact cost-effectiveness of B2H?

A. Staff believes that the cost estimate including the $143.3 million additional capital costs of upgrade would have a noticeable impact on the portfolio cost

analysis outcome. It may no longer be the case that the preferred portfolio is $266M lower in cost compared to the next best non-B2H portfolio. It might even be possible that the 2021 IRP preferred portfolio is not least cost once we account for these additional upgrade costs.

Q. What are the most recent B2H cost estimates with granular information as provided by Idaho Power in the PCN application?

A. The most recent cost updates in this docket were filed on December 30, 2022. Below are the comparisons between cost estimates filed with the petition and cost estimates provided on December 30.

[BEGIN CONFIDENTIAL]

Table 1

Description	July 2022 PCN5 Estimate Incl. Contingency (45.45% Cost, $) (30% detailed design package)	December 2022 PCN5 Estimate Update Incl. Contingency (45.45% Cost, $) (60% detailed design package)
I.	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

[END CONFIDENTIAL]

Q. Does the cost discrepancy affect Staff's understanding of the B2H Updated Project Cost as filed on December 30, 2022?

A. Staff has the same concerns about using outdated transmission projects for the purpose of calibration of B2H project costs and missing information on additional capital costs as referred to in Idaho Power/100/Ellsworth/29 as discussed earlier. It is also unknown if [BEGIN CONFIDENTIAL] [END CONFIDENTIAL]

If Staff adds the additional 143.3 million upgrade costs, the current PCN5 cost estimate would be presented in Line XI, December 2022 PCN5 Cost

Update column in the above Table 1 would be [BEGIN CONFIDENTIAL] [redacted] [END CONFIDENTIAL].

Additionally, Staff is unable to comprehend several subparts in the cost estimates provided by Idaho Power in this most recent update. For example, in Table 1, the derivation of the [BEGIN CONFIDENTIAL] [redacted] [END CONFIDENTIAL] interest figures are unknown to Staff. Staff was not able to reproduce the numbers in (I).

It is also not clear to Staff whether the mitigation costs in II include mitigation cost estimates that Idaho Power provided in response to Staff DR 1.[40]

Further, the derivations of IPC and BPA shares for III and V are not known.

Q. What other information is missing from the B2H project cost estimates in Table 1?

A. Staff also wonders why, if Idaho Power can report BPA's share in the project cost, it cannot also include information on PacifiCorp's share. Staff and stakeholders have brought up cost issues multiple times in public hearing sessions, workshops with the Company, and in their data requests. Unfortunately, there are still important gaps in the information provided by Idaho Power, and, therefore, Staff is not able to conclude that it has fully understood the basis and derivations of the total monetized cost of B2H as shown by Idaho Power.

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[40] Idaho Power/203/Barretto SDR 1 Confidential

Q. Is there any other issue with costs reported by Idaho Power?

A. Further, Staff is unclear how the BPA buyout estimates reported in IPC Confidential Exhibit 302 (and Table 1 above) were derived and how they compare with the estimated $34 million that Idaho Power will be repaying BPA over the period of ten years after B2H is energized in 2026, as can be seen in IPC's response to Staff DR 34 and Attachment 1 to DR 34.[41]

Q. What factors have been accounted for in the most recent cost updates and do the new cost assumptions seem reasonable to Staff?

A. In Idaho Power/300/Barretto/1, the Company explains that the main driver of the cost differences between September 30 and December 30 is the increased knowledge regarding details of the design package from 30 percent to 60 percent. This seems reasonable to Staff as the Company should be able to include information with greater certainty as the project gets closer to the construction date.

Q. What detailed design information was provided for cost estimates of B2H in the 2021 IRP?

A. Idaho Power provides a narrative on how the design progressed since the 2021 IRP was filed with a 10 percent detailed design package. At that time the indicative design "included selection of a standard tower series and conductor, the Oregon department of Energy Application for a Site Certificate proposed route location and length, preliminary sited towers and access roads, and

[41] Exhibit Staff/102, Pal/5

identified primary station equipment."[42] As more site-specific data become available, "detailed engineering progresses and economization occurs based on on-the-ground data."[43] Staff understands that for the 2021 IRP Owner's Engineer HDR (HDR), hired by Idaho Power, estimated the costs for B2H on the basis of the indicative design and used their utility and industry experience with current market values for materials, equipment, and labor, as well their experience with BPA towers and conductor, which will be replicated in the B2H project. HDR accomplished a partial material take off for all major items (towers, conductors, foundations, roads, rights-of-way, etc.).

Q. How did Idaho Power make improvements in the detailed design package?

A. Idaho Power hired Leidos Engineering in 2021, which then developed a detailed transmission line design for the project and subsequently provided the 30 percent and 60 percent detailed design packages. Meanwhile the Company had also hired a constructability consultant, Quanta Infrastructure Solutions Group, which performed a constructability review of the design and provided a revised cost estimate for the transmission line component of the project based on their expertise. Between the 30 percent and 60 percent detailed design packages more site-specific information regarding height limitations and right-of-way became available, which resulted in the December 30, 2022, cost updates. According to Idaho Power, these cost updates also reflect increased

[42] See Idaho Power/300/Barretto/2/Lines 7-10
[43] See Idaho Power/300/Barretto/2/Lines 4-6

material and labor costs due to inflation and supply chain issues.[44] However, Staff is not aware of specific amounts by which the costs have been adjusted to reflect these broader macroeconomic factors.

Q. What are the net present value impacts of these updated costs?

A. [BEGIN CONFIDENTIAL] [redacted] [END CONFIDENTIAL]

Q. What are the rate impacts of these updated costs?

A. The Company states,[BEGIN CONFIDENTIAL] "[redacted]

[44] PCN5 Idaho Power/300/Barretto/1-5

[redacted] [END CONFIDENTIAL] The Company provides calculations of these shares in the Confidential Attachment 1 to its Supplemental Response to DR 64.[45] The costs presented in this Attachment are the costs included in the September 2022 petition and do not reflect December 2022 updated costs.

Q. Has Staff sought additional information for a full understanding of the costs of B2H?

A. Yes. Staff has asked data requests seeking additional information, Staff realizes that exact material costs may not be obtained for transmission line components, such as, conductor, lattice steel, copper components, etc. until the Company has signed contracts for these materials. Therefore, Staff asked Idaho Power to provide historical benchmarks relied upon for cost estimation of these components.

Q. What historical benchmark does Idaho Power use to obtain cost estimates for materials?

A. In response to Staff DR 65, the Company provided the following information: London Metal Exchange (LME) Aluminum for conductor and LME Steel Scrap for lattice steel angle iron, SteelBB S&P Global Commodity Insights Plate) for Turkish plate, SteelOrbis(Orbis Steel index) for Indian Steel, and AMM (Fastmarket's American Metal Market) for hot rolled coil for steel poles. The

[45] Exhibit Staff/103/Confidential Attachment 1

Company used quantities at current market prices for these components from the Gateway South project in Idaho Power/200/Barretto/25. Idaho Power plans to use very little copper on the transmission line.[46]

Q. How will Idaho power finalize prices of construction materials?

A. According to the Company, "Idaho Power will go out for competitive bid for all major materials including conductor, lattice steel, steel poles and conductor hardware. Suppliers will either offer a fixed price delivered from the factory to the job site or a variable price tied to the appropriate index above, along with an adjustment formula tying the price of the material at the time of raw material purchase. Idaho Power will review the proposals and evaluate each based on pricing, risk, and delivery schedule commitment."[47]

Q. Does Staff find this information useful for its understanding of material costs?

A. Yes. Staff is looking into the information on material cost sources provided by IPC to further support its own understanding of material costs of the transmission line. Staff will provide further comments on this issue in Staff's rebuttal testimony.

Q. Has Idaho Power made efforts to keep costs under control?

A. It appears so. In response to Staff DR 9 on cost control measures, Idaho Power responded that they have strict cost control measures in place for this project. These include regular monthly forecast updates, budget and schedule

[46] Exhibit Staff/102, Pal/7
[47] Id.

tracking and early integration of the construction team to identify risk locations and economize design. IPC will procure all construction materials through competitive bidding and develop a project schedule jointly with the construction manager firm Quanta Infrastructure Solutions Group to stay on budget.[48] Given the response, Staff believes IPC is putting efforts to keep project costs under control.

Q. What is Staff's conclusion on monetized cost estimates of the B2H project and its impact on Oregon customers?

A. Staff does not have a conclusion at this time. Unless the company can close the gaps that currently exists in Idaho Power's cost estimates and receive cost and revenue requirement impact estimates for PAC, it cannot conclude anything specific regarding full understanding of the tangible cost of the B2H project. However, Staff appreciates Idaho Power's explanation of the association between detailed design packages and cost estimates. The explanation sounds reasonable to Staff.

Q. How did Staff analyze the non-monetized costs or negative impacts of the B2H project?

A. Staff looked at various environmental impacts; impacts on local communities; impacts on archaeologically sensitive sites and facilities; public comments; considered whether Idaho Power is aware of and has made efforts to study

[48] Exhibit Staff/108, Pal/4

these impacts; considered alternate routes to minimize impacts; and made public outreach efforts to address these impacts.

Staff Witness Charles Lockwood discusses environmental justice issues related to the petition in his testimony (Staff/300).

Q. What are stakeholder concerns with environmental impacts of the B2H transmission line and how are these addressed by Idaho Power?

A. Public comments express concerns regarding the project's negative impacts on rivers, streams, and aquatic life, wildfire risks, risk to endangered plant and animal species, wildlife, visual aesthetics, and archaeological sites. Two issues repeatedly raised in public comments were that of corona noise from operation of the transmission line and the visual impact around the Oregon Trail Interpretative Center near Baker City.

Q. What environmental impacts did Staff consider?

A. Staff had issued several data requests to learn about possible environmental impacts and Idaho Power's mitigation efforts.[49] These DRs asked questions on impacts and mitigation efforts related to topography, geology, environmental, agricultural, stream crossing, or cultural heritage or other conditions relevant to construction. Staff also enquired about harm related to avian, bat or other endangered species population and habitats, and impacts on residents' access

[49] Idaho Power/203/Barretto SDR 1
Idaho Power/203/Barretto SDR 15
Exhibit Staff/108, Pal/5-7
Exhibit Staff/102, Pal/8-10

to farms, businesses and homes, noise and visual impacts and mitigation efforts.

Q. Has Idaho Power studied the above impacts and developed mitigation plans?

A. In response to Staff DRs 1, 15, 17, and 26 which addresses the above impacts, Idaho Power has provided copies of impact studies and discussed mitigation efforts. These impact studies and mitigation plans are the same ones that Idaho Power has provided in the site certification process at the Energy Facility Siting Council (EFSC). Staff provides these IPC responses as Exhibits for detailed information on studies and mitigation efforts.

Q. Please describe the role of the Energy Facility Siting Council with respect to the B2H transmission line.

A. EFSC has authority to issue site certificates for certain energy facilities within Oregon. A site certificate authorizes the certificate holder to construct, operate, and decommission a facility on the approved facility site, in compliance with any conditions imposed in the site certificate and under EFSC's statutes and rules.[50] EFSC reviews a facility for compliance with various standards including land use standards, organizational expertise, soil protection, protected areas, financial assurance planning, fish and wildlife habitat, protections for threatened and endangered species, historic, cultural and

[50] ORS Chapter 469; Docket PCN 5, Supplement to Petition for CPCN, Attachment 1, page 8-9.

archaeological resources, recreation, and public services.[51] EFSC retains jurisdiction over the site during the life of the facility.

EFSC issued a final order granting a site certificate for the B2H transmission line facility on September 27, 2022.[52] The order contains a number of conditions of approval that are included in the site certificate. The approved facility includes an approved route and approved alternative route segments. With this approval, Idaho Power is authorized to design, construct and operate the B2H transmission line, though additional permits and approvals may need to be issued by federal, state and local entities, either because they are required to be issued under the findings of the site certificate or because EFSC does not have jurisdiction over a required permit.[53]

Q. What consideration may the Commission give to the EFSC order?

A. The Commission may give due consideration to findings in an EFSC order approving construction of a transmission line, under OAR 860-027-0035(2). However, EFSC does not have jurisdiction over right-of-way easements,[54] and a CPCN is still required from the Commission if the condemnation of private interests in land is necessary for construction of the line. As discussed in the section on land use findings below, the Commission will adopt the land use findings in an EFSC site certificate for a transmission line under OAR 860-027-0040(7).

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[51] ORS Chapter 469; Docket PCN 5, Supplement to Petition for CPCN, Attachment 1.
[52] ORS Chapter 469; Docket PCN 5, Supplement to Petition for CPCN, Attachment 1.
[53] ORS Chapter 469; Docket PCN 5, Supplement to Petition for CPCN, Attachment 1, page 8-9.
[54] ORS Chapter 469; Docket PCN 5, Supplement to Petition for CPCN, Attachment 1, p. 9.

Q. What is the relevance of the EFSC process in addressing Idaho Power's impact analyses and mitigation plan in the CPCN evaluation?

A. EFSC requires the Company to perform various impact analyses, including those stated above, as a part of the site certification process. EFSC evaluated the Company's studies on impacts and mitigation efforts and either accepted them or provided guidance and attached conditions that have to be met in order to construct the transmission line. Staff has primarily used information provided by Idaho Power in response to Staff DRs 1,15, 17 and 26 and to reach initial conclusions regarding negative impacts and mitigation efforts. Idaho Power's responses to Staff DRs 1, 15, 17 and 26 include copies and summaries of studies and reports provided in the EFSC process and references to the EFSC Final Order on mitigation efforts.

Q. Please summarize the findings on the potential impacts of the transmission line and mitigation efforts by Idaho power.

A. Idaho Power summarizes findings in the EFSC Final Order regarding various environmental impacts. These impacts address the issues Staff listed earlier. Here are some of the findings:[55]

- Taking into account the various avoidance, minimization, and mitigation measures—the B2H Project would not likely result in a significant adverse impact to soils, adverse impact to fish and wildlife habitat, scenic resources and protected areas.
- Taking into account mitigation, the construction and operation of the proposed facility, including approved route and approved alternative routes, is not likely to result in significant adverse impacts to any historic, cultural, or

[55] Exhibit Staff/102, Pal/8-10

archaeological resources, in compliance with the Council's Historic, Cultural, and Archaeological Resources standard.

- 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.

Q. Describe some of the mitigation measures that Idaho Power has proposed.

A. As stated in response to Staff DR 15, "To avoid and minimize impacts to fish and wildlife habitat, the Company will implement seasonal work restrictions, map and flag sensitive resources, and implement various other measures set forth in the Company's Reclamation and Revegetation Plan, Vegetation Management Plan, and Noxious Weed Plan. Unavoidable impacts will be addressed through compensatory mitigation, as outlined in the Fish and Wildlife Habitat Mitigation Plan."[56]

Geology related mitigation measures will include modifications to tower locations, design changes to structure foundations, soil amendments, or tower design modifications. Per an agreement with the City of La Grande, Idaho Power will provide funding to the City for recreational improvements at Morgan Lake Park.[57]

Idaho Power has made efforts to design the route of the transmission line to avoid irrigated areas and has sited towers along agricultural field boundaries where feasible. IPC suggests that out of the 1,461 transmission towers along the proposed route, 26 are proposed to be located within an

[57] Idaho Power/203/Barretto SDR 1

irrigated portion of an agricultural field. Idaho Power asserts that it may be able to further reduce this total number through micro-siting.[58]

Q. How will Idaho Power mitigate avian harm during construction of the transmission line?

A. Transmission lines can cause avian deaths from collision. Raptors are especially likely to suffer collisions with transmission lines due to their large wingspan. In response to Staff DR 17 Idaho Power stated that in order to minimize avian harm it will restrict the construction period to outside nesting season for raptor and non-raptor bird species found in that area. Idaho Power has also included spatial buffers around occupied nests of certain raptor species. EFSC conditions require the Company to conduct surveys to detect nests for raptor and non-raptor bird species and apply for EFSC approval if it intends to conduct any ground disturbing activities during nesting period. During operations of the transmission line, Idaho Power will adopt its Avian Protection Plan.

Staff also learned that Idaho Power is a member of the Avian Power Line Interaction Committee (APLIC) which is a national member organization consisting over 70 utilities, Edison Electric Institute, U.S. Fish and Wildlife Service, Electric Power Research Institute, National Rural Electrical Cooperative Association, Rural Utilities Service, and National Audubon Society. The APLIC is involved in continued efforts on learning about causes

[58] Idaho Power/203/Barretto SDR 15

and mitigations of avian electrocutions and collisions. It provided guidance on Avian Protection Plans for member utilities.[59]

Q. Does Idaho Power address any impact to bats and endangered species?

A. Idaho Power considers impacts on bats, pygmy rabbits and sage grouse.

Regarding state sensitive bat species and pygmy rabbits, Idaho Power avoided and minimized impacts to bat species by siting the project to avoid mines, caves, and known bat hibernacula. Additionally, if previously unidentified hibernacula are located, Idaho Power will develop additional avoidance, minimization, and mitigation measures in consultation with the ODFW. [60]

The EFSC Final Order[61] states that

> the proposed facility avoids sage grouse habitat except in cases where there is no reasonable alternative route, or when considering trade-offs and potential impacts to other important resources. In those instances, the proposed facility route minimizes the direct and indirect impacts of the proposed facility to sage-grouse habitat, in compliance with OAR 625-140-0025(2)(d).

The order also includes conditions on mitigation of impacts on sage grouse habitat during the operation of the transmission line in Fish and Wildlife habitat Conditions 17, 18 and 19.

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[59] https://www.aplic.org/resources (Last visited January 10, 2023)
[60] Idaho Power/203/Barretto SDR 15
[61] PCN 5 – Idaho Power's Supplement to Petition for CPCN, Nov. 9, 2022, Attachment 1, p 394.

Q. What other impacts and mitigation efforts were brought up in public comments?

A. Several individuals submitting public comment are extremely concerned about corona noise that is emitted from transmission lines. Some commenters also expressed that the BLM preferred route near LaGrande, Oregon would have less impact on local landowners compared to the final route (Morgan Lake Alternative) for which site certification was obtained and for which this CPCN petition has been filed. Some commenters had requested undergrounding of the transmission line either wholly or in parts, especially around culturally and historically sensitive areas, for instance, the National Historic Oregon Trail Interpretative Center near Baker City, Oregon.

Q. Please describe potential noise related impacts and Idaho Power's effort to mitigate these impacts.

A. In response to Staff DR 26, Idaho power provides the following summary of EFSC findings on noise impact and mitigation efforts.

> EFSC Exhibit X, Noise – Exhibit X addresses the potential noise impacts on property owners, including residences. 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.[62]

In responding to public comments on noise impacts Staff had asked Idaho Power to address this issue in greater detail at the Company hosted

[62] Exhibit Staff/102, Pal/8-10

virtual informational workshop on December 8, 2022. Staff plans to request additional information on this issue and the Company's ongoing efforts from Idaho Power as a result.

Staff will include additional information concerning noise impacts in its rebuttal testimony.

Q. Has Idaho Power addressed concerns around visual impacts related to the National Historic Oregon Trail Interpretive Center?

A. Staff heard commenters in public hearings bring up the issue of visual impacts especially around the National Historic Oregon Trail Interpretive Center (NHOTIC) in Baker City and suggest undergrounding the relevant segment of the transmission line.

Staff realizes that undergrounding might address public concerns and lessen impacts and hence looked into whether Idaho Power had considered that option. In response to Staff DR 31, Idaho Power mentioned that the issue of undergrounding has been discussed since the early scoping process of the project. Idaho power has presented undergrounding analysis in the EFSC filing and showed that this is not a reasonable option.

Q. What is Idaho Power's findings on undergrounding the transmission line around NHOTIC?

A. In response to public comments received on its EFSC filing Idaho Power has employed the engineering and environmental consulting firm POWER Engineers to conduct a detailed undergrounding study for the NHOTIC and provide cost estimates. The study confirmed that undergrounding would result

in significant ground disturbance, excavations, and direct surface impacts. The estimated cost for undergrounding this segment was $90.6 million to $186 million, more than installing an overhead transmission line.[63] Staff concludes that undergrounding may not be a feasible solution to visual impacts of the transmission line given physical impacts and cost implications of undergrounding.

Q. What are some concerns around the proposed route vs. alternative routes?

A. Several stakeholders have expressed a preference for the BLM preferred route over the chosen Morgan Lake Alternative as the former requires less private land to be condemned. Additional concerns about negative visual impacts, negative economic impacts resulting from a potential decline in tourism around Morgan Lake were brought by individuals in public comments.[64]

Q. How did Idaho Power address these concerns?

A. In response to Staff DR 60[65], Idaho Power provided a detailed explanation of the choice of the Morgan Lake Alternative over Mill Creek Alternative or the BLM Preferred route.

Staff's understanding from the response is that the Morgan Lake Alternative is similar to the BLM preferred route except for a 33.7 miles long

[63] Exhibit Staff/102, Pal/11-13
[64] Exhibit Staff/104 presents summaries of public comments received at the Commission through January 6, 2023.
[65] Exhibit Staff/102, Pal/14-20

segment in Union County referred to as the Glass Hill Alternative. Idaho Power provides copies of comparative analyses of the three routes that were provided as part of the BLM National Environmental Policy Act (NEPA) process.

BLM used several criteria including land use, agriculture, recreation, transportation, lands with wilderness characteristics, and potential congressional designations, as well as visual resources, cultural resources, Native American concerns, National Historic trails, and socio-economic and environmental justice concerns to consider the environmental impact of the proposed line. According to the Company, the same criteria were also used in its selection of the Morgan Lake Alternative. The Glass Hill alternative received significant public backlash including from the Glass Hill Coalition as well the Confederate Tribes of the Umatilla Indian Reservation.[66] This alternative was not pursued by Idaho Power in favor of the Morgan Lake Alternative.

In response to Staff DR 60, Idaho Power states*:*

> Following the Draft [Environmental Impact Statement] 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.
>
> The Mill Creek Alternative was developed to locate the line closer to the existing 230-kV transmission line.
>
> The Mill Creek Alternative would affect approximately 31 parcels as opposed to 26 parcels affected by Morgan Lake Route.

[66] Exhibit Staff/102, Pal/21-25.

Q. What is Staff's conclusion regarding the alternative route analysis?

A. Staff witness Yassir Rashid addresses the practicability of the proposed route in Exhibit Staff/200, with the initial conclusion that the project along the proposed route is practicable and feasible. As for the cost to those impacted by the selection of specific route segments, Staff believes that route alternatives have been studied elaborately and adequately in the BLM process. Staff has reviewed the evidence provided by Idaho Power in support of route comparisons based on several criteria. Staff realizes that the choice of the proposed Morgan Lake Alternative considers several criteria including responding to concerns of local people and governments.

Idaho Power's final selection for this petition was the Morgan Lake alternative. This route selection was 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.[67]

Q. Will B2H result in any negative socioeconomic impacts?

A. Yes, however, Idaho Power suggests that there will be no negative socio-economic impacts at the state or regional level.[68] However, Idaho Power acknowledges that there are impacts on private landowners in terms of loss of timber or agricultural land, interference with such and other land uses during construction, and impact on land values.

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[67] Exhibit Staff/102, Pal/14-20
[68] Exhibit Staff/108, Pal/10-12

In Staff Exhibit/300, Lockwood discusses impacts of this project on environmental justice communities and provides information on initial findings related to permanent loss of agricultural income and residential property value. The Company has developed management plans, including the Rights of Way Clearing Assessment, Agricultural Land Assessment, and has said that it will compensate landowners where the project will be located for the use of their land during easement negotiations.[69]

Q. What is Staff's conclusion on non-monetized costs or negative impacts and Idaho Power's mitigation efforts?

A. Staff will include a final and full evaluation, to the extent feasible, regarding non-monetized cost or impact and mitigation efforts in its Rebuttal testimony.

[69] Exhibit Staff/108, Pal/10-12

ISSUE 5: LAND USE FINDINGS

Q. What does the Commission require with respect to land use findings under OAR 860-025-0040?

A. To issue a CPCN, under OAR 860-025-0040(1), the Commission must adopt findings that a proposed transmission line complies with Statewide Planning Goals and is compatible with the acknowledged comprehensive plan and land use regulations of each local government where the project will be located. Required documentation from local governments is discussed in subsections (2) through (6) of this rule. But, as stated in OAR 860-025-0040(7), when "a proposed transmission line is subject to the jurisdiction of the Energy Facility Siting Council (EFSC), the Commission . . . will adopt the findings made as a part of the EFSC-issued site certificate, and the requirements of OAR 860-025-0040 (2) - (6) shall not apply."

Q. Is the proposed B2H transmission line subject to EFSC jurisdiction?

A. Yes, it is. A site certificate is required from EFSC to construct a "facility".[70] "Facility" is defined under ORS 469.300(14) as an "energy facility together with any related or supporting facilities." In turn, "energy facility" is defined under ORS 469.300(11)(a)(C) to include a "high voltage transmission line of more than 10 miles in length with a capacity of 230,000 volts or more to be constructed in more than one city or county in this state." EFSC has acknowledged that the B2H transmission line qualifies as an "energy facility"

[70] ORS 469.320.

under the definition in ORS 469.300(11)(C) and is subject to EFSC jurisdiction.[71]

Q. Has Idaho Power provided documentation to support findings under OAR 860-025-0040(7)?

A. Yes. Idaho Power supplemented its petition by filing a copy of EFSC's Order on Application for Site Certificate (EFSC Order).[72] The EFSC Order makes land use findings to support issuance of a site certificate for the B2H transmission line. Specifically, the EFSC Order finds that the transmission line facility will be located in and affect five Oregon counties (Morrow, Umatilla, Union, Baker and Malheur) and two Oregon cities (North Powder and Huntington).[73] EFSC reviews applicable land use regulations for each jurisdiction and adopts the following conditions:

Morrow County: Land Use Conditions 1 and 2[74]
Umatilla County: Land Use Conditions 3, 4, and 5[75]
Union County: Land Use Conditions 6 and 7[76]
Baker County: Land Use Conditions 8, 9 and 10[77]
Malheur County: Land Use Conditions 11 and 12[78]
City of North Powder: Land Use Condition 13[79]

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[71] *In the Matter of Idaho Power Company's Petition for Certificate of Public Convenience and Necessity,* Docket PCN 5, Supplement to Petition to for CPCN, Attachment 1, page 8, Final Order on Application for Site Certificate, November 9, 2022.
[72] Docket PCN 5, Supplement to Petition to for CPCN, Attachment 1, Final Order on Application for Site Certificate, November 9, 2022.
[73] Id., Attachment 1 at 149.
[74] Id., Attachment 1 at 170-172.
[75] Id., Attachment 1 at 193.
[76] Id., Attachment 1 at 218.
[77] Id., Attachment 1 at 233-234.
[78] Id., Attachment 1 at 243.
[79] Id., Attachment 1 at 248-249.

Regarding the City of Huntington, the EFSC order finds no provisions of the zoning ordinance apply, and no permits are required.[80] In addition, in the EFSC Order, EFSC reviewed exclusive farm use requirements under ORS 215.275 and ORS 215.283, adopting Land Use Condition 14.[81] Also in EFSC Order, EFSC reviewed requirements for high value farmland under ORS 215.[82] And the EFSC Order includes a review of forest zone requirements under OAR 660-006-0025, with EFSC adopting Land Use Condition 15 and 16.[83]

EFSC conducted a review of federal land management plans and of Oregon's statewide planning goals, adopting Land Use Condition 17 and approving a Goal 4 exception, to the extent it is necessary.[84] Ultimately, in the EFSC Order, EFSC concludes that subject to the conditions in the EFSC Order, the B2H facility, for the proposed route and alternate proposed routes, is compatible with the land use requirements and the statewide planning goals.[85] This route, or the alternate proposed routes, are consistent with the route proposed in Idaho Power's CPCN Petition. As noted above, this EFSC Order makes findings to support the Commission's land use findings necessary for issuance of a site certificate for the B2H transmission line as outlined in the CPCN petition.

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[80] Id., Attachment 1 at 249.
[81] Id., Attachment 1 at 251-266.
[82] Id., Attachment 1 at 267-268.
[83] Id., Attachment 1 at 268-279.
[84] Id., Attachment 1 at 279--294.
[85] Id., Attachment 1 at 294.

Q. Did Staff consider any additional information relevant to findings under OAR 860-025-0040(7)?

A. Yes. Idaho Power recently filed a request to amend its site certificate with EFSC, and Staff considered how amendment of the site certificate may affect the CPCN process. In addition, there is a pending appeal of the EFSC Order at the Oregon Supreme Court, Staff considered how appeal of the site certificate may affect the CPCN petition review process.

Q. How do the amendments affect Staff's analysis of the CPCN regarding land use findings?

A. Staff believes that the amendments will not impact Staff's ongoing analysis of the CPCN. Staff issued a data request, DR Number 72, to Idaho Power regarding the effect, if any, the requested amendment may have on issuance of a CPCN and associated land use findings. In response, Idaho Power refers to its request as "Preliminary Request for Amendment 1" and "RFA1" and states that if RFA1 is approved and the line is constructed as proposed in RFA1, "there will be a few parcels included in Attachment 10 [to the CPCN petition] that will not be required for construction or needed for condemnation."[86] Idaho Power states that it does not expect additional parcels not listed in Attachment 10 to need condemnation authority if RFA1 is approved. Further, Idaho Power confirms that if RFA1 is not approved, the Company intends to construct B2H consistent with the existing approval in the

[86] Exhibit Staff/102, Pal/26.

site certificate. Based on this response, it appears the land use findings in the approved site certificate remain relevant and applicable to review of the CPCN petition.

Q. How does the pending appeal affect Staff's analysis of the CPCN regarding land use findings?

A. In its January 6, 2023, filing with the Commission, Idaho Power lists the issues raised by the petitioners before the Supreme Court and states that none of them implicate the land use findings in the EFSC final order.[87] In addition, the procedural schedule for the appeals indicates a ruling will be made on the appeals on or before June 6, 2023, which is before the target date for the Commission's decision in this docket.[88] Therefore, at this time, Staff continues to find that the Commission may adopt the land use findings in the approved EFSC site certificate to support its findings on the CPCN petition.

Q. Does this conclude your testimony?

A. Yes, it does.

[87] Docket PCN 5, Idaho Power Company Response to the 12-19-22 Memorandum at pp. 2-3 (January 6, 2023).
[88] Docket PCN 5, Idaho Power Company Response to the 12-19-22 Memorandum at p. 2.

CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 101

Witness Qualifications Statement

January 17, 2023

WITNESS QUALIFICATIONS STATEMENT

NAME: Sudeshna Pal

EMPLOYER: Public Utility Commission of Oregon

TITLE: Senior Energy Policy Analyst
Energy Resources and Planning Division

ADDRESS: 201 High Street SE. Suite 100
Salem, OR. 97301

EDUCATION: West Virginia University
Doctor of Philosophy in Economics, 2008
Master of Arts in Economics, 2005

EXPERIENCE: Oregon Public Utility Commission
Senior Energy Policy Analyst
Economic Resources and Planning. 2022-Present

Oregon Citizens' Utility Board
Senior Economist, 2019-2022
At CUB I have provided analysis and comments on electric and gas utility integrated resource plans, distribution system plans, dockets involving rulemaking for renewable natural gas and clean energy plan. I have been a witness and written testimonies in utility rate cases.

Portland State University
Adjunct Faculty, Department of Economics, 2014-Present
I teach undergraduate and graduate courses in Economics.

CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 102

Exhibits in Support
Of Opening Testimony

January 17, 2023

PCN 5
Idaho Power Company's Response to
Staff's Information Requests Nos. 55-61

Topic or Keyword: Transmission Revenue

STAFF'S DATA REQUEST NO. 57.

Please refer to Idaho Power/100/Ellsworth/31/Line 24.
a. Please explain how the annual revenue credit is calculated.
b. What is the amount of the annual credit?
c. What factors will impact the amount of this credit?
d. For what period is this credit applied?

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 57.

a. To calculate the annual revenue credit, the Company compared the difference between forecasted Open Access Transmission Tariff ("OATT") revenues in a scenario where B2H does not exist and forecasted OATT revenues in a scenario where Boardman to Hemingway ("B2H") does exist. In the B2H scenario, the transmission revenue requirement is higher because the cost of the B2H project has been included in transmission rate base amounts, increasing the OATT rate. In addition, there is a net increase in OATT volumes, and a resulting increase in OATT revenues, due to BPA and PacifiCorp's usage of Idaho Power's transmission system. The difference between the non-B2H scenario OATT revenues and the B2H scenario OATT revenues results in the incremental revenue credit anticipated with the addition of the B2H project.

b. The revenue credit varies by year depending on the OATT rate and OATT volumes in a particular year. The estimated revenue credit from non-native load customers, including any changes in point-to-point reservations with BPA and PacifiCorp, for the first full year of OATT revenues with B2H in-service is $17.6 million.

c. Increases or decreases to the B2H project cost will impact the transmission revenue requirement, increasing or decreasing transmission rate base, the OATT rate and the amount of this credit. All else equal, a higher B2H project cost will increase the resulting revenue credit. Increases or decreases in OATT customer volumes will also impact the amount of this credit. All else equal, higher OATT customer volumes will increase the revenue credit. Finally, increases or decreases in native load will impact the proportion of the transmission revenue requirement paid for by OATT customers. All else equal, increases in native load will decrease the amount of the revenue credit.

d. The increased OATT revenues associated with the addition of the B2H project will continue so long as B2H is in-service and because transmission line retirements are extremely rare, Idaho Power anticipates that B2H will likely remain in service indefinitely.

Topic or Keyword: Contingency Reserves and Electrical Losses

STAFF'S DATA REQUEST NO. 42:

Ref: Idaho Power/100/Ellsworth/40/Lines 25-26. What are the current average electrical losses incurred in the "less efficient, lower voltage transmission lines with very large transfers" that IPC expects to replace with B2H.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 42:

The 500-kV Boardman to Hemingway ("B2H") project will be built in parallel with existing 230-kV lines between the Northwest and the Treasure Valley area. During times of higher imports or exports, these lines can have considerable losses. Enabling more power to flow on higher voltage lines such as B2H will result in less resistive losses on the system. Table 12 from the 2021 Integrated Resource Plan ("IRP") Appendix D Transmission Supplement (page 46) shows the loss reductions broken out by powerflow condition (also shown below). The Peak Summer, Peak Summer NW Import, and Off-Peak Heavy NW Export are three powerflow cases with large transfers. The loss reductions shown in the Change column indicate the loss reductions that are expected to occur on the existing, less efficient, underlying 230-kV transmission lines once B2H is in service.

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

Topic or Keyword: Resource Diversity Benefits

STAFF'S DATA REQUEST NO. 71.

Please refer to Ellsworth/36/Lines 15-19.

a. Please explain whether Idaho Power has identified specific wind and solar resources (actual or proxy) that B2H will integrate to its system. Please also provide a list of any such resources identified by the Company.
b. Please explain when B2H be able to integrate these resources.
c. Please describe when and to what extent the benefits from resource diversity enabled by B2H will be realized by Idaho Power's Oregon and Idaho customers.
d. Please explain whether, and the extent to which B2H will need to be complemented by Gateway West in order to integrate the renewable resources that are discussed here.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 71.

a. Boardman to Hemingway ("B2H") will assist the Company in integrating all renewable resources that it adds to its system by providing additional connectivity to the Pacific Northwest. For example, the Western Energy Imbalance Market ("EIM") assists the Company in integrating Variable Energy Resources ("VERs"), and the EIM is more efficient given more transmission connectivity. The Company identified the need for 700 MW of wind and 1,405 MW of solar between 2021 and 2040 in its most recently acknowledged 2021 IRP.
b. Integration benefits will occur immediately upon project energization.
c. The Company has not completed a VER Integration Study with and without B2H to determine the benefits provided by B2H. The Company believes that these benefits exist, but they have not been quantified.
d. B2H adds additional connectivity between the Pacific Northwest and Idaho without Gateway West, and therefore will provide benefits on a stand-alone basis. As discussed in part (c), the Company has not completed a VER Integration Study that compares a system with and without B2H.

Topic or Keyword: Transmission Modeling Assumptions

STAFF'S DATA REQUEST NO. 40:

Ref: Idaho Power/100/Ellsworth/31. Please provide results of calibration of B2H project costs with peer transmission companies as explained in the testimony.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 40:

The Boardman to Hemingway ("B2H") estimate was reviewed and approved by Bonneville Power Administration ("BPA") and PacifiCorp. At the time, BPA and PacifiCorp both had recent transmission line construction projects to calibrate against including 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)
- PacifiCorp: Sigurd to Red Butte 345-kV line (160 miles, in-service 2015)
- PacifiCorp: 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)

These discussions did not result in specific quantified adjustments to B2H project costs, but rather the information gained during these visits informed the development and reasonableness of future B2H cost estimates.

Topic or Keyword: Funding Agreements and Term Sheet

STAFF'S DATA REQUEST NO. 34:

Ref: Idaho Power/100/Ellsworth/10/Lines 3-5

a. Please describe whether the Company has estimated how much cost it will have incurred during this non-repayment time frame.

b. Please provide workbooks showing cost estimates for this period.

c. Please explain how these costs would be recovered.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 34:

a. Although not finalized at this time, the Company anticipates repaying the additional security deposit of $10 million at energization, leaving the remaining estimated $25 million unpaid during the first 10 years of the Network Integration Transmission Service Agreements. Using an annual compounding rate of 3.25 percent of interest, this balance would grow to approximately $34 million during the non-payment time frame.

b. Please see Attachment 1 for the computation of the approximately $34 million over the non-payment time frame. The project is assumed to be energized July 1, 2026, and utilizes a 3.25 percent annual interest rate, compounded at the beginning of each calendar year.

c. Payments are anticipated to take place over the second period of ten years (years 11 through 20), and when payments are made, such payments would become a component of Idaho Power's transmission rate base, joining other transmission investments for recovery from transmission customers through the FERC OATT transmission formula rate and the Company's retail customers through a future rate proceeding.

BPA Secuirty Deposit Balance Computation

BPA Permitting Balance	$ 25,000,000
Fixed Interest Rate:	3.25%

Year	Beg Bal	Pymt Sch	Interest	End Bal
2026	$ 25,000,000	$ -	$ 406,250	$ 25,406,250
2027	$ 25,406,250	$ -	$ 825,703	$ 26,231,953
2028	$ 26,231,953	$ -	$ 852,538	$ 27,084,492
2029	$ 27,084,492	$ -	$ 880,246	$ 27,964,738
2030	$ 27,964,738	$ -	$ 908,854	$ 28,873,592
2031	$ 28,873,592	$ -	$ 938,392	$ 29,811,983
2032	$ 29,811,983	$ -	$ 968,889	$ 30,780,873
2033	$ 30,780,873	$ -	$ 1,000,378	$ 31,781,251
2034	$ 31,781,251	$ -	$ 1,032,891	$ 32,814,142
2035	$ 32,814,142	$ -	$ 1,066,460	$ 33,880,601

Topic or Keyword: Cost, Revenue, Construction

STAFF'S DATA REQUEST NO. 65.

a. Please provide the historical benchmark relied on for conductor, lattice steel, and copper components, and the publication and data source the Company has used so far in this petition.
b. What benchmarks does IPC plan to use for contracts going forward for B2H?

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 65.

a. The indices used as a benchmark for raw material pricing include: London Metal Exchange ("LME") Aluminum for conductor and LME Steel Scrap for lattice steel angle iron, SteelBB (S&P Global Commodity Insights Plate) for Turkish plate, SteelOrbis (Orbis Steel Index) for Indian Steel, and AMM (Fastmarket's American Metal Market) for HRC (hot rolled coil) for steel poles. Idaho Power will use very little copper on the transmission line. The forecast provided in Idaho Power/200/Barretto/25 was based on quantities at the current market pricing from the Gateway South project (and other Quanta Infrastructure Solutions Group projects) for similar components, structures, and conductor.

b. Idaho Power will go out for competitive bid for all major materials including conductor, lattice steel, steel poles and conductor hardware. Suppliers will either offer a fixed price delivered from the factory to the job site or a variable price tied to the appropriate index above, along with an adjustment formula tying the price of the material at the time of raw material purchase. Idaho Power will review the proposals and evaluate each based on pricing, risk, and delivery schedule commitment.

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

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[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. 31:

Please explain whether IPC has considered undergrounding segments of the transmission line and if so, please provide a list of the segments considered, the estimated costs of undergrounding each, and all analyses informing IPC's decisions on undergrounding said segments.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 31:

Undergrounding Generally

Idaho Power received several comments during the early scoping process requesting that the Company consider installing the transmission line underground. Idaho Power addressed those requests in Exhibit BB of the Company's 2018 Energy Facility Siting Council ("EFSC") application.[1] Idaho Power determined that undergrounding was not a reasonable option because of the increased land disturbance associated with underground transmission lines, the reliability and reactive compensation issues for long installations, the unproven technology over long distances for 500-kV lines, and the high cost of an underground line compared to overhead 500-kV lines. The key elements from Idaho Power's analysis in Exhibit BB are summarized as follows:

- Ground Disturbance. Underground transmission lines result in greater amounts of ground disturbance because underground transmission lines require a continuous excavation through all habitat types, but overhead lines result in a disturbance only at the structure locations.[2]
- Reliability. Although underground transmission lines tend to have fewer forced outages than overhead transmission lines, outages on underground lines take longer to identify and correct. Overhead transmission lines can be quickly inspected and repaired, but underground failures require testing with specialized equipment to locate the damaged sections of the cable.[3]
- Reactive Power Compensation. The capacitive characteristics of the insulating material for underground cables introduce high capacitive reactance onto the electrical system resulting in potential system instability.[4] In order to prevent this system instability, this high capacitive reactance would have to be offset with inductive compensation at above ground compensation stations located every 7 to 20 miles along the transmission line route.[5]
- Cost. Idaho Power cited a 2009 study that determined that the construction costs of undergrounding a transmission line tend to exceed the costs of constructing an overhead transmission line by a multiplier of 12 to 17.[6]

[1] ASC, Exhibit BB, included as Attachment 1, at BB-6 through BB-7.
[2] See Attachment 1, ASC, Exhibit BB at BB-7.
[3] See Attachment 1, ASC, Exhibit BB at BB-6.
[4] See Attachment 1, ASC, Exhibit BB at BB-6 through BB-7.
[5] See Attachment 1, ASC, Exhibit BB at BB-7.
[6] See Attachment 1, ASC, Exhibit BB at BB-6.

Undergrounding near the National Historic Oregon Trail Interpretative Center

2019 NHOTIC Undergrounding Study

Idaho Power received comments on the Company's 2018 EFSC application requesting that the Company consider installing the transmission line underground in the vicinity of the National Historic Oregon Trail Interpretative Center ("NHOTIC") in Baker County. In response to those comments, Idaho Power retained engineering and environmental consulting firm POWER Engineers to conduct a detailed study estimating the cost and impacts from undergrounding the B2H Project for the segment near the NHOTIC. Idaho Power submitted the study to the EFSC as an attachment to the Exhibit BB Errata filing.[7]

POWER Engineers concluded that undergrounding the transmission line would result in significant additional ground disturbance because an underground transmission line of this size (500-kV) may require a 100-foot-wide corridor, resulting in approximately 30 acres of ground disturbance.[8] POWER Engineers also discussed the fact that there are few examples of undergrounding 500-kV transmission lines.[9] POWER Engineers determined that undergrounding the B2H Project for the segment near NHOTIC would cost approximately 30 to 33 times more than installing an overhead transmission line.[10]

2021 NHOTIC Undergrounding Study

Undergrounding near the NHOTIC was an issue litigated during the EFSC contested case. As part of that proceeding in 2021, Idaho Power retained POWER Engineers to conduct a more-detailed study and cost estimate.[11]

POWER Engineers' 2021 study confirmed its early analysis that undergrounding the transmission line would result in significant ground disturbance, finding that approximately 332,000 cubic yards of excavated material may need to be hauled away from the B2H Project site and the direct surface impact would be approximately 53.2 acres along the 1.7-mile length of the underground section.[12] POWER Engineers also confirmed that underground 500-kV transmission lines are extremely rare with only one known project in the United States.[13] Finally, POWER Engineers concluded, after conducting a more-rigorous cost assessment, that undergrounding the B2H Project for the segment near NHOTIC would cost approximately 27 to 35 times, or $90.6 million to $186 million, more than installing an overhead transmission line.[14]

Additionally, in the EFSC contested case proceeding, certain limited parties had proposed underground for a segment of the B2H project in the vicinity of Morgan Lake Park and for the entire length of the transmission line. Using the NHOTIC cost estimate as a proxy (i.e., a $55-$112 million per-mile cost from the Class 4 estimate), Idaho Power provided a cost estimate for

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[7] ASC, Exhibit BB Errata, included as Attachment 2, Attachment BB-3A, Comparison of Cost and Ground Disturbance Between Underground and Overhead Installation Within the Viewshed of the National Historic Oregon Trail Interpretive Center (NHOTIC) (Mar. 20, 2019) ("2019 NHOTIC Undergrounding Study").

[8] 2019 NHOTIC Undergrounding Study at 1.

[9] 2019 NHOTIC Undergrounding Study at 1.

[10] 2019 NHOTIC Undergrounding Study at 17.

[11] Class 4 Cost Estimate Report for an Underground Installation Within the Viewshed of the National Historic Oregon Trail Interpretative Center (NHOTIC) (Nov. 8, 2021) ("2021 NHOTIC Undergrounding Study"), included as Attachment 3.

[12] 2021 NHOTIC Undergrounding Study at 1.

[13] 2021 NHOTIC Undergrounding Study at 1.

[14] 2021 NHOTIC Undergrounding Study at 1 & 16.

undergrounding in the 3-mile segment near Morgan Lake Park in the amount of approximately $165-336 million.[15] Additionally, extrapolating the $55-$112 million per mile costs from the Class 4 estimate, the cost estimate for undergrounding the entire transmission line was approximately $16.3-$33.2 billion.[16]

[15] See Attachments 4-7, Idaho Power/Rebuttal Testimony of Dennis Johnson (Nov. 12, 2021) /Issues PS-4, PS-10, R-3 and SR-2/ p.45 of 46.

[16] See Attachments 4-7, Idaho Power/Rebuttal Testimony of Dennis Johnson (Nov. 12, 2021) /Issues PS-4, PS-10, R-3 and SR-2/ p. 38 of 46.

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.

Physical Features

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.

Proportion of private vs. public land

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.

Number of Parcels

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.

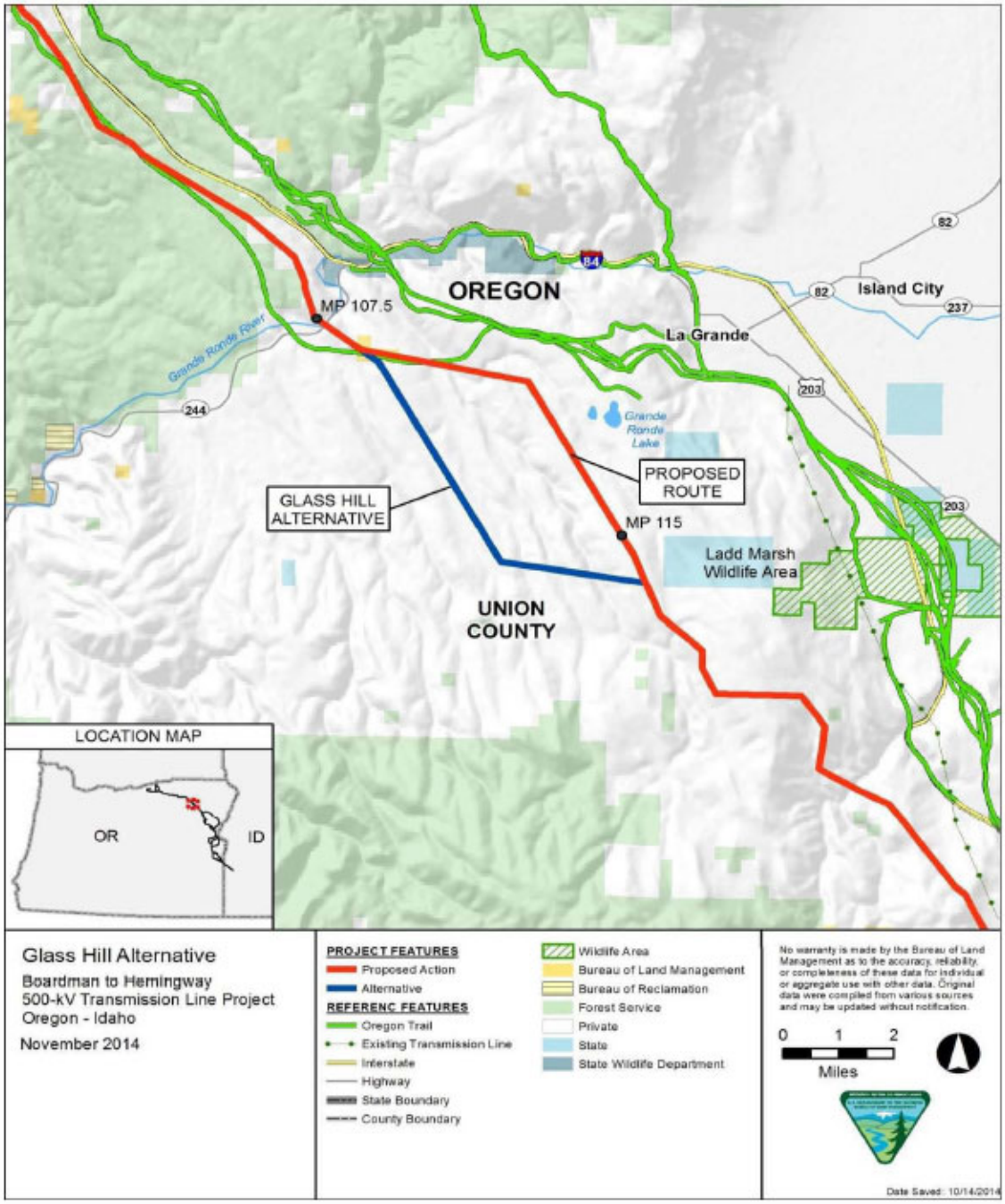
b. In the FEIS, several criteria were used to compare the various routes, including land use, agriculture, recreation, transportation, lands with wilderness characteristics, and potential congressional designations (see Table 2-23 provided in Attachment 3), as well as visual resources, cultural resources, 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.

[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).

COMMENT(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. 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. T1a

Based on information available in the DEIS and our meetings, the CTUIR DNR recommends the following alternatives in each Segment.: T1b

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.

RESPONSE(S)

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)

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

RESPONSE(S)

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)

T1 **CTUIR (cont.)**

CTUIR DNR Letter to BLM
Subject: Boardman to Hemingway Transmission Line Project Draft EIS
March 19, 2015
Page 3 of 5

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.

T1f 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 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

RESPONSE(S)

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)

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.

RESPONSE(S)

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)

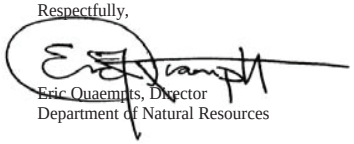
T1 **CTUIR (cont.)**

CTUIR DNR Letter to BLM
Subject: Boardman to Hemingway Transmission Line Project Draft EIS
March 19, 2015
Page 5 of 5

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]

RESPONSE(S)

T1k The term "Rock Art" has been replaced as suggested.

PCN 5
Idaho Power Company's Response to
Staff's Information Requests Nos. 68-72

Topic or Keyword: Preliminary Request for Amendment 1 to Boardman to Hemingway Project

STAFF'S DATA REQUEST NO. 72.

Refer to the Preliminary Request for Amendment 1 that Idaho Power filed with EFSC on Dec. 7, 2022, regarding the Boardman to Hemingway transmission project.

a. Please explain whether the changes identified in this request are reflected in the Company's PCN Petition filed with the commission on Sep. 30, 2022?
b. If not included in the CPCN Petition, please describe which of the properties' identified in Attachment 10 to the CPCN Petition, pages 1-7 will be impacted by the preliminary request for Amendment. Please also describe the nature of the impact on each parcel.
c. Please explain whether additional parcels not listed in Attachment 10 to CPCN, pages 1-7 will require condemnation
d. If Amendment 1 is not approved by EFSC, please explain whether IPC will construct B2H based on the route approved in the current site certificate.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 72.

a. The Preliminary Request for Amendment 1 ("RFA1") additions are not reflected in the Company's Petition filed in this proceeding.
b. Attachment 10 to the Petition includes landowners associated with the site boundary approved by Energy Facility Siting Council ("EFSC") in the site certificate. If RFA1 is approved and the Company constructs on the areas designated in RFA1, there will be a few parcels included in Attachment 10 that will not be required for construction or needed for condemnation. Nonetheless, Idaho Power is including those parcels in Attachment 10 as RFA1 has not been approved by EFSC.
c. The Company does not expect condemnation authority to be required for the additional parcels not listed in Attachment 10 to the Petition.
d. If RFA1 is not approved by EFSC, the Company plans to construct the Boardman to Hemingway line based on the approved route in the Site Certificate.

CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 103

Is confidential

Protective Order: 22-309

Exhibits in Support
Of Opening Testimony

January 17, 2023

CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILTY COMMISSION OF OREGON

STAFF EXHIBIT 104

Exhibits in Support of Opening Testimony

January 17, 2023

DATE: January 17, 2023

TO: Public Utility Commission

FROM: Sudeshna Pal

THROUGH: Bryan Conway

SUBJECT: IDAHO POWER COMPANY
(Docket No. PCN 5)
Public Comments Summary

DISCUSSION:

Through January 6, 2023, Consumer Services collected twenty-four (24) public comments relating to Idaho Power Company's (IPC) petition for a Certificate of Public Convenience and Necessity to construct a 300-mile, 500KV transmission line spanning five counties in eastern Oregon: Morrow, Umatilla, Union, Baker, and Malheur.

Of the twenty-four comments received, all were opposed to the project.

Comments in Opposition – These comments focused on multiple themes, including but not limited to:

1. IPC has not fully considered alternative routes for the transmission line.
2. The proposed line would have detrimental effects on tourism, a major component of local economies.
3. The line would increase the risk of wildfires in the region
4. Historic sites, specifically the Oregon Trail, would be threatened by construction of the line.
5. IPC has not adequately addressed public health and safety concerns, including related to noise.
6. The current proposed route would be highly disruptive to wildlife and the environment more broadly.
7. The proposed route would have a deleterious effect on agriculture in the region.
8. IPC has operated in bad faith in its negotiations with landowners.

PCN 5 PUBLIC COMMENTS SUMMARY				
NUMBER	**DATE**	**NAME**	**POSITION**	**SUMMARY**
1	11/21/2022	Greg Larkin	Oppose	IPC is underestimating the cost of land acquisition, construction, litigation, and site mitigation. IPC is also underestimating the wildfire and health risks the line will cause.
2	11/14/2022	Christopher and Margie Marie Lyon	Oppose	IPC has not adequately explored alternate routes that would be less disruptive to landowners.
3	11/16/2022	Jeannine Florance	Oppose	IPC has failed to consider alternate routes that would better protect the health, safety, and economy of local communities.
4	11/16/2022	Curtis Ringstad	Oppose	Other routes or underground construction should be utilized to protect the health and safety of communities and the environment.
5	11/16/2022	Jon White	Oppose	Objects to the amount of private land which will be condemned for the line and argues that Oregonians will see little benefit from the completed project.
6	11/21/2022	David Komlosi	Oppose	IPC has not properly considered alternative routes that would be less disruptive than the proposed route and has not offered adequate compensation to impacted landowners.
7	11/22/2022	Jim Kreider for STOP B2H	Oppose	IPC has not yet finalized construction agreements and should do so before being granted a certificate of public convenience and necessity. Additionally, PacifiCorp has not received PUC acknowledgement of its participation in the project. Finally, landowners have not been provided with an accurate procedural calendar.
8	11/21/2022	Arlene Young	Oppose	IPC did not adequately explore alternative routes which would be less disruptive to public health, agriculture, and the local economy.
9	11/28/2022	Mike Beatty	Oppose	Raises concerns over the environemental and economic impacts of the proposed line. Urges the Commission and IPC to instead direct resources to efficiency and conservation measures.
10	11/29/2022	Whit Deschner	Oppose	Raises concerns with the environental, aesthetic, and health/safety impacts of the proposed line and objects to the financial costs that will be imposed on IPC ratepayers.

11	11/29/2022	Peter Barry	Oppose	Objects to the proposed line on environmental, health/safety, and aethestic grounds and raises doubts about the accuracy of IPC documentation, including the final cost of the proposed line.
12	11/29/2022	JoAnn Marlette	Oppose	Raises concerns with the environmental impact of the proposed line, specifically the increased wildfire risk. Also raises concerns with the fiscal impact of the project, such as the cost to ratepayers and the uncertainty regarding final agreement to parcipate from PacifiCorp.
13	12/3/2022	Kevin March	Oppose	Argues that the EFSC process did not allow for full consideration of a number of issues and further objects to the proposed line on historic preservation and environmental grounds, specifically the impact to rivers, streams, and aquatic life.
14	12/4/2022	Cathy Webb	Oppose	Objects to the proposed route of the line, arguing that other proposals would have reduced the risk to historic sites, wildlife, and the environment. Suggests the increased risk of wildfires has not been addressed by IPC.
15	12/5/2022	Randy and Diana Siltanen	Oppose	Argue the proposed line is unnecessary and would pose an unacceptable environmental risk along its route and would damage local economies. Propose greater adoption of local renewable resources or enhanced use of existing infrastructure.
16	12/6/2022	Carol Lauritzen	Oppose	Raises concerns such as the loss of wildlife habitat, the destruction of historic sites, and the aethestic and economic damage done to the local tourism industry. Argues the proposed line will not benefit Oregon.
17	12/4/2022	Anne March	Oppose	Raises a number of procedural issues, including a failure to maximize public input and a belief among many petitioners that their feedback wasn't seriously considered. Objects to the proposed line on economic, public health and safety, environmental, historic, and aethetic grounds.
18	12/5/2022	Michael Jaeger	Oppose	Objects to the necessity of the proposed line, arguing that Oregon ratepayers will not be the primary beneficiaries.
19	12/7/2022	Glen Herman	Oppose	Argues that the environmental and aesthetic damage of the proposed route could be resolved by utilizing the alternate BLM route.

20	1/4/2023	Cathy Trochlell	Oppose	The proposed route requires too much private land, would damage wildlife habitat and historically imporant land, generate fire and other environmental risks, and negatively affect public health.
21	1/3/2023	Brian Kelly for Greater Hells Canyon Council	Oppose	Raises land use issues as well as environmental and economic justice concerns as many residents in affected counties are economically disadvantaged.
22	1/5/2023	Ann Brown	Oppose	Argues the proposed line is unncecessary for Oregon ratepayers and may not make economic sense based on need.
23	1/3/2023	Barb Zukin	Oppose	Other routes should be considered as they would be less disruptive to public health, historic landmarks, the environment, and the economy.
24	1/5/2023	John Milbert	Oppose	Argues that a CPCN is premature at this stage and is opposed to any use of eminent domain to acquire land for the proposed line

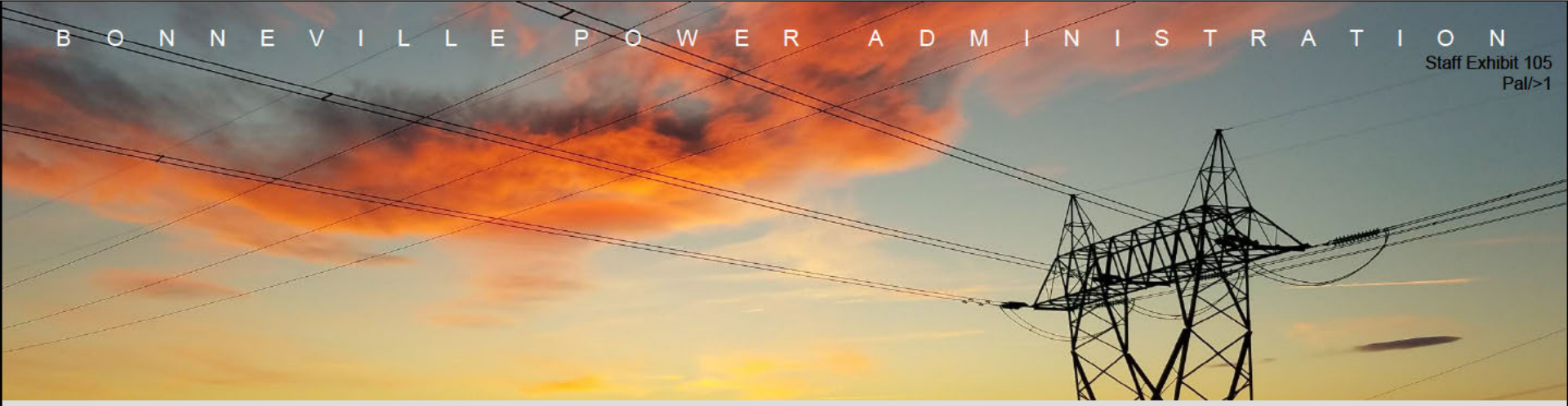
CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 105

Exhibits in Support
Of Opening Testimony

January 17, 2023



Staff Exhibit 105
Pal/>1

Workshop: B2H w/ Transfer Service Term Sheet & Business Case

February 8th 2022

Welcome to the SILS: B2H with Transfer Service Workshop

The meeting will begin momentarily

- When joining the Event, enter your name and email address where indicated so your name is visible in the Participant window to the meeting host
- Use the "Call Me using phone" (recommended) or "Use computer audio" for your Audio connection to the meeting
- Once in the meeting, open both the Participant and Chat windows for interacting with panelist and seeing your meeting status

Meeting Participation and How to Ask Questions:

- After you join the WebEx Event, you will not be able to unmute yourself or share your video/webcam unless the presenter makes you a panelist.
- **To be recognized for asking a question:**
  1. *Use the Chat option to send a question request to "Everyone"*
  2. *Or use the "Raise your Hand" option to signal you have a question*

- The Host/Panelists will monitor these actions and unmute or move you to "Panelist Status" and then call on you to ask a question.
- When finished the Host will re-mute or move you back to Attendee status. Please remember to re-mute and lower your hand when done speaking.

Staff Exhibit 105
Pal/>3

Welcome

- Safety
- Workshop instructions (WebEx)
- Introductions

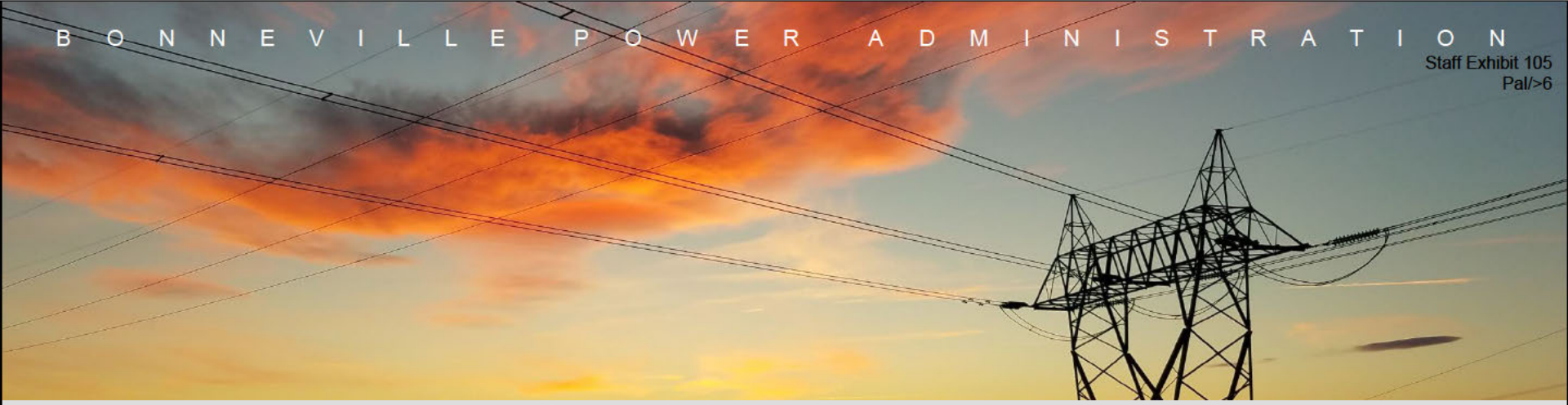
Agenda

- Introductions and Agenda Review
- Executive Overview
- Background and Context
- Term Sheet Overview
  - NITS OATT Service across Idaho
  - Security Agreement, Transfer of Permitting Interest, Business Case
  - Longhorn Substation
  - PacifiCorp Transmission Service
- Q & A
- Next steps

Staff Exhibit 105
Pal/>5

Executive Overview

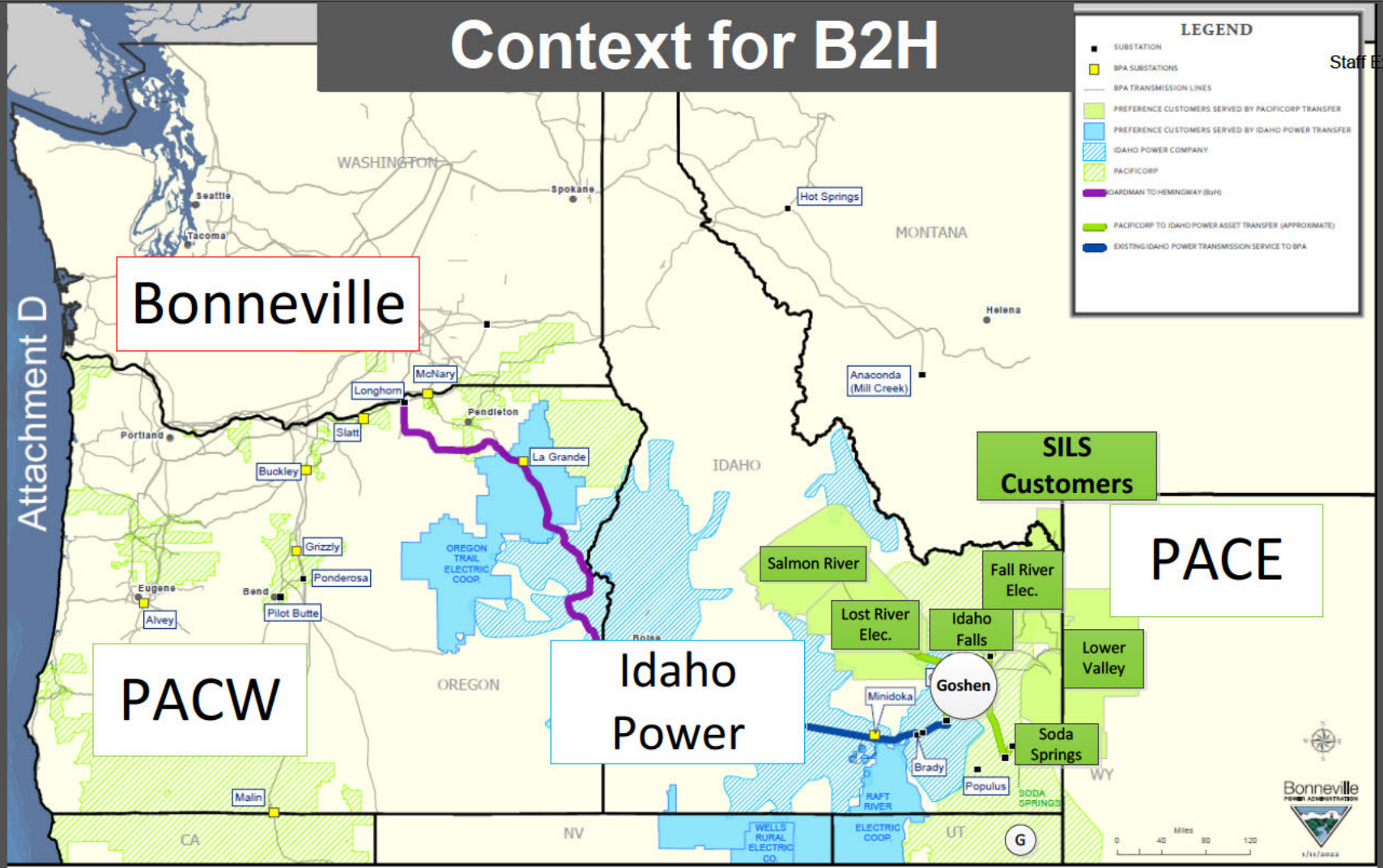
- BPA's overarching goal
  - To secure a long-term, cost effective and reliable solution for meeting contractual obligations for delivering firm federal power to public power customers in Southeast Idaho (SILS customers).
- Goal for today
  - Build understanding of status, rationale, and remaining decisions and work.
  - Solicit comments to inform BPA's impending decisions.
    - Submit initial feedback and comments on the Term Sheet to BPA by March 7.
- Today's discussion: an important milestone in a long journey; not a final action.



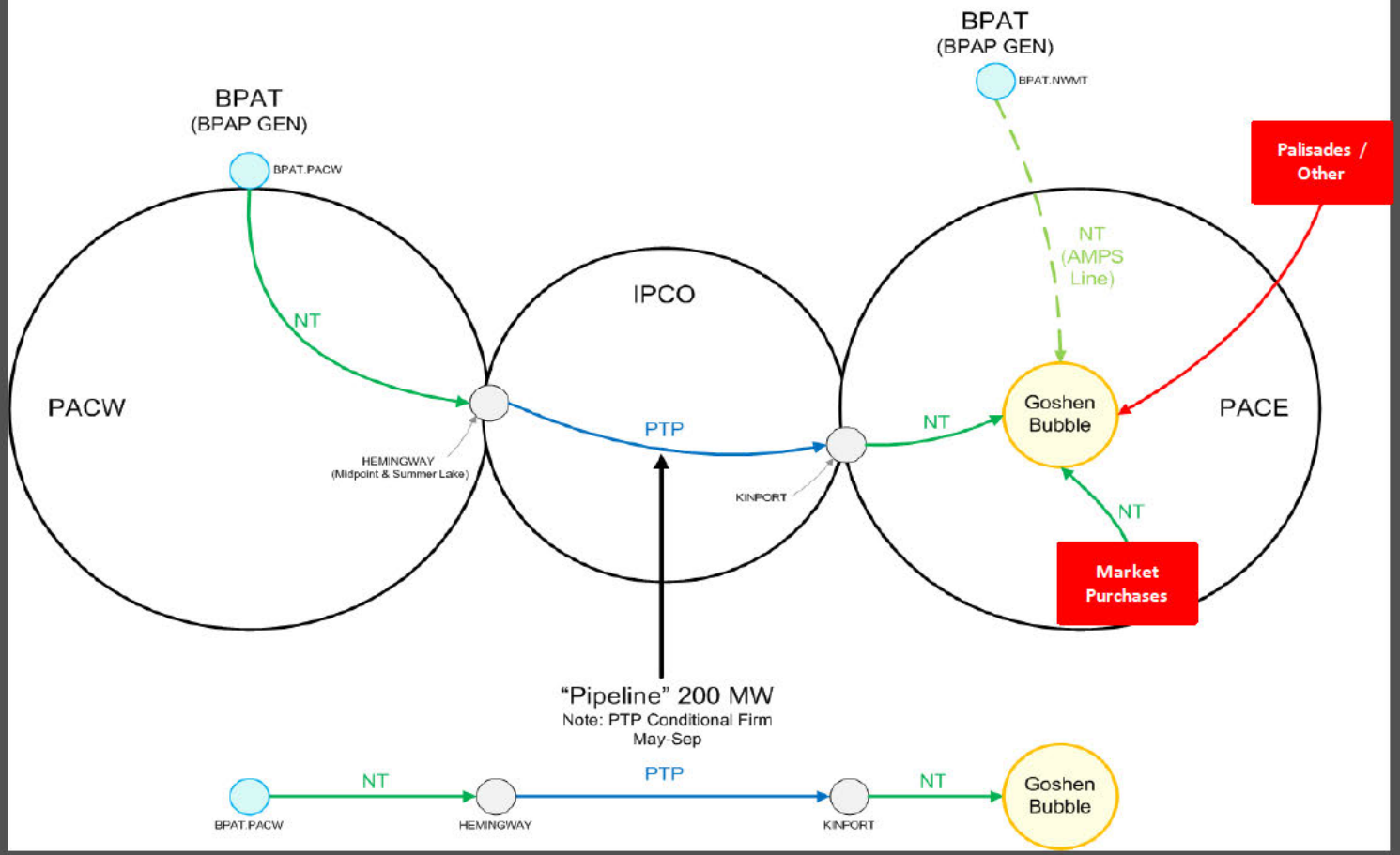
Background and Context

Context for B2H

Staff Exhibit 105
Pal/>7

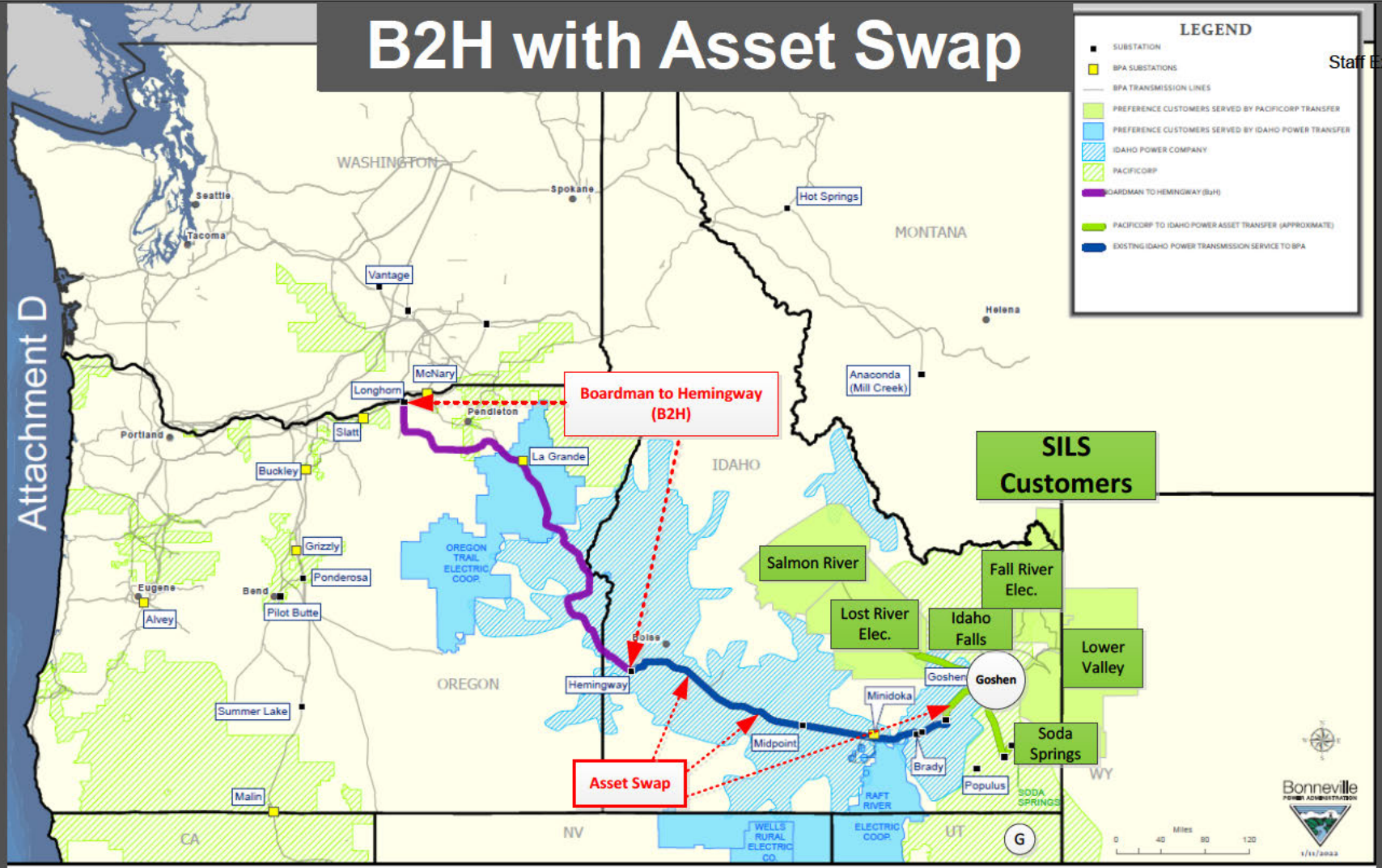


Current Load Service



Attachment D

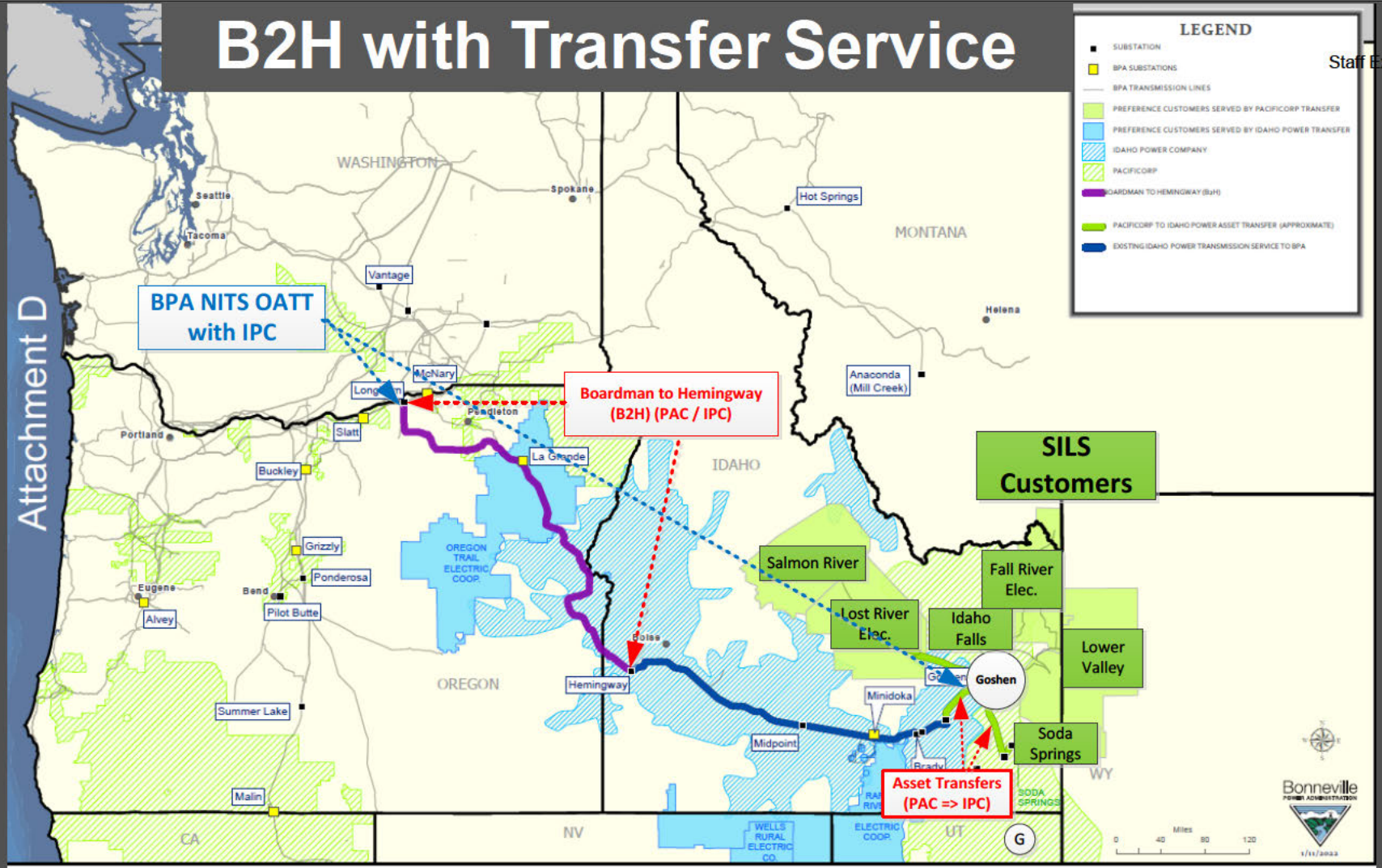
B2H with Asset Swap

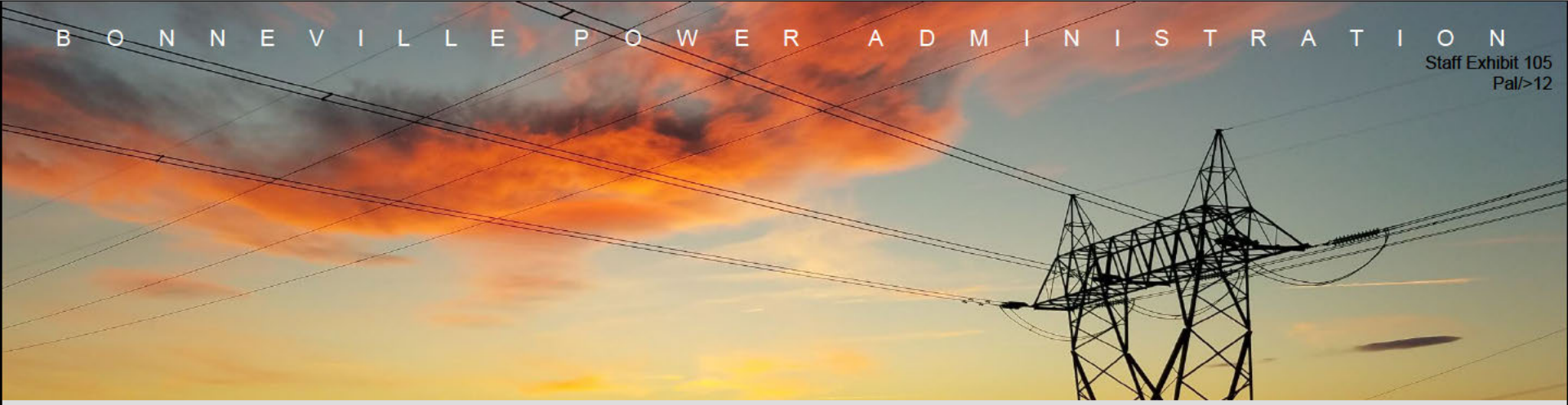


New Proposal: B2H with Transfer Service

- BPA would transfer its permitting interest in the project to Idaho Power. It does not intend to construct or own B2H.
- PacifiCorp and Idaho Power would transfer assets between each other.
  - All SILS customers' loads would be on Idaho Power's transmission system. (i.e. one wheel for BPA).
- BPA acquires NITS OATT service from Idaho Power to serve SILS customers' loads.
- BPA, PacifiCorp, and Idaho agree to various other transmission upgrades and arrangements.

