



RECEIVED

2021 DEC 30 AM 11:32

IDAHO PUBLIC
UTILITIES COMMISSION

LISA D. NORDSTROM
Lead Counsel
lnordstrom@idahopower.com

December 30, 2021

VIA ELECTRONIC EMAIL

Jan Noriyuki, Secretary
Idaho Public Utilities Commission
11331 W. Chinden Blvd., Bldg 8,
Suite 201-A (83714)
PO Box 83720
Boise, Idaho 83720-0074

Re: Case No. IPC-E-21-43
Idaho Power Company's 2021 Integrated Resource Plan

Dear Ms. Noriyuki:

Attached for electronic filing, pursuant to Order No. 35058, is Idaho Power Company's 2021 Integrated Resource Plan.

Additionally, five (5) copies of Idaho Power Company's 2021 Integrated Resource Plan will be hand delivered.

If you have any questions about the attached documents, please do not hesitate to contact me.

Very truly yours,

Lisa D. Nordstrom

LDN:sg
Attachments

LISA D. NORDSTROM (ISB No. 5733)
Idaho Power Company
1221 West Idaho Street (83702)
P.O. Box 70
Boise, Idaho 83707
Telephone: (208) 388-5825
Facsimile: (208) 388-6936
lnordstrom@idahopower.com

Attorney for Idaho Power Company

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF IDAHO POWER)
COMPANY'S 2021 INTEGRATED) CASE NO. IPC-E-21-43
RESOURCE PLAN.)
) APPLICATION
)
_____)

COMES NOW, Idaho Power Company ("Idaho Power" or "Company"), and in accordance with Idaho Public Utilities Commission ("Commission") Order Nos. 22299 and 30317, requests that the Commission acknowledge the Company's 2021 Integrated Resource Plan ("IRP" or "Plan"). In support of this request, Idaho Power states as follows:

I. INTRODUCTION

1. Idaho Power's 2021 IRP undertakes a comprehensive analysis of the optimal mix of both demand- and supply-side resources available to reliably serve customer demand and flexible capacity needs over the Plan's 20-year planning horizon from 2021 to 2040. Under Idaho Power's improved AURORA long-term capacity

expansion (“LTCE”) approach—which Idaho Power utilized for the first time in this IRP—resources are selected by the model from a variety of supply- and demand-side options to develop portfolios that are least cost for various alternative scenarios. To ensure that the resulting portfolios provide customers with least-cost, least-risk resources, Idaho Power employed verification tests to validate the most economic portfolio under numerous variations of resources and timing. Moreover, to confirm that the AURORA-produced portfolios meet Idaho Power’s reliability requirements, Idaho Power measured each portfolio’s reliability through the calculation of a portfolio loss of load expectation (“LOLE”) on an annual basis. Based on this analysis, Idaho Power selected a Preferred Portfolio and Short-Term Action Plan that are driven by and include the following core resource actions:

- Add 120 megawatts (“MW”) of solar photovoltaic (“PV”) capacity in 2022;
- Convert Bridger units 1 and 2 from coal to natural gas by summer 2024;
- Seek to acquire significant resources to meet energy and capacity needs in 2023 through 2027;
- Exit from Bridger unit 3 and Valmy unit 2 by year-end 2025;
- Energize B2H in 2026.

2. The complete 2021 IRP consists of five separate documents: (1) the 2021 Integrated Resource Plan; (2) Appendix A – Sales and Load Forecast; (3) Appendix B – Demand-Side Management 2020 Annual Report; (4) Appendix C – Technical Appendix. By the end of the first quarter of 2022, Idaho Power will also provide an Appendix D – Transmission Supplement. A copy of the complete 2021 IRP (with the exception of Appendix D) is provided as Attachment 1 and can also be found on the

Company's website at www.idahopower.com/irp. Appendix D will be filed and distributed to the service list in the first quarter of 2022. Interested parties may also request a single printed copy of the 2021 IRP by contacting irp@idahopower.com.

II. IRP GOALS AND ASSUMPTIONS

3. The primary goals of Idaho Power's 2021 IRP are to: (1) identify sufficient resources to reliably serve the growing demand for energy within Idaho Power's service area throughout the 20-year planning period (2021-2040); (2) ensure the selected resource portfolio balances cost and risk, while including environmental considerations; (3) give balanced treatment to both supply-side resources and demand-side measures; and (4) involve the public in the planning process in a meaningful way.

4. The 2021 IRP assumes that during the 20-year planning period, Idaho Power will continue to be responsible for acquiring resources sufficient to serve its retail customers in its Idaho and Oregon service areas and will continue to operate as a vertically integrated electric utility. During the 20-year planning period, Idaho Power's load is forecasted to grow by an average of 1.4 percent per year for energy demand and 1.4 percent per year for peak-hour demand. Total customers are expected to increase from more than 600,000 in 2021 to 847,000 by 2040.

