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January 8, 2024

via E-mail

Public Utility Commission of Oregon
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Re: In the Matter of Avista Natural Gas
Integrated Resource Plan
OPUC Docket No. LC 81

Enclosed for filing is the second errata to Staff's Final Comments correcting a misnumbering of Staff's Expectations and Requests, which not corrected in Staff's first errata. Staff regrets the necessity of filling multiple errata, but believes clear numbering provides essential clarity for Avista and stakeholders.

Sincerely,

/s/ Natascha Smith

Natascha Smith
Assistant Attorney General
Business Activities Section

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

Docket No. LC 81

In the Matter of

Avista, 2023 Natural Gas

Integrated Resource Plan.

Staff Final Comments
Second Errata

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1: Executive Summary

Nick Sayen, Senior Utility Analyst

The 2023 Natural Gas Integrated Resource Plan (IRP) is Avista's (Company) first since the Oregon Department of Environmental Quality's Climate Protection Program (CPP) went into effect. Staff recognizes the new challenge that decarbonization represents for Oregon natural gas companies. In addition, at the Federal level, the Infrastructure Investment and Jobs Act, and the Inflation Reduction Act, both brought significant change to the utility and energy industries. In the face of these challenges, Avista's IRP represents proactive and detailed work to develop a plan that meets the CPP and is a commendable start to the evolution that will be necessary in natural gas resource planning.

Staff identified and discussed in Opening Comments issues in the IRP's long-term plan. With the benefit of other parties' Opening Comments, Avista's Reply Comments, and continued engagement with the Company, Staff has revisited each of these issues, and Staff's critique has evolved. Regarding the IRP's Action Plan, Staff finds that the Action Items, while connected with the long-term plan to some extent, can be assessed without relying on the Company's long-term PLEXOS portfolio modeling. For this reason, Staff has chosen to consider the Action Plan separately from the long-term plan. Staff now summarizes recommendations for the long-term plan and for the Action Plan, and two additional prominent issues.

Long-Term Planning

The four critical issues Staff identified in the Company's long-term plan were:

- 1) A lack of alternative portfolios, as required by Guidelines 4h., 4i., and 4j.
- 2) A lack of adequately employed stochastic analysis, as required by Guideline 4b.
- 3) An error in climate modeling, and
- 4) Unrealistic assumptions about costly decarbonized fuels.

Staff maintains its critique that the IRP lacks adequate alternative resource portfolios and recommends future IRPs include alternative resource portfolios that represent different utility decisions. Staff is now comfortable with how Avista employed stochastic analysis and believes the Company adequately met IRP Guideline 4b. However, the value of stochastic analysis, as a stress test on the Company's Preferred Resource Strategy (PRS), would be greater if it were also conducted on alternative resource portfolios and scenarios. Doing so would help assess decisions the Company may make, and the risks associated with those decisions, resulting in an even more useful planning exercise.

Staff continues to find the Company's projection of future increased heating degree days for parts of its service territory to be incongruous with well documented climate change trends, and this subsequently impacts the IRP portfolio analysis and distorts results. Staff maintains that the long-term plan should not be acknowledged without an appropriate correction for this issue and any analysis reliant upon the corrected weather input.

Although decarbonized fuels play a significant near term and rapidly increasing role in the PRS, Staff maintains that there is limited understanding and modeling of commercialization risks. Further, Avista's IRP does not articulate a compelling strategy to secure the resources at necessary levels based on the Oregon PRS.

While Staff is now comfortable with how Avista employed stochastic analysis, Staff's concerns about the other three critical issues remain. The aggregate impact of the remaining issues is large enough that Staff can not recommend acknowledging the long-term plan.

Action Plan

Avista's 2023 IRP includes eight Action Items applicable to its Oregon service territory. In Opening Comments Staff found the Action Items reasonable but noted that the timeframe varies across Action Items. Staff requested Avista present a revised Action Plan with a consistent timeframe in Reply Comments. Avista did so, and modified Action Item 8 to include Oregon.¹ The nine Action Items applicable to Oregon from Avista's revised Action Plan are presented below in Table 1.

While Staff takes issue with the long-term plan, Staff finds the Action Items are not materially impacted by the aspects of the long-term plan. No Stakeholders raised objections with the Action Plan. Upon reviewing a revised Action Plan Staff recommends the Commission acknowledge Avista's revised Action Items 1, 2, 3, 4, 9, 10, and 11.

Staff recommends the Commission only partially acknowledge Action Item 5, specifically, not acknowledge the acquisition of 8.64 million therms of RNG in 2023. Staff makes this recommendation because these procurement efforts are underway, and historically Staff does not recommend acknowledgement of procurement that may be too substantially complete.

As noted above, Avista included Oregon in modifying Action Item 8. Staff appreciates Avista's intent to explore better valuation of non-energy impacts, and interest in including Oregon. However, Staff cautions that such an endeavor should include extensive engagement with, and involvement of, Oregon communities. Should Avista move forward with this effort, Staff encourages the Company to pursue early participation of Oregon communities in activities such as goal setting, scope development, and community outreach. Staff recommends acknowledgement of this Action Item, conditional on Avista successfully involving Oregon communities in these such activities.

¹ See Docket No. LC 81, Avista Reply Comments, Attachment A, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

Table 1: Revised Action Plan and Staff Recommendations

Oregon Action Item Number and Description		Staff Recommends	Further Discussion
1	Purchase Community Climate Investment credits (CCIs) for compliance with the CPP for years 2022 through 2026.	Acknowledge	Section 4
2	ETO identified 546,000 therms in the 2023 IRP verses 427,000 therms of planned savings in the 2023 ETO Budget and Action Plan. Avista will work with the ETO to meet the IRP gross savings target of 568,000 therms in 2024, 590,000 therms in 2025 and 614,000 therms in 2026.	Acknowledge	Section 8
3	A new program offered by ETO for interruptible customers in 2023 to save 15,000 therms. (This action item is included in the summary values in Action item 4.)	Acknowledge	Section 8
4	Engage Oregon stakeholders to explore additional new offerings for interruptible, transport, and low-income customers to work towards identified savings of 375,000 therms in 2024, 381,000 therms in 2025 and 371,000 therms in 2026.	Acknowledge	Section 8
5	In Oregon, acquire 8.64 million therms of RNG in 2023, 21.80 million therms of RNG in 2024, 23.52 million therms in 2025, and 26.03 million therms in 2026.	Partially acknowledge	Section 2
8	Explore methods for using Non-Energy Impact (NEI) values in future IRP analysis to account for social costs in Oregon and Washington to ensure equitable outcomes.	Acknowledge conditionally	Executive Summary
9	Explore using end use modeling techniques for forecasting customer demand.	Acknowledge	Section 3
10	Consider contracting with an outside entity to help value supply side resource options such as synthetic methane, renewable natural gas, carbon capture, and green hydrogen.	Acknowledge	Section 2
11	Regarding high pressure distribution or city gate station capital work, Avista does not expect any supply side or distribution resource additions to be needed in our Oregon territory for the next four years, based on current projections.	Acknowledge	Section 7

Additional Prominent Issues

Building Electrification

Natural gas utilities are expected to proactively consider the role of building electrification as they select resources to meet demand and reduce emissions. Avista's inclusion of building electrification as a demand side option in its modeling is a welcome improvement into the discussion on gas utility IRP modeling. The proxy cost Avista uses, however, likely does not represent either the compliance value of electrification or the price that may influence customer behavior. As part of the Company's electrification modeling, Avista should use an incentive strategy to price electrification. Commission direction and cross-utility collaboration are needed to address significant barriers to electrification that limit least cost/least risk planning.

Distribution System Planning

An absence of planned high-pressure or distribution capital projects in the coming years provides an opportunity to implement cohesive distribution system planning practices needed to better meet the demands of CPP compliance. Staff outlines such practices informed by guidance from Attachment A to Staff's Report in Order No. 23-023 (Docket No. LC 76); direction provided by Order No. 23-281 (Docket No. LC 79); practices agreed to in Stipulation Item 21 in Order No. 23-384 (Docket No. UG 461); and several extensions of Stipulation Item 21 as suggested in this IRP by Climate Advocates.

Staff appreciates the thoughtful engagement and innovative leadership of the Company, and the insightful comments by all participants in the IRP process to date. Staff looks forward to further discussion about next steps that can advance decarbonization of the gas system with strategies that best protect Oregon energy customers.

2: New Supply-Side Resources

Charles Lockwood, Utility and Energy Analyst

Decarbonized fuels play a significant near term and rapidly increasing role in the PRS, despite a need to procure very high volumes of RNG in the near term and the important long term compliance role played by synthetic methane, for which there is limited understanding and modeling of commercialization risks. Avista's IRP does not articulate a compelling strategy to secure the resources at necessary levels based on the Oregon PRS. The Company's acquisition of 8.64 million therms of RNG in 2023, a component of Action Item 5, is considered substantially complete and as such should not be acknowledged.

Avista's Oregon PRS relies on two new supply-side resources to meet its future load projections, RNG and synthetic methane, procured from green hydrogen, the latter serving as Avista's primary compliance resource in 2040. Staff commends the company for advancing the evaluation of these new supply-side resources and appreciates the insights from stakeholders in Opening Comments. Discussion focused on whether the Company is providing sufficient information through third-party studies; whether its assumptions regarding cost, availability, and appropriate end uses are reasonable; and whether its strategy for procuring these new resources appears sound.

2.1 – Synthetic Methane

Synthetic methane plays a large role in Avista's Oregon PRS, being selected as early as 2030 and growing to nearly 37 percent of Avista's total supply by 2040. Staff and stakeholders remain concerned by the Company's optimistic assumptions about synthetic methane and lack of sufficient supporting documentation to show a reliable means of procurement. As the primary compliance resource for the Company, Avista needs to better reflect risk in its modeling, demonstrate a path to cost-effective procurement, and consider contingency plans to mitigate the impact of negative outcomes on customers.

Staff's concerns were echoed by AWEC, the Climate Advocates, and CUB, who reiterated the Commission's directive in Docket No. LC 79 for Avista to provide clear documentation and pay greater attention to stress testing portfolios that rely heavily on decarbonized fuels.² Climate Advocates highlighted risks including unknown and likely high costs, the prospect of vital technologies not overcoming key barriers to commercial availability, and methane emission.

² See Docket No. LC 81, AWEC Opening Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>; Docket No. LC 81, Climate Advocates Opening Comments, pages 10-12, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>; Docket No. LC 81, CUB Opening Comments, page 3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

Staff's concerns regarding synthetic methane are separated into four main categories: Adequate Studies, Reflecting Reasonable Commercialization Challenges, Procurement Challenges, and Stress Testing & Modeling Risk.

Adequate Studies

In Staff's Opening Comments, Staff expressed concern about Avista's plan for inclusion of synthetic methane given the minimal studies to date supporting the cost and availability assumptions used.³ Specifically, Staff expressed concerns about cost assumptions following the expiration of Inflation Reduction Act (IRA) tax credits for carbon capture in 2023, the potential Oregon Department of Environmental Quality (DEQ) rule changes on natural gas replacements in the CPP,⁴ and uncertainties regarding the procurement process.

CUB describes the information available for future costs and availability as "sparse" and argues that since there is no "established method or robust source" projecting synthetic methane costs, that the Commission should reject Avista's modeling of synthetic methane as lacking "supporting evidence to validate [its] methodology."⁵ Avista articulates its own concerns about the lack of studies on synthetic methane in its IRP and states the Company will require further studies and lifecycle analysis if synthetic methane is selected as a resource.

Staff appreciates the Company's use of three publicly available studies but notes these studies are based on assumptions inapplicable to forecasting conservative cost and availability, do not address recent developments highlighted by the Climate Advocates, and they do not address Avista's lack of expertise and experience in the green hydrogen procurement process. Therefore, despite being independent third-party studies, they do not adequately address Staff's concerns.

Reflecting Reasonable Commercialization Challenges

In Opening Comments, CUB shared similar concerns as Staff, stating there remains several key risks surrounding the development of synthetic methane, such as major technological barriers, leading to the resource not being currently available at a commercial scale.⁶ CUB notes that current synthetic methane production relies on energy intensive and relatively low efficiency electrolysis to produce green hydrogen, which then either needs to be stored, transported, or promptly processed with captured carbon dioxide and additional renewable energy. CUB argues Avista's synthetic methane cost projections "do not appear to factor discounts or other means of accounting for the high risk that synthetic methane will fail to materialize. CUB concludes that the Company's plan to rely on synthetic methane six years from now is flawed

³ See Docket No. LC 81, Staff Opening Comments, page 30, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

⁴ See Oregon DEQ, Rulemaking Overview, 2023 Climate Rulemaking, <https://www.oregon.gov/deq/rulemaking/Documents/C2023ruleBrief.pdf>.