B2H with Transfer Service





Term Sheet

Staff Exhibit 105
Pal/>13

NITS Agreement / NITS Security Agreement / Transfer of Permitting Interest Agreement

Term Sheet

sections 3(a)7, 3(a)3, 3(b)1, 3(b)2, 3(b)3.

NITS Service for SILS Customers in Idaho (BPA and IPC)

- SILS customers on Idaho Power's transmission system.
  - PacifiCorp and Idaho Power would transfer assets so that BPA's SILS customers would be served on Idaho Power's transmission system. Term Sheet 3(a)7.
  - SILS customers would be one wheel away from BPA.
- BPA would enter into two 20-year NITS agreements with Idaho Power for service to SILS customers. Term Sheet 3(b)1.
- BPA would terminate its existing NITS agreements with PacifiCorp once B2H is built and service commences under the Idaho NITS agreements. Term Sheet 3(a)3.
- The Idaho Power NITS agreements assignable.
  - The NITS agreements with Idaho Power would be assignable to BPA's SILS customers, provided customers meet security requirements. Term Sheet 3(b)1.

Security Agreement (BPA and IPC)

- The NITS Security Agreement commits BPA to contribute an additional $10m upon execution of the package of agreements.
- This $10m would be added to the $25-26m of funding contributions already incurred by BPA through permitting costs. Term Sheet 3(b)2.
- If B2H is built then BPA is reimbursed in full, including interest
  - BPA's total contribution towards B2H ($35-36m) would be repaid to BPA by Idaho Power, with repayment beginning in year 11 of the 20 year NITS agreements and continuing until end of agreements. Term Sheet 3(b)2.
  - Interest on the BPA contribution would accrue upon energization of B2H. Idaho Power could make a lump-sum payment to BPA at anytime. Term Sheet 3(b)2.

Security Agreement (Cont'd)

- The NITS Security Agreement also addresses the risk backstop for B2H construction risk.
- If B2H is not built because Idaho Power does not receive **all permits** or **regulatory** approvals, then:
  - Idaho Power would repay to BPA its $10m contribution. Term Sheet 3(b)(2).
  - BPA would reimburse Idaho Power for pre-construction and permitting costs Idaho Power incurred associated with a 24.24% share of B2H. Term Sheet 3(b)2.
- If Idaho Power does not proceed with B2H for other reasons, then:
  - Idaho Power would repay to BPA its $10m contribution, attempt to sell the B2H permitting rights, and pay to BPA a pro rata portion of the proceeds of such sale. Term Sheet 3(b)2

Permitting Transfer Agreement

- BPA would transfer its permitting interest to Idaho Power. Term Sheet 3(b)3.
- Transfer would occur concurrently with signing of the NITS agreement and Security Agreement.
- Idaho Power would be responsible for 45% of future permitting costs and pre-construction costs. Term Sheet 3(b)3.

Business Case Summary

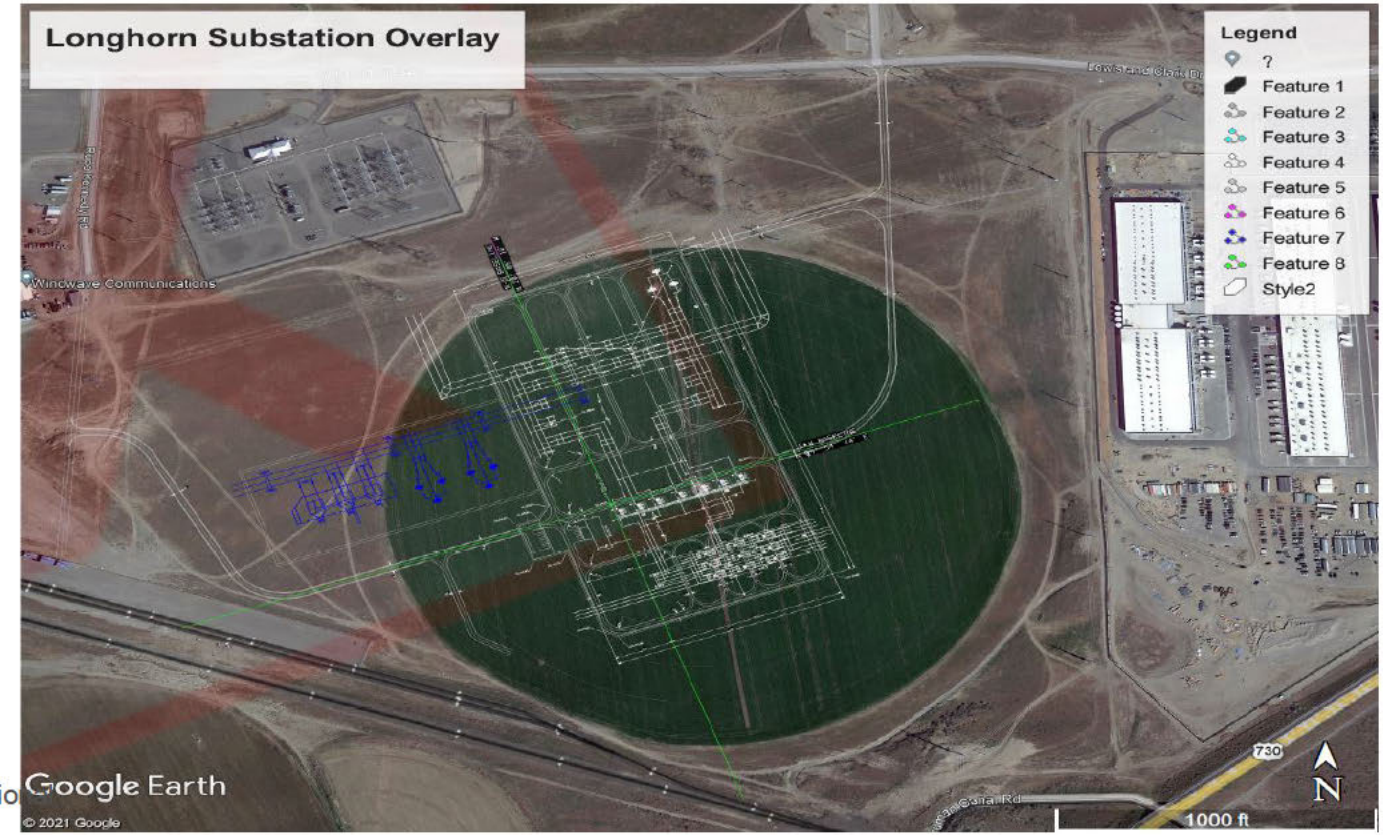
- BPA completed a business case with the goal of achieving a more cost effective and reliable solution for meeting current contractual obligations for delivering firm federal power to public power customers in Southern Idaho.
- The business case examined multiple options over a 30 year period to determine the option which best achieved the goals of reliability and cost effectiveness.
- Proceeding with B2H with Transfer Service proposal provides substantial benefits compared to Status Quo.
- The benefits are estimated at 35% - 52% improvement in net present value over the Status Quo.

Longhorn Substation and PacifiCorp Transmission Service

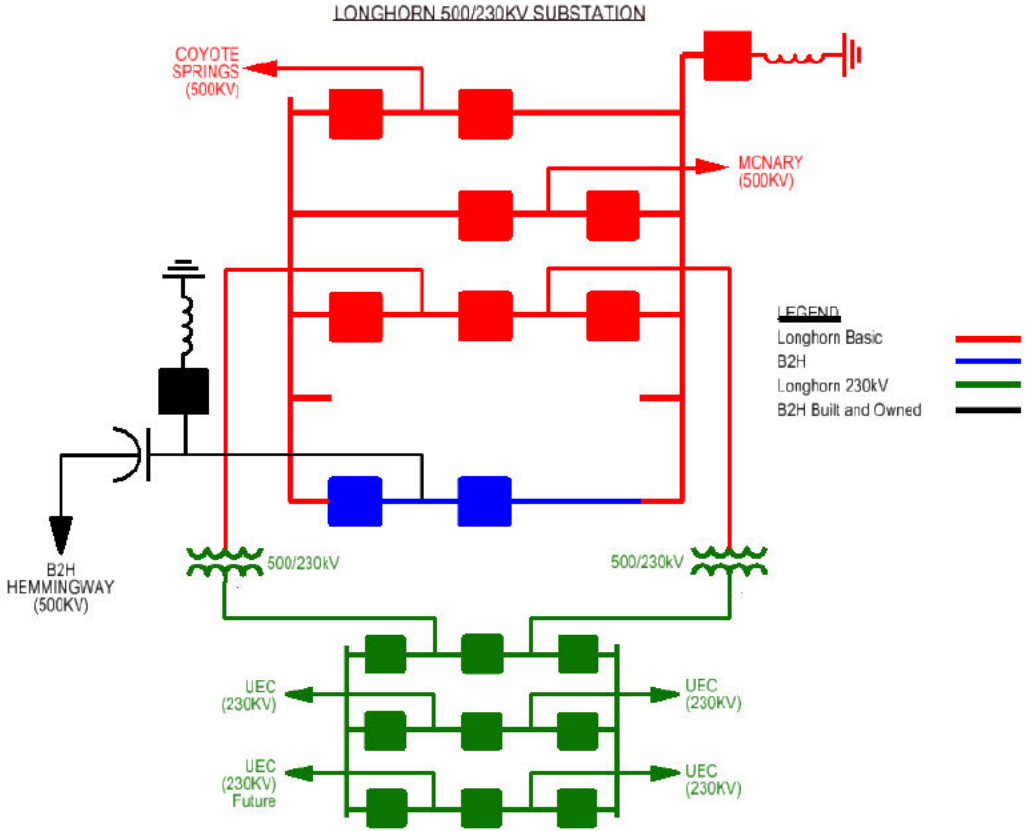
Term Sheet

Sections 3.a.1.I, 3.a.1.II

Proposed Longhorn Substation
(500kV & 230kV)



Proposed Longhorn Substation
(500kV & 230kV)



B2H interconnection to proposed Longhorn Substation

- B2H interconnection would add facilities (Shown in blue and black on "One Line" slide)
- New Interconnection Cost w/Line Terminal
  - direct assigned to B2H owners
  - B2H built, owned, operated and maintained and O&M
  - financed by PacifiCorp/Idaho Power subject to transmission credits
- Plus, ~$59M of the base Longhorn costs
  - PacifiCorp 55%
  - Idaho Power 21%
  - BPA 24%

PacifiCorp Transmission Service §3.a.1

- PacifiCorp seeks durable and long-term transmission access to serve its central Oregon load in return for transferring Goshen-area transmission assets to Idaho Power
- BPA would evaluate converting grandfathered transmission service to OATT service upon B2H/Midline Series Capacitor energization, or later *(Term Sheet §3.a.1.l)*
  - Converts legacy pre-OATT Midpoint-Meridian Agreement scheduling rights to OATT PTP service
  - May include merging legacy rights with redirecting existing PacifiCorp PTP service; PacifiCorp pays PTP rate for service
  - Evaluation considerations include: comply with OATT/Business Practice/policy requirements (e.g. ATC impacts); preserve existing rights for transmission customers and NWACI partners; meet reliability and regulatory requirements

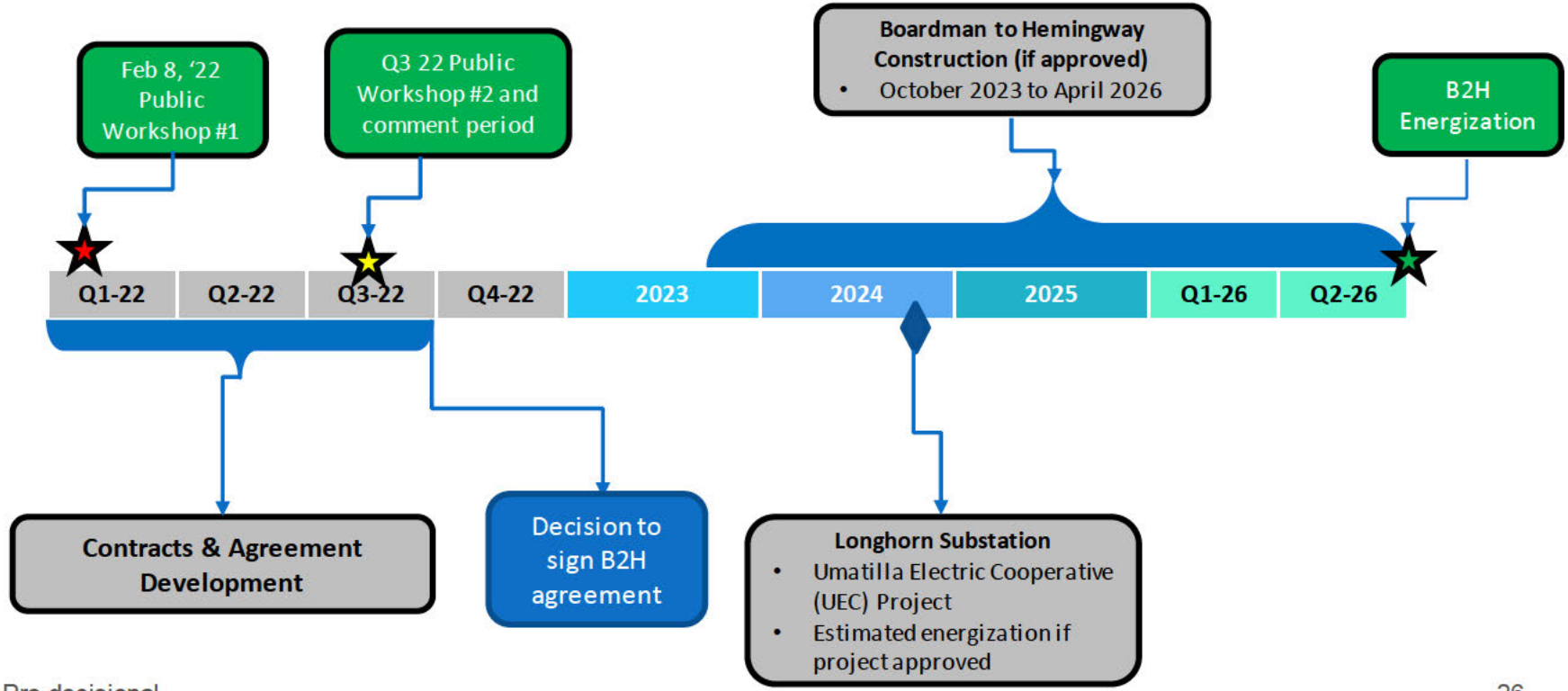
PacifiCorp Transmission Service, cont.

- If BPA cannot offer OATT service upon B2H/Midline Series Capacitor energization, BPA will allow PAC to schedule 340 MW from Buckley to Ponderosa and concurrently schedule 340 MW from Ponderosa to Buckley (concurrent bidirectional scheduling rights) until BPA can offer OATT service *(Term Sheet §3.a.1.II)*
  - Extends Midpoint-Meridian Agreement scheduling rights, subject to 340 MW scheduling and flow limits in N>S and S>N directions
  - Requires predetermined sources, source-to-sink E-Tags, control center software updates, agreement to associated operating terms, PTDF calculator tools, and Goshen asset exchange completion
- Agreement on Principles and Timelines
  - PAC and BPA will negotiate and execute an agreement to reflect the objectives, commitments, principles, conditions, and timelines, including negotiation of applicable follow-on agreements for the PTP service and concurrent bidirectional scheduling rights described above.

Q&A

- Questions?

SILS Timeline – High Level



Getting Involved

- Workshop and Public Comment Period
  - Comments from this workshop are due by 3/07/22
  - Please visit Public Comments (bpa.gov) to submit them
- Reach out to your Account Executive

Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

POWER SERVICES

January 18, 2022

In reply refer to: P-5

To parties interested in Southeast Idaho Load Service:

This notice announces Bonneville Power Administration's (BPA) recent signature to a non-binding term sheet (Term Sheet) that clarifies and updates BPA's role in Idaho Power's and PacifiCorp's progress towards the potential future construction of their new transmission line from Boardman, Oregon to Hemingway, Idaho (the "Boardman to Hemingway Project" or "B2H"). Also included is background information on the development of the current proposal, an overview of the proposal in the Term Sheet, and information about how to engage with BPA before it makes a decision.

The B2H transmission line, if constructed by Idaho Power and PacifiCorp, would, provide significant benefits to the region, and enable long-term, firm power and transmission service to BPA's customers currently served through PacifiCorp's southern Idaho transmission system ("Southeast Idaho Load Service" or "SILS customers") as well as generally enhance connectivity to and within Idaho. The included Term Sheet, provided in Attachment C, is the product of almost a decade of evaluation and negotiation, and reflects a significant step towards BPA's objective of providing firm and reliable power and transmission service to its customers at a reasonable cost.

Since 2011, Idaho Power and PacifiCorp, with participation from BPA, have been evaluating B2H as a potential solution to their respective regional needs for transmission. While initially BPA considered being a joint owner of the B2H transmission line, the Term Sheet captures a modified B2H ownership structure that removes BPA's role as a permitting partner and future partial owner of B2H, with BPA's share transferred to Idaho Power. Instead, BPA would acquire transmission service from Idaho Power under its Open Access Transmission Tariff (OATT). PacifiCorp would transfer assets to Idaho Power so that BPA's SILS loads currently served on PacifiCorp's southeast Idaho transmission system would now be within Idaho Power's transmission system. For BPA, the construction of B2H in conjunction with this transfer of assets between Idaho and PacifiCorp means BPA will receive firm transmission for its SILS customer loads using only one wheel of transmission (as opposed to two wheels, which is a part of the current plan of service). BPA also avoids the complexity and foregone revenue of an asset exchange and joint ownership. This proposal, described in this letter as 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.

How to Comment

Public participation and input on the B2H with Transfer Service proposal are important to BPA as it begins negotiations on the formal agreements discussed in the Term Sheet. The signing of the Term Sheet does not bind any party to proceed with the B2H with Transfer Service arrangement and does not constitute BPA's final decision to proceed with the project. BPA is seeking public feedback and input on the proposal as described in the Term Sheet. Comments on the Term Sheet are requested by **Feb. 18, 2022**. Comments should be submitted here: Public Comments (bpa.gov). BPA will host a workshop to answer questions about the Term Sheet on **Feb. 1, 2022**. BPA will present its business case describing potential benefits and the overall value proposition for B2H with Transfer Service at as subsequent workshop.

To assist stakeholders in understanding the context, history, and terms of the B2H with Transfer Service proposal, BPA has provided a detailed Letter to the Region as **Attachment A**. The detailed Letter to the Region includes background information on the development of the current proposal, an overview of the Term Sheet, including the additional transmission and financial commitments BPA intends to make to support the modified proposal, a summary of the benefits of the proposal, and a description of the public process that will enable stakeholders to engage with BPA in its decision-making process. **Attachment B** to this letter includes a timeline for the public process with relevant deadlines, dates, and topics to be addressed at prospective workshops. **Attachment C** provides a hyperlink to the Term Sheet. **Attachment D** provides a high-level overview of the relevant geography of the proposed line and the location of BPA's SILS customers.

We look forward to continued discussions with regional stakeholders on this important topic.

Sincerely,

Kim Thompson
Vice President, Northwest Requirements Marketing

Tina Ko
Vice President, Transmission Marketing and Sales

Attachments

ATTACHMENT A

Detailed BPA Letter to the Region re: B2H and Southeast Idaho Load Service

I. BACKGROUND

BPA's Historic Service to its SILS Customers

BPA provides federal power to six statutory preference customers[1] served using PacifiCorp's Idaho transmission system. These customers include four electric cooperatives (Fall River Rural Electric with members in Idaho's southeast region and in southern Montana, Lost River Electric and Salmon River Electric in Idaho's central region, and Lower Valley Energy in eastern Idaho and western Wyoming) and two municipalities (the Cities of Idaho Falls and Soda Springs both in southeast Idaho). BPA began serving SILS preference customers in 1963, when service to these and other public utilities was assigned from the Bureau of Reclamation to BPA. Initially, power generation from local Bureau of Reclamation projects was sufficient to meet these customers' loads. A combination of BPA transmission and the transmission of the local private utility (Utah Power & Light at the time, now PacifiCorp) were used to deliver federal power from the Bureau projects to the SILS loads.

By the 1970s, BPA's SILS customers' loads grew beyond the capability of local federal generation. To meet the Administrator's power supply obligation, power from the main federal system was needed. Because of limited connectivity between BPA's main transmission system and PacifiCorp's southeast Idaho service area, BPA arranged wheeling through Idaho Power's system. Throughout the 1970s and 1980s, BPA entered into a variety of power exchanges and wheeling agreements with Idaho Power and PacifiCorp to ensure continued firm federal deliveries to BPA's SILS customers. The last of these agreements was an exchange and associated wheeling agreement for service over local facilities executed in 1989 with PacifiCorp, in which PacifiCorp agreed to serve BPA's SILS customers' loads while BPA returned energy to PacifiCorp's loads in Western and Central Oregon.

Notice of Termination of the 1989 Agreements and Development of the B2H with Asset Swap Concept

In 2011, PacifiCorp gave BPA five year notice that it intended to terminate the 1989 exchange and associated wheeling agreement. With this notice, BPA had until 2016 to find a new, long-term solution for delivering federal power to its SILS customers' loads. Multiple options were considered, including new transmission builds and resource acquisitions. In the fall of 2011, Idaho Power approached BPA and PacifiCorp with an opportunity to participate in the permitting and construction of B2H, a new high voltage 500 kV transmission line beginning in Boardman, Oregon and terminating at Hemingway,

[1] The term "statutory preference customers" refers to entities that are entitled by statute to preference and priority to the power sold by BPA. *See* 16 U.S.C. § 832c(a); 16 U.S.C. § 839c(a).

Idaho. Under the proposal, the line would be built and jointly owned by Idaho Power, PacifiCorp, and BPA, with PacifiCorp holding 54.55.% share, Idaho Power 21.21%, and BPA 24.24%.

In January 2012, after a supportive public comment period, BPA entered into a Joint Permitting Agreement with PacifiCorp and Idaho Power that committed BPA to fund permitting costs through various stages of the project. The permitting agreement did not obligate BPA (nor any participant) to construct B2H, but preserved B2H as an option while BPA and the other parties more deeply assessed service options. In August 2012, BPA informed stakeholders of its preliminary evaluation of available options for meeting its long-term service obligations to its SILS customers served on PacifiCorp's system. Among other options considered, BPA included Idaho Power's B2H proposal. In BPA's explanation of the alternatives, BPA noted that the B2H line would provide firm transmission capacity from BPA's main transmission system to Hemingway, Idaho. To get federal power from Hemingway all the way to BPA's SILS loads, additional facilities would be needed. Thus, the B2H plan would need either supplemental tariff service or an associated asset exchange, wherein BPA, Idaho Power, and PacifiCorp would swap assets on their respective systems. This proposal (known as "B2H with Asset Swap") would give BPA a firm transmission path from its main transmission system to its SILS customers' loads.

After receiving stakeholder comments on the August 2012 alternatives, BPA notified the region in October 2012 that it intended to prioritize the B2H with Asset Swap proposal in its pursuit of long-term service solutions for its SILS customers. In this notice, BPA made clear that its "prioritization" of B2H with Asset Swap was not a decision, that many options continued to remain on the table, and that further development of the B2H with Asset Swap proposal was needed.

Starting in the fall of 2012, consistent with the permitting agreement, PacifiCorp, Idaho Power, and BPA worked collaboratively to obtain necessary permits, develop appropriate plans for the design of B2H, and negotiate the B2H Joint Permitting Agreement setting out the high level framework and terms necessary to permit B2H.

The Interim Plan of Service

Because the permitting and planning phase of the B2H line was expected to take a number of years, B2H would not be available for load service in June 2016 when the 1989 exchange and wheeling agreements with PacifiCorp terminated. As such, BPA developed and implemented an "interim" plan of service to ensure continued firm power deliveries to its SILS customers. The interim solution had BPA acquiring network transmission service from PacifiCorp under its Open Access Transmission Tariff (OATT). To get firm power deliveries to PacifiCorp's southeast Idaho system, BPA utilized a combination of transmission service over existing paths between BPA and PacifiCorp, conditional firm point-to-point (PTP) transmission over Idaho Power's system, and purchases of power from local markets.

Since 2016, the interim plan of service has proved successful in providing near-term firm transmission and power service to BPA's customers. For the long term, though, BPA is concerned about the risks of relying on the interim plan of service. The cost of this plan is high, with BPA purchasing two legs of transmission to deliver the bulk of power required to serve load from the main federal power system to its loads (a leg over PacifiCorp's system and a leg over Idaho Power's system). BPA must also rely on local dynamic energy markets to partially support power service to its loads. In addition, a central feature of this service – point-to-point transmission over Idaho Power's system – is reassessment conditional firm. This type of service contains conditions which allows Idaho Power certain rights to curtail service during certain months, and permits Idaho Power to revisit the curtailment conditions (such as increasing or decreasing the number of curtailment hours or months) every two years. Thus, while the interim service plan has provided acceptable near-term service, it remains a temporary solution to serve BPA's SILS customers.

Changed Approach for Service to SILS Customers: B2H with Transfer Service

In 2019, changes to the B2H with Asset Swap alternative began to be considered by the joint parties. The reason for the reconsideration are multifaceted, but paramount among the issues was the complexities involved with the joint ownership of land and assets by federal and non-federal parties. Simplification of the arrangement and clarification of roles and responsibilities of the parties became key considerations. The discussions continued into 2020, where a modified ownership structure of B2H was proposed. This modified proposal would remove BPA's role as permitting partner, and eliminate BPA's participation in the construction or future ownership of the B2H project (transmission line, roads or other assets or right of ways), with BPA's share transferred to Idaho Power. As such, Idaho Power and PacifiCorp would construct and own B2H, with Idaho Power holding a 45% share and PacifiCorp continuing to hold a 55% share. BPA would acquire network transmission service from Idaho Power under its OATT. Additionally, PacifiCorp would transfer assets to Idaho Power so that BPA's SILS loads currently served using PacifiCorp southeast Idaho transmission would be all within Idaho Power's system. This would result in BPA only having to acquire one wheel of transmission to serve its customers (not two), and BPA could avoid the complexity and foregone revenue of an asset exchange and joint ownership. BPA, in turn, would provide PacifiCorp with transmission service in central Oregon in exchange for PacifiCorp providing its transmission assets to Idaho Power and meeting other conditions. This new approach to long-term service became known as "B2H with Transfer Service."

Because BPA no longer intended to offer its assets to PacifiCorp and Idaho Power or to participate in the construction or ownership of the B2H project, and with Idaho Power taking on a larger share of the project, other adjustments to the original B2H with Asset Swap proposal were needed. Throughout 2020 and into 2021, the parties considered these adjustments. Following extensive discussions, the parties executed the attached non-binding Term Sheet on January 18, 2022 to reflect their collective intent to work collaboratively together to develop formal, binding agreements. A summary of these terms, including an overview of the major components of the B2H with Transfer Service proposal, are provided below.

II. The B2H with Transfer Service Term Sheet

The Term Sheet provides the general outline of terms, conditions, obligations, and agreements that BPA, Idaho Power, and PacifiCorp intend to negotiate to finalize the B2H with Transfer Service arrangement. It is non-binding and creates no legal or other obligation on the parties. *See* Term Sheet, Introduction. The Term Sheet is broken up into three primary sections. Section 3(a) identifies the major agreements, along with their primary terms or topics, that the parties intend to draft to address the parties' respective transmission needs in light of the B2H with Transfer Service arrangement. Section 3(b) addresses terms related to the Transfer Service portion of the B2H project, inclusive of financial security for the new transmission service. Section 3(c) addresses the roles and responsibilities for operating and maintaining B2H. BPA is not party to this section. Section 3(d) identifies the roles of the parties and terms regarding construction of B2H. BPA is party to this section only as it pertains to the proposed interconnection of the B2H project with the proposed BPA Longhorn substation and to actions BPA committed to make in the Administrator's Record of Decision for the Boardman to Ione 69kV Transmission Line (May 14, 2019).

At a high level, BPA's obligations in B2H with Transfer Service includes terms and agreements that cover the areas described below. These descriptions are intentionally broad, are not exhaustive, and do not reflect other conditions and limitations. The Term Sheet is the source of reference for the definite terms.

- BPA would transfer all of its interests in the permitting agreement to Idaho Power. 3(b)3. Following the transfer of these interests, and in consideration of the New Network Integration Transmission Service Agreement (NITSA) terms (described below), Idaho Power would fund 45% of all further costs associated with B2H. 3(a)14. BPA would not be an owner of the B2H project.

- Idaho Power and PacifiCorp would enter into a construction funding agreement for the B2H project as well as a transfer of assets. 3(a)7, 3(d). The construction of the B2H project and the completion of the asset transfer between PacifiCorp and Idaho Power would enable BPA to (1) acquire a single leg of network transmission service with Idaho Power for service to BPA's SILS loads and (2) terminate the two legs of transmission service BPA currently utilizes, which includes termination of the network transmission service contracts with PacifiCorp and the conditional firm PTP service with Idaho Power (via assignment to PacifiCorp). Sections 3(a)3, 3(a)7 3(a)11. In concert with the transfer of assets between PacifiCorp and Idaho Power, the parties also agree to use best efforts to develop a one-wheel transmission service arrangement for Idaho Falls. 3(a)7.

- With regard to the new network service agreements for service to the SILS customers now in Idaho Power's system:

- BPA would enter into two new, 20-year term, network service agreements (New NITSAs) with Idaho Power for service to BPA's SILS customers' loads. One of the New NITSAs would be for service for Idaho Falls; the other would be for service to the remaining SILS customers. The New NITSAs would be assignable to the SILS customers provided certain conditions were met. 3(b)1.

- In concert with the New NITSAs with Idaho Power, BPA would provide financial security to Idaho Power in a security agreement (NITSA Security Agreement). The NITSA Security Agreement requires BPA to provide an additional $10 million to Idaho Power to mitigate the risk associated with taking on BPA's share of constructing B2H. This $10 million, along with the value of BPA's permitting interest, would be returned prospectively to BPA if B2H is energized. If Idaho Power does not receive certain regulatory approvals and certificates for B2H, which results in B2H not being constructed, the $10 million payment would be returned to BPA, and BPA would pay Idaho Power for a fixed percentage of the permitting and preconstruction costs incurred by Idaho Power. Further, if Idaho Power receives all necessary permits and approvals, but is unable to proceed with the project for other reasons, Idaho Power would return the $10 million provided by BPA and would attempt to sell the permitting interests in B2H. The proceeds of that sale would be distributed between BPA and Idaho Power. 3(b)2.

- With regard to the termination of BPA's existing transmission services with PacifiCorp and Idaho Power:
  - BPA and PacifiCorp would terminate their existing network service agreements upon completion of the asset transfer between PacifiCorp and Idaho Power and the commencement of NITSA service under Idaho Power's OATT. 3(a)(3)

  - BPA would assign its conditional firm point-to-point transmission service on Idaho Power's system to PacifiCorp, subject to certain conditions. 3(a)11.

- In consideration for PacifiCorp transferring assets with Idaho Power and transferring BPA's SILS load service to Idaho Power, BPA would evaluate options to convert certain PacifiCorp grandfathered scheduling rights over the Buckley-Summer Lake line to OATT service in combination with PacifiCorp requesting to redirect existing point-to-point services to the Ponderosa substation. The options would provide PacifiCorp with a total of 680 MW of firm point-to point transmission service under BPA's OATT to the Ponderosa substation in central Oregon after energization of B2H, provided other conditions are met. Additionally, the 680 MW of firm point-to-point transmission service is conditioned upon the installation and energization of the B2H Midline Series Capacitor project with the B2H project. 3(a)1.

- In lieu of an asset exchange with BPA, Idaho Power would acquire new point-to-point transmission service on BPA's system under BPA's OATT associated with the proposed Longhorn substation. 3(a)8.

- Other terms between BPA, Idaho Power, and PacifiCorp include:

    - To facilitate the interconnection of B2H to the proposed BPA Longhorn substation, BPA, Idaho Power, and PacifiCorp would develop line and load interconnection and related funding and construction agreements. 3(a)4. Additionally, Idaho Power and PacifiCorp would reimburse BPA for actions BPA committed to make in the Administrator's Record of Decision for the Boardman to Ione 69kV Transmission Line.

    - Idaho Power and PacifiCorp would fund and install the B2H Midline Series Capacitor project concurrent with construction of B2H as well as reimburse BPA for the removal of a BPA transmission line from a right-of-way, which the B2H project would then utilize. 3(a)12.

    - BPA, Idaho Power, and PacifiCorp would develop an operational agreement covering various facilities and agreements that affect Path 14 (Idaho to Northwest, the WECC transmission Path that will include B2H), Path 75 (Hemingway – Summer Lake), and the Northwest AC Intertie. 3(a)2.

III. Benefits of B2H with Transfer Service

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.

IV. Public Process and Next Steps

As noted before, the Term Sheet is not binding and BPA has not made a final decision to proceed with the project in its new form. Over the next few months, BPA, Idaho Power, and PacifiCorp intend to continue their work to negotiate and finalize the agreements that comprise the B2H with Transfer Service arrangement. Before BPA makes a final decision on whether to proceed with the B2H with Transfer Service arrangement, BPA intends to engage with stakeholders through noticed public meetings, opportunities for comments, and responses to stakeholder inquiries. BPA also will conduct National Environmental Policy Act (NEPA) processes as appropriate before making a final decision to proceed. If BPA decides to proceed, BPA will issue a Close-out Letter describing its reasoning and responding to stakeholder comments.

The schedule for this engagement process is provided below as **Attachment B**. This timeline begins with a workshop to answer questions on the Term Sheet, which is then followed by an initial public comment period on the Term Sheet. Public comments should be submitted here: Public Comments (bpa.gov). As the topics in the Term Sheet are in active negotiation, BPA will schedule a follow-on public meeting at a later time to provide an update to regional stakeholders. Prior to making a final decision, BPA will provide stakeholders with an updated Term Sheet or other document that identifies the primary elements of the final arrangement (to the extent they are different from the Term Sheet in **Attachment** C), and a final business case. A public comment period will then open for 30 days. BPA will then make its formal decision to proceed (or not) with the B2H with Transfer Service proposal in a Close-out Letter to the region in mid-summer of 2022. If the decision is to adopt the proposal, BPA will execute the formal agreements concurrent with issuing the Close-out letter to the region.

ATTACHMENT B

Public Process Timeline

Day	Event	Description
January 18, 2022	Release Letter to Region on B2H with Transfer Service and Term Sheet	
February 1, 2022	Workshop meeting on B2H with Transfer Service Term Sheet	• Answer stakeholder questions regarding the Term Sheet, B2H public process and any other matters.
February 18, 2022	Initial comment period closes	• Initial comments on Term Sheet. • Comments should be submitted here: Public Comments (bpa.gov).
TBD	Business Case	• Present initial business case for B2H with Transfer Service
TBD*	Workshop Update on B2H Final Terms	• Provide final terms of B2H with Transfer Service; • Final BPA business case
TBD*	Formal Comment Period Closes	30 days from date above
TBD*	BPA Issues Letter to Region	
TBD*	BPA signs agreements (if decision is to proceed)	Term Sheet currently projects signing agreements in Calendar Year Q3 (July-Sept).

*Dependent on status of negotiations.

ATTACHMENT C

Link to Term Sheet

www.bpa.gov/goto/SoutheastIdahoLoadService

Attachment D

RELEVANT PROJECTS FOR BPA SE IDAHO LOAD SERVICES

LEGEND

- SUBSTATION
- BPA SUBSTATIONS
- BPA TRANSMISSION LINES
- PREFERENCE CUSTOMERS SERVED BY PACIFICORP TRANSFER
- PREFERENCE CUSTOMERS SERVED BY IDAHO POWER TRANSFER
- IDAHO POWER COMPANY
- PACIFICORP
- BOARDMAN TO HEMINGWAY (B_2H)
- PACIFICORP TO IDAHO POWER ASSET TRANSFER (APPROXIMATE)
- EXISTING IDAHO POWER TRANSMISSION SERVICE TO BPA

WASHINGTON
OREGON
IDAHO
MONTANA
WY
NV
UT
CA

Seattle
Tacoma
Spokane
Portland
Eugene
Bend
Boise
Pendleton
Helena

Vantage
McNary
Longhorn
Slatt
Buckley
La Grande
Grizzly
Ponderosa
Pilot Butte
Alvey
Summer Lake
Malin
Hot Springs
Anaconda (Mill Creek)
Hemingway
Midpoint
Minidoka
Brady
Goshen
Populus

OREGON TRAIL ELECTRIC COOP.
SALMON RIVER ELECTRIC COOP.
LOST RIVER ELECTRIC COOP.
IDAHO FALLS
FALL RIVER ELECTRIC COOP.
LOWER VALLEY P & L CO.
RAFT RIVER ELECTRIC COOP.
SODA SPRINGS
WELLS RURAL ELECTRIC CO.

Miles
0 40 80 120

Bonneville POWER ADMINISTRATION

1/11/2022

CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 106

Exhibits in Support
Of Opening Testimony

January 17, 2023

Boardman-to-Hemingway Variant (P02b-No B2H)

The P02b-No B2H portfolio is a variant of the P02-MM portfolio that eliminates the B2H transmission line. When this variant is compared to the P02-MM portfolio, changes in proxy resources and system costs driven by the removal of the B2H transmission line can be isolated. Figure 9.14 shows the cumulative (at left) and incremental (at right) portfolio changes when the B2H transmission line is eliminated from the P02-MM portfolio. A positive value indicates an increase in resources and a negative value indicates a decrease in resources when the transmission line is eliminated. Without B2H, 405 MW of wind and 200 MW of solar co-located with storage is removed from the portfolio in 2026. Approximately 200 MW of storage capacity is removed from eastern Wyoming in 2029, which must be replaced by just over 200 MW of non-emitting peaking capacity in 2030.

Figure 9.14 – Increase/(Decrease) in Proxy Resources when the B2H Transmission Line is Eliminated from the P02-MM portfolio.

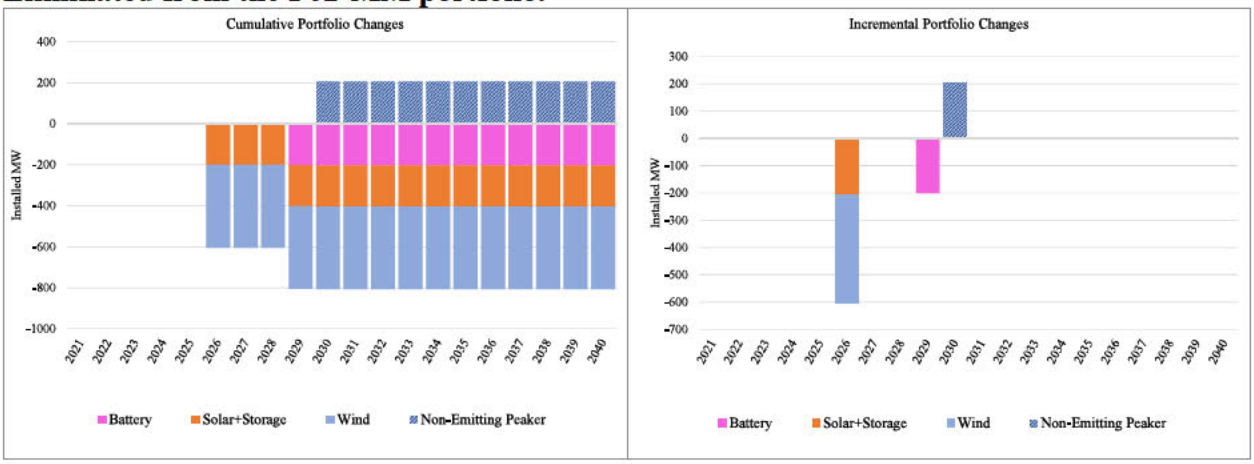


Figure 9.15 summarizes changes in system costs, based on ST model results using MM price-policy assumptions, when the B2H transmission line is eliminated from the P02-MM portfolio. The graph on the left shows annual changes in cost by category and the graph on right shows annual net changes in total costs (the solid black line) and the cumulative PVRR(d) of changes to net system costs over time (the dashed black line). Through 2040, the PVRR(d) shows that the portfolio without the B2H transmission line is $388 million higher cost than the P02-MM portfolio. On a risk-adjusted basis, which factors in the risk associated with low-probability, high-cost events through stochastic simulations, the portfolio without B2H is $453 million higher cost than the P02-MM portfolio.

Without the B2H transmission line, the cost for proxy resources is reduced consistent with the changes in the resource portfolio. However, the reduction in resources results in an increase in net market costs, indicating that without the B2H transmission line, the system would be more dependent on the market. With fewer renewable resources, output from coal and gas resources increase, emissions increase, and the associated costs from higher fossil-fueled generation and emissions also increase. The increase in transmission costs is driven by the incremental costs to reliably serve increasing load in central Oregon. The B2H transmission line provides more flexibility and increased load-serving capability on the 500-kV transmission system into the central Oregon load pocket. Without the B2H transmission line, additional resources would need to be sited in southern Oregon that could be called upon to maintain reliable operations of the broader transmission system in the region. The analysis assumes that 725 MW of incremental 4hour battery

resources and other transmission upgrades would be needed in southern Oregon if the B2H transmission line is not built. The transmission cost savings reflect the fact that these investments would be avoided if B2H is built.

Figure 9.15 – Increase/(Decrease) in System Costs when the B2H Transmission Line is Eliminated from the P02-MM portfolio.

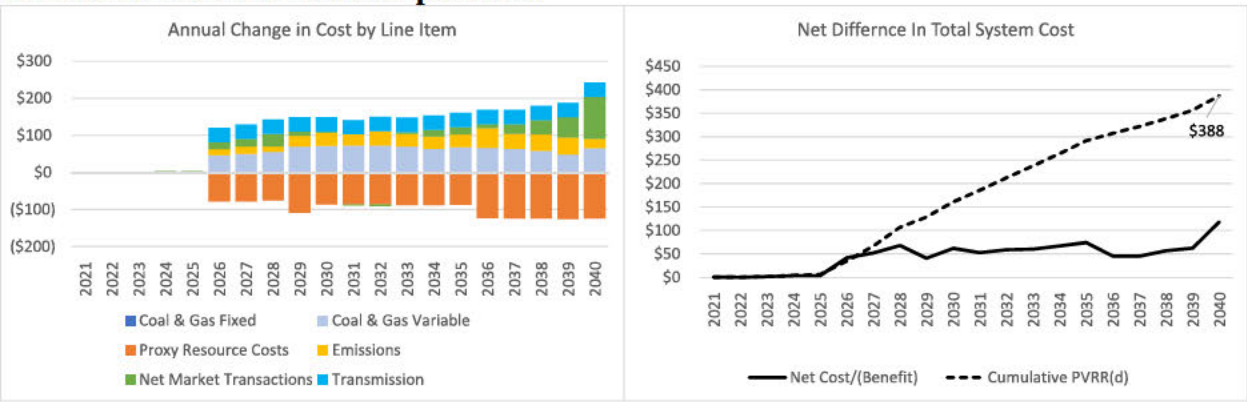


Table 9.8 summarizes the PVRR(d) of the P02b-No B2H portfolio relative to the P02-MM portfolio under a range of different price-policy scenarios. Eliminating the B2H transmission line increases the ST PVRR and the risk-adjusted PVRR all price-policy scenarios Removal of B2H also results in higher emissions (emissions increase by approximately 5 percent in the MM price-policy scenario). Note, that both portfolios, as measured by ENS results, are very reliable among all price-policy scenarios. While the cost increase from B2H in the LN price-policy scenario is low relative to other price-policy scenarios, it is more likely than not that there will be some form of policy that will impute a cost on greenhouse gas emissions. It is also unlikely that gas prices will remain low for decades to come. In aggregate, these results support the inclusion of the B2H transmission line in the preferred portfolio.

Table 9.8 – PVRR(d) of the P02b-No B2H Portfolio Relative to the P02-MM Portfolio Under Varying Price-Policy Scenarios.

	PVRR ($m)	ST PVRR + 5% of 95th Stochastic ($m)	ENS Average % of Load	CO2 Emissions 2021-2040 (Thousand Tons)
P02-MM-MM	$25,794	$26,151	0.0049%	398,953
P02-MM-LN	$22,592	$22,793	0.0054%	436,134
P02-MM-MN	$22,421	$22,609	0.0049%	511,369
P02-MM-HH	$28,779	$29,280	0.0049%	368,551
P02-MM-SCGHG	$39,639	$40,665	0.0094%	208,650
P02b-MM-MM	$26,181	$26,605	0.0050%	418,015
P02b-MM-LN	$22,622	$22,874	0.0054%	456,553
P02b-MM-MN	$22,575	$22,822	0.0050%	527,710
P02b-MM-HH	$29,521	$30,102	0.0050%	387,960
P02b-MM-SCGHG	$41,089	$42,223	0.0117%	228,728
Change from P02-MM-MM	$388	$453	0.0001%	19,062
Change from P02-MM-LN	$30	$81	0.0001%	20,419
Change from P02-MM-MN	$154	$213	0.0000%	16,342
Change from P02-MM-HH	$742	$822	0.0001%	19,408
Change from P02-MM-SCGHG	$1,450	$1,557	0.0023%	20,078

CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
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STAFF EXHIBIT 107

Exhibits in Support
Of Opening Testimony

January 17, 2023

McDOWELL RACKNER GIBSON PC
419 SW 11th Ave, Suite 400 | Portland, OR 97205

LISA RACKNER
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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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Attorneys for Idaho Power Company

Staff Exhibit 107
Pal/4

IDAHO POWER®
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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.

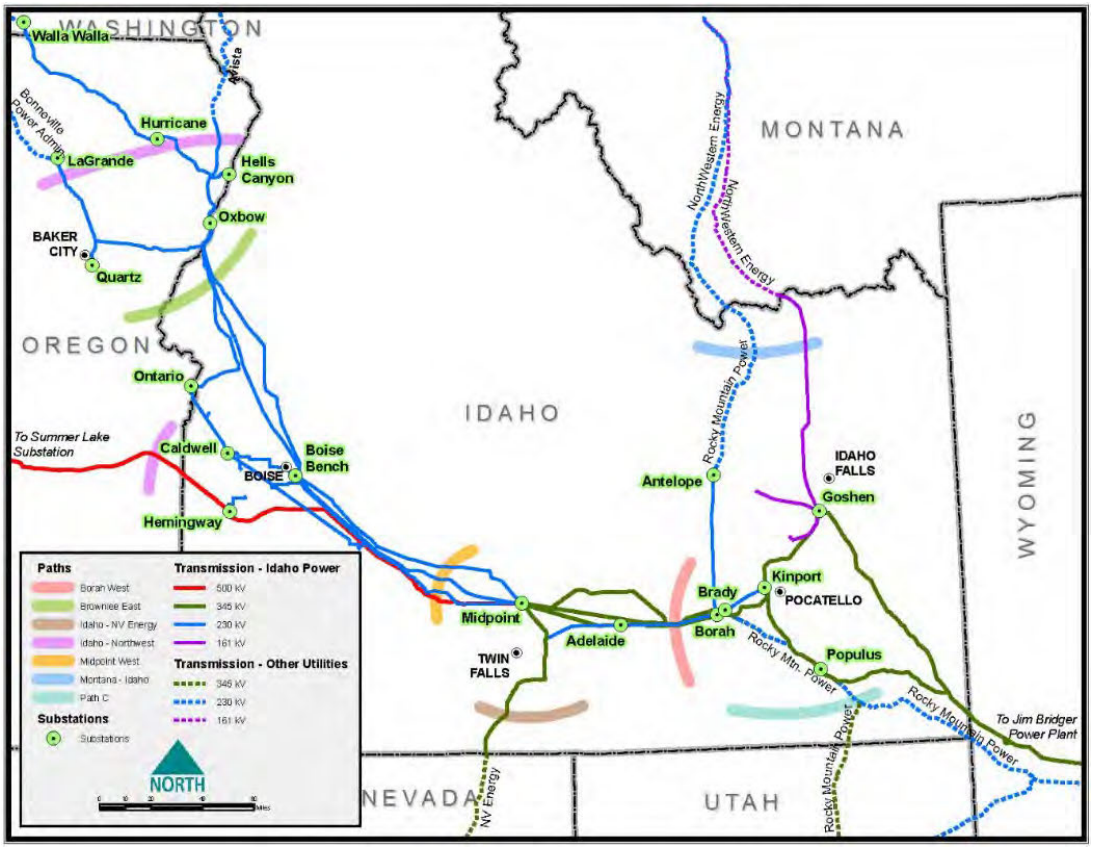


Figure 1. Idaho Power transmission system map

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.

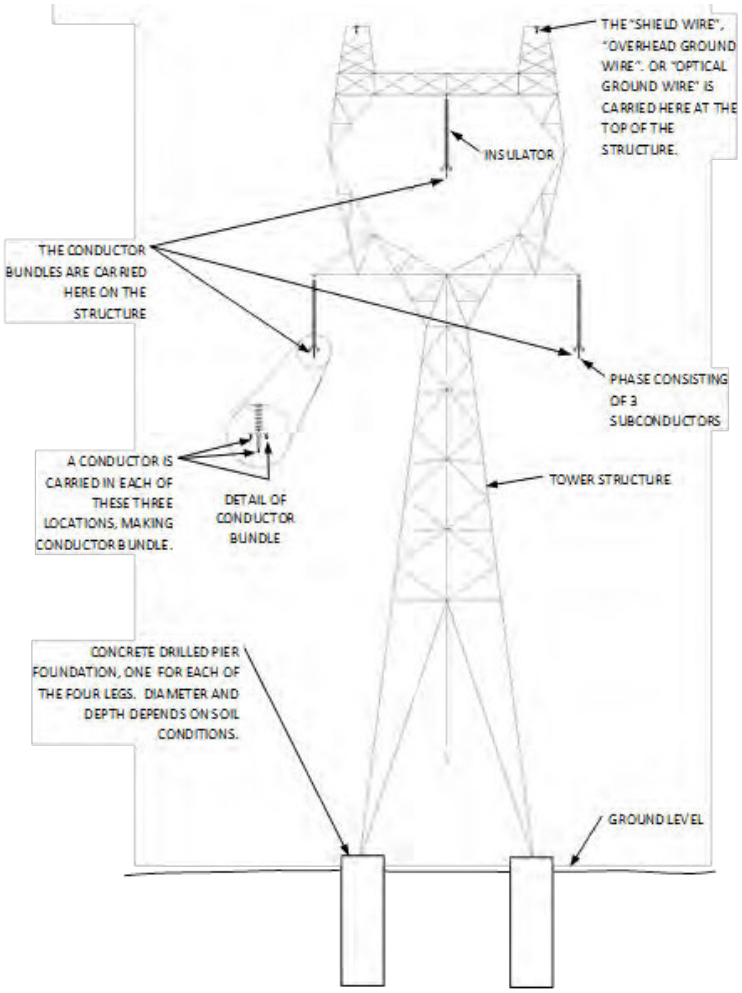


Figure 2. Transmission tower components

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.

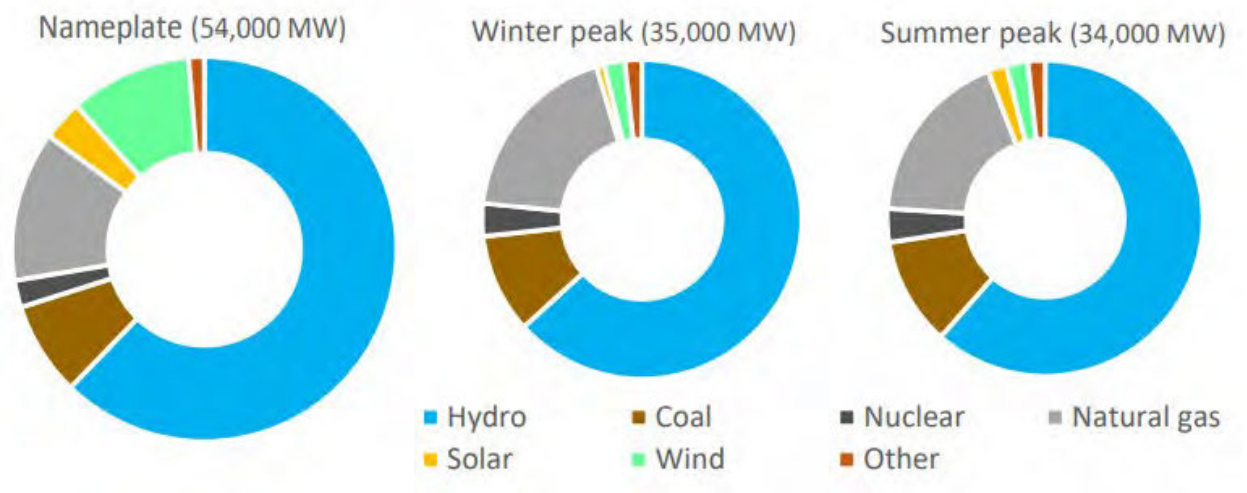


Figure 3. Northwest regional forecast (source: 2021 PNUCC)[13]

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.

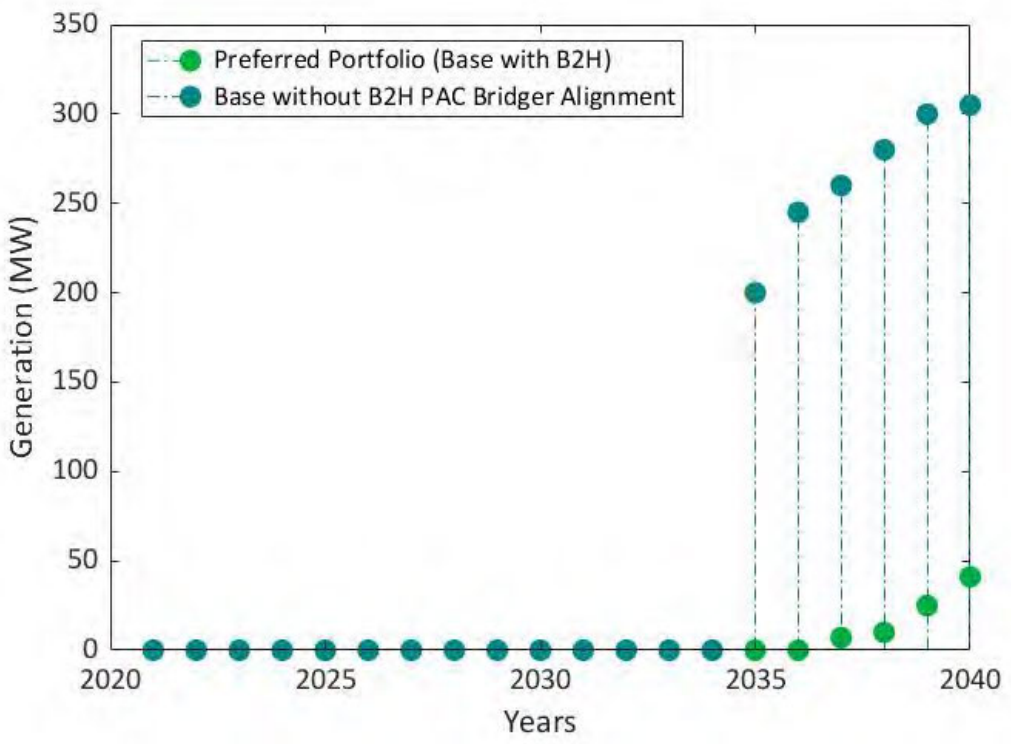


Figure 4. Additional generation required to achieve 0.05 LOLE by portfolio

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.

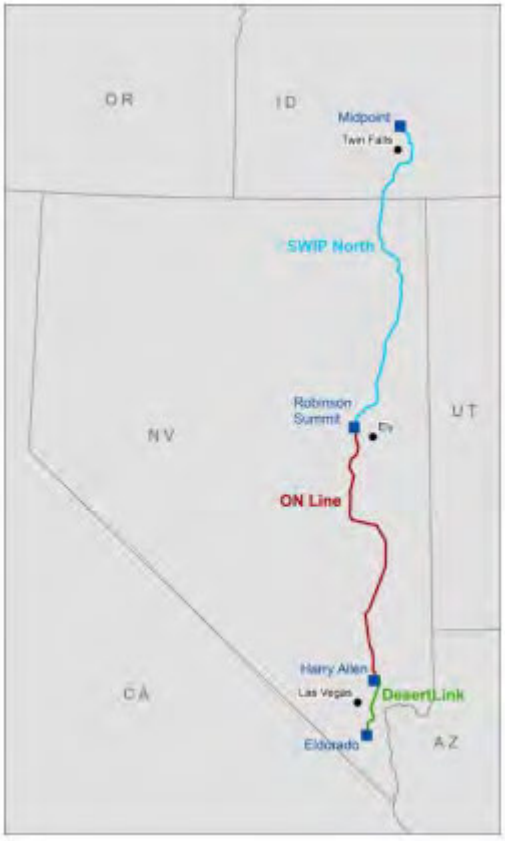


Figure 7. SWIP-North preliminary route

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

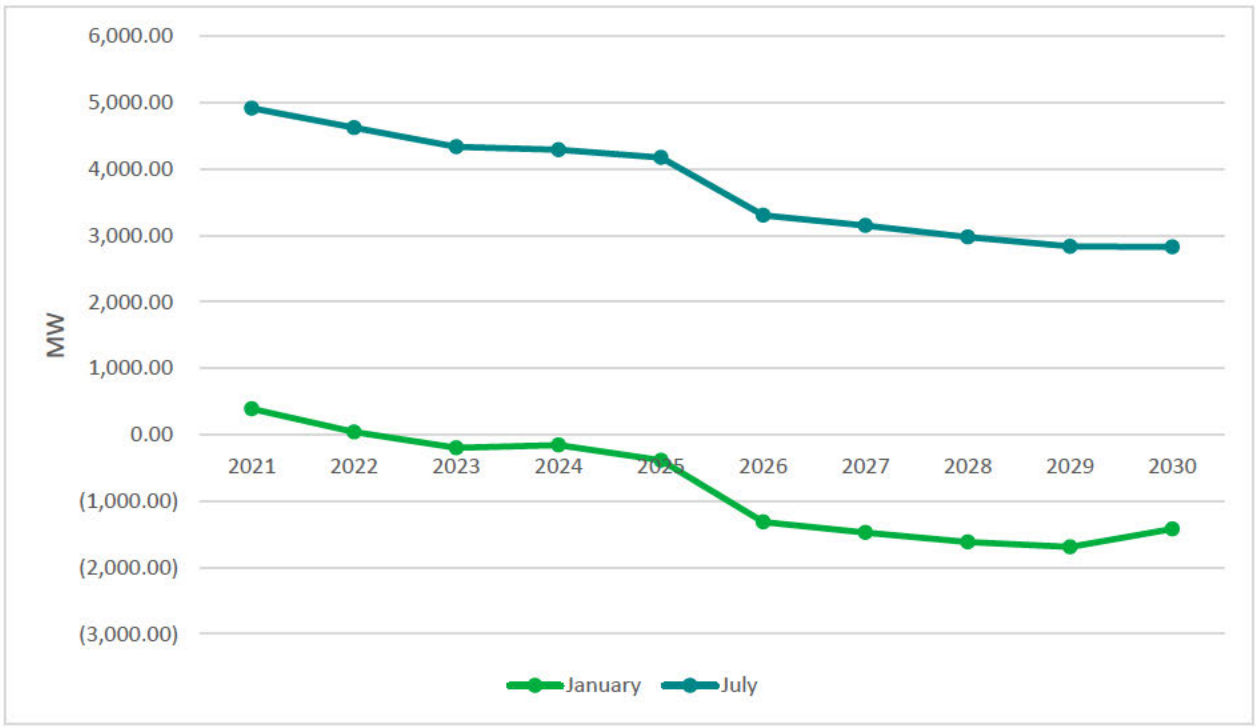


Figure 9. BPA white book PNW surplus/deficit one-hour capacity (1937 critical water year)

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.

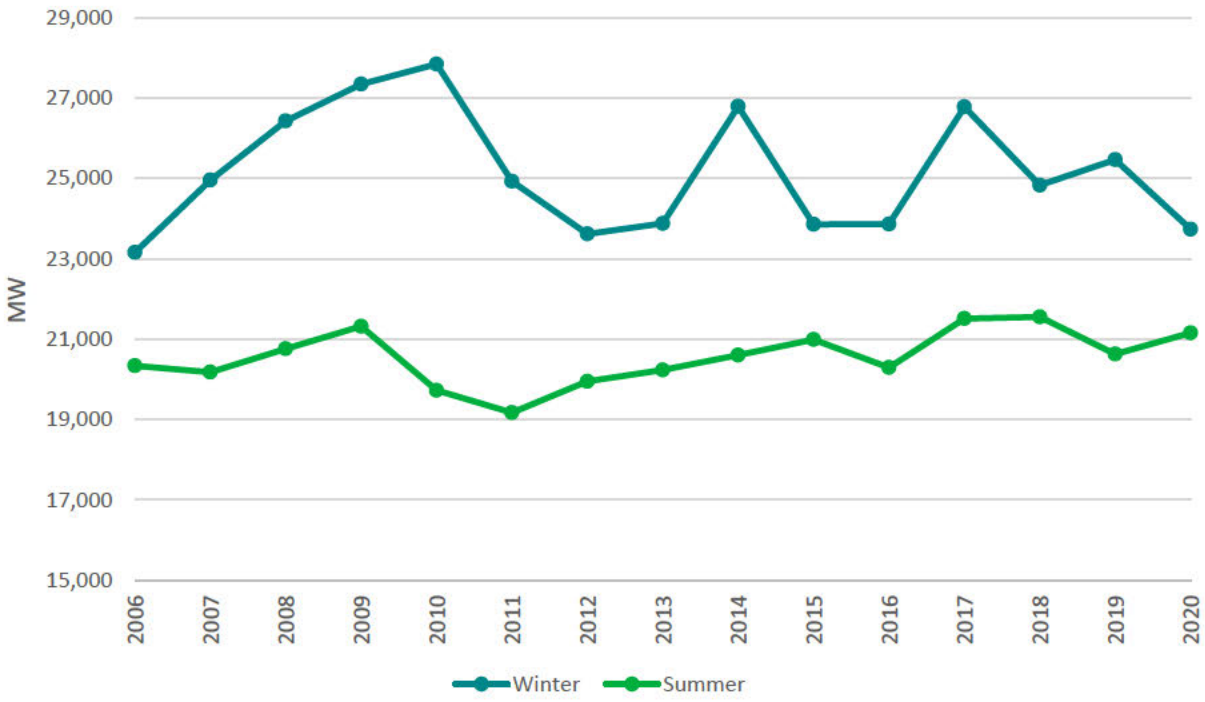


Figure 10. Peak coincident load data for most major Washington and Oregon utilities

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.

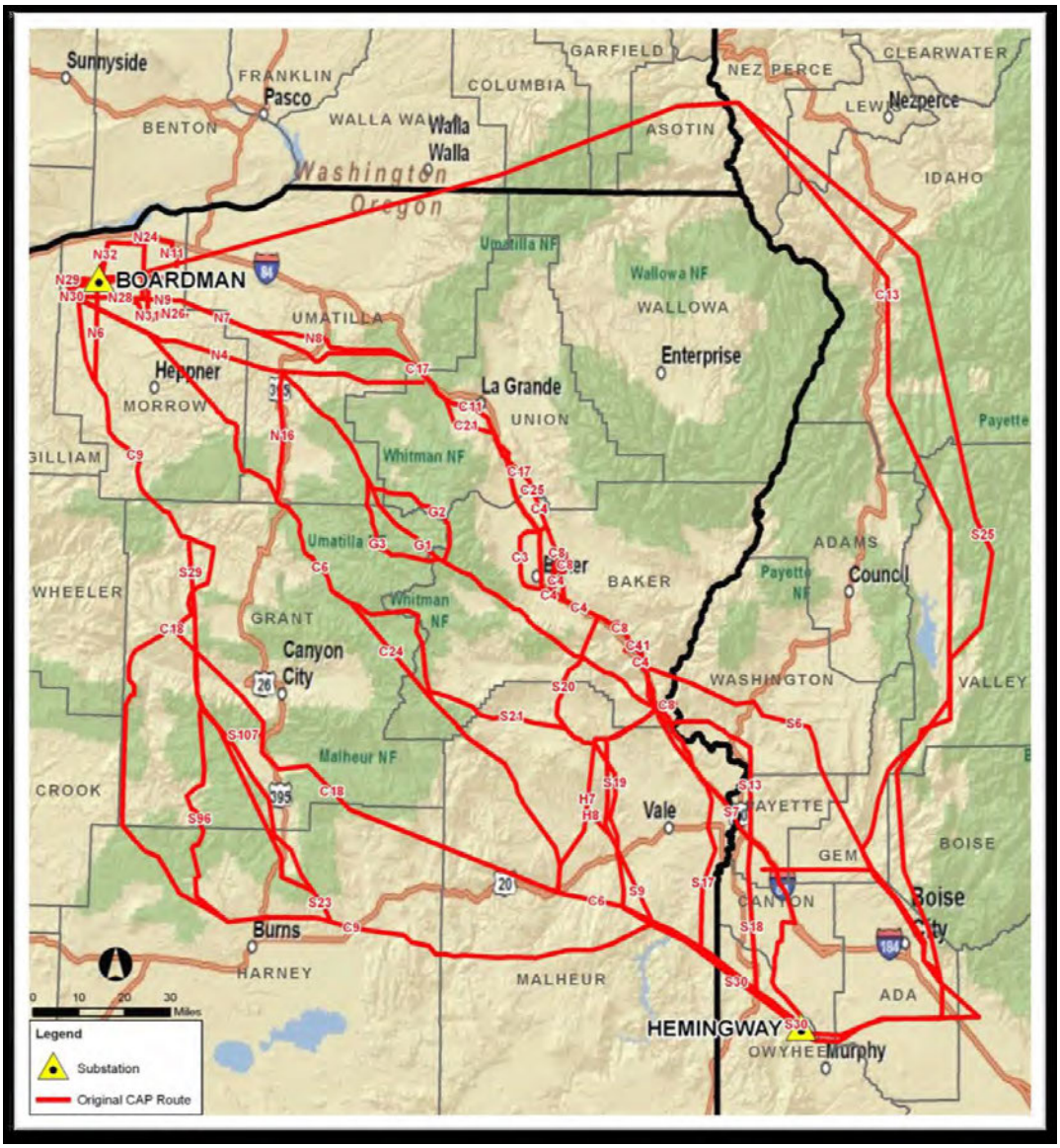


Figure D-1. Routes developed by the Community Advisory Process teams (2009 timeframe)

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.

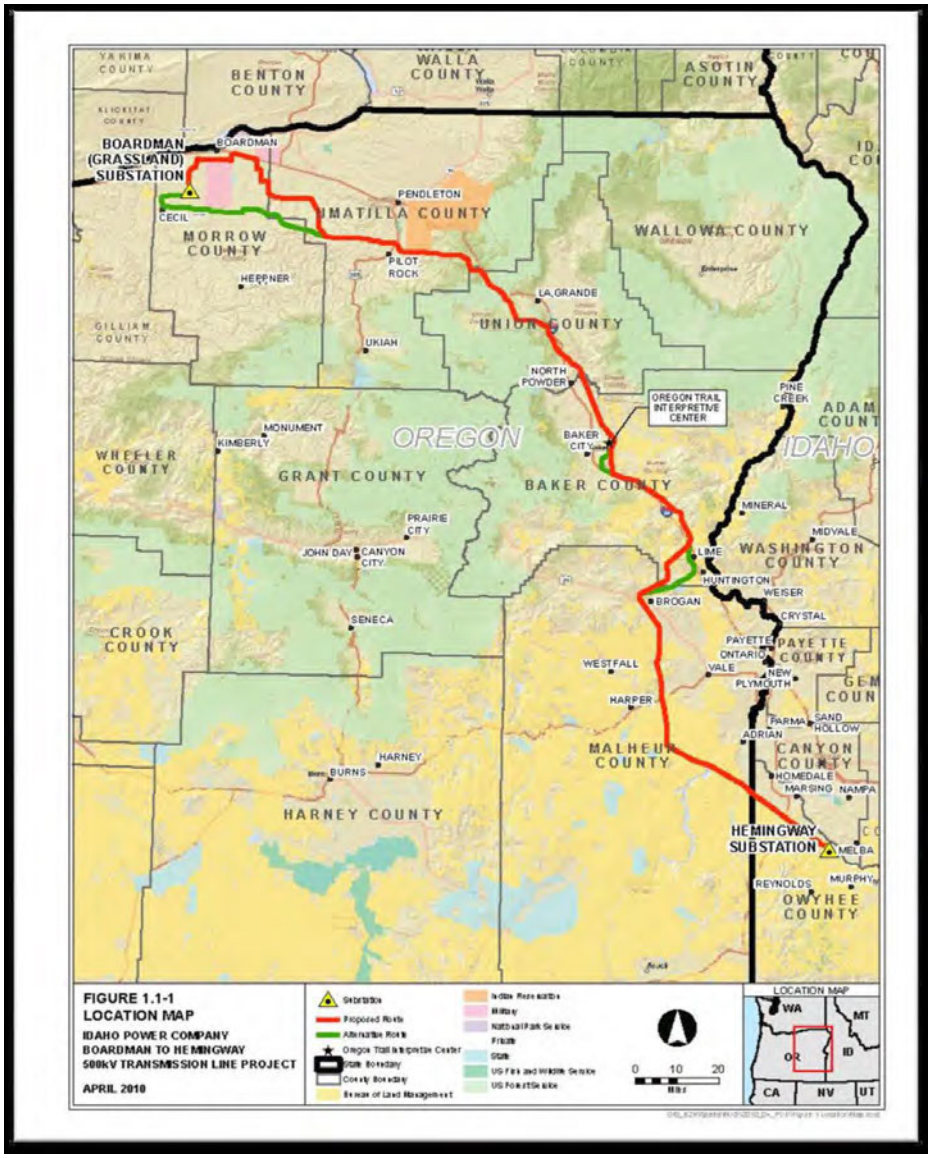


Figure D-2. B2H proposed route resulting from the Community Advisory Process (2010 timeframe)

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.