5. Hydroelectric generation remains a large part of Idaho Power's generation fleet; however, hydroelectric plants are subject to variable water and weather conditions. In response to public and regulatory input, Idaho Power continues to develop more conservative streamflow projections and planning criteria for use in resource adequacy planning.

6. The 2021 IRP examined demand-side management (“DSM”) programs, which are designed to achieve prudent, cost-effective energy efficiency savings and provide an optimal amount of peak reduction. Idaho Power also continues to provide customers with tools and information to help them manage their own energy usage. The Company achieves these objectives through the implementation and careful management of incentive programs and through outreach and education.

7. Idaho Power’s resource planning process also evaluates transmission capacity as a resource to serve retail customers. Transmission projects are often regional resources, and Idaho Power coordinates transmission planning regionally as a member of NorthernGrid. The delivery of energy, both within the Idaho Power system and through regional transmission interconnections, is of increasing importance as regional penetration of variable energy resources and their associated intermittent production continues to increase. The timing of new transmission projects is subject to complex permitting, siting, and regulatory requirements and coordination with co-participants.

8. Finally, Idaho Power engages with public stakeholders when developing its IRP. To incorporate stakeholder and public input, the Company worked with the Integrated Resource Plan Advisory Council (“IRPAC”), comprising members of the environmental community, major industrial customers, agricultural interests, representatives from both this Commission and the Public Utility Commission of Oregon, representatives from the Idaho Governor’s Office of Energy and Mineral Resources, representatives from the Northwest Power and Conservation Council (“NWPPCC”), and others. Many members of the public also attended and participated.

A list of the 2021 IRPAC members can be found in Appendix C – Technical Report.

9. For the 2021 IRP, Idaho Power conducted twelve IRPAC meetings. The Company also maintained an online forum for stakeholders to submit requests for information, and for the Company to provide responses to information requests. The forum allowed stakeholders to develop their understanding of the IRP process, particularly its key inputs, which enabled more meaningful stakeholder involvement throughout the process.

III. IRP METHODOLOGY

10. Idaho Power's IRP is designed to ensure the Company has sufficient resources to reliably serve customer demand and flexible capacity needs over the 20-year planning period.

A. Improved Capacity Expansion Modeling Approach

11. In Idaho Power's 2019 IRP, Idaho Power used AURORA's LTCE platform with varied success. The LTCE was able to optimize for the entire western interconnection; however, it was incapable of optimizing specifically for Idaho Power's service area. For this reason, the Company went through a manual optimization process to determine an Idaho Power Preferred Portfolio. The manual optimization approach complicated the IRP process, and it raised questions on the part of the Commission and stakeholders. Therefore, in an effort to improve both the process and results for the 2021 IRP, as well as future IRPs, the Company worked with the software provider to add functionality allowing for co-optimization between the western interconnection and Idaho Power. As a result, the resource portfolios developed in the 2021 IRP were optimized entirely within the LTCE platform, without manual

adjustments, specific to Idaho Power's balancing area.

12. As part of the 2021 IRP process, the Company formulated future scenarios based on economic, market, and regulatory considerations and then allowed the AURORA model to select the optimal resources to address the conditions in each scenario. The model selected from a wide variety of supply and demand-side resource options to develop optimal portfolios that meet a 15.5 percent planning margin, and regulated reserve requirements associated with balancing load, wind generation, and solar generation. The model can also simulate the exit or retirement of existing generation units, if economic, and can displace otherwise available resources that are higher cost.

13. To ensure that the AURORA-produced portfolios provide customers with affordable energy, Idaho Power employed verification tests to validate the most economic portfolio under numerous variations of resources and timing. To verify that the AURORA-produced portfolios meet Idaho Power's reliability requirements, Idaho Power measured each portfolio's reliability through the calculation of a portfolio LOLE. For those portfolios that did not achieve the minimum reliability threshold, an additional reliability resource requirement cost was added to the portfolio cost.

14. For each of the AURORA-developed portfolios, Idaho Power conducted a financial analysis of costs and benefits. The financial costs and benefits include:

- Construction costs
- Fuel costs
- Operations and maintenance costs
- Transmission upgrades associated with interconnecting new resource

options

- Natural gas pipeline reservation or new natural gas pipeline infrastructure
- Projected wholesale market purchases and sales
- Anticipated environmental controls
- Market value of renewable energy certificates (“REC”) for REC-eligible resources

15. In addition, to enhance the risk-evaluation within the IRP, the Company worked with the IRPAC to develop four unique future scenarios. Idaho Power ultimately used these scenarios to test whether the decisions being made within the Action Plan window are robust across multiple futures. The four future scenarios are:

- Rapid Electrification
- Climate Change
- 100% Clean by 2035
- 100% Clean by 2045

B. Boardman to Hemingway

16. Idaho Power’s 2021 IRP continues to analyze the addition of the Boardman to Hemingway Transmission Line Project (“B2H”) to ensure that it remains a prudent resource. In the 2021 IRP, the Company evaluated B2H based on the Company owning 45% of the project, which represents a change from Idaho Power’s share evaluated in the 2019 IRP. This increase in the Company’s assumed ownership share is based upon ongoing negotiations among Idaho Power, PacifiCorp, and Bonneville Power Administration. A detailed update with regard to B2H will be provided as Appendix D, which will be filed with the Commission during the first quarter of 2022.