⁵ See Docket No. LC 81, CUB Opening Comments, page 7, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

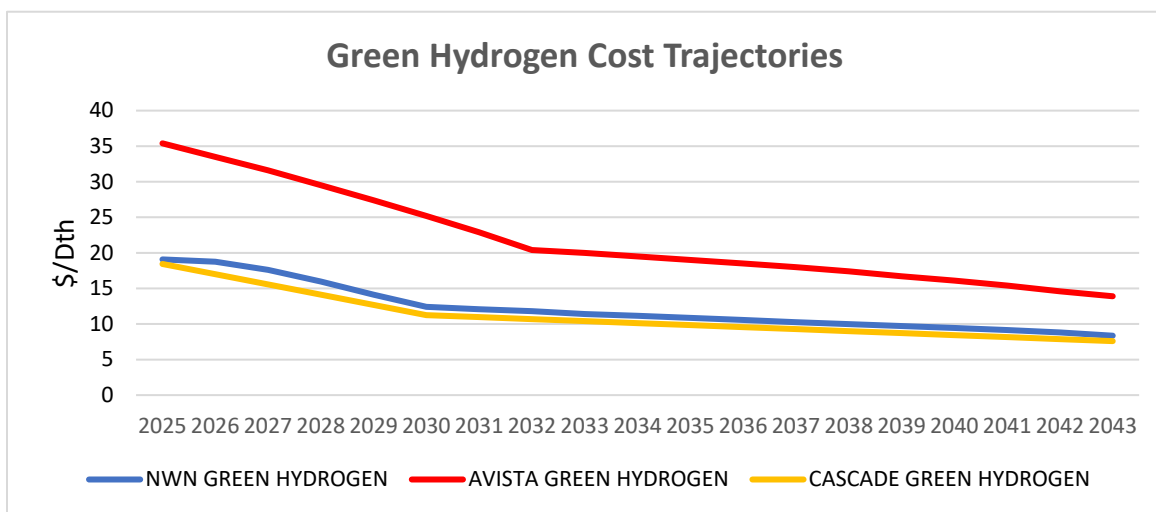
⁶ See Docket No. LC 81, CUB Opening Comments, page 6, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

because the estimated costs and modeling supporting its selection relies on unsupported data and has no “established method or robust source” projecting the synthetic methane costs.

Staff Analysis and Conclusions

Staff agrees with CUB’s assessment of the risks associated with synthetic methane, however, differs slightly regarding CUB’s assertion that Avista needs to rely on an “established method.” Staff supports Avista’s efforts to project new supply side resource costs and availability and encourages Avista to explore and critique objective third-party sources that could be used to project costs and availability as part of the TAC process for developing future IRPs. While Avista’s estimates for green hydrogen costs as a feedstock to synthetic methane are conservative when compared against NW Natural and Cascade, as shown in Figure 1,⁷ Staff remains concerned about the Company’s ability to produce or procure the green hydrogen required to produce synthetic methane at the scale projected by Avista in its IRP.

Figure 1: Comparison of Green Hydrogen Cost Trajectories



Procurement Challenges

Stakeholders noted that Avista’s ability to procure synthetic methane at the volumes and prices identified in the PRS relies on optimistic assumptions about the success of federal programs to support green hydrogen development and does not take into consideration competition. Climate Advocates argue that Avista’s green hydrogen assumptions for use in synthetic

⁷ See Docket No. LC 81, Staff Opening Comments, page 27, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

methane production do not reflect likely competition from other industries and highly intensive processes needing to procure green hydrogen.⁸

CUB and AWEC communicated their concerns around the Company's ability to procure green hydrogen, especially if the technology does not develop as Avista has concluded.⁹ Climate Advocates pointed to recent Wood Mackenzie projects' analysis showing procurement below US DOE goals and BloombergNEF projections as illustrating hydrogen is unlikely to see a significant increase due to IRA incentives.

Avista agreed that procurement is a challenge, stating they do not currently procure green hydrogen at significant volumes and that it has explored options to access the green hydrogen required for the synthetic methane envisioned in just seven years. Avista emphasized the utilization of several federal programs such as the Hydrogen Shot and IRA to increase the overall supply of green hydrogen, and in turn decreasing the price. The Company concluded that the usage of the three third-party studies was reasonable to determine future green hydrogen pricing.¹⁰

Avista's long term plan for CPP compliance relies heavily on the ability of the Company to procure large volumes of green hydrogen, and ultimately synthetic methane in relatively short order. Avista's lack of experience and the recent projections indicating federal incentives are unlikely to create significant increases in procurement both contribute to Staff's recommendation of non-acknowledgement of the long-term plan.

Stress Testing & Modeling Risk

In Opening Comments, Stakeholders stated a need for Avista to model uncertainties regarding new supply-side resources. Staff addresses these concerns in more detail in Section 4.

In replying to Staff's request to further describe the Company's ability to procure synthetic methane at the levels required for the Oregon PRS, the Company agreed about the risk related in reliance on natural gas alternative technologies to meet future climate goals of the state and Avista's PRS. Avista explained the Company's modeling accounts for pricing risks of each alternative supply-side resource's required technological advancements.

Avista's analysis consisted of generating "random monthly prices following a lognormal distribution type around resource-specific expected annual price curves, constrained by minimum and maximum values, and varied by an error standard deviation curve and

⁸ See Docket No. LC 81, Avista 2023 Integrated Resource Plan, page 4-23, edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf.

⁹ See Docket No. LC 81, CUB Opening Comments, pages 6-7, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>; Docket No. LC 81, AWEC Opening Comments, page 9, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>

¹⁰ See Docket No. LC 81, Avista Reply Comments, page 10, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

autocorrelation factor.”¹¹ These price forecasts were then used in the Company’s Monte Carlo analysis. The Company did not use availability ranges in its analysis.

Avista constrained the resource based on demand, which the Company stated is a prevalently used method amongst consultants, in fundamental forecasts of natural gas and other commodities. Avista stated the Company is less concerned with the volume of synthetic methane production but rather at what price the Company can develop any and all necessary volume assuming air capture and technology can scale.¹²

Notably, when asked to describe the significant development and deployment risks the Company is considering regarding the role synthetic methane in the Oregon PRS, the Company stated that because Avista does not have any experience with the processes to create synthetic methane development and deployment risks are high at this point,¹³ but would be evaluated in future IRPs with better-known production risks and updated costs.

Staff Analysis and Conclusions

Staff’s concerns regarding pricing are addressed through Avista’s analysis, however, Staff highlights the uncertainties that the modeling does not appear to address including deployment at scale and commercialization of synthetic methane.

Staff does not share Avista’s view of timing for purposes of acknowledging the Company’s long-term plan to incorporate the use of synthetic methane. 2030 is roughly six years away and the Company’s Action Plan does not reflect a reasonable deployment trajectory for the synthetic methane upon which the PRS relies for CPP compliance. Avista will need to take several steps to ensure reliable and efficient procurement of synthetic methane. First, Avista must secure green hydrogen as a feedstock, through PPAs or ownership, to guarantee production of the power. Avista will also need to secure rights to water, and necessary equipment used in synthetic methane production. Then Avista must develop infrastructure to capture carbon as well as secure the renewable energy needed for the production process. The Company faces these hurdles, along with the prominent risk of commercialization delays, all with no experience with the processes for creating synthetic methane.¹⁴ Staff believes modeling synthetic methane without higher near-term pricing and variability or any risk analysis that considers future availability, will cause the resource to overcrowd the current Oregon PRS.

Avista’s Reply Comments state that the company constrained resource based on demand, which the Company stated is a commonly used method amongst consultant, however Staff believes this description does not properly illustrate modeling and remains vague. Without fully understanding Avista’s modeling of the risks and unknowns surrounding synthetic methane,

¹¹ See Docket No. LC 81, Avista Reply Comments, pages 10-11, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

¹² See Docket No. LC 81, Avista Reply Comments, page 11, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

¹³ See Avista Response to Staff DR 90.

¹⁴ See Avista Response to Staff DR 90.

Staff remains concerned about its inclusion in Avista’s PRS. With these issues in mind, Staff recommends the Commission does not acknowledge Avista’s long-term plans, and expects the Company to provide a more detailed analysis of synthetic methane variables at an upcoming TAC meeting, as noted in Expectation 1.

2.2 – Renewable Natural Gas (RNG) Availability and Cost

Procuring 8.64 million therms of RNG in 2023 and 21.80 million therms of RNG in 2024 at over \$40 million appears to be an aggressive, yet economical and reasonable approach to meeting near term CPP compliance obligations when combined with roughly \$2.1 million of projected CCI purchases. However, Staff does not recommend acknowledgment of the 2023 RNG purchases; this is discussed further below. Avista’s long term cost assumptions for RNG appear low, likely resulting in a higher than reasonable reliance on RNG in the long-term and undermining the value of the long-term plan and the Oregon PRS.

Near-term RNG Procurement

Avista’s RNG procurement strategy must be aggressive to reach its targets of acquiring 8.64 million therms in 2023 and 21.80 million therms in 2024, and a review of recent contracts shows the Company currently falling short of meeting those targets. Further, the Company did not select any additional RNG from the RFP response offerings but instead used that information in validating its own contracts as least cost resources.

AWEC, CUB, and the Climate Advocates shared similar concerns in their Opening Comments. AWEC stated that there is not sufficient time, or feed stocks available for Avista to compete for and acquire the volume of RNG the Company forecasts for the first compliance period.¹⁵ Regardless, AWEC requested more details surrounding Avista’s plan to comply with the CPP using currently available technologies in case technology does not evolve as quickly as Avista assumes in the IRP.¹⁶

Avista’s Reply Comments indicate that the Company will acquire the RNG through an RFP process in the near term, with the Company focusing on long-term purchase contracts with volumetric flexibility at least cost.¹⁷

Staff Analysis and Conclusions

Given a near term need for CPP compliance options, Staff is supportive of the Company’s relatively aggressive near term RNG procurement efforts insofar RNG and CCIs are pursued in the most economical way possible to minimize compliance costs and risks. However, Staff notes that these procurement efforts are underway and appear to be substantially complete. **[BEGIN**

¹⁵ See Docket No. LC 81, AWEC Opening Comments, page 9, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>.

¹⁶ See Docket No. LC 81, AWEC Opening Comments, page 10, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>.

¹⁷ See Docket No. LC 81, Avista Reply Comments, pages 13-14, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

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[END CONFIDENTIAL]¹⁸ Historically, Staff does not recommend acknowledgement of procurement that may be too substantially complete. As such, Staff applies that same standard here, and does not recommend acknowledgement of the 2023 RNG procurement.

Staff finds the Company’s plan for procurement via an RFP reasonable. Staff expects that the Company provide an update on RNG procurement efforts in this docket as well as in its next IRP Update as outlined in Expectations, and refers the Company to RNG procurement guidance given in Order No. 23-281.

RNG Cost Assumptions and Long-term Planning

Regarding RNG pricing, the Company’s IRP relies on cost assumptions that are either outdated, missing material market factors, or both, reinforcing the challenge of long-term planning in a time of gas system decarbonization.

CUB concludes that Avista’s RNG costs are unreasonably low, noting that the cost estimates are about half or less of costs projected by S&P Global, and even undercut the levelized cost of RNG developed by a utility and sold at the cost of production.¹⁹ Specifically, CUB points to an S&P Global report, referenced by Staff in its Final Comments for Docket No. LC 79, which includes significantly higher pricing for RNG than Avista’s currently projected pricing. First, the study illustrates that transportation RNG plus D3 RIN credits are currently marketable at \$30-\$35/MMBtu. Second, RNG sold in the voluntary market was between \$20-\$25 MMBtu. And lastly, producers are anticipating that long-term projects have expected prices of around \$20/MMBtu. All of these values are higher, if not significantly higher, than Avista’s costs of approximately \$15/Dth for wastewater RNG and ~\$10/Dth in the near term, and levelized costs of \$19/Dth and \$11/Dth , all of which were derived from the Black & Veatch report.

CUB highlights that unreasonably low RNG cost projections result in mis-modeling of Avista’s Oregon PRS by undercutting the reliance on demand-side programs, and generally undermining planning efforts by relying on large volumes of RNG.²⁰ CUB noted that concerns about the procurement RNG in Docket No. LC 79, NW Natural’s 2022 IRP, contributed to the Commission’s decision to decline to acknowledge NW Natural’s long-term plan, finding “[u]ltimately, we lack sufficient confidence that the IRP produces a plan and preferred portfolio representing the best combination of cost and risk for utility customers.”²¹

¹⁸ See confidential Avista response to Staff DR 003. See also Avista response to Staff DR 001.