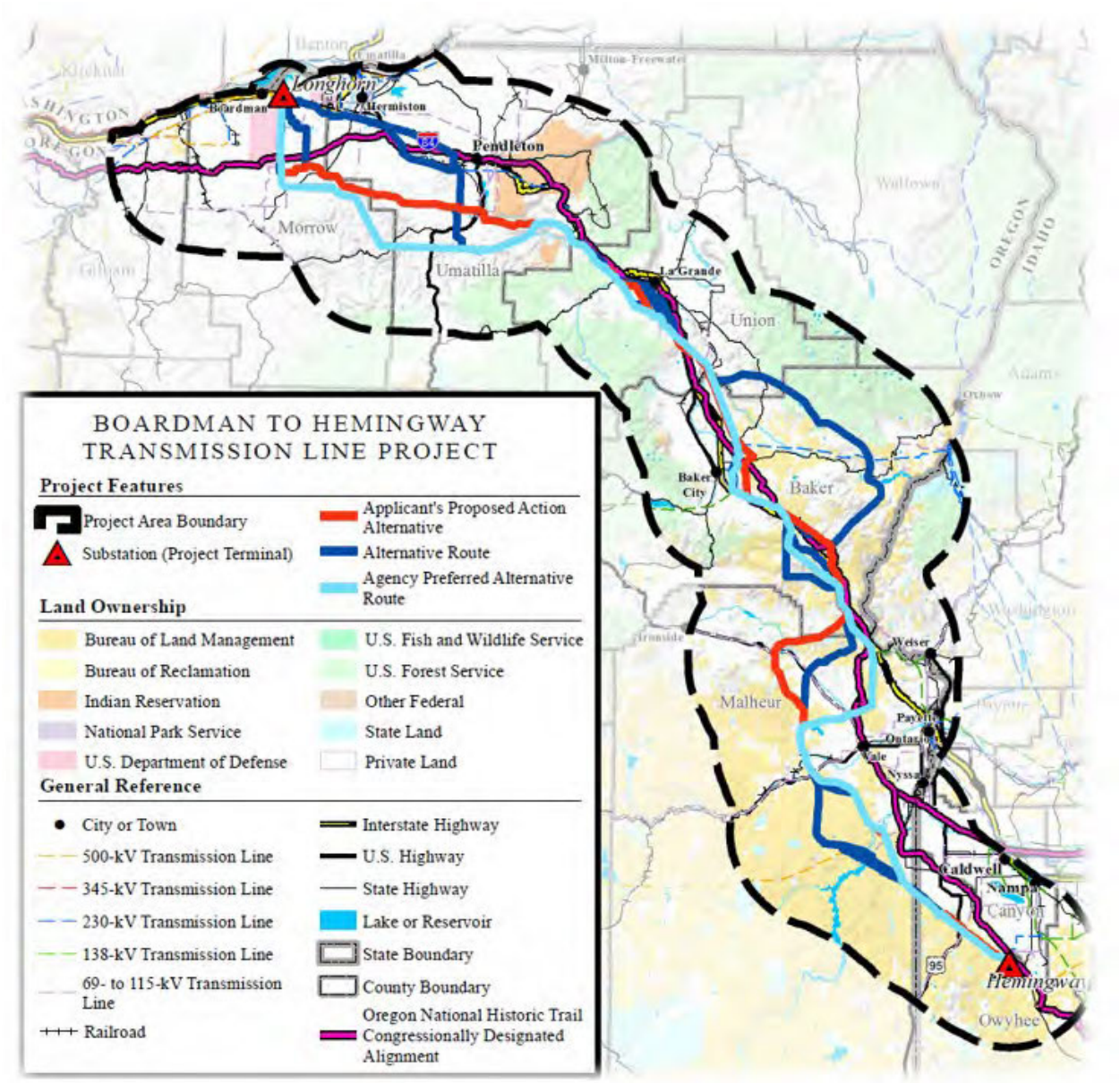


Figure D-3. BLM final EIS routes

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.

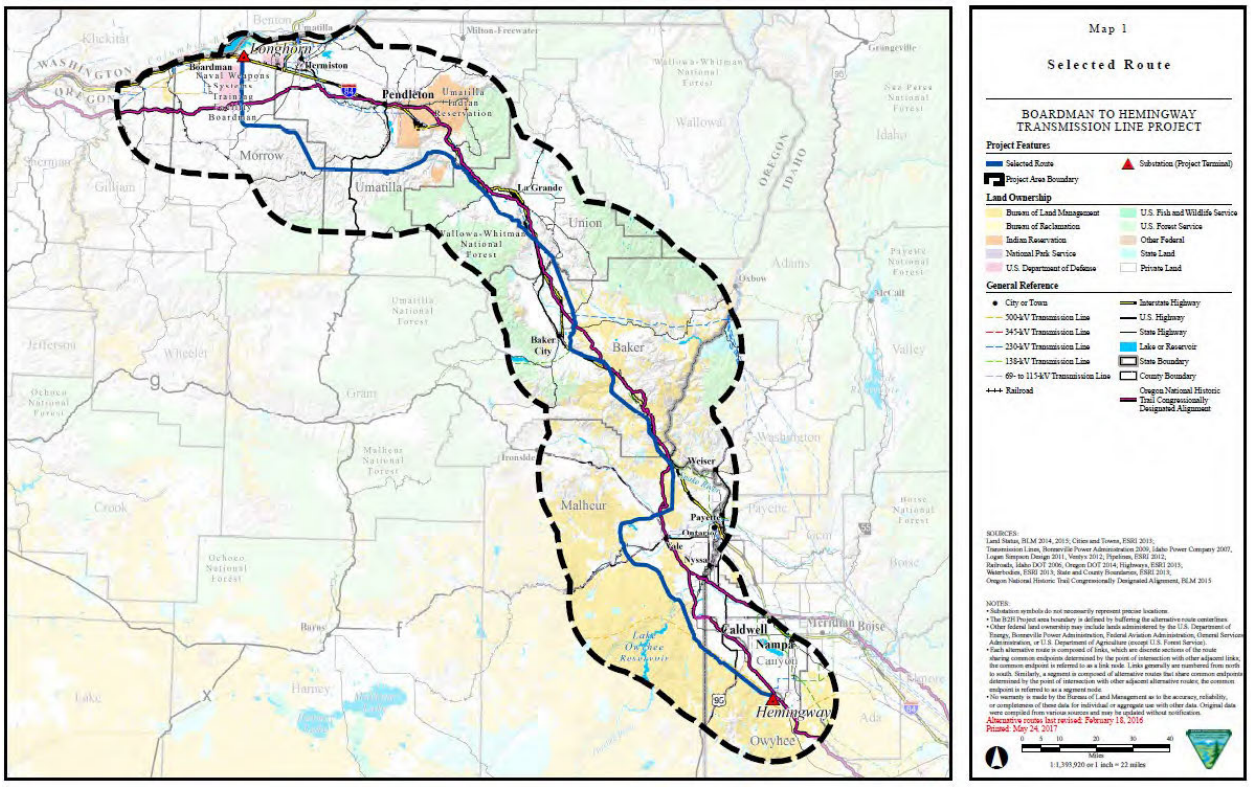


Figure D-4. BLM Agency Preferred route from the 2017 BLM ROD

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.

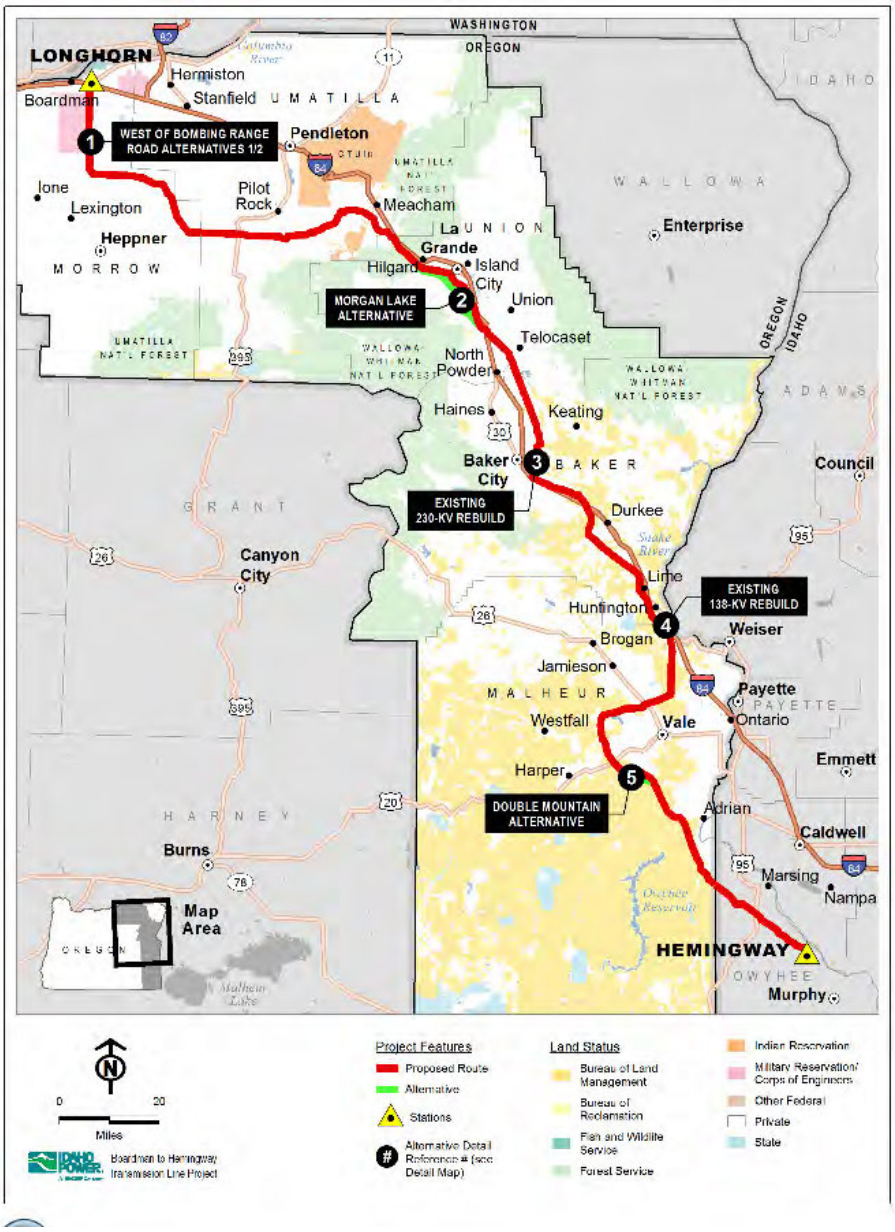


Figure D-5. B2H route submitted in 2017 EFSC Application for Site Certificate

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.

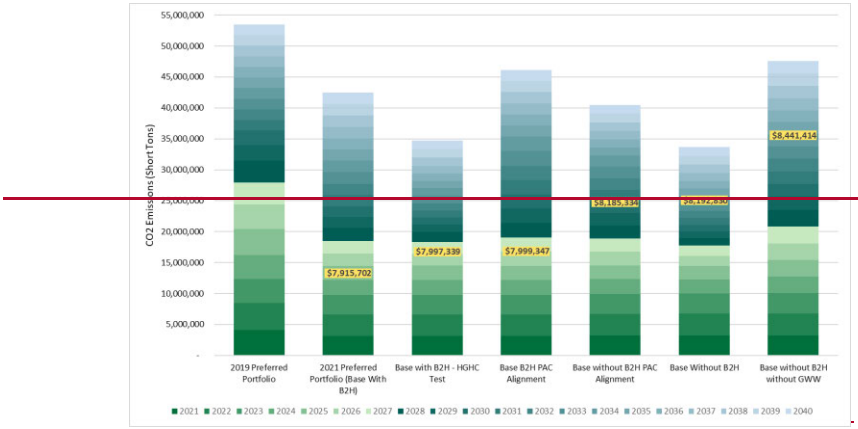
Table 10.5 2021 IRP validation and verification tests, NPV years 2021–2040 ($ x 1,000)

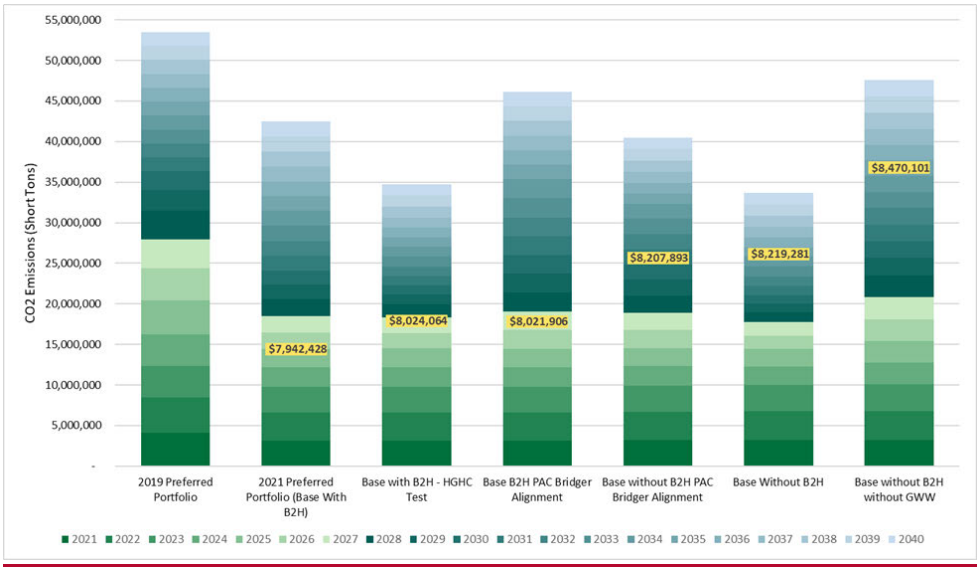
Validation & Verification Tests	Cost
Preferred Portfolio (Base with B2H)	$~~7,915,702~~7,942,428
Demand Response	$~~7,917,643~~7,944,368
Energy Efficiency	$~~8,143,113~~8,169,838
Natural Gas in 2028 Rather than Solar and Storage	$~~8,052,194~~8,078,645
Bridger Exit Units 1 & 2 at the End of 2023	$~~8,073,162~~8,077,805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

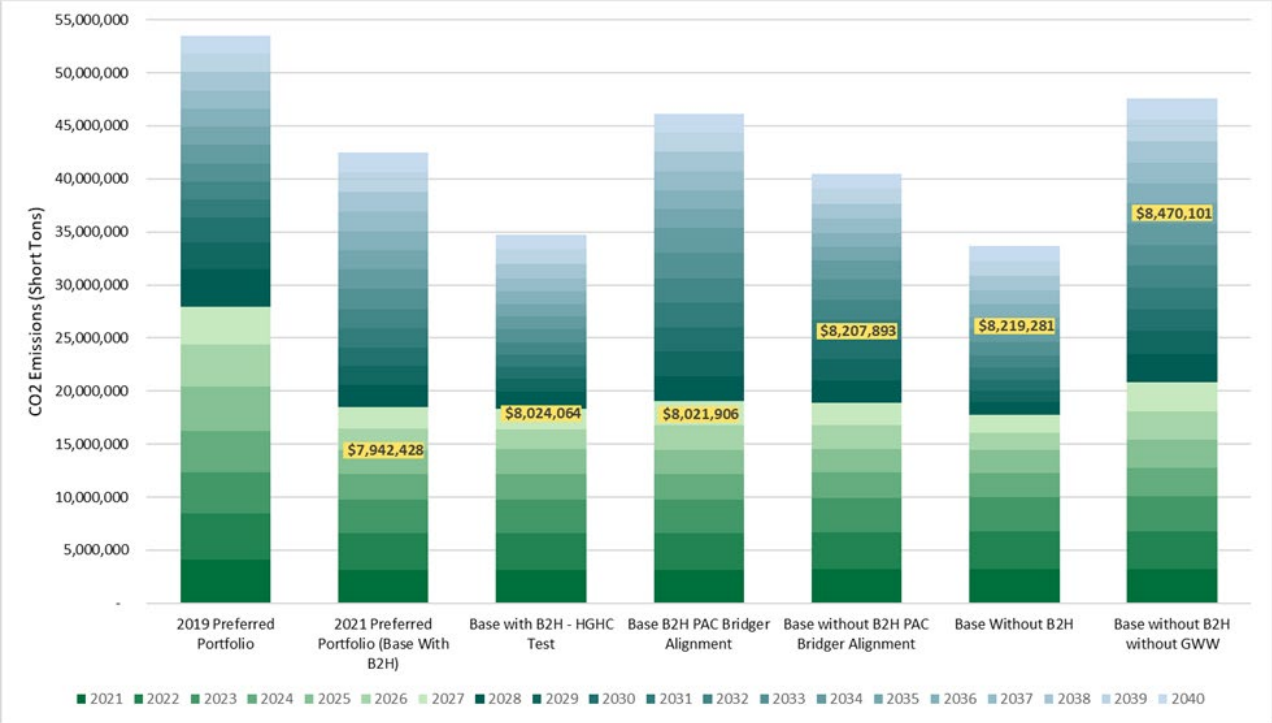


Figure 10.2 Estimated portfolio emissions from 2021–2040

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.

CASE: PCN 5
WITNESS: SUDESHNA PAL

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 108

Exhibits in Support
Of Opening Testimony

January 17, 2023

IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 19:

Please provide a narrative identifying expected capacity utilization in each direction along the proposed transmission line, immediately on energization, and ten years into operations.

RESPONSE TO IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 19:

The Company expects the transmission line to be utilized at a high level immediately following energization. Idaho Power is likely to utilize nearly its entire 750 megawatts ("MW") ownership level during summer months for the Company's native customer usage and for transmission service provided to Bonneville Power Administration ("BPA") to facilitate deliveries to Southeast Idaho. It is also likely that PacifiCorp will fully utilize its 300 MW of west-to-east ownership capacity during summer months for economic energy purchases/transfers from the Pacific Northwest.

Initially east-to-west usage of the line will be more likely to occur in fall and winter seasons as the utilization level is dependent on hydro and load conditions in the Pacific Northwest. It is likely that during low hydro years on the Columbia River system or during extreme winter conditions, Pacific Northwest utilities will access the B2H project to purchase more energy from Intermountain West utilities resulting in a higher capacity utilization.

Looking ahead ten years into operations, the Company anticipates that further upgrades will be made on the system to increase the total Idaho to Northwest path capability beyond the contemplated 2,250 MW west-to-east capacity. A project to add a 230-kilovolts ("kV") switching station at Pallette Junction in Oregon could potentially increase the system capacity by at least 300 MW when coupled with the B2H project. For east-to-west capacity the addition of the Gateway West 500-kV segments across Southern Idaho to Hemingway will remove a capacity bottleneck between Midpoint and Hemingway that could allow the post-B2H Idaho to Northwest path capacity to increase by 1,000 MW from 3,400 MW to approximately 4,400 MW. East-to-west capacity utilization on the path is expected to grow over the next ten years as more variable energy resources such as wind and solar are added to the Intermountain West region.

IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 14:

If the transmission line is constructed, what generation resources could avoid or delay being placed in service, and for how many years, if any?

RESPONSE TO IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 14:

Idaho Power's share of the B2H project will increase the Company's access to the Pacific Northwest hub by 500 megawatts ("MW"), allowing the Company to avoid 500 MW of capacity equivalent resources indefinitely. In fact, under planning conditions, the 2021 IRP preferred portfolio (the base with B2H portfolio) is approximately $270 million more cost-effective than the best portfolio that did not include the B2H project.

IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 13:

Please provide a narrative explaining how (if this is the case) the proposed transmission project enhances Oregon's ability to reach greenhouse gas, environmental and climate change goals by target dates for same.

RESPONSE TO IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 13:

The benefits of the B2H project in aggregate reflect its importance to the achievement of Idaho Power's goal to provide 100 percent 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.[1] 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 megawatts ("MW") of additional renewable capacity in the United States.[2] A Net Zero America report by Princeton[3] concluded that the United States will need to expand its electricity transmission system by 60 percent by 2030 in order to achieve net-zero emissions by 2050. As stated by Pat Wood III, CEO of Hunt Energy Network and FERC chair from 2001 to 2005, "there is no climate plan that is serious if it does not anticipate a significant regional transmission upgrade."

There are ample amounts of clean energy being produced in the western United States, with wind in Wyoming, solar in Arizona, and hydro in the Northwest but that energy must be moved from the places it's produced to the people who use it. As confirmed by Energy Strategies,[4] " . . . policy targets were difficult to achieve without assuming incremental transmission additions . . . suggest[ing] that, in the long-run, the West might require significant incremental transmission upgrades to achieve policy goals." Transmission projects like the B2H project will do just that – reliably and affordably. In addition, the key to cleaner energy is not just *where* it is generated – it's also *when*. The B2H project will aid moving wind and solar power across regions so customers can get clean energy any time of the day, with less reliance on carbon heavy sources like gas and coal – and more progress toward a clean energy future.

[1] 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/
[2] https://cleanenergygrid.org/wp-content/uploads/2021/09/Transmission-Projects-Ready-to-Go.pdf
[3] https://netzeroamerica.princeton.edu/img/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf
[4] https://westernenergyboard.org/wp-content/uploads/2019/12/12-10-19-ES-WIEB-Western-Flexibility-Assessment-Final-Report.pdf

IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 9:

Please provide a detailed description of how the petitioner intends to control costs for this project, including any description of performance guarantees and risk mitigation mechanisms. In this narrative, clearly delineate the planning cost of the project itself and other loadings including legal and administrative and general ("A&G") costs later assigned to the project.

RESPONSE TO IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 9:

Idaho Power has strict project cost controls for internal and external personnel. Regular monthly forecast updates, including the tracking of budgets and schedules, are part of the project controls suites that the project management team employs.

During the current preconstruction phase, Idaho Power engaged a construction manager, Quanta Infrastructure Solutions Group ("QISG"), to aid in certain preconstruction reviews and tasks. This early integration of the construction team allows for constructability feedback, identification of risk locations, and opportunities to economize the design. As the B2H project transitions into the construction phase, all material and construction services will be competitively bid and be pulled into a guaranteed maximum price ("GMP") that will serve as the construction pricing if awarded. This GMP is tied to a schedule that Idaho Power and the QISG will have developed together that the Company, and as a result the contractors, will be responsible for meeting. Milestone dates will be tied to monetary penalties for contractors if key dates slip.

In addition to the direct project costs, it is Idaho Power's policy, per Code of Federal Regulations ("CFR") guidelines, to apply overheads to construction work orders, which includes indirect operations and maintenance expenses associated with the project. Overheads are monitored for reasonableness based on the size of the project and overall level of internal activities. When presenting project costs, Idaho Power includes all estimated known costs associated with the B2H project, including any costs later assigned to the project and Allowance for Funds Used During Construction.

IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 17:

What provisions and features are designed into this project to prevent or minimize avian and bat harm?

RESPONSE TO IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 17:

To avoid and minimize impacts to avian species during construction, Idaho Power will limit construction activities to time periods outside of the primary migratory bird nesting season of April 1 to July 15, unless the Company conducts surveys immediately prior to such activities to identify avian nests to avoid, as memorialized in the following proposed EFSC site certificate conditions:

> **Fish and Wildlife Condition 13**: During construction, if the certificate holder will be conducting ground-disturbing activities during the migratory bird nesting season between April 1 and July 15, the certificate holder shall conduct, as applicable, biological surveys for native, non-raptor bird species nests on all portions of the site boundary a maximum of 7 days prior to ground-disturbing activities, regardless of whether those portions have been previously surveyed. If the certificate holder identifies a native, non-raptor bird species nest, the certificate holder shall submit to the Department for its approval a notification addressing the following:
> a. Identification of the native, non-raptor species observed;
> b. Location of the nest; and
> c. Any actions the certificate holder will take to avoid, minimize, or mitigate impacts to the nest.[1]
>
> **Fish and Wildlife Condition 14**: During construction, the certificate holder shall not conduct ground-disturbing activities within the following timeframes and spatial buffers surrounding occupied nests of certain raptor species. Upon request by the certificate holder, the Department of Energy in consultation with Oregon Department of Fish and Wildlife ("ODFW") may provide exceptions to this restriction. The certificate holder's request must include a justification for the request, including any actions the certificate holder will take to avoid, minimize, or mitigate impacts to the raptor and its nest.[2]

[1] Draft Site Certificate Conditions, Attachment 1 to the Oregon Department of Energy's Proposed Order, page 27 (July 2, 2020) ("ODOE's Proposed Order"), included as Attachment 1 to this response.
[2] Draft Site Certificate Conditions, Attachment 1 to ODOE's Proposed Order, pages 27 to 28, included as Attachment 1 to this response.

Raptor Nest Buffers		
Nesting Species	Spatial Buffers (radius around nest site):	Temporal Restrictions
Bald eagle	0.5 mile	January 1 to August 15
Golden eagle	0.5 mile	February 1 to August 15
Ferruginous hawk	0.50 mile	March 15 to August 15
Flammulated owl	0.25 mile	March 1 to August 15
Great gray owl	0.25 mile	March 1 to August 15
Northern goshawk	0.5 mile	May 1 to August 15
Peregrine falcon	0.25 mile	January 1 to July 1
Prairie falcon	0.25 mile	March 15 to July 1
Red-tailed hawk	300 to 500 feet	March 1 to August 15
Swainson's hawk	0.25 mile	April 1 to August 15
Western burrowing owl	0.25 mile	April 1 to August 15

> **Fish and Wildlife Condition 20**: During construction, the certificate holder shall not conduct ground-disturbing activities within sage-grouse areas of high population richness, core area habitat, low density habitat, or general habitat between March 1 to June 30. Upon request by the certificate holder, the Department of Energy in consultation with ODFW may provide exceptions to this restriction. The certificate holder's request must include a justification for the exception, including any actions the certificate holder will take to avoid, minimize, or mitigate impacts to sage-grouse in the relevant area.[3]

During operations, Idaho Power will implement its Avian Protection Plan, which includes mitigation measures to be taken if avian mortalities are discovered along the transmission line and modifications to the line that can be made if elevated mortalities of avian species are discovered.[4]

Regarding bat species, Idaho Power avoided and minimized impacts to bat species by siting the Project to avoid mines, caves, and known bat hibernacula.[5] Additionally, if previously unidentified hibernacula are located, Idaho Power will develop additional avoidance, minimization, and mitigation measures in consultation with the ODFW, as set forth in the following proposed site certificate condition:

> **Fish and Wildlife Condition 12**: During construction, if active pygmy rabbit colonies or the roost of a State Sensitive bat species is observed during the biological surveys set forth in Fish and Wildlife Conditions 15 and 16, the certificate holder shall submit to the Department for its approval a notification addressing the following:
> a. Identification of the State Sensitive bat species observed;
> b. Location of pygmy rabbit colony or bat roost; and
> c. Any actions the certificate holder will take to avoid, minimize, or mitigate impacts to pygmy rabbit colony or bat roost.

[3] Draft Site Certificate Conditions, Attachment 1 to ODOE's Proposed Order, page 31.
[4] Avian Protection Plan, Attachment P1-9 to ODOE's Proposed Order, page 27.
[5] Exhibit P1 (Fish and Wildlife Habitat) to Idaho Power's Application for Site Certificate, page P1-70 (Sept. 28, 2018).

d. The Department of Energy in consultation with the ODFW will review and approve the proposed avoidance, minimization, or mitigation measures prior to the action by the certificate holder to impact State Sensitive bat species roosts or hibernacula.[6]

[6] Administrative Law Judge's Proposed Contested Case Order, page 21 of 337 (May 31, 2022) ("ALJ's Contested Case Order") (modifying Fish and Wildlife Condition 14 as set forth in Draft Site Certificate Conditions, Attachment 1 to ODOE's Proposed Order, page 31).

IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 10:

Has the petitioner considered statewide or local economic impacts (positive or negative) as a result of construction of the transmission line? If so, please provide a detailed description of the impacts considered and any associated analysis. The petitioner may articulate what economic development is facilitated by the construction of the proposed transmission line. The petitioner may simply indicate that it chose not to respond to this SDR.

RESPONSE TO IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 10:

The positive economic impacts of the B2H project for eastern Oregon communities include 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.[1] 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.

When energized, the B2H project will benefit local economies by providing cost-effective energy, adding 1,050 megawatts ("MW") of transmission connectivity between the Bonneville Power Administration ("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:

La Grande and Baker City are served by the Oregon Trail Electric Cooperative ("OTEC"); portions of Morrow County and Umatilla County are served by Umatilla Electric Cooperative

[1] Idaho Power's 2021 IRP Appendix D.

("UEC") and Columbia Basin Electric Cooperative ("CBEC"); and 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.

Cost-effective energy also 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 kilovolts ("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 megawatts ("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. Furthermore, 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.

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

Regarding negative economic impacts, Idaho Power does not anticipate the B2H project will have any such impacts at a statewide or regional level. To the contrary, as discussed above, the B2H project will create construction jobs, provide economic opportunities for supportive services (i.e., lodging and food), increase annual tax benefits, provide cost-effective energy to Idaho Power, PacifiCorp, and BPA customers, create economic development opportunities, and create opportunities for energy resource development.

Even so, Idaho Power recognizes the B2H project may have negative economic impacts on individual landowners in the form of removing timber or agricultural land from production, interference with timber, agricultural, or other land uses during construction, and impacts on land values. To address those concerns, the Company has developed management plans containing best practices to avoid, minimize, and mitigate such impacts. For example, the Company's Right-of-Way Clearing Assessment includes a multitude of actions designed to minimize and mitigate impacts to forested lands and forestry operations, including logging best management practices, fire protection practices, road maintenance and improvements, and erosion controls.[2] Additionally, Idaho Power's Agricultural Lands Assessment includes numerous minimization and mitigation efforts to address impacts to agricultural lands and

[2] Right-of-Way Clearing Assessment, Attachment K-2 to the Oregon Department of Energy's Proposed Order at page 16 to 21 (July 2, 2020).

operations, including tower placement modifications, coordinated construction scheduling, coordinated helicopter options, maintenance and repair of drainage tiles, remediating soil compaction, noxious weed control, topsoil separation and storage, dust control, soil erosion protection, addressing inducted voltage, livestock control measures, and protections for organic crops.[3] Finally, Idaho Power will compensate landowners where the project will be located for the use of their land during utility easement negotiations.

[3] Agricultural Lands Assessment, Attachment K-1 to the Oregon Department of Energy's Proposed Order at pages 33 to 47 (July 2, 2020).

CASE: PCN 5
WITNESS: YASSIR RASHID

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 200

Redacted Opening Testimony

January 17, 2023

Q. Please state your name, occupation, and business address.

A. My name is Yassir Rashid. I am an Electrical Engineer and Senior Utility Analyst employed in the Safety, Reliability and Security Division of the Public Utility Commission of Oregon (OPUC or Commission). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My witness qualification statement is found in Exhibit Staff/201.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide examination and analysis of whether the transmission line project that Idaho Power Company (Idaho Power or Company) is proposing to build between a planned substation near Boardman, Oregon (Longhorn Substation) and the existing Hemingway Substation in southwest Idaho is necessary for the reliability of its electric gird. Throughout this testimony, I will refer to the planned transmission line and substation as the Project or as B2H. I will provide my expert opinion on the necessity, practicability, and safety of the Project in the public interest, primarily focusing on the criteria set out in OAR 860-025-0035(1)(a), (b) and (c).

Q. Did you prepare any exhibits for this docket?

A. Yes. I prepared the following exhibits:

- Exhibit Staff/201, witness qualification statement,
- Exhibit Staff/202, Idaho Power response to Staff DR No. 25
- Exhibit Staff/203, Idaho Power response to Staff SDR No. 6
- Exhibit Staff/204, Idaho Power confidential response to Staff DR No. 59

Q. Please describe your approach to analyzing this petition.

A. I reviewed the CPCN petition that Idaho Power filed with the Commission on September 30, 2022, and the testimony and documents that Idaho Power filed in support of its petition. I also examined responses to data requests that Staff and Intervenors directed to Idaho Power and the public comments provided on the petition.

Q. Have you reached an initial conclusion based on the evidence that Idaho Power presented in this docket?

A. Yes. I have concluded the following:

- Idaho Power did not provide evidence that the project is needed for reliability purposes.
- Idaho Power did not provide compelling evidence that the Project will improve system reliability that enables the Company to provide adequate and reliable service to its Oregon customers.
- Idaho Power considered different routes to build the transmission line and selected a route that meets the practicability standard.
- Idaho Power's expectation to energize the Project by summer 2026 may be overly ambitious and difficult to achieve by this target in-service date.

Q. How is your testimony organized?

A. My testimony is organized as follows:

BACKGROUND

Q. Please provide a brief background about this docket.

A. On September 30,2022, Idaho Power filed a petition with the Commission to obtain a CPCN to construct a transmission substation near Boardman, Oregon, and approximately 300 mile long, 500 kilo Volt (kV) transmission line between the proposed substation (known as Longhorn Substation) and the existing Hemingway Substation located in southwest Idaho. The transmission line will traverse across federal, state, tribal, and private lands in five counties in Oregon (Morrow, Umatilla, Union, Baker, and Malheur) and one county in Idaho (Owyhee). The proposed substation as well as 274 miles of the transmission line will be located in Oregon, and 24 miles will be located in Idaho.[1]

The project will provide a path for different generation resources and alleviate some of the constraints between Idaho Power's service territory, which is a summer peaking region, and the Pacific Northwest, which is generally a winter peaking region. Those constraints limit the amount of energy that is transferrable between the two regions. Ultimately, the Project will add a total of 1,050 MW transfer capability between the Pacific Northwest and Intermountain West Region.[2]

Q. Please provide a brief description of Idaho Power.

[1] Docket PCN 5, Idaho Power Petition for Certificate of Public Convenience and Necessity (CPCN Petition), Page-12 (September 30, 2022).
[2] Idaho Power/100, Ellsworth/47.

A. Idaho Power is an investor-owned utility (IOU) that engages in generation, transmission, and distribution of electricity in western Idaho and eastern Oregon. Idaho Power serves more than 600,000 customers[3], less than 20,000 of whom are in Oregon.[4]

Q. Please briefly describe the ownership of the Project.

A. Originally, the project was supposed to be a joint venture between Idaho Power, Pacific Power Company (PacifiCorp), and Bonneville Power Administration (BPA). However, "[a]s the B2H project entered into the permitting and pre-construction phase, project participants […], executed a non-binding term sheet (Term Sheet) that addresses B2H ownership, transmission service considerations, and asset exchanges."[5]

According to the Term Sheet, Idaho Power acquired BPA's share of ownership, increasing Idaho Power's share to 45.45 percent of the ownership of the Project.[6] Idaho Power witness Ellsworth further states, "[t]he Term Sheet reflects that, instead of an ownership interest, BPA will commit to acquiring B2H capacity from Idaho Power through transmission service agreements. The Company and PacifiCorp will execute a Construction Funding Agreement that will cover all work necessary to construct the B2H project."[7]

[3] CPCN Petition, Page 2.
[4] Idaho Power reported on Page 1 of its 2021 Reliability Report that it had 19,538 customers in Oregon by end of 2021. https://edocs.puc.state.or.us/efdocs/HAQ/re90haq14919.pdf
[5] Idaho Power/100, Ellsworth/2.
[6] Idaho Power/100, Ellsworth/2.
[7] Id.

Q. What criteria did you use to examine Idaho Power's CPCN petition?

A. I used the criteria contained in Oregon Administrative Rule (OAR) 860-025-0035(1), which states:

> "The Commission may approve a petition filed under OAR 860-025-0030 by determining the necessity, safety, practicability and justification in the public interest of the proposed transmission line upon consideration of the following:
>
> (a) Whether the transmission line will meet a demonstrated need for transmission of additional capacity or improved system reliability that enables the petitioner to provide or continue to provide adequate and reliable electricity service;
>
> (b) Whether the petitioner has demonstrated that it will ensure the transmission line is constructed, operated, and maintained in a manner that protects the public from danger and conforms with applicable Commission rules, and other applicable safety standards and best industry practices;
>
> (c) Whether the transmission line using petitioner's proposed route is practicable and feasible, whether it will be effectively and efficiently constructed in a commercially reasonable manner;
>
> (d) Whether petitioner has justified construction of the proposed transmission line as in the public interest, as compared with feasible alternatives for meeting the identified need, considering the public benefits and costs of the project, as they relate to the interests in land proposed to be condemned, petitioner's existing facilities and equipment, petitioner's Oregon customers, and other considerations that may be relevant to the public interest. Other such considerations include, but are not limited to, the benefits and costs to other Oregon utilities, their customers, and all Oregonians, the value of connections to regional and interregional electricity grids and to a petitioner's non-Oregon service territories, and all Oregonians; and
>
> (e) The Commission may also consider other factors it deems relevant to the statutory criteria."

Q. Please describe the facilities of the Project.

A. Typically, the overhead transmission line is comprised of reinforced aluminum conductors that are supported by dielectric insulators, which are hung from structures that could be monopoles, H frames, or lattice transmission towers.

The transmission towers that Idaho Power plans to use will support a single circuit, three-phase bundled conductor and two shield wires. The tower design will vary depending on whether the tower is a straight-line tower or a corner tower. The typical tower height for B2H is approximately 160 feet, but tower height will vary depending on location, with towers located roughly every 1,400 feet apart, on average.[8]

The purpose of Longhorn substation is to tie B2H to BPA's 500 kV system. Longhorn substation includes a bus system, switches, circuit breakers, shunt capacitor, shunt line reactors, and other related equipment.[9]

Q. Can you explain the critical functions this equipment performs?

A. Yes. The bus system, switches and circuit breakers are required to connect and control the flow of the energy into the transmission system BPA operates. The purpose of the shunt capacitors and reactors is to provide improvements in the power transfer capability of the line, improve system stability, reduce system losses, and improve voltage quality.[10] The transmission line design also includes a series capacitor substation somewhere in the middle of the transmission line. The purpose of this substation is to maintain voltage at the adequate operating levels for the transmission line, and this substation and the shunt reactors and capacitors at Longhorn are particularly important as the resource mix shifts toward renewable resources, where reactive power is less available.

[8] Idaho Power/200, Barretto/3.
[9] Idaho Power's Petition for CPCN, Attachment 15, Page-8.
[10] Id.

Q. What is the overall cost of the Project?

A. Idaho Power estimates that its share of the Project will cost will be **[Begin Confidential]** [redacted].[11] **[End Confidential]**

[11] Idaho Power/200, Barretto/25.

ISSUE 1: NECESSITY

Q. Please explain the term "Necessity" in the context of Idaho Power's CPCN petition.

A. The Commission determines the necessity of a proposed transmission line by considering the criteria in OAR 860-025-0035(1), of which (a), (d) and (e) are most relevant here:

> (a) Whether the transmission line will meet a demonstrated need for transmission of additional capacity or improved system reliability that enables the petitioner to provide or continue to provide adequate and reliable electricity service;
>
> (d) Whether petitioner has justified construction of the proposed transmission line as in the public interest, as compared with feasible alternatives for meeting the identified need, considering the public benefits and costs of the project, as they relate to the interests in land proposed to be condemned, petitioner's existing facilities and equipment, petitioner's Oregon customers, and other considerations that may be relevant to the public interest. Other such considerations include, but are not limited to, the benefits and costs to other Oregon utilities, their customers, and all Oregonians, the value of connections to regional and inter-regional electricity grids and to a petitioner's non-Oregon service territories, and all Oregonians;
>
> (e) The Commission may also consider other factors it deems relevant to the statutory criteria.

In the context of this petition and from a transmission system perspective, I evaluate whether, absent the construction of the Project, the reliability of Idaho Power's transmission system will be compromised and Idaho Power will fail to provide reliable and safe electric service to its customers. Staff witness Sudeshna Pal considers whether, absent the Project, Idaho Power will fail to meet growing load demand in its service

territory. Finally, Staff witness Pal considered whether Idaho Power would be unable to interconnect generation facilities and procure lower cost energy as resources to serve its customers if the Project is not built.

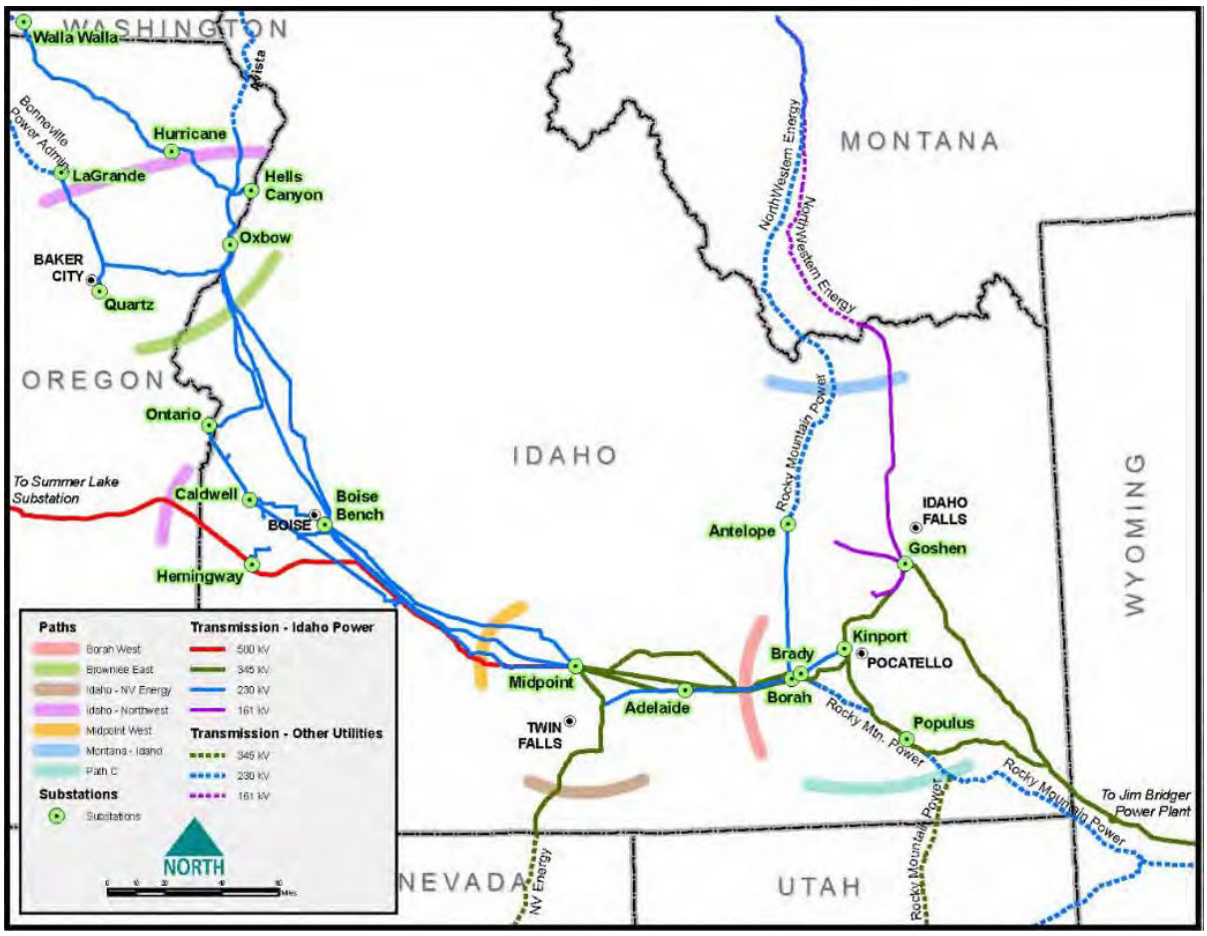
Q. Please describe Idaho Power's current transmission system.

A. Idaho Power's transmission system extends from eastern Oregon through southern Idaho to western Wyoming. It is composed of 115, 138, 161, 230, 345, and 500 kV transmission facilities.[12] Idaho Power defines sets of lines that transmit power from one geographic area to another as transmission paths. The following is a list of those transmission paths:

- Idaho to Northwest path,
- Brownlee East path,
- Idaho to Montana path,
- Borah West path,
- Midpoint West path,
- Idaho to Nevada path,
- Idaho to Wyoming path, and
- Idaho to Utah path

Below is a map depicting Idaho Power's current transmission system.

[12] Idaho Power's Petition for CPCN, Attachment 14, Pages-108 – 110



Q. Does Idaho Power contend that the Project is necessary for the reliability of its transmission supply in Oregon?

A. No. Idaho Power does not contend that the Project is needed to provide reliable service in Oregon. In response to Staff DR 25 Idaho Power stated, "[t]he Company has not undergone any rotating outages over the previous several years, so the Company's reliability and resilience impacts are unlikely to have changed."[13] Additionally, in response to Staff SDR 6, Idaho Power stated, "[n]o additional reliability or redundancy enhancements

[13] Exhibit Staff/202.

pertaining to the B2H project have been identified in local transmission planning studies beyond the need to import resources to supply native load.[14] Therefore, based on the Company's responses to Staff data requests, the Project is not necessary for its system reliability.

In its CPCN petition, Idaho Power emphasized that the Project would enhance reliability; but it is Staff's position that enhancement of reliability, however desirable, is different from maintenance of reliability, which is what Staff reads as a requirement under OAR 860-025-0035(1)(a).

Q. Please explain the reasons related to reliability that Idaho Power is proposing to construct the Project.

A. The Company files IRPs on a regular basis as required by the Commission. B2H has been present in Idaho Power's IRP ever since 2006. Idaho Power included its most recent IRP filing in Docket LC 78 as Attachment 14 to its CPCN petition. At a public meeting on December 6, 2022, the Commission acknowledged the IRP, though an order memorializing this decision has yet to be issued.[15] In its 2021 IRP, Idaho Power emphasized the need for a transmission line to the Pacific Northwest electricity market and indicated that the Project is expected to provide bidirectional capacity, notably 1,050 MW of that capacity will be in the West-to-East direction and 1,000 MW of that

[14] Exhibit Staff/203.
[15] See Oregon Public Utility Commission Minutes of a Special Public Meeting, December 6, 2022, available here: https://oregonpuc.granicus.com/DocumentViewer.php?file=oregonpuc_14197d89ee58f6f5573651663e629fa7.pdf&view=1

capacity will be in the East-to-West direction.[16] That means B2H is capable of transferring 1,050 MW from resources in the west if demand in the east warrants that transfer. B2H is also capable of transferring 1,000 MW from resources in the east if demand in the west warrants that transfer. Idaho Power also contends that

> "The new line [B2H] will provide many benefits, including the following:
> - Greater access to the Pacific Northwest electric market to economically serve homes, farms, and businesses in Idaho Power's service area
> - Improved system reliability and resiliency
> - Reduced capacity limitations on the regional transmission system as demands on the system continue to grow
> - Flexibility to integrate renewable resources and more efficiently implement advanced market tools, such as the EIM"[17,18]

Q. Has Idaho Power provided evidence to support the aforementioned claim of the Project's benefits?

A. Idaho Power provided a detailed analysis of the methodology in which the Western Electricity Coordinating Council (WECC) overviewed policies and procedures for Project coordination review, Project rating review, and progress reports. Idaho Power labeled that analysis B2H Phase 2 Study Report – WECC Rating Process, and included it as Attachment 15 to its CPCN petition. In that analysis, B2H is assumed to be added to Idaho Power's existing Northwest path, increasing its transfer capabilities to 2,250 MW West-to-East and 3,400 MW East-to-West. The study assesses the "Idaho-Northwest path

[16] Idaho Power's Petition for CPCN, Attachment 14, Page-111
[17] EIM denotes the Western Energy Imbalance Market.
[18] Idaho Power's Petition for CPCN, Attachment 14, Page-111

[…] at its proposed rating, simultaneous with other paths that may be impacted at their proposed rating […].

Additionally, sensitivity cases were studied to ensure that Idaho-Northwest can be operated to 2250 MW west-to-east regardless of the system configuration or northwestern terminus [the proposed Longhorn Substation]".[19] Overall, Idaho Power completed eight simultaneous interaction studies to assess IPC's Northwest path 2,250 MW transfer capability from West-to-East (including B2H); eight simultaneous interaction studies to assess IPC's Northwest path 3,400 MW transfer capability from East-to-West (including B2H); and five sensitivity studies to assess IPC's Northwest path 2,250 MW transfer capability from West-to-East (including B2H).

Q. Please explain how Idaho Power carried out the simultaneous interaction studies.

A. Idaho Power followed the North American Electric Reliability Corporation (NERC)/WECC[20] TPL[21] standards to make its assessments. In Attachment 15 to its CPCN petition, Idaho Power detailed the study methods and the NERC/WECC standards that it used in each study.[22] Each study is comprised of the following parameters:

[19] Idaho Power's Petition for CPCN, Attachment 15, Page-7
[20] NERC is an entity that is certified by the Federal Energy Regulatory Commission (FERC) to monitor transmission system reliability and issue standards that focus on maintaining transmission system reliability across the United States and parts of Canada and Mexico. WECC is one of six regions under NERC, where Idaho Power transmission system lies.
[21] TPL standards are set by NERC to govern Transmission Planning.
[22] Idaho Power's Petition for CPCN, Attachment 15, Pages-10 – 11

1. Steady state case: Steady state study is done based on the assumption that the measured physical quantities that describe operating conditions of the system can be considered constant (for purposes of the analysis). With that assumption in mind, the base case for this study stresses that Idaho Northwest path 1) transfers 2,250 MW in the west-to-east direction, and 2) transfers 3,400 MW in the east-to-west direction. These cases are further modified to stress additional paths to study potential simultaneous interactions with the Idaho-Northwest path[23] to assess the effect of B2H on the system overall.
2. Transient Stability Study: Transient-stable operating conditions of the transmission system occur when the system is operating in a stable manner while it is dynamically involved in delivering energy reliably. Idaho Power studied select single element (N-1), double element (N-2) and other outages to evaluate transient stability performance.
3. Post-Transient study: Post transient studies are done to assess the effect of unforeseen events that result in the Bulk Electric System loss of transmission elements (N-1, N-2, etc.). The study sets various assumptions for each case and assess the effect on the transmission system based on those assumptions.
4. Voltage Stability: This study utilizes two methods to verify voltage stability: real power margin assessment (PV Analysis) and, reactive power margin Assessment (VQ Analysis). PV Analysis requires N-1, N-2,

[23] Idaho Power's Petition for CPCN, Attachment 15, Page-10

and breaker failure contingencies to have a post-transient solution with the path under study stressed to at least 105% and 102.5%, respectively, of the proposed rating. VQ Analysis determines the reactive power margin, following a contingency, at a specific electrical bus on the power system.

5. Remedial Action Schemes: The study implemented remedial actions associated with N-1 and N-2 outages. A list of outages and their associated remedial action schemes are documented in the appendices associated with each study case.

Q. What is the conclusion of the simultaneous interaction studies and the sensitivity studies?

A. According to Idaho Power, "[t]he simultaneous interaction studies prove that the Idaho-Northwest path does not have an interaction with any other studied paths. The sensitivity studies prove that the Idaho-Northwest path can be operated to its proposed rating regardless of the system configuration or northwestern terminus."[24] Idaho Power included schematic diagrams and tables of its simulations in the B2H Phase 2 study report.

Q. What is your preliminary conclusion after reviewing B2H Phase 2 Study Report – WECC Rating Process?

A. I conclude that the Project would enhance the overall reliability of Idaho Power's transmission system and would allow for interconnectivity of future new resources that Idaho Power has identified in its 2021 IRP.

[24] Id, Page-5

ISSUE 2: SAFETY

Q. How does Staff examine the safety of the Project?

A. Staff considers the safety of the proposed line in the context of the Commission's criteria in OAR 860-025-0035(1)(b), which allows consideration of:

> (b) Whether the petitioner has demonstrated that it will ensure the transmission line is constructed, operated, and maintained in a manner that protects the public from danger and conforms with applicable Commission rules, and other applicable safety standards and best industry practices.

In its petition, Idaho Power indicated that it incorporated all the applicable standards that govern safety when the transmission line was designed.[25] Idaho Power witness Barretto listed in her testimony several standards that were followed while designing the transmission line. The list includes American Concrete Institute 318 – Building Code Requirements for 'Structural Concrete, American National Standards Institute standards (for material specifications), American Society of Civil Engineers manual No. 74 – Guidelines for Electrical Transmission Line Structural Loading, National Electrical Safety Code, Occupational Safety and Health Administration 1910.269 (for worker safety requirements), and National Fire Protection Association 780 – Guide for Improving the Lightning Performance of Transmission Lines.[26]

[25] Idaho Power/200. Barretto/3
[26] Id, Barretto/3 – 4

Q. Do you believe that Idaho Power's plans to follow the aforementioned safety standards is assuring?

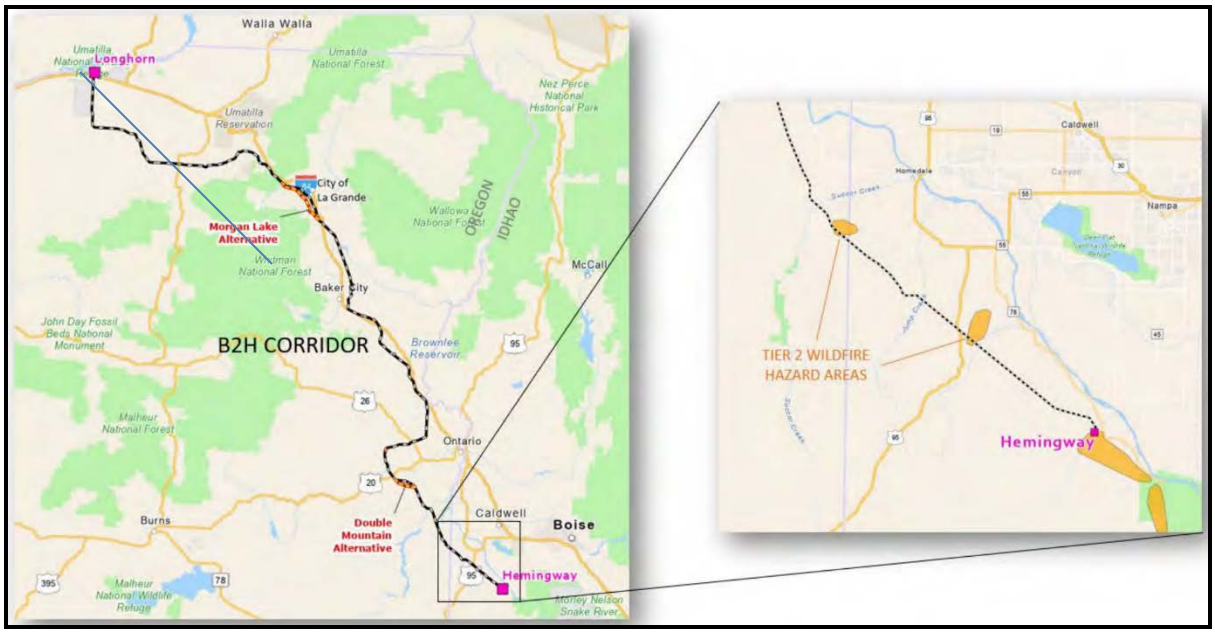
A. Yes. Typically, high voltage transmission line designers follow these standards, because they are widely adopted in the industry. These standards provide minimum thresholds to follow when designing pertinent projects; however, designs are made to exceed the minimum thresholds to provide more reliable designs. Idaho Power contends that "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."[27]

Q. Assuming the Project could potentially result in an increased risk of wildfire, has Idaho Power addressed this topic as it pertains to the transmission line?

A. Yes. Idaho Power referenced its Wildfire Mitigation Plan (WMP), which the Company filed on December 31, 2021 and which was approved by the Commission in its revised form on August 26, 2022 and explained that the B2H route was assessed as part of the 2021 WMP.[28] In its WMP, Idaho Power included a map[29] that depicted the proposed B2H route in relation the wildfire risk zones that the Company identified (included below). The map

[27] Id, Barretto/2
[28] Id, Barretto/7
[29] Docket No. UM 2209, Idaho Power Wildfire Mitigation Plan, filed on December 29, 2022 – Page 31

shows Hemingway Substation, as well as a small portion of the proposed route of the transmission line, lie within Tier 2 Wildfire Hazard Areas.[30]



In terms of the construction of the Project, Idaho Power indicated that although the steel structures used for the transmission towers are non-flammable, there will be a risk of flashover/arcing between the conductors and the grounding components of the line if there is a wildfire (typically faults can occur as a result of ionizing smoke) in the vicinity of the transmission line. In that case, the remedy and the standard action is to de-energize the line.[31] Idaho Power highlighted this position in its Petition by emphasizing that the Commission had approved Idaho Power's WMP, which includes its operational strategies, including its Public Safety Power Shutoff

[30] Idaho Power refers to Tier 2 as Yellow Risk Zone, which is lower risk than the highest risk zone, the Red Risk Zone (Tier 3)
[31] Id, Barretto/8

(PSPS) plan.[32] However, Idaho Power indicated, "the B2H project would likely still operate so long as the fires are not in the immediate area."[33]

Q. Has Idaho Power identified other safety risks that might affect the operation of the Project?

A. Yes. Idaho Power indicated that lightning could be a risk, but it indicated that while "[t]he B2H project is in an area that historically experiences 20 lightning storm days per year, which is relatively low compared to other parts of the United States,"[34] it would use proper shield wire and grounding to adequately dissipate lightning current if it ever occurred.[35] Idaho Power also indicated that earthquakes could be a risk but indicated that "[e]xperience has demonstrated that high-voltage transmission lines are very resistant to ground-motion forces caused by earthquakes,[and] are very resistant to ground-motion forces caused by earthquakes, so much so that national standards do not require these forces be directly considered in the design."[36]

Idaho Power also indicated, "B2H is fundamentally no different than any other supply-side resource under a direct physical attack."[37] However, in the case of physical attack on the transmission line that forced the line to be taken out of service, "the rest of the grid would adjust to account for the

[32] Petition, Page-32
[33] Id, Barretto/8
[34] Id, Barretto/5. Idaho Power references USDA RUS Bulletin 1751-801 as its source for this piece of information, not the Company's own study.
[35] Id, Barretto/5
[36] Id, Barretto/6
[37] Id, Barretto/9

loss of the line." This is because of the studies I discussed previously that address elements out of service and also because, based on WECC 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."[38]

Q. Did you evaluate any other potential concerns associated with high voltage transmission lines?

A. Yes, Staff considered the manner in which the corona effect will be addressed with the B2H transmission line**.**

Q. Please explain the corona effect and how it contribute to noise around transmission lines.

A. Corona is a phenomenon associated with high voltage transmission lines. Under certain atmospheric conditions, highly concentrated electric fields around energized conductors leak a small electric discharge, which ionizes the air close to the conductors. This energy leakage transforms into other forms such as heat, radio noise, sound, etc. The sound that results from the corona can be heard near high voltage transmission lines, with varying magnitudes depending on the conductor voltage, shape and diameter, dust, raindrops, etc. Corona is a waste of energy, which is why it is in the Company's interest to reduce the corona effect by designing the transmission line in such a way as to reduce it. Among other elements,

[38] Id, Barretto/9.

selecting proper insulators and conductors design would decrease the corona effect, and that in turns reduces the noise caused by it.

Q. Based on your experience, are you concerned that the proposed transmission line carries health risks to humans from the corona effect, the electromagnetic field (EMF), or any other factor associated with high voltage transmission?

A. I have participated in more than ten transmission line proceedings, during which the health risk issue has been raised. Based on my research, I have not come across any conclusive medical evidence that high voltage transmission lines, constructed under modern construction standards, pose health risks to humans who live in proximity to those lines outside of the horizontal clearance zone.

ISSUE 3: PRACTICABILITY

Q. What is the relevant "practicable" standard?

A. Staff considered the practicability of the proposed line in the context of the Commission's criteria in OAR 860-025-0035(1)(c), which allows consideration of:

> "Whether the transmission line using petitioner's proposed route is practicable and feasible, whether it will be effectively and efficiently constructed in a commercially reasonable manner."

Q. Has Idaho Power described the process it implemented to select the preferred route for the transmission line?

A. Yes. Idaho Power indicated that it started the route selection process in 2008, when the Company "submitted application materials to the Bureau of Land Management (BLM) […] and a Notice of Intent to the Energy Facility Siting Council (EFSC or Council)." Idaho Power indicated that BLM's National Environmental Policy Act (NEPA) process is separate and distinct from the EFSC process. The NEPA process produces an Environmental Impact Statement (EIS) that provides a comparative analysis of potential alternatives and ultimately identifies BLM's preferred route.

Alternatively, the EFSC process is a standard-based process based on a fixed site boundary, and that in turn produces a boundary within which the transmission line route will be determined.[39] Idaho Power indicated that the

[39] Idaho Power/200, Barretto/10 – 11

Company engaged with the public that would be affected by the transmission line to get input that would help select the most feasible route.

Q. Please describe Idaho Power's public outreach efforts.

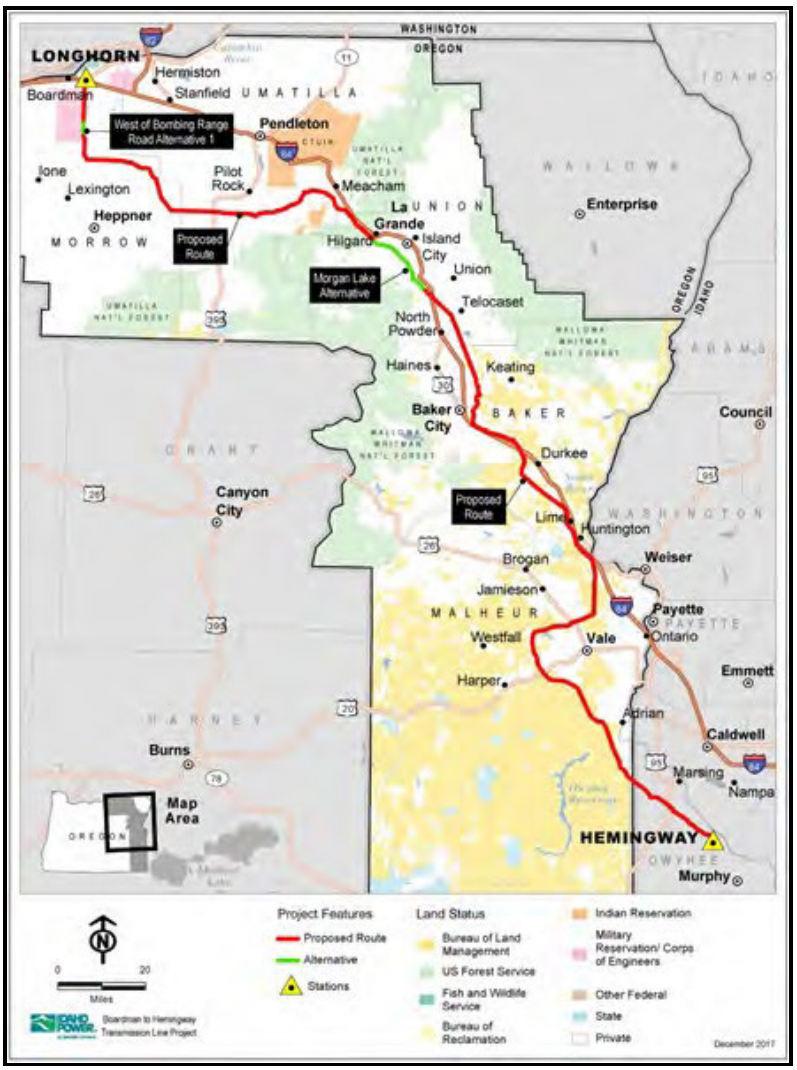
A. Idaho Power indicated that in 2009 it involved the public in a process it called community advisory process (CAP). Idaho Power listed CAP's objectives of this process as follows: "(1) identify community issues and concerns, (2) develop a range of possible routes that address community issues and concerns, (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…"[40] Idaho Power states that the CAP process resulted in a recommended route after considering 49 routes and/or segments. In 2010, Idaho Power submitted this "proponent-recommended route"[41] to BLM. However, "[w]ith a final route recommendation developed through the CAP, Idaho Power resubmitted the proposed route to the BLM and published its B2H Siting Study. At this point, the Company also filed a new Notice of Intent with EFSC."[42]

Idaho Power indicated that it did not stop its public engagement, because the NEPA process provided many opportunities for the public to comment on major milestones. Idaho Power stated, "[t]hroughout this

[40] Id, Barretto/11
[41] Id, Barretto/12
[42] Id

process, Idaho Power worked with landowners, stakeholders, and jurisdictional leaders on route refinements and to balance environmental impacts with impacts to farmers and ranchers."[43] Staff encourages Idaho Power to keep engaging the Public throughout the whole process of the Project.

Below is the final map of the transmission line route that Idaho Power included in its CPCN petition as Attachment 2.



[43] Id

Q. Has the EFSC process identified more than one route from which the Company can select to build the transmission line close to the City of La Grande?

A. Yes. It is worth mentioning that EFSC approved two route segments around the City of La Grande in Union County, Mill Creek Alternative and Morgan Lake Alternative. Idaho Power stated that, based on the feedback that the Company received from the local community, it has selected the Morgan Lake Alternative because it is farther from and not visible from the City of La Grande.[44]

Idaho Power indicated that it is "seeking condemnation authority only for properties along the final route choice, and not for alternative segments included in the EFSC application but not chosen as part of the final route."[45]

Q. Do you believe that Idaho Power has chosen the route that would be practicable to construct the proposed transmission line?

A. Based on the information that Idaho Power provided in this proceeding, and in light of the discussion above, I have no reason to believe that the route that Idaho Power has selected is not a practicable route to construct the proposed transmission line at this time.

Q. Do you believe that the proposed route is feasible?

A. The Project traverses nearly 300 miles over a diverse set of terrain. The transmission line runs through areas that contain historic, cultural, and

[44] Id, Barretto/17
[45] Id

archaeological resources. It runs through areas with fish and wildlife habitats. It also crosses federal, state, local, and private lands. It is very challenging to obtain approvals and permits from all involved in the process of this Project. However, as explained earlier, Idaho Power has been working on this Project for more than a decade, and through that work, the Company has demonstrated that it has selected a route that is feasible.

Q. Has Idaho Power provided details regarding the design of the Project?

A. Idaho Power witness Ellsworth stated,

> "[t]he Company contracted with HDR, Inc. (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."[46]

In its confidential response to Staff DR No. 59, Idaho Power provided Confidential Attachment 2, **[Start Confidential]** [redacted] [redacted][47] **[End Confidential].** Idaho Power has not provided evidence to suggest that it has set a schedule to start the

[46] Idaho Power/100, Ellsworth/30
[47] Exhibit Staff/204

detailed design of the Project. I recommend that Idaho Power address this topic in its reply testimony.

Q. When does Idaho Power anticipate the Project will be energized?

A. Idaho Power plans to energize the Project prior to the summer of 2026 to meet the peak demand growth needs.[48] Idaho Power witness Barretto indicated that failing to meet that date would create the resource deficit the Company identified in its 2021 IRP.[49]

Q. Has the Company secured all easements necessary to build the Project?

A. No. In its Initial Petition, Idaho Power witness Barretto testified that the Company needed to obtain easements from approximately 168 landowners.[50] However, in a subsequent filing, Idaho Power indicated, "the Company continued its efforts negotiating with landowners in good faith to obtain options for easements, executing an additional 22 easement option agreements, for a total of 51 parcels under contract. In addition, Idaho Power has identified 34 parcels on the landowner list that do not contain project features and therefore no access/easement option is required."[51]

Q. Has the Company sought contractors to build the Project?

[48] Id, Ellsworth 47
[49] Idaho Power/200, Barretto/27 – 28
[50] Id. Barretto/28
[51] Idaho Power/300, Barretto/5

A. No. Idaho Power states that it "anticipates issuing a Request for Proposals for materials and subcontractors necessary for construction to commence in the first quarter of 2023."[52]

Q. Considering the outstanding tasks that the Company has to complete, do you believe energizing the Project by summer 2026 is feasible?

A. I am unsure. Idaho Power has substantial work ahead of it, including finalizing the transmission line route at the micro level, acquiring needed easements, finalizing the detailed design of the Project components from transmission towers, to substations, obtaining required permits from federal, state, and local authorities. Idaho Power needs to select contactors to build the Project, procure all the materials and equipment needed for the Project, build the Project, conduct trials before committing to fully energize the Project and interconnecting with the transmission grid, etc.

Q. From your experience, what examples do you have that cause you concern about B2H coming online in 2026?

A. From my experience being involved in large transmission projects, I have knowledge that such projects need more than three years to come to fruition. In my capacity as a Staff Electrical Engineer with the Illinois Commerce Commission (ICC), I was an active participant or an observer in several transmission line cases. Commonwealth Edison Company (ComEd), which serves more than 4 million customers in Northern Illinois, applied for a CPCN to build the 60-mile, 345 kV Grand Prairie Gateway

[52] Id

project in Northern Illinois in December 2013. ComEd obtained the CPCN in October 2014. ComEd placed the Grand Prairie Gateway project in service in May 2017, nearly three and a half years after it applied for the CPCN.[53, 54]

Another case involved Ameren Transmission Company of Illinois (Ameren Transmission), a subsidiary of Ameren Illinois, which serves 1.2 million customers across Central and Southern Illinois in a service territory that covers approximately three quarters of the state. In that case, Ameren Transmission applied for a CPCN to build the 375-mile, 345 kV Illinois Rivers Transmission project in Central Illinois in November 2012. Ameren Transmission obtained the CPCN in August 2013. Ameren Transmission placed the Illinois Rivers Transmission project in service in December 2020, more than seven years after it applied for the CPCN.[55, 56] Given that the topography of Illinois (flat agricultural fields) makes it easier to construct a high voltage transmission line than Oregon's (a mix of flat land, forests, and mountains), I do not believe that Idaho Power will be able to build a 300-mile, 500 kV transmission line in under four years from when the Company applied for CPCN.

Q. What is the Company's evaluation of the situation if the Project is not energized by summer 2026?

[53] ICC Docket No. 13-0657
[54] ComEd's Grand Prairie Gateway Project Is Complete | ComEd - An Exelon Company
[55] ICC Docket No. 12-0598
[56] https://www.ameren.com/company/illinois-rivers-project

A. According to IPC witness Ellsworth, "Slippage in the schedule from 2026 to 2027 would not be ideal for Idaho Power customers, however, even if that occurs, the B2H project remains the most cost-effective long-term resource".[57]

Q. What is your assessment of the situation if the Project is not energized by summer 2026?

A. My testimony focuses on reliability and Idaho Power indicates that the Project is not necessary to maintain reliable service to ratepayers, including Oregon ratepayers. Unless Idaho Power or another entity provided evidence that reliability would be at risk if the Project were not energized by summer 2026, I am not concerned that a delay would affect reliability to Idaho Power's Oregon customers.

[57] Idaho Power/100, Ellsworth/47

Conclusion and Recommendations

Q. After reviewing Idaho Power's Petition, have you reached any initial conclusions?

A. Yes, though my position may change based on additional discovery and information in testimony from other parties. I conclude that Idaho Power has not demonstrated that the Project is necessary to maintain electric service reliability to its Oregon customers. I conclude that Idaho Power has demonstrated that the Project would provide extra electricity transfer capability for resources that it identified in its 2021 IRP. From my perspective, I conclude that the route Idaho Power has identified and EFSC has approved is practicable and feasible for the transmission line. Finally, I conclude that Idaho Power has many hurdles in the way of completing the Project, and that its goal to energize the Project by summer 2026 is an ambitious, if not unrealistic in-service date.

Q. Does this conclude your testimony?

A. Yes, it does.

CASE: PCN 5
WITNESS: YASSIR RASHID

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 201

Witness Qualifications Statement

January 17, 2023

WITNESS QUALIFICATIONS STATEMENT

NAME: Yassir Rashid

EMPLOYER: Public Utility Commission of Oregon (OPUC)

TITLE: Senior Utility Analyst, Electrical Engineer
Safety, Reliability and Security Division

ADDRESS: 201 High Street SE. Suite 100
Salem, OR. 97301

EDUCATION: Master of Science in Electrical and Computer Engineering, Southern Illinois University Carbondale

Postgraduate Diploma in Business Administration, University of Khartoum, Sudan

Bachelor of Science in Electrical Engineering, University of Khartoum, Sudan

EXPERIENCE: I have fourteen-year experience in utility regulation. I joined OPUC in October 2018, where I provide analysis and reporting in issues concerning safety and reliability. I have written memos and reports as well as provided testimony in various dockets including dockets relating to reliability transmission line Certificates of Public Convenience and Necessity (CPCN) and wildfire mitigation plans.

Prior joining the OPUC, I worked for the Illinois Commerce Commission (ICC) for ten years. In my capacity as an electrical engineer with the ICC, I provided analysis, written memos and reports, and rendered technical advice to Administrative Law Judges in various dockets. I provided testimony in numerous dockets ranging from transmission line CPCN and distribution system reliability to rate cases and Fuel Adjustment Claus cases. I performed distribution feeders and substations inspections including vegetation inspections, as well as meter shop audits. I reviewed and investigated work place accidents reported by regulated utilities.

While in Sudan, I worked in operation of the electric grid that is owned by Kenana Sugar Company, which consists of a 40 MW powerhouse, a 33 kV transmission grid that is interconnected with Sudan's national grid, and a distribution grid that feeds the irrigation system, the sugar factory, as well as the company's village.

CASE: PCN 5
WITNESS: YASSIR RASHID

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 202

Exhibits in Support
Of Opening Testimony

January 17, 2023

Topic or Keyword: B2H Background, Outreach and Permitting Processes

STAFF'S DATA REQUEST NO. 25:

Please provide an account of foregone resources, outages, and any other reliability and resilience impacts that could have been avoided if B2H was in place. Also identify if there were any cost saving opportunities that were foregone due to B2H being unavailable.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 25:

Idaho Power has not modeled the requested hypothetical scenario where B2H would be in service earlier than what is actually achievable. However, in the absence of such an analysis, the Company offers the following assessment of some of the benefits of B2H under an assumption that those benefits could be realized today.

The Company has not undergone any rotating outages over the previous several years, so the Company's reliability and resilience impacts are unlikely to have changed. However, B2H's transmission capacity may have been useful to other entities in the Western Electricity Coordinating Council ("WECC"), offsetting B2H project costs for Idaho Power's customers.

If B2H were in place, the Company would have had access to additional low-cost power and energy from the Mid-C market compared to business as usual, and potentially benefited from these lower cost resources. The Lawrence Berkley National Lab recently completed a study titled "Empirical Estimates of Transmission Value using Locational Margin Prices[1]." On page 20, the study identifies the Value in Millions $ per 1000 MW-yr between different nodes on the power system. The value identified for a 1000 MW connection between EIM_BPAHub and EIM_UT (a reasonable surrogate for the B2H line) was identified at over $100 million per year and had an average energy cost spread of nearly $15 per megawatt-hour ("MWh").

[1] https://eta-publications.lbl.gov/sites/default/files/lbnl-empirical_transmission_value_study-august_2022.pdf

CASE: PCN 5
WITNESS: YASSIR RASHID

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 203

Exhibits in Support
Of Opening Testimony

January 17, 2023

IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 6:

Please provide all available local transmission planning studies or analysis that supports the need for the proposed transmission line. In your response, please identify any necessary reliability or redundancy enhancements as they pertain to the proposed line.

RESPONSE TO IDAHO POWER COMPANY'S STANDARD DATA REQUEST NO. 6:

Please see Section 3.4 of Idaho Power's most recent local transmission planning study, the 2020-2021 Local Transmission Plan below, illustrating the need for the B2H project. The entire plan can be found:
https://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCO_2021_Final_Local_Transmission_Plan.pdf

3.4 Transmission Use Forecast

In Q1, Idaho Power submitted new transmission service obligations ("TSOs") to NorthernGrid. Table 5 below shows these new transmission service obligations.