As part of the 2021 IRP, the Company provides an extensive evaluation of B2H compared to portfolios that do not include B2H, as well as several sensitivities of the project related to project cost contingency, Mid-Columbia market availability, and project timing. The Preferred Portfolio, which includes B2H, is significantly more cost-effective than the best alternative portfolio that did not include B2H, with the cost gap between the portfolios having an NPV difference of about \$270 million. This gap provides substantial insulation to the various project risks that were evaluated.

C. Climate Change

17. Idaho Power's 2021 IRP includes a new chapter addressing both the mitigation of and adaption to climate change. In March of 2019, the Company announced a goal to provide 100% clean energy by 2045. Complementing this clean energy goal, the 2021 IRP shows that the Company will continue to rely on hydropower, plan to end reliance on coal-fired operations by year-end 2028, as well as continue to focus on energy efficiency and demand response programs, as they are deemed economical and reliable. This chapter of the IRP also addresses measures required to adapt to a changing climate, through risk mitigation and management. The 2021 IRP also includes a variety of modeling scenarios to conceive of a climate change future and/or future with climate change policies or regulations.

IV. PREFERRED RESOURCE PORTFOLIO

18. A fundamental goal of the IRP process is to identify a selected, or preferred, resource portfolio. The Preferred Portfolio identifies resource options and timing to allow Idaho Power to continue to reliably serve customer demand, balancing cost and risk over the 2021 to 2040 planning period.

19. Using the AURORA LTCE model, Idaho Power produced optimized portfolios:

- With and without B2H;
- With and without portions of the Gateway West project;
- Allowing the model to choose Bridger Coal Plant exit date and natural gas conversion date assumptions based on Idaho Power's economics;
- Aligning with PacifiCorp's Bridger Coal Plant exit date and natural gas conversion date assumptions.¹

20. These portfolios were compared against each other using various natural gas price forecasts (planning and high) and carbon adder price forecasts (planning, zero, and high). The planning case futures represent Idaho Power's assessment of the most likely future.

21. To validate the resource selection and the robustness of the Preferred Portfolio, the Company performed the following additional scenario and sensitivity analyses:

- The resources selected in the Action Plan window of the Preferred Portfolio were compared to optimal resources selected for four future scenarios to determine the changes that would need to be made in each of those scenarios: Rapid Electrification, Climate Change, 100% Clean by 2035, and 100% Clean by 2045.

¹ *In the Matter of Rocky Mountain Power's Filing for Acknowledgement of Its 2021 Integrated Resource Plan*, Case No. PAC-E-21-19, Updated Vol. 1 at 299, 322 (Sep 15, 2021).

- Both low and high cogeneration and small power producers (“CSPP”) wind renewal assumptions were tested to determine the impact on the resources selected within the Action Plan window.
- A sensitivity was evaluated to test the cost-effectiveness of the Southwest Intertie Project (“SWIP”) North transmission project—a potential future partnership opportunity.
- Validation and verification studies were performed to test coal exit dates, Bridger unit natural gas conversions, and both supply-side and demand-side resource additions.
- Various tests and sensitivities were performed on B2H project capacity, cost, and timing assumptions.

22. Based on all of this analysis, Idaho Power selected its Preferred Portfolio, which is identified as the Base with B2H portfolio. This Preferred Portfolio incorporates positive changes toward clean, low-cost resources, with an increased focus on system adequacy.

V. 2021 IRP ACTION PLAN (2021-2027)

23. The Action Plan for the 2021 IRP reflects near-term actionable items of the Preferred Portfolio necessary to successfully position Idaho Power to provide reliable, economic, and environmentally sound service to our customers into the future. As noted above, the core resource actions include:

- The addition of 120 MW of solar photovoltaic capacity in 2022;
- Conversion of Bridger units 1 and 2 from coal to natural gas by summer 2024;

- Seek to acquire significant resources to meet capacity and energy needs in 2023 through 2027;
- Exit from Bridger unit 3 and Valmy unit 2 by 2025;
- B2H online in 2026.