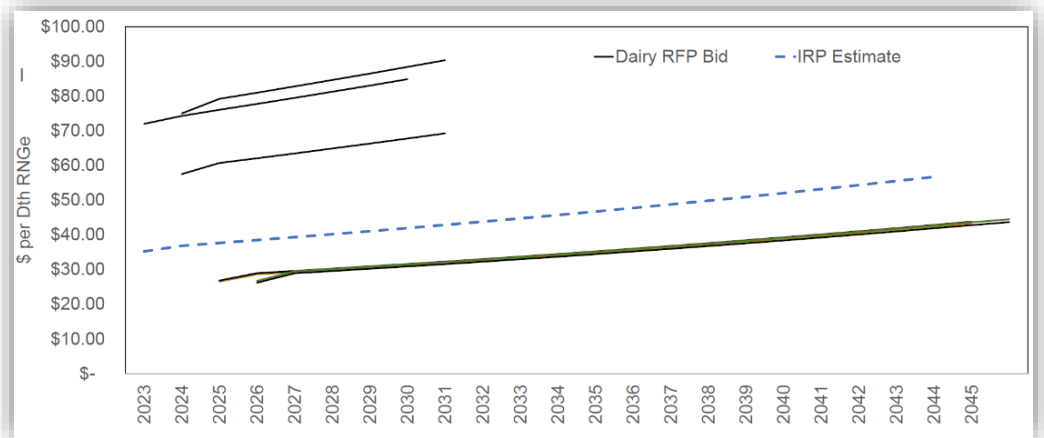
¹⁹ See Docket No. LC 81, CUB Opening Comments, pages 5-6, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

²⁰ See Docket No. LC 81, CUB Opening Comments, page 6, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

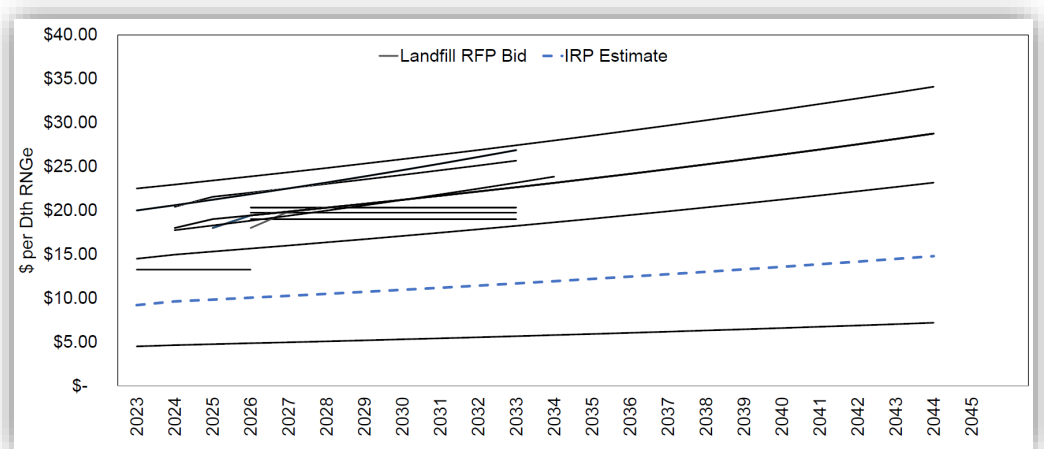
²¹ See Docket No. LC 79, Order No. 23-281, page 8, <https://apps.puc.state.or.us/orders/2023ords/23-281.pdf>.

Avista addresses Staff’s request regarding how cost assumptions have changed since the 2018 Black & Veatch report by providing four charts comparing RNG pricing of the “IRP Estimate” derived from the report versus RFP bids Avista received.²² Of the four charts, only Avista’s solid waste IRP estimate is perceivably higher than then RFP bids. Avista’s IRP estimate for landfill and wastewater RNG is much lower than at least a majority, if not all the RFP bids. Dairy is likely closer to the middle of pricing based on the RFP bids, but without detailed workpapers, also appears perceivably lower than average. Avista states that the RFP prices consider market factors including Low Carbon Fuel Standard (LCFS) and Renewable Identification Number (RIN) program in the bid price.

*Figure 2:
Comparison of
Dairy RNG IRP
Estimate and RFP
Bids*



*Figure 3:
Comparison of
Landfill RNG IRP
Estimate and RFP
Bids*



²² See Docket No. LC 81, Avista. <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

Figure 4:
Comparison of
Wastewater RNG
IRP Estimate and
RFP Bids

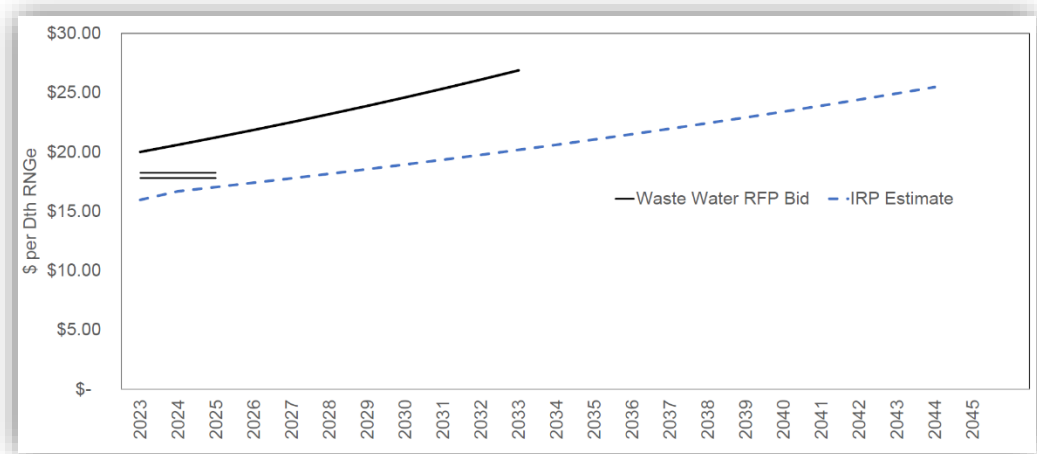
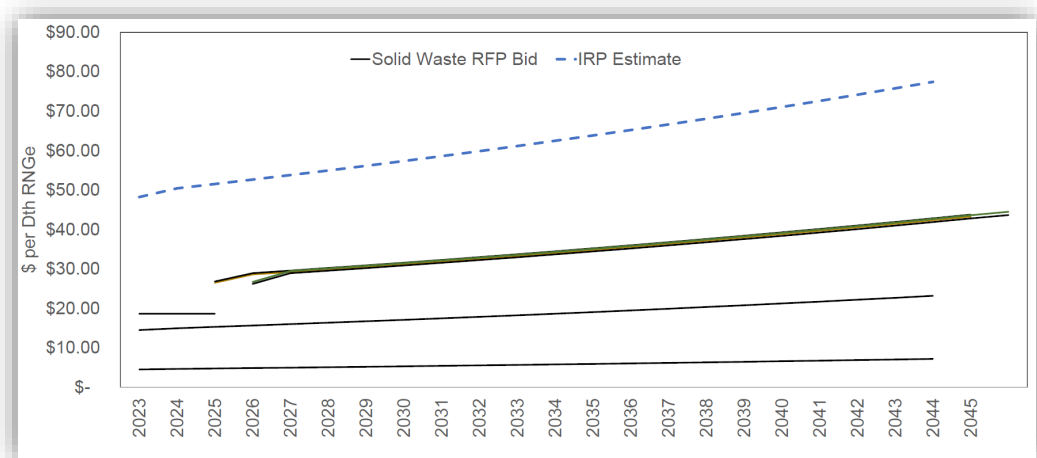


Figure 5:
Comparison of
Solid Waste RNG
IRP Estimate and
RFP Bids



Staff Analysis and Conclusions

Staff agrees with CUB that the RNG pricing is unreasonably low and that this undermines the Oregon PRS and IRP long-term plan generally.²³ While RNG is not the Company’s primary CPP compliance resource, it remains a consistently large resource in the PRS, starting in the near-term and maintaining importance throughout. If the resource is being underpriced, this could have negative impacts particularly on utilization of CCI and DSM programs, each of which represent smaller portions of the resource mix. The RNG cost comparison charts provided by Avista reinforces this concern. IRP RNG pricing that does not include important market factors, including LCFS and RIN program pricing, are unreasonably low and do not accurately represent the cost of RNG, therefore, lead to RNG to potentially overcrowding the Company’s Oregon PRS

²³ See Docket No. LC 81, CUB Opening Comments, page 6, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

2.3 – Summary of Recommendations, Expectations, and Requests

Recommendations

Recommendation 1: Do not acknowledge 8.64 million therms of RNG in 2023.

Expectations

Expectation 1: At a TAC meeting for the next IRP, Avista should provide an estimate of the capacity in MW of electrolyzers, renewable generation, and methanation equipment needed in each year to include synthetic methane in the Oregon PRS. The Company should also provide the cost and quantity of CO2 needed in each year in key portfolios to support synthetic methane production. Lastly, the Company should seek alignment from participants regarding price and availability forecasts and approaches for modeling risk.

Expectation 2: Avista should provide an RNG procurement update in its next IRP Update including a comparison of projected and actual procurement; RNG prices secured; a description of how the Company has leveraged other carbon markets to reduce RNG costs; and how the Company is applying the environmental attributes of the RNG procured to CPP compliance. Further, where actuals volumes of RNG used for CPP compliance are less than those projected, the Company should describe its plan to address those compliance deficiencies.

3: Load Forecast

Ryan Bain, Senior Utility and Energy Analyst

Avista improved the climate modeling in its load forecast for this IRP. However, Staff continues to find the Company's projection of future increased heating degree days for parts of its service territory to be incongruous to well documented climate change trends, and this subsequently impacts the IRP portfolio analysis and distorts results. Staff maintains that the long-term plan should not be acknowledged without an appropriate correction for this issue and any analysis reliant upon the corrected weather input.

3.1 – Climate Modeling and Load Forecast

Staff identified a flaw in the Company's application of the RCP 4.5 Global Climate Model (GCM) onto their service territory that introduced a "cold bias" that inappropriately forecasts increased heating degree days (HDDs) for some areas, despite the general expectation of overall warming temperatures and thus decreased HDDs. This flaw was one of the four major issues standing in the way of Staff recommending acknowledgment of the long-term plan.

Climate Advocates raised an additional concern that the use of only the RCP 4.5 GCM may not provide an adequate range of potential future climate conditions, recommending that the Company model the RCP 6.0 or 8.5 model as well. Climate Advocates recommended the OPUC "provide guidance to both gas and electric utilities as to how they should incorporate climate data and provide realistic climate-related demand projections in future resource planning."²⁴

In Reply Comments the Company said it "will consider the use of alternative methods and/or studies for climate forecasts in its 2025 IRP", after first stating that Staff's criticisms of its use of GCMs indicate flaws in the models or assumptions.²⁵ The Company did not respond to Climate Advocates recommendation to model the RCP 6.0 or 8.5 models in its next IRP.

Staff Analysis and Conclusions

Staff would like to clarify, or correct, a statement by the Company in Reply Comments suggesting that Staff's criticism of the Company's use of GCMs indicates flaws in those models. The Company correctly represents that Staff criticized its use of the RCP 4.5 GCM, but the flaw was in the application of the model by the Company, not in the model itself. Staff appreciates the Company's willingness to consider an alternative method for climate forecasting in its 2025 IRP. Staff would like to see the Company engage with stakeholders on the method recommended by Staff in Opening Comments that incorporates GCM trends by downscaling the model appropriately onto the Company's Oregon service territory. Until such a time as Staff, stakeholders, and the Company have reached an agreed upon best practice for this process

²⁴ See Docket No. LC 81, Climate Advocates Opening Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

²⁵ See Docket No. LC 81, Avista Reply Comments, page 4, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

through the Technical Advisory Committee (TAC), Staff expects downscaling of the GCMs onto Oregon’s complex local topography through a method known as Multivariate Adaptive Constructed Analogs (MACA), currently employed by Oregon State University’s Institute of Natural Resources.²⁶ Staff expects the IRP Update to show a load forecast that reflects this methodological change and for the Company to engage the TAC regarding the methodology proposed for the next IRP.

Further on the issue of additional RCP model consideration, Staff agrees that an expanded understanding of the range of potential climate futures is useful in informing portfolio analyses and would provide an added measure of robustness to the Company’s demand forecast. As well as updating the climate modeling methodology, Staff considers it reasonable to include a demand forecast scenario utilizing the RCP 6.0 model for future expected weather in the Company’s next IRP. In response to Climate Advocates’ recommendation for the OPUC to provide guidance to the gas and electric utilities on incorporating climate data, Staff will include this as a topic for consideration when the OPUC commences a process to update its IRP guidelines in the coming year.

3.2 – Customer Count and Load Forecast

Staff appreciates the Company’s diligence in the modeling of usage per customer and its acknowledgment of regulatory headwinds in the State of Washington on future customer count growth. Stakeholders including Climate Advocates and CUB commented on the need for the Company to model Oregon territory under similar electrification policies, given demonstrated interest by Oregon cities such as Ashland and Milwaukie.

Climate Advocates discussed the need for customer growth to reflect Oregon’s House Bill (HB) 3409, directing state agencies to reduce barriers to home energy efficiency and resilience, and the Line Extension Allowance (LEA) decision from Docket No. UG 461, the Company’s rate case, on customer growth.²⁷

Avista affirms customer count in its 2025 IRP scenario analysis will reflect consideration of potential Oregon policies mandating electrified space and water heating and reductions in LEAs, and “other such policies that might reduce customer count expectations.”²⁸

Staff Analysis and Conclusions

Staff agrees with stakeholders on the modeling scenario requests above and would like to see the Company consider the possibility of similar electrification policies in Oregon in its next IRP

²⁶ See Oregon State University, Institute for Natural Resources Willamette Water 2100 Project, Analysis by Topic: Future Climate, <https://inr.oregonstate.edu/ww2100/analysis-topic/future-climate>.

²⁷ See Docket No. LC 81, Climate Advocates Opening Comments, page 5, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>. The Second Settlement Stipulation in Order No. 23-384 included Item 14, which phased out LEAs beginning in 2024, reaching \$0 in 2027. *In the Matter of Avista Corporation, Request for General Rate Revision*, Docket No. UG 461, Order No. 23-384 at 9 (Oct. 26, 2023).

²⁸ See Docket No. LC 81, Avista Reply Comments, page 23, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

by evaluating a scenario of no future customer count growth beyond 2027. Staff believes this scenario would illuminate how to plan for a possible future without that growth, and a sensitivity would inform how a PRS performs in a future in which zero customer growth occurs. Staff expects that Avista work with TAC members on how to appropriately model varied electrification policy futures in the state of Oregon, as well as HB 3409 impacts. Staff also appreciates the Company's pledge to ensure that the agreement on LEAs from its most recent rate case will be incorporated into its next IRP demand forecast. Staff agrees with stakeholders that the LEA phasing out will inform decisions by potential customers and thus should be reflected in the Company's future customer growth modeling.