Table 5
New Long-Term Transmission Service Obligations

Year	*From*	*To*	*MW*
2026 (Summer)	Northwest	Idaho	500
2026 (Summer)	Northwest	BPA SEID	250
2026 (Winter)	Northwest	Idaho	200
2026 (Winter)	Northwest	BPA SEID	550

Table 6 is a comparison of the 2040 transmission capacity needed ("TCN") from Table 5 with TTCs of the critical paths with and without the Boardman to Hemingway 500kV transmission project ("B2H"). The TTCs are based on Path Rating Studies performed for the B2H project. Numbers in red indicate a deficiency in meeting the transmission needs on the path. Green numbers are those which have sufficient capacity to meet the transmission needs.

Table 6
Comparison of 2040 Transmission Needs with Expected TTC

WECC Path Number/ Direction	2040 Transmission Capacity Needed (MW)	2040 TTC (w/ B2H)	2040 TTC (w/o B2H)
14 W-E	**1950**	2250	1200
17 W-E	**705**	1600	1600

The results of this comparison illustrate the need for the B2H project.

No additional reliability or redundancy enhancements pertaining to the B2H project have been identified in local transmission planning studies beyond the need to import resources to supply native load.

The B2H project has been a component of Idaho Power's Local Transmission Plan since the 2008-2009 study cycle, all of which can be found below:

Study Cycle	Local Transmission Plan Link
2008-2009	https://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCo_2009_Local_Transmission_Planning.pdf
2010-2011	http://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCo_2011_Final_Local_Transmission_Plan.pdf
2012-2013	https://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCo_2013_Final_Local_Transmission_Plan.pdf
2014-2015	https://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCO_Final_2015_Local_Transmission_Plan.pdf
2016-2017	https://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCO_2017_Final_Local_Transmission_Plan.pdf
2018-2019	https://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCO_Final_2019_Local_Transmission_Plan.pdf
2020-2021	https://www.oasis.oati.com/woa/docs/IPCO/IPCOdocs/IPCO_2021_Final_Local_Transmission_Plan.pdf

CASE: PCN 5
WITNESS: YASSIR RASHID

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 204

Is confidential

Protective Order: 22-309

Exhibits in Support
Of Opening Testimony

January 17, 2023

CASE: PCN 5
WITNESS: CHARLES LOCKWOOD

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 300

Opening Testimony

January 17, 2023

Q. Please state your name, occupation, and business address.

A. My name is Charles Lockwood. I am a Utility Analyst employed in the Utility Strategy and Integration Division of the Public Utility Commission of Oregon (Commission or OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My witness qualification statement is found in Exhibit Staff/301.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide information on the effects of the planned transmission line identified in Idaho Power's Petition for Certificate of Public Convenience and Necessity (CPCN) on environmental justice communities.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared the following exhibits:

Exhibit Staff/301 Witness Qualification Statement

Exhibit Staff/302 Idaho Power Responses to Data Requests

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, ENVIRONMENTAL JUSTICE

Q. What criteria does the Commission use to consider environmental justice issues?

A. The Public Utility Commission of Oregon (Commission) is a natural resource agency, that under ORS 182.545, when making a decision, must "consider the effects of the action on environmental justice issues."

In addition, the Commission considers the criteria set forth in OAR 860-025-0035(1) when evaluating a CPCN petition filed under ORS 758.015 to determine the necessity, practicability, safety and justification in the public interest of a proposed transmission line. Environmental justice issues may be relevant to the Commission's consideration of two of these criteria:

> (d) Whether petitioner has justified construction of the proposed transmission line as in the public interest, as compared with feasible alternatives for meeting the identified need, considering the public benefits and costs of the project, as they relate to the interests in land proposed to be condemned, petitioner's existing facilities and equipment, petitioner's Oregon customers, and other considerations that may be relevant to the public interest. Other such considerations include, but are not limited to, the benefits and costs to other Oregon utilities, their customers, and all Oregonians, the value of connections to regional and inter-regional electricity grids and to a petitioner's non-Oregon service territories, and all Oregonians;
>
> (e) The Commission may also consider other factors it deems relevant to the statutory criteria.

Q. Are there particular definitions that Staff considered in evaluating environmental justice issues?

A. Yes. Staff considered this definition added to ORS 182.535:[1]

> "Environmental justice" means the equal protection from environmental and health risks, fair treatment and meaningful involvement in decision making of all people regardless of race, color, national origin, immigration status, income or other identities with respect to the development, implementation and enforcement of environmental laws, regulations and policies that affect the environment in which people live, work, learn and practice spirituality and culture."

Staff also considered a similar definition for "environmental justice" and the definition of "environmental justice communities" provided in ORS 756.010(4), (5):

> "(4) 'Environmental justice' means equal protection from environmental and health hazards and meaningful public participation in decisions that affect the environment in which people live, work, learn, practice spirituality and play.
>
> (5) 'Environmental justice communities' includes communities of color, communities experiencing lower incomes, tribal communities, rural communities, coastal communities, communities with limited infrastructure and other communities traditionally underrepresented in public processes and adversely harmed by environmental and health hazards, including but not limited to seniors, youth and persons with disabilities."

Q. Did Staff reach any initial conclusions regarding environmental justice issues?

A. Yes, Staff found that several environmental justice communities, including communities of color and low-income, rural, and tribal communities, may be

[1] Oregon Laws 2022, Chapter 58, Section 11.

affected by construction and operation of the proposed B2H line. Staff now seeks further information to better understand the potential effects on each community, as well as the mitigation actions Idaho Power may be taking or be required to take. Staff will consider additional discovery and the testimony of other parties, before providing a comprehensive summary of environmental justice issues in rebuttal testimony.

Q. Please describe the process employed by Staff to gather information relevant to environmental justice considerations?

A. Staff gathered information relevant for the Commission to evaluate environmental justice considerations through the issuance of data requests, Data Requests Nos. 44-54, to Idaho Power Company (Idaho Power). Staff's focus is gathering information about environmental justice impacts and planned mitigation measures to support the Commission's evaluation. Staff drafted these data requests to directly include environmental justice considerations in this docket, as discussed in Docket No. AR 626, the docket in which the Commission adopted amendments to the CPCN petition requirements in OAR 860-025-0030.

In Order No. 22-351, the Commission decline to adopt the recommendation that OAR 860-025-003(2)(c)(C) be modified to include specific environmental justice requirements. Instead, the Commission directed Staff to include environmental justice considerations as part of the standard data requests (SDRs) for CPCN petitions. The CPCN statute already requires the Commission to evaluate the public interest aspect of all criteria, and which the

Commission has specifically expressed in OAR 860-025-0035(1)(d) as the interests of all Oregonians. By considering responses to requests for information about environmental justice analyses, Staff, and ultimately the Commission, may better understand and develop inquiries relevant to specific petitions. Therefore, Staff issued data requests in this docket. Similar data requests may be approved as SDRs for use in future petitions.

Staff then reviewed Idaho Power's DR responses and filed attachments, including a portion of Bureau of Land Management's (BLM) 2016 Final Environmental Impact Statement (FEIS) detailing the BLM's National Environmental Policy Act (NEPA) review of environmental justice considerations, and two separate tables summarizing Idaho Power's community engagement regarding the siting and construction of the proposed Boardman to Hemingway transmission line (B2H line), and the demographics for the U.S. Census Bureau Tracts in Idaho Power's Oregon service area that are in the B2H line project area identified in the FEIS. Staff utilized relevant definitions and reviewed responses to better understand all potential environmental justice issues. Staff focused on the potential impacts as described by the FEIS, to best approximate how the B2H line may affect environmental justice communities.

Q. To Staff's knowledge are any environmental justice communities likely to be affected by construction or operation of the proposed transmission line?

A. Yes. Based on the information provided by Idaho Power, Staff has identified several environmental justice communities, as defined by ORS 756.010(5), that would likely be affected by the construction or operation of the B2H line. These communities include, but are not limited to, communities of color, as well as low-income, rural, and tribal communities.[2] Staff believes it is important to note that Oregon residents affected by the proposed B2H line could be a part of one or more environmental justice communities.

Q. Please describe the information on the potential impacts the proposed transmission line may have on the communities of color from the BLM's FEIS.

A. Staff's initial review of the potential impacts the proposed transmission line may have on the communities of color originates from information found in the FEIS provided by Idaho Power in response to Data Request No. 44 and Data Request No. 54's attachment summarizing the demographics for the U.S. Census Bureau Tracts in Idaho Power's Oregon service area that are in the B2H line project area identified in the FEIS.

Staff found that the FEIS contains relevant information on the potential impacts the proposed transmission line may have on the communities of color, with slight variations due to the difference between federal and Oregon standards, which are explained below. Staff believes it is also important to note that the information provided by Idaho Power, through the FEIS and data

[2] Staff notes each community identified may also include seniors, youth, and persons with disabilities. Particularly, based on participation in public comment and hearings, Staff emphasizes the presence of members of the senior community, who may be affected by the B2H line.

responses, is based on the six proposed B2H routes Idaho Power was considering in its initial project development. Staff does not currently have the ability to separate this aggregated data and pinpoint exact impacts for the route proposed in the CPCN petition.

Q. What are the findings from the BLM FEIS?

A. According to the BLM's FEIS, there are 1,553 Census Blocks within one mile of the six proposed B2H lines. Of the 1,553 Census Blocks, 40 Census Blocks were identified as minority environmental justice populations.[3] The FEIS states that minority Census Blocks are not expected to experience disproportionate impacts from the construction or operation of the B2H line, therefore, no further analysis was undertaken.[4]

Q. Is this sufficient to understand the effects of the B2H project on communities of color?

A. No. Due to the disproportionality standard applied by the BLM, Staff is currently unable to fully understand overall impacts to the communities of color. While the FEIS notes construction would likely include increases in local traffic, noise, and dust,[5] Staff is curious about the long-term impacts such as increased risk of fire,[6] noise transmitted from the B2H line, permanent loss of land, etc. Staff believes more information on the impacts felt by the communities of color when compared to all Oregonians would be relevant to evaluating effects on this

[3] Exhibit Staff/302, Lockwood/78, IPC response to DR 44, Attachment 4, FEIS 3-1963.
[4] Exhibit Staff/302, Lockwood/115, IPC response to DR 44, Attachment 3, FEIS 3-1980.
[5] Exhibit Staff/302, Lockwood/115, IPC response to DR 44, Attachment 3, FEIS 3-1980.
[6] Exhibit Staff/302, Lockwood/112, IPC response to DR 44, Attachment 3, FEIS 3-1977.

community. Staff further outlines future inquires and points of clarification below.

Q. Is there additional information that may inform consideration of the potential impacts on the communities of color?

A. Yes. Based on the received data responses from Idaho Power and the continued work in Docket No. PCN 5, Staff seeks additional information that may inform consideration of the potential impacts on the communities of color.

Staff will be seeking additional information on baseline impacts on the communities of color, and all environmental justice communities, beyond impacts deemed to be "disproportionate" by the BLM. Based on the FEIS information provided in response to Data Request No. 44, Staff finds that information to be geographically narrow in scope. Based on Staff's review of the FEIS, the BLM was tasked with determining if there are negative impacts, and if so, do the future negative impacts fall disproportionately on minority and/or low-income members of the community.[7] The BLM determined whether negative impacts disproportionately fall on environmental justice community members, when compared to other members of the same geographical community. Any disproportionate of impacts must be the difference between impacts on environmental justice members and non-environmental justice members of the same geographical community, to trigger further analysis.[8]

[7] Exhibit Staff/302, Lockwood/87, IPC response to DR 44, Attachment 1, FEIS 3-1962.
[8] Exhibit Staff/302, Lockwood/87, IPC response to DR 44, Attachment 1, FEIS 3-1962.

Staff seeks to identify members of environmental justice communities, regardless of how they are grouped into Census Blocks, to better understand the extent of impacts. Staff also will seek information regarding whether anyone along the proposed B2H line is a member of multiple environmental justice communities and is feeling amplified impacts. For example, if community member along the line is a member of both the rural and low-income communities, they may feel amplified impacts from the proposed B2H line. Staff will also seek additional information from Idaho Power regarding mitigation efforts for communities of color, and all affected environmental justice communities.

Staff recognizes that in addition to discovery responses, Idaho Power may also provide additional information in its reply testimony, and Staff welcomes any future input to outline and understand environmental justice issues associated with the CPCN petition.

Q. Please describe the available information on the low-income community that may be affected by B2H.

A. Staff's information on the low-income community originates from information found in the FEIS and the summaries of the U.S. Census Bureau Tracts in Idaho Power's Oregon service area.

The FEIS defines environmental justice communities as one that has a greater percentage of minority or low-income populations than the identified reference community. Low-income populations are defined as those individuals

that are considered living below poverty levels.[9] In 2010, the U.S. Census Bureau determines poverty level thresholds for individuals and a family of four as annual income levels below $11,139 and $22,314, respectively.[10]

Utilizing the methods discussed above for the communities of color, the BLM's FEIS found four Census Block Groups along the various routes that meet the low-income definition.

Q. Please describe the available information on the potential impacts the proposed transmission line may have on the low-income community.

A. In the FEIS, similar to the communities of color analysis, despite impacts during construction, the BLM found that no communities experience disproportionate impacts.[11] Therefore, no further analysis was completed. The FEIS does, however, allude to some negative impacts that will be felt by the low-income community, including potential loss of revenue to the agricultural, and recreation and tourism industries,[12] as well as potential decrease in property value and permanent loss of land.[13] And while the FEIS does not provide specific information on how the negative impacts will be felt by the low-income community directly,

Staff seeks additional information on those impacts, when compared to all Oregonians. Staff further outlines future inquires and points of clarification below.

[9] Exhibit Staff/302, Lockwood/87, IPC response to DR 44, Attachment 1, FEIS 3-1962.
[10] Exhibit Staff/302, Lockwood/87, IPC response to DR 44, Attachment 1, FEIS 3-1962.
[11] Exhibit Staff/302, Lockwood/115, IPC response to DR 44, Attachment 3, FEIS 3-1980.
[12] Exhibit Staff/302, Lockwood/13, IPC response to DR 44, Attachment 2, FEIS 3-1949.
[13] Exhibit Staff/302, Lockwood/113, IPC response to DR 44, Attachment 3, FEIS 3-1978.

Q. Is there additional information that may inform consideration of the potential impacts on the low-income community?

A. Yes. Based on the data responses from Idaho Power and the continued work in Docket No. PCN 5, Staff seeks additional information that may inform consideration of the potential impacts on the low-income community. As discussed previously, Staff, through discovery, will seek additional information to better understand all expected impacts felt by the low-income community.

Q. Does the FEIS include rural communities in its assessment of environmental justice impacts?

A. No. Unlike ORS 756.010(5), the EPA and BLM do not define rural communities as environmental justice communities for the purpose of their analysis, therefore, the FEIS does not provide a detailed, focused analysis of potential impacts to the rural community surrounding the B2H line. Idaho Power mentions this difference in definition in its response to Data Request No. 44 and explains that the FEIS does still analyze the impacts to important elements of communities not specifically mentioned in the FEIS.[14]

Q. What does Staff consider a "rural community" for purposes of environmental justice?

[14] Exhibit Staff/302, Lockwood/2, IPC response to DR 44, footnote 8.

A. ORS 756.010(5) does not specifically define "rural community". However, under certain definitions used by other state agencies, all communities surrounding the B2H line could be considered rural communities.[15]

Q. Does the FEIS identify similar rural communities along the proposed transmission line route?

A. Yes. The FEIS describes the communities that surround the proposed B2H line as rural and notes that agriculture, livestock grazing, and timber industries play a large role in the economy.[16] For example, the FEIS states that, "[f]arming and ranching continue to be a way of life in the Eastern Pacific Northwest, and the region's rich soils and weather allow it to be an integral part of the local economy, and grow a significant share of the nation's wheat, potatoes, apples, and pears."[17] The farming sector supports approximately 9,700 jobs in the six counties, accounting for nearly 11 percent of total employment.[18] With approximately 48 percent of these jobs being held by self-employed properties and a large portion of the agricultural production coming from family farms.[19]

Q. What impacts were identified by the BLM's FEIS that the proposed transmission line may have on that rural community?

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[15] The Oregon Office of Rural Health Geographic Definitions define rural communities as "any geographic areas in Oregon ten or more miles from the centroid of a population center of 40,000 people or more.", https://www.ohsu.edu/oregon-office-of-rural-health/about-rural-and-frontier-data#:~:text=Rural%20as%20any%20geographic%20areas%20in%20Oregon%20ten,identified%2010%20of%20Oregon%E2%80%99s%2036%20counties%20as%20frontier.
[16] Exhibit Staff/302, Lockwood/11, IPC response to DR 44, Attachment 2, FEIS 3-1947.
[17] Exhibit Staff/302, Lockwood/9, IPC response to DR 44, Attachment 2, FEIS 3-1945.
[18] Exhibit Staff/302, Lockwood/10, IPC response to DR 44, Attachment 2, FEIS 3-1946.
[19] Exhibit Staff/302, Lockwood/11, IPC response to DR 44, Attachment 2, FEIS 3-1947.

A. The FEIS identified the proposed B2H line's impacts on key sectors including irrigated agriculture, confined animal feeding operations (CAFOs), livestock grazing, timber resources, and property values, all of which are likely to directly impact rural communities, for example:

- Agricultural production losses could range from $10,100 in Segment 2, the Blue Mountains Segment in Union County, to, $266,000 to $666,400 during construction, with an additional $83,000 to $177,000 in losses annually during operations, in Segment 1, Morrow to Umatilla.[20]
- The project would impact several CAFOs, all located in Segment 1, Morrow to Umatilla, potentially causing the CAFOs to close due to increased difficulty in the operations' ability to remain environmentally compliant and financially viable.[21]
- Overall federal forging losses would range from small to moderate, with the largest impact to federal forging in Baker County.[22]
- The project could have mixed impacts on timber resources, with relatively large impacts in Union County[23], and smaller impacts in Baker County[24] and Malheur County[25].
- Individual residential property value impacts would be highly variable and greatly depend on the route selected and construction methods.

[20] Exhibit Staff/302, Lockwood/46, IPC response to DR 44, Attachment 3, FEIS 3-1990.
[21] Exhibit Staff/302, Lockwood/47, IPC response to DR 44, Attachment 3, FEIS 3-1991.
[22] Exhibit Staff/302, Lockwood/64, IPC response to DR 44, Attachment 3, FEIS 3-2008.
[23] Exhibit Staff/302, Lockwood/133, IPC response to DR 44, Attachment 3, FEIS 3-1998.
[24] Exhibit Staff/302, Lockwood/64, IPC response to DR 44, Attachment 3, FEIS 3-2008.
[25] Exhibit Staff/302, Lockwood/155, IPC response to DR 44, Attachment 3, FEIS 3-2020.

Staff notes again that the information provided by the FEIS summarizes the impacts of various proposed routes and may also be slightly out of date. The FEIS states that while the adverse economic impacts noted may be small in the context of the greater regional economy, they may be of greater importance to local communities directly impacted.[26]

Q. How would Staff summarize the impact to the farming sector described in the FEIS?

A. Based on the summarized impacts to the farming sector, it is clear to Staff that the B2H transmission line may have negative impacts on the rural community. Due to the discussed potential impacts above, Staff is reviewing the Energy Facility Siting Council's Final Order Approving the Application for Site Certificate with its conditions, and consider other steps taken by Idaho Power that may mitigate the detailed effects. Staff will address any relevant information on mitigation in rebuttal testimony.

Q. Does the FEIS include information on the effects of the proposed transmission line on the tribal community.

A. Not directly. Unlike ORS 756.010(5), the EPA and BLM do not define tribal communities as environmental justice communities for the purposes of their analysis, therefore, the FEIS does not provide a detailed, focused analysis of potential impacts to the tribal community surrounding the B2H line. While tribal communities were not considered environmental justice communities

[26] Exhibit Staff/302, Lockwood/126, IPC response to DR 44, Attachment 3, FEIS 3-1991.

warranting further analysis by the EPA and BLM in the FEIS, the FEIS provides Staff with useful information regarding potential impacts.

Q. Please describe the available information on the potential effects of the proposed transmission line on the tribal community.

A. Idaho Power, in its response to DR 44, and the FEIS note that only the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have ceded lands in the B2H project area, and that the BLM consulted with the CTUIR and considered the conditions needed to satisfy all rights reserved by the tribe through treaty. However, several other tribes consider portions of, or the entirety of, the B2H project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence.[27] These tribes include the Shoshone-Paiute of the Duck Valley Indian Reservation, the Burns Paiute, the Confederated Tribes of the Warm Springs Indian Reservation, the Fort McDermitt Paiute and Shoshone Tribes, the Nez Perce, the Confederated Tribes of the Colville Reservation, the Yakama Nation, and the Shoshone-Bannock of the Fort Hall Reservation.[28]

Construction and operation of the B2H line may both temporarily and permanently impact members of the tribal communities in several ways. First, construction may restrict access to such areas described above, where members of the tribal communities may procure subsistence resources such as gathered plants, small and large game, and fish.[29] Second, noise and human-

[27] Exhibit Staff/302, Lockwood/14, IPC response to DR 44, Attachment 2, FEIS 3-1950.
[28] Exhibit Staff/302, Lockwood/14, IPC response to DR 44, Attachment 2, FEIS 3-1950.
[29] Exhibit Staff/302, Lockwood/15, IPC response to DR 44, Attachment 2, FEIS 3-1951.

activity during construction may disturb native animals, adversely impacting wildlife-related sustenance activities. Third, from an economic perspective, many tribal families may rely on fishing, hunting, and gathering of wild plants to sustain viable communities and promote cohesiveness, pride, and sharing.[30] These lands also hold a plethora of non-monetary value for tribal communities based on each tribe's unique history and heritage. Lastly, operation of the B2H line may restrict access to certain areas of the project as well as result in both permanent and temporary changes to vegetation or disruption to game populations.[31]

Q. Is there additional information that may inform consideration of the potential impacts on the tribal community?

A. Yes. Based on the data responses from Idaho Power and the continued work in Docket No. PCN 5, Staff seeks additional information that may inform consideration of the potential impacts on the tribal community.

Staff will seek in discovery additional information regarding Idaho Power's outreach to tribal communities who consider portions of, or the entirety of, the B2H project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence. In its response to Data Request No. 52 and corresponding attachment, Idaho Power summarizes the Company's community engagement, though not specifically with members of tribal

[30] Exhibit Staff/302, Lockwood/15, IPC response to DR 44, Attachment 2, FEIS 3-1951.
[31] Exhibit Staff/302, Lockwood/14, IPC response to DR 44, Attachment 2, FEIS 3-1950.

communities. The only tribal government Idaho Power included in its community engagement appears to be CTUIR.

Q. Does this conclude your testimony?

A. Yes.

CASE: PCN 5
WITNESS: CHARLES LOCKWOOD

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 301

Witness Qualifications Statement

January 17, 2023

WITNESS QUALIFICATIONS STATEMENT

NAME: Charles Lockwood

EMPLOYER: Public Utility Commission of Oregon

TITLE: Utility Analyst
Utility Strategy and Integration Division

ADDRESS: 201 High Street SE. Suite 100
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EDUCATION: University of Florida
Bachelor of Science in Environmental Science, 2019

University of Oregon
Juris Doctor, 2022
Concentrations in Green Business Law, Environmental and Natural Resources Law

EXPERIENCE: Oregon Public Utility Commission
Administrative Hearings Division Law Clerk, 2021-2022

Oregon Public Utility Commission
Utility Analyst, 2022 - Present

CASE: PCN 5
WITNESS: CHARLES LOCKWOOD

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 302

Exhibits in Support
Of Opening Testimony

January 17, 2023

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 44:

Please list and describe all analyses and activities related to or inclusive of environmental justice considerations that the Company has completed related to the proposed Boardman to Hemingway transmission line (B2H project) including any and all routes considered for the line at any time. Please specify in the response which, if any, were done as a requirement for a state or federal agency. Include all available publications and work papers as attachments.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 44.

Environmental justice considerations were addressed directly in the Bureau of Land Management's ("BLM") National Environmental Policy Act ("NEPA") review process and indirectly through the Energy Facility Siting Council's ("EFSC") Public Services Standard.

Federal Environmental Justice Analysis

At the federal level, environmental justice concerns are addressed primarily through implementation of Executive Order 12898 and consideration of socioeconomic impacts in the agencies' NEPA review processes. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human-health or environmental effects of its programs, policies, and activities on minority and low-income populations. Executive Order 12898 also requires that the agencies conduct their programs and activities in a manner that does not exclude persons from participation because of their race, color, or national origin. Furthermore, agencies' Environmental Impact Statements may include analysis of socioeconomic impacts on local communities, which incorporates elements of environmental justice analysis. For the Boardman to Hemingway ("B2H") project, environmental justice concerns[1] were thoroughly addressed in BLM's Final Environmental Impact Statement.[2]

BLM's environmental justice assessment involved an analysis of whether minority and low-income populations (i.e., populations of concern) would be affected by the B2H project and whether they would experience adverse impacts from the B2H project.[3] If there were negative impacts, the severity and proportion of the impacts on populations of concern would be assessed in comparison to the larger majority population or populations not classified as low-income or minority. At issue was "whether such negative impacts fall disproportionately on minority and/or low-income members of the community and, if so, whether they meet the threshold of disproportionately high and adverse. If disproportionately high and adverse effects

[1] As discussed below in footnote 8, the BLM's environmental justice analysis focused on minority and low-income populations, and did not apply the definition of "environmental justice communities" in ORS 765.010.
[2] See BLM Final Environmental Impact Statement (Nov. 25, 2016) ("FEIS"). Due to the volume of the FEIS, Idaho Power has not included a copy with this response but has included as attachments the excerpts from the FEIS referenced later in this response.
[3] BLM FEIS at p. 3-1962, see Attachment 1.

are evident, EPA guidance advises consideration of alternatives and mitigation actions in coordination with extensive community outreach efforts."[4]

A "community with potential environmental justice populations" was defined as "one that has a greater percentage of minority or low-income populations than does an identified reference community."[5] Minority populations are those populations having "(1) 50 percent minority population in the affected area or (2) a significantly greater minority population than the reference area."[6] For the B2H project, a conservative approach was used to identify potential environmental justice populations by "assum[ing] that if the affected area minority and/or poverty status populations are more than 10 percentage points higher than those of the reference area, there is likely an environmental justice population of concern."[7] "Minority" populations included all racial groups other than white, not Hispanic or Latino. "Low-income" populations were defined as those individuals considered living below poverty levels, which the U.S. Census Bureau defined as $11,139 and $22,314 for individuals and families of four, respectively.[8]

Minority Populations

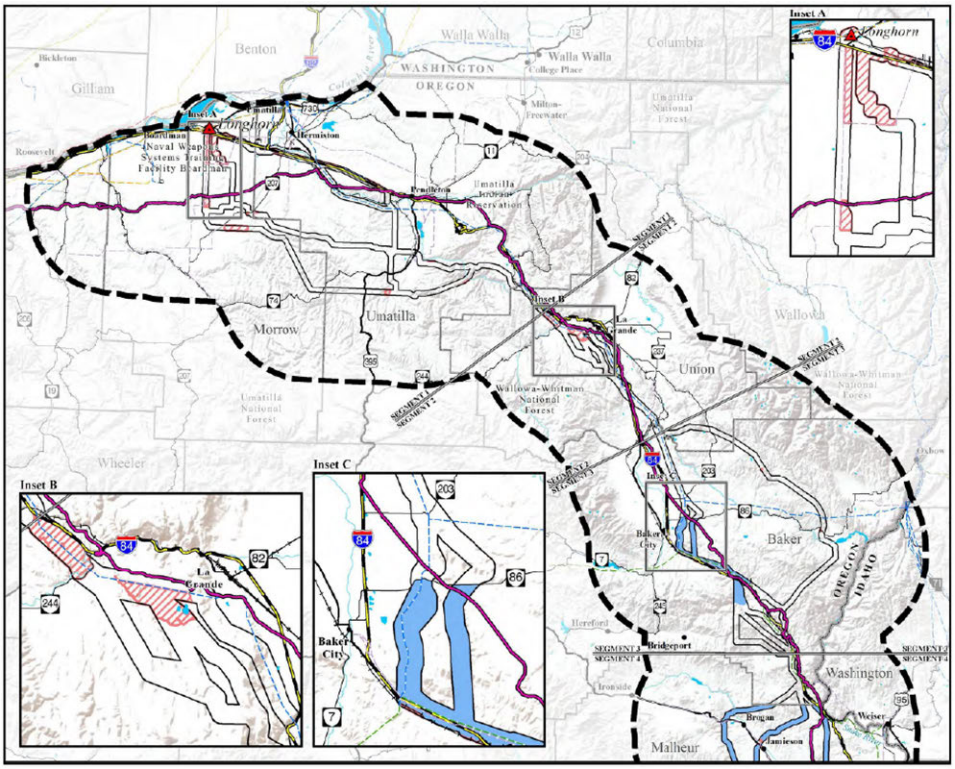
Potential environmental justice minority populations are shown in Table 3-574 and Maps 3-10a and 3-10b below.[9]

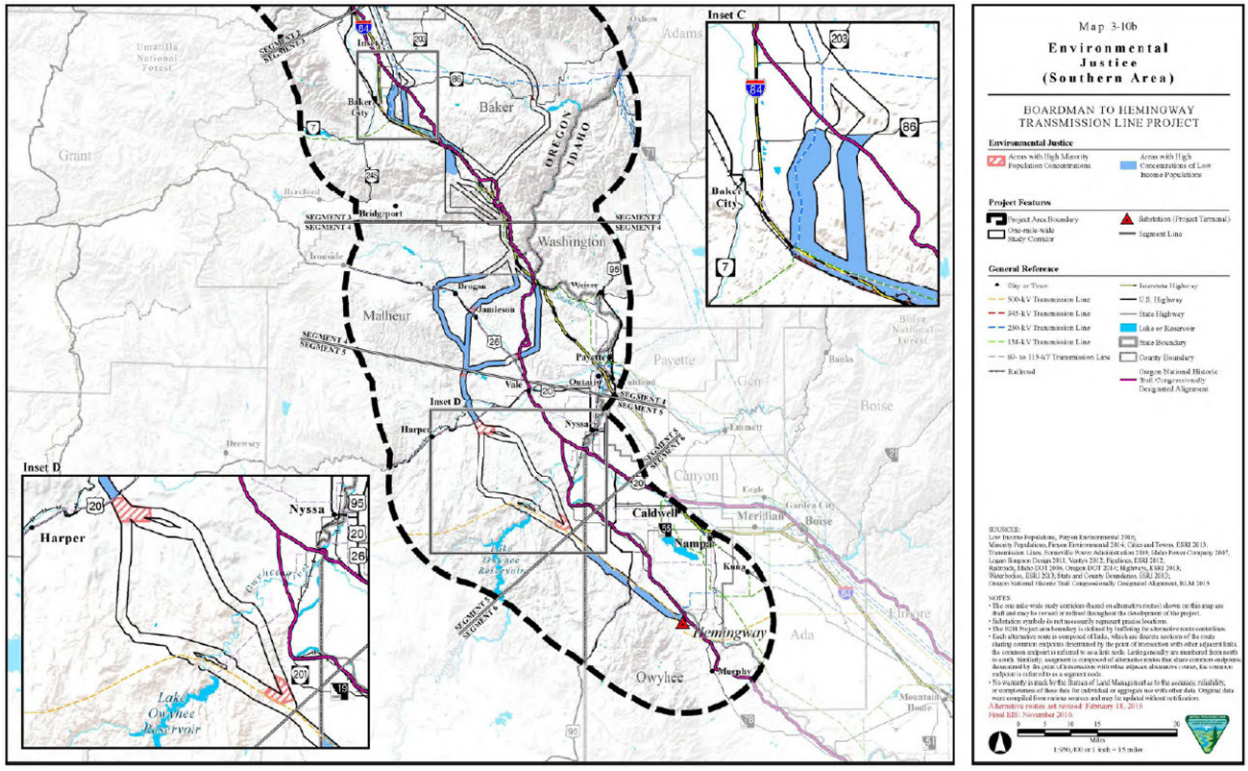
[4] Please see Attachment 1.
[5] Please see Attachment 1.
[6] Please see Attachment 1.
[7] Please see Attachment 1.
[8] BLM and EPA's definition of "environmental justice communities" differs from that in ORS 756.010, and therefore, BLM's environmental justice analysis did not directly address certain communities that were included in the ORS 75.010 definition, including communities of color, rural communities, coastal communities, communities with limited infrastructure, seniors, youth and persons with disabilities. Even so, the FEIS does analyze the impacts to important elements of those remaining communities, including agriculture, livestock grazing, timber resources, outdoor recreation and tourism, housing, RV parks, waste management, emergency services, health care, and schools. *See* BLM FEIS at pp. 3-1945 through 3-1961 (see also Attachment 2) and 3-1970 through 3-2021 (see also Attachment 3).
[9] BLM FEIS at pp. 3-1963 through 3-1967 (see Attachment 4).

Table 3-574. Environmental Justice Information for Minority Populations in the B2H Study Area, States, and Counties

Area	Total Population	Minority Population[1]	Percent Minority Population[1]	Threshold to Determine Environmental Justice Population	Number of Census Blocks	Number of Populated Census	Number of Census Blocks with Minority Populations Greater than Reference Community
Idaho	1,609,083	267,256	17	27	0	0	0
Owyhee County, Idaho	11,805	3,790	32	42	115	18	0
Oregon	3,988,866	880,980	22	32	0	0	0
Baker County, Oregon	16,529	1,248	8	18	526	69	9
Malheur County, Oregon	32,250	11,928	37	47	222	48	8
Morrow County, Oregon	11,484	4,102	36	46	116	25	7
Umatilla County, Oregon	78,359	24,361	31	41	343	95	14
Union County, Oregon	26,389	2,518	10	20	231	32	2
				Total	**1,553**	**287**	**40**

Table Note: [1]Minority population includes all racial groups other than white, not Hispanic or Latino.





Low-Income Populations

Table 3-576 summarizes the county and state poverty populations in the B2H project area.[10] Of the 28 Census Block Groups within the B2H project area, three Census Block Groups in Oregon meet the U.S. Census definition of a poverty area: (1) Block Group 2, Census Tract 9503, Baker County, Oregon; (2) Block Group 3, Census Tract 9709, Malheur County, Oregon; and (3) Block Group 2, Census Tract 9504, Umatilla County, Oregon.

[10] BLM FEIS at pp. 3-1969 through 3-1970 (see also Attachment 5).

Table 3-576. Environmental Justice Information for Low-Income Populations		
Area	**Percentage of Low-Income Households**	**B2H Project Segment**
Idaho	**12**	–
Owyhee County, Idaho	**21**	–
Block Group 1, Census Tract 9501.01, Owyhee County, Idaho	17	Segment 6—Treasure Valley
Block Group 2, Census Tract 9501.02, Owyhee County, Idaho	16	Segment 6—Treasure Valley
Block Group 1, Census Tract 9502, Owyhee County, Idaho	**24**	Segment 6—Treasure Valley
Oregon	**13**	–
Baker County, Oregon	**19**	–
Block Group 2, Census Tract 9503, Baker County, Oregon	**30**	Segment 3—Baker Valley
Block Group 3, Census Tract 9503, Baker County, Oregon	19	Segment 3—Baker Valley
Block Group 1, Census Tract 9505, Baker County, Oregon	16	Segment 3—Baker Valley
Block Group 3, Census Tract 9506, Baker County, Oregon	18	Segment 3—Baker Valley
Malheur County, Oregon	**21**	–
Block Group 2, Census Tract 9706, Malheur County, Oregon	13	Segment 4—Brogan
Block Group 3, Census Tract 9709, Malheur County, Oregon	**20**	Segment 4—Brogan
Block Group 1, Census Tract 9707, Malheur County, Oregon	15	Segment 5—Malheur
Block Group 2, Census Tract 9709, Malheur County, Oregon	14	Segment 5—Malheur
Morrow County, Oregon	**11**	–
Block Group 2, Census Tract 9701, Morrow County, Oregon	19	Segment 1—Morrow-Umatilla
Block Group 5, Census Tract 9701, Morrow County, Oregon	8	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9702, Morrow County, Oregon	10	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9702, Morrow County, Oregon	9	Segment 1—Morrow-Umatilla
Block Group 6, Census Tract 9702, Morrow County, Oregon	12	Segment 1—Morrow-Umatilla
Umatilla County, Oregon	**14**	–
Block Group 2, Census Tract 9400, Umatilla County, Oregon	18	Segment 1—Morrow-Umatilla
Block Group 2, Census Tract 9504, Umatilla County, Oregon	**22**	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9505, Umatilla County, Oregon	6	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9511, Umatilla County, Oregon	17	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9513, Umatilla County, Oregon	1	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9513, Umatilla County, Oregon	11	Segment 1—Morrow-Umatilla
Block Group 4, Census Tract 9513, Umatilla County, Oregon	12	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9514, Umatilla County, Oregon	12	Segment 1—Morrow-Umatilla
Block Group 2, Census Tract 9514, Umatilla County, Oregon	14	Segment 1—Morrow-Umatilla
Union County, Oregon	**17**	–
Block Group 3, Census Tract 9702, Union County, Oregon	11	Segment 2—Blue Mountains
Block Group 1, Census Tract 9706, Union County, Oregon	13	Segment 2—Blue Mountains
Block Group 2, Census Tract 9706, Union County, Oregon	7	Segment 2—Blue Mountains

Native American Tribes

Several Native American tribes potentially would be impacted by the B2H project. The Confederated Tribes of the Umatilla Indian Reservation are the only tribe with ceded lands in the B2H project area, however, several other tribes consider portions of, or the entirety of, the B2H project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence, including the Shoshone-Paiute of the Duck Valley Indian Reservation, the Burns Paiute, the Confederated Tribes of the Warm Springs Indian Reservation, the Fort

McDermitt Paiute and Shoshone Tribes, the Nez Perce, the Confederated Tribes of the Colville Reservation, the Yakama Nation, and the Shoshone-Bannock of the Fort Hall Reservation.[11]

Environmental Consequences

After the locations of the environmental justice populations were identified, all adverse effects were considered to determine whether the B2H project had the potential to have a "disproportionately high and adverse" impact (human health or environmental effect) to those populations.[12] Impacts assessed for the B2H project included cumulative and multiple impacts, and were evaluated to determine which, if any, disproportionately and adversely affect those populations.

The analysis showed that environmental justice populations are not expected to experience disproportionate impacts from the construction or operation of the B2H project, with BLM explaining:

> The data suggest the B2H project would cross Census Block Groups that could be considered minority or low-income communities. However, construction of the B2H project is not expected to have high and adverse human-health or environmental effects on nearby communities. Construction-related impacts would likely include increases in local traffic, noise, and dust which could result in temporary delays at some highway crossings. Construction workers temporarily relocating to the B2H project area would increase demand for local housing resources. These impacts would be temporary and localized and are not expected to be high.
>
> Construction also would temporarily increase the demand for education, health care, and municipal services, as well as potentially increase the demand for police and fire-protection services. However, these impacts would not measurably affect the quality of services currently received by local communities and residents.
>
> The Proposed Action does not cross any Native American reservations but is located near the Umatilla Indian Reservation.[13]

EFSC Public Services Standard

Under the Public Services Standard, EFSC must find that construction and operation of the facility, taking into account mitigation, is not likely to result in significant adverse impacts on the ability of public and private providers to provide public services.[14] The public services identified by EFSC are as follows: sewers and sewage treatment, water, storm-water drainage, solid-waste management, housing, traffic safety, police and fire protection, health care, and schools.

In its Final Order approving the site certificate for the B2H project, EFSC concluded that the B2H project is not likely to result in significant adverse impact to the ability of public and private

[11] BLM Final EIS at p. 3-1950 (see also Attachment 6).
[12] BLM FEIS at p. 3-1971 (see also Attachment 7).
[13] BLM FEIS at pp. 3-1980 through 3-1981 (see also Attachment 8).
[14] OAR 345-022-0110(1).

providers to provide public services, and therefore, the B2H project complies with the Public Services Standard.[15] While the EFSC analysis was not focused specifically on environmental justice concerns, the Council's conclusion that the B2H project will not impact service providers' ability to deliver their services applies equally to all communities, including environmental justice communities.

Routes Considered

Information on "any and all routes considered for the line at any time" is set out in the Company's Response to Staff's Data Request No. 60, where Idaho Power summarizes the decade-plus-long siting process and identifies the several siting studies that describe the numerous routes considered along the way.

[15] EFSC Final Order (Sept. 27, 2022), included as Attachment 1 to Idaho Power's Supplement to its Petition filed on October 7, 2022.

Address Environmental Justice in Minority Populations and Low-Income Populations issued in 1994 by President Clinton (Executive Order 12898, 1994). The Executive Order was signed by President Clinton on February 11, 1994; it directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Executive Order is in response to Title VI of the Civil Rights Act of 1964 which states "No person in the U.S. shall, in the grounds of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."

An environmental justice assessment requires an analysis of whether minority and low-income populations (i.e., populations of concern) would be affected by a proposed federal action and whether they would experience adverse impacts from the Proposed Action. If there are negative impacts, the severity and proportion of these impacts on populations of concern must be assessed in comparison to the larger majority population or populations not classified as low-income or minority. At issue is whether such negative impacts fall disproportionately on minority and/or low-income members of the community and, if so, whether they meet the threshold of disproportionately high and adverse. If disproportionately high and adverse effects are evident, EPA guidance advises consideration of alternatives and mitigation actions in coordination with extensive community outreach efforts (EPA 1998).

The EPA defines a community with potential environmental justice populations as one that has a greater percentage of minority or low-income populations than does an identified reference community. Minority populations are those populations having (1) 50 percent minority population in the affected area or (2) a significantly greater minority population than the reference area (EPA 2016). The EPA has not specified any percentage of the population that can be characterized as "significant" to define environmental justice populations. Therefore, for the purposes of this analysis, a conservative approach is used to identify potential environmental justice populations. It is assumed that if the affected area minority and/or poverty status populations are more than 10 percentage points higher than those of the reference area, there is likely an environmental justice population of concern.

For this analysis, minority includes all racial groups other than white, not Hispanic or Latino. For the year 2010, low-income populations were defined as those individuals that are considered living below poverty levels. The U.S. Census Bureau defines poverty level thresholds for individuals and a family of four as income levels below $11,139 and $22,314, respectively (U.S. Census Bureau 2012b).

To identify the presence of potential environmental justice populations residing in proximity to the B2H Project alternative segments, it is necessary to create an affected area for a smaller geographic area than that of the defined socioeconomic study area. Populations are analyzed at the 2010 U.S. Census Block and Census Tract level located within one mile of the six B2H Project segments. The minority environmental justice analysis is undertaken at the Census Block level, which allows an assessment of only the racial and ethnicity characteristics of the populations. Poverty information is only available at the Census Tract level of analysis for 2010. The populations located in these Census Blocks and

Specialization

Highly specialized economies (i.e., those that depend on a few industries for the bulk of employment and income) are more prone to cyclical fluctuations and generally support fewer economic opportunities. Communities have been identified as being specialized with respect to employment using a ratio of local employment in each industry in a region of interest relative to the percent of employment in that industry for a larger reference area. When local employment in a given industry accounts for a larger proportion of total employment than in the broader reference region, local employment specialization exists in that industry (USFS 1998).

Applying this criterion to employment data for the B2H Project socioeconomic study area reveals that the region was slightly more specialized with respect to non-services related industries When compared to the broader U.S. economy, non-services related sectors supported a larger proportion (+3.3 percent) of local employment opportunities. Employment specialization in non-services related sectors were concentrated in industries that directly relied on the region's natural resources, natural resources and Mining (+1.8 percent) and agriculture, forestry, fishing and hunting (+1.6 percent) (BEA 2015). Specialization in these natural resource based activities is further discussed in detail below.

Agriculture

Farming and ranching continue to be an integral part of the economy, environment and way of life in Eastern Pacific Northwest. The region's rich soils, moderate rainfall, and mild winters make it one of the most ecologically rich farming areas in the U.S.; and enable it to grow a significant share of the nation's wheat, potatoes, apples and pears (USDA 2012). At the time of the most recent Census of Agriculture, there were 60,255 farms producing agricultural products on more than 28 million acres of land across Oregon and Idaho (USDA 2012). Cash receipts for agricultural products produced in these states exceeded $13.9 billion in 2014 (BEA 2014).

Agricultural production is prevalent in all six of the counties that the B2H Project would cross. Farm counts and acreage estimates for each county, as reported in the 2012 Census of Agriculture, are shown below in Table 3-559. In 2012 there were 5,169 farms producing fruit and vegetable crops, grains, forage, and livestock on more than 5.4 million acres across the six counties. Approximately 12.5 percent of which, were high-value irrigated crop and pasture lands (USDA 2012).

Table 3-559. Number of Farms and Land in Farms (Acres), 2012					
Area	Number of Farms	Total Cropland[1] (Acres)	Irrigated Land (Acres)	Total Land in Farms (Acres)	Percent of Land Base in Farms
Morrow County, Oregon	401	486,433	65,637	1,165,126	89.6
Umatilla County, Oregon	1,603	769,670	147,844	1,308,312	63.6
Union County, Oregon	829	119,224	49,049	411,671	31.6
Baker County, Oregon	645	107,531	100,898	710,789	36.2
Malheur County, Oregon	1,113	204,769	183,003	1,076,768	17
Owyhee County, Idaho	578	140,719	133,530	748,771	15.3
B2H Project Area	5,169	1,828,346	679,961	5,421,437	30.4

Table Source: USDA 2012.
Table Note: [1]Total cropland (both irrigated and nonirrigated land) includes five components: cropland harvested, crop failure, cultivated summer fallow, cropland used only for pasture, and idle cropland.

Agricultural production in these counties was collectively valued at $1.8 billion in 2014 (BEA 2014). The majority of cash receipts were collected on agricultural goods produced in Umatilla, Morrow, and Malheur counties – three of Oregon's top Agribusiness counties. In addition to commodity cash receipts, farm income often includes government payments and other farm-related income. Once production expenses are factored in 2014 net farm income for the six-county area shrank to $236 million (Table 3-560). The large variance between farm cash receipts and net income illustrates how profit margins for agricultural producers can be tight, especially for smaller scale operators.

Table 3-560. Farm Business Income, 2014 (thousands of 2014 dollars)					
Area	Cash Receipts		Other Income		Net Income
	Livestock and Products	Crops	Government Payments	Imputed Rent and Miscellaneous Income	
Morrow County, Oregon	504,448	133,472	13,942	29,255	107,780
Umatilla County, Oregon	71,299	305,907	14,250	87,334	20,529
Union County, Oregon	24,720	39,529	2,650	15,368	3,483
Baker County, Oregon	69,491	32,937	6,062	12,700	5,029
Malheur County, Oregon	244,275	110,596	11,094	37,248	13,263
Owyhee County, Idaho	263,103	58,889	3,762	10,809	76,066
B2H Project Area	**1,177,336**	**681,330**	**51,760**	**192,714**	**236,150**

Table Source: BEA 2014.

The farm sector supported approximately 9,700 jobs[5] and accounted for nearly 11 percent of total employment across these six counties in 2014 (BEA 2014). Approximately 48 percent of these jobs were held by self-employed proprietors who worked (full and part-time) as non-corporate farm operators. The larger share of regional farm employment was supported by hired farm laborers who may have worked full-time or part-time throughout the year. In 2014, hired farm workers within these six counties earned $32,344 on average, with workers involved in animal production making about $7,000 on average annually more than their counterparts in crop production (BLS 2015).

[5]These employment figures include sole proprietors, partners, and hired full-time and part-time farm laborers.

Much of agricultural production in the U.S. continues to come from family farms where production is highly seasonal and much of the labor is provided by unpaid family workers. Farming households often draw a significant portion of their income from off-farm sources and reallocate various family members' time to tasks on the farm throughout the year. A previous agriculture study estimated that unpaid family labor might provide nearly two-thirds of the labor inputs required by the agricultural sector (Kandel 2008). When the employment statistics discussed above are considered alongside contributions of unpaid family workers, the farm sector is revealed to play a much larger role in the rural communities that surround the proposed B2H Project.

Timber

The cool temperate climate of the Pacific Northwest creates ideal soil conditions for forested lands that produce high quality timber and forest products. Oregon has historically been divided into two major wood-producing regions, Western and Eastern. The Eastern Region is comprised of two resource areas, which encompass all counties east of the crest of Cascade Range. Percentages of forested lands within each Eastern Region county are illustrated in the figure below (Figure 3-7).

The B2H Project area is within the Blue Mountain Resource Area, which bisects the region from north to south along Morrow, Grant, and Harney counties. This resource area makes up about 21 percent of eastern Oregon and is almost 65 percent forested lands. Viable commercial timber species in the Blue Mountain area include ponderosa pine, lodgepole pine, Douglas-fir, western juniper, white or grand fir, and quaking aspen. Although the area is heavily forested, only a portion of these lands are classified as timberlands who produce, or are capable of producing, more than 20 cubic feet per acre per year of industrial wood crops under natural conditions (USDA 2004).

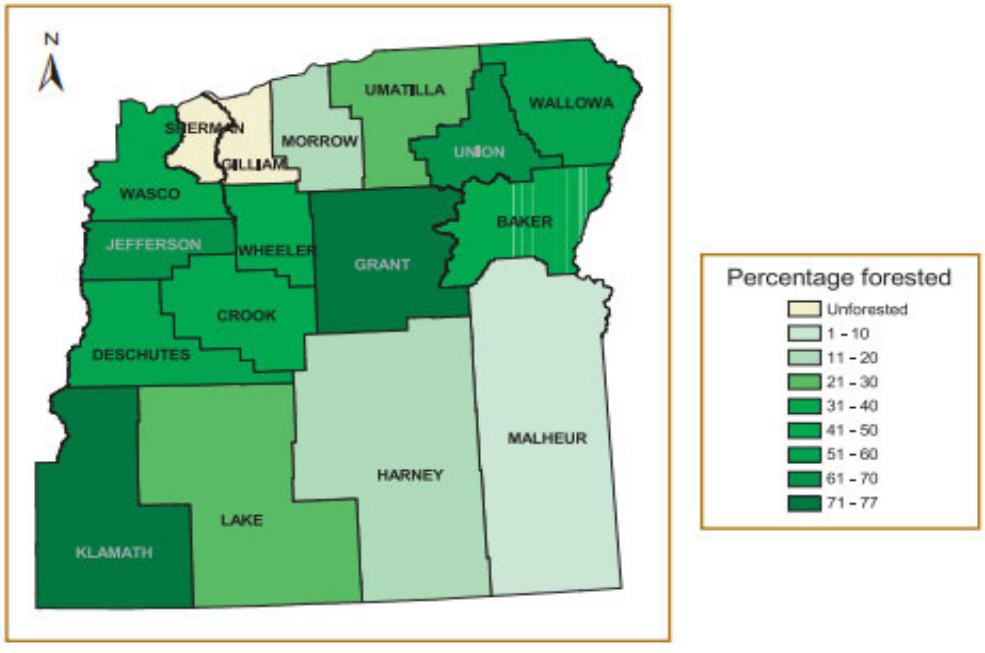


Figure Source: USDA 2004.

Figure 3-7. Percent of Forested in Eastern Oregon Land by County

Firms in the forestry and logging subsector grow and harvest timber on a long production cycle, generally 10 years or more. Since timber production requires natural forests or suitably large areas of land that are available long term, regional timber harvests occur on a combination of federal and state public lands, tribal lands, and private lands managed for timber. Between 2003 and 2009, timber harvests in the B2H Project area accounted for 2.4 percent to 3.2 percent of annual state harvests during these years. Like other regions in the Pacific Northwest, timber harvests in the Blue Mountain region have been declining. In 2005, annual harvests within the B2H Project's socioeconomic study area totaled 136 million board-feet. By 2009 total harvests in counties crossed by the proposed line had fallen to 88 million board-feet, with annual harvest falling to 67 million board-feet by 2014. Total timber harvests for counties crossed by the B2H Project are reported below in thousands of board-feet (Table 3-561).

Table 3-561. Timber Harvest (thousand board-feet) in B2H Analysis Area, 2014

Area	Private Land Harvest	Public Land Harvest	Total Volume of Harvest
Morrow County, Oregon	1,258	2,523	3,781
Umatilla County, Oregon	14,970	199	15,169
Union County, Oregon	33,186	6,211	39,397
Baker County, Oregon	4,856	4,282	9,138
Malheur County, Oregon	48	0	48

Table Source: Oregon Department of Forestry 2015.
Table Note: There was no recorded timber harvest in Gilliam and Malheur counties or in Owyhee, Idaho in 2009 or 2014.

The growing, harvesting, and processing of timber has long been an economic cornerstone in rural Oregon. These activities directly support local employment opportunities in three major categories: growing and harvesting[6], sawmills and paper mills[7], and wood products manufacturing[8]. In addition to the jobs directly supported in these timber-related industries, local timber production induces and indirectly supports employment opportunities in a wide range of non-timber-related sectors.

Over the years, timber-related employment within the six-county B2H Project area have steadily declined as a result of slowing in local timber harvesting and processing. Between 1998 and 2013, timber-related employment across these counties shrank by 37 percent from 2,382 to 1,498 jobs (U.S. Census Bureau 2015). Timber-related jobs within the B2H Project area are primarily supported by mills and wood product manufacturing facilities, which pay $46,783 and $43,741 annually on average (BLS 2015). These jobs are particularly critical in rural communities where wood product manufacturing accounts for the majority of manufacturing jobs and generally pay higher average wages than those in other sectors.

Outdoor Recreation and Tourism

Outdoor recreation and tourism in the study area brings visitors to the area for a variety of reasons. These visitors generate economic activity through expenditures on such things as retail, food and

[6] *[NAICS codes: forestry and logging (113), support activities for forestry (1153)]*
[7] *[NAICS codes: sawmills and wood preservation (3211), pulp, paper, and paperboard mills (3221), veneer, plywood, and engineered wood product manufacturing (3212)]*
[8] *[NAICS codes: other wood product manufacturing (3219) and converted paper product manufacturing (3222)]*

beverage and accommodations. Opportunities for various outdoor recreation, cultural and historic sites, wildlife viewing and scenic drives are all important to this economic activity. Recreation and tourism is not classified or measured as a standard industrial category; therefore, employment and income data are not specifically collected for this sector. Components of recreation and tourism activities are instead captured in a number of industrial sectors, primarily the retail sales and services sectors. Estimates of travel-related spending and associated employment in Oregon for 2014 prepared for the Oregon Tourism Commission found that statewide travel-related employment accounted for about 8.8 percent of total employment (Table 3-562).

Table 3-562. Travel-Related Economic Contributions in Oregon Counties, 2014

Area	Travel Spending[1]	Travel-Related Earnings[1]	Travel-Related Employment	Percent of Total Employment[2]
Gilliam	9	2.2	100	2.9
Morrow	14.5	3.4	180	2.5
Umatilla	147.9	45.1	2,310	5.8
Union	33.1	10.4	560	3.9
Baker	43.7	12.2	710	8.5
Malheur	40.3	11	570	3.4
Oregon	10,300.0	4,800.0	153,700.0	8.8

Table Source: Dean Runyan Associates 2015.

Table Notes:
[1]Dollars in Millions
[2]Travel-related employment is estimated as a percent of total employment using data from the U.S. Bureau of Economic Analysis.

In Umatilla and Baker counties, travel-related employment accounted for a smaller share of total employment than the statewide average (5.8 percent and 8.5 percent respectively). Travel-related employment in the socioeconomic study area's other four Oregon counties averaged 2.5 percent of local employment. These estimates are primarily based on travel-related spending on accommodation, food and beverages, local transportation, recreation and entertainment, and shopping. While these estimates include business travel and recreation and tourism-related travel, they provide a useful indication of the relative importance of recreation and tourism to the local economies within the socioeconomic study area.

The most recent comprehensive assessment of travel-related spending and associated employment in Idaho counties was prepared in 2004 (Global Insight and D.K. Shifflet & Associates [Global Insight] 2005). This analysis found that statewide travel-related employment accounted for about 7 percent of total employment (Table 3-563). Travel-related employment accounted for a larger share of total employment than the statewide average in Ada County (9 percent versus 7 percent) and a smaller share than the state average in Canyon and Owyhee counties (4 percent and 1 percent, respectively).

Table 3-563. Travel-Related Economic Contributions by Idaho County, 2004				
Area	Travel Spending[1]	Travel-Related Earnings[1]	Travel-Related Employment	Percent of Total Employment
Ada	1,128.90	277	17,951	9
Canyon	126.9	31.1	2,017	4
Owyhee	1.8	0.4	28	1
Idaho	2,968.10	728.3	47,203	7

Table Source: Global Insight 2005.
Table Note: [1]Dollars in Millions

Estimates of statewide travel-related impacts prepared by the U.S. Travel Association (2009), however, suggest that the 2004 estimates prepared by Global Insight may overestimate the importance of travel-related employment in Idaho, at least at the state level. The U.S. Travel Association (2009) estimates found that travel-related employment accounted for 23,700 jobs in Idaho in 2004, about half the number estimated by Global Insight. The 2005 Global Insight estimates do, however, represent the best available data at the county level and provide an indication of the relative importance of recreation and tourism in the three socioeconomic study area counties in Idaho.

Designated recreation areas within 0.5 mile of the proposed B2H Project and alternatives are discussed in Section 3.2.8. These areas include the BLM- managed Virtue Flat Extensive Recreation Management Area (ERMA), the Owyhee River below the Dam SRMA, the Oregon Trail and Owyhee River ACECs. Section 3.2.8 also discusses dispersed recreation activities, including hunting, OHV use, and camping that may occur within the analysis area.

Tribal Households

The U.S. Constitution (Article II, Section 2, Clause 2) provides that treaties are equal to federal laws and are binding on states as the supreme law of the land. As a portion of the B2H Project area passes through lands ceded to the U.S. Government by 1855 treaty with the CTUIR, the BLM—as manager of these federal lands—has the legal responsibility to consult with the CTUIR and consider the conditions necessary to satisfy the rights reserved by the tribe as part of its treaty. Exercise of treaty rights could include, but is not limited to, water rights, taking fish, mineral rights, collection of plant resources such as roots and berries, and hunting of small and large game for economic, religious, and cultural use. Treaty rights also include pasturing stock on open and unclaimed lands.

Although the CTUIR is the only tribe with ceded lands in the B2H Project area, several other tribes consider portions of, or the entirety of, the B2H Project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence. These tribes include the Shoshone-Paiute of the Duck Valley Indian Reservation, the Burns Paiute, the Confederated Tribes of the Warm Springs Indian Reservation, the Fort McDermitt Paiute and Shoshone Tribes, the Nez Perce, the Confederated Tribes of the Colville Reservation, the Yakama Nation, and the Shoshone-Bannock of the Fort Hall Reservation.

While each of these tribes has a unique history and heritage, they share land-based worldviews rooted in the active recognition of kinship with the natural world. Thus, the social, economic, and

spiritual structures and practices of tribal households are centered on sustaining a stable relationship with their native lands. Subsistence activities are an integral part of their customary and traditional lifestyles. These activities include hunting, fishing, gathering, trapping, and "other activities which provide income in kind—food, heat, clothing, shelter, and a variety of other subsistence goods and services" consumed by and shared within the family and community (Kuokkanen 2011).

In addition to providing household sustenance, many tribal families barter, trade, or sell subsistence goods and services for fuel, transportation, food, shelter, clothing, and cultural utilitarian items. While there is no data available to estimate the percent contribution which fishing, hunting and gathering of wild plants provides to households or communities of the abovementioned tribes, these activities are vital to sustaining viable communities in a manner that promotes cohesiveness, pride and sharing (Inuit Circumpolar Conference 1992).

Refer to Sections 3.2.3, 3.2.4, 3.2.6, 3.2.13, and 3.2.14 for further discussion of treaty rights from the perspective of vegetation, wildlife, land use, and cultural resources, respectively.

Housing and Lodging

This section will provide information on housing and lodging potentially available to the construction workforce in the study area and in the towns and areas close to the transmission route. This information will include data related to vacant and occupied housing units and temporary lodging options available in the study area.

Housing Characteristics

Housing estimates are presented in Table 3-564 for the socioeconomic study area and for Oregon and Idaho. These estimates suggest that limited housing is available for rent in Gilliam, Morrow, and Owyhee counties, with estimates of less than 1,000 available units in each county. An estimated 718 units are available for rent in Umatilla County, Oregon, and an estimated 4,038 units and 1,840 units are available in Ada and Canyon counties, Idaho, respectively.

Table 3-564. B2H Project Area Housing Availability

Housing Characteristics	States		Counties					
			Idaho	Oregon				
	Idaho	Oregon	Owyhee	Morrow	Umatilla	Union	Baker	Malheur
Total Housing Units	667,796	1,675,562	4,781	4,426	29,638	11,464	8,806	11,637
Occupied	579,408	1,518,938	4,076	3,741	26,744	10,235	7,120	10,136
Vacant	88,388	156,624	705	685	2,894	1,229	1,686	1,501
For rent	16,360	40,193	104	70	718	283	181	297
Rented or sold, not occupied	997	2,608	8	4	46	20	20	31
For sale only	12,814	24,191	72	55	289	124	147	139

Table 3-564. B2H Project Area Housing Availability								
Housing Characteristics	States		Counties					
			Idaho	Oregon				
	Idaho	Oregon	Owyhee	Morrow	Umatilla	Union	Baker	Malheur
For seasonal, recreational or occasional use	2,177	4,401	22	242	888	281	48	48
All other vacancies	41,660	55,473	307	145	767	248	1,058	463
Owner-Occupied Housing Units	404,903	29,758	2,856	2,799	16,916	6,873	332	6,501
Renter-Occupied Housing Units	174,505	944,485	1,220	1,117	9,988	3,628	7,040	3,910
Rental Vacancy Rate	8.50%	6.50%	7.80%	5.90%	6.70%	7.20%	7.40%	7%
Median Gross Rent (2009-2013 ACS Estimate)	$607	$749	$409	$514	$530	$532	$491	$467
Median Value of Owner-Occupied Housing (2009-2013 ACS Estimate)	$162,100	$121,200	$238,000	$119,800	$142,700	$156,600	$147,700	$132,600

Table Source: U.S. Census Bureau 2012a, 2013.

Table Notes: Median and gross rent based on U.S. Census Bureau 2009-2013 5-year average estimates from the ACS (U.S. Census Bureau 2013). Other housing characteristics based on 2010 U.S. Census data (U.S. Census Bureau 2012a)
ACS = American Community Survey

The availability of temporary housing varies seasonally and geographically within the B2H Project area. Demand for temporary housing is generally greatest during the tourism season in the summer months. Statewide in Oregon, the average hotel and motel occupancy rate in 2009 was 63.2 percent in June compared to 38.3 percent in December, with an annual average rate of 53.9 percent (TravelOregon.com 2009a, 2009b). Hotel and motel occupancy rates also vary by region.

Recreational Vehicle Parks

Comprehensive data are not available on recreational vehicle (RV) parks in the B2H Project vicinity. Table 3-565 presents data for RV parks in the socioeconomic study area by county. These data were compiled from travel web sites, primarily TravelOregon.com, VisitIdaho.org, and Rvparking.com, but do not necessarily account for all of the RV parks near the B2H Project. Approximate numbers of spaces are provided. These represent the total approximate number of spaces available at the identified RV parks in each community, not the number that would necessarily be available to rent.

Table 3-565. RV Parks		
Area	Number of RV Parks[1]	Estimated Number of RV Spaces[2]
Gilliam County, Oregon	3	73
Morrow County, Oregon	2	166
Umatilla County, Oregon	15	754
Union County, Oregon	9	432

Table 3-565. RV Parks		
Area	Number of RV Parks[1]	Estimated Number of RV Spaces[2]
Baker County, Oregon	5	219
Malheur County, Oregon	5	199
Canyon County, Idaho	5	440
Ada County, Idaho	6	548
Owyhee County, Idaho	4	134

Table Source: Rvparking.com n.d.; TravelOregon.com n.d.; VisitIdaho.org n.d.

Table Notes:

[1]These data were compiled from travel web sites and do not necessarily account for all RV parks near the B2H Project.

[2]These estimates represent the total number of spaces available at the identified RV parks in each community, not the number that will necessarily be available to rent.

Hotels and Motels

Hotel and motel accommodations for each county are listed in Table 3-566. These data do not necessarily account for all of the existing hotel, motel, and bed and breakfast rooms within 20 miles of the proposed B2H Project because the Smith Travel Research data does not include establishments with less than 15 rooms. The data compiled on the state tourism web sites, which includes hotels, motels, and bed and breakfast inns with less than 15 rooms, are for participating businesses only. The hotel and motel data summarized in Table 3-566, however, represents a reasonable approximation of the number of hotel and motel rooms based on the best available data.

Table 3-566. Hotels and Motels by County			
Area	Number of Hotels[1]	Number of Rooms	Estimated Number of Available Rooms[2]
Gilliam County, Oregon	24	1,639	603
Morrow County, Oregon	84	6,915	2,545
Umatilla County, Oregon	22	1,054	388
Union County, Oregon	2	13	5
Baker County, Oregon	3	140	52
Malheur County, Oregon	10	427	157
Canyon County, Idaho	5	110	40
Ada County, Idaho	10	443	163
Owyhee County, Idaho	12	793	292

Table Source: Smith Travel Research 2009, 2011; TravelOregon.com 2009a, n.d.; Visit Idaho.org n.d.

Table Notes:

[1]Data were compiled by Smith Travel Research and include hotels, motels, and bed and breakfasts with 15 or more rooms.

[2]Average number of rooms is estimated based on the average hotel occupancy rate in Oregon in June 2009.

Tax Revenues

Oregon

Property taxes are an important source of revenue for the public sector in Oregon (Oregon Department of Revenue 2015) and are based on the assessed value of the property. In Oregon, the appropriate county assessor administers most property assessments, but the Oregon Department of Revenue assesses the value of some properties, including public utilities and large industrial properties.

Property taxes imposed for fiscal year 2014/2015 are presented for Oregon and the B2H Project area counties in Oregon in Table 3-567. This table also presents the total assessed value of property in each county, and their average tax rates. Total property taxes imposed ranged from approximately $8.9 million in Gilliam County to about $77.0 million in Umatilla County.

Table 3-567. Property Tax Revenue in Oregon Counties, FY 2014-2015

Area	Total Assessed Value ($1,000)	Average Tax Rate (per $1,000 of Assessed Value)	Net Property Tax Imposed ($1,000)
Gilliam County, Oregon	753,455	11.91	8,974
Morrow County, Oregon	1,774,504	15.53	27,559
Umatilla County, Oregon	4,958,881	15.71	77,889
Union County, Oregon	1,655,564	12.51	20,716
Baker County, Oregon	1,330,221	13.05	17,358
Malheur County, Oregon	1,752,017	13.59	23,802
Oregon	**343,171,244**	**16.15**	**5,540,756**

Table Source: Oregon Department of Revenue 2015

Oregon does not have sales tax but does impose a statewide transient lodging tax of one percent. The majority of the revenue generated from this tax (80 percent) is used to fund state tourism marketing programs, with up to 15 percent used to implement regional tourism marketing programs. Lodging tax revenues generated in the northeastern region of Oregon, which includes the counties in the B2H Project area, approached $450,000 during 2015 (Oregon Department of Revenue 2016).

Idaho

Property taxes in Idaho are based on a property's current market value, and most homes, farms, and businesses are subject to property tax. Property tax values for operating property, including industries engaged in electric generation, transmission, and distribution, are set by the Idaho State Tax Commission. The Idaho State Tax Commission appraises operating property using a unit-appraisal approach, which values a group of property items as one entity. The market value of each unit is estimated using cost, income, and/or market approaches to valuation (Idaho State Tax Commission 2003). Property taxes are collected only by local taxing jurisdictions in Idaho and are not collected by the state (Idaho State Tax Commission 2010). Property tax revenues for 2011 are summarized for Idaho counties in the broader analysis area in Table 3-568. Total property taxes imposed ranged from $402 million in Owyhee County to $23 billion in Ada County.

Table 3-568. Property Tax Revenues in Idaho Counties, Fiscal Year 2011				
Area	Real and Personal Property Assessed Value ($1,000)[1]	Operating Property Assessed Value ($1,000)[1,2]	Total Assessed Value ($1,000)	2011 Property Tax Revenue ($1,000)[3]
Ada	23,814,462	692,004	24,566,467	391,693
Canyon	6,614,288	214,417	6,840,706	138,820
Owyhee	402,933	103,140	507,439	5,001
Idaho	101,365,623	4,822,889	106,659,746	1,380,558

Table Source: Idaho State Tax Commission 2012a.

Table Notes:
[1]Real and personal property includes residential, industrial, and commercial property and farms, timber, and mining.
[2]Operating property includes industries engaged in electric generation, transmission, and distribution.
[3]Property tax rates vary by and within each county. The total property tax revenues shown here are for all taxing districts within each county, including towns, cities, and special taxing districts

The sales and use tax rate in Idaho is 6 percent. Sales tax is levied on goods and services purchased within the state. Use tax is imposed on goods purchased tax-free outside Idaho for consumption, use, or storage in Idaho. Use tax is paid directly to the state rather than to the seller of the good. The state also applies a travel and convention tax of 2 percent on hotel/motel occupants and campground users (Idaho State Tax Commission 2012b). Long-term, temporary residents (more than 30 days) are exempt from the travel and convention tax. Sales, use, and travel and convention tax revenues are summarized for fiscal year 2011 by affected Idaho counties in Table 3-569. Total revenues ranged from about $1.5 million in Owyhee County to $258.9 million in Ada County.

Table 3-569. Sales, Use, and Travel and Convention Tax Revenues in Idaho Counties, Fiscal Year 2011 ($1,000)			
Area	Sales and Use Tax ($1,000)	Travel and Convention Tax ($1,000)	Total ($1,000)
Ada	258,909.90	1,805.49	260,715.30
Canyon	41,564.50	211.82	41,776.30
Owyhee	1,568.20	2.55	1,570.80

Table Source: Idaho State Tax Commission 2012b.

Individual income tax generated $1.45 billion in revenues in Idaho in fiscal year 2011 (Idaho State Tax Commission 2012c). Data on income tax revenues by county are not readily available for Idaho (Pack 2012). The corporate tax rate in Idaho is 7.6 percent. Corporate income tax generated $22.6 million in revenues in Idaho in fiscal year 2011 (Idaho State Tax Commission 2012c).

Community Services

Local governments and other entities provide public services, such as solid-waste disposal, law enforcement, fire protection, health care, and education to communities surrounding the B2H Project area. Interviews were conducted with local authorities in each county to assess the availability of public services and infrastructure in the six counties that would be crossed by the proposed Project and alternatives. These interviews had two purposes: (1) identify the current capacities of different

organizations to provide services, and (2) identify the ability of these service providers to meet the potential increase in demand associated with the proposed B2H Project.

Solid-Waste Management

Solid waste generated during construction would likely be disposed of at landfills located within the B2H Project area. Landfills located within the B2H Project area include those located in Morrow, Baker, and Malheur counties in Oregon and in Canyon County, Idaho. These landfills are listed in Table 3-570, which also identifies the volume of waste each landfill currently receives (tons per day), as well as the amount of waste each landfill is permitted to receive (tons per day), where this information is available.

Table 3-570. Landfills within the Analysis Area

Facility Name	County	Current Volume of Waste (Tons Received/Day)	Current Permitted Volume of Waste (Tons Received/Day)
Finley Buttes Landfill	Morrow, Oregon	1,923 tons	No permitting restriction
Clay Peak Landfill	Payette, Idaho	approximately 500 tons	No permitting restriction
Baker Sanitary Landfill	Baker, Oregon	50 to 60 tons	No permitting restriction
Lytle Boulevard Landfill	Malheur, Oregon	18,000-19,000 tons	20,000 tons
Pickles Butte Landfill	Canyon, Idaho	Unknown[1]	Unknown[1]

Table Source: Freese 2011; Geedes 2011; Large 2011; Schmidt 2016; Geedes 216

Table Note: [1]Multiple attempts were made to contact Pickles Butte Landfill to obtain information about current and future operations. No response has been received to date.

Law Enforcement

The proposed B2H Project and alternatives would cross through the jurisdiction of six county sheriff's departments (Table 3-571). Four of these sheriff's departments responded to requests for information (Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011).

Table 3-571. Law Enforcement

Department	Number of Law Enforcement Personal	Response Time to Project
Morrow County Sheriff	Unknown[1]	Unknown[1]
Umatilla County Sheriff	7 deputies (3 within the B2H Project area)	20 minutes to next day
Union County Sheriff	Unknown[1]	Unknown[1]
Baker County Sheriff	8 deputies	5 minutes to 1 hour
Malheur County Sheriff	18 deputies	1 hour
Owyhee County Sheriff	13 deputies	20 minutes

Table Source: Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011.

Table Note: [1]The Morrow County and Union County Sheriff's offices did not respond to several requests for information Fire Protection and Emergency Response.

Response times from local stations to the B2H Project area would vary and depend on the time of day, the priority of the emergency, environmental conditions, the location of the emergency, and whether law enforcement personnel were already patrolling the area. Estimated response times would range from 5 minutes to 1 hour for the Baker, Malheur, and Owyhee County sheriffs' departments (Bentz 2011; Hoagland 2011; Southwick 2011). The Umatilla County Sheriff's Department indicated that response

times for non-emergency calls during the day could take several hours and that non-emergency calls at night would not likely be responded to until the next day. Response times for emergency calls (i.e., life-threatening situations) by the Umatilla County Sheriff's Department would likely range from 20 minutes to 1 hour (Diehl 2011).

The B2H Project and proposed alternatives would cross through the jurisdiction of 13 fire departments (Table 3-572). These departments were initially identified by contacting offices with jurisdiction over the counties crossed by the proposed B2H Project. In addition, the Oregon State Fire Marshal's office was contacted to confirm that the departments shown in Table 3-572 covered the entire B2H Project area (Warner 2011). Each fire department was contacted and 10 of the 13 fire departments and 1 federal fire office responded to requests for information (Carter 2011; Enright 2011; Harper 2011; Johnson 2011; Martin 2011; Morgan 2011; Payton 2011; Rogelstad 2011; Skerjanec 2011; Webb 2011; Wooldridge 2011).

Table 3-572. Fire Departments

Department	County	Number of Fire	Equipment	Response Time
Boardman Rural Fire Protection District	Morrow	7 paid	(3) type 1 interface engines (off-road)	0.5 hour south-route
		17 volunteers	(1) type 1 tender with a 3,000-gallon tank	10 minutes north-route
			(1) type 6 engine	
Ione Rural Fire Protection District	Morrow	14 to 15 volunteers	(2) pumper engines (2,000- and 1,000-gallon tanks)	Unknown[1]
			(3) brush trucks	
			(1) tender with a 3,000-gallon tank	
Echo Rural Fire Department	Umatilla	20 to 21 volunteers	(5) brush rigs	20–25 minutes near
			(3) tankers	Pilot Rock
			(4) pumpers	40 minutes in other areas
Pilot Rock Rural Fire Protection District	Umatilla	Unknown[1]	Unknown[1]	Unknown[1]
North Powder Fire Department	Union	16 volunteers	(1) type 6 brush rig	12 to 15 minutes
			(1) 2,500 gallon tender (1) 1,800 gallon tender (1) 1,500 gallon tender	
La Grande Rural Fire Protection District	Union	1 paid	(3) type 1 engines	10 minutes
		20 volunteers	(1) brush truck	
			(1) 3,000-gallon water tender	
			(2) rescue vehicles	
Union Emergency Services – Fire Department	Union	15 volunteers	(2) ambulances (1) rescue rig (4) fire engines (2) tankers	11 to 12 minutes
			(1) brush truck	
Wallowa-Whitman National Forest – Blue	Union	64 seasonal personnel	(11) wildland engines	Varies with distance
			(1) type 2 helicopter (July –	

Table 3-572. Fire Departments

Department	County	Number of Fire	Equipment	Response Time
Mountain Interagency Dispatch Center: Grande Ronde Fire Zone, Burnt Powder Fire Zone, and North Fork John Day Ranger District			September) (2) single engine air tanker (July – September)	
Wallowa-Whitman National Forest	Union	11 permanent; 5 permanent seasonal; 25 temporary personnel	(4) engines (1) hand crews	20 minutes minimum; varies with distance
Keating Rural Fire District	Baker	15 volunteers	(2) structure engines (1) tender (4) wildland engines	25 minutes
Diamond Rural Fire Protection District	Baker	Unknown[1]	Unknown[1]	Unknown[1]
Baker Rural Fire Protection District	Baker	18 volunteers	(3) structure trucks (2) 4,200-gallon tenders (4) brush trucks	8 to 14 minutes
BLM Vale District Fire, Oregon	Malheur	34 permanent seasonal personnel	(11) heavy engines (8) light engines (1) tactical tender (1) dozer	Varies with distance
		60 temporary personnel	(1) single engine air tanker (July – September) (1) type 2 helicopter (July – September)	
Adrian Rural Fire Protection District	Malheur	14 volunteers	(1) 1,000-gallon pumper engine (1) 3,000-gallon tender truck (1) heavy truck with an 800-gallon tank (1) light truck with a 300-gallon tank	20 to 25 minutes
Homedale Fire Department	Owyhee	Unknown[1]	Unknown[1]	Unknown[1]
Marsing Rural Fire Department	Owyhee	32 volunteers	(2) engines (2) brush trucks (4) tenders	15 minutes
BLM Fire Management Officer	Project Wide	Not applicable	Not applicable	Not applicable

Table Sources: Carter 2011; Enright 2011; Harper 2011; Johnson 2011; Martin 2011; Morgan 2011; Payton 2011; Rogelstad 2011; Skerjanec 2011; Webb 2011; Wooldridge 2011.