24. Below is a summary of the 2021 IRP’s Action Plan items through 2027:

Year	Action
2022	Conduct ongoing B2H permitting activities. Negotiate and execute B2H partner construction agreements. Once the agreements are in place, file for a certificate of public convenience and necessity with state commissions.
2022	Discuss partnership opportunities related to SWIP-North with the project developer for more detailed evaluation in future IRPs.
2022–2023	Jackpot Solar is contracted to provide 120 MW starting December 2022. Work with the developer to determine, if necessary, mitigating measures if the project cannot meet the negotiated timeline.
2022–2024	Plan and coordinate with PacifiCorp and regulators for conversion to natural gas operation with a 2034 exit date for Bridger units 1 and 2. The conversion is targeted before the summer peak of 2024.
2022–2025	Issue a Request for Proposal (RFP) to procure resources to meet identified deficits in 2024 and 2025.
2022–2025	Plan and coordinate with PacifiCorp and regulators for the exit/closure of Bridger Unit 3 by year-end 2025 with Bridger Unit 4 following the Action Plan window in 2028.
2022–2025	Redesign existing DR programs then determine the amount of additional DR necessary to meet the identified need.
2022–2026	Conduct preliminary construction activities, acquire long-lead materials, and construct the B2H project.
2022–2027	Implement cost-effective energy efficiency measures each year as identified in the energy efficiency potential assessment.
2022–2027	Work with large-load customers to support their energy needs with solar resources.
2022–2027	Finalize candidate locations for distributed storage projects and implement where possible to defer T&D investments as identified in the Action Plan.
2025	Exit Valmy Unit 2 by December 31, 2025.
2025–2026	Subject to coordination with PacifiCorp, and B2H in-service prior to summer 2026, exit Bridger Unit 3 by December 31, 2025.

VI. FUFILLMENT OF 2019 IRP COMMITMENTS

25. During the Idaho Commission and stakeholder review of the Second Amended 2019 IRP, Idaho Power received recommendations and committed to provide

additional analysis and/or discussion of a number of issues in its 2021 IRP.² The fulfillment of key commitments is discussed below.

26. Idaho Power committed to explore cost and reliability impacts from reserve shortfalls as part of the 2021 IRP analysis.³ For the 2021 IRP, Idaho Power adopted a reliability threshold of 0.05 days per year to better account for extreme weather events that are becoming more frequent, factor in water availability uncertainty year to year, as well as to align with the reliability threshold used by the NWPCC. The portfolio reliability analysis results and the amount of additional generation (when needed) that was added to each of the selected portfolios are shown in Appendix C - Technical Report.

27. Idaho Power indicated it would apply additional value streams for storage technologies in the 2021 IRP.⁴ The 2021 IRP contains additional valuation of benefits like peak capacity, regulation reserves, spinning reserves, and locational benefits for storage technology.

28. The Company committed to provide a sensitivity analysis about wind replacement assumptions and their impacts on resource planning.⁵ The Company performed CSPP wind renewal sensitivity studies in the 2021 IRP. The base assumption is that 25 percent of CSPP wind developers will re-power. The Company also performed CSPP Wind Renewal Low and High scenarios. These scenarios test the

² *In the Matter of Idaho Power Company's 2019 Integrated Resource Plan*, Case No. IPC-E-19-19, Order No. 34959 (March 16, 2021).

³ *Id.* at 15.

⁴ Case No. IPC-E-19-19, Idaho Power's Reply Comments at 46.

⁵ Order No. 34959 at 16.

25 percent renewal assumption by replacing it with 0 percent and 100 percent renewal rates, respectively. These studies are discussed in Chapter 9 of the 2021 IRP.

29. The Company committed to evaluate market availability alongside transmission capacity to determine capacity deficiencies.⁶ For the 2021 IRP, internally set-aside transmission capacity needs to have a corresponding reservation on neighboring systems to be considered as firm capacity from markets. A discussion of transmission included in the load and resource balance⁷ is included in the Chapter 10 Capacity Planning Margin section. Regional resource adequacy (market depth) is discussed in the Chapter 10, Regional Resource Adequacy section. Appendix D – Transmission Supplement will also include a discussion on market depth.

30. The Company agreed to include contingency reserve requirements necessary as a result of transmission customers in the load and resource balance evaluation.⁸ A discussion of transmission customer contingency reserves in the planning reserve margin will be included in the forthcoming Appendix D – Transmission Supplement.

31. Idaho Power agreed its future IRPs would analyze class-level peak contribution and include sensitivity or probability bands of its system peak forecast.⁹ The inclusion, results and methodology used to develop class-level impacts to peak using conformed hourly forecast are discussed in Appendix A of the 2021 IRP. The Company included high and low sensitivity bands around the load forecast as guideposts for the

⁶ *Id.*

⁷ The load and resource balance table is included in Appendix C – Technical Appendix on pages 18-37.

⁸ Order No. 34959 at 16.

⁹ Case No. IPC-E-19-19, Idaho Power's Reply Comments at 57; Order No. 34959 at 15.

employed stochastic analysis. A table showing a discussion of the Company's Idaho commitments and compliance is attached as Attachment 2.