3.3 – Inflation Reduction Act (IRA) and Portfolio Selection

CUB and Climate Advocates identified material concerns with the application of IRA credits into the Company's resource selection modeling, where credits may have been applied to alternative fuels and carbon capture technologies, but not included commensurately for eligible electrification technologies.

The Company does not directly address the issue of uneven application of IRA credits in portfolio modeling, instead discussing high-level assumptions and risks involved in modeling electrification resources. The Company cites the importance of incentives when discussing large variances in modeled electrification conversion costs depending on different factors including "service territory, end use, building envelope, incentives, and end use efficiencies."²⁹

Staff Analysis and Conclusions

The unbalanced application of IRA credits may bias the resource portfolio selection toward those technologies where the IRA was applied. In the next IRP, Avista should apply IRA credits to all applicable resources. Along with using the most current data on alternative fuel prices and availability, this action will provide for a more reliable selection of preferred resources.

3.4 – Summary of Recommendations, Expectations, and Requests

Recommendations

Recommendation 2: For the IRP Update the Company should update the load forecast with a GCM downscaling methodology using Multivariate Adaptive Constructed Analogs as employed by Oregon State University's Institute of Natural Resources.

Expectations

Expectation 3: The next IRP should show a load forecast that reflects GCM trends by downscaling the model appropriately onto the Company's Oregon service territory.

Expectation 4: For the next IRP, engage the TAC regarding the GCM model downscaling methodology proposed for the next IRP.

²⁹ See Docket No. LC 81, Avista Reply Comments, page 3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

Expectation 5: For the next IRP, include a scenario of future weather informed by the RCP 6.0 model.

Expectation 6: For the next IRP, include a scenario of no future customer growth beyond 2027.

Expectation 7: Continue to work with TAC members on how to model customer growth impacts from HB 3409 and the potential for further Oregon electrification policies reflecting those in place in Washington.

Expectation 8: For the next IRP, update its customer growth modeling to reflect the line extension allowance decision flowing from Docket No. UG 461.

Expectation 9: For the next IRP, update its application of IRA credits to all applicable resources, including electrification resources.

4: Portfolio Evaluation

Claire Valentine-Fossum, Senior Energy Policy Analyst, Curtis Dlouhy, Senior Utility Analyst
and Nick Sayen, Senior Utility Analyst

Avista's IRP lacks adequate alternative resource portfolios and future IRPs should include alternative resource portfolios that represent different utility decisions, include stress testing of the PRS and alternative portfolios, and provide metrics comparing the severity and variability of risk in alternative portfolios. Staff is now comfortable with how Avista employed stochastic analysis. Future IRPs should include modeling of all relevant distribution system costs and capacity costs.

4.1 – Alternative Resource Portfolios

In Opening Comments Staff explained that it understood Avista began its modeling for the IRP with a deterministic analysis to identify an optimal portfolio. It then performed five simultaneous, stochastic simulations on that optimal portfolio, which resulted in five different outcomes, or futures. Each future represented a stochastic run in PLEXOS using predetermined ranges of expected assumptions about key variables such as weather and natural gas prices. The result of the five simulations was a single best set of resources to solve the energy and emissions goals.

Staff critiqued the IRP for lacking adequate development of alternative resource portfolios,³⁰ failing to meet IRP Guidelines 4h, 4i, and 4j. These Guidelines require construction of a representative set of resource portfolios, evaluation of those portfolios, and the results of testing and ranking those portfolios.³¹ Staff's critique in Opening Comments was based on a misunderstanding of the IRP's presentation of alternate *scenarios*. Staff's understanding of the IRP's treatment of resource portfolios and alternate scenarios has since evolved, and Staff clarifies this critique now.

Staff maintains that the IRP lacks adequate alternative resource portfolios. In Staff's Final Comments in Docket No. LC 79, Staff called for multiple portfolios that represent decisions the Company could make and noted examples such as pursuing dual fuel heat pumps in collaboration with electric utilities, or aggressively pursuing additional efficiency savings.³² Further, Staff noted examples of Portland General Electric and PacifiCorp IRPs that included top portfolios representing different utility decisions.³³ As an illustration, extending this approach

³⁰ See Docket No. LC 81, Staff Opening Comments, pages 50-51, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

³¹ See *In the Matter of Public Utility Commission of Oregon, Investigation into Integrated Resource Planning Requirements*, Docket No. UM 1056, Order No. 07-002 at 12 (Jan. 8, 2007) (Guidelines 4(h),4(i), and 4(j)), <https://apps.puc.state.or.us/orders/2007ords/07-002.pdf>.

³² See Docket No. LC 79, Staff Final Comments, page 45, <https://edocs.puc.state.or.us/efdocs/HAC/lc79hac142022.pdf>.

³³ See Docket No. LC 79, Staff Final Comments, page 44, <https://edocs.puc.state.or.us/efdocs/HAC/lc79hac142022.pdf>.

to Avista's IRP might result in the PRS being evaluated, tested, and ranked against a second, deterministic resource portfolio in which the utility decides not to pursue synthetic methane, or a third, deterministic resource portfolio in which the utility decides to aggressively procure RNG. Instead, in this IRP the PRS is not evaluated, tested, and ranked. Rather, Avista presents the PRS as a single best set of resources, a priori, as a result of the stochastic simulations that created it.

Staff Analysis and Conclusions

Staff appreciates that PLEXOS is an advanced modeling tool, and in offering this critique does not intend to impede progress of analytical techniques. However, Staff struggled to understand Avista's approach to developing the PRS and continues to struggle with whether such an approach can satisfy current Guideline requirements. Staff sees this as a potential topic for consideration in the forthcoming IRP Guideline update investigation. However, Staff recommends, regardless of the analytical approach taken to create the PRS, future IRPs should include alternative resource portfolios that represent different utility decisions. Staff also requests that future IRPs include clearer explanation of the PRS, and a more transparent presentation of the assumptions and processes used in creating the PRS. For example:

- A step-by-step explanation of portfolio creation including precise supply side and demand side resources included in each step;
- Workpapers and spreadsheets should include units and labels, including an explanation of where data is specifically located within the workpapers;
- Data used within workpapers should include links to the data's source, either through Excel formula or citation;
- Terms of art (such as "five futures"), abbreviations, or acronyms should be defined;
- If Avista relied on TAC member feedback, or presented part of the IRP's conclusions at a TAC meeting, Avista should cite the specific TAC meeting; and
- Complex or new topics should include informative scaffolding to ensure the concept is clearly understood.

4.2 – Use of Stochastic Analysis and the PRS

In Opening Comments Staff explained it understood Avista used stochastic analysis to develop the PRS but did not use stochastic analysis to subsequently *stress-test* the PRS or to conduct risk analysis.³⁴ Staff critiqued this as a failure to adequately meet IRP Guideline 4b, which requires the plan include analysis of high and low load growth scenarios in addition to stochastic load risk analysis with an explanation of major assumptions.³⁵ Staff noted that failure results in the potential loss of valuable insight into the PRS's weaknesses, costs, and

³⁴ See Docket No. LC 81, Staff Opening Comments, Section 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

³⁵ See *In the Matter of Public Utility Commission of Oregon, Investigation into Integrated Resource Planning Requirements*, Docket No. UM 1056, Order No. 07-002 at 11 (Jan. 8, 2007) (Guideline 4(b)), <https://apps.puc.state.or.us/orders/2007ords/07-002.pdf>.

assumptions. Inadequate use of stochastic analysis was one of the four major issues standing in the way of Staff recommending acknowledgment of the long-term plan.

No stakeholders commented on this specific aspect of the PRS.

In Reply Comments Avista stated that:

The 2023 IRP process included a Preferred Resource Strategy (PRS) optimizing for least cost compliance while including fuel price and load risk. Avista further studied the PRS through a Monte Carlo or Stochastic analysis of the assumptions and conducted a thorough scenario analysis to measure portfolio impacts to the unknown futures.³⁶

Staff Analysis and Conclusions

After further engaging the Company regarding the use of stochastic analysis on the PRS, Staff better understands how the IRP handled this Guideline requirement. For example, slides 82 through 85 of Avista's December 15, 2022, TAC Meeting, show histograms presenting various measures of cost associated with the PRS under each of 500 Monte Carlo draws.³⁷ These draws show not only the spread of costs of the PRS, but also the distribution under 500 stochastic draws. Staff appreciates the inclusion of the 500 stress tests for the PRS and feels that it shows cost risk of the PRS in a way that is digestible and valuable. Further, in meeting with Staff, Avista also clarified that each of the 500 costs arising from the stochastic analysis is reflective of their system cost if the system were redispatched – that is, allowed to change resources – in a limited manner to meet demand and respond to market prices. Staff was initially unsure whether the stress tests allowed for redispatch in each Monte Carlo simulation. Not allowing redispatching would overestimate costs by limiting the portfolio's ability to adjust in a way that it would be able to in reality. By allowing more cost-effective resources to be used if available, this limited redispatching gives a more realistic representation of system cost risk than merely assuming the only change to the costs associated with the PRS are driven by price changes. Staff is now comfortable with how Avista employed stochastic analysis to stress test its PRS, and believes the Company adequately met IRP Guideline 4b. Staff appreciates the Company's time to thoroughly evaluate this important requirement.

Staff notes however, that the value of the stress test on the PRS would be greater if it were also conducted on alternative resource portfolios, with PRS results presented alongside alternative portfolios results. Doing so would help assess decisions the Company may make, and the risks associated with those decisions, resulting in an even more useful planning process. For consistency and transparency, Staff thus adopts the recommendation from Docket No. LC 79 that future IRPs should include stress testing of the RPS and alternative resource portfolios and provide metrics comparing the severity and variability of risk in alternative portfolios.

³⁶ See Docket No. LC 81, Avista Reply Comments, page 1, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

³⁷ See Docket No. LC 81, Avista 2023 Integrated Resource Plan, Appendix 8.2, page 848, <https://edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf>.

4.3 – Resource Options

In Opening Comments, Staff took issue with PLEXOS’s handling of CCIs. Given that CCIs appeared to be the least-cost compliance approach, it was unclear to Staff why Avista’s PRS did not select the maximum number of CCIs in the near-term. Instead, Staff noted, the model selected RNG.

AWEC, Climate Advocates, and CUB broadly questioned the model’s portfolio optimization, given concerns about future resource cost and availability assumptions used as inputs. Staff notes those comments in Section 2. With respect to CCIs, CUB characterized them as a very attractive near-term CPP compliance option given the low and predictable cost relative to renewable fuel options.³⁸ Given this, CUB understood Avista would maximize CCI usage in the near-term.³⁹

In Reply Comments Avista explained there are several reasons why the model selected RNG over maximizing CCIs. First, CCIs are limited in availability, reducing each year moving forward, so other resources to meet demand and constraints are needed as the model looks at the entire horizon and determines the least cost option; RNG satisfies model constraints at a cheaper price over the entire horizon.⁴⁰ Additionally, CCIs are paired with fossil gas, so the high near-term natural gas price affects the comparison of CCIs and RNG.⁴¹ Avista stated that the Net Present Value Revenue Requirement (NPVRR) of a Max CCI sensitivity was \$4.576 billion (compared to the NPVRR of \$3.93 billion for the PRS).⁴²

Staff Analysis and Conclusions

Staff appreciates this explanation from Avista but still struggles to sufficiently understand why selecting *less* of a cheaper resource, results in a lower cost portfolio than choosing *more* of that cheaper resource.

Staff also notes several non-model, real world instances that are informative of this dynamic. First, in discussions with Staff, Avista explained that although CCIs may be cheaper, the Company intends to reserve a portion of unused CCIs in the near term, akin to insurance, in case future gas demand requires the purchase of natural gas beyond what is forecasted. Second, in responding to Staff Data Request (DR) 89, Avista explained that the price comparison of CCIs and RNG continues to fluctuate. Specifically, after the Company’s first RNG procurement, a subsequent RFP in 2022 elicited sufficient volumes of RNG, but at prices that were uncompetitive when compared to the first procurement, or when compared to CCIs. In

³⁸ See Docket No. LC 81, CUB Opening Comments, page 2, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

³⁹ See Docket No. LC 81, CUB Opening Comments, page 2, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

⁴⁰ See Docket No. LC 81, Avista Reply Comments, page 17, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁴¹ See Docket No. LC 81, Avista Reply Comments, page 17, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁴² See Docket No. LC 81, Avista Reply Comments, page 16 (Avista response to Staff Request 17), <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

this regard, Staff notes that like CCIs, RNG is also paired with natural gas, as RNG purchases are for attributes (renewable thermal credits, RTCs) and therefore still require purchases of fuel that is subject to natural gas price volatility.⁴³ Avista’s 2023 RFP for RNG (released this fall) will inform whether RNG of CCIs are the lower cost option for CPP compliance.⁴⁴ Third, Avista explained that RNG is purchased in long-term contracts. Avista compared RNG purchases with CCIs, which are purchased annually; natural gas, which is purchased in 2-4 year contracts; and synthetic methane, which is purchased on the spot market. Expanding on its Reply Comments, Avista suggested that given the long-term contracts, it was pertinent to secure RNG now for compliance in the future, even if it was not the least-cost resource.⁴⁵ Staff appreciates this candid response from the Company. It underscores Staff and stakeholder comments about risk and uncertainty of alternative fuels, and the importance of better capturing that risk and uncertainty in future IRP modeling.