Not all lands where the B2H Project would be developed fall within a designated fire district. In these cases, the closest or best-situated fire district would likely respond (Enright 2011; Wooldridge 2011).

Mutual-aid agreements have been established between local fire districts for mutual response to ensure cooperation. (Martin 2011; Payton 2011; Webb 2011). Because of these mutual-aid agreements, the fire district that responds to fires may not be the district the fire occurs in or even the closest district, but rather the district best situated and suited to respond.

Response times to a fire along the B2H Project would vary. Most of the fire districts in the B2H Project area are comprised of volunteers and, in some cases, it could take time to collect and mobilize an entire fire crew. In addition, most of the B2H Project crosses open remote lands where access is often limited. Were a fire to occur in one of these areas, it might not be immediately identified.

Health Care

A number of medical facilities serve the communities and outlying areas near the B2H Project. If minor B2H Project-related injuries occurred, they would be treated at local medical facilities or emergency rooms. Workers suffering more serious injuries would be taken to one of the major hospitals near the B2H Project. Four major hospitals capable of treating serious injuries are located within the counties of the proposed B2H Project: Saint Anthony Hospital in Pendleton, Oregon, Grande Ronde Hospital in La Grande, Oregon, Saint Alphonsus Medical Center in Ontario, Oregon and another Saint Alphonsus level four hospital in Baker City with life flight services.

Saint Anthony Hospital is a level three hospital licensed for 49 beds, 5 of which are intensive-care beds. The hospital employs about 80 nurses, and 30 physicians have staffing privileges. Medical transportation is provided by Life Flight. A Life Flight helicopter is stationed at the hospital, and the hospital has access to a fixed-wing craft. Flight times between the hospital and the B2H Project area would take about 15 minutes for the portions of the B2H Project located near Pilot Rock and 40 minutes for the areas located further east. Patients suffering major injuries, such as severed limbs or electrical burns, would be stabilized at Saint Anthony Hospital and then transported to a regional hospital for treatment (Blanc 2011).

Grande Ronde Hospital is a level four hospital licensed for 25 beds, six of which are intensive-care beds. The hospital employs about 175 nurses, and 45 physicians have staffing privileges. The Grande Ronde Hospital partners with Life Flight Network to provide emergency air medical transportation. Life Flight has both a rotor-wing helicopter and fixed-wing aircraft based in La Grande, Oregon (Grande Ronde Hospital and Clinics 2011). Flight times between the airport and the B2H Project area would likely be about 20 to 90 minutes. Patients suffering major injuries, such as severed limbs or electrical burns, would be stabilized at Grande Ronde Hospital and then transported to a regional hospital for treatment (McCowan 2011).

The Saint Alphonsus Medical Centers in Baker City and Ontario are small acute care facilities with a combined total of 74 beds. These medical centers are part of the Saint Alphonsus Health System, a four-hospital regional, faith-based Catholic ministry with over 4,300 associates and 950+ medical staff serving 700,000 people in eastern Oregon and western Idaho. Saint Alphonsus Health System is anchored by the only Level II Trauma Center in the region, Saint Alphonsus Regional Medical Center in Boise, Idaho. The Life Flight Network, which is partially owned by the Saint Alphonsus Health System,

provides Saint Alphonsus Regional Medical Center's emergency air transportation. Life Flight has rotor-wing helicopters stationed in Ontario, Oregon, and Boise, Idaho, and a fixed-wing aircraft are stationed at the Boise International Airport; flight times between the hospital and the B2H Project area will likely be about 15 minutes. This medical facility will be able to treat any injury that could occur during construction or operation of the B2H Project, with the exception of major burns; patients suffering major burns will be stabilized at this center and then sent to a burn center in Salt Lake City, Utah, or Portland, Oregon (Ryan 2012).

Public Schools

The B2H Project area crosses six counties and multiple school districts. The school districts most likely to be affected are identified by county in Table 3-573, which also identifies current student enrollment and student/teacher ratios, as well as enrollment trends for the 10 school districts that responded to requests for information. All 10 of these districts indicated that enrollment has either been flat or declining in recent years, with current trends expected to continue in the future. Student/teacher ratios for the 2010/2011 school year ranged from 7.2 students per teacher in the Huntington School District and 16 to 21 students per teacher in the La Grande School District 001.

Table 3-573. School Districts

Area	School District	Student Enrollment (2010 to 2011)	Student/Teacher Ratio (2010 to 2011)	Enrollment Trends
Oregon				
Baker	Baker School District	2,000	19.6	flat to declining
Baker	Huntington School District 16J	71	7.2	declining
Malheur	Ontario School District 8C	2,400	18.0	flat
Malheur	Vale School District 084	878	16.0	declining
Malheur	Nyssa School District 026[1]	1,130	17.0	unknown
Malheur	Adrian School District 061	242	13.6	flat
Morrow	Morrow School District 001	2,200	16.8	flat
Umatilla	Pilot Rock School District 002	352	14.6	declining
Union	La Grande School District 001	2,204	21.0	declining
Union	Union School District 005	370	16.1	declining
Idaho				
Owyhee	Marsing Joint School District 363	850	12.6	flat
Owyhee	Melba Joint School District 136	740	17.3	flat

Table Sources: Allison 2011; Burrows 2011; Hogg 2011; Lowry 2011; Milburn 2011; Nunn 2011; Panike 2011; Stalk 2011; Wegener 2011; Wood 2011.

Nonmarket Values

People derive a wide variety of benefits from lands surrounding the proposed transmission line. Some benefits are reflected in market goods such as timber, livestock, and agricultural crops; while other benefits are derived from the recreation, wildlife and fisheries, water supply and quality, and biodiversity these lands support. Benefits derived from natural amenities are commonly referred to as nonmarket

values, and have been credited with increasing the attractiveness of communities across the West (Clark and Hunter 1992; Knapp and Graves 1989; Lewis et al. 2002; McGranahan 1999; Mueser and Graves 1995; Treyz et al. 1993).

Nonmarket values can generally be classified into two categories, those derived from the direct use of natural resources and those from non-use. Nonmarket use values are realized from the consumptive and non-consumptive use of natural resources. Although the use of nonmarket goods may require consumption of associated market goods (e.g., food, gas and lodging), the personal enjoyment and satisfaction people derive from these goods exceed any monetary costs they incur to use them. These personal benefits may be attained from recreational experiences; or associated with aesthetic enjoyment, artistic and spiritual inspiration, and emotional comfort derived from natural settings.

Natural resources possess additional values beyond those associated with their current use. These passive use values include existence, option and bequest values. Existence values are the amount society is willing to pay to guarantee that an asset simply exists. In addition to implicit existence values, society's willingness to pay to preserve resources for future use attaches additional passive use values. The potential benefits people would receive from future visits to undeveloped lands along the proposed transmission line are referred to as option values when future use is expected to occur within the same generation, and bequest values when preservation allows future generations to benefit from the resource use. Along the proposed transmission line bequest and option values might exist for numerous native plant and animal species, wild and scenic landscapes, and recreational areas.

Although lands proposed for development may possess nonmarket values, use and non-use nonmarket values are difficult to quantify and assign monetary values to. Methods for measuring these values can be controversial and difficult to apply. Recently the BLM and USFS have been exploring the concept of ecosystem services as a way to describe the benefits provided by forests and other public lands, however, this type of approach has not been applied operationally in a management context (Kline 2006). While it is not feasible to estimate nonmarket values during this phase in planning process, it is important that responsible officers recognize that the true value of natural resources include both market and nonmarket values so that they can make more informed land management decisions.

The effects of the action alternatives on these types of services are assessed in the sections of this EIS that address wildlife, fish, vegetation, water resources, cultural resources, and visual resources, among others. Monetary values are not assigned to these services, but this does not lessen their importance in the decision- making process. Decision-makers will consider the economic values presented in this section within the context of the information presented elsewhere in this document, much of which cannot readily be translated into economic terms

ENVIRONMENTAL JUSTICE

Federal environmental justice regulations were established due to concerns that land uses and facilities were being placed in minority and low-income communities without regard to the consequences of these actions. Environmental justice refers to the social equity in sharing the benefits and the burdens of specific projects and/or programs and is addressed by Executive Order 12898, *Federal Actions to*

Table 3-576. Environmental Justice Information for Low-Income Populations		
Area	**Percentage of Low-Income Households**	**B2H Project Segment**
Union County, Oregon	**17**	–
Block Group 3, Census Tract 9702, Union County, Oregon	11	Segment 2—Blue Mountains
Block Group 1, Census Tract 9706, Union County, Oregon	13	Segment 2—Blue Mountains
Block Group 2, Census Tract 9706, Union County, Oregon	7	Segment 2—Blue Mountains

3.2.17.6 Environmental Consequences

The B2H Project has the potential to affect social and economic conditions in all counties in the socioeconomic study area. The following section discusses how the construction and operations of the B2H Project under the alternatives may affect the socioeconomic characteristics of the study area.

Study Methods

The environmental consequences analysis evaluates how the social and economic effects of the construction and operations phases of the B2H Project, both positive and negative, are distributed among the communities and counties in the study area. Socioeconomic impacts are described and quantified where possible. However, where quantification of impacts was not possible, the analysis included a qualitative discussion of possible effects. The analysis includes separate but integrated approaches to addressing economic, demographic, fiscal, and social impacts using the methods and approaches discussed.

Agricultural impacts associated with the construction and continued operation of the B2H Project were assessed in terms of production losses. Acres of various crops types disturbed during the construction and operations phases of the B2H Project were obtained from the land-use analysis, and an average value of production for each of these crop types was estimated with data from the National Agricultural Statistical Service including field crops, fruit and tree nuts, and vegetables for 2014. Grass and pasturelands were valued at the average rental price per acre in 2014. Production losses were valued by applying per acre values to acres disturbed and then used as inputs in a customized regional economic model known as IMPLAN® to assess how changes in agricultural production affect local economic conditions.

Estimates of construction and operation workforce were provided by the Applicant and used to describe the impacts on regional employment and population. Changes in employment and population were then used to evaluate other local impacts, such as housing, emergency services, schools, and other public and community services can be evaluated. Anticipated changes in property tax revenues associated with development and operations of the B2H Project were estimated through methods consistent with those described and applied at the state level, although the taxes are assumed primarily to accrue to the counties. For example, in Oregon utilities are centrally assessed by the Oregon Department of Revenue and transferred to the county assessment rolls where an appropriate property tax rate is applied. The average property tax levy per county is published annually by the Oregon Department of Revenue (Oregon Department of Revenue 2015) and was used for this analysis. The average tax rate

for utilities in Idaho was estimated by dividing total taxes charged against utilities by the total assessed value of utilities in 2012 (Idaho State Tax Commission 2013). It is anticipated that tax revenues would fall after the first year of service, as assessed values would consider cost of operation. A capitalization rate was applied to cost of construction to estimate the decreasing assessed valuation, to which the annual tax rate was applied.

An environmental justice analysis is conducted to determine if any environmental justice populations are present within the study area. The environmental justice analysis is conducted in compliance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and follows guidance published by the EPA (2016). The environmental justice analysis involves two basic steps:

- Determine whether environmental justice populations exist in the relevant study area
- If environmental justice populations exist, determine whether they would be disproportionately affected by development and operation of the Project

To identify the presence of potential environmental justice populations residing in proximity to the alternative routes, it is necessary to create an affected area for a smaller geographic area than that of the defined socioeconomic study area. Populations are analyzed at the Census Block Group and Census Tract level located within 1 mile of all alternative routes. The populations located in these Census Block Groups and Census Tracts are compared with those of the reference communities in terms of percentages of minority and low-income populations. Reference communities for the analysis are defined as the county and/or the state in which the Tract or Block Group was located; if the percentages of low-income and/or minority populations within proximity to the alternative routes significantly exceed those of the reference communities, further environmental justice assessment is undertaken. If no environmental justice populations are identified, no further analysis is needed.

Once the locations of the environmental justice populations are identified, all adverse effects are considered to determine whether the B2H Project has the potential to have a “disproportionately high and adverse” impact (human health or environmental effect) to these populations. Impacts of the Proposed Action include cumulative and multiple impacts, and are evaluated to determine which, if any, disproportionately and adversely affect these populations.

No Action Alternative

If no action were taken, the B2H Project would not be granted a right-of-way and the transmission line and substations would not be constructed. The human environment would remain as is and management direction from the current management plans would continue. Under the No Action, none of the social and economic impacts described under the alternative routes would be realized. However, without the B2H Project, the existing system would not be upgraded, and as a result, the Applicant would not be able to ensure sufficient capacity and reliability to meet the electric demands of its current and future customers in the Pacific Northwest and the Intermountain West. Without its development, there would be fewer high-voltage transmission lines to provide power from existing and new renewable (e.g., wind, solar) and thermal (e.g., gas, coal) generation sources to meet growing customer needs;

ease transmission congestion; and improve the flow of electricity throughout the West (refer to Chapter 1).

Effects Common to All Route Alternatives and Variations

The construction, operation, and maintenance of the proposed transmission line and related facilities are expected to have beneficial impacts on local employment and economic conditions. The largest potential impact from the B2H Project on employment would occur during the construction phase.

Population

Construction of the proposed B2H Project would occur in two geographic segments or "spreads" over 24 to 30 months. The B2H Project would be constructed primarily by contract personnel, with the Applicant responsible for B2H Project 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. Construction is expected to take place year-round as weather and conditions allow. While construction during the summer season may be preferred, there are issues that may require winter construction. Weather conditions typically prohibit construction at higher elevations during winter months. Project schedule, financing, design, and/or material delivery may not fit within the summer season. Environmental issues and soil conditions also may dictate construction of portions of the line during certain times of the year, for example, to avoid or reduce impacts on wildlife.

The proposed Project and alternative routes are expected to create a short-term demand for workers during its construction. Construction workforce requirements were estimated by the Applicant's transmission engineering contractor based on average crew sizes and production rates by job type. Labor requirement projections for the two spreads are shown below in Table 3-577. These estimates are for the 500-kV transmission line component of the B2H Project and do not include estimated employment for the 138/69-kV rebuild or modifications to the Hemingway Substation.

Table 3-577. 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 with family[1]	18	19
Total	**243**	**251**

Table Source: Idaho Power Company 2011.

Table Note: [1]Based on data compiled by the U.S. Census Bureau (2009) as part of the 2008 American Community Survey, the average relocating family is assumed to consist of 2 adults and 1 school-age child.

Less than 10 percent of the workers temporarily relocating are expected to be accompanied by their families. Some workers like the construction supervisors and inspectors would stay the length of the B2H Project, but many workers would be employed for just 4 to 6 months. In addition, workers employed on linear projects of this sort tend to relocate along the line as needed, staying in each

location for a short period. For these reasons, workers on these types of projects do not typically bring dependents.

The maximum projected temporary workforce associated with construction spread one would be equivalent to approximately 0.2 percent of the total 2010 population in Morrow, Umatilla, Union, and Baker counties. The maximum projected temporary workforce associated with construction spread two and modifications to the Hemingway Substation would be equivalent to about 0.4 percent of the total 2010 population in Baker, Malheur, and Owyhee counties.

Existing staff of the Applicant would be responsible for the operations and maintenance of the new transmission line and associated facilities. Very few, if any, of the workers employed during the construction phase of the B2H Project would be expected to permanently relocate to the area. Therefore, B2H Project-related anticipated increases in population would be temporary in nature.

Housing

Assuming that approximately 75 percent of the peak construction workforce would temporarily relocate to the analysis area, suggests that up to 182 workers could temporarily relocate to the northwest (construction spread one) and 188 workers to the southeast (construction spread two) parts of the primary socioeconomic analysis area. An estimated 10 percent of these workers are assumed to be accompanied by their families.

Based on experience with similar projects, the Applicant's transmission engineering contractor estimates that approximately 35 percent of non-local workers would provide their own housing in the form of RVs or pop-up trailers. The remaining non-local workers would be expected to require rental housing (apartments/houses) (25 percent), mobile homes (5 percent), and motel or hotel rooms (35 percent). Construction workers, particularly those working in less populated areas, often commute relatively long distances to the job site, with commutes of up to 90 minutes each way (BLM 2014.).

Existing housing resources, rental housing, hotels and motels, and RV spaces tend to be concentrated in and around the larger communities in the analysis area. Workers temporarily relocating to the area would generally be expected to reside in or near larger communities where these housing options and services are more available. Review of the rental-housing units and hotel and motel rooms that would normally be vacant and available for rent suggests there would be sufficient housing resources available for rent in the counties that would be crossed by each construction spread.

Rental-housing resources in the counties crossed by construction spread one (Morrow, Umatilla, Union, and Baker counties) include approximately 19,114 rental units. Hotel and motel resources in these counties include approximately 2,600 rooms. Additional resources are available in the Tri-Cities of Richland, Kennewick, and Pasco, Washington, which are located about an hour drive north of Boardman, Oregon.

Rental-housing resources in the counties crossed by construction spread two (Baker, Malheur, and Owyhee counties) include approximately 12,752 units (Baker County units also included in spread one). Hotel and motel resources in these counties include approximately 1,200 rooms. Additional resources

are available in the cities of Boise and Nampa, which are in neighboring Ada and Canyon counties. Any small, short-term changes in population due to the B2H Project are expected to have minimal impacts on available housing across the region.

Once construction is complete, the operation and maintenance of the transmission line and its associated facilities will be completed by the Applicant's staff. No existing employees would be required to relocate to the socioeconomic area to operate or maintain the B2H Project. The Applicant has indicated that operations and maintenance associated with the new transmission line may result in one additional part-time position, which would be filled locally. Thus, the B2H Project is not anticipated to have any measurable effect on long-term housing availability within the socioeconomic study area.

Tribal Households and Communities

Construction of the B2H Project may temporarily restrict access to areas of the B2H Project within which Native American tribes procure subsistence resources such as gathered plants, small and large game, and fish. Noise and human activity associated during construction of the Project may disturb animals that constitute subsistence resources, causing them to temporarily leave the area. Once construction and rehabilitation activities are complete, animals normally return to these disturbed areas. Thus, construction and rehabilitation activities may adversely impact wildlife-related sustenance activities temporarily, but are not anticipated to have long-term adverse impacts on wildlife-related subsistence activities. While there is no data to quantify the percent contribution to tribal household or community income represented by these resources, adverse effects on natural resources and restricted access during construction could negatively affect tribal household's ability to continue to practice traditional ways of life.

Operation of the B2H Project may result in restriction of access to certain areas of the B2H Project, or may result in changes to vegetation or disruption to fish, small and large game populations, which could affect tribes' ability to procure subsistence resources. As there are no data to quantify the percent contribution to tribal household or community income represented by these resources, effects caused by operation are not known.

Tax Revenues

Income, Business, and Sales Taxes

Tax revenues will be generated by the B2H Project from income and business taxes. These taxes were not quantified as part of this analysis because they will be collected at the state/federal level and only a small portion will be passed along to county and city agencies. As a result, business and income taxes will likely have a very limited effect on county and city revenues.

Oregon has no local sales or use taxes. Estimated expenditures were assigned to Owyhee County, Idaho based on the share of construction activity that will take place in that county. Total expenditures for construction materials, supplies, and equipment would be estimated to average approximately $3.2 million per mile for the transmission line portion of the B2H Project. Expenditures on materials, supplies, and equipment to modify the Hemingway Substation would be estimated to be approximately $32 million. Assuming an Owyhee County sales and use tax rate of 6 percent, these expenditures would

generate tax revenues of between $3.2 and $6.5 million, which is equivalent to between five and eleven times the amount of sales and use tax revenues distributed to Owyhee County in 2015.

Operation of the B2H Project would generate sales and use tax revenues in Idaho because of local operations and maintenance expenditures. These impacts are expected to be small, especially when compared to the construction-related impacts.

Property Taxes

Estimated property tax revenues are presented by county in Table 3-578. These estimates are based on the projected value of the improvements included in the proposed B2H Project by county and average property tax rates. This table illustrates the relative contribution of the estimated B2H Project-related property tax revenues to county budgets by comparing estimated annual revenues with actual property tax revenues for 2014-2015 and 2012 by county. The table summarizes a range of tax revenues for the B2H Project based on the facilities that would be developed under each segment and alternative for all the counties. Estimated B2H Project-related property tax revenues range 1.2 percent of 2014 property tax revenues in Umatilla County to as high as 17.4 percent of property tax revenues in Baker County.

The estimates presented in Table 3-578 indicate that the B2H Project would generate annual property taxes in Owyhee County equivalent to 7.5 percent of total 2012 property tax revenues. Idaho limits the amount by which annual revenues from property tax can increase in each county. With some exceptions, this amount is limited to 3 percent based on the highest annual budget from the preceding 3 years. Exceptions include new construction (excluding public utilities), annexation, and previously unlevied funds (Houde 2012). In cases where increases in property tax revenues exceed 3 percent and are not exempt, the increase above 3 percent may provide an opportunity to lower levies for other taxpayers in the affected district.

Table 3-578. Estimated Annual Property Tax Revenues

Area	Estimated Annual Project-Related Property Taxes ($1,000)[1,2]	Actual Property Tax Imposed 2014-15 ($1,000)[1,3]	Estimated Property Tax as a Percent of 2010 Property Tax Revenues
Morrow	1,028 to 2,855	27,559	3.7 to 10.4
Umatilla	931 to 3,782	77,889	1.2 to 4.9
Union	898 to 2,156	20,716	4.5 to 10.7
Baker	814 to 3,014	17,358	4.7 to 17.4
Malheur	1,246 to 3,348	23,802	5.2 to 14.1
Owyhee	320	4,284	7.5

Table Source: Idaho State Tax Commission 2013.

Table Notes:

[1]Estimated B2H Project-related property tax revenues and actual property tax revenues from 2010 are in thousands of dollars ($000s).

[2]Property tax estimates are based on the projected value of the proposed improvements, including transmission line and substation costs. Tax revenues are estimated using applicable county property tax rates.

[3]These are actual property taxes imposed by counties in Oregon for 2014-15 (Oregon Department of Revenue 2015) and for Owyhee County for 2012 (Idaho State Tax Commission 2013).

Community Services

Solid-Waste Management

Solid waste generated during construction of the B2H Project would include a small portion of the soil and rock excavated for foundations. Other solid waste generated would include broken insulators, scrap conductor, and empty conductor spools, as well as general construction waste, such as crates, pallets, and paper wrappings used to protect equipment and materials during shipping. The B2H Project is expected to generate about 13,909 cubic yards of waste during construction (or about 124 cubic yards of waste per week). This waste would likely be disposed of at various landfills located along the B2H Project's length, and, therefore, no single landfill would be expected to accommodate the entire waste-load generated by B2H Project construction.

The Applicant will promote an aggressive recycling program to minimize the waste that will otherwise be disposed of in landfills. Wastes generated during construction will be collected in recycling and disposal containers, which will be located at multiuse areas. Separate disposal and recycling containers will be labeled by waste type to segregate materials as appropriate for recycling or disposal. Disposal and recycling containers will be of adequate size, design, and number to handle the amount of waste being generated. Landfill-supplied containers, such as 20- or 30-cubic yard rolloffs, will be used to collect scrap metal, wood and paper products, concrete waste, and other recyclable materials. Paper products and other materials such as chemicals, batteries, glass, metals, and plastic will be recycled when practical. As disposal and recycling containers reach capacity they will be sent to disposal facilities that can handle these materials, and the containers will be replaced with empty units. The Applicant's waste hauling contractor will be responsible for overseeing waste management, transporting waste to appropriate disposal facilities, and managing disposal and recycling containers.

The amounts of waste materials and wastewater generated during B2H Project operation are expected to be minimal. Wastes, including vegetative waste, derived during this part of the B2H Project will likely be recycled or disposed of off-site by individual operations and maintenance crews. Therefore, waste management impacts are expected to be low.

Representatives from the Finley Buttes Landfill, which is about 12 miles south of Boardman, indicated the landfill has 200 million cubic yards of storage, with only 8 million cubic yards of this storage used to date (Large 2011). Representatives from the Clay Peak Landfill, which is approximately 3 miles east of Payette, Idaho, indicated the landfill has 2.3 million cubic yards of storage, and there are plans to expand the facility and add about 25 million cubic yards of storage (Schmidt 2011). The amount of waste that can be received per day is not restricted for either facility (Table 3-570). Either landfill would be able to accommodate all the solid waste generated by the B2H Project (Large 2011; Schmidt 2011).

Representatives at the Baker Sanitary Landfill, which is about 7 miles south of Baker City, indicated they do not have a restriction on the amount of waste that can be accepted per day and would be able to accommodate any waste generated by the B2H Project (Freese 2011). However, the Lytle Boulevard Landfill in Vale, Oregon, indicated their facility is close to the permitted capacity for waste they can

accept per day (Geedes 2011). Therefore, only limited waste from the B2H Project would likely be sent to the Lytle Boulevard Landfill, with the remaining waste sent to other facilities.

Law Enforcement

Construction of a transmission line can result in security issues that can have impacts on local law enforcement resources. The transmission line construction site(s) could become a target for crimes (e.g., theft of construction materials or equipment). In addition, about 75 percent of the work force needed to construct the line is expected to reside permanently outside the primary socioeconomic analysis area (i.e., the counties crossed by the proposed transmission line). Workers not hired from within the region would either temporarily relocate to the affected regions or commute in from their permanent residences.

Representatives of four potentially affected sheriff's departments responded to requests for information—Baker, Malheur, Owyhee, and Umatilla County sheriffs' departments. They indicated that, while the construction site(s) could become a target for crimes and a temporary influx of construction workers could result in short-term increases in traffic incidents and other disturbances, the B2H Project was unlikely to require additional law enforcement resources or facilities (Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011).

During operations, new access roads and the transmission line and associated facilities could slightly increase demands on local law enforcement. These impacts are expected to be low.

Fire Protection and Emergency Response

The B2H Project could result in an increased risk of fire during construction and operation. The BLM is responsible for fire suppression on the majority of the public lands crossed by the B2H Project. The Deputy Fire Management Officer for the BLM indicated the B2H Project would not affect their ability to suppress fires or require additional fire suppression resources.

The Keating Rural Fire District's fire chief expressed concerns regarding the risk of fighting fires near energized transmission lines as electricity could arc through the smoke and strike firefighters (Harper 2011). This issue is typically addressed by waiting for an electric transmission line to be de-energized before attempting to suppress fires in the immediate vicinity. This issue would be addressed through the Applicant's outreach with local fire and emergency response agencies.

A representative of the all-volunteer Union Emergency Services–Fire Department expressed concern about the potential for new construction in Union County (including recent wind-farm developments) to have adverse impacts on their resources or their ability to serve the community (Johnson 2011). Recent construction has not, however, affected the department to date, and they are currently well equipped (Johnson 2011). The Fire Chief for the North Powder Fire Department indicated that an increased risk of fire during the summer could affect his department and their equipment could need to be upgraded to address this potential increase in fire risk.

The Applicant has proposed a Framework Fire Prevention and Suppression Plan as Appendix J to the Revised POD (Idaho Power Company 2011). The Framework Plan includes provisions for sharing

responsibilities and coordination with fire-protection agencies; measures to reduce fire hazards during construction; and operations and maintenance procedures to reduce fire risk. Implementation of the Framework Fire Prevention and Suppression Plan measures would reduce the potential for the B2H Project to affect local fire departments to minor effects by reducing the risk of wildfires.

Health Care

Representatives from Saint Anthony Hospital, Grande Ronde Hospital, and Saint Alphonsus Medical Centers indicated that, given the size of the construction and operations workforces, injuries with the potential to occur during B2H Project construction and operations would not have a significant impact on these medical facilities (Blanc 2011; McCowan 2011; Vachek 2011).

Public Schools

This analysis assumes that the B2H Project would be constructed in two, approximately 150-mile-long spreads built concurrently. The estimated peak workforce in the northwest part of the analysis area (spread one) could involve up to 182 construction workers temporarily relocating to the area during construction. Assuming that 10 percent of these non-local workers would relocate with their families, up to 18 children may need to be enrolled in local schools in the northwest part of the B2H Project area. The estimated peak workforce in the southeast part of the B2H Project area (spread two) could involve the temporary relocation of up to 188 construction workers, with up to 19 children needing to be enrolled in schools in the southeast part of the B2H Project area. The school districts responded that they could accommodate these additional students.

During operations, existing staff of the Applicant would be responsible primarily for the operation and maintenance of the transmission line and associated facilities. One additional part-time position would be filled locally. No employees would be required to relocate to the B2H Project area. As a result, during operations there would be no identifiable impact on school enrollment.

Property Values (General Property Impacts and Compensation)

The proposed B2H Project would require a new right-of-way involving a combination of right-of-way grants and easements between the Applicant and federal and state governments, other companies (e.g., utilities and railroads), and private landowners (including fee acquisition). The Applicant would obtain rights-of-way on private land as perpetual easements. Easements through private lands would be negotiated between individual landowners and the Applicant during the easement acquisition process. This process is intended to provide just compensation to the landowner for the right to use the property for transmission line construction and operation. The required easements may encumber the affected right-of-way area with land-use limitations. Each easement would specify the extent of any encumbrances. Typical transmission line easement conditions include the right to clear the right-of-way and keep it clear of trees and structures, including structure-supported crops, brush, vegetation, and other potential fire and electrical hazards.

Whenever land uses change, concern is often raised about the effect the change may have on surrounding property values. The question of whether nearby transmission lines can affect residential property values has been studied extensively in the U.S. and Canada over the last 20 years or so, with

mixed results. In general, the impacts are difficult to measure, vary among individual properties, and are influenced by a number of interplaying factors, including the following:

- Proximity of residential properties to transmission line structures
- Type and size of high-voltage transmission line structures
- Appearance of easement landscaping
- Surrounding topography (Pitts and Jackson 2007)

Jackson and Pitts (2010) and Pitts and Jackson (2007) summarize the following on the impacts of high-voltage transmission lines.

- When negative impacts are present, studies report an average decline of prices from 2 to 9 percent.
- Value diminution is attributable to the visual unattractiveness of the lines, potential health hazards, disturbing sounds, and safety concerns.
- Impacts diminish as the distance between the high-voltage transmission lines and the affected properties increase, and disappear completely at a distance of 200 feet from the lines (0.04 miles).
- Where views of transmission lines and towers are completely unobstructed, negative impacts can extend up to 0.25 mile.
- If high-voltage transmission line structures are at least partially screened from view by trees, landscaping, or topography, any negative effects are reduced considerably.
- Value diminution attributed to high-voltage transmission line proximity is temporary and usually decreases over time, disappearing completely in 4 to 10 years.

Another recent study by Chalmers analyzed nearly 600 miles of a 500-kV line stretching across Montana (Chalmers 2012a, 2012b, 2012c). Chalmers' research reports on sales dynamics involving properties within 500 feet (almost 0.1 of a mile) of the centerline of the Colstrip to Townsend, Townsend to Taft, and Taft to Hot Springs 500-kV lines[9] that sold between 2000 and 2010. He found that circumstances can affect vulnerability to transmission line impacts in rural settings, including:

- When a property's sole use is residential, its vulnerability to price impacts from a transmission line increases.
- As property size increases, vulnerability to negative market impacts from a transmission line decreases.
- If substitutes are available (additional housing in an area), vulnerability to price impacts and marketing delays can increase.

Although extents vary, price impacts and market delays associated with the 500-kV line on small rural residential parcels have been noted in the Chalmers study. The same report did not find evidence of transmission line impact on sales involving producing agricultural properties, and based on a small

[9]The lines from Colstrip to Townsend are owned by NorthWestern Energy and from Townsend to Taft to Hot Springs by Bonneville Power Administration.

number of case studies, found no identifiable impact on the sales of recreationally influenced agricultural lands from the presence of the high-voltage transmission line

Studies of impacts during periods of physical change, such as new transmission line construction or structural rebuilds, generally reveal greater short-term impacts than long-term effects. However, most studies have concluded that other factors (e.g., general location, size of property or structure, improvements, irrigation potential, condition, amenities, and supply and demand factors in a specific market area) are far more important criteria than the presence or absence of transmission lines in determining the value of residential real estate.

Recreation and Tourism

The impacts on recreational resources are described in Section 3.2.8. Short- and long-term impacts associated with the development and operation of the transmission line would diminish the natural appearance and the undeveloped character of many areas along the routes, affecting vistas and scenery. In addition, depending on reclamation and implementation of mitigation measures, vehicle and ATV use could increase over the longer term because of new access roads. In total, an influx or outflow of visitors to the study area is not anticipated to occur; therefore, negligible impacts on the study area economies associated with visitor spending would occur due to these changes in recreation resources. However, there may be some adverse impacts on recreational and other nonmarket values associated with changes to scenery and vistas surrounding non-motorized and motorized trails, the National Historic Oregon Trail and Interpretive Center, semi-primitive non-motorized and motorized areas, and other areas as more access is likely through the construction of roads to build the transmission line and through the possibility of future development. These potential effects would be limited to the immediate areas of construction activity and short-term in nature. It is likely that some visitors will be discouraged to visit these areas especially during construction which can have a negative economic impact on local businesses and communities.

Environmental Justice Populations

The potential minority and low-income Census Block Groups identified in the Environmental Justice Screening Analysis are not expected to experience disproportionate impacts from the construction or operation of the B2H Project. The data suggest the B2H Project would cross Census Block Groups that could be considered minority or low-income communities. However, construction of the B2H Project is not expected to have high and adverse human-health or environmental effects on nearby communities. Construction-related impacts would likely include increases in local traffic, noise, and dust which could result in temporary delays at some highway crossings. Construction workers temporarily relocating to the B2H Project area would increase demand for local housing resources. These impacts would be temporary and localized and are not expected to be high.

Construction also would temporarily increase the demand for education, health care, and municipal services, as well as potentially increase the demand for police and fire-protection services. However, these impacts would not measurably affect the quality of services currently received by local communities and residents.

The Proposed Action does not cross any Native American reservations but is located near the Umatilla Indian Reservation.

SEGMENT 1—MORROW-UMATILLA

Segment 1 begins at the Longhorn Substation in Morrow County and ends west of La Grande in Union County on the Wallowa-Whitman National Forest. Seven alternative routes and two areas of local variations were identified in Segment 1.

Irrigated Agriculture

As discussed in Section 3.2.7, Segment 1 is the most agriculturally intensive segment of the B2H Project area. It contains extensive tracts of important farmland and high-value soils that are irrigated by center pivots, flood, and other mechanized irrigation methods. These high-value farmlands produce a variety of crops, ranging from field crops such as alfalfa and corn, to fruit and tree nuts such as blueberries and cherries, to vegetables such as onions, peas, and peppers. Transmission lines can affect these farm operations and increase costs for the farm operator.

The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way, and would negotiate damage-related issues with affected farmers during the easement acquisition process. Potential impacts depend on the transmission line design and placement, and the type of farming affected. For further information related to impacts on agriculture, refer to Section 3.2.7. These impacts generally include:

- Problems with field machinery and maintaining efficient fieldwork patterns;
- Increased soil erosion and compaction of soils
- The encroachment and spread of weeds, invasive species, and agricultural pests;
- Safety hazards associated with tower structure and conductor placement;
- Hindrance or prevention of aerial spraying or seeding activities by planes or helicopters;
- Interference with irrigation equipment;
- Hindrance of future plans for farm ground such as consolidation of farm fields or expansion of irrigation systems
- Temporary interruption of planting, irrigation, and harvesting schedules

The alternatives have been sited to follow field boundaries to the extent feasible and to avoid agricultural infrastructure to the extent possible. However, there are occasions when a transmission line must be routed through existing agricultural lands. Agricultural production may be temporarily disturbed to enable construction of B2H Project facilities such as tensioning and pulling sites and access roads for construction equipment. Because of limited time frames for seeding particular crops, landowners could lose an entire year of crops if construction schedules affected planting season. The Applicant would coordinate construction timing with affected landowners to minimize impacts on crop production. Effects on high-value agricultural lands are discussed in 3.2.7, including acres of disturbed cropland by crop type (Table 3-320, 3-321, and 3-322).

The land-use analysis determined that between 6 and 925 acres of private croplands could be disturbed during the construction of the B2H Project, depending on the alternative route. These surface disturbances may affect the production of field crops, fruits and tree nuts, grass and private pasturelands, vegetables, and products from tree farms. Short-term agricultural yield losses under the alternatives are anticipated to range between $ 4,217 under Variation S1-B2 and $666,425 under the route *East of Bombing Range Road* (Table 3-579).

Table 3-579. Lost Agricultural Production during Construction for Segment 1—Morrow to Umatilla (dollars)

Alternative Route	Value of Lost Production (dollars)					Total Value of Yield Loss
	Field Crops	Fruit and Tree Nuts	Grass/ Pasture	Vegetables	Tree Farms	
Applicant's Proposed Action	276,950	22,924	61,776	46,589	0	408,239
Variation S1-B1	*0*	*0*	*5,834*	*0*	*0*	*5,834*
Variation S1-B2	*0*	*0*	*4,21*	*0*	*0*	*4,217*
East of Bombing Range Road	322,447	34,221	66,944	166,913	75,900	666,425
Applicant's Proposed Action – Southern Route	280,945	23,255	59,882	47,261	0	411,342
West of Bombing Range Road – Southern Route	141,416	24,357	65,637	34,650	0	266,060
Longhorn	271,314	128,507	68,561	137,706	33,314	639,401
Interstate 84	200,480	34,882	69,630	174,865	0	479,857
Variation S1-A1	*65,540*	*0*	*2,574*	*8,735*	*0*	*76,850*
Variation S1-A2	*14,220*	*0*	*0*	*14,783*	*0*	*29,003*
Interstate 84 – Southern Route	213,394	35,213	67,478	176,522	0	492,607

Yield losses resulting from the construction of the B2H Project could have an adverse effect on the local economic conditions. Direct effects from reduced yields include lower local employment opportunities in the agriculture sector (direct effect) and industries that provide input supplies and support household spending (secondary effects). Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported below in Table 3-580. These impacts are anticipated to persist until temporary surface disturbances associated with construction are mitigated.

Table 3-580. Economic Losses of Reduced Yields During Construction for Segment 1—Morrow to Umatilla

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	1.48	52,211	2.6	102,779
Variation S1-B1	*0*	*0*	*0.0*	*714*
Variation S1-B2	*0*	*0*	*0.0*	*516*
East of Bombing Range Road	3.41	162,469	3.9	155,418
Applicant's Proposed Action – Southern Route	1.50	52,964	2.6	103,920

Table 3-580. Economic Losses of Reduced Yields During Construction for Segment 1—Morrow to Umatilla				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
West of Bombing Range Road – Southern Route	1.02	39,821	1.5	61,061
Longhorn	3.99	182,114	3.6	145,973
Interstate 84	2.31	113,345	2.6	104,278
Variation S1-A1	*0.26*	*7,779*	*0.5*	*21,345*
Variation S1-A2	*0.14*	*7,495*	*0.2*	*6,665*
Interstate 84 – Southern Route	2.36	115,065	2.7	108,217

Operations of the B2H Project would permanently occupy the lands on which permanent B2H Project facilities are constructed. While B2H Project structures would displace agricultural uses, most agricultural activities could continue within the right-of-way. Effects associated with operations of the B2H Project would be long term and persist for the life of the B2H Project. Activities associated with the operation and maintenance would affect crop yields and reduce agricultural production. These yield losses are estimated to be worth between $2,000 and $177,000 each growing season (Table 3-581). The long-term economic impacts of these yield losses would have direct and secondary effects on local economic conditions, resulting in fewer local jobs and less local labor income. On annual average, long-term yield losses would result in a loss of 0 to 4 direct jobs in the agriculture sector, and 0 to 1 fewer jobs in sectors that provide support services and support household consumption (Table 3-582).

Table 3-581. Value of Annual Yield Losses During Operation for Segment 1—Morrow to Umatilla (dollars)						
Alternative Route	Value of Lost Production (dollars)					Total Value of Yield Loss
	Field Crops	Fruit and Tree Nuts	Grass/ Pasture	Vegetables	Tree Farm	
Applicant's Proposed Action	74,563	6,172	16,632	12,543	0	109,910
Variation S1-B1	*0*	*0*	*2,033*	*0*	*0*	*2,033*
Variation S1-B2	*0*	*0*	*1,366*	*0*	*0*	*1,366*
East of Bombing Range Road	85,674	9,092	17,787	44,349	20,167	177,069
Applicant's Proposed Action – Southern Route	77,226	6,392	16,460	12,991	0	113,070
West of Bombing Range Road – Southern Route	44,152	7,605	20,493	10,818	0	83,069
Longhorn	72,948	34,551	18,434	37,025	8,957	171,915
Interstate 84	53,208	9,258	18,480	46,410	0	127,355
Variation S1-A1	*13,444*	*0*	*528*	*1,792*	*0*	*15,764*
Variation S1-A2	*4,266*	*0*	*0*	*4,435*	*0*	*8,701*
Interstate 84 – Southern Route	59,109	9,754	18,691	48,896	0	136,450

Table 3-582. Annual Economic Losses of Reduced Yields During Operations for Segment 1—Morrow to Umatilla				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	1.5	23,935	0.7	32,877
Variation S1-B1	*0.0*	*342*	*0.0*	*608*
Variation S1-B2	*0.0*	*247*	*0.0*	*409*
East of Bombing Range Road	3.4	39,073	1.0	52,966
Applicant's Proposed Action – Southern Route	1.5	24,117	0.7	33,822
West of Bombing Range Road – Southern Route	1.0	15,599	0.5	24,848
Longhorn	4.0	37,488	1.0	51,424
Interstate 84	2.3	28,134	0.7	38,095
Variation S1-A1	*0.3*	*4,506*	*0.1*	*4,715*
Variation S1-A2	*0.1*	*1,700*	*0.1*	*2,603*
Interstate 84 – Southern Route	2.4	28,882	0.8	40,816

Confined Animal Feeding Operation

The three CAFOs are within the study corridor could be affected by the construction and continued operations and maintenance of the new transmission line. These CAFOs are large concentrated dairy operations and are permitted for between 6,000 and 12,900 dairy cattle. CAFO operations will be affected by exclusion fencing and surface disturbances that would take land out of production. Surface disturbances discussed in 3.2.7 would affect the ratio of animal units to crop area and CAFO's ability to manage manure and meet the terms of their NPDES permits and comprehensive nutrient management plans. Since the area that could be treated with manure would be reduced, CAFOs would have to reduce the carrying capacity of dairies crossed by the B2H Project.

Adverse impacts on CAFOs would occur under four of the proposed route alignments. Surface disturbances to CAFO operations are highest under the Longhorn Alternative and could be completely avoided under most of the alternative routes. These disturbances would be highest during construction and could reduce carrying capacities between 223 and 7,836 fewer dairy cows, depending on route and alternative (Table 3-583). Reduced carrying capacities of dairies during construction of the B2H Project are expected to result in loss in production of between $118,272 and $4.2 million (Table 3-584). Reduced carrying capacities of dairies during construction of the B2H Project are expected to result in loss in production of between $464,640 and $15.6 million (Table 3-584).

Residual impacts on CAFOs once design features of the B2H Project for environmental protection are implemented would be considerably less than temporary impacts during construction. Residual impacts on carrying capacities result in reduction of 59 to 2,107 head (Table 3-583). The value of this reduced carrying capacity range from $139,392 and $4.2 million as reported in Table 3-584.

Table 3-583. Reduced Confined Animal Feeding Operation Capacities for Segment 1—Morrow to Umatilla		
Alternative Route	Fewer Cows	
	Construction	Operations
Applicant's Proposed Action	0	0
Variation S1-B1	*0*	*0*
Variation S1-B2	*0*	*0*
East of Bombing Range Road	0	0
Applicant's Proposed Action – Southern Route	0	0
West of Bombing Range Road – Southern Route	0	0
Longhorn	7,836	2,107
Interstate 84	223	59
Variation S1-A1	*0*	*0*
Variation S1-A2	*232*	*70*
Interstate 84 – Southern Route	225	62

Table 3-584. Value of Lost Confined Animal Feeding Operation Carrying Capacity for Segment 1—Morrow to Umatilla		
Alternative Route	Value of Lost Capacity (dollars)	
	Construction	Operations
Applicant's Proposed Action	0	0
Variation S1-B1	*0*	*0*
Variation S1-B2	*0*	*0*
East of Bombing Range Road	0	0
Applicant's Proposed Action – Southern Route	0	0
West of Bombing Range Road – Southern Route	0	0
Longhorn	15,671,040	4,213,440
Interstate 84	445,632	118,272
Variation S1-A1	*0*	*0*
Variation S1-A2	*464,640*	*139,392*
Interstate 84 – Southern Route	449,856	124,608

Reduced CAFO carrying capacities would result in an economic loss that would ripple through the socioeconomic study area's economy, reducing local opportunities for employment and income. Changes in local employment and income are reported below in Table 3-585. Direct effects associated with lower carrying capacities at the three dairies could result in up to 13 fewer jobs and $1.2 million in foregone labor income in the agricultural sector. In addition to direct effects in the agricultural sector, adverse impacts on dairy production within the B2H Project corridor could mean up to 70 fewer local jobs and $2.9 million in foregone labor income in secondary industries that provide input supplies and support household spending (Table 3-585).

Table 3-585. Annual Economic Losses Resulting from Reduced Confined Animal Feeding Operation Capacities for Segment 1— Morrow to Umatilla

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.0	0	0.0	0
Variation S1-B1	*0.0*	*0*	*0.0*	*0*
Variation S1-B2	*0.0*	*0*	*0.0*	*0*
East of Bombing Range Road	0.0	0	0.0	0
Applicant's Proposed Action – Southern Route	0.0	0	0.0	0
West of Bombing Range Road – Southern Route	0.0	0	0.0	0
Longhorn	13.1	1,236,207	70.9	2,929,698
Interstate 84	0.4	34,701	2.0	83,311
Variation S1-A1	*0.0*	*0*	*0.0*	*0*
Variation S1-A2	*0.4*	*40,897*	*2.1*	*86,864*
Interstate 84 – Southern Route	0.4	6,560	2.0	84,101

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

Livestock Grazing

Grazing occurs on public and private rangelands in the Morrow to Umatilla study corridor, and is a source of income for private landowners. Both the USFS and BLM provide for livestock grazing on active allotments in the B2H Project area. States also lease land for grazing and have similar systems in place for management of grazing leases. Impacts on grazing on private land, other than where federally managed grazing allotments occur on private land and where land is zoned as Exclusive Range Use, are not disclosed in this EIS, as data is unavailable to identify where grazing is occurring. Acres of federally managed allotments on private land within Segment 1 are discussed in Section 3.2.7.

Short-term impacts on grazing would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Impacts on grazing operations would be temporary during the construction period and limited to areas of construction activity, and could include:

- Potential spread of noxious and invasive plant species
- Interference with livestock management
- Interference with access to livestock operations, and
- Potential increased mortality of livestock from increased traffic.
- Disturbance of calving and lambing areas

Long-term impacts on grazing allotments would result from permanent construction disturbance due to loss of vegetation on land occupied by structure pad areas, communication stations, stations and permanent access roads. During operations and maintenance, pasture and rangeland would be

removed from grazing where they are occupied by support structures, stations, regeneration stations, or access roads; the remainder of the rangeland within the right-of-way would be available for grazing.

Residual impacts on rangeland within grazing allotments crossed by the B2H Project would be low after the application of design features of the B2H Project for environmental protection (refer to Table 2-7), which would include vegetation reclamation.

Surface disturbances associated with construction and operations of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage available on designated grazing allotments, which generally provides feed during a critical time of the year when livestock transition from winter-feeding areas to summer ranges (Table 3-586).

Table 3-586. Estimated Disturbance in Designated Grazing Allotments in Segment 1—Morrow to Umatilla

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	96	26
Variation S1-B1	*102*	*35*
Variation S1-B2	*79*	*26*
East of Bombing Range Road	95	25
Applicant's Proposed Action – Southern Route	97	27
West of Bombing Range Road – Southern Route	102	32
Longhorn	98	26
Interstate 84	137	36
Variation S1-A1	*0*	*0*
Variation S1-A2	*0*	*0*
Interstate 84 – Southern Route	138	38

Estimated federal forage losses associated with surface disturbances within the study corridor are reported below in terms of AUMs, the amount of forage to fulfill the metabolic requirements by one "animal unit[10]" for one month (Table 3-587).

Table 3-587. Estimated Annual Federal Forage Losses in Segment 1—Morrow to Umatilla

Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	3	<1
Variation S1-B1	*3*	*1*
Variation S1-B2	*9*	*3*
East of Bombing Range Road	3	<1
Applicant's Proposed Action – Southern Route	3	<1
West of Bombing Range Road – Southern Route	3	<1

[10]The animal unit (AU) is a standard unit used in calculating the relative grazing impact of different kinds and classes of livestock. One animal unit is defined as a 1000 lb (450 kg) beef cow with or without a nursing calf, with a daily dry matter forage requirement of 26 lb (11.8 kg).

Table 3-587. Estimated Annual Federal Forage Losses in Segment 1—Morrow to Umatilla		
Alternative Route	Animal Unit Months	
	Construction	Operations
Longhorn	3	<1
Interstate 84	3	<1
Variation S1-A1	*0*	*0*
Variation S1-A2	*0*	*0*
Interstate 84 – Southern Route	3	<1
Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.		

In addition to federal forage losses, surface disturbances reported in Table 3-586 would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands. Although short-term and residual federal AUMs losses are minimal compared to the overall forage requirements of herds in Morrow and Umatilla counties, local ranchers generally have to offset these forage losses with more expensive supplemental feed or forage from private pasturelands. Since most ranchers operate under very tight profit margins, these higher feed costs directly affect the bottom line of small ranching operations that rely on forage within the study corridor.

Timber Resources

Impacts on forested areas and forestry operations, including timber resources, result from the removal of tall-growing trees in and adjacent to the right-of-way. Construction of the B2H Project through timber management areas and other forested lands will require the Applicant to remove trees capable of growing tall enough to interfere with the power line within the right-of-way, and adjacent hazardous trees that could fall into transmission structures and access roads. The Applicant will minimize impacts on timber resources, reduce visual contrast, and reduce habitat disruptions by selectively removing trees within and along the edges of the right-of-way. Removal of trees with a mature height above 20 feet in right-of-way would be a long-term impact, persisting for the life of the B2H Project. Once construction is complete, staging areas, pulling and tensioning sites, tower sites and access roads are revegetated with appropriate native vegetation to promote and maintain wildlife, reduce invasion pressure by non-native plant species, and mitigate impacts on wildlife habitat.

Depending on the alternative route, construction of the B2H Project would require the selective vegetation removal from approximately 122 to 387 acres of forested woodlands in the Wallowa-Whitman National Forest, on forested lands managed by the BLM and Oregon, and on private lands (Table 3-588). Forest Inventory and Analysis data for eastern Oregon indicate that more than 90 percent of forest woodlands in this segment are timberlands, forests capable of growing 20 cubic feet or more per acre per year of industrial woods (USDA 2004). Potential B2H Project impacts on timber resources include loss of harvestable timber, a loss of future timber revenue, and potential constraints

on certain types of timber harvest operations adjacent to the right-of-way for safety near transmission components.

As shown by Table 3-588, impacts on timber resources are anticipated to be highest under the Applicant's Proposed Action – Southern Route, where approximately 354 acres of timberland are anticipated to be disturbed during construction and 123 acres would be permanently taken out of production. Since there are no timber resources in Variation S1-A1 or S1-A2, long-term impacts on timber resources can be completely avoided through these route variations.

Table 3-588. Estimated Disturbance in Forests and Timberlands in Segment 1—Morrow to Umatilla

Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	337.6	90.9	309.0	83.2
Variation S1-B1	*130.2*	*39.1*	*119.2*	*35.8*
Variation S1-B2	*122.0*	*33.8*	*111.7*	*30.9*
East of Bombing Range Road	345.7	112.0	316.4	102.5
Applicant's Proposed Action – Southern Route	387.0	134.8	354.2	123.4
West of Bombing Range Road – Southern Route	371.2	99.8	339.8	91.4
Longhorn	358.7	112.0	328.3	102.5
Interstate 84	336.8	89.5	308.3	81.9
Variation S1-A1	*0*	*0.0*	*0*	*0.0*
Variation S1-A2	*0*	*0.0*	*0*	*0.0*
Interstate 84 – Southern Route	370.3	101.8	338.9	93.2

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project.

Indirect impacts associated with the loss of timber production may include a minimal loss or gain of work for those employed in the timber industry due to the amount of timber being processed. For example, additional jobs may be created in the forest products industry due to the removal of forestland for timber in the short-term, while jobs may be lost in the long term if these resources are removed.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-term (Table 3-589); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses.

Table 3-589. Number of Residences in the Study Corridor in Segment 1—Morrow to Umatilla

Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	1	2	13	26
Variation S1-B1	*0*	*1*	*0*	*2*	*2*
Variation S1-B2	*0*	*0*	*0*	*0*	*6*
East of Bombing Range Road	0	1	2	13	26
Applicant's Proposed Action to Southern Route	0	1	1	9	24
West of Bombing Range Road to Southern Route	0	1	1	6	36
Longhorn	0	2	2	12	24
I-84		2	29	35	72
Variation S1-A1	*0*	*0*	*3*	*5*	*12*
Variation S1-A2	*0*	*2*	*2*	*3*	*15*
I-84 to Southern Route	0	2	28	31	70

Conclusions

Construction of Segment 1 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 1 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 1 would be high and range between $ 266,000 under the West of Bombing Range Road – Southern Route and $666,400 under the East of Bombing Range Road Route during construction, and between $83,000 and $177,000 annually during operations. Reduced crop yields within Segment 1 will have relatively small adverse impacts on local employment and income during construction and operations. Depending on the route chosen, reduced crop yields associated with B2H surface disturbances could result in 3 to 8 fewer jobs and $100,000 to $328,000 less labor income during construction, and between 2 to 4 jobs and between $40,000 and $92,000 in labor income on annual average during operations. While these adverse economic impacts may be small in

context of the regional economy of the socioeconomic study area, these employment opportunities may be of greater importance in the local communities adjacent to Segment 1.

Construction and operation of the B2H Project would have large adverse impacts on CAFOs under the Longhorn route. The large loss in carrying capacity under this alternative would make it more difficult for affected operations to remain environmental compliant and financially viable, potentially causing local CAFOs to close. Impacts on CAFOs would be large to moderate under the two Interstate-84 Alternatives, but could be avoided under both of the Applicant's Proposed Action Alternative routes, and the routes east and west of Bombing Range Road.

Federal forage losses resulting from surface disturbances during the construction and operation of the B2H Project would be relatively small under all routes. These losses in federal would range between 3 and 12 AUMs during construction and between > 1 and 3 AUMs annually once temporarily disturbed areas are restored. In this segment, the Applicant's Proposed Action Alternative with Variation S1-B2 would have the largest adverse impact on federal forage. In addition to federal forage losses, surface disturbances reported would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Construction and operation of Segment 1 would have a relatively large impact on local timber resources under all route alternatives. Surface disturbances affected forested lands could impact between 308 acres of timberland under the Interstate-84 Route and 428 acres of timberland under the Applicant's Proposed Action Alternative with Variation S1-B1. The clearing and removal of timber to enable the construction of Segment 1 would boost economic activity in the regional logging and wood processing sectors, temporarily increasing employment and income these sectors. During operations surface disturbances in forested areas would decline as staging sites are rehabilitated and disturbed vegetation grows back. In the long-run, operations of the B2H Project would withdraw between 82 acres of timberland under the Interstate-84 Route and 119 acres under the Applicant's Proposed Action Alternative with Variation S1-B1 from future timber production.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Interstate-84 Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route.

Impacts on residential property owners would be lowest under the Longhorn and Applicant's Proposed Action to Southern Route because these routes have fewer residential structures within a half mile of centerline. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 2—BLUE MOUNTAINS

The Blue Mountains Segment of the B2H Project area is located primarily in Union County and includes three alternative routes and six areas of local variations.

Irrigated Agriculture

Although there is designated prime farmland within the study corridor of Segment 2, agricultural use of lands within this segment of the B2H Project is relatively small. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 23 acres of private croplands could be disturbed during the construction of the B2H Project, depending on the alternative route. These surface disturbances may affect the production of field crops, grass and private pasturelands. Short-term agricultural yield losses under the alternatives are anticipated to range between $1,432 under Variation S2-C2 and $14,994 under the Mill Creek Route (Table 3-590).

Table 3-590. Lost Agricultural Production during Construction in Segment 2—Blue Mountains

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/ Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	11,686	0	1,492	0	0	13,178
Variation S2-A1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-A2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-B1	*1,480*	*0*	*0*	*0*	*0*	*1,480*
Variation S2-B2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-C1	*1,538*	*0*	*0*	*0*	*0*	*1,538*
Variation S2-C2	*0*	*0*	*1,432*	*0*	*0*	*1,432*
Variation S2-E1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-E2	*1,448*	*0*	*0*	*0*	*0*	*1,448*
Variation S2-F1	*8,338*	*0*	*0*	*0*	*0*	*8,338*
Variation S2-F2	*2,818*	*0*	*0*	*0*	*0*	*2,818*
Glass Hill	8,648	0	1,472	0	0	10,120
Variation S2-D1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-D2	*0*	*0*	*0*	*0*	*0*	*0*
Mill Creek	11,945	0	3,049	0	0	14,994

Yield losses resulting from the construction of the B2H Project could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 2 are anticipated to be low and persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported on the next page in Table 3-591.

Table 3-591. Economic Losses of Reduced Yields During Construction in Segment 2—Blue Mountains

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.03	685	0.09	3,678
Variation S2-A1	*0.00*	*0*	*0.00*	*0*
Variation S2-A2	*0.00*	*0*	*0.00*	*0*
Variation S2-B1	*0.00*	*87*	*0.01*	*443*
Variation S2-B2	*0.00*	*0*	*0.00*	*0*
Variation S2-C1	*0.00*	*90*	*0.01*	*460*
Variation S2-C2	*0.00*	*0*	*0.00*	*175*
Variation S2-E1	*0.00*	*0*	*0.00*	*0*
Variation S2-E2	*0.00*	*85*	*0.01*	*433*
Variation S2-F1	*0.02*	*489*	*0.06*	*2,494*
Variation S2-F2	*0.01*	*165*	*0.02*	*843*
Glass Hill	0.03	507	0.07	2,767
Variation S2-D1	*0.00*	*0*	*0.00*	*0*
Variation S2-D2	*0.00*	*0*	*0.00*	*0*
Mill Creek	0.04	700	0.10	3,946

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $409 and $4,933 each growing season, and would have minimal effects on local economic conditions (Table 3-592). Direct and secondary economic impacts associated with these long-term yield losses are shown below in (Table 3-593).

Table 3-592. Lost Annual Agricultural Production During Operations in Segment 2—Blue Mountains

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	3,723	0	475	0	0	4,198
Variation S2-A1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-A2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-B1	*485*	*0*	*0*	*0*	*0*	*485*
Variation S2-B2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-C1	*543*	*0*	*0*	*0*	*0*	*543*
Variation S2-C2	*0*	*0*	*409*	*0*	*0*	*409*
Variation S2-E1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-E2	*452*	*0*	*0*	*0*	*0*	*452*

Table 3-592. Lost Annual Agricultural Production During Operations in Segment 2—Blue Mountains

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Variation S2-F1	*2,366*	*0*	*0*	*0*	*0*	*2,366*
Variation S2-F2	*827*	*0*	*0*	*0*	*0*	*827*
Glass Hill	2,676	0	455	0	0	3,131
Variation S2-D1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-D2	*0*	*0*	*0*	*0*	*0*	*0*
Mill Creek	3,930	0	1,003	0	0	4,933

Table 3-593. Annual Economic Losses of Reduced Yields During Operations in Segment 2—Blue Mountains

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.03	685	0.09	3,678
Variation S2-A1	*0.00*	*0*	*0.00*	*0*
Variation S2-A2	*0.00*	*0*	*0.00*	*0*
Variation S2-B1	*0.00*	*87*	*0.01*	*443*
Variation S2-B2	*0.00*	*0*	*0.00*	*0*
Variation S2-C1	*0.00*	*90*	*0.01*	*460*
Variation S2-C2	*0.00*	*0*	*0.00*	*175*
Variation S2-E1	*0.00*	*0*	*0.00*	*0*
Variation S2-E2	*0.00*	*85*	*0.01*	*433*
Variation S2-F1	*0.02*	*489*	*0.06*	*2,494*
Variation S2-F2	*0.01*	*165*	*0.02*	*843*
Glass Hill	0.03	507	0.07	2,767
Variation S2-D1	*0.00*	*0*	*0.00*	*0*
Variation S2-D2	*0.00*	*0*	*0.00*	*0*
Mill Creek	0.04	700	0.10	3,946

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Blue Mountains study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations within Segment 2. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

As discussed above in the Livestock Grazing section under Segment 1, activities associated with the construction and continued operation of the B2H Project may have adverse effects on grazing resources within the study corridor. Construction activities would adversely affect the access and availability of forage on affected grazing allotments; however, design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects that persist during regular operation of the B2H Project. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 2 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Acres of temporary and permanently affected designated grazing allotments during construction and operations are shown below for each alternative and local area of variation (Table 3-594).

Table 3-594. Estimated Disturbance in Designated Grazing Allotments for Segment 2—Blue Mountains

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	267	83
Variation S2-A1	*27*	*7*
Variation S2-A2	*52*	*13*
Variation S2-B1	*18*	*6*
Variation S2-B2	*0*	*0*
Variation S2-C1	*48*	*17*
Variation S2-C2	*63*	*18*
Variation S2-E1	*20*	*7*
Variation S2-E2	*31*	*10*
Variation S2-F1	*95*	*27*
Variation S2-F2	*124*	*36*
Glass Hill	277	85
Variation S2-D1	*0*	*0*
Variation S2-D2	*0*	*0*
Mill Creek	226	75

Surface disturbances associated with construction and operations of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges.

Estimated federal forage losses associated with surface disturbances within the study corridor are reported in terms of AUMs (Table 3-595). In addition to federal forage losses, surface disturbances reported would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Table 3-595. Estimated Annual Forage Losses in Segment 2—Blue Mountains		
Alternative Route	Animal Unit Months (AUMs)	
	Construction	Operations
Applicant's Proposed Action	3	1
Variation S2-A1	*3*	*<1*
Variation S2-A2	*5*	*1*
Variation S2-B1	*<1*	*<1*
Variation S2-B2	*0*	*0*
Variation S2-C1	*0*	*0*
Variation S2-C2	*0*	*0*
Variation S2-E1	*0*	*0*
Variation S2-E2	*0*	*0*
Variation S2-F1	*0*	*0*
Variation S2-F2	*0*	*0*
Glass Hill	3	1
Variation S2-D1	*0*	*0*
Variation S2-D2	*0*	*0*
Mill Creek	6	2

Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.

Although short-term and residual AUMs losses are minimal compared to the overall forage requirements of herds in Union County, local ranchers generally have to offset these forage losses with more expensive supplemental feed or forage from private pasturelands. Since most ranchers operate under very tight profit margins, these higher feed costs directly affect the bottom line of small ranching operations that rely on forage within the study corridor.

Timber Resources

Depending on the alternative route, construction of the B2H Project would require the selective removal of vegetation on approximately 5.5 to 301.7 acres of forested woodlands in Union County (Table 3-596). Forest Inventory and Analysis data for eastern Oregon indicated that approximately 93 percent of forest woodlands in Union County are timberlands, forests capable of growing 20 cubic feet or more per acre per year of industrial woods (USDA 2004). Potential B2H Project impacts on timber resources include loss of harvestable timber, a loss of future timber revenue, and potential constraints on certain types of timber harvest operations adjacent to the right-of-way for safety near transmission components.

As shown by Table 3-596, impacts on timber resources after revegetation are anticipated to be highest under the Applicant's Proposed Action Alternative, with 279.1 acres of timberland are anticipated to be disturbed during construction and 88.9 acres could be permanently taken out of production. Impacts on timber resources could be minimized under Variation S2-F2, where only 5.1 acres would be disturbed during the construction of the B2H Project. Once construction areas have been restored, less than 2 acres of timberland would be affected by the B2H Project.

Table 3-596. Estimated Disturbance in Forests and Timberlands in Segment 2—Blue Mountains

Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	301.7	96.1	279.1	88.9
Variation S2-A1	*34.8*	*11.4*	*32.2*	*10.5*
Variation S2-A2	*42.1*	*12.9*	*39.0*	*11.9*
Variation S2-B1	*46.9*	*16.5*	*43.4*	*15.3*
Variation S2-B2	*47.7*	*18.5*	*44.2*	*17.1*
Variation S2-C1	*139.6*	*44.9*	*129.2*	*41.5*
Variation S2-C2	*136.0*	*42.5*	*125.8*	*39.3*
Variation S2-E1	*33.9*	*10.5*	*31.4*	*9.7*
Variation S2-E2	*32.9*	*12.7*	*30.4*	*11.8*
Variation S2-F1	*14.6*	*5.2*	*13.5*	*4.9*
Variation S2-F2	*5.5*	*1.8*	*5.1*	*1.7*
Glass Hill	254.8	66.2	235.7	61.2
Variation S2-D1	*68.5*	*22.5*	*63.3*	*20.8*
Variation S2-D2	*68.5*	*20.1*	*63.3*	*18.6*
Mill Creek	208.2	54.1	192.6	50.0

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project.

Indirect impacts associated with the loss of timber production may include a minimal loss or gain of work for those employed in the timber industry due to the amount of timber being processed. For example, additional jobs may be created in the forest products industry due to the removal of forestland for timber in the short-term, while jobs may be lost in the long term if these resources are removed.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-

term (Table 3-597); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses.

Table 3-597. Number of Residences in the Study Corridor in Segment 2—Blue Mountains

Alternative Route	Crossed by the Reference Centerline	In the Right-of-way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	0	1	1	3
Variation S2-A1	*0*	*0*	*0*	*0*	*0*
Variation S2-A2	*0*	*0*	*0*	*0*	*0*
Variation S2-B1	*0*	*0*	*0*	*0*	*0*
Variation S2-B2	*0*	*0*	*0*	*0*	*1*
Variation S2-C1	*0*	*0*	*0*	*0*	*3*
Variation S2-C2	*0*	*0*	*0*	*1*	*5*
Variation S2-E1	*0*	*0*	*0*	*0*	*0*
Variation S2-E2	*0*	*0*	*0*	*0*	*1*
Variation S2-F1	*0*	*0*	*1*	*1*	*0*
Variation S2-F2	*0*	*0*	*0*	*0*	*2*
Glass Hill	0	0	1	1	2
Variation S2-D1	*0*	*0*	*0*	*0*	*2*
Variation S2-D2	*0*	*0*	*0*	*0*	*2*
Mill Creek	0	0	0	9	26

Conclusions

Construction of Segment 2 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 2 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 2 would be low and range between $10,100 under the Glass Hill Route and $14,900 under the Mill Creek Route during construction, and between $3,100 and $4,900 annually during operations. Reduced crop yields within Segment 2 would have negligible adverse impacts on local employment and income during construction and operations.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project would be relatively small under all routes. These losses would range between 3 and 8 AUMs during construction, and between 1 and 2 AUMs annually once temporarily disturbed areas are restored. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Construction and operation of Segment 2 would have a relatively large impact on local timber resources under all route alternatives. Surface disturbances affecting forested lands could impact between 193 acres of timberland under the Mill Creek Route and 408 acres of timberland under the Applicant's Proposed Action Alternative with Variation S2-C1. The clearing and removal of timber to enable the construction of Segment 2 would boost economic activity in the regional logging and wood processing sectors, temporarily increasing employment and income these sectors. During operations surface disturbances in forested areas would decline as staging sites are rehabilitated and disturbed vegetation grows back. In the long-run, operations of the B2H Project would withdraw between 50 acres of timberland under the Mill Creek Route and 131 acres under the Applicant's Proposed Action Alternative with Variation S2-C1 from future timber production.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Mill Creek Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route. The number of residential property owners affected by construction and operation of the B2H Project would be considerably lower under the Applicant's Proposed Action Alternative and the Glass Hill route. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 3—BAKER VALLEY

The Baker Valley Segment of the B2H Project area is located primarily in Baker County and includes seven alternative routes and three areas of local variations.

Irrigated Agriculture

The Baker Valley Segment is less agricultural intensive than Segment 1, but considerably more intensive than Segment 2. High-value agricultural lands in this segment include prime farmland and other irrigated croplands. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 2 and 115 acres of private croplands in Segment 3 could be disturbed during the construction of the B2H Project, depending on the alternative route. These surface disturbances may affect the production of field crops, vegetables, and grass and private pasturelands. Short-term agricultural yield losses under the alternatives are anticipated to range between $1,478 under Variation S3-B1 and $76,161 under the Flagstaff A Alternative (Table 3-598).

Table 3-598. Lost Agricultural Production during Construction in Segment 3—Baker Valley						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	11,583	0	36,960	0	0	48,543
Variation S3-A1	*4,053*	*0*	*1,379*	*0*	*0*	*5,432*
Variation S3-A2	*1,331*	*0*	*1,360*	*0*	*0*	*2,691*
Variation S3-B1	*0*	*0*	*1,478*	*0*	*0*	*1,478*
Variation S3-B2	*8,454*	*0*	*0*	*0*	*0*	*8,454*
Variation S3-B3	*8,222*	*0*	*0*	*0*	*0*	*8,222*
Variation S3-B4	*20,263*	*0*	*4,138*	*4,681*	*0*	*29,083*
Variation S3-B5	*16,676*	*0*	*7,095*	*4,816*	*0*	*28,587*
Variation S3-C1	*7,692*	*0*	*32,987*	*0*	*0*	*40,678*
Variation S3-C2	*9,152*	*0*	*37,382*	*0*	*0*	*46,535*
Variation S3-C3	*7,886*	*0*	*19,325*	*0*	*0*	*27,210*
Variation S3-C4	*4,751*	*0*	*19,404*	*0*	*0*	*24,155*
Variation S3-C5	*1,771*	*0*	*28,934*	*0*	*0*	*30,705*
Variation S3-C6	*3,594*	*0*	*11,009*	*0*	*0*	*14,603*
Flagstaff A	28,698	0	42,491	4,972	0	76,161
Timber Canyon	32,576	0	25,344	0	0	57,920
Flagstaff A – Burnt River Mountain	28,957	0	29,568	5,017	0	63,542
Flagstaff B	19,998	0	35,006	0	0	55,005
Flagstaff B – Burnt River West	12,100	0	29,344	0	0	41,443
Flagstaff B – Durkee	16,993	0	14,197	0	0	31,189

Yield losses resulting from the construction of the B2H Project could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 3 are anticipated to be relatively low and persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported below in Table 3-599.

Table 3-599. Economic Losses of Reduced Yields During Construction for Segment 3—Baker Valley				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.03	679	0.20	7,990
Variation S3-A1	*0.01*	*238*	*0.03*	*1,381*
Variation S3-A2	*0.00*	*78*	*0.01*	*565*
Variation S3-B1	*0.00*	*0*	*0.00*	*181*
Variation S3-B2	*0.03*	*496*	*0.06*	*2,529*
Variation S3-B3	*0.02*	*482*	*0.06*	*2,459*
Variation S3-B4	*0.09*	*3,298*	*0.18*	*7,332*

Table 3-599. Economic Losses of Reduced Yields During Construction for Segment 3—Baker Valley				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Variation S3-B5	*0.08*	*3,148*	*0.17*	*6,642*
Variation S3-C1	*0.02*	*451*	*0.16*	*6,340*
Variation S3-C2	*0.03*	*537*	*0.18*	*7,315*
Variation S3-C3	*0.02*	*462*	*0.12*	*4,725*
Variation S3-C4	*0.01*	*279*	*0.09*	*3,797*
Variation S3-C5	*0.01*	*104*	*0.10*	*4,073*
Variation S3-C6	*0.01*	*211*	*0.06*	*2,423*
Flagstaff A	0.12	3,923	0.36	14,598
Timber Canyon	0.10	1,910	0.32	12,848
Flagstaff A – Burnt River Mountain	0.12	3,959	0.33	13,101
Flagstaff B	0.06	1,172	0.26	10,269
Flagstaff B – Burnt River West	0.04	709	0.18	7,212
Flagstaff B – Durkee	0.05	996	0.17	6,821
Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $462 and $23,329 each growing season, and would have minimal effects on local economic conditions (Table 3-600. Direct and secondary economic effects associated with these long-term yield losses are shown below in (Table 3-601).

Table 3-600. Lost Annual Agricultural Production during Operations in Segment 3—Baker Valley						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	3,620	0	11,550	0	0	15,170
Variation S3-A1	*1,066*	*0*	*363*	*0*	*0*	*1,429*
Variation S3-A2	*336*	*0*	*343*	*0*	*0*	*679*
Variation S3-B1	*0*	*0*	*462*	*0*	*0*	*462*
Variation S3-B2	*2,482*	*0*	*0*	*0*	*0*	*2,482*
Variation S3-B3	*2,249*	*0*	*0*	*0*	*0*	*2,249*
Variation S3-B4	*5,332*	*0*	*1,089*	*1,232*	*0*	*7,653*
Variation S3-B5	*4,731*	*0*	*2,013*	*1,366*	*0*	*8,111*
Variation S3-C1	*2,715*	*0*	*11,642*	*0*	*0*	*14,357*
Variation S3-C2	*3,180*	*0*	*12,989*	*0*	*0*	*16,169*
Variation S3-C3	*2,909*	*0*	*7,128*	*0*	*0*	*10,037*

Table 3-600. Lost Annual Agricultural Production during Operations in Segment 3—Baker Valley

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Variation S3-C4	*1,745*	*0*	*7,128*	*0*	*0*	*8,873*
Variation S3-C5	*776*	*0*	*12,672*	*0*	*0*	*13,448*
Variation S3-C6	*1,590*	*0*	*4,871*	*0*	*0*	*6,461*
Flagstaff A	8,790	0	13,015	1,523	0	23,329
Timber Canyon	11,673	0	9,082	0	0	20,755
Flagstaff A – Burnt River Mountain	9,049	0	9,240	1,568	0	19,857
Flagstaff B	6,063	0	10,613	0	0	16,676
Flagstaff B – Burnt River West	4,137	0	10,032	0	0	14,169
Flagstaff B – Durkee	5,972	0	4,990	0	0	10,962

Table 3-601. Annual Economic Losses of Reduced Yields during Operations in Segment 3—Baker Valley

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.01	212	0.06	2,497
Variation S3-A1	*0.00*	*63*	*0.01*	*363*
Variation S3-A2	*0.00*	*20*	*0.00*	*143*
Variation S3-B1	*0.00*	*0*	*0.00*	*57*
Variation S3-B2	*0.01*	*146*	*0.02*	*742*
Variation S3-B3	*0.01*	*132*	*0.02*	*673*
Variation S3-B4	*0.02*	*868*	*0.05*	*1,929*
Variation S3-B5	*0.02*	*893*	*0.05*	*1,885*
Variation S3-C1	*0.01*	*159*	*0.06*	*2,238*
Variation S3-C2	*0.01*	*186*	*0.06*	*2,542*
Variation S3-C3	*0.01*	*17*	*0.04*	*1,743*
Variation S3-C4	*0.01*	*102*	*0.03*	*1,395*
Variation S3-C5	*0.00*	*45*	*0.04*	*1,784*
Variation S3-C6	*0.00*	*93*	*0.03*	*1,072*
Flagstaff A	0.04	1,202	0.11	4,472
Timber Canyon	0.03	684	0.11	4,604
Flagstaff A – Burnt River Mountain	0.04	1,237	0.10	4,094
Flagstaff B	0.02	355	0.08	3,113
Flagstaff B – Burnt River West	0.01	243	0.06	2,466
Flagstaff B – Durkee	0.02	350	0.06	2,397

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Baker Valley study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations within Segment 3. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

Activities associated with the construction and continued operation of Segment 3 may have adverse effects on grazing resources within the study corridor. Like the other segments, short-term impacts would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects on livestock grazing within the study corridor over time. After reclamation, rangeland within the right-of-way would be available for grazing with the exception of areas occupied by support structures, stations, or access roads. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 3 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Total acreage of affected designated grazing allotments within each alternative and local area of variation during construction and operations are shown below in Table 3-602.