VII. COMMUNICATIONS AND SERVICE OF PLEADINGS

32. Idaho Power requests that any notices, inquiries, and communications regarding this request be provided to:

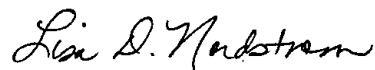
Lisa D. Nordstrom
Idaho Power Company
1221 West Idaho Street (83702)
P.O. Box 70
Boise, Idaho 83707
Telephone: (208) 388-5825
Facsimile: (208) 388-6936
lnordstrom@idahopower.com
dockets@idahopower.com

Timothy E. Tatum
Alison Williams
Idaho Power Company
1221 West Idaho Street (83702)
P.O. Box 70
Boise, Idaho 83707
Telephone: (208) 388-5515
Facsimile: (208) 388-6449
ttatum@idahopower.com
awilliams@idahopower.com

VIII. REQUEST FOR ACKNOWLEDGEMENT

33. Idaho Power respectfully requests that the Commission issue its order acknowledging the Company's 2021 IRP and finding that the 2021 IRP meets both the procedural and substantive requirements of Commission Order Nos. 22299 and 30317.

DATED at Boise, Idaho, this 30th day of December 2021.



LISA D. NORDSTROM
Attorney for Idaho Power Company

**BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION
CASE NO. IPC-E-21-43**

IDAHO POWER COMPANY

**ATTACHMENT 1
2021 INTEGRATED RESOURCE PLAN**

SEE ATTACHED DOCUMENTS

**BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION
CASE NO. IPC-E-21-43**

IDAHO POWER COMPANY

**ATTACHMENT 2
IRP COMMITMENTS AND COMPLIANCE**

Reference	Topic	IRP Requirement, Recommendation or Commitment	How the Item is Addressed in the 2021 IRP
Idaho			
Order No. 34959, p. 15	Modeling	Idaho Power commits to explore cost and reliability impacts from reserve shortfalls as part of the 2021 IRP analysis	For the 2021 IRP, Idaho Power is adopting a reliability threshold of 0.05 days per year to better account for extreme weather events that are becoming more frequent, as well as to align with the reliability threshold used by the Northwest Power & Conservation Council (NWPCC). The portfolio reliability analysis results are shown in the Technical Appendix and the amount of additional generation (when needed) that was added to each of the selected portfolios.
Idaho Power's Reply Comments, p. 46	DERs	The Company plans to apply additional value streams for storage technologies in the 2021 IRP.	The Company applied several benefits to storage technologies such as: peak capacity, regulation reserves, spinning reserves, and locational benefits.
Order No. 34959, p. 14	Load and Resource Balance	The Company agrees and commits to providing the L&RB table in future IRPs.	The load and resource balance table is provided in the Technical Appendix.
Order No. 34959, p. 16	QF/Load and Resource Balance	The Company's next IRP will include a sensitivity analysis about wind replacement assumptions and their impacts on resource planning.	The Company performed CSPP wind renewal sensitivity studies in the 2021 IRP as discussed in <i>Chapter 9. Portfolio</i> . The base assumption is that 25% of CSPP wind developers will re-power. The Company also performed the CSPP Wind Renewal Low and High scenarios. These scenarios test the 25% renewal assumption by replacing it with 0% and 100% renewal rates. These studies are discussed in Chapter 9. Portfolios.
Order No. 34959, p. 16	Load and Resource Balance	Idaho Power agrees with Staff that market availability alongside transmission capacity should be looked at when determining capacity deficiencies and will review these concepts when developing the L&RB to be included in the 2021 IRP.	For the 2021 IRP, internally set aside transmission capacity needs to have a corresponding reservation on neighboring systems to be considered as firm capacity purchases from markets. This in response to the Valmy #2 exit study where the availability of third-party transmission was analyzed. A discussion of transmission included in the L&RB is included in the Chapter 10. Capacity Planning Margin. Regional resource adequacy (market depth) is discussed separately in Chapter 10. Regional Resource Adequacy. Appendix D will also include a discussion on market depth.
Order No. 34959, p. 16	Load and Resource Balance	The Company agrees that contingency reserve requirements necessary as a result of transmission customers should play a role in the L&RB evaluation.	Contingency reserves are part of the planning reserve margin. A discussion of transmission customer contingency reserves will be included in the forthcoming Appendix D transmission supplement.
Staff's Comments, p. 15 and Order No. 34959, p. 16	Load and Resource Balance	In the future the Company will provide better definitions of resource categories and will change the labeling per Staffs recommendation. "Existing EE" to "Energy Efficiency"	Labels in the L&RB were updated to provide clearer definitions.
Order No. 34959, p. 15 and Idaho Power's Reply Comments, p. 57	Load Forecast	Idaho Power agreed that class peak dynamics are important to know and therefore, in response to Staff's recommendation, proposed that class-level AMI data be used to inform assignments of class contribution to system peak	The inclusion, results and methodology used to develop class level impacts to peak using conformed hourly forecast are discussed in Appendix A of 2021 IRP.
Order No. 34959, p. 15 and Idaho Power's Reply Comments, p. 57	Load Forecast	Idaho Power also agreed its future IRPs would analyze class-level peak contribution and include sensitivity or probability bands of its system peak forecast.	See above for peak contribution. In addition, the Company included high and low sensitivity bands around the load forecast are and included in Appendix A of 2021 IRP. These sensitivity bands around the load forecast are guideposts for the stochastic analysis used.
Order No. 34959, p. 18	Load Forecast	Idaho Power acknowledged that customer-generators accounted for one-half of one percent of retail customers when the 2019 IRP was developed but that recent adoption of solar is "relatively strong" in Idaho Power's service territory, and the higher values will be reflected in the 2021 load forecast.	The Company included a decrement to the load forecast for net metered customer generators. Details on methodology are included in Appendix A of 2021 IRP. Notice and discussion in regard was held with stakeholders and Staff's of both Idaho and Oregon during March 11, 2021 IRPAC.
Oregon			
Order No. 21-184, p. 8 and Appendix A, p. 4 and 35	Energy Efficiency	Adopts Staff's recommendation that Idaho Power report on the impact that the Idaho cost evaluation change may have, in conjunction with Idaho Power's obligation to evaluate efficiency potential consistent with Oregon cost assessment methodologies as part of the next IRP and for the Company to do a comprehensive review of Energy Trust of Oregon's efficiency measures from 2018 through 2020, and share the results.	Idaho Power performed a comprehensive review of ETO's piloted efficiency measures from 2018 to 2020. The results were presented to the Company's EEAG in August 2020.