4.4 – Representation of Costs

Staff raised two issues regarding cost representation in Opening Comments. First, Staff found that Avista’s Portfolio Evaluation approach resulted in the loss of important IRP elements. The IRP did not include NPVRR metrics for portfolio options, instead presenting an alternative scenario cost comparison in terms of annual levelized costs. Staff noted this failed to meet IRP Guideline 1c.⁴⁶ Staff requested Avista provide in Reply Comments the traditional NPVRR analysis of the Preferred Portfolio and alternative portfolios.⁴⁷

Second, Staff noted that the Scenarios Avista presents in the IRP do not consider the cost of distribution system upgrades to accommodate load growth, nor the risk of customers leaving the system, resulting in stranded assets or rising rates for the customers that remain on the system.

No Stakeholders provided feedback on the omission of NPVRR analysis. As noted in Section 9 CUB shared similar concerns about the risk of some customers leaving the system, leading to rising rates for customers left behind.

In Reply Comments Avista provided NPVRR of the Scenarios presented in the IRP and noted that NPVRR analysis will be done on a portfolio level in future IRPs. The Company also noted that the IRP includes a similar analysis of the PRS that instead examines the levelized cost rather than the NPVRR. Avista stated that its analysis through levelized costs helps in comparing resources with differing expected lifetimes or timeframes. Avista also stated that rank ordering scenario

⁴³ See Docket No. LC 81, Avista 2023 Integrated Resource Plan at pages 4-22, 4-23 Fig. 412, <https://edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf>.

⁴⁴ See Avista Response to Staff DR 89.

⁴⁵ See Docket No. LC 81, Avista Reply Comments, page 2 (“..”), <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁴⁶ See *In the Matter of Public Utility Commission of Oregon, Investigation into Integrated Resource Planning Requirements*, Docket No. UM 1056, Order No. 07-002 at 5 (Jan. 8, 2007) (Guideline 1(c)), <https://apps.puc.state.or.us/orders/2007ords/07-002.pdf>.

⁴⁷ See Docket No. LC 81, Staff Opening Comments, page 47 (Request for Reply Comments 16) <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

results would be an incorrect methodology in the IRP⁴⁸ but argued it had complied with IRP guideline 4j as ranking can be inferred from the final costs shown in Figure 7.14 of the IRP.⁴⁹

Staff Analysis and Conclusions

Regarding NPVRR analysis, Staff appreciates Avista providing this in its Reply Comments, and the Company’s intent to provide it in the future. However, Staff notes that the NPVRR analysis provided in this IRP was for the PRS and scenarios, and not for alternative resource portfolios. That concern notwithstanding, the IRP includes one portfolio – the PRS – and the Company provided the NPVRR for it, meeting the letter of IRP Guideline 1c. When Staff reviewed Avista’s workpapers, however, Staff found an error in the formulae which affected three scenarios. Staff confirmed this error with the Company and presents corrected NPVRR analysis of the affected scenarios below, for the record in Table 2. Staff compared the corrected NPVRR analysis with the levelized cost analysis presented in the IRP and found that the rank order of scenarios was generally consistent (e.g., the scenario with the lowest NPVRR had the lowest levelized cost, the scenario with the highest NPVRR had the highest levelized cost).

Table 2: Corrected NPVRR Analysis

Scenarios	20-year NPVRR (Billion \$)	
	Reply Comments	Staff’s Corrected
Electrification – Low	\$3.75	\$4.98
Electrification – Expected	\$4.45	\$5.37
Hybrid Total Costs	\$4.75	\$5.06

Staff appreciates Avista’s clarification of its use of levelized cost analysis and believes that it is a useful metric. Staff requests Avista engage the TAC in discussion of the value of NPVRR analysis relative to levelized-cost analysis.

Staff concurs that rank ordering scenario results may not be a correct methodology in the IRP. Staff notes however, that the IRP Guideline in question, 4j., calls for testing and rank ordering of *portfolios* – not scenarios – by cost and risk metric, and interpretation of those results.

Staff notes that the system cost calculations informing the NPVRR represent *all* Avista customers, i.e., Oregon, Washington, and Idaho (combined-state costs). However, the use of combined-state costs does not allow Staff to understand the NPVRR of investment options for *Oregon* ratepayers. And with the policy environments of these three states rapidly diverging, Staff is concerned that PRS in future IRPs may result in unacceptable outcomes for Oregon ratepayers. For example, if Washington customers electrify end-uses faster than Oregon customers,⁵⁰ then Oregon ratepayers may be forced to subsidize fixed gas system costs and

⁴⁸ See Docket No. LC 81, Avista Reply Comments, page 15, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>; see also Avista Response to Staff DR 87.

⁴⁹ See Avista Response to Staff DR 88.

⁵⁰ Avista has modeled its electric IRP to show Washington gas customers converting to 80 percent electrification by 2045. Avista Response to Staff DR 93; see also Avista Response to Staff DR 94; Avista 2023 Electric Integrated Resource Plan, section 10, <https://www.myavista.com/about-us/integrated-resource-planning>.

long-term contracts for a larger, multi-state system. While Avista modeled combined-state costs in this IRP, and may have modeled similarly in the past, Staff believes there is merit in considering in the future a breakdown by state, for the model to select resource and system investments for Oregon, for the Commission to evaluate those resources and system investments allocated to Oregon, and for improved transparency overall.⁵¹ Staff requests Avista engage the TAC in considering the merits and drawbacks of modeling state-specific resource and system investments.

Regarding portfolios giving full consideration to the cost of distribution system upgrades, or risk of customers leaving the system, Staff explained in Docket No. LC 79 that, in the past, when each portfolio had a similar load forecast, exclusion of such costs was acceptable since costs were likely to be the same in each portfolio. In the future, if different portfolios have very different load forecasts and approaches to CPP compliance, a reliable portfolio analysis must include the distribution costs and risk. Staff recognizes that Avista's Action Plan does not include new distribution projects. For consistency and transparency, however, Staff adopts the recommendation from Docket No. LC 79 that the next IRP should include modeling of all relevant distribution system costs and capacity costs, including additional projects that would be needed in high load scenarios as well as costs that would not be incurred in lower load scenarios.

4.5 – Summary of Recommendations, Expectations, and Requests

Recommendations

Recommendation 3: Regardless of the analytical approach taken to create the PRS, future IRPs should include alternative resource portfolios that represent different utility decisions.

Recommendation 4: Future IRPs should include stress testing of the RPS and alternative resource portfolios and provide metrics comparing the severity and variability of risk in alternative portfolios.

Recommendation 5: In the next IRP should include modeling of all relevant distribution system costs and capacity costs, including additional projects that would be needed in high load scenarios as well as costs that would not be incurred in lower load scenarios.

Requests

Request 1: Future IRPs should include a clearer explanation of the PRS, and a more transparent presentation of the assumptions and processes used in creating the PRS, including examples noted by Staff.

Request 2: Staff requests Avista engage the TAC in discussion of the value of NPVRR analysis relative to levelized-cost analysis.

⁵¹ Staff does not find that the state specific discussions provide sufficient detail to evaluate investment decisions. See Docket No. LC 81, Avista 2023 Integrated Resource Plan, pages 6-22 to 6-29, <https://edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf>.

Request 3: Avista engage the TAC in considering the merits and drawbacks of modeling state-specific resource and system investments.

5: Alternative Scenarios

Nick Sayen, Senior Utility Analyst, and Claire Valentine-Fossum, Senior Energy Policy Analyst

Staff maintains that the scenarios employed in the IRP are insufficient to evaluate the PRS in the face of rapidly changing policy and resources environments and concurs with Stakeholders that the scenarios do not adequately test the possible impacts and risk of utilizing future resources with great uncertainty. Staff recommends changes to improve modeling risk in the next IRP, for example developing scenarios and sensitivities that better test uncertainty surround future resources, and that include complex possible futures.

5.1 – Risk and Uncertainty in a Complex Future

In Opening Comments Staff described how Avista tested the PRS with alternative demand and supply assumptions using a deterministic analysis. This resulted in 14 total variations, which Avista presents as scenarios, and in each scenario a single variable is adjusted. Staff noted this illustrative approach helps in understanding the PRS and impacts of policy changes. However, Staff also critiqued the approach, noting that by modifying a single variable the variations do not portray a complex future beyond the scope of the PRS, such as a future with high electrification costs, low RNG supply, and warmer winter months. Staff found all 14 variations essentially function as sensitivities of the PRS, rather than scenarios.⁵² As noted earlier in Final Comments, Staff’s critique on inadequate alternative resource portfolios in Opening Comments was based on a misunderstanding of the IRP’s treatment of alternate scenarios, which has since evolved. Staff now narrows this critique to a discussion of the role of scenarios and sensitivities play in understanding risk and uncertainty in a complex future.

CUB commented on the risk and uncertainty of new resources, that is on the fuels themselves, as Staff notes in Section 2. CUB further opined on the need to adequately *model* risk and uncertainty of new resources, noting the important role this plays in an IRP:

Gas companies are having to examine entirely new resource options — a task that historically was much more significant to electric utilities than gas utilities — and although this necessitates dealing in uncertainty, that uncertainty must be properly accounted for in modeling. Acknowledging the uncertainty in writing is not adequate. This is an essential component of planning for a reliable and cost-effective energy transition.⁵³

CUB noted that “Avista’s cost projections of synthetic methane do not appear to factor discounts or other means of accounting for the high risk that synthetic methane will fail to

⁵² See Docket No. LC 81, Staff Opening Comments, Section 9, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

⁵³ See Docket No. LC 81, CUB Opening Comments, page 3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

materialize.”⁵⁴ CUB also critiqued the scenarios in the IRP, noting they failed to explore cost and risk of various pathways to CPP compliance. For example, CUB noted that if the Company models significant use of a fuel with high uncertainty, it should also model a scenario *omitting* that fuel.⁵⁵ CUB also noted that, while the IRP included a low conversion cost scenario for electrification, the scenario still included the PRS’ unreasonably low-cost estimates for RNG and synthetic methane, and so the scenario failed to explore the impact of higher electrification, and the implications of CPP compliance.⁵⁶

Like CUB, Climate Advocates commented on the risk associated with noncommercial alternative fuels, again on the fuels themselves, which Staff notes in Section 2. Climate Advocates recommended Avista improve its accounting of risk, in particular the quantification of compliance risk, risks of high technology, commodity, allowance costs, stranded asset risk, and health and climate risks.⁵⁷ Climate Advocates suggested: scenarios that included higher costs for alternative fuels,⁵⁸ a scenario in which synthetic methane should not be considered, and a scenario excluding RNG and RTCs.⁵⁹ Climate Advocates also commented that the electrification scenarios lack clarity generally, which makes understanding impacts difficult.⁶⁰ More broadly, Climate Advocates suggested the Commission take the same approach it took in Docket No. LC 79 and not acknowledge an IRP “...that does not adequately assess cost and risk, without providing ‘accurate assessments of all relevant aspects, including the uncertainty surrounding them.’”⁶¹

AWEC commented that relying on the rapid development of cost-effective technologies (such as low carbon fuels) to meet CPP caps calls into question whether compliance would be possible, should the technology not develop at the pace that Avista expects. As such, Avista should provide more details surrounding its plan to comply with the CPP if technology does not develop at the pace expected in the IRP.⁶²

⁵⁴ See Docket No. LC 81, CUB Opening Comments, page 7, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

⁵⁵ See Docket No. LC 81, CUB Opening Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

⁵⁶ See Docket No. LC 81, CUB Opening Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

⁵⁷ See Docket No. LC 81, Climate Advocates Opening Comments, page 2, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

⁵⁸ See Docket No. LC 81, Climate Advocates Opening Comments, page 10, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

⁵⁹ See Docket No. LC 81, Climate Advocates Opening Comments, page 12 n.48, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

⁶⁰ See Docket No. LC 81, Climate Advocates Opening Comments, page 13, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

⁶¹ See Docket No. LC 81, Climate Advocates Opening Comments, page 11, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

⁶² See Docket No. LC 81, AWEC Opening Comments, page 10, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>.

In Reply Comments Avista stated that the Company conducted a thorough scenario analysis of the PRS to measure portfolio impacts to the unknown futures, and the scenarios included electrification of customers and limits on fuel type options. Avista further states:

The scenarios are broken out by expected futures as found in the PRS scenarios, the low future expectations as found in the electrification scenarios, and the high future expectation where customer growth continues despite policy. These scenarios clearly create a range of future expectations as directed by IRP guidelines.⁶³

Staff Analysis and Conclusions

Staff maintains that the scenarios employed in the IRP are insufficient to evaluate the PRS in the face of rapidly changing policy and resources environments. Staff concurs with Stakeholders that the scenarios do not adequately test the possible impacts and risk of utilizing future resources with great uncertainty. Staff recommends Avista work with the TAC to develop additional scenarios and sensitivities for the next IRP, including for example: greater price variation for low carbon resources, high-cost for low carbon resources, omission of any highly uncertain resource, or utilization of only existing resources.

Avista's Reply Comments illustrate another critical aspect of improved scenario and sensitivity analysis, stating "in the event alternative fuels such as clean hydrogen and synthetic methane do not progress as expected, electrification or technological innovation of the end use may be a least cost and least risk choice."⁶⁴ It is precisely this type of complex scenario analysis that Staff finds more valuable than the scenarios employed in the IRP. Staff expects scenarios and sensitivities developed for the next IRP to include complex possible futures that capture plausible sources of risk due to uncertainty; Avista should explore its resource portfolios against these scenarios.