Table 3-602. Estimated Disturbance in Designated Grazing Allotments in Segment 3—Baker Valley

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	796	248
Variation S3-A1	*86*	*22*
Variation S3-A2	*80*	*20*
Variation S3-B1	*278*	*86*
Variation S3-B2	*197*	*58*
Variation S3-B3	*197*	*54*
Variation S3-B4	*163*	*43*
Variation S3-B5	*164*	*46*
Variation S3-C1	*336*	*118*
Variation S3-C2	*333*	*115*
Variation S3-C3	*271*	*100*
Variation S3-C4	*284*	*105*
Variation S3-C5	*499*	*218*
Variation S3-C6	*552*	*245*
Flagstaff A	682	208
Timber Canyon	1212	434
Flagstaff A – Burnt River Mountain	621	194
Flagstaff B	717	217
Flagstaff B – Burnt River West	850	290
Flagstaff B – Durkee	911	322

Surface disturbances associated with the construction, and ongoing operations and maintenance, of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges. Estimated federal forage losses associated with surface disturbances within the study corridor are reported below in terms of AUMs (Table 3-603).

Table 3-603. Estimated Annual Forage Losses in Segment 3—Baker Valley

Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	30	9
Variation S3-A1	*2*	*<1*
Variation S3-A2	*<1*	*<1*
Variation S3-B1	*11*	*3*
Variation S3-B2	*<1*	*<1*
Variation S3-B3	*0*	*0*
Variation S3-B4	*0*	*0*
Variation S3-B5	*<1*	*<1*
Variation S3-C1	*16*	*6*
Variation S3-C2	*12*	*4*
Variation S3-C3	*11*	*4*
Variation S3-C4	*11*	*4*
Variation S3-C5	*19*	*8*
Variation S3-C6	*38*	*17*
Flagstaff A	19	6
Timber Canyon	42	20
Flagstaff A – Burnt River Mountain	14	4
Flagstaff B	19	6
Flagstaff B – Burnt River West	19	6
Flagstaff B – Durkee	41	14

Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.

Federal forage losses in Segment 3 range between 14 AUMs under the Flagstaff A – Burnt River Mountain Alternative and 68 AUMs during construction under the Applicant's Proposed Action Alternative with Variations S3-C6. Once areas temporarily disturbed during construction are restored, residual impacts could reduce the federal forage base between 4 and 26 AUMs under these alternatives. In addition to these federal forage losses, surface disturbances may also adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Although these forage losses account for less than 1 percent of local herd's annual forage requirements, reduced forage availability within the study corridor could affect the profitability and

viability of individual operators. Since most ranchers operate under very tight profit margins, additional costs to offset forage losses with more expensive supplemental feed or private pasturelands could cause some local ranchers to reduce herd sizes or transition ranch resources from livestock production to other agricultural uses.

Timber Resources

Depending on the alternative route in Segment 3, construction of the B2H Project would require the selective removal of vegetation on approximately 0.6 to 518.5 acres of forested woodlands in Baker County (Table 3-604). Forest Inventory and Analysis data for eastern Oregon indicated that approximately 92 percent of forest woodlands in Baker County are timberlands, forests capable of growing 20 cubic feet or more per acre per year of industrial woods (USDA 2004). Potential B2H Project impacts on timber resources include loss of harvestable timber, a loss of future timber revenue, and potential constraints on certain types of timber harvest operations adjacent to the right-of-way for safety near transmission components.

As shown by Table 3-604, impacts on timber resources after revegetation are anticipated to be highest under the Timber Canyon Alternative, with 457.7 acres of timberland anticipated to be disturbed during construction and 125.2 acres of timberland permanently taken out of production. Impacts on timber resources could be avoided or minimized under Variations S3-A1 and S3-A2, where less than one acre would be disturbed during the construction and ongoing operation and maintenance of the B2H Project.

Table 3-604. Estimated Disturbance in Forests and Timberlands in Segment 3—Baker Valley

Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	5.8	1.8	5.3	1.7
Variation S3-A1	*0.6*	*0.2*	*0.6*	*0.2*
Variation S3-A2	*0.0*	*0.0*	*0.0*	*0.0*
Variation S3-B1	*2.6*	*0.9*	*2.4*	*0.8*
Variation S3-B2	*9.8*	*3.6*	*9.0*	*3.3*
Variation S3-B3	*7.1*	*2.6*	*6.5*	*2.4*
Variation S3-B4	*7.9*	*3.5*	*7.3*	*3.2*
Variation S3-B5	*11.1*	*4.9*	*10.2*	*4.5*
Variation S3-C1	*2.4*	*0.7*	*2.2*	*0.7*
Variation S3-C2	*2.2*	*0.8*	*2.0*	*0.7*
Variation S3-C3	*27.1*	*8.5*	*24.9*	*7.8*
Variation S3-C4	*25.9*	*7.8*	*23.7*	*7.2*
Variation S3-C5	*39.1*	*13.4*	*35.8*	*12.3*
Variation S3-C6	*95.4*	*33.5*	*87.5*	*30.7*
Flagstaff A	11.5	3.0	10.5	2.8
Timber Canyon	518.5	136.5	475.7	125.2
Flagstaff A – Burnt River Mountain	34.0	8.6	31.2	7.9
Flagstaff B	9.6	3.0	8.8	2.8
Flagstaff B – Burnt River West	34.0	8.6	31.2	7.9
Flagstaff B – Durkee	91.4	25.0	83.8	22.9

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project.

Indirect impacts associated with the loss of timber production may include a minimal loss or gain of work for those employed in the timber industry due to the amount of timber being processed. For example, additional jobs may be created in the forest products industry due to the removal of forestland for timber in the short-term, while jobs may be lost in the long term if these resources are removed.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-term (Table 3-605); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses.

Table 3-605. Number of Residences within Study Corridor in Segment 3—Baker Valley

Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	1	3	3	12
Variation S3-A1	*0*	*0*	*0*	*0*	*0*
Variation S3-A2	*0*	*0*	*0*	*0*	*0*
Variation S3-B1	*0*	*0*	*0*	*0*	*0*
Variation S3-B2	*0*	*0*	*2*	*3*	*6*
Variation S3-B3	*0*	*0*	*2*	*5*	*5*
Variation S3-B4	*0*	*0*	*2*	*5*	*5*
Variation S3-B5	*0*	*0*	*2*	*3*	*6*
Variation S3-C1	*0*	*1*	*3*	*3*	*10*
Variation S3-C2	*0*	*1*	*6*	*3*	*13*
Variation S3-C3	*0*	*2*	*3*	*1*	*7*
Variation S3-C4	*0*	*2*	*3*	*1*	*5*

Table 3-605. Number of Residences within Study Corridor in Segment 3—Baker Valley					
Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Variation S3-C5	*0*	*0*	*0*	*2*	*1*
Variation S3-C6	*0*	*0*	*0*	*3*	*0*
Flagstaff A	0	1	5	6	18
Timber Canyon	1	3	9	10	26
Flagstaff A – Burnt River Mountain	0	2	5	8	17
Flagstaff B	0	1	5	8	17
Flagstaff B – Burnt River West	0	0	2	7	8
Flagstaff B – Durkee	0	0	2	8	7

Recreation and Tourism

Alternative routes proposed in Segment 3 have the potential to impact the NHOTIC which could affect the recreational experience of visitors to the site. Construction of the transmission line may affect the quantity and type of visitors coming to NHOTIC, especially in the short-term. Decreases in visitation will have a negative economic impact on local businesses and communities. These impacts are expected to be short-term and tied more to construction activities though quality of the recreation experience may be affected in the long term by the presence of an infrastructure feature near the NHOTIC. Segments with the greatest impacts on the NHOTIC would be Applicant's Proposed Action Alternative, Variations S3-B1, S3-B2, S3-B3, and less under S3-B4, S3-B5, and Flagstaff Alternatives.

Conclusions

Construction of Segment 3 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 3 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 3 would have a moderately impact private grass and pasturelands, but have a small impact on other irrigated crop lands. Agricultural yield losses in Segment 3 would range between $31,100 under the Flagstaff B – Durkee Route and $95,000 under the Applicant's -Proposed Action with Variation S3-C2 during construction of the transmission line. After rehabilitation of temporarily disturbed areas, annual yield losses during operations of B2H would range between $10,900 and $31,300 under these alternatives. Reduced crop yields within Segment 3 would have negligible adverse impacts on local employment and income during construction and operations. Construction and operation of Segment 3 of the B2H Project would have no identifiable impact on CAFOs within this this segment. While adverse economic impacts associated with agriculture production may be negligible in context of the regional economy of the socioeconomic study area,

these employment opportunities may be of greater importance in the local communities adjacent to Segment 3.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project would be moderate under all route alternatives in Segment 3. These losses would range between 14 AUMs under the Flagstaff A – Burnt River Mountain Alternative and 68 AUMs during construction under the Applicant's Proposed Action Alternative with Variation S3-C6. Once temporarily disturbed areas are restored, operation of the B2H Project would reduce forage by 4 to 26 AUMs annually under these alternatives. In order to make up for these forage losses, local ranchers would have to supplement forage with more expensive grass and/ or hay feed or reduce their herd sizes. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

With the exception of the Timber Canyon Route Alternative, construction and operation of Segment 3 would have a relatively small impact on local timber resources. Construction through forested lands would disturb nearly 476 acres of timberland under the Timber Canyon Route and between 5 and 93 acres under the Applicant's Proposed Action Alternative with Variation S3-A2 and Variation S3-C6, respectively. The clearing and removal of timber to enable the construction of Segment 3 would boost economic activity in the regional logging and wood processing sectors, temporarily increasing employment and income these sectors. During operations surface disturbances in forested areas would decline as staging sites are rehabilitated and disturbed vegetation grows back. In the long-run, operations of the B2H Project would withdraw 125 acres of timberland from production under the Timber Canyon Alternative, and between 2 and 32 acres of timberland under the Applicant's Proposed Action Alternative with Variation S3-A2 and Variation S3-C6, respectively.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Timber Canyon Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route.

Impacts on residential property owners would be lowest under the Flagstaff B- Burnt River West and Durkee Route Alternatives because these routes have fewer residential structures within a half mile of the centerline. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

Construction of the transmission line may affect the quantity and type of visitors coming to NHOTIC, especially in the short-term. Decreases in visitation will have a negative economic impact on local businesses and communities. Segments with the greatest impacts on the NHOTIC would be Applicant's Proposed Action Alternative, Variations S3-B1, S3-B2, S3-B3, and less under S3-B4, S3-B5, and Flagstaff Alternatives.

SEGMENT 4—BROGAN

Segment 4 is located in southern Baker County and northern Malheur County and includes three alternative routes and one area of local variations

Irrigated Agriculture

Although there is designated prime farmland within the study corridor of the Brogan Segment, agricultural use of these lands are predominately for grass and pasturelands. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 53 acres of field crops and between 37 and 586 acres of private pastureland could be disturbed during the construction of the B2H Project, depending on the alternative route. Short-term agricultural yield losses under the alternatives are anticipated to range between $24,750 under Variation S4-A3 and $421,676 under the Tub Mountain South Route (Table 3-606).

Table 3-606. Lost Agricultural Production during Construction in Segment 4—Brogan

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	0	0	122,522	0	0	122,522
Variation S4-A1	*0*	*0*	*34,320*	*0*	*0*	*34,320*
Variation S4-A2	*0*	*0*	*26,294*	*0*	*0*	*26,294*
Variation S4-A3	*0*	*0*	*24,750*	*0*	*0*	*24,750*
Tub Mountain South	34,593	0	387,083	0	0	421,676
Willow Creek	33,449	0	200,475	0	0	233,924

Reduced production of field crops and grasses because of construction activities within the study corridor could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 4 are anticipated to be relatively low since most of these impacts result from affected grass and pasturelands, which are generally not very labor intensive to produce. These yield losses, and resulting economic impacts will persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported on the next page in Table 3-607.

Table 3-607. Economic Losses of Reduced Yields During Construction for Segment 4—Brogan

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	0	0.37	15,003
Variation S4-A1	*0.00*	*0*	*0.10*	*4,202*
Variation S4-A2	*0.00*	*0*	*0.08*	*3,220*
Variation S4-A3	*0.00*	*0*	*0.07*	*3,031*
Tub Mountain South	0.10	2,028	1.43	57,746
Willow Creek	0.10	1,961	0.86	34,554

Table 3-607. Economic Losses of Reduced Yields During Construction for Segment 4—Brogan				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $9,504 and $128,583 each growing season, but would have minimal effects on local economic conditions since most of these impacts are associated with the production of private grass and pasturelands (Table 3-608). Direct and secondary economic impacts associated with these long-term yield losses are shown below in (Table 3-609).

Table 3-608. Lost Annual Agricultural Production during Operations in Segment 4—Brogan						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	0	0	42,728	0	0	42,728
Variation S4-A1	*0*	*0*	*13,992*	*0*	*0*	3,992
Variation S4-A2	*0*	*0*	*9,926*	*0*	*0*	9,926
Variation S4-A3	*0*	*0*	*9,504*	*0*	*0*	9,504
Tub Mountain South	10,549	0	118,034	0	0	128,583
Willow Creek	10,406	0	62,370	0	0	72,776

Table 3-609. Annual Economic Losses of Reduced Yields During Operations in Segment 4—Brogan				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	0	0.13	5,232
Variation S4-A1	*0.00*	*0*	*0.04*	*1,713*
Variation S4-A2	*0.00*	*0*	*0.03*	*1,215*
Variation S4-A3	*0.00*	*0*	*0.03*	*1,164*
Tub Mountain South	0.03	618	0.44	17,609
Willow Creek	0.03	610	0.27	10,750
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Brogan study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations

within Segment 4. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

Activities associated with the construction and continued operation of Segment 4 may have adverse effects on grazing resources within the study corridor. Like the other segments, short-term impacts would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects on livestock grazing within the study corridor over time. After reclamation, rangeland within the right-of-way would be available for grazing with the exception of areas occupied by support structures, stations, or access roads. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 4 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Total acreage of affected designated grazing allotments within each alternative and local area of variation during construction and operations are shown below in Table 3-610.

Table 3-610. Estimated Disturbance in Designated Grazing Allotments in Segment 4—Brogan

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	884	310
Variation S4-A1	*133*	*54*
Variation S4-A2	*129*	*49*
Variation S4-A3	*133*	*51*
Tub Mountain South	701	215
Willow Creek	530	166

Surface disturbances associated with the construction, and ongoing operations and maintenance, of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges. Estimated federal forage losses associated surface disturbances within the study corridor are reported below in terms of AUMs (Table 3-611).

Table 3-611. Estimated Annual Forage Losses in Segment 4—Brogan		
Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	74	26
Variation S4-A1	*2*	*<1*
Variation S4-A2	*2*	*<1*
Variation S4-A3	*2*	*<1*
Tub Mountain South	94	29
Willow Creek	62	19
Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.		

Federal forage losses in Segment 4 range between 62 AUMs under the Willow Creek Alternative and 94 AUMs during construction under the Tub Mountain South Alternative. Once areas temporarily disturbed during construction are restored, residual surface disturbances are anticipated to reduce the federal forage base between 19 AUMs under the Willow Creek Alternative and 29 AUMs under the Tub Mountain South Alternative. In addition to these federal forage losses, surface disturbances may also adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Although these forage losses account for less than 1 percent of local herd's annual forage requirements, reduced forage availability within the study corridor could affect the profitability and viability of individual operators. Since most ranchers operate under very tight profit margins, additional costs to offset forage losses with more expensive supplemental feed or private pasturelands could cause some local ranchers to reduce herd sizes or transition ranch resources from livestock production to other agricultural uses.

Timber Resources

Regardless of the alternative route or local area of variation, activities associated with the construction and continued operations of the B2H Project will have minimal effects on timber resources within Segment 4. As shown by Table 3-612, impacts on timber resources after revegetation are anticipated to result in less than one acre of timberland along the Applicant's Proposed Action Alternative and the Willow Creek Alternative, and no identifiable impacts on timber resources during construction or operations under variations of the Applicant's Proposed Action Alternative or under the Tub Mountain South Alternative.

Table 3-612. Estimated Disturbance in Forests and Timberlands in Segment 4—Brogan				
Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	1.4	0.5	0.8	0.3
Variation S4-A1	*0.0*	*0.0*	*0.0*	*0.0*
Variation S4-A2	*0.0*	*0.0*	*0.0*	*0.0*
Variation S4-A3	*0.0*	*0.0*	*0.0*	*0.0*
Tub Mountain South	0.0	0.0	0.0	0.0
Willow Creek	3.2	1.2	1.7	0.6

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project. Impacts on timber resources within this segment are not anticipated to have a measurable effect on local economic conditions.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-term (Table 3-613); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses

Table 3-613. Number of Residences within Study Corridor in Segment 4—Brogan					
Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	0	0	2	3
Variation S4-A1	*0*	*0*	*0*	*2*	*0*
Variation S4-A2	*0*	*0*	*0*	*2*	*0*
Variation S4-A3	*0*	*0*	*0*	*0*	*2*
Tub Mountain South	*0*	*0*	*4*	*6*	*19*
Willow Creek	*0*	*0*	*0*	*4*	*3*

Conclusions

Construction of Segment 4 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 4 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Similar to Segment 3, agricultural impacts in Segment 4 would affect private grass and pasturelands more than other irrigated crop lands. Agricultural yield losses in Segment 4 would range between $147,200 under the Applicant's Proposed Action Alternative with Variation S4-A3 and $421,600 under the Tub Mountain South during construction. Approximately 86 percent of these impacts would be associated with yield losses in grass and pasturelands. After rehabilitation of temporarily disturbed areas, annual yield losses during operations of B2H would range between $52,200 and $72,700 under these alternatives. Reduced agricultural yields within Segment 4 would have negligible adverse impacts on local employment and income during construction and operations.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project through Segment 4 would be moderate under all route alternatives. These losses would range between 62 and 94 AUMs under the Willow Creek Route Alternative and the Tub Mountain South Alternative, respectively. Once temporarily disturbed areas are restored, operation of the B2H Project would reduce forage by 19 to 29 AUMs annually under these alternatives. In order to make up for these forage losses, local ranchers would have to supplement forage with more expensive grass and/ or hay feed or reduce their herd sizes. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Impacts on Timber resources in Segment 4 would be negligible during construction and operation under all route alternatives and variations. During construction, between 0 and 1.7 acres of timberland are anticipated to be disturbed under the Tub Mountain South and Willow Creek routes, respectively. Once temporarily disturbed areas are rehabilitated, less than 1 acre of timberland would be withdrawn from timber production under all route alternatives and variations.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Tub Mountain South Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route.

Impacts on residential property owners would be lowest under the Applicant's Proposed Action Alternative with Variation S4-A1 and S4-A2 because these routes have fewer residential structures within a half mile of centerline. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 5—MALHEUR

The Malheur Segment is located in Malheur County and includes three alternative routes and two areas of local variations.

Irrigated Agriculture

Agricultural use of lands within the study corridor of Segment 5 are similar to those in Segment 4. Although there is prime farmland and other irrigated croplands used for the production of field crops, agricultural lands within the study corridor are predominately used in grass and pastureland production. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 8 acres of field crops and between 9 and 598 acres of private pastureland could be disturbed during the construction of the B2H Project, depending on the alternative route. Short-term agricultural yield losses under the alternatives are anticipated to range between $5,914 under Variation S5-B1 and $396,010 under the Applicant's Proposed Action Alternative (Table 3-614).

Table 3-614. Lost Agricultural Production during Construction in Segment 5—Malheur

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	1,416	0	394,594	0	0	396,010
Variation S5-A1	*0*	*0*	*81,939*	*0*	*0*	*81,939*
Variation S5-A2	*0*	*0*	*88,862*	*0*	*0*	*88,862*
Variation S5-B1	*0*	*0*	*5,914*	*0*	*0*	*5,914*
Variation S5-B2	*5,248*	*0*	*13,398*	*0*	*0*	*18,646*
Malheur S	2,896	0	317,856	0	0	320,752
Malheur A	2,792	0	286,546	0	0	289,338

Reduced production of field crops and grasses because of construction activities within the study corridor could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 5 are anticipated to be relatively low since most of these impacts result from affected grass and pasturelands, which are generally not very labor intensive to produce. These yield losses, and resulting economic impacts will persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported on the next page in Table 3-615.

Table 3-615. Economic Losses of Reduced Yields During Construction in Segment 5—Malheur				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	83	1.20	48,742
Variation S5-A1	*0.00*	*0*	*0.25*	*10,033*
Variation S5-A2	*0.00*	*0*	*0.27*	*10,881*
Variation S5-B1	*0.00*	*0*	*0.02*	*724*
Variation S5-B2	*0.02*	*308*	*0.08*	*3,211*
Malheur S	*0.01*	*170*	*0.98*	*39,788*
Malheur A	*0.01*	*164*	*0.89*	*35,923*
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $1,980 and $112,112 each growing season, but would have minimal effects on local economic conditions since most of these impacts are associated with the production of private grass and pasturelands (Table 3-616). Direct and secondary economic impacts associated with these long-term yield losses are shown below in (Table 3-617).

Table 3-616. Lost Annual Agricultural Production during Operations in Segment 5—Malheur						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	401	0	111,712	0	0	112,112
Variation S5-A1	*0*	*0*	*21,021*	*0*	*0*	*21,021*
Variation S5-A2	*0*	*0*	*19,747*	*0*	*0*	*19,747*
Variation S5-B1	*0*	*0*	*1,980*	*0*	*0*	*1,980*
Variation S5-B2	*1,267*	*0*	*3,234*	*0*	*0*	*4,501*
Malheur S	866	0	95,073	0	0	95,939
Malheur A	801	0	82,249	0	0	83,051

Table 3-617. Annual Economic Losses of Reduced Yields During Operations in Segment 5—Malheur				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	23	0.34	13,799
Variation S5-A1	*0.00*	*0*	*0.06*	*2,574*
Variation S5-A2	*0.00*	*0*	*0.06*	*2,418*
Variation S5-B1	*0.00*	*0*	*0.01*	*242*
Variation S5-B2	*0.00*	*74*	*0.02*	*775*
Malheur S	0.00	51	0.29	11,901
Malheur A	0.00	47	0.25	10,311
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Malheur study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations within Segment 5. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

Activities associated with the construction and continued operation of Segment 5 may have adverse effects on grazing resources within the study corridor. Like the other segments, short-term impacts would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects on livestock grazing within the study corridor over time. After reclamation, rangeland within the right-of-way would be available for grazing with the exception of areas occupied by support structures, stations, or access roads. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 5 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Total acreage of affected designated grazing allotments within each alternative and local area of variation during construction and operations are shown in Table 3-618.

Table 3-618. Estimated Disturbance in Designated Grazing Allotments in Segment 5—Malheur		
Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	849	240
Variation S5-A1	*135*	*35*
Variation S5-A2	*147*	*33*
Variation S5-B1	*45*	*15*
Variation S5-B2	*16*	*4*
Malheur S	958	286
Malheur A	917	263

Surface disturbances associated with the construction, and ongoing operations and maintenance, of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges. Estimated forage losses associated surface disturbances within the study corridor are reported below in terms of AUMs (Table 3-619).

Table 3-619. Estimated Annual Forage Losses in Segment 5—Malheur		
Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	54	15
Variation S5-A1	*2*	*<1*
Variation S5-A2	*19*	*4*
Variation S5-B1	*<1*	*<1*
Variation S5-B2	*<1*	*<1*
Malheur S	74	22
Malheur A	69	19.7
Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.		

Federal forage losses in Segment 5 range between 54 AUMs under the Applicant's Proposed Action Alternative with Variation S5-B1 or B2 and 74 AUMs during construction under the Malheur S Alternative. Once areas temporarily disturbed during construction are restored, residual surface disturbances are anticipated to reduce the federal forage base between 15 AUMs and 22 AUMs under these alternatives. In addition to federal forage losses, surface disturbances may also adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Although these forage losses account for less than 1 percent of local herd's annual forage requirements, reduced forage availability within the study corridor could affect the profitability and viability of individual operators. Since most ranchers operate under very tight profit margins, additional

costs to offset forage losses with more expensive supplemental feed or private pasturelands may cause some local ranchers to reduce herd sizes or transition ranch resources from livestock production to other agricultural uses under alternative routes with high long-term forage reductions.

Timber Resources

Regardless of the alternative route or local area of variation, activities associated with the construction and continued operations of the B2H Project will have minimal effects on timber resources within Segment 5. As shown by Table 3-620, impacts on timber resources after revegetation are anticipated to result in less than one acre of timberland along the Applicant's Proposed Action Alternative, Variation S5-B1, and routes Malheur S and A; there would be no identifiable impacts on timber resources during construction or operations under variations Variation S5-A1, S5-A2, S5-B2.

Table 3-620. Estimated Disturbance in Forests and Timberlands in Segment 5—Malheur

Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	1.5	0.4	0.2	0.1
Variation S5-A1	*0.0*	*0*	*0.0*	*0.0*
Variation S5-A2	*0.0*	*0.0*	*0.0*	*0.0*
Variation S5-B1	*1.1*	*0.3*	*0.2*	*0.0*
Variation S5-B2	*0.0*	*0.0*	*0.0*	*0.0*
Malheur S	1.8	0.4	0.3	0.1
Malheur A	1.1	0.3	0.2	0.0

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project. Impacts on timber resources within this segment are not anticipated to have a measurable effect on local economic conditions.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-

term (Table 3-621); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses

Table 3-621. Number of Residences within Study Corridor in Segment 5—Malheur

Alternative Route	Crossed by the Reference Centerline	In the Right-of-way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	0	0	0	2
Variation S5-A1	*0*	*0*	*0*	*0*	*0*
Variation S5-A2	*0*	*0*	*0*	*0*	*0*
Variation S5-B1	*0*	*0*	*0*	*0*	*1*
Variation S5-B2	*0*	*0*	*0*	*2*	*1*
Malheur S	0	0	0	1	0
Malheur A	0	0	0	1	0

Conclusions

Construction of Segment 5 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 5 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 5 would be moderate and affect private grass and pasturelands more than other irrigated crop lands. Agricultural yield losses in Segment 5 would range between $289,300 under the Malheur A Route and $484,800 under the Applicant's Proposed Action Alternative with Variation S5-A2 during construction. Approximately 99 percent of these impacts would be associated with yield losses in grass and pasturelands. After rehabilitation of temporarily disturbed areas, annual yield losses during operations of B2H would range between $83,000 and $133,100 under Malheur A and the Applicant's Proposed Action Alternative with Variation S5-A1, respectively. Reduced agricultural yields within Segment 5 would have negligible adverse impacts on local employment and income during construction and operations.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project through Segment 5 would be moderate under all route alternatives. These losses would range between 54 and 74 AUMs under the Applicant's Proposed Action Alternative and the Malheur S Alternative respectively. Once temporarily disturbed areas are restored, operation of the B2H Project would reduce forage by 15 to 22 AUMs annually under the Applicant's Proposed Action Alternative and the Malheur S alternatives, respectively. In order to make up for these forage losses, local ranchers would have to supplement forage with more expensive grass and/ or hay feed or reduce their herd sizes. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Impacts on Timber resources in Segment 5 would be negligible during construction and operation under all route alternatives and variations. Less than one acre of timberland would be withdrawn from timber production during construction and operation of the B2H Project. Timber cleared and removed to construct the B2H Project in Segment 5 will have negligible effects on the logging and wood processing sectors. The long-term withdrawal of these acres from production will also have negligible impacts on these sectors.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since there are few residential structures within a half mile of centerline, impacts on residential property values are anticipated to be negligible. Idaho Power will work with property owners within the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 6—TREASURE VALLEY

The Treasure Valley Segment is located entirely in Owyhee County, Idaho, and includes the proposed route located in the foothills and includes two areas of local variations.

Irrigated Agriculture

Like Segments 4 and 5, agricultural use of prime farmland and other irrigated croplands within the study corridor of the Treasure Valley Segment is predominately for grass and pastureland production. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 4 acres of field crops and between 79 and 260 acres of private pastureland could be disturbed during the construction of the B2H Project, depending on the alternative route. Short-term agricultural yield losses under the alternatives are anticipated to range between $52,510 under Variation S6-A1 and $174,834 under the Applicant's Proposed Action Alternative (Table 3-622).

Table 3-622. Lost Agricultural Production during Construction in Segment 6—Treasure Valley

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	2,831	0	172,003	0	0	174,834
Variation S6-A1	*0*	*0*	*52,510*	*0*	*0*	*52,510*
Variation S6-A2	*0*	*0*	*74,052*	*0*	*0*	*74,052*
Variation S6-B1	*0*	*0*	*83,068*	*0*	*0*	*83,068*
Variation S6-B2	*0*	*0*	*60,707*	*0*	*0*	*60,707*

Reduced production of field crops and grasses because of construction activities within the study corridor could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 6 are anticipated to be relatively low since most of these impacts result from affected grass and pasturelands, which are generally not very labor intensive to produce. These yield

Census Tracts are compared with those of the reference communities in terms of percentages of minority and low-income populations. Reference communities for the analysis are defined as the county and/or the state in which the Census Block or Census Tract is located; if the percentages of low-income and/or minority populations within proximity to the six B2H Project segments significantly exceed those of the reference communities, further environmental justice assessment is undertaken. If no environmental justice populations are identified, no further analysis is needed.

Minority Populations

Potential environmental justice minority populations are displayed in Table 3-574. In 2010, there were 1,553 Census Blocks within one mile of the six B2H Project alternative segments. Of those, more than three-quarters of the Census Blocks (79 percent) contained no resident populations. The remaining 287 Census Blocks have a total population of 2,911. Of the remaining 287 Census Blocks, 247 Census Blocks or 86 percent did not comprise environmental justice populations and 40 Census Blocks were identified as having minority environmental justice populations. The 40 environmental justice Census Blocks have a population of 365. The distribution of the Census Blocks with potential minority environmental justice populations by county is provided in Table 3-574 and depicted on Maps 3-10a and 3-10b.

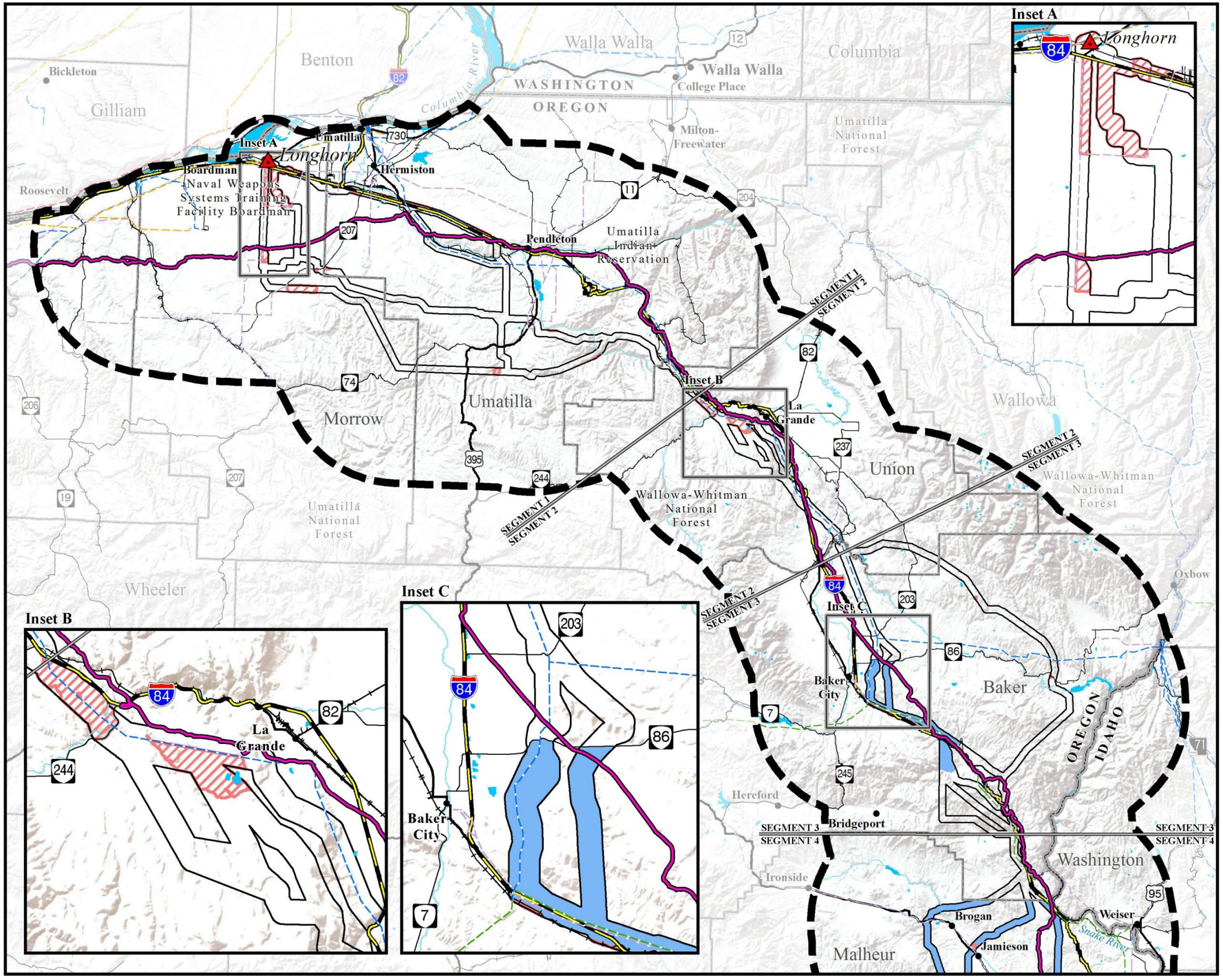
The percentage of Census Blocks identified with minority populations along each of the six B2H Project segments range from zero percent to 33 percent (refer to Table 3-575).Of the six B2H Project segments, Segment 5—Malheur has the greatest percentage (33 percent) of Census Blocks with minority environmental justice populations. Segment 6 – Treasure Valley has no Census Blocks with minority environmental justice populations.

Table 3-574. Environmental Justice Information for Minority Populations in the B2H Study Area, States, and Counties

Area	Total Population	Minority Population[1]	Percent Minority Population[1]	Threshold to Determine Environmental Justice Population	Number of Census Blocks	Number of Populated Census	Number of Census Blocks with Minority Populations Greater than Reference Community
Idaho	1,609,083	267,256	17	27	0	0	0
Owyhee County, Idaho	11,805	3,790	32	42	115	18	0
Oregon	3,988,866	880,980	22	32	0	0	0
Baker County, Oregon	16,529	1,248	8	18	526	69	9
Malheur County, Oregon	32,250	11,928	37	47	222	48	8
Morrow County, Oregon	11,484	4,102	36	46	116	25	7
Umatilla County, Oregon	78,359	24,361	31	41	343	95	14
Union County, Oregon	26,389	2,518	10	20	231	32	2
				Total	**1,553**	**287**	**40**

Table Note: [1]Minority population includes all racial groups other than white, not Hispanic or Latino.

Table 3-575. Segments and Populated Census Blocks with Minority Environmental Justice Populations			
Segment and Area	**Number of Populated Census Blocks**	**Number of Census Blocks with Minority Populations**	**Percent of Segment with Minority Populations**
Segment 1—Morrow-Umatilla			
Morrow County, Oregon	25	7	28
Umatilla County, Oregon	95	14	15
Union County, Oregon	0	0	0
Segment 1 Total	**120**	**21**	**18**
Segment 2—Blue Mountains			
Baker County, Oregon	0	0	0
Union County, Oregon	28	2	7
Segment 2 Total	**28**	**2**	**7**
Segment 3—Baker Valley			
Baker County, Oregon	65	7	11
Union County, Oregon	4	0	0
Segment 3 Total	**69**	**7**	**11**
Segment 4—Brogan			
Baker County, Oregon	4	2	50
Malheur County, Oregon	33	4	12
Segment 4 Total	**37**	**6**	**16**
Segment 5—Malheur			
Malheur County, Oregon	12	4	33
Segment 5 Total	**12**	4	**33**
Segment 6—Treasure Valley			
Owyhee County, Idaho	20	0	0
Malheur County, Oregon	1	0	0
Segment 6 Total	**21**	**0**	**0**
Total	**287**	**40**	**30**



Map 3-10a

Environmental Justice (Northern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Environmental Justice

- Areas with High Minority Population Concentrations
- Areas with High Concentrations of Low Income Populations

Project Features

- Project Area Boundary
- One-mile-wide Study Corridor
- Substation (Project Terminal)
- Segment Line

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:
Low Income Populations, Pinyon Environmental 2016;
Minority Populations, Pinyon Environmental 2016; 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 one mile-wide study corridors (based on 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.
- 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 3-10b

Environmental Justice (Southern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Environmental Justice

- Areas with High Minority Population Concentrations
- Areas with High Concentrations of Low Income Populations

Project Features

- Project Area Boundary
- One-mile-wide Study Corridor
- Substation (Project Terminal)
- Segment Line

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:
Low Income Populations, Pinyon Environmental 2016;
Minority Populations, Pinyon Environmental 2016; 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 one mile-wide study corridors (based on 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.
- 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

Low-Income Populations

Table 3-576 summarizes the county and state poverty populations in the B2H Project area. Of the 28 Census Block Groups within the B2H Project area, four Census Block Groups meet the U.S. Census definition of a poverty area (Table 3-576). These four Census Block Groups with low-income populations are found throughout the B2H Project area, as shown on in Maps 3-10a and 3-10b, and in Table 3-576.

Table 3-576. Environmental Justice Information for Low-Income Populations

Area	Percentage of Low-Income Households	B2H Project Segment
Idaho	**12**	–
Owyhee County, Idaho	**21**	–
Block Group 1, Census Tract 9501.01, Owyhee County, Idaho	17	Segment 6—Treasure Valley
Block Group 2, Census Tract 9501.02, Owyhee County, Idaho	16	Segment 6—Treasure Valley
Block Group 1, Census Tract 9502, Owyhee County, Idaho	**24**	Segment 6—Treasure Valley
Oregon	**13**	–
Baker County, Oregon	**19**	–
Block Group 2, Census Tract 9503, Baker County, Oregon	**30**	Segment 3—Baker Valley
Block Group 3, Census Tract 9503, Baker County, Oregon	19	Segment 3—Baker Valley
Block Group 1, Census Tract 9505, Baker County, Oregon	16	Segment 3—Baker Valley
Block Group 3, Census Tract 9506, Baker County, Oregon	18	Segment 3—Baker Valley
Malheur County, Oregon	**21**	–
Block Group 2, Census Tract 9706, Malheur County, Oregon	13	Segment 4—Brogan
Block Group 3, Census Tract 9709, Malheur County, Oregon	**20**	Segment 4—Brogan
Block Group 1, Census Tract 9707, Malheur County, Oregon	15	Segment 5—Malheur
Block Group 2, Census Tract 9709, Malheur County, Oregon	14	Segment 5—Malheur
Morrow County, Oregon	**11**	–
Block Group 2, Census Tract 9701, Morrow County, Oregon	19	Segment 1—Morrow-Umatilla
Block Group 5, Census Tract 9701, Morrow County, Oregon	8	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9702, Morrow County, Oregon	10	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9702, Morrow County, Oregon	9	Segment 1—Morrow-Umatilla
Block Group 6, Census Tract 9702, Morrow County, Oregon	12	Segment 1—Morrow-Umatilla
Umatilla County, Oregon	**14**	–
Block Group 2, Census Tract 9400, Umatilla County, Oregon	18	Segment 1—Morrow-Umatilla
Block Group 2, Census Tract 9504, Umatilla County, Oregon	**22**	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9505, Umatilla County, Oregon	6	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9511, Umatilla County, Oregon	17	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9513, Umatilla County, Oregon	1	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9513, Umatilla County, Oregon	11	Segment 1—Morrow-Umatilla
Block Group 4, Census Tract 9513, Umatilla County, Oregon	12	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9514, Umatilla County, Oregon	12	Segment 1—Morrow-Umatilla
Block Group 2, Census Tract 9514, Umatilla County, Oregon	14	Segment 1—Morrow-Umatilla

Table 3-576. Environmental Justice Information for Low-Income Populations		
Area	**Percentage of Low-Income Households**	**B2H Project Segment**
Union County, Oregon	**17**	–
Block Group 3, Census Tract 9702, Union County, Oregon	11	Segment 2—Blue Mountains
Block Group 1, Census Tract 9706, Union County, Oregon	13	Segment 2—Blue Mountains
Block Group 2, Census Tract 9706, Union County, Oregon	7	Segment 2—Blue Mountains

3.2.17.6 Environmental Consequences

The B2H Project has the potential to affect social and economic conditions in all counties in the socioeconomic study area. The following section discusses how the construction and operations of the B2H Project under the alternatives may affect the socioeconomic characteristics of the study area.

Study Methods

The environmental consequences analysis evaluates how the social and economic effects of the construction and operations phases of the B2H Project, both positive and negative, are distributed among the communities and counties in the study area. Socioeconomic impacts are described and quantified where possible. However, where quantification of impacts was not possible, the analysis included a qualitative discussion of possible effects. The analysis includes separate but integrated approaches to addressing economic, demographic, fiscal, and social impacts using the methods and approaches discussed.

Agricultural impacts associated with the construction and continued operation of the B2H Project were assessed in terms of production losses. Acres of various crops types disturbed during the construction and operations phases of the B2H Project were obtained from the land-use analysis, and an average value of production for each of these crop types was estimated with data from the National Agricultural Statistical Service including field crops, fruit and tree nuts, and vegetables for 2014. Grass and pasturelands were valued at the average rental price per acre in 2014. Production losses were valued by applying per acre values to acres disturbed and then used as inputs in a customized regional economic model known as IMPLAN® to assess how changes in agricultural production affect local economic conditions.

Estimates of construction and operation workforce were provided by the Applicant and used to describe the impacts on regional employment and population. Changes in employment and population were then used to evaluate other local impacts, such as housing, emergency services, schools, and other public and community services can be evaluated. Anticipated changes in property tax revenues associated with development and operations of the B2H Project were estimated through methods consistent with those described and applied at the state level, although the taxes are assumed primarily to accrue to the counties. For example, in Oregon utilities are centrally assessed by the Oregon Department of Revenue and transferred to the county assessment rolls where an appropriate property tax rate is applied. The average property tax levy per county is published annually by the Oregon Department of Revenue (Oregon Department of Revenue 2015) and was used for this analysis. The average tax rate

Table 3-563. Travel-Related Economic Contributions by Idaho County, 2004				
Area	Travel Spending[1]	Travel-Related Earnings[1]	Travel-Related Employment	Percent of Total Employment
Ada	1,128.90	277	17,951	9
Canyon	126.9	31.1	2,017	4
Owyhee	1.8	0.4	28	1
Idaho	2,968.10	728.3	47,203	7

Table Source: Global Insight 2005.
Table Note: [1]Dollars in Millions

Estimates of statewide travel-related impacts prepared by the U.S. Travel Association (2009), however, suggest that the 2004 estimates prepared by Global Insight may overestimate the importance of travel-related employment in Idaho, at least at the state level. The U.S. Travel Association (2009) estimates found that travel-related employment accounted for 23,700 jobs in Idaho in 2004, about half the number estimated by Global Insight. The 2005 Global Insight estimates do, however, represent the best available data at the county level and provide an indication of the relative importance of recreation and tourism in the three socioeconomic study area counties in Idaho.

Designated recreation areas within 0.5 mile of the proposed B2H Project and alternatives are discussed in Section 3.2.8. These areas include the BLM- managed Virtue Flat Extensive Recreation Management Area (ERMA), the Owyhee River below the Dam SRMA, the Oregon Trail and Owyhee River ACECs. Section 3.2.8 also discusses dispersed recreation activities, including hunting, OHV use, and camping that may occur within the analysis area.

Tribal Households

The U.S. Constitution (Article II, Section 2, Clause 2) provides that treaties are equal to federal laws and are binding on states as the supreme law of the land. As a portion of the B2H Project area passes through lands ceded to the U.S. Government by 1855 treaty with the CTUIR, the BLM—as manager of these federal lands—has the legal responsibility to consult with the CTUIR and consider the conditions necessary to satisfy the rights reserved by the tribe as part of its treaty. Exercise of treaty rights could include, but is not limited to, water rights, taking fish, mineral rights, collection of plant resources such as roots and berries, and hunting of small and large game for economic, religious, and cultural use. Treaty rights also include pasturing stock on open and unclaimed lands.

Although the CTUIR is the only tribe with ceded lands in the B2H Project area, several other tribes consider portions of, or the entirety of, the B2H Project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence. These tribes include the Shoshone-Paiute of the Duck Valley Indian Reservation, the Burns Paiute, the Confederated Tribes of the Warm Springs Indian Reservation, the Fort McDermitt Paiute and Shoshone Tribes, the Nez Perce, the Confederated Tribes of the Colville Reservation, the Yakama Nation, and the Shoshone-Bannock of the Fort Hall Reservation.

While each of these tribes has a unique history and heritage, they share land-based worldviews rooted in the active recognition of kinship with the natural world. Thus, the social, economic, and

for utilities in Idaho was estimated by dividing total taxes charged against utilities by the total assessed value of utilities in 2012 (Idaho State Tax Commission 2013). It is anticipated that tax revenues would fall after the first year of service, as assessed values would consider cost of operation. A capitalization rate was applied to cost of construction to estimate the decreasing assessed valuation, to which the annual tax rate was applied.

An environmental justice analysis is conducted to determine if any environmental justice populations are present within the study area. The environmental justice analysis is conducted in compliance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and follows guidance published by the EPA (2016). The environmental justice analysis involves two basic steps:

- Determine whether environmental justice populations exist in the relevant study area
- If environmental justice populations exist, determine whether they would be disproportionately affected by development and operation of the Project

To identify the presence of potential environmental justice populations residing in proximity to the alternative routes, it is necessary to create an affected area for a smaller geographic area than that of the defined socioeconomic study area. Populations are analyzed at the Census Block Group and Census Tract level located within 1 mile of all alternative routes. The populations located in these Census Block Groups and Census Tracts are compared with those of the reference communities in terms of percentages of minority and low-income populations. Reference communities for the analysis are defined as the county and/or the state in which the Tract or Block Group was located; if the percentages of low-income and/or minority populations within proximity to the alternative routes significantly exceed those of the reference communities, further environmental justice assessment is undertaken. If no environmental justice populations are identified, no further analysis is needed.

Once the locations of the environmental justice populations are identified, all adverse effects are considered to determine whether the B2H Project has the potential to have a “disproportionately high and adverse” impact (human health or environmental effect) to these populations. Impacts of the Proposed Action include cumulative and multiple impacts, and are evaluated to determine which, if any, disproportionately and adversely affect these populations.

No Action Alternative

If no action were taken, the B2H Project would not be granted a right-of-way and the transmission line and substations would not be constructed. The human environment would remain as is and management direction from the current management plans would continue. Under the No Action, none of the social and economic impacts described under the alternative routes would be realized. However, without the B2H Project, the existing system would not be upgraded, and as a result, the Applicant would not be able to ensure sufficient capacity and reliability to meet the electric demands of its current and future customers in the Pacific Northwest and the Intermountain West. Without its development, there would be fewer high-voltage transmission lines to provide power from existing and new renewable (e.g., wind, solar) and thermal (e.g., gas, coal) generation sources to meet growing customer needs;

Address Environmental Justice in Minority Populations and Low-Income Populations issued in 1994 by President Clinton (Executive Order 12898, 1994). The Executive Order was signed by President Clinton on February 11, 1994; it directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The Executive Order is in response to Title VI of the Civil Rights Act of 1964 which states "No person in the U.S. shall, in the grounds of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."

An environmental justice assessment requires an analysis of whether minority and low-income populations (i.e., populations of concern) would be affected by a proposed federal action and whether they would experience adverse impacts from the Proposed Action. If there are negative impacts, the severity and proportion of these impacts on populations of concern must be assessed in comparison to the larger majority population or populations not classified as low-income or minority. At issue is whether such negative impacts fall disproportionately on minority and/or low-income members of the community and, if so, whether they meet the threshold of disproportionately high and adverse. If disproportionately high and adverse effects are evident, EPA guidance advises consideration of alternatives and mitigation actions in coordination with extensive community outreach efforts (EPA 1998).

The EPA defines a community with potential environmental justice populations as one that has a greater percentage of minority or low-income populations than does an identified reference community. Minority populations are those populations having (1) 50 percent minority population in the affected area or (2) a significantly greater minority population than the reference area (EPA 2016). The EPA has not specified any percentage of the population that can be characterized as "significant" to define environmental justice populations. Therefore, for the purposes of this analysis, a conservative approach is used to identify potential environmental justice populations. It is assumed that if the affected area minority and/or poverty status populations are more than 10 percentage points higher than those of the reference area, there is likely an environmental justice population of concern.

For this analysis, minority includes all racial groups other than white, not Hispanic or Latino. For the year 2010, low-income populations were defined as those individuals that are considered living below poverty levels. The U.S. Census Bureau defines poverty level thresholds for individuals and a family of four as income levels below $11,139 and $22,314, respectively (U.S. Census Bureau 2012b).

To identify the presence of potential environmental justice populations residing in proximity to the B2H Project alternative segments, it is necessary to create an affected area for a smaller geographic area than that of the defined socioeconomic study area. Populations are analyzed at the 2010 U.S. Census Block and Census Tract level located within one mile of the six B2H Project segments. The minority environmental justice analysis is undertaken at the Census Block level, which allows an assessment of only the racial and ethnicity characteristics of the populations. Poverty information is only available at the Census Tract level of analysis for 2010. The populations located in these Census Blocks and

Specialization

Highly specialized economies (i.e., those that depend on a few industries for the bulk of employment and income) are more prone to cyclical fluctuations and generally support fewer economic opportunities. Communities have been identified as being specialized with respect to employment using a ratio of local employment in each industry in a region of interest relative to the percent of employment in that industry for a larger reference area. When local employment in a given industry accounts for a larger proportion of total employment than in the broader reference region, local employment specialization exists in that industry (USFS 1998).

Applying this criterion to employment data for the B2H Project socioeconomic study area reveals that the region was slightly more specialized with respect to non-services related industries When compared to the broader U.S. economy, non-services related sectors supported a larger proportion (+3.3 percent) of local employment opportunities. Employment specialization in non-services related sectors were concentrated in industries that directly relied on the region's natural resources, natural resources and Mining (+1.8 percent) and agriculture, forestry, fishing and hunting (+1.6 percent) (BEA 2015). Specialization in these natural resource based activities is further discussed in detail below.

Agriculture

Farming and ranching continue to be an integral part of the economy, environment and way of life in Eastern Pacific Northwest. The region's rich soils, moderate rainfall, and mild winters make it one of the most ecologically rich farming areas in the U.S.; and enable it to grow a significant share of the nation's wheat, potatoes, apples and pears (USDA 2012). At the time of the most recent Census of Agriculture, there were 60,255 farms producing agricultural products on more than 28 million acres of land across Oregon and Idaho (USDA 2012). Cash receipts for agricultural products produced in these states exceeded $13.9 billion in 2014 (BEA 2014).

Agricultural production is prevalent in all six of the counties that the B2H Project would cross. Farm counts and acreage estimates for each county, as reported in the 2012 Census of Agriculture, are shown below in Table 3-559. In 2012 there were 5,169 farms producing fruit and vegetable crops, grains, forage, and livestock on more than 5.4 million acres across the six counties. Approximately 12.5 percent of which, were high-value irrigated crop and pasture lands (USDA 2012).

Table 3-559. Number of Farms and Land in Farms (Acres), 2012					
Area	Number of Farms	Total Cropland[1] (Acres)	Irrigated Land (Acres)	Total Land in Farms (Acres)	Percent of Land Base in Farms
Morrow County, Oregon	401	486,433	65,637	1,165,126	89.6
Umatilla County, Oregon	1,603	769,670	147,844	1,308,312	63.6
Union County, Oregon	829	119,224	49,049	411,671	31.6
Baker County, Oregon	645	107,531	100,898	710,789	36.2
Malheur County, Oregon	1,113	204,769	183,003	1,076,768	17
Owyhee County, Idaho	578	140,719	133,530	748,771	15.3
B2H Project Area	5,169	1,828,346	679,961	5,421,437	30.4

Table Source: USDA 2012.
Table Note: [1]Total cropland (both irrigated and nonirrigated land) includes five components: cropland harvested, crop failure, cultivated summer fallow, cropland used only for pasture, and idle cropland.

Agricultural production in these counties was collectively valued at $1.8 billion in 2014 (BEA 2014). The majority of cash receipts were collected on agricultural goods produced in Umatilla, Morrow, and Malheur counties – three of Oregon's top Agribusiness counties. In addition to commodity cash receipts, farm income often includes government payments and other farm-related income. Once production expenses are factored in 2014 net farm income for the six-county area shrank to $236 million (Table 3-560). The large variance between farm cash receipts and net income illustrates how profit margins for agricultural producers can be tight, especially for smaller scale operators.

Table 3-560. Farm Business Income, 2014 (thousands of 2014 dollars)					
Area	Cash Receipts		Other Income		Net Income
	Livestock and Products	Crops	Government Payments	Imputed Rent and Miscellaneous Income	
Morrow County, Oregon	504,448	133,472	13,942	29,255	107,780
Umatilla County, Oregon	71,299	305,907	14,250	87,334	20,529
Union County, Oregon	24,720	39,529	2,650	15,368	3,483
Baker County, Oregon	69,491	32,937	6,062	12,700	5,029
Malheur County, Oregon	244,275	110,596	11,094	37,248	13,263
Owyhee County, Idaho	263,103	58,889	3,762	10,809	76,066
B2H Project Area	**1,177,336**	**681,330**	**51,760**	**192,714**	**236,150**

Table Source: BEA 2014.

The farm sector supported approximately 9,700 jobs[5] and accounted for nearly 11 percent of total employment across these six counties in 2014 (BEA 2014). Approximately 48 percent of these jobs were held by self-employed proprietors who worked (full and part-time) as non-corporate farm operators. The larger share of regional farm employment was supported by hired farm laborers who may have worked full-time or part-time throughout the year. In 2014, hired farm workers within these six counties earned $32,344 on average, with workers involved in animal production making about $7,000 on average annually more than their counterparts in crop production (BLS 2015).

[5]These employment figures include sole proprietors, partners, and hired full-time and part-time farm laborers.

Much of agricultural production in the U.S. continues to come from family farms where production is highly seasonal and much of the labor is provided by unpaid family workers. Farming households often draw a significant portion of their income from off-farm sources and reallocate various family members' time to tasks on the farm throughout the year. A previous agriculture study estimated that unpaid family labor might provide nearly two-thirds of the labor inputs required by the agricultural sector (Kandel 2008). When the employment statistics discussed above are considered alongside contributions of unpaid family workers, the farm sector is revealed to play a much larger role in the rural communities that surround the proposed B2H Project.

Timber

The cool temperate climate of the Pacific Northwest creates ideal soil conditions for forested lands that produce high quality timber and forest products. Oregon has historically been divided into two major wood-producing regions, Western and Eastern. The Eastern Region is comprised of two resource areas, which encompass all counties east of the crest of Cascade Range. Percentages of forested lands within each Eastern Region county are illustrated in the figure below (Figure 3-7).

The B2H Project area is within the Blue Mountain Resource Area, which bisects the region from north to south along Morrow, Grant, and Harney counties. This resource area makes up about 21 percent of eastern Oregon and is almost 65 percent forested lands. Viable commercial timber species in the Blue Mountain area include ponderosa pine, lodgepole pine, Douglas-fir, western juniper, white or grand fir, and quaking aspen. Although the area is heavily forested, only a portion of these lands are classified as timberlands who produce, or are capable of producing, more than 20 cubic feet per acre per year of industrial wood crops under natural conditions (USDA 2004).

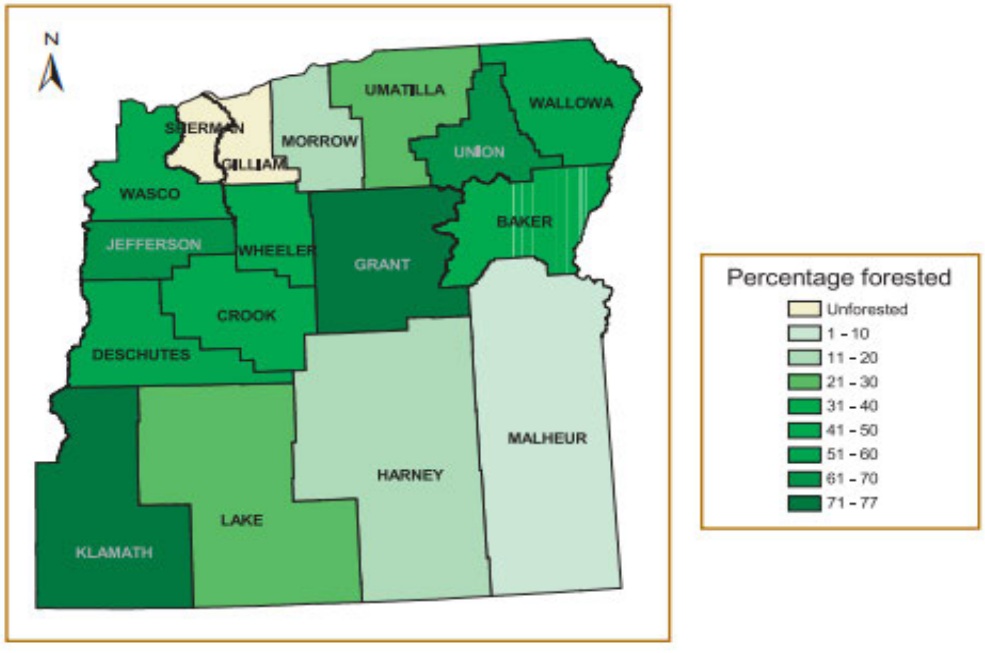

Figure Source: USDA 2004.

Figure 3-7. Percent of Forested in Eastern Oregon Land by County

Firms in the forestry and logging subsector grow and harvest timber on a long production cycle, generally 10 years or more. Since timber production requires natural forests or suitably large areas of land that are available long term, regional timber harvests occur on a combination of federal and state public lands, tribal lands, and private lands managed for timber. Between 2003 and 2009, timber harvests in the B2H Project area accounted for 2.4 percent to 3.2 percent of annual state harvests during these years. Like other regions in the Pacific Northwest, timber harvests in the Blue Mountain region have been declining. In 2005, annual harvests within the B2H Project's socioeconomic study area totaled 136 million board-feet. By 2009 total harvests in counties crossed by the proposed line had fallen to 88 million board-feet, with annual harvest falling to 67 million board-feet by 2014. Total timber harvests for counties crossed by the B2H Project are reported below in thousands of board-feet (Table 3-561).

Table 3-561. Timber Harvest (thousand board-feet) in B2H Analysis Area, 2014

Area	Private Land Harvest	Public Land Harvest	Total Volume of Harvest
Morrow County, Oregon	1,258	2,523	3,781
Umatilla County, Oregon	14,970	199	15,169
Union County, Oregon	33,186	6,211	39,397
Baker County, Oregon	4,856	4,282	9,138
Malheur County, Oregon	48	0	48

Table Source: Oregon Department of Forestry 2015.
Table Note: There was no recorded timber harvest in Gilliam and Malheur counties or in Owyhee, Idaho in 2009 or 2014.

The growing, harvesting, and processing of timber has long been an economic cornerstone in rural Oregon. These activities directly support local employment opportunities in three major categories: growing and harvesting[6], sawmills and paper mills[7], and wood products manufacturing[8]. In addition to the jobs directly supported in these timber-related industries, local timber production induces and indirectly supports employment opportunities in a wide range of non-timber-related sectors.

Over the years, timber-related employment within the six-county B2H Project area have steadily declined as a result of slowing in local timber harvesting and processing. Between 1998 and 2013, timber-related employment across these counties shrank by 37 percent from 2,382 to 1,498 jobs (U.S. Census Bureau 2015). Timber-related jobs within the B2H Project area are primarily supported by mills and wood product manufacturing facilities, which pay $46,783 and $43,741 annually on average (BLS 2015). These jobs are particularly critical in rural communities where wood product manufacturing accounts for the majority of manufacturing jobs and generally pay higher average wages than those in other sectors.

Outdoor Recreation and Tourism

Outdoor recreation and tourism in the study area brings visitors to the area for a variety of reasons. These visitors generate economic activity through expenditures on such things as retail, food and

[6] *[NAICS codes: forestry and logging (113), support activities for forestry (1153)]*
[7] *[NAICS codes: sawmills and wood preservation (3211), pulp, paper, and paperboard mills (3221), veneer, plywood, and engineered wood product manufacturing (3212)]*
[8] *[NAICS codes: other wood product manufacturing (3219) and converted paper product manufacturing (3222)]*

beverage and accommodations. Opportunities for various outdoor recreation, cultural and historic sites, wildlife viewing and scenic drives are all important to this economic activity. Recreation and tourism is not classified or measured as a standard industrial category; therefore, employment and income data are not specifically collected for this sector. Components of recreation and tourism activities are instead captured in a number of industrial sectors, primarily the retail sales and services sectors. Estimates of travel-related spending and associated employment in Oregon for 2014 prepared for the Oregon Tourism Commission found that statewide travel-related employment accounted for about 8.8 percent of total employment (Table 3-562).

Table 3-562. Travel-Related Economic Contributions in Oregon Counties, 2014

Area	Travel Spending[1]	Travel-Related Earnings[1]	Travel-Related Employment	Percent of Total Employment[2]
Gilliam	9	2.2	100	2.9
Morrow	14.5	3.4	180	2.5
Umatilla	147.9	45.1	2,310	5.8
Union	33.1	10.4	560	3.9
Baker	43.7	12.2	710	8.5
Malheur	40.3	11	570	3.4
Oregon	10,300.0	4,800.0	153,700.0	8.8

Table Source: Dean Runyan Associates 2015.

Table Notes:
[1]Dollars in Millions
[2]Travel-related employment is estimated as a percent of total employment using data from the U.S. Bureau of Economic Analysis.

In Umatilla and Baker counties, travel-related employment accounted for a smaller share of total employment than the statewide average (5.8 percent and 8.5 percent respectively). Travel-related employment in the socioeconomic study area's other four Oregon counties averaged 2.5 percent of local employment. These estimates are primarily based on travel-related spending on accommodation, food and beverages, local transportation, recreation and entertainment, and shopping. While these estimates include business travel and recreation and tourism-related travel, they provide a useful indication of the relative importance of recreation and tourism to the local economies within the socioeconomic study area.

The most recent comprehensive assessment of travel-related spending and associated employment in Idaho counties was prepared in 2004 (Global Insight and D.K. Shifflet & Associates [Global Insight] 2005). This analysis found that statewide travel-related employment accounted for about 7 percent of total employment (Table 3-563). Travel-related employment accounted for a larger share of total employment than the statewide average in Ada County (9 percent versus 7 percent) and a smaller share than the state average in Canyon and Owyhee counties (4 percent and 1 percent, respectively).

Table 3-563. Travel-Related Economic Contributions by Idaho County, 2004				
Area	Travel Spending[1]	Travel-Related Earnings[1]	Travel-Related Employment	Percent of Total Employment
Ada	1,128.90	277	17,951	9
Canyon	126.9	31.1	2,017	4
Owyhee	1.8	0.4	28	1
Idaho	2,968.10	728.3	47,203	7

Table Source: Global Insight 2005.
Table Note: [1]Dollars in Millions

Estimates of statewide travel-related impacts prepared by the U.S. Travel Association (2009), however, suggest that the 2004 estimates prepared by Global Insight may overestimate the importance of travel-related employment in Idaho, at least at the state level. The U.S. Travel Association (2009) estimates found that travel-related employment accounted for 23,700 jobs in Idaho in 2004, about half the number estimated by Global Insight. The 2005 Global Insight estimates do, however, represent the best available data at the county level and provide an indication of the relative importance of recreation and tourism in the three socioeconomic study area counties in Idaho.

Designated recreation areas within 0.5 mile of the proposed B2H Project and alternatives are discussed in Section 3.2.8. These areas include the BLM- managed Virtue Flat Extensive Recreation Management Area (ERMA), the Owyhee River below the Dam SRMA, the Oregon Trail and Owyhee River ACECs. Section 3.2.8 also discusses dispersed recreation activities, including hunting, OHV use, and camping that may occur within the analysis area.

Tribal Households

The U.S. Constitution (Article II, Section 2, Clause 2) provides that treaties are equal to federal laws and are binding on states as the supreme law of the land. As a portion of the B2H Project area passes through lands ceded to the U.S. Government by 1855 treaty with the CTUIR, the BLM—as manager of these federal lands—has the legal responsibility to consult with the CTUIR and consider the conditions necessary to satisfy the rights reserved by the tribe as part of its treaty. Exercise of treaty rights could include, but is not limited to, water rights, taking fish, mineral rights, collection of plant resources such as roots and berries, and hunting of small and large game for economic, religious, and cultural use. Treaty rights also include pasturing stock on open and unclaimed lands.

Although the CTUIR is the only tribe with ceded lands in the B2H Project area, several other tribes consider portions of, or the entirety of, the B2H Project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence. These tribes include the Shoshone-Paiute of the Duck Valley Indian Reservation, the Burns Paiute, the Confederated Tribes of the Warm Springs Indian Reservation, the Fort McDermitt Paiute and Shoshone Tribes, the Nez Perce, the Confederated Tribes of the Colville Reservation, the Yakama Nation, and the Shoshone-Bannock of the Fort Hall Reservation.

While each of these tribes has a unique history and heritage, they share land-based worldviews rooted in the active recognition of kinship with the natural world. Thus, the social, economic, and

spiritual structures and practices of tribal households are centered on sustaining a stable relationship with their native lands. Subsistence activities are an integral part of their customary and traditional lifestyles. These activities include hunting, fishing, gathering, trapping, and "other activities which provide income in kind—food, heat, clothing, shelter, and a variety of other subsistence goods and services" consumed by and shared within the family and community (Kuokkanen 2011).

In addition to providing household sustenance, many tribal families barter, trade, or sell subsistence goods and services for fuel, transportation, food, shelter, clothing, and cultural utilitarian items. While there is no data available to estimate the percent contribution which fishing, hunting and gathering of wild plants provides to households or communities of the abovementioned tribes, these activities are vital to sustaining viable communities in a manner that promotes cohesiveness, pride and sharing (Inuit Circumpolar Conference 1992).

Refer to Sections 3.2.3, 3.2.4, 3.2.6, 3.2.13, and 3.2.14 for further discussion of treaty rights from the perspective of vegetation, wildlife, land use, and cultural resources, respectively.

Housing and Lodging

This section will provide information on housing and lodging potentially available to the construction workforce in the study area and in the towns and areas close to the transmission route. This information will include data related to vacant and occupied housing units and temporary lodging options available in the study area.

Housing Characteristics

Housing estimates are presented in Table 3-564 for the socioeconomic study area and for Oregon and Idaho. These estimates suggest that limited housing is available for rent in Gilliam, Morrow, and Owyhee counties, with estimates of less than 1,000 available units in each county. An estimated 718 units are available for rent in Umatilla County, Oregon, and an estimated 4,038 units and 1,840 units are available in Ada and Canyon counties, Idaho, respectively.

Table 3-564. B2H Project Area Housing Availability

Housing Characteristics	States		Counties					
			Idaho	Oregon				
	Idaho	Oregon	Owyhee	Morrow	Umatilla	Union	Baker	Malheur
Total Housing Units	667,796	1,675,562	4,781	4,426	29,638	11,464	8,806	11,637
Occupied	579,408	1,518,938	4,076	3,741	26,744	10,235	7,120	10,136
Vacant	88,388	156,624	705	685	2,894	1,229	1,686	1,501
For rent	16,360	40,193	104	70	718	283	181	297
Rented or sold, not occupied	997	2,608	8	4	46	20	20	31
For sale only	12,814	24,191	72	55	289	124	147	139

Table 3-564. B2H Project Area Housing Availability								
Housing Characteristics	States		Counties					
			Idaho	Oregon				
	Idaho	Oregon	Owyhee	Morrow	Umatilla	Union	Baker	Malheur
For seasonal, recreational or occasional use	2,177	4,401	22	242	888	281	48	48
All other vacancies	41,660	55,473	307	145	767	248	1,058	463
Owner-Occupied Housing Units	404,903	29,758	2,856	2,799	16,916	6,873	332	6,501
Renter-Occupied Housing Units	174,505	944,485	1,220	1,117	9,988	3,628	7,040	3,910
Rental Vacancy Rate	8.50%	6.50%	7.80%	5.90%	6.70%	7.20%	7.40%	7%
Median Gross Rent (2009-2013 ACS Estimate)	$607	$749	$409	$514	$530	$532	$491	$467
Median Value of Owner-Occupied Housing (2009-2013 ACS Estimate)	$162,100	$121,200	$238,000	$119,800	$142,700	$156,600	$147,700	$132,600

Table Source: U.S. Census Bureau 2012a, 2013.

Table Notes: Median and gross rent based on U.S. Census Bureau 2009-2013 5-year average estimates from the ACS (U.S. Census Bureau 2013). Other housing characteristics based on 2010 U.S. Census data (U.S. Census Bureau 2012a)
ACS = American Community Survey

The availability of temporary housing varies seasonally and geographically within the B2H Project area. Demand for temporary housing is generally greatest during the tourism season in the summer months. Statewide in Oregon, the average hotel and motel occupancy rate in 2009 was 63.2 percent in June compared to 38.3 percent in December, with an annual average rate of 53.9 percent (TravelOregon.com 2009a, 2009b). Hotel and motel occupancy rates also vary by region.

Recreational Vehicle Parks

Comprehensive data are not available on recreational vehicle (RV) parks in the B2H Project vicinity. Table 3-565 presents data for RV parks in the socioeconomic study area by county. These data were compiled from travel web sites, primarily TravelOregon.com, VisitIdaho.org, and Rvparking.com, but do not necessarily account for all of the RV parks near the B2H Project. Approximate numbers of spaces are provided. These represent the total approximate number of spaces available at the identified RV parks in each community, not the number that would necessarily be available to rent.

Table 3-565. RV Parks		
Area	Number of RV Parks[1]	Estimated Number of RV Spaces[2]
Gilliam County, Oregon	3	73
Morrow County, Oregon	2	166
Umatilla County, Oregon	15	754
Union County, Oregon	9	432

Table 3-565. RV Parks		
Area	Number of RV Parks[1]	Estimated Number of RV Spaces[2]
Baker County, Oregon	5	219
Malheur County, Oregon	5	199
Canyon County, Idaho	5	440
Ada County, Idaho	6	548
Owyhee County, Idaho	4	134

Table Source: Rvparking.com n.d.; TravelOregon.com n.d.; VisitIdaho.org n.d.

Table Notes:

[1]These data were compiled from travel web sites and do not necessarily account for all RV parks near the B2H Project.

[2]These estimates represent the total number of spaces available at the identified RV parks in each community, not the number that will necessarily be available to rent.

Hotels and Motels

Hotel and motel accommodations for each county are listed in Table 3-566. These data do not necessarily account for all of the existing hotel, motel, and bed and breakfast rooms within 20 miles of the proposed B2H Project because the Smith Travel Research data does not include establishments with less than 15 rooms. The data compiled on the state tourism web sites, which includes hotels, motels, and bed and breakfast inns with less than 15 rooms, are for participating businesses only. The hotel and motel data summarized in Table 3-566, however, represents a reasonable approximation of the number of hotel and motel rooms based on the best available data.

Table 3-566. Hotels and Motels by County			
Area	Number of Hotels[1]	Number of Rooms	Estimated Number of Available Rooms[2]
Gilliam County, Oregon	24	1,639	603
Morrow County, Oregon	84	6,915	2,545
Umatilla County, Oregon	22	1,054	388
Union County, Oregon	2	13	5
Baker County, Oregon	3	140	52
Malheur County, Oregon	10	427	157
Canyon County, Idaho	5	110	40
Ada County, Idaho	10	443	163
Owyhee County, Idaho	12	793	292

Table Source: Smith Travel Research 2009, 2011; TravelOregon.com 2009a, n.d.; Visit Idaho.org n.d.

Table Notes:

[1]Data were compiled by Smith Travel Research and include hotels, motels, and bed and breakfasts with 15 or more rooms.

[2]Average number of rooms is estimated based on the average hotel occupancy rate in Oregon in June 2009.

Tax Revenues

Oregon

Property taxes are an important source of revenue for the public sector in Oregon (Oregon Department of Revenue 2015) and are based on the assessed value of the property. In Oregon, the appropriate county assessor administers most property assessments, but the Oregon Department of Revenue assesses the value of some properties, including public utilities and large industrial properties.

Property taxes imposed for fiscal year 2014/2015 are presented for Oregon and the B2H Project area counties in Oregon in Table 3-567. This table also presents the total assessed value of property in each county, and their average tax rates. Total property taxes imposed ranged from approximately $8.9 million in Gilliam County to about $77.0 million in Umatilla County.

Table 3-567. Property Tax Revenue in Oregon Counties, FY 2014-2015

Area	Total Assessed Value ($1,000)	Average Tax Rate (per $1,000 of Assessed Value)	Net Property Tax Imposed ($1,000)
Gilliam County, Oregon	753,455	11.91	8,974
Morrow County, Oregon	1,774,504	15.53	27,559
Umatilla County, Oregon	4,958,881	15.71	77,889
Union County, Oregon	1,655,564	12.51	20,716
Baker County, Oregon	1,330,221	13.05	17,358
Malheur County, Oregon	1,752,017	13.59	23,802
Oregon	**343,171,244**	**16.15**	**5,540,756**

Table Source: Oregon Department of Revenue 2015

Oregon does not have sales tax but does impose a statewide transient lodging tax of one percent. The majority of the revenue generated from this tax (80 percent) is used to fund state tourism marketing programs, with up to 15 percent used to implement regional tourism marketing programs. Lodging tax revenues generated in the northeastern region of Oregon, which includes the counties in the B2H Project area, approached $450,000 during 2015 (Oregon Department of Revenue 2016).

Idaho

Property taxes in Idaho are based on a property's current market value, and most homes, farms, and businesses are subject to property tax. Property tax values for operating property, including industries engaged in electric generation, transmission, and distribution, are set by the Idaho State Tax Commission. The Idaho State Tax Commission appraises operating property using a unit-appraisal approach, which values a group of property items as one entity. The market value of each unit is estimated using cost, income, and/or market approaches to valuation (Idaho State Tax Commission 2003). Property taxes are collected only by local taxing jurisdictions in Idaho and are not collected by the state (Idaho State Tax Commission 2010). Property tax revenues for 2011 are summarized for Idaho counties in the broader analysis area in Table 3-568. Total property taxes imposed ranged from $402 million in Owyhee County to $23 billion in Ada County.