Order No. 21-184, p. 9	Valmy Unit 2	In regards to Valmy Unit 2, we direct Idaho Power to provide the results of the analysis in its 2021 IRP to either confirm the proposed 2022 exit or provide clarification on next steps in the event the early exit is not supported by analysis.	Idaho Power conducted a system reliability analysis to evaluate the timing of exit from Valmy Unit 2. The results of the analysis were filed in IPUC docket IPC-E-21-12 and in OPUC docket LC 74. Additionally, in the 2021 IRP early exit of Unit 2 was evaluated as part of the AURORA capacity expansion modeling, but the AURORA model did not select Unit 2 for exit earlier than 2025, see Chapter 8. Planning Period Forecasts.
Order No. 21-184, p. 10 and Appendix A, p. 12	Jim Bridger Units 1 and 2	Early exit from Jim Bridger Units 1 and 2 We will review the additional analysis and updates on negotiation with PacifiCorp in Idaho Power's 2021 IRP. More information regarding Jim Bridger 1 and 2 exits should be provided in the 2021 IRP, including a reliability impact analysis similar to the one proposed for Valmy	For the 2021 IRP, Idaho Power used AURORA's LTCE model to determine the best Bridger operating option specific to Idaho Power's system subject to the following constraints: <ul style="list-style-type: none"> •Unit 1—Allowed to exit year-end 2023 or convert to natural gas. If converted to natural gas, the unit will operate through 2034. •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.
Order No. 21-184, p. 11 and Appendix A, p. 23	Jim Bridger Units 1 and 2	Update the Commission as soon as it knows the outcome of PacifiCorp's negotiation with the Wyoming DEQ regarding continued use of Jim Bridger Units 1 and 2 without SCR investments.	The negotiation between the Environmental Protection Agency ("EPA"), state of Wyoming, and PacifiCorp to resolve Jim Bridger units 1 and 2 compliance with the Federal Clean Air Act Regional Haze ("RH") rules is ongoing. On November 15, Wyoming Governor Gordon issued a notice of intent to sue alleging that EPA failed to perform a nondiscretionary duty under the Clean Air Act when it failed to approve or disapprove Wyoming's RH State Implementation Plan revision for Bridger within the time prescribed by law. On November 16, the Wyoming Public Service Commission initiated an investigation to determine the effects on rates, generation adequacy, system reliability, and other aspects of operations by the potential discontinuation of operations at Jim Bridger Unit 2 due to the EPA's inaction on the Wyoming Regional Haze State Implementation Plan.
Order No. 21-184, p. 16	B2H	We decline to determine that 20 percent is the appropriate cost contingency for B2H, but expect Idaho Power to explain and support the cost contingency assigned to this project in the 2021 IRP.	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. Chapter 10. Modeling Analysis -Table 10.9 details the cost of the B2H project with 0%, 10%, 20%, and 30% cost contingencies. 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.
Order No. 21-184, p. 16	B2H	We expect Idaho Power to analyze closely whether expanding its ownership share from 21 percent, and relying on OATT revenues to offset its additional costs is truly comparable, in terms of risks and financial impacts, to joint ownership. Where differences may exist, we expect that Idaho Power will explain how those risks are mitigated or considered in its analyses.	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.