Critically, in using this complex scenario methodology, as discussed in Docket No. LC 79, Staff expects Avista to run stochastic analysis for price and demand assumptions consistent *within* scenarios and report risk severity metrics for each scenario, as the probability distributions in one scenario may differ from those in another.⁶⁵ Notwithstanding Staff's prior recommendations, Staff expects Avista engage stakeholders and the TAC to seek input on any additional modeling methodologies or techniques to better capture risk.

Staff understands PLEXOS to minimize expected costs but does so without utilizing any risk aversion preferences when minimizing costs, which Staff considers a blind spot. Two portfolios may be considered equally optimal (least cost) if they have the same expected low cost across stochastic draws, even if one portfolio has a much wider spread of possible costs across draws.

⁶³ See Docket No. LC 81, Avista Reply Comments, pages 1-2, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁶⁴ See Docket No. LC 81, Avista Reply Comments, page 3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁶⁵ See Docket No. LC 79, Staff Final Comments, page 42, <https://edocs.puc.state.or.us/efdocs/HAC/lc79hac142022.pdf>.

A risk averse preference would select the portfolio with the smaller spread. It is also possible that a portfolio with moderately higher average costs across stochastic draws but a smaller spread of costs could be deemed more preferable than a riskier portfolio with moderately lower expected costs. In a world in which expected costs, regulatory compliance regimes, and the preferences between electric and gas service are constantly shifting, Staff feels that it is important to have a clear understanding of a portfolio's relative cost risk and integrate the risk assessment into analysis whenever possible. As such, Staff expects Avista to work with Staff and the TAC to investigate PLEXOS' ability to integrate risk aversion.

Given stakeholders concerns that risk was not represented within the IRP or modeling, Staff expects that Avista include both the quantitative risk assessments described above and a qualitative risk matrix in the next IRP. The matrix should consolidate Avista's risk assessment for each resource in one chart and provide a narrative assessment about a given resource option's potential for negative outcomes due to uncertainty, rather than focusing on which option is the least-cost/least-risk in each scenario. Staff requests that in the next IRP the Company conduct a review, comparing projections from this IRP to actuals of their resource assumptions, quantitative least-cost/least risk predictions, and forecasts.

5.2 – Electrification Scenarios

In the IRP Avista's four electrification scenarios⁶⁶ PLEXOS is forced to remove gas customers from the gas system at a rate of two percent per year, resulting in a 33 percent customer loss by 2045. This represents the gas customers' choice to completely electrify their property in a single year. Avista's hybrid case scenario assumes the adoption of an electric heat pump wherein natural gas is used for winter peak heating, below 40°F, while all other appliances are converted to electric. Like other electrification scenarios, the hybrid case scenario reduces customers by 2 percent annually, however it also assumes these customers would remain on the natural gas system for backup heating use.

In Opening Comments stakeholders said that electric heat pump sales will significantly increase due to local ordinances, state statutes, and federal incentives. For example, Climate Advocates note that should Avista's customers adopt their fair share of HB 3409's overall state goal for heat pump adoption, it would represent approximately 32,000 customers in Avista territory within the next seven years.⁶⁷ Rogue Climate also noted local ductless heat pump programs available to customers in Avista's southern Oregon service territory.⁶⁸

⁶⁶ The four electrification scenarios include: Electrification – expected costs; Electrification- low costs; Electrification – high costs; Hybrid Scenario.

⁶⁷ See Docket No. LC 81, Climate Advocates Opening Comments, page 6, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>. Climate Advocates, page 6.

⁶⁸ See Docket No. LC 81, Rogue Climate Opening Comments, page 3, <https://edocs.puc.state.or.us/efdocs/HPC/lc81hpc101424.pdf>.

In Reply Comments, Avista noted the uncertainty of heat pumps to provide enough BTUs during cold weather events⁶⁹ and noted concerns that electric utilities may not be equipped to support the increased electric load during cold weather events.

Staff Analysis and Conclusions

Given the potential for widespread adoption of heat pumps, and the fact that space heat makes up the largest portion of Oregon residential and commercial customer's natural gas usage,⁷⁰ there may be a sizeable and relatively rapid shift in BTU consumption across utility systems. As such, it is important to accurately model the potential impacts and risks of electrification.

Staff finds three significant issues with the approach Avista used in modeling the four electrification scenarios: an assumed unrealistic pace of customer attrition; an extreme cost shift over the planning horizon from forcing a large portion of existing infrastructure costs onto a quickly shrinking customer base; and an inability to effectively compare the NPVRR of the electrification scenarios with the NPVRR of the other Alternative Scenarios, which use Avista's Expected Demand forecast. Staff expects Avista to work with the TAC to develop electrification modeling that reflects refined customer attrition assumptions.

Staff also has concerns that electrification modeling may not accurately reflect system costs under such scenarios, nor convey realistic assumptions about customer behavior. A review of Avista's forecasted NPVRR shows that certain expenses are not meaningfully reduced in electrification scenarios, despite a 33 percent decline in customer count. Examples of these expenses include DSM programs, Jackson Prairie Storage costs, and gas pipeline system costs.⁷¹ Staff expects the next IRP to include electrification modeling assumptions that decrease capacity costs, distribution system costs, and other appropriate expenses corresponding with reduced demand from electrification. For transparency, Staff expects the modeling to be segmented by end-use to correspond with Avista's cost calculation method.

In recognizing the uncertainty and reliability issues Avista raised in Reply Comments, Staff expects future IRPs to include a scenario with significantly increased residential heat pump adoption and the corresponding shift in winter load from the gas system to the electric system. Staff believes that future planning for both gas and electric utilities will require some form of scenario and load forecast data sharing.

⁶⁹ See Docket No. LC 81, Avista Reply Comments, page 10, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁷⁰ See Synapse Energy Economics, *Toward Net Zero Emissions from Oregon Buildings*, pages 4, 7 (June 2022) <https://www.synapse-energy.com/net-zero-emissions-oregon-buildings>.

⁷¹ The costs of Jackson Prairie Storage and demand-side management programs remain stagnant from the PRS to the electrification scenarios, despite Jackson Prairie related costs accounting for a significant portion of the NPVRR. There is only a two percent difference in Oregon's gas pipeline system costs between the PRS and Expected Electrification Scenario, despite the 33 percent customer reduction in the Electrification Scenario. See LC 81 Avista 2023 Integrated Resource Plan NPVRR workbook, System Cost Breakout (provided at Staff's request October 6, 2023).

Though Staff appreciates the inclusion of a hybrid case scenario, it is unclear if the modeled pace of heat pump adoption is appropriate or how the model handles the forced loss of two percent of customers while simultaneously accounting for their peak heating needs. Consistent with Staff's recommendation in Docket No. LC 79, Staff expects Avista to work with the TAC to explore and model the potential of dual fuel heat pumps in the next IRP. For example, ensuring that the use of some dual fuel heat pumps is represented in Monte Carlo risk analysis.

5.3 – Summary of Recommendations, Expectations, and Requests

Recommendations

Recommendation 6: Avista work with the TAC to develop additional scenarios and sensitivities for the next IRP, including for example: greater price variation for low carbon resources, high-cost for low carbon resources, omission of any highly uncertain resource, or utilization of only existing resources.

Expectations

Expectation 10: Scenarios and sensitivities developed for the next IRP should include complex possible futures that capture plausible sources of risk due to uncertainty; Avista should explore its resource portfolios against these scenarios. Avista should run stochastic analysis for price and demand assumptions consistent within scenarios and report risk severity metrics for each scenario.

Expectation 11: Avista should engage stakeholders and the TAC to seek input on any additional modeling methodologies or techniques to better capture risk.

Expectation 12: Avista should work with Staff and the TAC to investigate PLEXOS' ability to integrate risk aversion.

Expectation 13: In its next IRP, Avista include a qualitative risk matrix in the next IRP that consolidates risk assessment for each resource in one chart, and provides a narrative risk assessment about each resource option's potential for negative outcomes due to uncertainty.

Expectation 14: The Company should conduct a review, comparing projections from this IRP to actuals of their resource assumptions, quantitative least-cost/least risk predictions, and forecasts.

Expectation 15: Avista should work with the TAC to develop electrification modeling that reflects refined customer attrition assumptions.

Expectation 16: The next IRP include electrification modeling assumptions that decrease capacity costs, distribution system costs, and other appropriate expenses corresponding with reduced demand from electrification.

Expectation 17: Future IRPs should include a scenario with significantly increased residential heat pump adoption and the corresponding shift in winter load from the gas system to the electric system.

Expectation 18: Avista should work with the TAC to more fully explore and model the potential of dual fuel heat pumps in the next IRP, for example by ensuring that the use of some dual fuel heat pumps is represented in Monte Carlo risk analysis.

6: Building Electrification

Claire Valentine-Fossum, Senior Energy Policy Analyst

Natural gas utilities are expected to proactively consider the role of building electrification as they select resources to meet demand and reduce emissions. Avista's inclusion of building electrification as a demand side option in its modeling is a welcome improvement into the discussion on gas utility IRP modeling. The proxy cost Avista uses, however, likely does not represent either the value of electrification or the price that may influence customer behavior. As part of the Company's electrification modeling, Avista should use an incentive strategy to price electrification. Commission direction and cross-utility collaboration are needed to address significant barriers to electrification that limit least cost/least risk planning.

Avista recognizes that customers' conversion from gas to electric can help Avista meet its emissions goals.⁷² Avista portfolio optimization includes a Building Electrification variable as a demand-side resource option. Staff commends Avista's inclusion and work on this topic.

The Building Electrification Proxy Cost is the sum of conversion costs and electricity costs to the gas ratepayer. Under this modeling framework, PLEXOS did not select electrification as cost-effective and accordingly the Company does not include electrification in the Preferred Resource Strategy (PRS). In addition to modeling building electrification as a demand side resource, Avista includes a suite of electrification scenarios in its Alternative Scenarios analysis to understand price elasticity.

Staff recognizes Avista's efforts to better comprehend the role of electrification in gas and electric IRPs. Staff Opening Comments raised questions about the assumed costs for the Building Electrification Proxy Cost. More importantly, Staff explained that Avista's modeling of electrification while helpful did not capture electrification as a *proactive* resource strategy. This may have been a timing issue (i.e., the issuing of Order No. 23-281 and the filing of Docket No. LC 81) regardless, it is the direction that the Commission would like to move towards. In Reply Comments Avista requested the Commission begin a discussion on what is considered a proactive resource strategy. While the topic of electrification may be taken up in more detail in the OPUC process to update its IRP guidelines, Staff expects the discussion of a proactive resource strategy to be resumed in a separate venue as detailed in Section 6.4.

Staff begins by addressing stakeholders' concerns and Avista's reply filing surrounding appropriate methodology to calculate the cost input for building electrification. Within this discussion, Staff provides additional feedback on its proposed "incentive" approach to calculate this cost. Staff concludes with a discussion of the proactive resource strategy, first by recognizing barriers to electrification that may impede Avista's proactive resource strategy and

⁷²See Docket No. LC 81, Avista 2023 Integrated Resource Plan, Appendix 0.2, page 14, <https://edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf>.

second, with an expectation that Avista host a workshop on electrification addressing key issues of such a strategy.

6.1 – Building Electrification Cost Calculation Methodology

As discussed in Staff Opening Comments, Avista includes a Building Electrification Proxy as a resource option to meet demand. This Proxy rests on three pillars: end-use efficiency; total conversion price for end-use install and equipment; and energy cost, wherein Avista used increasing electric rates to mimic PacifiCorp’s assumed incremental rate increases to comply with HB 2021.

In opening comments, Stakeholders argued that Avista’s conversion costs rest on unsupported assumptions and flawed data.⁷³ They further noted that Avista did not adequately consider the application of federal incentives to reduce electrification conversion costs as the Company had done for RNG.⁷⁴ Climate Advocates argued for using decreasing electric rates to account for downward rate pressure from additional load resulting from electrification. They asserted the flaws in the methodology biased resource selection against electrification. According to CUB, the presentation of incorrect electrification costs misleads ratepayers about the actual costs of staying on the gas system.⁷⁵ AWEC generally accepted Avista’s electrification approach but argued that the electric rates should be higher to account for the incremental fixed cost of investments (T&D and generation facilities) that may be needed to serve electrified natural gas demand. Stakeholders did not raise specific issues with the end-use efficiency calculations.

In reply comments, Avista explained there are a multitude of costs configurations. Avista explained that it intentionally underestimated electrification conversion costs to understand whether PLEXOS would select electrification at a lower price point. In the IRP, Avista selected lower conversion costs from its sourced study and also discounted conversion costs by 50 percent to represent IRA incentives. Even intentionally underestimating the cost of electrification, Avista said, shows electrification is not cost-effective, due to the combination of conversion cost and new electric load. Like NW Natural in LC 79, Avista called for explicit direction on how gas and electric utilities can align information.⁷⁶

Staff Analysis and Conclusions

⁷³ See Docket No. LC 81, CUB Opening Comments, page 7, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

⁷⁴ See Docket No. LC 81, CUB Opening Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>; Docket No. LC 81, Climate Advocates Opening Comments, page 6, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

⁷⁵ See Docket No. LC 81, CUB Opening Comments, page 2 (arguing that using incompatible conversion costs presents false estimates of the future cost of staying on the gas system, which harms ratepayers, particularly those with gas appliances nearing end of life that may be considering converting from gas to electric), <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

⁷⁶ See Docket No. LC 81, Avista Reply Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>; see also Docket No. LC 79, Staff Final Comments, page 40, <https://edocs.puc.state.or.us/efdocs/HAC/lc79hac142022.pdf>.