Table 3-568. Property Tax Revenues in Idaho Counties, Fiscal Year 2011				
Area	Real and Personal Property Assessed Value ($1,000)[1]	Operating Property Assessed Value ($1,000)[1,2]	Total Assessed Value ($1,000)	2011 Property Tax Revenue ($1,000)[3]
Ada	23,814,462	692,004	24,566,467	391,693
Canyon	6,614,288	214,417	6,840,706	138,820
Owyhee	402,933	103,140	507,439	5,001
Idaho	101,365,623	4,822,889	106,659,746	1,380,558

Table Source: Idaho State Tax Commission 2012a.

Table Notes:
[1]Real and personal property includes residential, industrial, and commercial property and farms, timber, and mining.
[2]Operating property includes industries engaged in electric generation, transmission, and distribution.
[3]Property tax rates vary by and within each county. The total property tax revenues shown here are for all taxing districts within each county, including towns, cities, and special taxing districts

The sales and use tax rate in Idaho is 6 percent. Sales tax is levied on goods and services purchased within the state. Use tax is imposed on goods purchased tax-free outside Idaho for consumption, use, or storage in Idaho. Use tax is paid directly to the state rather than to the seller of the good. The state also applies a travel and convention tax of 2 percent on hotel/motel occupants and campground users (Idaho State Tax Commission 2012b). Long-term, temporary residents (more than 30 days) are exempt from the travel and convention tax. Sales, use, and travel and convention tax revenues are summarized for fiscal year 2011 by affected Idaho counties in Table 3-569. Total revenues ranged from about $1.5 million in Owyhee County to $258.9 million in Ada County.

Table 3-569. Sales, Use, and Travel and Convention Tax Revenues in Idaho Counties, Fiscal Year 2011 ($1,000)			
Area	Sales and Use Tax ($1,000)	Travel and Convention Tax ($1,000)	Total ($1,000)
Ada	258,909.90	1,805.49	260,715.30
Canyon	41,564.50	211.82	41,776.30
Owyhee	1,568.20	2.55	1,570.80

Table Source: Idaho State Tax Commission 2012b.

Individual income tax generated $1.45 billion in revenues in Idaho in fiscal year 2011 (Idaho State Tax Commission 2012c). Data on income tax revenues by county are not readily available for Idaho (Pack 2012). The corporate tax rate in Idaho is 7.6 percent. Corporate income tax generated $22.6 million in revenues in Idaho in fiscal year 2011 (Idaho State Tax Commission 2012c).

Community Services

Local governments and other entities provide public services, such as solid-waste disposal, law enforcement, fire protection, health care, and education to communities surrounding the B2H Project area. Interviews were conducted with local authorities in each county to assess the availability of public services and infrastructure in the six counties that would be crossed by the proposed Project and alternatives. These interviews had two purposes: (1) identify the current capacities of different

organizations to provide services, and (2) identify the ability of these service providers to meet the potential increase in demand associated with the proposed B2H Project.

Solid-Waste Management

Solid waste generated during construction would likely be disposed of at landfills located within the B2H Project area. Landfills located within the B2H Project area include those located in Morrow, Baker, and Malheur counties in Oregon and in Canyon County, Idaho. These landfills are listed in Table 3-570, which also identifies the volume of waste each landfill currently receives (tons per day), as well as the amount of waste each landfill is permitted to receive (tons per day), where this information is available.

Table 3-570. Landfills within the Analysis Area

Facility Name	County	Current Volume of Waste (Tons Received/Day)	Current Permitted Volume of Waste (Tons Received/Day)
Finley Buttes Landfill	Morrow, Oregon	1,923 tons	No permitting restriction
Clay Peak Landfill	Payette, Idaho	approximately 500 tons	No permitting restriction
Baker Sanitary Landfill	Baker, Oregon	50 to 60 tons	No permitting restriction
Lytle Boulevard Landfill	Malheur, Oregon	18,000-19,000 tons	20,000 tons
Pickles Butte Landfill	Canyon, Idaho	Unknown[1]	Unknown[1]

Table Source: Freese 2011; Geedes 2011; Large 2011; Schmidt 2016; Geedes 216

Table Note: [1]Multiple attempts were made to contact Pickles Butte Landfill to obtain information about current and future operations. No response has been received to date.

Law Enforcement

The proposed B2H Project and alternatives would cross through the jurisdiction of six county sheriff's departments (Table 3-571). Four of these sheriff's departments responded to requests for information (Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011).

Table 3-571. Law Enforcement

Department	Number of Law Enforcement Personal	Response Time to Project
Morrow County Sheriff	Unknown[1]	Unknown[1]
Umatilla County Sheriff	7 deputies (3 within the B2H Project area)	20 minutes to next day
Union County Sheriff	Unknown[1]	Unknown[1]
Baker County Sheriff	8 deputies	5 minutes to 1 hour
Malheur County Sheriff	18 deputies	1 hour
Owyhee County Sheriff	13 deputies	20 minutes

Table Source: Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011.

Table Note: [1]The Morrow County and Union County Sheriff's offices did not respond to several requests for information Fire Protection and Emergency Response.

Response times from local stations to the B2H Project area would vary and depend on the time of day, the priority of the emergency, environmental conditions, the location of the emergency, and whether law enforcement personnel were already patrolling the area. Estimated response times would range from 5 minutes to 1 hour for the Baker, Malheur, and Owyhee County sheriffs' departments (Bentz 2011; Hoagland 2011; Southwick 2011). The Umatilla County Sheriff's Department indicated that response

times for non-emergency calls during the day could take several hours and that non-emergency calls at night would not likely be responded to until the next day. Response times for emergency calls (i.e., life-threatening situations) by the Umatilla County Sheriff's Department would likely range from 20 minutes to 1 hour (Diehl 2011).

The B2H Project and proposed alternatives would cross through the jurisdiction of 13 fire departments (Table 3-572). These departments were initially identified by contacting offices with jurisdiction over the counties crossed by the proposed B2H Project. In addition, the Oregon State Fire Marshal's office was contacted to confirm that the departments shown in Table 3-572 covered the entire B2H Project area (Warner 2011). Each fire department was contacted and 10 of the 13 fire departments and 1 federal fire office responded to requests for information (Carter 2011; Enright 2011; Harper 2011; Johnson 2011; Martin 2011; Morgan 2011; Payton 2011; Rogelstad 2011; Skerjanec 2011; Webb 2011; Wooldridge 2011).

Table 3-572. Fire Departments

Department	County	Number of Fire	Equipment	Response Time
Boardman Rural Fire Protection District	Morrow	7 paid	(3) type 1 interface engines (off-road)	0.5 hour south-route
		17 volunteers	(1) type 1 tender with a 3,000-gallon tank	10 minutes north-route
			(1) type 6 engine	
Ione Rural Fire Protection District	Morrow	14 to 15 volunteers	(2) pumper engines (2,000- and 1,000-gallon tanks)	Unknown[1]
			(3) brush trucks	
			(1) tender with a 3,000-gallon tank	
Echo Rural Fire Department	Umatilla	20 to 21 volunteers	(5) brush rigs	20–25 minutes near
			(3) tankers	Pilot Rock
			(4) pumpers	40 minutes in other areas
Pilot Rock Rural Fire Protection District	Umatilla	Unknown[1]	Unknown[1]	Unknown[1]
North Powder Fire Department	Union	16 volunteers	(1) type 6 brush rig	12 to 15 minutes
			(1) 2,500 gallon tender (1) 1,800 gallon tender (1) 1,500 gallon tender	
La Grande Rural Fire Protection District	Union	1 paid	(3) type 1 engines	10 minutes
		20 volunteers	(1) brush truck	
			(1) 3,000-gallon water tender	
			(2) rescue vehicles	
Union Emergency Services – Fire Department	Union	15 volunteers	(2) ambulances (1) rescue rig (4) fire engines (2) tankers	11 to 12 minutes
			(1) brush truck	
Wallowa-Whitman National Forest – Blue	Union	64 seasonal personnel	(11) wildland engines	Varies with distance
			(1) type 2 helicopter (July –	

Table 3-572. Fire Departments

Department	County	Number of Fire	Equipment	Response Time
Mountain Interagency Dispatch Center: Grande Ronde Fire Zone, Burnt Powder Fire Zone, and North Fork John Day Ranger District			September) (2) single engine air tanker (July – September)	
Wallowa-Whitman National Forest	Union	11 permanent; 5 permanent seasonal; 25 temporary personnel	(4) engines (1) hand crews	20 minutes minimum; varies with distance
Keating Rural Fire District	Baker	15 volunteers	(2) structure engines (1) tender (4) wildland engines	25 minutes
Diamond Rural Fire Protection District	Baker	Unknown[1]	Unknown[1]	Unknown[1]
Baker Rural Fire Protection District	Baker	18 volunteers	(3) structure trucks (2) 4,200-gallon tenders (4) brush trucks	8 to 14 minutes
BLM Vale District Fire, Oregon	Malheur	34 permanent seasonal personnel	(11) heavy engines (8) light engines (1) tactical tender (1) dozer	Varies with distance
		60 temporary personnel	(1) single engine air tanker (July – September) (1) type 2 helicopter (July – September)	
Adrian Rural Fire Protection District	Malheur	14 volunteers	(1) 1,000-gallon pumper engine (1) 3,000-gallon tender truck (1) heavy truck with an 800-gallon tank (1) light truck with a 300-gallon tank	20 to 25 minutes
Homedale Fire Department	Owyhee	Unknown[1]	Unknown[1]	Unknown[1]
Marsing Rural Fire Department	Owyhee	32 volunteers	(2) engines (2) brush trucks (4) tenders	15 minutes
BLM Fire Management Officer	Project Wide	Not applicable	Not applicable	Not applicable

Table Sources: Carter 2011; Enright 2011; Harper 2011; Johnson 2011; Martin 2011; Morgan 2011; Payton 2011; Rogelstad 2011; Skerjanec 2011; Webb 2011; Wooldridge 2011.

Not all lands where the B2H Project would be developed fall within a designated fire district. In these cases, the closest or best-situated fire district would likely respond (Enright 2011; Wooldridge 2011).

Mutual-aid agreements have been established between local fire districts for mutual response to ensure cooperation. (Martin 2011; Payton 2011; Webb 2011). Because of these mutual-aid agreements, the fire district that responds to fires may not be the district the fire occurs in or even the closest district, but rather the district best situated and suited to respond.

Response times to a fire along the B2H Project would vary. Most of the fire districts in the B2H Project area are comprised of volunteers and, in some cases, it could take time to collect and mobilize an entire fire crew. In addition, most of the B2H Project crosses open remote lands where access is often limited. Were a fire to occur in one of these areas, it might not be immediately identified.

Health Care

A number of medical facilities serve the communities and outlying areas near the B2H Project. If minor B2H Project-related injuries occurred, they would be treated at local medical facilities or emergency rooms. Workers suffering more serious injuries would be taken to one of the major hospitals near the B2H Project. Four major hospitals capable of treating serious injuries are located within the counties of the proposed B2H Project: Saint Anthony Hospital in Pendleton, Oregon, Grande Ronde Hospital in La Grande, Oregon, Saint Alphonsus Medical Center in Ontario, Oregon and another Saint Alphonsus level four hospital in Baker City with life flight services.

Saint Anthony Hospital is a level three hospital licensed for 49 beds, 5 of which are intensive-care beds. The hospital employs about 80 nurses, and 30 physicians have staffing privileges. Medical transportation is provided by Life Flight. A Life Flight helicopter is stationed at the hospital, and the hospital has access to a fixed-wing craft. Flight times between the hospital and the B2H Project area would take about 15 minutes for the portions of the B2H Project located near Pilot Rock and 40 minutes for the areas located further east. Patients suffering major injuries, such as severed limbs or electrical burns, would be stabilized at Saint Anthony Hospital and then transported to a regional hospital for treatment (Blanc 2011).

Grande Ronde Hospital is a level four hospital licensed for 25 beds, six of which are intensive-care beds. The hospital employs about 175 nurses, and 45 physicians have staffing privileges. The Grande Ronde Hospital partners with Life Flight Network to provide emergency air medical transportation. Life Flight has both a rotor-wing helicopter and fixed-wing aircraft based in La Grande, Oregon (Grande Ronde Hospital and Clinics 2011). Flight times between the airport and the B2H Project area would likely be about 20 to 90 minutes. Patients suffering major injuries, such as severed limbs or electrical burns, would be stabilized at Grande Ronde Hospital and then transported to a regional hospital for treatment (McCowan 2011).

The Saint Alphonsus Medical Centers in Baker City and Ontario are small acute care facilities with a combined total of 74 beds. These medical centers are part of the Saint Alphonsus Health System, a four-hospital regional, faith-based Catholic ministry with over 4,300 associates and 950+ medical staff serving 700,000 people in eastern Oregon and western Idaho. Saint Alphonsus Health System is anchored by the only Level II Trauma Center in the region, Saint Alphonsus Regional Medical Center in Boise, Idaho. The Life Flight Network, which is partially owned by the Saint Alphonsus Health System,

provides Saint Alphonsus Regional Medical Center's emergency air transportation. Life Flight has rotor-wing helicopters stationed in Ontario, Oregon, and Boise, Idaho, and a fixed-wing aircraft are stationed at the Boise International Airport; flight times between the hospital and the B2H Project area will likely be about 15 minutes. This medical facility will be able to treat any injury that could occur during construction or operation of the B2H Project, with the exception of major burns; patients suffering major burns will be stabilized at this center and then sent to a burn center in Salt Lake City, Utah, or Portland, Oregon (Ryan 2012).

Public Schools

The B2H Project area crosses six counties and multiple school districts. The school districts most likely to be affected are identified by county in Table 3-573, which also identifies current student enrollment and student/teacher ratios, as well as enrollment trends for the 10 school districts that responded to requests for information. All 10 of these districts indicated that enrollment has either been flat or declining in recent years, with current trends expected to continue in the future. Student/teacher ratios for the 2010/2011 school year ranged from 7.2 students per teacher in the Huntington School District and 16 to 21 students per teacher in the La Grande School District 001.

Table 3-573. School Districts

Area	School District	Student Enrollment (2010 to 2011)	Student/Teacher Ratio (2010 to 2011)	Enrollment Trends
Oregon				
Baker	Baker School District	2,000	19.6	flat to declining
Baker	Huntington School District 16J	71	7.2	declining
Malheur	Ontario School District 8C	2,400	18.0	flat
Malheur	Vale School District 084	878	16.0	declining
Malheur	Nyssa School District 026[1]	1,130	17.0	unknown
Malheur	Adrian School District 061	242	13.6	flat
Morrow	Morrow School District 001	2,200	16.8	flat
Umatilla	Pilot Rock School District 002	352	14.6	declining
Union	La Grande School District 001	2,204	21.0	declining
Union	Union School District 005	370	16.1	declining
Idaho				
Owyhee	Marsing Joint School District 363	850	12.6	flat
Owyhee	Melba Joint School District 136	740	17.3	flat

Table Sources: Allison 2011; Burrows 2011; Hogg 2011; Lowry 2011; Milburn 2011; Nunn 2011; Panike 2011; Stalk 2011; Wegener 2011; Wood 2011.

Nonmarket Values

People derive a wide variety of benefits from lands surrounding the proposed transmission line. Some benefits are reflected in market goods such as timber, livestock, and agricultural crops; while other benefits are derived from the recreation, wildlife and fisheries, water supply and quality, and biodiversity these lands support. Benefits derived from natural amenities are commonly referred to as nonmarket

values, and have been credited with increasing the attractiveness of communities across the West (Clark and Hunter 1992; Knapp and Graves 1989; Lewis et al. 2002; McGranahan 1999; Mueser and Graves 1995; Treyz et al. 1993).

Nonmarket values can generally be classified into two categories, those derived from the direct use of natural resources and those from non-use. Nonmarket use values are realized from the consumptive and non-consumptive use of natural resources. Although the use of nonmarket goods may require consumption of associated market goods (e.g., food, gas and lodging), the personal enjoyment and satisfaction people derive from these goods exceed any monetary costs they incur to use them. These personal benefits may be attained from recreational experiences; or associated with aesthetic enjoyment, artistic and spiritual inspiration, and emotional comfort derived from natural settings.

Natural resources possess additional values beyond those associated with their current use. These passive use values include existence, option and bequest values. Existence values are the amount society is willing to pay to guarantee that an asset simply exists. In addition to implicit existence values, society's willingness to pay to preserve resources for future use attaches additional passive use values. The potential benefits people would receive from future visits to undeveloped lands along the proposed transmission line are referred to as option values when future use is expected to occur within the same generation, and bequest values when preservation allows future generations to benefit from the resource use. Along the proposed transmission line bequest and option values might exist for numerous native plant and animal species, wild and scenic landscapes, and recreational areas.

Although lands proposed for development may possess nonmarket values, use and non-use nonmarket values are difficult to quantify and assign monetary values to. Methods for measuring these values can be controversial and difficult to apply. Recently the BLM and USFS have been exploring the concept of ecosystem services as a way to describe the benefits provided by forests and other public lands, however, this type of approach has not been applied operationally in a management context (Kline 2006). While it is not feasible to estimate nonmarket values during this phase in planning process, it is important that responsible officers recognize that the true value of natural resources include both market and nonmarket values so that they can make more informed land management decisions.

The effects of the action alternatives on these types of services are assessed in the sections of this EIS that address wildlife, fish, vegetation, water resources, cultural resources, and visual resources, among others. Monetary values are not assigned to these services, but this does not lessen their importance in the decision- making process. Decision-makers will consider the economic values presented in this section within the context of the information presented elsewhere in this document, much of which cannot readily be translated into economic terms

ENVIRONMENTAL JUSTICE

Federal environmental justice regulations were established due to concerns that land uses and facilities were being placed in minority and low-income communities without regard to the consequences of these actions. Environmental justice refers to the social equity in sharing the benefits and the burdens of specific projects and/or programs and is addressed by Executive Order 12898, *Federal Actions to*

Table 3-576. Environmental Justice Information for Low-Income Populations		
Area	**Percentage of Low-Income Households**	**B2H Project Segment**
Union County, Oregon	**17**	–
Block Group 3, Census Tract 9702, Union County, Oregon	11	Segment 2—Blue Mountains
Block Group 1, Census Tract 9706, Union County, Oregon	13	Segment 2—Blue Mountains
Block Group 2, Census Tract 9706, Union County, Oregon	7	Segment 2—Blue Mountains

3.2.17.6 Environmental Consequences

The B2H Project has the potential to affect social and economic conditions in all counties in the socioeconomic study area. The following section discusses how the construction and operations of the B2H Project under the alternatives may affect the socioeconomic characteristics of the study area.

Study Methods

The environmental consequences analysis evaluates how the social and economic effects of the construction and operations phases of the B2H Project, both positive and negative, are distributed among the communities and counties in the study area. Socioeconomic impacts are described and quantified where possible. However, where quantification of impacts was not possible, the analysis included a qualitative discussion of possible effects. The analysis includes separate but integrated approaches to addressing economic, demographic, fiscal, and social impacts using the methods and approaches discussed.

Agricultural impacts associated with the construction and continued operation of the B2H Project were assessed in terms of production losses. Acres of various crops types disturbed during the construction and operations phases of the B2H Project were obtained from the land-use analysis, and an average value of production for each of these crop types was estimated with data from the National Agricultural Statistical Service including field crops, fruit and tree nuts, and vegetables for 2014. Grass and pasturelands were valued at the average rental price per acre in 2014. Production losses were valued by applying per acre values to acres disturbed and then used as inputs in a customized regional economic model known as IMPLAN® to assess how changes in agricultural production affect local economic conditions.

Estimates of construction and operation workforce were provided by the Applicant and used to describe the impacts on regional employment and population. Changes in employment and population were then used to evaluate other local impacts, such as housing, emergency services, schools, and other public and community services can be evaluated. Anticipated changes in property tax revenues associated with development and operations of the B2H Project were estimated through methods consistent with those described and applied at the state level, although the taxes are assumed primarily to accrue to the counties. For example, in Oregon utilities are centrally assessed by the Oregon Department of Revenue and transferred to the county assessment rolls where an appropriate property tax rate is applied. The average property tax levy per county is published annually by the Oregon Department of Revenue (Oregon Department of Revenue 2015) and was used for this analysis. The average tax rate

for utilities in Idaho was estimated by dividing total taxes charged against utilities by the total assessed value of utilities in 2012 (Idaho State Tax Commission 2013). It is anticipated that tax revenues would fall after the first year of service, as assessed values would consider cost of operation. A capitalization rate was applied to cost of construction to estimate the decreasing assessed valuation, to which the annual tax rate was applied.

An environmental justice analysis is conducted to determine if any environmental justice populations are present within the study area. The environmental justice analysis is conducted in compliance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and follows guidance published by the EPA (2016). The environmental justice analysis involves two basic steps:

- Determine whether environmental justice populations exist in the relevant study area
- If environmental justice populations exist, determine whether they would be disproportionately affected by development and operation of the Project

To identify the presence of potential environmental justice populations residing in proximity to the alternative routes, it is necessary to create an affected area for a smaller geographic area than that of the defined socioeconomic study area. Populations are analyzed at the Census Block Group and Census Tract level located within 1 mile of all alternative routes. The populations located in these Census Block Groups and Census Tracts are compared with those of the reference communities in terms of percentages of minority and low-income populations. Reference communities for the analysis are defined as the county and/or the state in which the Tract or Block Group was located; if the percentages of low-income and/or minority populations within proximity to the alternative routes significantly exceed those of the reference communities, further environmental justice assessment is undertaken. If no environmental justice populations are identified, no further analysis is needed.

Once the locations of the environmental justice populations are identified, all adverse effects are considered to determine whether the B2H Project has the potential to have a “disproportionately high and adverse” impact (human health or environmental effect) to these populations. Impacts of the Proposed Action include cumulative and multiple impacts, and are evaluated to determine which, if any, disproportionately and adversely affect these populations.

No Action Alternative

If no action were taken, the B2H Project would not be granted a right-of-way and the transmission line and substations would not be constructed. The human environment would remain as is and management direction from the current management plans would continue. Under the No Action, none of the social and economic impacts described under the alternative routes would be realized. However, without the B2H Project, the existing system would not be upgraded, and as a result, the Applicant would not be able to ensure sufficient capacity and reliability to meet the electric demands of its current and future customers in the Pacific Northwest and the Intermountain West. Without its development, there would be fewer high-voltage transmission lines to provide power from existing and new renewable (e.g., wind, solar) and thermal (e.g., gas, coal) generation sources to meet growing customer needs;

ease transmission congestion; and improve the flow of electricity throughout the West (refer to Chapter 1).

Effects Common to All Route Alternatives and Variations

The construction, operation, and maintenance of the proposed transmission line and related facilities are expected to have beneficial impacts on local employment and economic conditions. The largest potential impact from the B2H Project on employment would occur during the construction phase.

Population

Construction of the proposed B2H Project would occur in two geographic segments or "spreads" over 24 to 30 months. The B2H Project would be constructed primarily by contract personnel, with the Applicant responsible for B2H Project 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. Construction is expected to take place year-round as weather and conditions allow. While construction during the summer season may be preferred, there are issues that may require winter construction. Weather conditions typically prohibit construction at higher elevations during winter months. Project schedule, financing, design, and/or material delivery may not fit within the summer season. Environmental issues and soil conditions also may dictate construction of portions of the line during certain times of the year, for example, to avoid or reduce impacts on wildlife.

The proposed Project and alternative routes are expected to create a short-term demand for workers during its construction. Construction workforce requirements were estimated by the Applicant's transmission engineering contractor based on average crew sizes and production rates by job type. Labor requirement projections for the two spreads are shown below in Table 3-577. These estimates are for the 500-kV transmission line component of the B2H Project and do not include estimated employment for the 138/69-kV rebuild or modifications to the Hemingway Substation.

Table 3-577. 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 with family[1]	18	19
Total	**243**	**251**

Table Source: Idaho Power Company 2011.

Table Note: [1]Based on data compiled by the U.S. Census Bureau (2009) as part of the 2008 American Community Survey, the average relocating family is assumed to consist of 2 adults and 1 school-age child.

Less than 10 percent of the workers temporarily relocating are expected to be accompanied by their families. Some workers like the construction supervisors and inspectors would stay the length of the B2H Project, but many workers would be employed for just 4 to 6 months. In addition, workers employed on linear projects of this sort tend to relocate along the line as needed, staying in each

location for a short period. For these reasons, workers on these types of projects do not typically bring dependents.

The maximum projected temporary workforce associated with construction spread one would be equivalent to approximately 0.2 percent of the total 2010 population in Morrow, Umatilla, Union, and Baker counties. The maximum projected temporary workforce associated with construction spread two and modifications to the Hemingway Substation would be equivalent to about 0.4 percent of the total 2010 population in Baker, Malheur, and Owyhee counties.

Existing staff of the Applicant would be responsible for the operations and maintenance of the new transmission line and associated facilities. Very few, if any, of the workers employed during the construction phase of the B2H Project would be expected to permanently relocate to the area. Therefore, B2H Project-related anticipated increases in population would be temporary in nature.

Housing

Assuming that approximately 75 percent of the peak construction workforce would temporarily relocate to the analysis area, suggests that up to 182 workers could temporarily relocate to the northwest (construction spread one) and 188 workers to the southeast (construction spread two) parts of the primary socioeconomic analysis area. An estimated 10 percent of these workers are assumed to be accompanied by their families.

Based on experience with similar projects, the Applicant's transmission engineering contractor estimates that approximately 35 percent of non-local workers would provide their own housing in the form of RVs or pop-up trailers. The remaining non-local workers would be expected to require rental housing (apartments/houses) (25 percent), mobile homes (5 percent), and motel or hotel rooms (35 percent). Construction workers, particularly those working in less populated areas, often commute relatively long distances to the job site, with commutes of up to 90 minutes each way (BLM 2014.).

Existing housing resources, rental housing, hotels and motels, and RV spaces tend to be concentrated in and around the larger communities in the analysis area. Workers temporarily relocating to the area would generally be expected to reside in or near larger communities where these housing options and services are more available. Review of the rental-housing units and hotel and motel rooms that would normally be vacant and available for rent suggests there would be sufficient housing resources available for rent in the counties that would be crossed by each construction spread.

Rental-housing resources in the counties crossed by construction spread one (Morrow, Umatilla, Union, and Baker counties) include approximately 19,114 rental units. Hotel and motel resources in these counties include approximately 2,600 rooms. Additional resources are available in the Tri-Cities of Richland, Kennewick, and Pasco, Washington, which are located about an hour drive north of Boardman, Oregon.

Rental-housing resources in the counties crossed by construction spread two (Baker, Malheur, and Owyhee counties) include approximately 12,752 units (Baker County units also included in spread one). Hotel and motel resources in these counties include approximately 1,200 rooms. Additional resources

are available in the cities of Boise and Nampa, which are in neighboring Ada and Canyon counties. Any small, short-term changes in population due to the B2H Project are expected to have minimal impacts on available housing across the region.

Once construction is complete, the operation and maintenance of the transmission line and its associated facilities will be completed by the Applicant's staff. No existing employees would be required to relocate to the socioeconomic area to operate or maintain the B2H Project. The Applicant has indicated that operations and maintenance associated with the new transmission line may result in one additional part-time position, which would be filled locally. Thus, the B2H Project is not anticipated to have any measurable effect on long-term housing availability within the socioeconomic study area.

Tribal Households and Communities

Construction of the B2H Project may temporarily restrict access to areas of the B2H Project within which Native American tribes procure subsistence resources such as gathered plants, small and large game, and fish. Noise and human activity associated during construction of the Project may disturb animals that constitute subsistence resources, causing them to temporarily leave the area. Once construction and rehabilitation activities are complete, animals normally return to these disturbed areas. Thus, construction and rehabilitation activities may adversely impact wildlife-related sustenance activities temporarily, but are not anticipated to have long-term adverse impacts on wildlife-related subsistence activities. While there is no data to quantify the percent contribution to tribal household or community income represented by these resources, adverse effects on natural resources and restricted access during construction could negatively affect tribal household's ability to continue to practice traditional ways of life.

Operation of the B2H Project may result in restriction of access to certain areas of the B2H Project, or may result in changes to vegetation or disruption to fish, small and large game populations, which could affect tribes' ability to procure subsistence resources. As there are no data to quantify the percent contribution to tribal household or community income represented by these resources, effects caused by operation are not known.

Tax Revenues

Income, Business, and Sales Taxes

Tax revenues will be generated by the B2H Project from income and business taxes. These taxes were not quantified as part of this analysis because they will be collected at the state/federal level and only a small portion will be passed along to county and city agencies. As a result, business and income taxes will likely have a very limited effect on county and city revenues.

Oregon has no local sales or use taxes. Estimated expenditures were assigned to Owyhee County, Idaho based on the share of construction activity that will take place in that county. Total expenditures for construction materials, supplies, and equipment would be estimated to average approximately $3.2 million per mile for the transmission line portion of the B2H Project. Expenditures on materials, supplies, and equipment to modify the Hemingway Substation would be estimated to be approximately $32 million. Assuming an Owyhee County sales and use tax rate of 6 percent, these expenditures would

generate tax revenues of between $3.2 and $6.5 million, which is equivalent to between five and eleven times the amount of sales and use tax revenues distributed to Owyhee County in 2015.

Operation of the B2H Project would generate sales and use tax revenues in Idaho because of local operations and maintenance expenditures. These impacts are expected to be small, especially when compared to the construction-related impacts.

Property Taxes

Estimated property tax revenues are presented by county in Table 3-578. These estimates are based on the projected value of the improvements included in the proposed B2H Project by county and average property tax rates. This table illustrates the relative contribution of the estimated B2H Project-related property tax revenues to county budgets by comparing estimated annual revenues with actual property tax revenues for 2014-2015 and 2012 by county. The table summarizes a range of tax revenues for the B2H Project based on the facilities that would be developed under each segment and alternative for all the counties. Estimated B2H Project-related property tax revenues range 1.2 percent of 2014 property tax revenues in Umatilla County to as high as 17.4 percent of property tax revenues in Baker County.

The estimates presented in Table 3-578 indicate that the B2H Project would generate annual property taxes in Owyhee County equivalent to 7.5 percent of total 2012 property tax revenues. Idaho limits the amount by which annual revenues from property tax can increase in each county. With some exceptions, this amount is limited to 3 percent based on the highest annual budget from the preceding 3 years. Exceptions include new construction (excluding public utilities), annexation, and previously unlevied funds (Houde 2012). In cases where increases in property tax revenues exceed 3 percent and are not exempt, the increase above 3 percent may provide an opportunity to lower levies for other taxpayers in the affected district.

Table 3-578. Estimated Annual Property Tax Revenues

Area	Estimated Annual Project-Related Property Taxes ($1,000)[1,2]	Actual Property Tax Imposed 2014-15 ($1,000)[1,3]	Estimated Property Tax as a Percent of 2010 Property Tax Revenues
Morrow	1,028 to 2,855	27,559	3.7 to 10.4
Umatilla	931 to 3,782	77,889	1.2 to 4.9
Union	898 to 2,156	20,716	4.5 to 10.7
Baker	814 to 3,014	17,358	4.7 to 17.4
Malheur	1,246 to 3,348	23,802	5.2 to 14.1
Owyhee	320	4,284	7.5

Table Source: Idaho State Tax Commission 2013.

Table Notes:

[1]Estimated B2H Project-related property tax revenues and actual property tax revenues from 2010 are in thousands of dollars ($000s).

[2]Property tax estimates are based on the projected value of the proposed improvements, including transmission line and substation costs. Tax revenues are estimated using applicable county property tax rates.

[3]These are actual property taxes imposed by counties in Oregon for 2014-15 (Oregon Department of Revenue 2015) and for Owyhee County for 2012 (Idaho State Tax Commission 2013).

Community Services

Solid-Waste Management

Solid waste generated during construction of the B2H Project would include a small portion of the soil and rock excavated for foundations. Other solid waste generated would include broken insulators, scrap conductor, and empty conductor spools, as well as general construction waste, such as crates, pallets, and paper wrappings used to protect equipment and materials during shipping. The B2H Project is expected to generate about 13,909 cubic yards of waste during construction (or about 124 cubic yards of waste per week). This waste would likely be disposed of at various landfills located along the B2H Project's length, and, therefore, no single landfill would be expected to accommodate the entire waste-load generated by B2H Project construction.

The Applicant will promote an aggressive recycling program to minimize the waste that will otherwise be disposed of in landfills. Wastes generated during construction will be collected in recycling and disposal containers, which will be located at multiuse areas. Separate disposal and recycling containers will be labeled by waste type to segregate materials as appropriate for recycling or disposal. Disposal and recycling containers will be of adequate size, design, and number to handle the amount of waste being generated. Landfill-supplied containers, such as 20- or 30-cubic yard rolloffs, will be used to collect scrap metal, wood and paper products, concrete waste, and other recyclable materials. Paper products and other materials such as chemicals, batteries, glass, metals, and plastic will be recycled when practical. As disposal and recycling containers reach capacity they will be sent to disposal facilities that can handle these materials, and the containers will be replaced with empty units. The Applicant's waste hauling contractor will be responsible for overseeing waste management, transporting waste to appropriate disposal facilities, and managing disposal and recycling containers.

The amounts of waste materials and wastewater generated during B2H Project operation are expected to be minimal. Wastes, including vegetative waste, derived during this part of the B2H Project will likely be recycled or disposed of off-site by individual operations and maintenance crews. Therefore, waste management impacts are expected to be low.

Representatives from the Finley Buttes Landfill, which is about 12 miles south of Boardman, indicated the landfill has 200 million cubic yards of storage, with only 8 million cubic yards of this storage used to date (Large 2011). Representatives from the Clay Peak Landfill, which is approximately 3 miles east of Payette, Idaho, indicated the landfill has 2.3 million cubic yards of storage, and there are plans to expand the facility and add about 25 million cubic yards of storage (Schmidt 2011). The amount of waste that can be received per day is not restricted for either facility (Table 3-570). Either landfill would be able to accommodate all the solid waste generated by the B2H Project (Large 2011; Schmidt 2011).

Representatives at the Baker Sanitary Landfill, which is about 7 miles south of Baker City, indicated they do not have a restriction on the amount of waste that can be accepted per day and would be able to accommodate any waste generated by the B2H Project (Freese 2011). However, the Lytle Boulevard Landfill in Vale, Oregon, indicated their facility is close to the permitted capacity for waste they can

accept per day (Geedes 2011). Therefore, only limited waste from the B2H Project would likely be sent to the Lytle Boulevard Landfill, with the remaining waste sent to other facilities.

Law Enforcement

Construction of a transmission line can result in security issues that can have impacts on local law enforcement resources. The transmission line construction site(s) could become a target for crimes (e.g., theft of construction materials or equipment). In addition, about 75 percent of the work force needed to construct the line is expected to reside permanently outside the primary socioeconomic analysis area (i.e., the counties crossed by the proposed transmission line). Workers not hired from within the region would either temporarily relocate to the affected regions or commute in from their permanent residences.

Representatives of four potentially affected sheriff's departments responded to requests for information—Baker, Malheur, Owyhee, and Umatilla County sheriffs' departments. They indicated that, while the construction site(s) could become a target for crimes and a temporary influx of construction workers could result in short-term increases in traffic incidents and other disturbances, the B2H Project was unlikely to require additional law enforcement resources or facilities (Bentz 2011; Diehl 2011; Hoagland 2011; Southwick 2011).

During operations, new access roads and the transmission line and associated facilities could slightly increase demands on local law enforcement. These impacts are expected to be low.

Fire Protection and Emergency Response

The B2H Project could result in an increased risk of fire during construction and operation. The BLM is responsible for fire suppression on the majority of the public lands crossed by the B2H Project. The Deputy Fire Management Officer for the BLM indicated the B2H Project would not affect their ability to suppress fires or require additional fire suppression resources.

The Keating Rural Fire District's fire chief expressed concerns regarding the risk of fighting fires near energized transmission lines as electricity could arc through the smoke and strike firefighters (Harper 2011). This issue is typically addressed by waiting for an electric transmission line to be de-energized before attempting to suppress fires in the immediate vicinity. This issue would be addressed through the Applicant's outreach with local fire and emergency response agencies.

A representative of the all-volunteer Union Emergency Services–Fire Department expressed concern about the potential for new construction in Union County (including recent wind-farm developments) to have adverse impacts on their resources or their ability to serve the community (Johnson 2011). Recent construction has not, however, affected the department to date, and they are currently well equipped (Johnson 2011). The Fire Chief for the North Powder Fire Department indicated that an increased risk of fire during the summer could affect his department and their equipment could need to be upgraded to address this potential increase in fire risk.

The Applicant has proposed a Framework Fire Prevention and Suppression Plan as Appendix J to the Revised POD (Idaho Power Company 2011). The Framework Plan includes provisions for sharing

responsibilities and coordination with fire-protection agencies; measures to reduce fire hazards during construction; and operations and maintenance procedures to reduce fire risk. Implementation of the Framework Fire Prevention and Suppression Plan measures would reduce the potential for the B2H Project to affect local fire departments to minor effects by reducing the risk of wildfires.

Health Care

Representatives from Saint Anthony Hospital, Grande Ronde Hospital, and Saint Alphonsus Medical Centers indicated that, given the size of the construction and operations workforces, injuries with the potential to occur during B2H Project construction and operations would not have a significant impact on these medical facilities (Blanc 2011; McCowan 2011; Vachek 2011).

Public Schools

This analysis assumes that the B2H Project would be constructed in two, approximately 150-mile-long spreads built concurrently. The estimated peak workforce in the northwest part of the analysis area (spread one) could involve up to 182 construction workers temporarily relocating to the area during construction. Assuming that 10 percent of these non-local workers would relocate with their families, up to 18 children may need to be enrolled in local schools in the northwest part of the B2H Project area. The estimated peak workforce in the southeast part of the B2H Project area (spread two) could involve the temporary relocation of up to 188 construction workers, with up to 19 children needing to be enrolled in schools in the southeast part of the B2H Project area. The school districts responded that they could accommodate these additional students.

During operations, existing staff of the Applicant would be responsible primarily for the operation and maintenance of the transmission line and associated facilities. One additional part-time position would be filled locally. No employees would be required to relocate to the B2H Project area. As a result, during operations there would be no identifiable impact on school enrollment.

Property Values (General Property Impacts and Compensation)

The proposed B2H Project would require a new right-of-way involving a combination of right-of-way grants and easements between the Applicant and federal and state governments, other companies (e.g., utilities and railroads), and private landowners (including fee acquisition). The Applicant would obtain rights-of-way on private land as perpetual easements. Easements through private lands would be negotiated between individual landowners and the Applicant during the easement acquisition process. This process is intended to provide just compensation to the landowner for the right to use the property for transmission line construction and operation. The required easements may encumber the affected right-of-way area with land-use limitations. Each easement would specify the extent of any encumbrances. Typical transmission line easement conditions include the right to clear the right-of-way and keep it clear of trees and structures, including structure-supported crops, brush, vegetation, and other potential fire and electrical hazards.

Whenever land uses change, concern is often raised about the effect the change may have on surrounding property values. The question of whether nearby transmission lines can affect residential property values has been studied extensively in the U.S. and Canada over the last 20 years or so, with

mixed results. In general, the impacts are difficult to measure, vary among individual properties, and are influenced by a number of interplaying factors, including the following:

- Proximity of residential properties to transmission line structures
- Type and size of high-voltage transmission line structures
- Appearance of easement landscaping
- Surrounding topography (Pitts and Jackson 2007)

Jackson and Pitts (2010) and Pitts and Jackson (2007) summarize the following on the impacts of high-voltage transmission lines.

- When negative impacts are present, studies report an average decline of prices from 2 to 9 percent.
- Value diminution is attributable to the visual unattractiveness of the lines, potential health hazards, disturbing sounds, and safety concerns.
- Impacts diminish as the distance between the high-voltage transmission lines and the affected properties increase, and disappear completely at a distance of 200 feet from the lines (0.04 miles).
- Where views of transmission lines and towers are completely unobstructed, negative impacts can extend up to 0.25 mile.
- If high-voltage transmission line structures are at least partially screened from view by trees, landscaping, or topography, any negative effects are reduced considerably.
- Value diminution attributed to high-voltage transmission line proximity is temporary and usually decreases over time, disappearing completely in 4 to 10 years.

Another recent study by Chalmers analyzed nearly 600 miles of a 500-kV line stretching across Montana (Chalmers 2012a, 2012b, 2012c). Chalmers' research reports on sales dynamics involving properties within 500 feet (almost 0.1 of a mile) of the centerline of the Colstrip to Townsend, Townsend to Taft, and Taft to Hot Springs 500-kV lines[9] that sold between 2000 and 2010. He found that circumstances can affect vulnerability to transmission line impacts in rural settings, including:

- When a property's sole use is residential, its vulnerability to price impacts from a transmission line increases.
- As property size increases, vulnerability to negative market impacts from a transmission line decreases.
- If substitutes are available (additional housing in an area), vulnerability to price impacts and marketing delays can increase.

Although extents vary, price impacts and market delays associated with the 500-kV line on small rural residential parcels have been noted in the Chalmers study. The same report did not find evidence of transmission line impact on sales involving producing agricultural properties, and based on a small

[9]The lines from Colstrip to Townsend are owned by NorthWestern Energy and from Townsend to Taft to Hot Springs by Bonneville Power Administration.

number of case studies, found no identifiable impact on the sales of recreationally influenced agricultural lands from the presence of the high-voltage transmission line

Studies of impacts during periods of physical change, such as new transmission line construction or structural rebuilds, generally reveal greater short-term impacts than long-term effects. However, most studies have concluded that other factors (e.g., general location, size of property or structure, improvements, irrigation potential, condition, amenities, and supply and demand factors in a specific market area) are far more important criteria than the presence or absence of transmission lines in determining the value of residential real estate.

Recreation and Tourism

The impacts on recreational resources are described in Section 3.2.8. Short- and long-term impacts associated with the development and operation of the transmission line would diminish the natural appearance and the undeveloped character of many areas along the routes, affecting vistas and scenery. In addition, depending on reclamation and implementation of mitigation measures, vehicle and ATV use could increase over the longer term because of new access roads. In total, an influx or outflow of visitors to the study area is not anticipated to occur; therefore, negligible impacts on the study area economies associated with visitor spending would occur due to these changes in recreation resources. However, there may be some adverse impacts on recreational and other nonmarket values associated with changes to scenery and vistas surrounding non-motorized and motorized trails, the National Historic Oregon Trail and Interpretive Center, semi-primitive non-motorized and motorized areas, and other areas as more access is likely through the construction of roads to build the transmission line and through the possibility of future development. These potential effects would be limited to the immediate areas of construction activity and short-term in nature. It is likely that some visitors will be discouraged to visit these areas especially during construction which can have a negative economic impact on local businesses and communities.

Environmental Justice Populations

The potential minority and low-income Census Block Groups identified in the Environmental Justice Screening Analysis are not expected to experience disproportionate impacts from the construction or operation of the B2H Project. The data suggest the B2H Project would cross Census Block Groups that could be considered minority or low-income communities. However, construction of the B2H Project is not expected to have high and adverse human-health or environmental effects on nearby communities. Construction-related impacts would likely include increases in local traffic, noise, and dust which could result in temporary delays at some highway crossings. Construction workers temporarily relocating to the B2H Project area would increase demand for local housing resources. These impacts would be temporary and localized and are not expected to be high.

Construction also would temporarily increase the demand for education, health care, and municipal services, as well as potentially increase the demand for police and fire-protection services. However, these impacts would not measurably affect the quality of services currently received by local communities and residents.

The Proposed Action does not cross any Native American reservations but is located near the Umatilla Indian Reservation.

SEGMENT 1—MORROW-UMATILLA

Segment 1 begins at the Longhorn Substation in Morrow County and ends west of La Grande in Union County on the Wallowa-Whitman National Forest. Seven alternative routes and two areas of local variations were identified in Segment 1.

Irrigated Agriculture

As discussed in Section 3.2.7, Segment 1 is the most agriculturally intensive segment of the B2H Project area. It contains extensive tracts of important farmland and high-value soils that are irrigated by center pivots, flood, and other mechanized irrigation methods. These high-value farmlands produce a variety of crops, ranging from field crops such as alfalfa and corn, to fruit and tree nuts such as blueberries and cherries, to vegetables such as onions, peas, and peppers. Transmission lines can affect these farm operations and increase costs for the farm operator.

The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way, and would negotiate damage-related issues with affected farmers during the easement acquisition process. Potential impacts depend on the transmission line design and placement, and the type of farming affected. For further information related to impacts on agriculture, refer to Section 3.2.7. These impacts generally include:

- Problems with field machinery and maintaining efficient fieldwork patterns;
- Increased soil erosion and compaction of soils
- The encroachment and spread of weeds, invasive species, and agricultural pests;
- Safety hazards associated with tower structure and conductor placement;
- Hindrance or prevention of aerial spraying or seeding activities by planes or helicopters;
- Interference with irrigation equipment;
- Hindrance of future plans for farm ground such as consolidation of farm fields or expansion of irrigation systems
- Temporary interruption of planting, irrigation, and harvesting schedules

The alternatives have been sited to follow field boundaries to the extent feasible and to avoid agricultural infrastructure to the extent possible. However, there are occasions when a transmission line must be routed through existing agricultural lands. Agricultural production may be temporarily disturbed to enable construction of B2H Project facilities such as tensioning and pulling sites and access roads for construction equipment. Because of limited time frames for seeding particular crops, landowners could lose an entire year of crops if construction schedules affected planting season. The Applicant would coordinate construction timing with affected landowners to minimize impacts on crop production. Effects on high-value agricultural lands are discussed in 3.2.7, including acres of disturbed cropland by crop type (Table 3-320, 3-321, and 3-322).

The land-use analysis determined that between 6 and 925 acres of private croplands could be disturbed during the construction of the B2H Project, depending on the alternative route. These surface disturbances may affect the production of field crops, fruits and tree nuts, grass and private pasturelands, vegetables, and products from tree farms. Short-term agricultural yield losses under the alternatives are anticipated to range between $ 4,217 under Variation S1-B2 and $666,425 under the route *East of Bombing Range Road* (Table 3-579).

Table 3-579. Lost Agricultural Production during Construction for Segment 1—Morrow to Umatilla (dollars)

Alternative Route	Value of Lost Production (dollars)					Total Value of Yield Loss
	Field Crops	Fruit and Tree Nuts	Grass/ Pasture	Vegetables	Tree Farms	
Applicant's Proposed Action	276,950	22,924	61,776	46,589	0	408,239
Variation S1-B1	*0*	*0*	*5,834*	*0*	*0*	*5,834*
Variation S1-B2	*0*	*0*	*4,21*	*0*	*0*	*4,217*
East of Bombing Range Road	322,447	34,221	66,944	166,913	75,900	666,425
Applicant's Proposed Action – Southern Route	280,945	23,255	59,882	47,261	0	411,342
West of Bombing Range Road – Southern Route	141,416	24,357	65,637	34,650	0	266,060
Longhorn	271,314	128,507	68,561	137,706	33,314	639,401
Interstate 84	200,480	34,882	69,630	174,865	0	479,857
Variation S1-A1	*65,540*	*0*	*2,574*	*8,735*	*0*	*76,850*
Variation S1-A2	*14,220*	*0*	*0*	*14,783*	*0*	*29,003*
Interstate 84 – Southern Route	213,394	35,213	67,478	176,522	0	492,607

Yield losses resulting from the construction of the B2H Project could have an adverse effect on the local economic conditions. Direct effects from reduced yields include lower local employment opportunities in the agriculture sector (direct effect) and industries that provide input supplies and support household spending (secondary effects). Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported below in Table 3-580. These impacts are anticipated to persist until temporary surface disturbances associated with construction are mitigated.

Table 3-580. Economic Losses of Reduced Yields During Construction for Segment 1—Morrow to Umatilla

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	1.48	52,211	2.6	102,779
Variation S1-B1	*0*	*0*	*0.0*	*714*
Variation S1-B2	*0*	*0*	*0.0*	*516*
East of Bombing Range Road	3.41	162,469	3.9	155,418
Applicant's Proposed Action – Southern Route	1.50	52,964	2.6	103,920

Table 3-580. Economic Losses of Reduced Yields During Construction for Segment 1—Morrow to Umatilla				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
West of Bombing Range Road – Southern Route	1.02	39,821	1.5	61,061
Longhorn	3.99	182,114	3.6	145,973
Interstate 84	2.31	113,345	2.6	104,278
Variation S1-A1	*0.26*	*7,779*	*0.5*	*21,345*
Variation S1-A2	*0.14*	*7,495*	*0.2*	*6,665*
Interstate 84 – Southern Route	2.36	115,065	2.7	108,217

Operations of the B2H Project would permanently occupy the lands on which permanent B2H Project facilities are constructed. While B2H Project structures would displace agricultural uses, most agricultural activities could continue within the right-of-way. Effects associated with operations of the B2H Project would be long term and persist for the life of the B2H Project. Activities associated with the operation and maintenance would affect crop yields and reduce agricultural production. These yield losses are estimated to be worth between $2,000 and $177,000 each growing season (Table 3-581). The long-term economic impacts of these yield losses would have direct and secondary effects on local economic conditions, resulting in fewer local jobs and less local labor income. On annual average, long-term yield losses would result in a loss of 0 to 4 direct jobs in the agriculture sector, and 0 to 1 fewer jobs in sectors that provide support services and support household consumption (Table 3-582).

Table 3-581. Value of Annual Yield Losses During Operation for Segment 1—Morrow to Umatilla (dollars)						
Alternative Route	Value of Lost Production (dollars)					Total Value of Yield Loss
	Field Crops	Fruit and Tree Nuts	Grass/ Pasture	Vegetables	Tree Farm	
Applicant's Proposed Action	74,563	6,172	16,632	12,543	0	109,910
Variation S1-B1	*0*	*0*	*2,033*	*0*	*0*	*2,033*
Variation S1-B2	*0*	*0*	*1,366*	*0*	*0*	*1,366*
East of Bombing Range Road	85,674	9,092	17,787	44,349	20,167	177,069
Applicant's Proposed Action – Southern Route	77,226	6,392	16,460	12,991	0	113,070
West of Bombing Range Road – Southern Route	44,152	7,605	20,493	10,818	0	83,069
Longhorn	72,948	34,551	18,434	37,025	8,957	171,915
Interstate 84	53,208	9,258	18,480	46,410	0	127,355
Variation S1-A1	*13,444*	*0*	*528*	*1,792*	*0*	*15,764*
Variation S1-A2	*4,266*	*0*	*0*	*4,435*	*0*	*8,701*
Interstate 84 – Southern Route	59,109	9,754	18,691	48,896	0	136,450

Table 3-582. Annual Economic Losses of Reduced Yields During Operations for Segment 1—Morrow to Umatilla				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	1.5	23,935	0.7	32,877
Variation S1-B1	*0.0*	*342*	*0.0*	*608*
Variation S1-B2	*0.0*	*247*	*0.0*	*409*
East of Bombing Range Road	3.4	39,073	1.0	52,966
Applicant's Proposed Action – Southern Route	1.5	24,117	0.7	33,822
West of Bombing Range Road – Southern Route	1.0	15,599	0.5	24,848
Longhorn	4.0	37,488	1.0	51,424
Interstate 84	2.3	28,134	0.7	38,095
Variation S1-A1	*0.3*	*4,506*	*0.1*	*4,715*
Variation S1-A2	*0.1*	*1,700*	*0.1*	*2,603*
Interstate 84 – Southern Route	2.4	28,882	0.8	40,816

Confined Animal Feeding Operation

The three CAFOs are within the study corridor could be affected by the construction and continued operations and maintenance of the new transmission line. These CAFOs are large concentrated dairy operations and are permitted for between 6,000 and 12,900 dairy cattle. CAFO operations will be affected by exclusion fencing and surface disturbances that would take land out of production. Surface disturbances discussed in 3.2.7 would affect the ratio of animal units to crop area and CAFO's ability to manage manure and meet the terms of their NPDES permits and comprehensive nutrient management plans. Since the area that could be treated with manure would be reduced, CAFOs would have to reduce the carrying capacity of dairies crossed by the B2H Project.

Adverse impacts on CAFOs would occur under four of the proposed route alignments. Surface disturbances to CAFO operations are highest under the Longhorn Alternative and could be completely avoided under most of the alternative routes. These disturbances would be highest during construction and could reduce carrying capacities between 223 and 7,836 fewer dairy cows, depending on route and alternative (Table 3-583). Reduced carrying capacities of dairies during construction of the B2H Project are expected to result in loss in production of between $118,272 and $4.2 million (Table 3-584). Reduced carrying capacities of dairies during construction of the B2H Project are expected to result in loss in production of between $464,640 and $15.6 million (Table 3-584).

Residual impacts on CAFOs once design features of the B2H Project for environmental protection are implemented would be considerably less than temporary impacts during construction. Residual impacts on carrying capacities result in reduction of 59 to 2,107 head (Table 3-583). The value of this reduced carrying capacity range from $139,392 and $4.2 million as reported in Table 3-584.

Table 3-583. Reduced Confined Animal Feeding Operation Capacities for Segment 1—Morrow to Umatilla		
Alternative Route	Fewer Cows	
	Construction	Operations
Applicant's Proposed Action	0	0
Variation S1-B1	*0*	*0*
Variation S1-B2	*0*	*0*
East of Bombing Range Road	0	0
Applicant's Proposed Action – Southern Route	0	0
West of Bombing Range Road – Southern Route	0	0
Longhorn	7,836	2,107
Interstate 84	223	59
Variation S1-A1	*0*	*0*
Variation S1-A2	*232*	*70*
Interstate 84 – Southern Route	225	62

Table 3-584. Value of Lost Confined Animal Feeding Operation Carrying Capacity for Segment 1—Morrow to Umatilla		
Alternative Route	Value of Lost Capacity (dollars)	
	Construction	Operations
Applicant's Proposed Action	0	0
Variation S1-B1	*0*	*0*
Variation S1-B2	*0*	*0*
East of Bombing Range Road	0	0
Applicant's Proposed Action – Southern Route	0	0
West of Bombing Range Road – Southern Route	0	0
Longhorn	15,671,040	4,213,440
Interstate 84	445,632	118,272
Variation S1-A1	*0*	*0*
Variation S1-A2	*464,640*	*139,392*
Interstate 84 – Southern Route	449,856	124,608

Reduced CAFO carrying capacities would result in an economic loss that would ripple through the socioeconomic study area's economy, reducing local opportunities for employment and income. Changes in local employment and income are reported below in Table 3-585. Direct effects associated with lower carrying capacities at the three dairies could result in up to 13 fewer jobs and $1.2 million in foregone labor income in the agricultural sector. In addition to direct effects in the agricultural sector, adverse impacts on dairy production within the B2H Project corridor could mean up to 70 fewer local jobs and $2.9 million in foregone labor income in secondary industries that provide input supplies and support household spending (Table 3-585).

Table 3-585. Annual Economic Losses Resulting from Reduced Confined Animal Feeding Operation Capacities for Segment 1— Morrow to Umatilla

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.0	0	0.0	0
Variation S1-B1	*0.0*	*0*	*0.0*	*0*
Variation S1-B2	*0.0*	*0*	*0.0*	*0*
East of Bombing Range Road	0.0	0	0.0	0
Applicant's Proposed Action – Southern Route	0.0	0	0.0	0
West of Bombing Range Road – Southern Route	0.0	0	0.0	0
Longhorn	13.1	1,236,207	70.9	2,929,698
Interstate 84	0.4	34,701	2.0	83,311
Variation S1-A1	*0.0*	*0*	*0.0*	*0*
Variation S1-A2	*0.4*	*40,897*	*2.1*	*86,864*
Interstate 84 – Southern Route	0.4	6,560	2.0	84,101

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

Livestock Grazing

Grazing occurs on public and private rangelands in the Morrow to Umatilla study corridor, and is a source of income for private landowners. Both the USFS and BLM provide for livestock grazing on active allotments in the B2H Project area. States also lease land for grazing and have similar systems in place for management of grazing leases. Impacts on grazing on private land, other than where federally managed grazing allotments occur on private land and where land is zoned as Exclusive Range Use, are not disclosed in this EIS, as data is unavailable to identify where grazing is occurring. Acres of federally managed allotments on private land within Segment 1 are discussed in Section 3.2.7.

Short-term impacts on grazing would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Impacts on grazing operations would be temporary during the construction period and limited to areas of construction activity, and could include:

- Potential spread of noxious and invasive plant species
- Interference with livestock management
- Interference with access to livestock operations, and
- Potential increased mortality of livestock from increased traffic.
- Disturbance of calving and lambing areas

Long-term impacts on grazing allotments would result from permanent construction disturbance due to loss of vegetation on land occupied by structure pad areas, communication stations, stations and permanent access roads. During operations and maintenance, pasture and rangeland would be

removed from grazing where they are occupied by support structures, stations, regeneration stations, or access roads; the remainder of the rangeland within the right-of-way would be available for grazing.

Residual impacts on rangeland within grazing allotments crossed by the B2H Project would be low after the application of design features of the B2H Project for environmental protection (refer to Table 2-7), which would include vegetation reclamation.

Surface disturbances associated with construction and operations of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage available on designated grazing allotments, which generally provides feed during a critical time of the year when livestock transition from winter-feeding areas to summer ranges (Table 3-586).

Table 3-586. Estimated Disturbance in Designated Grazing Allotments in Segment 1—Morrow to Umatilla

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	96	26
Variation S1-B1	*102*	*35*
Variation S1-B2	*79*	*26*
East of Bombing Range Road	95	25
Applicant's Proposed Action – Southern Route	97	27
West of Bombing Range Road – Southern Route	102	32
Longhorn	98	26
Interstate 84	137	36
Variation S1-A1	*0*	*0*
Variation S1-A2	*0*	*0*
Interstate 84 – Southern Route	138	38

Estimated federal forage losses associated with surface disturbances within the study corridor are reported below in terms of AUMs, the amount of forage to fulfill the metabolic requirements by one "animal unit[10]" for one month (Table 3-587).

Table 3-587. Estimated Annual Federal Forage Losses in Segment 1—Morrow to Umatilla

Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	3	<1
Variation S1-B1	*3*	*1*
Variation S1-B2	*9*	*3*
East of Bombing Range Road	3	<1
Applicant's Proposed Action – Southern Route	3	<1
West of Bombing Range Road – Southern Route	3	<1

[10]The animal unit (AU) is a standard unit used in calculating the relative grazing impact of different kinds and classes of livestock. One animal unit is defined as a 1000 lb (450 kg) beef cow with or without a nursing calf, with a daily dry matter forage requirement of 26 lb (11.8 kg).

Table 3-587. Estimated Annual Federal Forage Losses in Segment 1—Morrow to Umatilla		
Alternative Route	Animal Unit Months	
	Construction	Operations
Longhorn	3	<1
Interstate 84	3	<1
Variation S1-A1	*0*	*0*
Variation S1-A2	*0*	*0*
Interstate 84 – Southern Route	3	<1
Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.		

In addition to federal forage losses, surface disturbances reported in Table 3-586 would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands. Although short-term and residual federal AUMs losses are minimal compared to the overall forage requirements of herds in Morrow and Umatilla counties, local ranchers generally have to offset these forage losses with more expensive supplemental feed or forage from private pasturelands. Since most ranchers operate under very tight profit margins, these higher feed costs directly affect the bottom line of small ranching operations that rely on forage within the study corridor.

Timber Resources

Impacts on forested areas and forestry operations, including timber resources, result from the removal of tall-growing trees in and adjacent to the right-of-way. Construction of the B2H Project through timber management areas and other forested lands will require the Applicant to remove trees capable of growing tall enough to interfere with the power line within the right-of-way, and adjacent hazardous trees that could fall into transmission structures and access roads. The Applicant will minimize impacts on timber resources, reduce visual contrast, and reduce habitat disruptions by selectively removing trees within and along the edges of the right-of-way. Removal of trees with a mature height above 20 feet in right-of-way would be a long-term impact, persisting for the life of the B2H Project. Once construction is complete, staging areas, pulling and tensioning sites, tower sites and access roads are revegetated with appropriate native vegetation to promote and maintain wildlife, reduce invasion pressure by non-native plant species, and mitigate impacts on wildlife habitat.

Depending on the alternative route, construction of the B2H Project would require the selective vegetation removal from approximately 122 to 387 acres of forested woodlands in the Wallowa-Whitman National Forest, on forested lands managed by the BLM and Oregon, and on private lands (Table 3-588). Forest Inventory and Analysis data for eastern Oregon indicate that more than 90 percent of forest woodlands in this segment are timberlands, forests capable of growing 20 cubic feet or more per acre per year of industrial woods (USDA 2004). Potential B2H Project impacts on timber resources include loss of harvestable timber, a loss of future timber revenue, and potential constraints

on certain types of timber harvest operations adjacent to the right-of-way for safety near transmission components.

As shown by Table 3-588, impacts on timber resources are anticipated to be highest under the Applicant's Proposed Action – Southern Route, where approximately 354 acres of timberland are anticipated to be disturbed during construction and 123 acres would be permanently taken out of production. Since there are no timber resources in Variation S1-A1 or S1-A2, long-term impacts on timber resources can be completely avoided through these route variations.

Table 3-588. Estimated Disturbance in Forests and Timberlands in Segment 1—Morrow to Umatilla

Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	337.6	90.9	309.0	83.2
Variation S1-B1	*130.2*	*39.1*	*119.2*	*35.8*
Variation S1-B2	*122.0*	*33.8*	*111.7*	*30.9*
East of Bombing Range Road	345.7	112.0	316.4	102.5
Applicant's Proposed Action – Southern Route	387.0	134.8	354.2	123.4
West of Bombing Range Road – Southern Route	371.2	99.8	339.8	91.4
Longhorn	358.7	112.0	328.3	102.5
Interstate 84	336.8	89.5	308.3	81.9
Variation S1-A1	*0*	*0.0*	*0*	*0.0*
Variation S1-A2	*0*	*0.0*	*0*	*0.0*
Interstate 84 – Southern Route	370.3	101.8	338.9	93.2

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project.

Indirect impacts associated with the loss of timber production may include a minimal loss or gain of work for those employed in the timber industry due to the amount of timber being processed. For example, additional jobs may be created in the forest products industry due to the removal of forestland for timber in the short-term, while jobs may be lost in the long term if these resources are removed.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-term (Table 3-589); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses.

Table 3-589. Number of Residences in the Study Corridor in Segment 1—Morrow to Umatilla

Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	1	2	13	26
Variation S1-B1	*0*	*1*	*0*	*2*	*2*
Variation S1-B2	*0*	*0*	*0*	*0*	*6*
East of Bombing Range Road	0	1	2	13	26
Applicant's Proposed Action to Southern Route	0	1	1	9	24
West of Bombing Range Road to Southern Route	0	1	1	6	36
Longhorn	0	2	2	12	24
I-84		2	29	35	72
Variation S1-A1	*0*	*0*	*3*	*5*	*12*
Variation S1-A2	*0*	*2*	*2*	*3*	*15*
I-84 to Southern Route	0	2	28	31	70

Conclusions

Construction of Segment 1 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 1 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 1 would be high and range between $ 266,000 under the West of Bombing Range Road – Southern Route and $666,400 under the East of Bombing Range Road Route during construction, and between $83,000 and $177,000 annually during operations. Reduced crop yields within Segment 1 will have relatively small adverse impacts on local employment and income during construction and operations. Depending on the route chosen, reduced crop yields associated with B2H surface disturbances could result in 3 to 8 fewer jobs and $100,000 to $328,000 less labor income during construction, and between 2 to 4 jobs and between $40,000 and $92,000 in labor income on annual average during operations. While these adverse economic impacts may be small in

context of the regional economy of the socioeconomic study area, these employment opportunities may be of greater importance in the local communities adjacent to Segment 1.

Construction and operation of the B2H Project would have large adverse impacts on CAFOs under the Longhorn route. The large loss in carrying capacity under this alternative would make it more difficult for affected operations to remain environmental compliant and financially viable, potentially causing local CAFOs to close. Impacts on CAFOs would be large to moderate under the two Interstate-84 Alternatives, but could be avoided under both of the Applicant's Proposed Action Alternative routes, and the routes east and west of Bombing Range Road.

Federal forage losses resulting from surface disturbances during the construction and operation of the B2H Project would be relatively small under all routes. These losses in federal would range between 3 and 12 AUMs during construction and between > 1 and 3 AUMs annually once temporarily disturbed areas are restored. In this segment, the Applicant's Proposed Action Alternative with Variation S1-B2 would have the largest adverse impact on federal forage. In addition to federal forage losses, surface disturbances reported would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Construction and operation of Segment 1 would have a relatively large impact on local timber resources under all route alternatives. Surface disturbances affected forested lands could impact between 308 acres of timberland under the Interstate-84 Route and 428 acres of timberland under the Applicant's Proposed Action Alternative with Variation S1-B1. The clearing and removal of timber to enable the construction of Segment 1 would boost economic activity in the regional logging and wood processing sectors, temporarily increasing employment and income these sectors. During operations surface disturbances in forested areas would decline as staging sites are rehabilitated and disturbed vegetation grows back. In the long-run, operations of the B2H Project would withdraw between 82 acres of timberland under the Interstate-84 Route and 119 acres under the Applicant's Proposed Action Alternative with Variation S1-B1 from future timber production.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Interstate-84 Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route.

Impacts on residential property owners would be lowest under the Longhorn and Applicant's Proposed Action to Southern Route because these routes have fewer residential structures within a half mile of centerline. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 2—BLUE MOUNTAINS

The Blue Mountains Segment of the B2H Project area is located primarily in Union County and includes three alternative routes and six areas of local variations.

Irrigated Agriculture

Although there is designated prime farmland within the study corridor of Segment 2, agricultural use of lands within this segment of the B2H Project is relatively small. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 23 acres of private croplands could be disturbed during the construction of the B2H Project, depending on the alternative route. These surface disturbances may affect the production of field crops, grass and private pasturelands. Short-term agricultural yield losses under the alternatives are anticipated to range between $1,432 under Variation S2-C2 and $14,994 under the Mill Creek Route (Table 3-590).

Table 3-590. Lost Agricultural Production during Construction in Segment 2—Blue Mountains

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/ Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	11,686	0	1,492	0	0	13,178
Variation S2-A1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-A2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-B1	*1,480*	*0*	*0*	*0*	*0*	*1,480*
Variation S2-B2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-C1	*1,538*	*0*	*0*	*0*	*0*	*1,538*
Variation S2-C2	*0*	*0*	*1,432*	*0*	*0*	*1,432*
Variation S2-E1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-E2	*1,448*	*0*	*0*	*0*	*0*	*1,448*
Variation S2-F1	*8,338*	*0*	*0*	*0*	*0*	*8,338*
Variation S2-F2	*2,818*	*0*	*0*	*0*	*0*	*2,818*
Glass Hill	8,648	0	1,472	0	0	10,120
Variation S2-D1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-D2	*0*	*0*	*0*	*0*	*0*	*0*
Mill Creek	11,945	0	3,049	0	0	14,994

Yield losses resulting from the construction of the B2H Project could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 2 are anticipated to be low and persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported on the next page in Table 3-591.

Table 3-591. Economic Losses of Reduced Yields During Construction in Segment 2—Blue Mountains

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.03	685	0.09	3,678
Variation S2-A1	*0.00*	*0*	*0.00*	*0*
Variation S2-A2	*0.00*	*0*	*0.00*	*0*
Variation S2-B1	*0.00*	*87*	*0.01*	*443*
Variation S2-B2	*0.00*	*0*	*0.00*	*0*
Variation S2-C1	*0.00*	*90*	*0.01*	*460*
Variation S2-C2	*0.00*	*0*	*0.00*	*175*
Variation S2-E1	*0.00*	*0*	*0.00*	*0*
Variation S2-E2	*0.00*	*85*	*0.01*	*433*
Variation S2-F1	*0.02*	*489*	*0.06*	*2,494*
Variation S2-F2	*0.01*	*165*	*0.02*	*843*
Glass Hill	0.03	507	0.07	2,767
Variation S2-D1	*0.00*	*0*	*0.00*	*0*
Variation S2-D2	*0.00*	*0*	*0.00*	*0*
Mill Creek	0.04	700	0.10	3,946

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $409 and $4,933 each growing season, and would have minimal effects on local economic conditions (Table 3-592). Direct and secondary economic impacts associated with these long-term yield losses are shown below in (Table 3-593).

Table 3-592. Lost Annual Agricultural Production During Operations in Segment 2—Blue Mountains

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	3,723	0	475	0	0	4,198
Variation S2-A1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-A2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-B1	*485*	*0*	*0*	*0*	*0*	*485*
Variation S2-B2	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-C1	*543*	*0*	*0*	*0*	*0*	*543*
Variation S2-C2	*0*	*0*	*409*	*0*	*0*	*409*
Variation S2-E1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-E2	*452*	*0*	*0*	*0*	*0*	*452*

Table 3-592. Lost Annual Agricultural Production During Operations in Segment 2—Blue Mountains

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Variation S2-F1	*2,366*	*0*	*0*	*0*	*0*	*2,366*
Variation S2-F2	*827*	*0*	*0*	*0*	*0*	*827*
Glass Hill	2,676	0	455	0	0	3,131
Variation S2-D1	*0*	*0*	*0*	*0*	*0*	*0*
Variation S2-D2	*0*	*0*	*0*	*0*	*0*	*0*
Mill Creek	3,930	0	1,003	0	0	4,933

Table 3-593. Annual Economic Losses of Reduced Yields During Operations in Segment 2—Blue Mountains

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.03	685	0.09	3,678
Variation S2-A1	*0.00*	*0*	*0.00*	*0*
Variation S2-A2	*0.00*	*0*	*0.00*	*0*
Variation S2-B1	*0.00*	*87*	*0.01*	*443*
Variation S2-B2	*0.00*	*0*	*0.00*	*0*
Variation S2-C1	*0.00*	*90*	*0.01*	*460*
Variation S2-C2	*0.00*	*0*	*0.00*	*175*
Variation S2-E1	*0.00*	*0*	*0.00*	*0*
Variation S2-E2	*0.00*	*85*	*0.01*	*433*
Variation S2-F1	*0.02*	*489*	*0.06*	*2,494*
Variation S2-F2	*0.01*	*165*	*0.02*	*843*
Glass Hill	0.03	507	0.07	2,767
Variation S2-D1	*0.00*	*0*	*0.00*	*0*
Variation S2-D2	*0.00*	*0*	*0.00*	*0*
Mill Creek	0.04	700	0.10	3,946

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Blue Mountains study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations within Segment 2. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

As discussed above in the Livestock Grazing section under Segment 1, activities associated with the construction and continued operation of the B2H Project may have adverse effects on grazing resources within the study corridor. Construction activities would adversely affect the access and availability of forage on affected grazing allotments; however, design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects that persist during regular operation of the B2H Project. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 2 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Acres of temporary and permanently affected designated grazing allotments during construction and operations are shown below for each alternative and local area of variation (Table 3-594).

Table 3-594. Estimated Disturbance in Designated Grazing Allotments for Segment 2—Blue Mountains

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	267	83
Variation S2-A1	*27*	*7*
Variation S2-A2	*52*	*13*
Variation S2-B1	*18*	*6*
Variation S2-B2	*0*	*0*
Variation S2-C1	*48*	*17*
Variation S2-C2	*63*	*18*
Variation S2-E1	*20*	*7*
Variation S2-E2	*31*	*10*
Variation S2-F1	*95*	*27*
Variation S2-F2	*124*	*36*
Glass Hill	277	85
Variation S2-D1	*0*	*0*
Variation S2-D2	*0*	*0*
Mill Creek	226	75

Surface disturbances associated with construction and operations of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges.

Estimated federal forage losses associated with surface disturbances within the study corridor are reported in terms of AUMs (Table 3-595). In addition to federal forage losses, surface disturbances reported would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Table 3-595. Estimated Annual Forage Losses in Segment 2—Blue Mountains		
Alternative Route	Animal Unit Months (AUMs)	
	Construction	Operations
Applicant's Proposed Action	3	1
Variation S2-A1	*3*	*<1*
Variation S2-A2	*5*	*1*
Variation S2-B1	*<1*	*<1*
Variation S2-B2	*0*	*0*
Variation S2-C1	*0*	*0*
Variation S2-C2	*0*	*0*
Variation S2-E1	*0*	*0*
Variation S2-E2	*0*	*0*
Variation S2-F1	*0*	*0*
Variation S2-F2	*0*	*0*
Glass Hill	3	1
Variation S2-D1	*0*	*0*
Variation S2-D2	*0*	*0*
Mill Creek	6	2

Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.

Although short-term and residual AUMs losses are minimal compared to the overall forage requirements of herds in Union County, local ranchers generally have to offset these forage losses with more expensive supplemental feed or forage from private pasturelands. Since most ranchers operate under very tight profit margins, these higher feed costs directly affect the bottom line of small ranching operations that rely on forage within the study corridor.

Timber Resources

Depending on the alternative route, construction of the B2H Project would require the selective removal of vegetation on approximately 5.5 to 301.7 acres of forested woodlands in Union County (Table 3-596). Forest Inventory and Analysis data for eastern Oregon indicated that approximately 93 percent of forest woodlands in Union County are timberlands, forests capable of growing 20 cubic feet or more per acre per year of industrial woods (USDA 2004). Potential B2H Project impacts on timber resources include loss of harvestable timber, a loss of future timber revenue, and potential constraints on certain types of timber harvest operations adjacent to the right-of-way for safety near transmission components.

As shown by Table 3-596, impacts on timber resources after revegetation are anticipated to be highest under the Applicant's Proposed Action Alternative, with 279.1 acres of timberland are anticipated to be disturbed during construction and 88.9 acres could be permanently taken out of production. Impacts on timber resources could be minimized under Variation S2-F2, where only 5.1 acres would be disturbed during the construction of the B2H Project. Once construction areas have been restored, less than 2 acres of timberland would be affected by the B2H Project.

Table 3-596. Estimated Disturbance in Forests and Timberlands in Segment 2—Blue Mountains				
Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	301.7	96.1	279.1	88.9
Variation S2-A1	*34.8*	*11.4*	*32.2*	*10.5*
Variation S2-A2	*42.1*	*12.9*	*39.0*	*11.9*
Variation S2-B1	*46.9*	*16.5*	*43.4*	*15.3*
Variation S2-B2	*47.7*	*18.5*	*44.2*	*17.1*
Variation S2-C1	*139.6*	*44.9*	*129.2*	*41.5*
Variation S2-C2	*136.0*	*42.5*	*125.8*	*39.3*
Variation S2-E1	*33.9*	*10.5*	*31.4*	*9.7*
Variation S2-E2	*32.9*	*12.7*	*30.4*	*11.8*
Variation S2-F1	*14.6*	*5.2*	*13.5*	*4.9*
Variation S2-F2	*5.5*	*1.8*	*5.1*	*1.7*
Glass Hill	254.8	66.2	235.7	61.2
Variation S2-D1	*68.5*	*22.5*	*63.3*	*20.8*
Variation S2-D2	*68.5*	*20.1*	*63.3*	*18.6*
Mill Creek	208.2	54.1	192.6	50.0

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project.

Indirect impacts associated with the loss of timber production may include a minimal loss or gain of work for those employed in the timber industry due to the amount of timber being processed. For example, additional jobs may be created in the forest products industry due to the removal of forestland for timber in the short-term, while jobs may be lost in the long term if these resources are removed.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-

term (Table 3-597); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses.