Order No. 21-184, p. 17	B2H	Market resource conditions must continue to be reviewed and tested.	Regional Resource Adequacy is discussed in Chapter 10. Modeling Analysis. 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.
Order No. 21-184, p. 17	B2H	Idaho Power should update its estimated B2H project costs prior to submitting its 2021 IRP	As part of the 2021 IRP the Company refreshed its overall cost estimate which is included in the B2H costs modeled in the IRP analysis.
Order No. 21-184, p. 18	Demand Response	Adopt Staff's recommendation - DR needs comprehensive review. DR needs to be a priority for Idaho Power, and it needs to carefully review how DR could fill out peak needs, with potentially lower costs than alternative resources.	As part of the 2021 IRP the Company performed a rigorous examination of the potential for expanded demand response, Idaho Power utilized a Northwest Power and Conservation Council (NWPPCC) assessment of DR potential for the Northwest region to determine the DR potential that may be available in Idaho Power's service area. Based on this assessment, Idaho Power estimated approximately 580 MW of DR potential in its service area and concluded that any needed capacity from demand response would be shifted to later hours of the day than what the current DR programs were designed for. Based on the results of the analysis, Idaho Power submitted filings with both the IPUC and OPUC to modify the program parameters based on these proposed changes to the programs. This is further discussed in Chapter 6. Demand-Side Resources.
Order No. 21-184, p. 18 and Appendix A, p. 4 and 41	Demand Response	The 2021 IRP should model expanded DR with a LCOC based on real programmatic approximations for acquiring the said amount of incremental additional DR; LCOC estimates representative of incremental increases (e.g., 10 percent increase, 20 percent increase, 30 percent increase, 50 percent increase); or some other mutually agreed upon approach to more rationally model this key variable.	Based on the results of its comprehensive review, DR was evaluated in the 2021 IRP modeling process by using the 584 MW of DR potential including an estimate of 300 MW of capacity from the modified DR programs. Therefore, a maximum of approximately 280 additional MW of DR (584 MW minus 300 MW, rounded down) was available for selection in the AURORA model when analyzing the future load and resource balance.
Order No. 21-184, p. 18	Load Forecast	We determine that Staff should work with Idaho Power to review the current framework and alternatives, and that Idaho Power should work with Staff and stakeholders to update its methodology. After working with stakeholders, Idaho Power should be prepared to justify its final chosen approach in its next IRP.	The Company held a workshop and received feedback on Load Forecasting models and cross validation tests it proposes to use with stakeholders and the Staff's of Idaho and Oregon Feb 23, 2021. Further the Company up held conference calls and feedback sessions with Idaho Staff April 1, 2021 and April 29, 2021; and Oregon Staff on August 26, 2021 in regards.
Order No. 21-184 - Appendix A, p. 4 and p. 38 and Idaho Power's Final Comments, p. 70	Load Forecast	Include load forecasting improvements with respect to indicator variables and out-of sample testing	Efforts with respect are noted above. In addition, Appendix A of 2021 IRP includes additional discussion.
Order No. 21-184 - Appendix A, p. 4 and 38 and Idaho Power's Final Comments, p. 70	Load Forecast	Present the impacts of the economic recession caused by COVID-19 on long-term load growth	Impacts of COVID-19 was presented to stakeholders and Staff's of both Idaho and Oregon on the March 11, 2021 IRPAC. Narrative discussion is also included in Appendix A of 2021 IRP.
Order No. 21-184 - Appendix A, p. 4 and 38	Load Forecast/Modeling	Address whether the upper and lower bounds on the Company's customer load stochastic risk analysis are wide enough.	The Company did evaluate the stochastic risk bands in preparation of the 2021 IRP and concluded they were reasonable and did not need revision. To assess the reasonableness of the stochastic error bounds as they relate to customer load, the upper and lower bounds were compared to the load forecast 90/10 error bounds. For both the upper and lower bound, the stochastic values were found to fall slightly outside of the 90/10 bounds which is to be expected. The stochastic process produces 20 scenarios which could be expected to test a larger bound of 95/5.
Order No. 21-184, p. 19 and Appendix A, p. 67	QF	In addition to adopting Staff's recommendation to come up with reasonable assumptions through a sensitivity analysis, we direct that, in the next IRP, Idaho Power explain how the sensitivities resulting from the study would affect the IRP's preferred portfolio and action plan if incorporated.	The Company performed CSPP wind renewal sensitivity studies in the 2021 IRP and its discussed in <i>Chapter 9. Portfolio</i> . The base assumption is that 25% of CSPP wind developers will re-power. The Company also performed the CSPP Wind Renewal Low and High scenarios. These scenarios test the 25% renewal assumption by replacing it with 0% and 100% renewal rates. These studies are discussed in Chapter 9. Portfolios.
Order No. 21-184, p. 17	DERs	Idaho Power should model renewables plus storage as part of IRP planning.	The 2021 IRP includes renewables plus storage as a supply-side resource option. The various supply-side resources considered in the 2021 IRP are discussed in <i>Chapter 5. Future Supply-Side Generation and Storage Resources</i> . The resource attributes for the solar plus storage resource are found in Table 8.4.