Staff appreciates the detail of Stakeholders' comments and also the challenges of identifying the representative costs for electrification. Staff is not persuaded by Climate Advocates' argument that electric rates should account for downward rate pressure. Staff believes increasing investments in capacity and transmission due to the electric system becoming "peakier" and the need to acquire non-dispatchable renewable generation will likely put an upward pressure on rates. AWEC's assessment appears to overlook that Avista included proxy electric rates in the Building Electrification calculation based on Avista's forecasted electric rate increases for Washington state. These Washington rates assume increased costs for transmission and distribution buildout from Avista's predicted electric sector growth under the CAA. Given that the Company lacked the specific forecasted rate data of the electric utilities serving Oregon's customers Staff believes Avista's approach to determine rates in the 2023 IRP was reasonable.

Staff continues to find Avista's method of including the entire conversion price problematic. In Opening Comments, Staff recommended using an incentive strategy cost as the proxy for electrification. Staff explained that this strategy would identify the tipping point to incentivize the gas customer to switch from a gas to electric appliance. Staff did not expect the tipping point would be the entire conversion price, but rather the portion needed to incent the customer to make the switch. The incentive strategy would reduce CPP compliance costs and emissions, the value of which would be realized through rates.

In review of the feedback from both Avista and Stakeholders, Staff recognizes that a proactive resource strategy will need to identify the value of electrification to the customer as well as the value of electrification to the company. Accordingly, Staff proposes Avista work with the TAC to consider Staff's revised Electrification Incentive Strategy, which is comprised of three parts, Ratepayer Incentive Value, Policy Incentives, and Company Cost Value, to identify a proxy for electrification (see Attachment A).

In Staff's view, the Ratepayer Incentive Value and Policy Incentives drive the price that the Company is willing to pay for electrification to reduce demand and emissions. The Company Cost Value focuses on understanding the costs and recovery implications for the local distribution company (LDC) to encourage electrification. Staff believes this incentive strategy should be informed by existing incentive payments, avoided cost precedent, and policy encouraging electrification. By extension Staff raises questions, discussed in section 6.4, it hopes stakeholders and the Company will further develop. Staff anticipates working with the Company to deepen conversation around electrification and avoided cost within Docket No. UM 1893.

6.2 – Electric Sector Marginal Emissions

Under Avista's framework, electrification has zero emissions. When selected, electrification results in a net reduction of natural gas demand with a corresponding reduction to emissions from the avoided demand.

AWEC argued Avista should include electric sector emissions. According to AWEC, marginal emissions, rather than average emissions, should be used as this accounts for new incremental load on the electric system from electrification. AWEC noted a particular concern for gas customers shifting load within the Oregon Trail Electric Cooperative (OTEC) service territory arguing this shift would change the GHG profile of OTEC’s current load.⁷⁷

While the Company did not respond to this comment specifically, Avista suggested that it considers the implications of converting to a potentially more carbon intensive energy source with the selection of electrification. Avista also noted that the risks of whether electricity providers could meet climate goals should be considered in the price of electrification.⁷⁸

Staff Analysis and Conclusions

The CPP does not require LDCs to account for electric sector emissions. Nevertheless, Staff finds value in trying to understand emissions assumptions across energy sectors. A variety of factors may impact how shifting load from gas to electric, particularly during winter peak, corresponds with electric sector marginal emissions. Regional forecasts suggest that new generation will come from renewable or battery resources.⁷⁹ While investments in renewable generation to meet the demand of new customers would reduce marginal emissions, short term absolute emissions could increase if electrification of Avista’s load outpaces renewable investments. Staff acknowledges that rigorous scrutiny of both electric and gas utility resource selection and fuel decarbonization is necessary to understanding the role of electrifying end-uses. Although AWEC’s comment raises important questions, Staff does not recommend that Avista include marginal emissions of electrification at this time. Instead, Staff suggests that the forthcoming OPUC process to update its IRP guidelines may be the best place to address accounting for emissions assumptions across energy sectors.

6.3 – Barriers to Electrification

In conversations with Avista, Staff learned that even if PLEXOS had selected electrification as a cost-effective route, existing barriers restrict the Company from proactively “procuring” electrification to meet demand. These barriers include: 1) uncertain cost recovery, 2) a lack of cross-utility collaboration, 3) limitations of housing stock and residential energy consumption data, and 4) obligation to serve.

⁷⁷ See Docket No. LC 81, AWEC Opening Comments, page 5, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>.

⁷⁸ See Docket No. LC 81, Avista Reply Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁷⁹ See Docket No. LC 79, Staff Final Comments, Appendix A, Synapse Energy Economics, *Review of Northwest Natural Gas 2022 Integrated Resource Plan—Final Report*, page 22 (citing Pacific Northwest Utilities Conference Committee, *Northwest Regional Forecast of Power Loads and Resources, 2022– 2032* (April 2022). <https://edocs.puc.state.or.us/efdocs/HAC/lc79hac142022.pdf>), <https://edocs.puc.state.or.us/efdocs/HAC/lc79hac142022.pdf>.

First Barrier: Uncertain Cost Recovery

Avista requested that the Commission clarify who pays if electrification is modeled as a programmatic offering or as a non-pipe alternative. To seriously consider electrification, Avista explained, cost recovery must consider both the loss of recovery for Company costs and the expenses for a programmatic offering encouraging conversion. In this regard, Avista compared programmatic electrification with that already in place for energy efficiency. Unlike energy efficiency, Avista pointed out, there is no clear mandate for electrification or rate recovery.

Staff notes that utilities in California have provided testimony on the subject, explaining that single-use utilities could use regulatory asset treatment of behind-the-meter electrification expenditures to support customer affordability.⁸⁰ Similarly, in that docket, parties suggested that LDCs earn a return on electrification and non-pipeline alternative investments consistent with the return they would earn on a traditional gas infrastructure capital investment.⁸¹

Second Barrier: Lack of Cross-Utility Collaboration

Avista explained that cross-utility collaboration is necessary for targeted electrification and gas asset decommissioning.⁸² Avista explained that under the current distribution planning approach the Company lacks electric system distribution maps and data to better understand the location of available capacity for increased demand. Avista further noted that it does not have a mechanism to share information with the electric utilities, nor are electric utilities TAC members. In this regard, Staff sees an opportunity for Avista to work with Oregon's electric utilities that overlap service territory to develop a Building Electrification framework and map. These utilities could share electrification scenarios and associated load growth assumptions aligned with information and data submitted in electric utility IRPs and Distribution System Planning efforts.⁸³ To initiate this collaboration, Staff anticipates exploring the efforts by other commissions to share information across utility sectors and proposes this be a topic for consideration as part of the forthcoming IRP guideline update.⁸⁴

⁸⁰ See California Public Utilities Commission, *Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning*, Proceeding No. R.20-01-007, Opening Comments of Southern California Edison (U 338-E) on the Administrative Law Judge's Ruling Directing Parties to File Comments on Staff Gas Infrastructure Decommissioning Proposal, page 9 (Feb. 24, 2023), <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M485/K564/485564416.pdf>.

⁸¹ See California Public Utilities Commission, *Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning*, Proceeding No. R.20-01-007, Comments of RMI on Staff Gas Infrastructure Decommissioning Proposal, page 17 (Feb. 24, 2023), <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M502/K756/502756907.PDF>.

⁸² Per discussion between Avista and Staff on November 2, 2023.

⁸³ For example, PacifiCorp has introduced a new "shared interconnection" approach to enhance existing interconnections through a storage plus generation approach. Avista could work with PacifiCorp to explore optimal areas for targeted electrification, pruning, or electrification NPAs. Similarly, Avista could work with PacifiCorp to explore how battery storage can assuage the reliability concerns raised by stakeholders as customers shift load from gas to electric.

⁸⁴ See e.g., British Columbia Utilities Commission, *FortisBC Energy Inc. – British Columbia Hydro and Power Authority – Energy Scenarios* (acknowledgement letter July 6, 2022).

Staff expects Avista to work with the TAC to identify a PacifiCorp IRP scenario reflecting electrification that Avista might use to generate a load forecast for its next IRP. Before the next IRP, Avista should work with PacifiCorp to collect the load forecasts used in planning that most closely reflects a building electrification scenario for the overlapping territories. With these load forecast results, Avista should discuss with PacifiCorp supporting commentary regarding supply-side and demand-side resource impacts, rate impacts, and associated GHG emissions with each scenario/portfolio. Avista should discuss with the TAC the extent to which the Company might be able to model the equivalent in its next IRP.

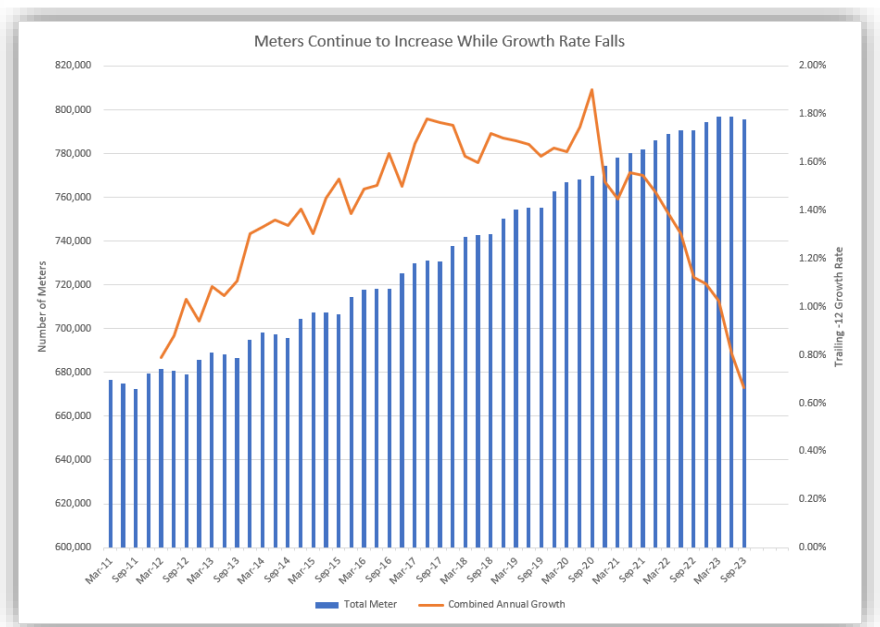
Third Barrier: Limitations of Housing Stock and Residential Energy Consumption

Data

Avista explained that housing stock, customer choice, and the inability to see a distribution load forecast created barriers to scaling electrification. For example, older housing may need additional retrofits. Similarly, houses ripe for electrification may be limited if the electric distribution grid does not have sufficient capacity to handle increased load. This barrier suggests that understanding the impacts of electrification on distribution system planning and remaining gas infrastructure needs will require a granular understanding of customer behavior, housing stock, and energy use.

To start to understand baseline electrification occurring naturally, Staff recommends Avista use advanced metering infrastructure data and Form 10Q data to capture customer behavior. By the next IRP, Avista should present that information in the worksheet template included as Attachment B. An example of captured customer behavior from NW Natural’s Form 10Q is shown in Figure 6. This graph shows that even as meters increase, growth rate falls, suggesting increased energy efficiency measures and the natural electrification of end-uses. Such data can then be used

Figure 6: NW Natural meter counts showing the return of a 2011-2015 trend of where meters decline in Q2-Q3 before rebounding in Q4 and Q1. The trailing 12-month growth rate is also at an all-time low since 2012.



as inputs in econometric modeling of electrification by use or by locality. Captured changes in behavior and energy use suggest that LDCs, in consultation with electric utilities, municipalities,

stakeholders, and Energy Trust of Oregon, can use bottom-up modeling to capture and locate electrification opportunities within distribution grid planning.⁸⁵

Fourth Barrier: Obligation to Serve

In Reply Comments, Avista noted “critical factor in this electrification option surrounds Avista’s ability to force a customer to leave its natural gas system.”⁸⁶ Avista suggested that customer choice dictates electrification over cost-effectiveness in IRP modeling.⁸⁷

LDCs have an obligation to furnish gas service.⁸⁸ Accordingly, a customer may require Avista to continue gas service in an area selected for electrification. This requirement can hamper plans to reduce fixed costs and emissions through electrification. A report from the California Energy Commission suggests amending this obligation or transitioning away from rate setting that provides incentives for retaining gas service.⁸⁹ Staff expresses no opinion around obligation to serve at this time, but shares it as an insight into the topics stakeholders hope to eventually explore as the state continues to refine its approach to electrification.

6.4 – Proactive Resource Strategy

In Opening Comments, Staff found that a proactive resource strategy would consider whether it would be cheaper for the Company to incentivize gas customers to electrify than for the Company to select a gas resource option. Under a proactive resource strategy, electrification is not simply an indicator of elasticity, but is modeled as a viable compliance resource for the utility. In Reply Comments, Avista stated it will continue to review electrification modeling with TAC members. Avista requested guidance on the expectations or and the LDC responsibilities within a proactive resource strategy.⁹⁰

⁸⁵ Bottom-up modeling uses electrification adoption rates (forecasted and known) and expected growth or known local development including local GHG reduction policies, and incentives for end-use electric adoption to forecast changes in load. This is in comparison traditional top-down forecasting which starts with a system-level forecast and then allocates distribution needs and models that estimate loads for a designated geographic area. See California Public Utilities Commission, Energy Division, *Electrification Impacts Study Draft Research Plan* (Kevala 2021) at pages 8-9; see also California Public Utilities Commission Order No. R.21-06-017, *Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future.*, Proceeding No. R.21-06-017 (July 2, 2021).