Table 3-597. Number of Residences in the Study Corridor in Segment 2—Blue Mountains

Alternative Route	Crossed by the Reference Centerline	In the Right-of-way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	0	1	1	3
Variation S2-A1	*0*	*0*	*0*	*0*	*0*
Variation S2-A2	*0*	*0*	*0*	*0*	*0*
Variation S2-B1	*0*	*0*	*0*	*0*	*0*
Variation S2-B2	*0*	*0*	*0*	*0*	*1*
Variation S2-C1	*0*	*0*	*0*	*0*	*3*
Variation S2-C2	*0*	*0*	*0*	*1*	*5*
Variation S2-E1	*0*	*0*	*0*	*0*	*0*
Variation S2-E2	*0*	*0*	*0*	*0*	*1*
Variation S2-F1	*0*	*0*	*1*	*1*	*0*
Variation S2-F2	*0*	*0*	*0*	*0*	*2*
Glass Hill	0	0	1	1	2
Variation S2-D1	*0*	*0*	*0*	*0*	*2*
Variation S2-D2	*0*	*0*	*0*	*0*	*2*
Mill Creek	0	0	0	9	26

Conclusions

Construction of Segment 2 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 2 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 2 would be low and range between $10,100 under the Glass Hill Route and $14,900 under the Mill Creek Route during construction, and between $3,100 and $4,900 annually during operations. Reduced crop yields within Segment 2 would have negligible adverse impacts on local employment and income during construction and operations.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project would be relatively small under all routes. These losses would range between 3 and 8 AUMs during construction, and between 1 and 2 AUMs annually once temporarily disturbed areas are restored. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Construction and operation of Segment 2 would have a relatively large impact on local timber resources under all route alternatives. Surface disturbances affecting forested lands could impact between 193 acres of timberland under the Mill Creek Route and 408 acres of timberland under the Applicant's Proposed Action Alternative with Variation S2-C1. The clearing and removal of timber to enable the construction of Segment 2 would boost economic activity in the regional logging and wood processing sectors, temporarily increasing employment and income these sectors. During operations surface disturbances in forested areas would decline as staging sites are rehabilitated and disturbed vegetation grows back. In the long-run, operations of the B2H Project would withdraw between 50 acres of timberland under the Mill Creek Route and 131 acres under the Applicant's Proposed Action Alternative with Variation S2-C1 from future timber production.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Mill Creek Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route. The number of residential property owners affected by construction and operation of the B2H Project would be considerably lower under the Applicant's Proposed Action Alternative and the Glass Hill route. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 3—BAKER VALLEY

The Baker Valley Segment of the B2H Project area is located primarily in Baker County and includes seven alternative routes and three areas of local variations.

Irrigated Agriculture

The Baker Valley Segment is less agricultural intensive than Segment 1, but considerably more intensive than Segment 2. High-value agricultural lands in this segment include prime farmland and other irrigated croplands. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 2 and 115 acres of private croplands in Segment 3 could be disturbed during the construction of the B2H Project, depending on the alternative route. These surface disturbances may affect the production of field crops, vegetables, and grass and private pasturelands. Short-term agricultural yield losses under the alternatives are anticipated to range between $1,478 under Variation S3-B1 and $76,161 under the Flagstaff A Alternative (Table 3-598).

Table 3-598. Lost Agricultural Production during Construction in Segment 3—Baker Valley						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	11,583	0	36,960	0	0	48,543
Variation S3-A1	*4,053*	*0*	*1,379*	*0*	*0*	*5,432*
Variation S3-A2	*1,331*	*0*	*1,360*	*0*	*0*	*2,691*
Variation S3-B1	*0*	*0*	*1,478*	*0*	*0*	*1,478*
Variation S3-B2	*8,454*	*0*	*0*	*0*	*0*	*8,454*
Variation S3-B3	*8,222*	*0*	*0*	*0*	*0*	*8,222*
Variation S3-B4	*20,263*	*0*	*4,138*	*4,681*	*0*	*29,083*
Variation S3-B5	*16,676*	*0*	*7,095*	*4,816*	*0*	*28,587*
Variation S3-C1	*7,692*	*0*	*32,987*	*0*	*0*	*40,678*
Variation S3-C2	*9,152*	*0*	*37,382*	*0*	*0*	*46,535*
Variation S3-C3	*7,886*	*0*	*19,325*	*0*	*0*	*27,210*
Variation S3-C4	*4,751*	*0*	*19,404*	*0*	*0*	*24,155*
Variation S3-C5	*1,771*	*0*	*28,934*	*0*	*0*	*30,705*
Variation S3-C6	*3,594*	*0*	*11,009*	*0*	*0*	*14,603*
Flagstaff A	28,698	0	42,491	4,972	0	76,161
Timber Canyon	32,576	0	25,344	0	0	57,920
Flagstaff A – Burnt River Mountain	28,957	0	29,568	5,017	0	63,542
Flagstaff B	19,998	0	35,006	0	0	55,005
Flagstaff B – Burnt River West	12,100	0	29,344	0	0	41,443
Flagstaff B – Durkee	16,993	0	14,197	0	0	31,189

Yield losses resulting from the construction of the B2H Project could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 3 are anticipated to be relatively low and persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported below in Table 3-599.

Table 3-599. Economic Losses of Reduced Yields During Construction for Segment 3—Baker Valley				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.03	679	0.20	7,990
Variation S3-A1	*0.01*	*238*	*0.03*	*1,381*
Variation S3-A2	*0.00*	*78*	*0.01*	*565*
Variation S3-B1	*0.00*	*0*	*0.00*	*181*
Variation S3-B2	*0.03*	*496*	*0.06*	*2,529*
Variation S3-B3	*0.02*	*482*	*0.06*	*2,459*
Variation S3-B4	*0.09*	*3,298*	*0.18*	*7,332*

Table 3-599. Economic Losses of Reduced Yields During Construction for Segment 3—Baker Valley				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Variation S3-B5	*0.08*	*3,148*	*0.17*	*6,642*
Variation S3-C1	*0.02*	*451*	*0.16*	*6,340*
Variation S3-C2	*0.03*	*537*	*0.18*	*7,315*
Variation S3-C3	*0.02*	*462*	*0.12*	*4,725*
Variation S3-C4	*0.01*	*279*	*0.09*	*3,797*
Variation S3-C5	*0.01*	*104*	*0.10*	*4,073*
Variation S3-C6	*0.01*	*211*	*0.06*	*2,423*
Flagstaff A	0.12	3,923	0.36	14,598
Timber Canyon	0.10	1,910	0.32	12,848
Flagstaff A – Burnt River Mountain	0.12	3,959	0.33	13,101
Flagstaff B	0.06	1,172	0.26	10,269
Flagstaff B – Burnt River West	0.04	709	0.18	7,212
Flagstaff B – Durkee	0.05	996	0.17	6,821
Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $462 and $23,329 each growing season, and would have minimal effects on local economic conditions (Table 3-600. Direct and secondary economic effects associated with these long-term yield losses are shown below in (Table 3-601).

Table 3-600. Lost Annual Agricultural Production during Operations in Segment 3—Baker Valley						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	3,620	0	11,550	0	0	15,170
Variation S3-A1	*1,066*	*0*	*363*	*0*	*0*	*1,429*
Variation S3-A2	*336*	*0*	*343*	*0*	*0*	*679*
Variation S3-B1	*0*	*0*	*462*	*0*	*0*	*462*
Variation S3-B2	*2,482*	*0*	*0*	*0*	*0*	*2,482*
Variation S3-B3	*2,249*	*0*	*0*	*0*	*0*	*2,249*
Variation S3-B4	*5,332*	*0*	*1,089*	*1,232*	*0*	*7,653*
Variation S3-B5	*4,731*	*0*	*2,013*	*1,366*	*0*	*8,111*
Variation S3-C1	*2,715*	*0*	*11,642*	*0*	*0*	*14,357*
Variation S3-C2	*3,180*	*0*	*12,989*	*0*	*0*	*16,169*
Variation S3-C3	*2,909*	*0*	*7,128*	*0*	*0*	*10,037*

Table 3-600. Lost Annual Agricultural Production during Operations in Segment 3—Baker Valley

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Variation S3-C4	*1,745*	*0*	*7,128*	*0*	*0*	*8,873*
Variation S3-C5	*776*	*0*	*12,672*	*0*	*0*	*13,448*
Variation S3-C6	*1,590*	*0*	*4,871*	*0*	*0*	*6,461*
Flagstaff A	8,790	0	13,015	1,523	0	23,329
Timber Canyon	11,673	0	9,082	0	0	20,755
Flagstaff A – Burnt River Mountain	9,049	0	9,240	1,568	0	19,857
Flagstaff B	6,063	0	10,613	0	0	16,676
Flagstaff B – Burnt River West	4,137	0	10,032	0	0	14,169
Flagstaff B – Durkee	5,972	0	4,990	0	0	10,962

Table 3-601. Annual Economic Losses of Reduced Yields during Operations in Segment 3—Baker Valley

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.01	212	0.06	2,497
Variation S3-A1	*0.00*	*63*	*0.01*	*363*
Variation S3-A2	*0.00*	*20*	*0.00*	*143*
Variation S3-B1	*0.00*	*0*	*0.00*	*57*
Variation S3-B2	*0.01*	*146*	*0.02*	*742*
Variation S3-B3	*0.01*	*132*	*0.02*	*673*
Variation S3-B4	*0.02*	*868*	*0.05*	*1,929*
Variation S3-B5	*0.02*	*893*	*0.05*	*1,885*
Variation S3-C1	*0.01*	*159*	*0.06*	*2,238*
Variation S3-C2	*0.01*	*186*	*0.06*	*2,542*
Variation S3-C3	*0.01*	*17*	*0.04*	*1,743*
Variation S3-C4	*0.01*	*102*	*0.03*	*1,395*
Variation S3-C5	*0.00*	*45*	*0.04*	*1,784*
Variation S3-C6	*0.00*	*93*	*0.03*	*1,072*
Flagstaff A	0.04	1,202	0.11	4,472
Timber Canyon	0.03	684	0.11	4,604
Flagstaff A – Burnt River Mountain	0.04	1,237	0.10	4,094
Flagstaff B	0.02	355	0.08	3,113
Flagstaff B – Burnt River West	0.01	243	0.06	2,466
Flagstaff B – Durkee	0.02	350	0.06	2,397

Table Notes: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Baker Valley study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations within Segment 3. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

Activities associated with the construction and continued operation of Segment 3 may have adverse effects on grazing resources within the study corridor. Like the other segments, short-term impacts would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects on livestock grazing within the study corridor over time. After reclamation, rangeland within the right-of-way would be available for grazing with the exception of areas occupied by support structures, stations, or access roads. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 3 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Total acreage of affected designated grazing allotments within each alternative and local area of variation during construction and operations are shown below in Table 3-602.

Table 3-602. Estimated Disturbance in Designated Grazing Allotments in Segment 3—Baker Valley

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	796	248
Variation S3-A1	*86*	*22*
Variation S3-A2	*80*	*20*
Variation S3-B1	*278*	*86*
Variation S3-B2	*197*	*58*
Variation S3-B3	*197*	*54*
Variation S3-B4	*163*	*43*
Variation S3-B5	*164*	*46*
Variation S3-C1	*336*	*118*
Variation S3-C2	*333*	*115*
Variation S3-C3	*271*	*100*
Variation S3-C4	*284*	*105*
Variation S3-C5	*499*	*218*
Variation S3-C6	*552*	*245*
Flagstaff A	682	208
Timber Canyon	1212	434
Flagstaff A – Burnt River Mountain	621	194
Flagstaff B	717	217
Flagstaff B – Burnt River West	850	290
Flagstaff B – Durkee	911	322

Surface disturbances associated with the construction, and ongoing operations and maintenance, of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges. Estimated federal forage losses associated with surface disturbances within the study corridor are reported below in terms of AUMs (Table 3-603).

Table 3-603. Estimated Annual Forage Losses in Segment 3—Baker Valley

Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	30	9
Variation S3-A1	*2*	*<1*
Variation S3-A2	*<1*	*<1*
Variation S3-B1	*11*	*3*
Variation S3-B2	*<1*	*<1*
Variation S3-B3	*0*	*0*
Variation S3-B4	*0*	*0*
Variation S3-B5	*<1*	*<1*
Variation S3-C1	*16*	*6*
Variation S3-C2	*12*	*4*
Variation S3-C3	*11*	*4*
Variation S3-C4	*11*	*4*
Variation S3-C5	*19*	*8*
Variation S3-C6	*38*	*17*
Flagstaff A	19	6
Timber Canyon	42	20
Flagstaff A – Burnt River Mountain	14	4
Flagstaff B	19	6
Flagstaff B – Burnt River West	19	6
Flagstaff B – Durkee	41	14

Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.

Federal forage losses in Segment 3 range between 14 AUMs under the Flagstaff A – Burnt River Mountain Alternative and 68 AUMs during construction under the Applicant's Proposed Action Alternative with Variations S3-C6. Once areas temporarily disturbed during construction are restored, residual impacts could reduce the federal forage base between 4 and 26 AUMs under these alternatives. In addition to these federal forage losses, surface disturbances may also adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Although these forage losses account for less than 1 percent of local herd's annual forage requirements, reduced forage availability within the study corridor could affect the profitability and

viability of individual operators. Since most ranchers operate under very tight profit margins, additional costs to offset forage losses with more expensive supplemental feed or private pasturelands could cause some local ranchers to reduce herd sizes or transition ranch resources from livestock production to other agricultural uses.

Timber Resources

Depending on the alternative route in Segment 3, construction of the B2H Project would require the selective removal of vegetation on approximately 0.6 to 518.5 acres of forested woodlands in Baker County (Table 3-604). Forest Inventory and Analysis data for eastern Oregon indicated that approximately 92 percent of forest woodlands in Baker County are timberlands, forests capable of growing 20 cubic feet or more per acre per year of industrial woods (USDA 2004). Potential B2H Project impacts on timber resources include loss of harvestable timber, a loss of future timber revenue, and potential constraints on certain types of timber harvest operations adjacent to the right-of-way for safety near transmission components.

As shown by Table 3-604, impacts on timber resources after revegetation are anticipated to be highest under the Timber Canyon Alternative, with 457.7 acres of timberland anticipated to be disturbed during construction and 125.2 acres of timberland permanently taken out of production. Impacts on timber resources could be avoided or minimized under Variations S3-A1 and S3-A2, where less than one acre would be disturbed during the construction and ongoing operation and maintenance of the B2H Project.

Table 3-604. Estimated Disturbance in Forests and Timberlands in Segment 3—Baker Valley

Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	5.8	1.8	5.3	1.7
Variation S3-A1	*0.6*	*0.2*	*0.6*	*0.2*
Variation S3-A2	*0.0*	*0.0*	*0.0*	*0.0*
Variation S3-B1	*2.6*	*0.9*	*2.4*	*0.8*
Variation S3-B2	*9.8*	*3.6*	*9.0*	*3.3*
Variation S3-B3	*7.1*	*2.6*	*6.5*	*2.4*
Variation S3-B4	*7.9*	*3.5*	*7.3*	*3.2*
Variation S3-B5	*11.1*	*4.9*	*10.2*	*4.5*
Variation S3-C1	*2.4*	*0.7*	*2.2*	*0.7*
Variation S3-C2	*2.2*	*0.8*	*2.0*	*0.7*
Variation S3-C3	*27.1*	*8.5*	*24.9*	*7.8*
Variation S3-C4	*25.9*	*7.8*	*23.7*	*7.2*
Variation S3-C5	*39.1*	*13.4*	*35.8*	*12.3*
Variation S3-C6	*95.4*	*33.5*	*87.5*	*30.7*
Flagstaff A	11.5	3.0	10.5	2.8
Timber Canyon	518.5	136.5	475.7	125.2
Flagstaff A – Burnt River Mountain	34.0	8.6	31.2	7.9
Flagstaff B	9.6	3.0	8.8	2.8
Flagstaff B – Burnt River West	34.0	8.6	31.2	7.9
Flagstaff B – Durkee	91.4	25.0	83.8	22.9

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project.

Indirect impacts associated with the loss of timber production may include a minimal loss or gain of work for those employed in the timber industry due to the amount of timber being processed. For example, additional jobs may be created in the forest products industry due to the removal of forestland for timber in the short-term, while jobs may be lost in the long term if these resources are removed.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-term (Table 3-605); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses.

Table 3-605. Number of Residences within Study Corridor in Segment 3—Baker Valley

Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	1	3	3	12
Variation S3-A1	*0*	*0*	*0*	*0*	*0*
Variation S3-A2	*0*	*0*	*0*	*0*	*0*
Variation S3-B1	*0*	*0*	*0*	*0*	*0*
Variation S3-B2	*0*	*0*	*2*	*3*	*6*
Variation S3-B3	*0*	*0*	*2*	*5*	*5*
Variation S3-B4	*0*	*0*	*2*	*5*	*5*
Variation S3-B5	*0*	*0*	*2*	*3*	*6*
Variation S3-C1	*0*	*1*	*3*	*3*	*10*
Variation S3-C2	*0*	*1*	*6*	*3*	*13*
Variation S3-C3	*0*	*2*	*3*	*1*	*7*
Variation S3-C4	*0*	*2*	*3*	*1*	*5*

Table 3-605. Number of Residences within Study Corridor in Segment 3—Baker Valley					
Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Variation S3-C5	*0*	*0*	*0*	*2*	*1*
Variation S3-C6	*0*	*0*	*0*	*3*	*0*
Flagstaff A	0	1	5	6	18
Timber Canyon	1	3	9	10	26
Flagstaff A – Burnt River Mountain	0	2	5	8	17
Flagstaff B	0	1	5	8	17
Flagstaff B – Burnt River West	0	0	2	7	8
Flagstaff B – Durkee	0	0	2	8	7

Recreation and Tourism

Alternative routes proposed in Segment 3 have the potential to impact the NHOTIC which could affect the recreational experience of visitors to the site. Construction of the transmission line may affect the quantity and type of visitors coming to NHOTIC, especially in the short-term. Decreases in visitation will have a negative economic impact on local businesses and communities. These impacts are expected to be short-term and tied more to construction activities though quality of the recreation experience may be affected in the long term by the presence of an infrastructure feature near the NHOTIC. Segments with the greatest impacts on the NHOTIC would be Applicant's Proposed Action Alternative, Variations S3-B1, S3-B2, S3-B3, and less under S3-B4, S3-B5, and Flagstaff Alternatives.

Conclusions

Construction of Segment 3 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 3 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 3 would have a moderately impact private grass and pasturelands, but have a small impact on other irrigated crop lands. Agricultural yield losses in Segment 3 would range between $31,100 under the Flagstaff B – Durkee Route and $95,000 under the Applicant's -Proposed Action with Variation S3-C2 during construction of the transmission line. After rehabilitation of temporarily disturbed areas, annual yield losses during operations of B2H would range between $10,900 and $31,300 under these alternatives. Reduced crop yields within Segment 3 would have negligible adverse impacts on local employment and income during construction and operations. Construction and operation of Segment 3 of the B2H Project would have no identifiable impact on CAFOs within this this segment. While adverse economic impacts associated with agriculture production may be negligible in context of the regional economy of the socioeconomic study area,

these employment opportunities may be of greater importance in the local communities adjacent to Segment 3.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project would be moderate under all route alternatives in Segment 3. These losses would range between 14 AUMs under the Flagstaff A – Burnt River Mountain Alternative and 68 AUMs during construction under the Applicant's Proposed Action Alternative with Variation S3-C6. Once temporarily disturbed areas are restored, operation of the B2H Project would reduce forage by 4 to 26 AUMs annually under these alternatives. In order to make up for these forage losses, local ranchers would have to supplement forage with more expensive grass and/ or hay feed or reduce their herd sizes. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

With the exception of the Timber Canyon Route Alternative, construction and operation of Segment 3 would have a relatively small impact on local timber resources. Construction through forested lands would disturb nearly 476 acres of timberland under the Timber Canyon Route and between 5 and 93 acres under the Applicant's Proposed Action Alternative with Variation S3-A2 and Variation S3-C6, respectively. The clearing and removal of timber to enable the construction of Segment 3 would boost economic activity in the regional logging and wood processing sectors, temporarily increasing employment and income these sectors. During operations surface disturbances in forested areas would decline as staging sites are rehabilitated and disturbed vegetation grows back. In the long-run, operations of the B2H Project would withdraw 125 acres of timberland from production under the Timber Canyon Alternative, and between 2 and 32 acres of timberland under the Applicant's Proposed Action Alternative with Variation S3-A2 and Variation S3-C6, respectively.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Timber Canyon Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route.

Impacts on residential property owners would be lowest under the Flagstaff B- Burnt River West and Durkee Route Alternatives because these routes have fewer residential structures within a half mile of the centerline. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

Construction of the transmission line may affect the quantity and type of visitors coming to NHOTIC, especially in the short-term. Decreases in visitation will have a negative economic impact on local businesses and communities. Segments with the greatest impacts on the NHOTIC would be Applicant's Proposed Action Alternative, Variations S3-B1, S3-B2, S3-B3, and less under S3-B4, S3-B5, and Flagstaff Alternatives.

SEGMENT 4—BROGAN

Segment 4 is located in southern Baker County and northern Malheur County and includes three alternative routes and one area of local variations

Irrigated Agriculture

Although there is designated prime farmland within the study corridor of the Brogan Segment, agricultural use of these lands are predominately for grass and pasturelands. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 53 acres of field crops and between 37 and 586 acres of private pastureland could be disturbed during the construction of the B2H Project, depending on the alternative route. Short-term agricultural yield losses under the alternatives are anticipated to range between $24,750 under Variation S4-A3 and $421,676 under the Tub Mountain South Route (Table 3-606).

Table 3-606. Lost Agricultural Production during Construction in Segment 4—Brogan

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	0	0	122,522	0	0	122,522
Variation S4-A1	*0*	*0*	*34,320*	*0*	*0*	*34,320*
Variation S4-A2	*0*	*0*	*26,294*	*0*	*0*	*26,294*
Variation S4-A3	*0*	*0*	*24,750*	*0*	*0*	*24,750*
Tub Mountain South	34,593	0	387,083	0	0	421,676
Willow Creek	33,449	0	200,475	0	0	233,924

Reduced production of field crops and grasses because of construction activities within the study corridor could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 4 are anticipated to be relatively low since most of these impacts result from affected grass and pasturelands, which are generally not very labor intensive to produce. These yield losses, and resulting economic impacts will persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported on the next page in Table 3-607.

Table 3-607. Economic Losses of Reduced Yields During Construction for Segment 4—Brogan

Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	0	0.37	15,003
Variation S4-A1	*0.00*	*0*	*0.10*	*4,202*
Variation S4-A2	*0.00*	*0*	*0.08*	*3,220*
Variation S4-A3	*0.00*	*0*	*0.07*	*3,031*
Tub Mountain South	0.10	2,028	1.43	57,746
Willow Creek	0.10	1,961	0.86	34,554

Table 3-607. Economic Losses of Reduced Yields During Construction for Segment 4—Brogan				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $9,504 and $128,583 each growing season, but would have minimal effects on local economic conditions since most of these impacts are associated with the production of private grass and pasturelands (Table 3-608). Direct and secondary economic impacts associated with these long-term yield losses are shown below in (Table 3-609).

Table 3-608. Lost Annual Agricultural Production during Operations in Segment 4—Brogan						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	0	0	42,728	0	0	42,728
Variation S4-A1	*0*	*0*	*13,992*	*0*	*0*	3,992
Variation S4-A2	*0*	*0*	*9,926*	*0*	*0*	9,926
Variation S4-A3	*0*	*0*	*9,504*	*0*	*0*	9,504
Tub Mountain South	10,549	0	118,034	0	0	128,583
Willow Creek	10,406	0	62,370	0	0	72,776

Table 3-609. Annual Economic Losses of Reduced Yields During Operations in Segment 4—Brogan				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	0	0.13	5,232
Variation S4-A1	*0.00*	*0*	*0.04*	*1,713*
Variation S4-A2	*0.00*	*0*	*0.03*	*1,215*
Variation S4-A3	*0.00*	*0*	*0.03*	*1,164*
Tub Mountain South	0.03	618	0.44	17,609
Willow Creek	0.03	610	0.27	10,750
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Brogan study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations

within Segment 4. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

Activities associated with the construction and continued operation of Segment 4 may have adverse effects on grazing resources within the study corridor. Like the other segments, short-term impacts would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects on livestock grazing within the study corridor over time. After reclamation, rangeland within the right-of-way would be available for grazing with the exception of areas occupied by support structures, stations, or access roads. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 4 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Total acreage of affected designated grazing allotments within each alternative and local area of variation during construction and operations are shown below in Table 3-610.

Table 3-610. Estimated Disturbance in Designated Grazing Allotments in Segment 4—Brogan

Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	884	310
Variation S4-A1	*133*	*54*
Variation S4-A2	*129*	*49*
Variation S4-A3	*133*	*51*
Tub Mountain South	701	215
Willow Creek	530	166

Surface disturbances associated with the construction, and ongoing operations and maintenance, of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges. Estimated federal forage losses associated surface disturbances within the study corridor are reported below in terms of AUMs (Table 3-611).

Table 3-611. Estimated Annual Forage Losses in Segment 4—Brogan		
Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	74	26
Variation S4-A1	*2*	*<1*
Variation S4-A2	*2*	*<1*
Variation S4-A3	*2*	*<1*
Tub Mountain South	94	29
Willow Creek	62	19
Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.		

Federal forage losses in Segment 4 range between 62 AUMs under the Willow Creek Alternative and 94 AUMs during construction under the Tub Mountain South Alternative. Once areas temporarily disturbed during construction are restored, residual surface disturbances are anticipated to reduce the federal forage base between 19 AUMs under the Willow Creek Alternative and 29 AUMs under the Tub Mountain South Alternative. In addition to these federal forage losses, surface disturbances may also adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Although these forage losses account for less than 1 percent of local herd's annual forage requirements, reduced forage availability within the study corridor could affect the profitability and viability of individual operators. Since most ranchers operate under very tight profit margins, additional costs to offset forage losses with more expensive supplemental feed or private pasturelands could cause some local ranchers to reduce herd sizes or transition ranch resources from livestock production to other agricultural uses.

Timber Resources

Regardless of the alternative route or local area of variation, activities associated with the construction and continued operations of the B2H Project will have minimal effects on timber resources within Segment 4. As shown by Table 3-612, impacts on timber resources after revegetation are anticipated to result in less than one acre of timberland along the Applicant's Proposed Action Alternative and the Willow Creek Alternative, and no identifiable impacts on timber resources during construction or operations under variations of the Applicant's Proposed Action Alternative or under the Tub Mountain South Alternative.

Table 3-612. Estimated Disturbance in Forests and Timberlands in Segment 4—Brogan				
Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	1.4	0.5	0.8	0.3
Variation S4-A1	*0.0*	*0.0*	*0.0*	*0.0*
Variation S4-A2	*0.0*	*0.0*	*0.0*	*0.0*
Variation S4-A3	*0.0*	*0.0*	*0.0*	*0.0*
Tub Mountain South	0.0	0.0	0.0	0.0
Willow Creek	3.2	1.2	1.7	0.6

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project. Impacts on timber resources within this segment are not anticipated to have a measurable effect on local economic conditions.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-term (Table 3-613); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses

Table 3-613. Number of Residences within Study Corridor in Segment 4—Brogan					
Alternative Route	Crossed by the Reference Centerline	In the Right-of-Way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	0	0	2	3
Variation S4-A1	*0*	*0*	*0*	*2*	*0*
Variation S4-A2	*0*	*0*	*0*	*2*	*0*
Variation S4-A3	*0*	*0*	*0*	*0*	*2*
Tub Mountain South	*0*	*0*	*4*	*6*	*19*
Willow Creek	*0*	*0*	*0*	*4*	*3*

Conclusions

Construction of Segment 4 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 4 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Similar to Segment 3, agricultural impacts in Segment 4 would affect private grass and pasturelands more than other irrigated crop lands. Agricultural yield losses in Segment 4 would range between $147,200 under the Applicant's Proposed Action Alternative with Variation S4-A3 and $421,600 under the Tub Mountain South during construction. Approximately 86 percent of these impacts would be associated with yield losses in grass and pasturelands. After rehabilitation of temporarily disturbed areas, annual yield losses during operations of B2H would range between $52,200 and $72,700 under these alternatives. Reduced agricultural yields within Segment 4 would have negligible adverse impacts on local employment and income during construction and operations.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project through Segment 4 would be moderate under all route alternatives. These losses would range between 62 and 94 AUMs under the Willow Creek Route Alternative and the Tub Mountain South Alternative, respectively. Once temporarily disturbed areas are restored, operation of the B2H Project would reduce forage by 19 to 29 AUMs annually under these alternatives. In order to make up for these forage losses, local ranchers would have to supplement forage with more expensive grass and/ or hay feed or reduce their herd sizes. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Impacts on Timber resources in Segment 4 would be negligible during construction and operation under all route alternatives and variations. During construction, between 0 and 1.7 acres of timberland are anticipated to be disturbed under the Tub Mountain South and Willow Creek routes, respectively. Once temporarily disturbed areas are rehabilitated, less than 1 acre of timberland would be withdrawn from timber production under all route alternatives and variations.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since the Tub Mountain South Route has the potential to affect the greatest number of residential structures, short-term impacts would be highest under this route.

Impacts on residential property owners would be lowest under the Applicant's Proposed Action Alternative with Variation S4-A1 and S4-A2 because these routes have fewer residential structures within a half mile of centerline. Idaho Power will work with property owners in the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 5—MALHEUR

The Malheur Segment is located in Malheur County and includes three alternative routes and two areas of local variations.

Irrigated Agriculture

Agricultural use of lands within the study corridor of Segment 5 are similar to those in Segment 4. Although there is prime farmland and other irrigated croplands used for the production of field crops, agricultural lands within the study corridor are predominately used in grass and pastureland production. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 8 acres of field crops and between 9 and 598 acres of private pastureland could be disturbed during the construction of the B2H Project, depending on the alternative route. Short-term agricultural yield losses under the alternatives are anticipated to range between $5,914 under Variation S5-B1 and $396,010 under the Applicant's Proposed Action Alternative (Table 3-614).

Table 3-614. Lost Agricultural Production during Construction in Segment 5—Malheur

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	1,416	0	394,594	0	0	396,010
Variation S5-A1	*0*	*0*	*81,939*	*0*	*0*	*81,939*
Variation S5-A2	*0*	*0*	*88,862*	*0*	*0*	*88,862*
Variation S5-B1	*0*	*0*	*5,914*	*0*	*0*	*5,914*
Variation S5-B2	*5,248*	*0*	*13,398*	*0*	*0*	*18,646*
Malheur S	2,896	0	317,856	0	0	320,752
Malheur A	2,792	0	286,546	0	0	289,338

Reduced production of field crops and grasses because of construction activities within the study corridor could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 5 are anticipated to be relatively low since most of these impacts result from affected grass and pasturelands, which are generally not very labor intensive to produce. These yield losses, and resulting economic impacts will persist until temporary surface disturbances associated with construction are mitigated. Lost employment and labor income resulting from yield losses associated with the various alternative routes are reported on the next page in Table 3-615.

Table 3-615. Economic Losses of Reduced Yields During Construction in Segment 5—Malheur				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment (Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	83	1.20	48,742
Variation S5-A1	*0.00*	*0*	*0.25*	*10,033*
Variation S5-A2	*0.00*	*0*	*0.27*	*10,881*
Variation S5-B1	*0.00*	*0*	*0.02*	*724*
Variation S5-B2	*0.02*	*308*	*0.08*	*3,211*
Malheur S	*0.01*	*170*	*0.98*	*39,788*
Malheur A	*0.01*	*164*	*0.89*	*35,923*
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

As discussed above in Segment 1, permanent B2H Project facilities would be constructed to maintain operations of the B2H Project. Although most agricultural activities could continue within the right-of-way, structures would displace a small proportion of agricultural uses. Yield losses associated with permanent facilities are estimated to be valued between $1,980 and $112,112 each growing season, but would have minimal effects on local economic conditions since most of these impacts are associated with the production of private grass and pasturelands (Table 3-616). Direct and secondary economic impacts associated with these long-term yield losses are shown below in (Table 3-617).

Table 3-616. Lost Annual Agricultural Production during Operations in Segment 5—Malheur						
Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	401	0	111,712	0	0	112,112
Variation S5-A1	*0*	*0*	*21,021*	*0*	*0*	*21,021*
Variation S5-A2	*0*	*0*	*19,747*	*0*	*0*	*19,747*
Variation S5-B1	*0*	*0*	*1,980*	*0*	*0*	*1,980*
Variation S5-B2	*1,267*	*0*	*3,234*	*0*	*0*	*4,501*
Malheur S	866	0	95,073	0	0	95,939
Malheur A	801	0	82,249	0	0	83,051

Table 3-617. Annual Economic Losses of Reduced Yields During Operations in Segment 5—Malheur				
Alternative Route	Direct Effect		Secondary Effects	
	Employment (Jobs)	Labor Income (dollars)	Employment Jobs)	Labor Income (dollars)
Applicant's Proposed Action	0.00	23	0.34	13,799
Variation S5-A1	*0.00*	*0*	*0.06*	*2,574*
Variation S5-A2	*0.00*	*0*	*0.06*	*2,418*
Variation S5-B1	*0.00*	*0*	*0.01*	*242*
Variation S5-B2	*0.00*	*74*	*0.02*	*775*
Malheur S	0.00	51	0.29	11,901
Malheur A	0.00	47	0.25	10,311
Table Note: Analysis completed using IMPLAN 2014 Data for Ada, Canyon, and Owyhee counties in Idaho and Baker, Gilliam, Malheur, Morrow, Umatilla, and Union counties in Oregon (Minnesota IMPLAN Group 2014).				

Confined Animal Feeding Operation

The land-use analysis in 3.2.7 did not identify any CAFOs within the Malheur study corridor. Thus, construction and operation activities under the alternatives are not expected to affect CAFO operations within Segment 5. There are no economic impacts associated with changes in CAFO production because of the construction or operations of the B2H Project in this segment.

Livestock Grazing

Activities associated with the construction and continued operation of Segment 5 may have adverse effects on grazing resources within the study corridor. Like the other segments, short-term impacts would result from temporary construction disturbance, including structure work areas, wire tensioning/pulling sites, helicopter fly yards, and temporary access roads. Design features of the B2H Project for environmental protection and proposed reclamation activities would reduce residual effects on livestock grazing within the study corridor over time. After reclamation, rangeland within the right-of-way would be available for grazing with the exception of areas occupied by support structures, stations, or access roads. Surface disturbances to federal, state, and federally managed allotments on private land within Segment 5 were analyzed as part of the land-use analysis and are discussed in 3.2.7. Total acreage of affected designated grazing allotments within each alternative and local area of variation during construction and operations are shown in Table 3-618.

Table 3-618. Estimated Disturbance in Designated Grazing Allotments in Segment 5—Malheur		
Alternative Route	Acres of Disturbance	
	Construction	Operations
Applicant's Proposed Action	849	240
Variation S5-A1	*135*	*35*
Variation S5-A2	*147*	*33*
Variation S5-B1	*45*	*15*
Variation S5-B2	*16*	*4*
Malheur S	958	286
Malheur A	917	263

Surface disturbances associated with the construction, and ongoing operations and maintenance, of the B2H Project will adversely affect the forage base within the study corridor. Temporary and residual disturbances reduce the amount of forage supported by designated grazing allotments. These allotments generally provide forage during a critical time of the year when livestock transition from winter-feeding areas to summer ranges. Estimated forage losses associated surface disturbances within the study corridor are reported below in terms of AUMs (Table 3-619).

Table 3-619. Estimated Annual Forage Losses in Segment 5—Malheur		
Alternative Route	Animal Unit Months	
	Construction	Operations
Applicant's Proposed Action	54	15
Variation S5-A1	*2*	*<1*
Variation S5-A2	*19*	*4*
Variation S5-B1	*<1*	*<1*
Variation S5-B2	*<1*	*<1*
Malheur S	74	22
Malheur A	69	19.7
Table Note: Forage losses were calculated based on the percentage of land within a federal allotment disturbed during construction and operations, and the total number of federal AUMs within that allotment. These estimates do not include forage losses that would occur on state and private forage areas crossed by the B2H Project.		

Federal forage losses in Segment 5 range between 54 AUMs under the Applicant's Proposed Action Alternative with Variation S5-B1 or B2 and 74 AUMs during construction under the Malheur S Alternative. Once areas temporarily disturbed during construction are restored, residual surface disturbances are anticipated to reduce the federal forage base between 15 AUMs and 22 AUMs under these alternatives. In addition to federal forage losses, surface disturbances may also adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Although these forage losses account for less than 1 percent of local herd's annual forage requirements, reduced forage availability within the study corridor could affect the profitability and viability of individual operators. Since most ranchers operate under very tight profit margins, additional

costs to offset forage losses with more expensive supplemental feed or private pasturelands may cause some local ranchers to reduce herd sizes or transition ranch resources from livestock production to other agricultural uses under alternative routes with high long-term forage reductions.

Timber Resources

Regardless of the alternative route or local area of variation, activities associated with the construction and continued operations of the B2H Project will have minimal effects on timber resources within Segment 5. As shown by Table 3-620, impacts on timber resources after revegetation are anticipated to result in less than one acre of timberland along the Applicant's Proposed Action Alternative, Variation S5-B1, and routes Malheur S and A; there would be no identifiable impacts on timber resources during construction or operations under variations Variation S5-A1, S5-A2, S5-B2.

Table 3-620. Estimated Disturbance in Forests and Timberlands in Segment 5—Malheur

Alternative Route	Forests		Timberlands	
	Construction	Operations	Construction	Operations
Applicant's Proposed Action	1.5	0.4	0.2	0.1
Variation S5-A1	*0.0*	*0*	*0.0*	*0.0*
Variation S5-A2	*0.0*	*0.0*	*0.0*	*0.0*
Variation S5-B1	*1.1*	*0.3*	*0.2*	*0.0*
Variation S5-B2	*0.0*	*0.0*	*0.0*	*0.0*
Malheur S	1.8	0.4	0.3	0.1
Malheur A	1.1	0.3	0.2	0.0

Trees cleared from forested land crossed by the B2H Project may or may not be sold for timber depending on a number of factors, including the age and type of tree. Non-merchantable timber would most likely be chipped and used for mulch or other restoration purposes or burned. Some landowners may choose to clear and sell timber from forested land prior to the start of Project activities, or the Applicant may clear the land and sell the timber per its agreement with the affected landowner. When timber or other vegetative resources would be removed from federally administered lands, land managing agencies would appraise the value of forest products and authorize removal through a forest product sale, contract, permit or Federal law or regulation. The Applicant would coordinate with all affected land managers and landowners to minimize impacts on forest and timber resources and determine fair compensation for damages that would result from the construction and operation of the B2H Project. Impacts on timber resources within this segment are not anticipated to have a measurable effect on local economic conditions.

Property Values

As discussed above in *Effects Common to All Alternatives,* power transmission lines can adversely affect property values and salability of residential properties. While the construction and maintenance of the B2H Project may affect property values (and salability) on an individual basis because of the new transmission line, these impacts would be highly variable, individualized, and unpredictable. It is likely that the siting of transmission lines would moderately affect property values for residences in the short-

term (Table 3-621); however, landscaping and other natural features that create visual obstructions could mitigate these temporary losses

Table 3-621. Number of Residences within Study Corridor in Segment 5—Malheur

Alternative Route	Crossed by the Reference Centerline	In the Right-of-way	Distance from Reference Centerline		
			0.125-mile	0.126 to 0.25-mile	0.26 to 0.5-mile
Applicant's Proposed Action	0	0	0	0	2
Variation S5-A1	*0*	*0*	*0*	*0*	*0*
Variation S5-A2	*0*	*0*	*0*	*0*	*0*
Variation S5-B1	*0*	*0*	*0*	*0*	*1*
Variation S5-B2	*0*	*0*	*0*	*2*	*1*
Malheur S	0	0	0	1	0
Malheur A	0	0	0	1	0

Conclusions

Construction of Segment 5 of the B2H Project would have a negligible impact on the populations and economic conditions of local communities within the socioeconomic study area because of the temporary nature of transmission line construction. Construction and operation of Segment 5 of the B2H Project would not result in disproportionate adverse impacts on environmental justice populations under any of the route alternatives.

Agricultural impacts in Segment 5 would be moderate and affect private grass and pasturelands more than other irrigated crop lands. Agricultural yield losses in Segment 5 would range between $289,300 under the Malheur A Route and $484,800 under the Applicant's Proposed Action Alternative with Variation S5-A2 during construction. Approximately 99 percent of these impacts would be associated with yield losses in grass and pasturelands. After rehabilitation of temporarily disturbed areas, annual yield losses during operations of B2H would range between $83,000 and $133,100 under Malheur A and the Applicant's Proposed Action Alternative with Variation S5-A1, respectively. Reduced agricultural yields within Segment 5 would have negligible adverse impacts on local employment and income during construction and operations.

Federal forage losses resulting from surface disturbances during the construction of the B2H Project through Segment 5 would be moderate under all route alternatives. These losses would range between 54 and 74 AUMs under the Applicant's Proposed Action Alternative and the Malheur S Alternative respectively. Once temporarily disturbed areas are restored, operation of the B2H Project would reduce forage by 15 to 22 AUMs annually under the Applicant's Proposed Action Alternative and the Malheur S alternatives, respectively. In order to make up for these forage losses, local ranchers would have to supplement forage with more expensive grass and/ or hay feed or reduce their herd sizes. In addition to federal forage losses, surface disturbances would adversely impact forage availability on state and privately administered allotments crossed by the Project. Temporary and long-term forage losses would reduce county payments from federal and state revenue sharing programs, and personal income derived from leasing private lands.

Impacts on Timber resources in Segment 5 would be negligible during construction and operation under all route alternatives and variations. Less than one acre of timberland would be withdrawn from timber production during construction and operation of the B2H Project. Timber cleared and removed to construct the B2H Project in Segment 5 will have negligible effects on the logging and wood processing sectors. The long-term withdrawal of these acres from production will also have negligible impacts on these sectors.

Adverse impacts on individual residential property values would be highly variable and short-term in nature under all alternatives. Since there are few residential structures within a half mile of centerline, impacts on residential property values are anticipated to be negligible. Idaho Power will work with property owners within the buffer to mitigate adverse impacts during micro-siting of the towers, and would negotiate fair compensation to affected landowners for any adverse impacts they may incur as a result of the construction and operation of the Project.

SEGMENT 6—TREASURE VALLEY

The Treasure Valley Segment is located entirely in Owyhee County, Idaho, and includes the proposed route located in the foothills and includes two areas of local variations.

Irrigated Agriculture

Like Segments 4 and 5, agricultural use of prime farmland and other irrigated croplands within the study corridor of the Treasure Valley Segment is predominately for grass and pastureland production. The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way and potential impacts are discussed above in Segment 1. The land-use analysis determined that between 0 and 4 acres of field crops and between 79 and 260 acres of private pastureland could be disturbed during the construction of the B2H Project, depending on the alternative route. Short-term agricultural yield losses under the alternatives are anticipated to range between $52,510 under Variation S6-A1 and $174,834 under the Applicant's Proposed Action Alternative (Table 3-622).

Table 3-622. Lost Agricultural Production during Construction in Segment 6—Treasure Valley

Alternative Route	Value of Lost Production (dollars)					
	Field Crops	Fruit and Tree Nuts	Grass/Pasture	Vegetables	Tree Farm	Total Value of Yield Loss
Applicant's Proposed Action	2,831	0	172,003	0	0	174,834
Variation S6-A1	*0*	*0*	*52,510*	*0*	*0*	*52,510*
Variation S6-A2	*0*	*0*	*74,052*	*0*	*0*	*74,052*
Variation S6-B1	*0*	*0*	*83,068*	*0*	*0*	*83,068*
Variation S6-B2	*0*	*0*	*60,707*	*0*	*0*	*60,707*

Reduced production of field crops and grasses because of construction activities within the study corridor could have an adverse effect on local economic conditions. Direct and secondary effects from reduced yields in Segment 6 are anticipated to be relatively low since most of these impacts result from affected grass and pasturelands, which are generally not very labor intensive to produce. These yield

Census Tracts are compared with those of the reference communities in terms of percentages of minority and low-income populations. Reference communities for the analysis are defined as the county and/or the state in which the Census Block or Census Tract is located; if the percentages of low-income and/or minority populations within proximity to the six B2H Project segments significantly exceed those of the reference communities, further environmental justice assessment is undertaken. If no environmental justice populations are identified, no further analysis is needed.

Minority Populations

Potential environmental justice minority populations are displayed in Table 3-574. In 2010, there were 1,553 Census Blocks within one mile of the six B2H Project alternative segments. Of those, more than three-quarters of the Census Blocks (79 percent) contained no resident populations. The remaining 287 Census Blocks have a total population of 2,911. Of the remaining 287 Census Blocks, 247 Census Blocks or 86 percent did not comprise environmental justice populations and 40 Census Blocks were identified as having minority environmental justice populations. The 40 environmental justice Census Blocks have a population of 365. The distribution of the Census Blocks with potential minority environmental justice populations by county is provided in Table 3-574 and depicted on Maps 3-10a and 3-10b.

The percentage of Census Blocks identified with minority populations along each of the six B2H Project segments range from zero percent to 33 percent (refer to Table 3-575).Of the six B2H Project segments, Segment 5—Malheur has the greatest percentage (33 percent) of Census Blocks with minority environmental justice populations. Segment 6 – Treasure Valley has no Census Blocks with minority environmental justice populations.

Table 3-574. Environmental Justice Information for Minority Populations in the B2H Study Area, States, and Counties

Area	Total Population	Minority Population[1]	Percent Minority Population[1]	Threshold to Determine Environmental Justice Population	Number of Census Blocks	Number of Populated Census	Number of Census Blocks with Minority Populations Greater than Reference Community
Idaho	1,609,083	267,256	17	27	0	0	0
Owyhee County, Idaho	11,805	3,790	32	42	115	18	0
Oregon	3,988,866	880,980	22	32	0	0	0
Baker County, Oregon	16,529	1,248	8	18	526	69	9
Malheur County, Oregon	32,250	11,928	37	47	222	48	8
Morrow County, Oregon	11,484	4,102	36	46	116	25	7
Umatilla County, Oregon	78,359	24,361	31	41	343	95	14
Union County, Oregon	26,389	2,518	10	20	231	32	2
				Total	**1,553**	**287**	**40**

Table Note: [1]Minority population includes all racial groups other than white, not Hispanic or Latino.

Table 3-575. Segments and Populated Census Blocks with Minority Environmental Justice Populations			
Segment and Area	**Number of Populated Census Blocks**	**Number of Census Blocks with Minority Populations**	**Percent of Segment with Minority Populations**
Segment 1—Morrow-Umatilla			
Morrow County, Oregon	25	7	28
Umatilla County, Oregon	95	14	15
Union County, Oregon	0	0	0
Segment 1 Total	**120**	**21**	**18**
Segment 2—Blue Mountains			
Baker County, Oregon	0	0	0
Union County, Oregon	28	2	7
Segment 2 Total	**28**	**2**	**7**
Segment 3—Baker Valley			
Baker County, Oregon	65	7	11
Union County, Oregon	4	0	0
Segment 3 Total	**69**	**7**	**11**
Segment 4—Brogan			
Baker County, Oregon	4	2	50
Malheur County, Oregon	33	4	12
Segment 4 Total	**37**	**6**	**16**
Segment 5—Malheur			
Malheur County, Oregon	12	4	33
Segment 5 Total	**12**	4	**33**
Segment 6—Treasure Valley			
Owyhee County, Idaho	20	0	0
Malheur County, Oregon	1	0	0
Segment 6 Total	**21**	**0**	**0**
Total	**287**	**40**	**30**

Inset A

Inset B

Inset C

Map 3-10a

Environmental Justice (Northern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Environmental Justice

- Areas with High Minority Population Concentrations
- Areas with High Concentrations of Low Income Populations

Project Features

- Project Area Boundary
- One-mile-wide Study Corridor
- Substation (Project Terminal)
- Segment Line

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:
Low Income Populations, Pinyon Environmental 2016;
Minority Populations, Pinyon Environmental 2016; 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 one mile-wide study corridors (based on 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.
- 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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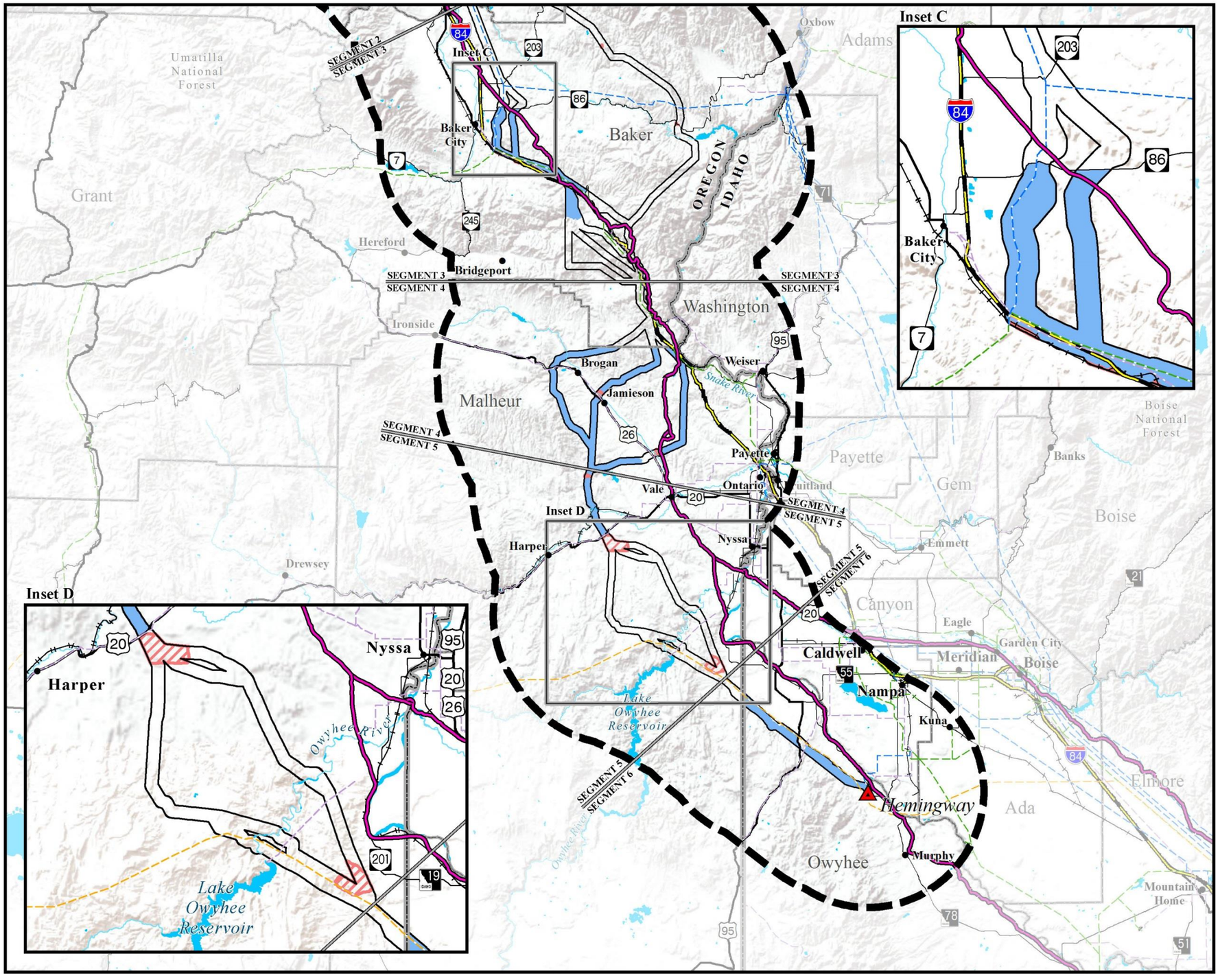

Map 3-10b

Environmental Justice (Southern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Environmental Justice

- Areas with High Minority Population Concentrations
- Areas with High Concentrations of Low Income Populations

Project Features

- Project Area Boundary
- One-mile-wide Study Corridor
- Substation (Project Terminal)
- Segment Line

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:
Low Income Populations, Pinyon Environmental 2016;
Minority Populations, Pinyon Environmental 2016; Cities and Towns, ESRI 2013;
Transmission Lines, Bonneville Power Administration 2009, Idaho Power Company 2007, Logan Simpson Design 2011, Ventyx 2012; Pipelines, ESRI 2012;
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Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

NOTES:
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- Substation symbols do not necessarily represent precise locations.
- The B2H Project area boundary is defined by buffering the alternative route centerlines.
- 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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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

Low-Income Populations

Table 3-576 summarizes the county and state poverty populations in the B2H Project area. Of the 28 Census Block Groups within the B2H Project area, four Census Block Groups meet the U.S. Census definition of a poverty area (Table 3-576). These four Census Block Groups with low-income populations are found throughout the B2H Project area, as shown on in Maps 3-10a and 3-10b, and in Table 3-576.

Table 3-576. Environmental Justice Information for Low-Income Populations

Area	Percentage of Low-Income Households	B2H Project Segment
Idaho	**12**	–
Owyhee County, Idaho	**21**	–
Block Group 1, Census Tract 9501.01, Owyhee County, Idaho	17	Segment 6—Treasure Valley
Block Group 2, Census Tract 9501.02, Owyhee County, Idaho	16	Segment 6—Treasure Valley
Block Group 1, Census Tract 9502, Owyhee County, Idaho	**24**	Segment 6—Treasure Valley
Oregon	**13**	–
Baker County, Oregon	**19**	–
Block Group 2, Census Tract 9503, Baker County, Oregon	**30**	Segment 3—Baker Valley
Block Group 3, Census Tract 9503, Baker County, Oregon	19	Segment 3—Baker Valley
Block Group 1, Census Tract 9505, Baker County, Oregon	16	Segment 3—Baker Valley
Block Group 3, Census Tract 9506, Baker County, Oregon	18	Segment 3—Baker Valley
Malheur County, Oregon	**21**	–
Block Group 2, Census Tract 9706, Malheur County, Oregon	13	Segment 4—Brogan
Block Group 3, Census Tract 9709, Malheur County, Oregon	**20**	Segment 4—Brogan
Block Group 1, Census Tract 9707, Malheur County, Oregon	15	Segment 5—Malheur
Block Group 2, Census Tract 9709, Malheur County, Oregon	14	Segment 5—Malheur
Morrow County, Oregon	**11**	–
Block Group 2, Census Tract 9701, Morrow County, Oregon	19	Segment 1—Morrow-Umatilla
Block Group 5, Census Tract 9701, Morrow County, Oregon	8	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9702, Morrow County, Oregon	10	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9702, Morrow County, Oregon	9	Segment 1—Morrow-Umatilla
Block Group 6, Census Tract 9702, Morrow County, Oregon	12	Segment 1—Morrow-Umatilla
Umatilla County, Oregon	**14**	–
Block Group 2, Census Tract 9400, Umatilla County, Oregon	18	Segment 1—Morrow-Umatilla
Block Group 2, Census Tract 9504, Umatilla County, Oregon	**22**	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9505, Umatilla County, Oregon	6	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9511, Umatilla County, Oregon	17	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9513, Umatilla County, Oregon	1	Segment 1—Morrow-Umatilla
Block Group 3, Census Tract 9513, Umatilla County, Oregon	11	Segment 1—Morrow-Umatilla
Block Group 4, Census Tract 9513, Umatilla County, Oregon	12	Segment 1—Morrow-Umatilla
Block Group 1, Census Tract 9514, Umatilla County, Oregon	12	Segment 1—Morrow-Umatilla
Block Group 2, Census Tract 9514, Umatilla County, Oregon	14	Segment 1—Morrow-Umatilla

Table 3-576. Environmental Justice Information for Low-Income Populations		
Area	**Percentage of Low-Income Households**	**B2H Project Segment**
Union County, Oregon	**17**	**–**
Block Group 3, Census Tract 9702, Union County, Oregon	11	Segment 2—Blue Mountains
Block Group 1, Census Tract 9706, Union County, Oregon	13	Segment 2—Blue Mountains
Block Group 2, Census Tract 9706, Union County, Oregon	7	Segment 2—Blue Mountains

3.2.17.6 Environmental Consequences

The B2H Project has the potential to affect social and economic conditions in all counties in the socioeconomic study area. The following section discusses how the construction and operations of the B2H Project under the alternatives may affect the socioeconomic characteristics of the study area.

Study Methods

The environmental consequences analysis evaluates how the social and economic effects of the construction and operations phases of the B2H Project, both positive and negative, are distributed among the communities and counties in the study area. Socioeconomic impacts are described and quantified where possible. However, where quantification of impacts was not possible, the analysis included a qualitative discussion of possible effects. The analysis includes separate but integrated approaches to addressing economic, demographic, fiscal, and social impacts using the methods and approaches discussed.

Agricultural impacts associated with the construction and continued operation of the B2H Project were assessed in terms of production losses. Acres of various crops types disturbed during the construction and operations phases of the B2H Project were obtained from the land-use analysis, and an average value of production for each of these crop types was estimated with data from the National Agricultural Statistical Service including field crops, fruit and tree nuts, and vegetables for 2014. Grass and pasturelands were valued at the average rental price per acre in 2014. Production losses were valued by applying per acre values to acres disturbed and then used as inputs in a customized regional economic model known as IMPLAN® to assess how changes in agricultural production affect local economic conditions.

Estimates of construction and operation workforce were provided by the Applicant and used to describe the impacts on regional employment and population. Changes in employment and population were then used to evaluate other local impacts, such as housing, emergency services, schools, and other public and community services can be evaluated. Anticipated changes in property tax revenues associated with development and operations of the B2H Project were estimated through methods consistent with those described and applied at the state level, although the taxes are assumed primarily to accrue to the counties. For example, in Oregon utilities are centrally assessed by the Oregon Department of Revenue and transferred to the county assessment rolls where an appropriate property tax rate is applied. The average property tax levy per county is published annually by the Oregon Department of Revenue (Oregon Department of Revenue 2015) and was used for this analysis. The average tax rate

Table 3-563. Travel-Related Economic Contributions by Idaho County, 2004				
Area	Travel Spending[1]	Travel-Related Earnings[1]	Travel-Related Employment	Percent of Total Employment
Ada	1,128.90	277	17,951	9
Canyon	126.9	31.1	2,017	4
Owyhee	1.8	0.4	28	1
Idaho	2,968.10	728.3	47,203	7

Table Source: Global Insight 2005.
Table Note: [1]Dollars in Millions

Estimates of statewide travel-related impacts prepared by the U.S. Travel Association (2009), however, suggest that the 2004 estimates prepared by Global Insight may overestimate the importance of travel-related employment in Idaho, at least at the state level. The U.S. Travel Association (2009) estimates found that travel-related employment accounted for 23,700 jobs in Idaho in 2004, about half the number estimated by Global Insight. The 2005 Global Insight estimates do, however, represent the best available data at the county level and provide an indication of the relative importance of recreation and tourism in the three socioeconomic study area counties in Idaho.

Designated recreation areas within 0.5 mile of the proposed B2H Project and alternatives are discussed in Section 3.2.8. These areas include the BLM- managed Virtue Flat Extensive Recreation Management Area (ERMA), the Owyhee River below the Dam SRMA, the Oregon Trail and Owyhee River ACECs. Section 3.2.8 also discusses dispersed recreation activities, including hunting, OHV use, and camping that may occur within the analysis area.

Tribal Households

The U.S. Constitution (Article II, Section 2, Clause 2) provides that treaties are equal to federal laws and are binding on states as the supreme law of the land. As a portion of the B2H Project area passes through lands ceded to the U.S. Government by 1855 treaty with the CTUIR, the BLM—as manager of these federal lands—has the legal responsibility to consult with the CTUIR and consider the conditions necessary to satisfy the rights reserved by the tribe as part of its treaty. Exercise of treaty rights could include, but is not limited to, water rights, taking fish, mineral rights, collection of plant resources such as roots and berries, and hunting of small and large game for economic, religious, and cultural use. Treaty rights also include pasturing stock on open and unclaimed lands.

Although the CTUIR is the only tribe with ceded lands in the B2H Project area, several other tribes consider portions of, or the entirety of, the B2H Project area as part of their aboriginal territory, subsistence range, traditional use area, or zone of influence. These tribes include the Shoshone-Paiute of the Duck Valley Indian Reservation, the Burns Paiute, the Confederated Tribes of the Warm Springs Indian Reservation, the Fort McDermitt Paiute and Shoshone Tribes, the Nez Perce, the Confederated Tribes of the Colville Reservation, the Yakama Nation, and the Shoshone-Bannock of the Fort Hall Reservation.

While each of these tribes has a unique history and heritage, they share land-based worldviews rooted in the active recognition of kinship with the natural world. Thus, the social, economic, and

for utilities in Idaho was estimated by dividing total taxes charged against utilities by the total assessed value of utilities in 2012 (Idaho State Tax Commission 2013). It is anticipated that tax revenues would fall after the first year of service, as assessed values would consider cost of operation. A capitalization rate was applied to cost of construction to estimate the decreasing assessed valuation, to which the annual tax rate was applied.

An environmental justice analysis is conducted to determine if any environmental justice populations are present within the study area. The environmental justice analysis is conducted in compliance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and follows guidance published by the EPA (2016). The environmental justice analysis involves two basic steps:

- Determine whether environmental justice populations exist in the relevant study area
- If environmental justice populations exist, determine whether they would be disproportionately affected by development and operation of the Project

To identify the presence of potential environmental justice populations residing in proximity to the alternative routes, it is necessary to create an affected area for a smaller geographic area than that of the defined socioeconomic study area. Populations are analyzed at the Census Block Group and Census Tract level located within 1 mile of all alternative routes. The populations located in these Census Block Groups and Census Tracts are compared with those of the reference communities in terms of percentages of minority and low-income populations. Reference communities for the analysis are defined as the county and/or the state in which the Tract or Block Group was located; if the percentages of low-income and/or minority populations within proximity to the alternative routes significantly exceed those of the reference communities, further environmental justice assessment is undertaken. If no environmental justice populations are identified, no further analysis is needed.

Once the locations of the environmental justice populations are identified, all adverse effects are considered to determine whether the B2H Project has the potential to have a “disproportionately high and adverse” impact (human health or environmental effect) to these populations. Impacts of the Proposed Action include cumulative and multiple impacts, and are evaluated to determine which, if any, disproportionately and adversely affect these populations.

No Action Alternative

If no action were taken, the B2H Project would not be granted a right-of-way and the transmission line and substations would not be constructed. The human environment would remain as is and management direction from the current management plans would continue. Under the No Action, none of the social and economic impacts described under the alternative routes would be realized. However, without the B2H Project, the existing system would not be upgraded, and as a result, the Applicant would not be able to ensure sufficient capacity and reliability to meet the electric demands of its current and future customers in the Pacific Northwest and the Intermountain West. Without its development, there would be fewer high-voltage transmission lines to provide power from existing and new renewable (e.g., wind, solar) and thermal (e.g., gas, coal) generation sources to meet growing customer needs;

number of case studies, found no identifiable impact on the sales of recreationally influenced agricultural lands from the presence of the high-voltage transmission line

Studies of impacts during periods of physical change, such as new transmission line construction or structural rebuilds, generally reveal greater short-term impacts than long-term effects. However, most studies have concluded that other factors (e.g., general location, size of property or structure, improvements, irrigation potential, condition, amenities, and supply and demand factors in a specific market area) are far more important criteria than the presence or absence of transmission lines in determining the value of residential real estate.

Recreation and Tourism

The impacts on recreational resources are described in Section 3.2.8. Short- and long-term impacts associated with the development and operation of the transmission line would diminish the natural appearance and the undeveloped character of many areas along the routes, affecting vistas and scenery. In addition, depending on reclamation and implementation of mitigation measures, vehicle and ATV use could increase over the longer term because of new access roads. In total, an influx or outflow of visitors to the study area is not anticipated to occur; therefore, negligible impacts on the study area economies associated with visitor spending would occur due to these changes in recreation resources. However, there may be some adverse impacts on recreational and other nonmarket values associated with changes to scenery and vistas surrounding non-motorized and motorized trails, the National Historic Oregon Trail and Interpretive Center, semi-primitive non-motorized and motorized areas, and other areas as more access is likely through the construction of roads to build the transmission line and through the possibility of future development. These potential effects would be limited to the immediate areas of construction activity and short-term in nature. It is likely that some visitors will be discouraged to visit these areas especially during construction which can have a negative economic impact on local businesses and communities.

Environmental Justice Populations

The potential minority and low-income Census Block Groups identified in the Environmental Justice Screening Analysis are not expected to experience disproportionate impacts from the construction or operation of the B2H Project. The data suggest the B2H Project would cross Census Block Groups that could be considered minority or low-income communities. However, construction of the B2H Project is not expected to have high and adverse human-health or environmental effects on nearby communities. Construction-related impacts would likely include increases in local traffic, noise, and dust which could result in temporary delays at some highway crossings. Construction workers temporarily relocating to the B2H Project area would increase demand for local housing resources. These impacts would be temporary and localized and are not expected to be high.

Construction also would temporarily increase the demand for education, health care, and municipal services, as well as potentially increase the demand for police and fire-protection services. However, these impacts would not measurably affect the quality of services currently received by local communities and residents.

The Proposed Action does not cross any Native American reservations but is located near the Umatilla Indian Reservation.

SEGMENT 1—MORROW-UMATILLA

Segment 1 begins at the Longhorn Substation in Morrow County and ends west of La Grande in Union County on the Wallowa-Whitman National Forest. Seven alternative routes and two areas of local variations were identified in Segment 1.

Irrigated Agriculture

As discussed in Section 3.2.7, Segment 1 is the most agriculturally intensive segment of the B2H Project area. It contains extensive tracts of important farmland and high-value soils that are irrigated by center pivots, flood, and other mechanized irrigation methods. These high-value farmlands produce a variety of crops, ranging from field crops such as alfalfa and corn, to fruit and tree nuts such as blueberries and cherries, to vegetables such as onions, peas, and peppers. Transmission lines can affect these farm operations and increase costs for the farm operator.

The Applicant recognizes that construction of the B2H Project may affect agricultural operations within the right-of-way, and would negotiate damage-related issues with affected farmers during the easement acquisition process. Potential impacts depend on the transmission line design and placement, and the type of farming affected. For further information related to impacts on agriculture, refer to Section 3.2.7. These impacts generally include:

- Problems with field machinery and maintaining efficient fieldwork patterns;
- Increased soil erosion and compaction of soils
- The encroachment and spread of weeds, invasive species, and agricultural pests;
- Safety hazards associated with tower structure and conductor placement;
- Hindrance or prevention of aerial spraying or seeding activities by planes or helicopters;
- Interference with irrigation equipment;
- Hindrance of future plans for farm ground such as consolidation of farm fields or expansion of irrigation systems
- Temporary interruption of planting, irrigation, and harvesting schedules

The alternatives have been sited to follow field boundaries to the extent feasible and to avoid agricultural infrastructure to the extent possible. However, there are occasions when a transmission line must be routed through existing agricultural lands. Agricultural production may be temporarily disturbed to enable construction of B2H Project facilities such as tensioning and pulling sites and access roads for construction equipment. Because of limited time frames for seeding particular crops, landowners could lose an entire year of crops if construction schedules affected planting season. The Applicant would coordinate construction timing with affected landowners to minimize impacts on crop production. Effects on high-value agricultural lands are discussed in 3.2.7, including acres of disturbed cropland by crop type (Table 3-320, 3-321, and 3-322).

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 45.

Please list and describe any future environmental justice analyses and related activities the Company intends to complete as a requirement for another state or federal agency related to the construction of the B2H project.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 45.

Idaho Power is not required by another state or federal agency to complete any future environmental justice analysis related to the B2H project, and the Company does not anticipate otherwise completing such analysis.

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 46.

Please explain the Company's approach to incorporating environmental justice and equity considerations into its planning and development of the B2H project. At a minimum, please provide:

a. Any environmental justice metrics informing the B2H project; CPCN process; siting; development, etc.;
b. Any consideration of historical, cultural, and institutional dynamics and structures that may disproportionately burden environmental justice communities;
c. If the Company does not have environmental justice metrics it is currently utilizing or plans to utilize, please explain why.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 46.

As discussed in the Company's Response to Staff's Request No. 44, environmental justice considerations were addressed in the BLM NEPA review process and the EFSC Public Services Standard. While the current Oregon Revised Statutes Chapter 756 definition of environmental justice communities was not in place at that time and thus did not directly inform the BLM NEPA review process, the processes described in the Company's Response to Request No. 44 directly examined potential impacts to minority populations (as defined by race) and income. In addition, much of the siting process involved working closely with landowners and impacted communities (including those communities that would presently be considered environmental justice communities, such as tribal and rural communities) to evaluate siting opportunities and constraints. To the extent Idaho Power did not address in that response the specific items identified here in this request, the Company does so below:

a. The fundamental metric or measure used in the environmental justice analysis was the determination of whether the B2H project would have a "disproportionately high and adverse impact" (human health or environmental effect) on environmental justice populations.[1]

b. Idaho Power did not directly analyze the historical, cultural, and institutional dynamics and structures that may disproportionately burden environmental justice communities. However, as discussed in the Company's Response to Staff's Request No. 44, the siting process considered potential impacts to tribes, cultural resources, landowners, low income populations, minority populations, etc.

c. As described in Idaho Power's Response to Staff's Data Request No. 45, the Company is not currently conducting additional environmental justice analysis and does not anticipate doing so in the future, as Idaho Power is not aware of any future state or federal environmental justice requirements that would be applicable to the B2H project. However, as noted above and in the Company's Response to Staff's Request No. 44, environmental justice was considered in the BLM NEPA process and indirectly through the EFSC Public Service Standard.

[1] BLM FEIS at p. 3-1971 (see Attachment 7 to the Company's Response to Data Request No. 44).

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 47.

To summarize any expected disproportionate impacts of the B2H project on environmental justice communities, please provide a table substantially similar to the table below that includes the following elements:

a. Identity/Type of Environmental Justice Community
b. An estimate of the number of impacted households or individuals if available
c. Impact Code 1 (Benefit or Burden)
d. Impact Code 2 (Direct or Indirect)
e. Impact Code 3 (Near-term, Long-term, and/or Transgenerational)
f. Description of the impacts listed in 4(a)(ii-iv)
g. If the Company has engaged with the affected community (Yes or No) and the level of engagement. In responding to the following question, please use the "Spectrum of Engagement" as developed by the International Association of Public Participation. If the Company has engaged with the affected community, please select which level of engagement the Company believes is appropriate for the affected community.

Identity/Type of Environmental Justice Community	Estimate of Number of Households or Individuals	Impact Code 1 (Benefit/ Burden)	Impact Code 2 (Direct/Indirect)	Impact Code 3 (Near-term/Long-term/Transgenerational)	Detailed Description	Affected Community Engaged (Y/N)	Level of Engagement

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 47.

(a.-f.) As described in Idaho Power's Response to Staff's Data Request No. 44, there are no expected disproportionate impacts on the environmental justice communities analyzed through the BLM NEPA process. Additionally, as described in that response, EFSC concluded that the B2H project is not likely to result in significant adverse impacts to the ability of public and private providers to public services. Based on the extensive siting process and consideration for impacted groups in the B2H project area, the Company does not expect any disproportionate impacts on environmental justice communities. To further support this view, please see the Company's Responses to Staff's Request Nos. 24 and 60 for additional discussion of the siting process and the extensive public engagement that occurred.

(g.) Please see Attachment 1 to the Company's Response to Staff's Request No. 52 for a discussion of community engagement regarding the siting and construction of the B2H line.

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 48.

For any of the impacts coded as "Burden" in the Company's response to the above request, please describe any actions or analyses Idaho Power has considered or included in the B2H project to mitigate the negative impacts.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 48.

As described in Idaho Power's Responses to Staff's Data Request No. 44 and Staff's Data Request No. 47, there are no expected disproportionate impacts on environmental justice communities.

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 49.

If the Company finds no environmental justice communities are currently expected to be impacted by the B2H project in responding to request No. 4 above, please explain the Company's reasoning and analysis which lead to this conclusion.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 49.

Idaho Power is interpreting this request as being related to Staff's Request Nos. 47 and 48, which are related to disproportionate impacts rather than any impacts. Based on this interpretation, please see the Company's Responses to Staff's Request Nos. 44 and 47, which detail the findings of the BLM NEPA process and support the Company's assertion that environmental justice groups will not be disproportionately impacted.

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 50.

Has the Company considered a means of prioritizing environmental justice communities when mitigating potential burdens or equitably spreading benefits during development, construction or operation of the B2H transmission line? Why or why not?

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 50.

Idaho Power has not considered a means of prioritizing environmental justice communities when mitigating potential burdens or equitably spreading benefits during development, construction, or operation of the B2H project, because the environmental justice analysis showed that environmental justice communities would not be disproportionately impacted.

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 51.

To summarize any expected disproportionate impacts of the B2H project on environmental justice communities, with a specific focus on impacts felt during the construction and future operation of the project, please provide a table substantially similar to the table below that includes the following elements:

a. Identity/Type of Environmental Justice Community
b. Impact Code 1 (Benefit or Burden)
c. Impact Code 2 (Direct or Indirect)
d. Impact Code 3 (Near-term, Long-term, and/or Transgenerational)
e. Description of the impacts listed in 4(a)(ii-iv)
f. If the Company has engaged with the affected community (Yes or No) and the level of engagement. In responding to the following question, please use the "Spectrum of Engagement" as developed by the International Association of Public Participation. If the Company has engaged with the affected community, please select which level of engagement the Company believes is appropriate for the affected community.

Identity/Type of Environmental Justice Community	Impact Code 1 (Benefit/Burden)	Impact Code 2 (Direct/Indirect)	Impact Code 3 (Near-term/Long-term/Transgenerational)	Detailed Description	Affected Community Engaged (Y/N)	Level of Engagement

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 51.

(a.-e.) As described in Idaho Power's Responses to Staff's Data Request Nos. 44 and 47, there are no expected disproportionate impacts on environmental justice communities.

(f.) Please see Attachment 1 to the Company's Response to Staff's Request No. 52 for a discussion of community engagement regarding the siting and construction of the B2H line.

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 52.

To summarize the Company's community engagement regarding the siting and construction of the B2H line, and the community impacts, please provide a table similar to the one below that includes the following elements:

a. Name of organization/group
b. Type of organization (e.g, community-based organizations (CBOs); Community Action Partnerships; schools; etc.)
c. State/Federal requirement (Yes or No)
d. Description of notice requirements
e. Description of engagement (e.g. dates; format; feedback)

In responding to this question, please use the "Spectrum of Engagement" as developed by the International Association of Public Participation. Please explain the level of engagement the Company believes is appropriate to utilize for affected communities throughout the B2H project. Please also indicated whether the company is currently utilizing this level when engaging with environmental justice communities.

Name of Organization/Group	Type of Organization	State/Federal Requirement (Y/N)	Description of Notice Requirements	Description of Engagement

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 52.

Please see Attachment 1 for a table summarizing the Company's community engagement regarding the siting and construction of the B2H line as requested and similar to the one above.

Idaho Power Company's Response to Staff's Data Request No. 24 provides a summary of outreach activities performed by the Company to inform and address concerns of those potentially affected by the construction of the B2H transmission line.

As stated previously, Idaho Power has attended well over a thousand public meetings, landowner meetings, agency meetings and presented to numerous interested parties in Eastern Oregon and Southern Idaho. Much of this outreach can be found on pages 75 through 85 of Idaho Power's 2021 Integrated Resource Plan ("IRP") Appendix D.[1]

From 2008 through 2021, Idaho Power contracted with EnviroIssues to facilitate meetings, set up public agency meetings and track all outreach activities. The last summary of outreach, from June 2021, is included as Attachment 2 to Staff's Data Request No. 24.

[1] Included as Attachment 1 to Standard Data Request No. 11 submitted with the Company's Petition for Certificate of Public Convenience and Necessity.

Idaho Power believes the level of engagement noted in this response was appropriate for affected stakeholders throughout the process, and will utilize the appropriate level of engagement throughout any remaining processes related to B2H.

STAFF EXHIBIT 302

DR 52 Attachment 1

Is filed in electronic format

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 53.

If the Company is not currently engaging with or has not engaged with any community-based organizations with respect to the B2H transmission line, please explain why the Company has not done so.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 53.

The Company has engaged with community-based organizations as described in the Response to Staff's Data Request No. 52.

Topic or Keyword: Environmental Justice; Equity

STAFF'S DATA REQUEST NO. 54.

Please provide a summary of demographics in the B2H impacted areas within Idaho Power's service territory. With the company's response, please include any data relied upon in preparing the response and the source, if available.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 54.

Please see the attached file containing summary demographics for the U.S. Census Bureau Tracts located in Idaho Power's Oregon service area that are in the B2H Project Area identified in the FEIS. All data included in this summary, as well as additional data categories, can be found at the United States Census Bureau's website at https://data.census.gov.

STAFF EXHIBIT 302

DR 54 Attachment

Is filed in electronic format