Order No. 21-184 - Appendix A, p. 49	DERs	Perform the Company's approved capacity factor approximation method using all the new data that has become available.	With sufficient historical generation data available, the Company was able to calculate the Effective Load Carrying Capability of solar in compliance with Order No. 16-362.
Order No. 21-184 - Appendix A, p. 49	DERs	Eliminate or raise the 80 MW cap on battery storage. This includes standalone battery storage as well as storage paired with solar.	The 80 MW cap on battery storage was removed for the 2021 IRP. As evidence, the Company's Preferred Portfolio includes almost 1,700 MW of battery storage resources.
Order No. 21-184 - Appendix A, p. 49	DERs	Model the PTC for wind to the extent it is technically achievable by the Company.	Where feasible, the Company included PTC for future wind resources. Costs of wind resources are provided in <i>Technical Appendix. Supply-Side Resource Data</i> .
Order No. 21-184 - Appendix A, p. 49	DERs	Revise its Wyoming cost inputs to include more reasonable cost assumptions.	The Company's cost assumptions are provided in Technical Appendix. Supply-Side Resource Data. Wyoming wind was given a 45% average capacity factor.
Order No. 21-184, p. 7	DERs	Incorporate solar hosting capacity into the customer-owned generation forecasts for the 2021 IRP.	Solar hosting capacity was assessed as a driver of the customer-owned generation forecast and was determined to not materially impact the customer-owned generation forecast.
Order No. 21-184 - Appendix A, p. 21	DERs	File the results of each of the VER studies with the Commission once they are complete and notify the LC 74 service list.	Idaho Power worked in conjunction with a Technical Review Committee (TRC) for the development of the 2020 VER Study and retained E3 to conduct the study. The study was filed with the OPUC in docket UM 1730(6).
Order No. 21-184 - Appendix A, p. 4 and 32	Risk	Report qualitative benefits and risks by portfolio in the 2021 IRP and in all IRPs going forward in which a qualitative analysis plays a significant role.	Idaho Power included qualitative risk analysis and its found in Chapter 10. Modeling Analysis - Qualitative Risk Analysis. Table 10.6 shows a Qualitative risk comparison between the portfolios.
Order No. 21-184 - Appendix A, p. 4 and 32	Risk	Implement a more robust measure of risk for evaluating portfolios. The Company should incorporate risks or situations that are not used to create the initial portfolios and should strive to incorporate qualitative risks into the portfolio development process.	In addition to testing the portfolios against high gas and high carbon risk, the Company in collaboration with the IRPAC developed four additional future scenarios to be run for the purpose of risk evaluation: Rapid Electrification, climate change, 100% Clean by 2035 and 100% Clean by 2045. These are discussed in Chapter 9. Portfolios.
Order No. 21-184 - Appendix A, p. 4 and 32	Modeling	Devote resources to improve optimization techniques and address this issue in a 2021 IRP workshop. In particular, the Company should implement techniques in its next IRP to optimize resource buildouts based on the Company's system only.	Idaho Power worked with Energy Exemplar, the AURORA software developer to ensure that capacity expansion runs for the 2021 IRP were optimized specifically for Idaho Power's system. The Company also performed model validation and verification tests to ensure the model is operating as expected and to verify that the selected Preferred Portfolio represents a robust optimization of cost and risk. The Company held an AURORA workshop on April 22, 2021 to help stakeholders better understand the AURORA modeling.
Order No. 21-184 - Appendix A, p. 29	Modeling	In the 2021 IRP improve portfolio naming conventions	For the 2021 IRP, the Company developed a branching scenario analysis strategy to ensure that it had reasonably identified an optimal solution specific to its customers. Figure 9.1 details the initial branching evaluation where the company compared AURORA-optimized portfolios for a base scenario (i.e., planning conditions for all key inputs such as load growth, natural gas price, carbon price, etc.) for six potential future portfolios. Figure 9.2 details the additional sensitivities and scenarios.
Idaho Power's Reply Comments, p. 47-48	Modeling	Transmission capacity assumptions (for market purchases and what counts toward planning margin) will be reevaluated in the 2021 IRP.	The determination of the Planning Margin is discussed in <i>Chapter 9. Portfolios</i> and in the LOLE methodology is found in the Loss of Load Expectation section of Appendix C—Technical Report. The Planning margin resource type breakdown is shown in Table 9.1
Order No. 21-184 - Appendix A, p.4-5 and p. 43	Other	Provide an update on the Oregon Residential Time-of-Day Pilot Plan, including number of participants, total cost of the pilot since its 2019 launch, and peak capacity reduction by season, as well as propose an alternative venue for reporting pilot results, given that the Smart Grid Report will be suspended with the Commission approval of DSP guidelines.	In Chapter 6. Demand Size Resources, the Company provides an update on its Oregon TOU offering.
Order No. 21-184 - Appendix A, p. 5 and p. 51	Other	The Company should produce the Climate Change Risk Report referenced in the 2017 IRP acknowledgment order and include it in the next IRP.	The climate change risk report is included as <i>Chapter 3. Climate Change</i> . This new chapter of the IRP focuses on identifying climate-related risks, discussing the company's approach to monitoring and mitigating identified risks, and examining climate-related risk considerations in the IRP.