⁸⁶ See Docket No. LC 81, Avista Reply Comments, page 3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁸⁷ See Docket No. LC 81, Avista Reply Comments, page 3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

⁸⁸ Oregon Administrative Rule 860-021-0050.

⁸⁹ California Energy Commission, Docket No. 21-IEPR-01, *Final 2021 Integrated Energy Policy Report Vol. III: Decarbonizing the State’s Gas System*, pages 82-83 (March 9, 2022), <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2021-integrated-energy-policy-report>.

⁹⁰ See Docket No. LC 81, Avista Reply Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

Going forward, Staff expects Avista to host TAC workshops to solicit stakeholder feedback on electrification, including at a minimum the below topics.⁹¹ Staff expects the feedback to inform the development of a proactive resource strategy.

1. Utility assumptions that relate to electrification and decarbonization and how these assumptions can be verified.
2. How to address the known barriers in Section 6.3 for cost-effective planning.
3. Whether it is appropriate to use electric rates, bill impacts, or other metrics to measure operation costs for electric end uses in the determination of lifecycle costs.

6.5 – Summary of Recommendations, Expectations, and Requests

Recommendations

Recommendation 7: To start to understand baseline electrification occurring naturally, Staff recommends Avista use advanced metering infrastructure data and Form 10Q data to capture customer behavior as discussed in Section 6.3. At the IRP update, Avista should present that information in the attached worksheet templates (Attachment B).

Expectations

Expectation 19: Before the next IRP, Staff expects Avista to work with the TAC to consider Staff's revised Electrification Incentive Strategy (see Attachment A).

Expectation 20: Staff expects Avista to work with the TAC to identify a PacifiCorp IRP scenario reflecting electrification that Avista might use to generate a load forecast for its next IRP. Before the next IRP, Avista should work with PacifiCorp to collect the load forecasts used in planning that most closely reflects a building electrification scenario for the overlapping territories. With these load forecast results, Avista should discuss with PacifiCorp supporting commentary regarding supply-side and demand-side resource impacts, rate impacts, and associated GHG emissions with each scenario/portfolio. Avista should discuss with the TAC the extent to which the Company might be able to model the equivalent in its next IRP.

Expectation 21: Before the next IRP, Staff expects Avista to host electrification workshops, addressing the issues listed in Section 6.4 to support a discussion on a proactive resource strategy.

⁹¹ These topics come, in part, from feedback received during CADMUS' Oregon Energy Systems Planning Alignment workshops. The CADMUS report on these workshops is forthcoming.

7: Distribution System Planning

Nick Sayen, Senior Utility Analyst

An absence of planned high-pressure or distribution capital projects provides an opportunity to implement cohesive distribution system planning practices needed to better meet the demands of CPP compliance. Staff outlines such practices informed by guidance from Attachment A to Staff's Report in Order No. 23-023 (Docket No. LC 76); direction provided by Order No. 23-281 (Docket No. LC 79); practices agreed to in Stipulation Item 21 in Order No. 23-384 (Docket No. UG 461); and several extensions of Stipulation Item 21 as suggested by Climate Advocates.

Avista's Action Plan does not foresee supply side or distribution resource additions in its Oregon territory in the next four years. This provides an opportunity to consider more forward-looking distribution system planning (DSP), especially for topics in Order No. 23-281 that aim for better consideration of non-pipe alternatives (NPA) in areas currently being monitored for future upgrades.⁹²

7.1 – Future Distribution System Planning and NPA

In Opening Comments Staff noted Avista's parameters for considering NPA projects: not related to safety, compliance, or road moves; an upgrade cost high enough to allow the possibility for the NPA to be cost-effective; adequate timing; and adequate demand reduction achieved by the NPA. Staff also identified direction from Order No. 23-281 on issues pertaining to DSP:

- Future DSP should include a cost benefit analysis for NPA that reflects an avoided GHG compliance cost element consistent with a high-cost estimate of future alternative fuels prices.⁹³
- Future IRPs should include a database containing information about feeders, in service dates of pipes, and lowest recent observed pressures.⁹⁴
- In future IRPs, when a gas company is monitoring areas in the distribution system where system reinforcements may be needed in the future, whenever possible, ample time (five years) should be allowed for evaluation and analysis of targeted energy efficiency and targeted demand response, among other alternative solutions.⁹⁵

Staff requested that Avista discuss in Reply Comments how Order No. 23-281 may impact the Company's current DSP practices, such as an analysis of evaluation elements for Oregon city gate projects, how current targeted conservation resource practices may change, or how

⁹² See *In the Matter of Northwest Natural Gas Co., 2022 Integrated Resource Plan*, Docket No. LC 79, Order No. 23-281, Appendix A, Recommendation 10 (Aug. 2, 2023), <https://apps.puc.state.or.us/orders/2023ords/23-281.pdf>.

⁹³ See *In the Matter of Northwest Natural Gas Co., 2022 Integrated Resource Plan*, Docket No. LC 79, Order No. 23-281, Appendix A, Recommendation 10 (Aug. 2, 2023), <https://apps.puc.state.or.us/orders/2023ords/23-281.pdf>.

⁹⁴ See *In the Matter of Northwest Natural Gas Co., 2022 Integrated Resource Plan*, Docket No. LC 79, Order No. 23-281, Appendix A, Recommendation 11 (Aug. 2, 2023), <https://apps.puc.state.or.us/orders/2023ords/23-281.pdf>.

⁹⁵ See *In the Matter of Northwest Natural Gas Co., 2022 Integrated Resource Plan*, Docket No. LC 79, Order No. 23-281, page 15 (Aug. 2, 2023), <https://apps.puc.state.or.us/orders/2023ords/23-281.pdf>.

demand response offerings may be considered in the future.⁹⁶ Staff also requested for Avista to comment on including an update on possible distribution projects in future IRP Updates.⁹⁷

Climate Advocates, echoing the Commission's language in Order No. 23-281, recommended that the Commission communicate more direct, near-term expectations for evaluation of electrification in analysis of NPA.⁹⁸

In response to Staff's request for a discussion of Order No. 23-281's impact on current DSP practices, Avista noted that while it does not expect a need for distribution upgrades until 2026 at the earliest, it is currently working with Energy Trust to identify areas where targeted energy efficiency can help offset future upgrades. Avista stated that understanding where growth will occur is challenging, but the Company will do its best to avoid upgrade costs where possible. Avista also noted three new efficiency programs, discussed in Section 8, which will help mitigate additional demand by acquiring cost-effective energy efficiency.⁹⁹

Avista also provided updated project information in Reply Comments:

- There are no Oregon high-pressure capital projects currently planned for the next four years.
- The status of the Medford City Gate Station project was unchanged.
- The status of the Sutherlin City Gate Station project was still to be determined; however, the project may be required to accommodate a new, large customer in 2024.

Staff Analysis and Conclusions

While Avista's Reply Comments Staff lacked a robust discussion of changes to current DSP practices, Order No. 23-281 and the Stipulations resolving from the Company's recent rate case (discussed further below), should result in significant changes to current practices.

Staff notes two Commission Orders relevant to future DSP practices for gas companies: Order Nos. 23-384 and 23-023. While Staff did not raise these Orders in Opening Comments, Staff discusses them now in order to present a holistic summary of Commission direction on this topic. Order No. 23-384, issued in Docket No. UG 461, Avista's recent rate case, formally adopted stipulations reached in this proceeding. The Second Settlement Stipulation addressed NPA in Item 21 as follows:

⁹⁶ See Docket No. LC 81, Staff Opening Comments, Request for Reply Comments 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

⁹⁷ See Docket No. LC 81, Staff Opening Comments, Request for Reply Comments 7, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

⁹⁸ See Docket No. LC 81, Climate Advocates Opening Comments, page 2, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

⁹⁹ See Docket No. LC 81, Avista Reply Comments, page 9, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

21. Non-Pipe Alternatives (NPA): Avista agrees to implement a NPA framework in Oregon, including the following elements.

i. Upon rate-effective date, NPA analysis will be performed for supply-side resources and for distribution system reinforcements and expansion projects that exceed a threshold of \$1 million for individual projects or groups of geographically related projects. If a NPA is not selected for projects that meet this criteria, Avista will include the NPA analysis as part of the justification when it seeks recovery of the resource addition or distribution system reinforcement or expansion in a rate case.

A. "Supply-side resources" includes but is not limited to all resources upstream of Avista's distribution system and city gates, and supply-side contracts.

b. "Geographically-related projects" means a group of projects that are interdependent or interrelated.

ii. For resources or projects that meet the criteria of (21)(i), Avista will include electrification as an NPA.

iii. Non-Energy Impacts must be included as part of the NPA evaluation.¹⁰⁰

Staff also notes language from Order No. 23-384 that contextualizes Item 21 in the IRP process:

Regarding the new NPA framework that Avista will implement consistent with the terms of the second stipulation, we note that such a framework would ordinarily be something we consider as part of an Integrated Resource Plan (IRP). We adopt the terms of the stipulation and the framework as set forth by the parties, but we clarify that issues concerning NPAs will continue to evolve through the IRP process in the future and the framework may need to evolve with it.¹⁰¹

In Opening Comments for this IRP Climate Advocates recommended that the Commission extend Stipulation Item 21 by directing Avista to:

- Include NPA analysis for all capacity expansion projects and groups of geographically-related projects in future IRPs, not just when seeking recovery of the resource addition or distribution system reinforcement or expansion in a rate case.
- Lower the project value threshold from \$1M to \$500,000.
- Include in the analysis: an explanation of which measures were considered; if a NPA is not selected, the reason why; if a NPA is not selected and the reason is insufficient

¹⁰⁰ See *In the Matter of Avista Corporation, Request for a Genal Rate Revision*, Docket No. UG 461, Order No. 23-384, Appendix B at 15 (Oct. 26, 2023) <https://apps.puc.state.or.us/orders/2023ords/23-384.pdf>.

¹⁰¹ See *In the Matter of Avista Corporation, Request for a Genal Rate Revision*, Docket No. UG 461, Order No. 23-384, at 11 (Oct. 26, 2023) <https://apps.puc.state.or.us/orders/2023ords/23-384.pdf>.

implementation time, steps the Company will take to perform NPA analysis in time for future projects.¹⁰²

In Order No. 23-023, issued in Docket No. LC 76, Cascade Natural Gas' IRP Update, the Commission identifies that the CPP requires:

...a hard look at reliability versus growth-driven justifications for natural gas distribution projects and that we ask difficult questions about whether the need for upgrades to address near-term reliability could have been avoided with more aggressive load management in areas nearing reliability thresholds. As such, we expect natural gas companies will provide evidence not only that projects are warranted by near-term reliability needs (as distinct from long-term growth projections), but also that the company acted with a sense of urgency in pursuing alternatives, including DSM and energy efficiency, for distribution projects in future IRP analyses.¹⁰³

Staff highlights criteria from Order No. 23-023 for assessing future growth-driven distribution system projects: project relationship to CPP compliance strategy, project modeling and verified measurement, local load forecast, and assessment of alternatives.¹⁰⁴

Staff appreciates Avista's intent to minimize upgrade costs where possible¹⁰⁵ and the Company's new and ongoing efficiency programs, which should mitigate future demand. Even so, there is a substantial need to advance DSP practices in IRPs to better meet the demands of CPP compliance. As such, Staff expects the Company to update its distribution system planning practices and IRP processes to include:

- Guidance from Attachment A to Staff's Report in Order No. 23-023;
- Direction provided by Order No. 23-281;
- Practices agreed to through Stipulation Item 21 in Order No. 23-384; and
- Several of the extensions of Stipulation Item 21 suggested by Climate Advocates.

Specific elements of Staff's expectation are included in Attachment C. Staff emphasizes this expectation does not include significant, new concepts. With the exception of three items (2e., 2f., and 3) all of these practices have already been included in Commission Orders. Staff's expectation simply assembles these concepts into a more cohesive package.

Avista did not directly respond to Staff's request for comment on including the latest information on possible distribution projects in future IRP Updates. However, given the

¹⁰² See Docket No. LC 81, Climate Advocates Opening Comments, page 15, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

¹⁰³ See *In the Matter of Cascade Natural Gas, 2020 Integrated Resource Plan Update*, Docket No. LC 76, Order No. 23-023, at 2 (Feb. 6, 2023), <https://apps.puc.state.or.us/orders/2023ords/23-023.pdf>.

¹⁰⁴ See *In the Matter of Cascade Natural Gas, 2020 Integrated Resource Plan Update*, Docket No. LC 76, Order No. 23-023, Attachment A (Feb. 6, 2023), <https://apps.puc.state.or.us/orders/2023ords/23-023.pdf>.

¹⁰⁵ See e.g., Docket No. LC 81, Avista Reply Comments, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

Company's willingness and ability to provide this information through quarterly meetings, Staff requests that the latest information, including any proposed traditional investments or proposed NPA, also be included in future IRP Updates. Staff requests this include information relevant to the threshold (engineering, safety, etc.) nearing violation, for example what is being tracked, measured, or monitored, and context for the threshold violation, for example what data signals a need for work.

Staff engaged Avista to learn more about the possibility that the Sutherlin City Gate Station project may be required to accommodate a new customer in 2024. Staff understands the Company recently learned about a possible new customer, and though Avista did not have any signed agreements, was striving to transparently include the latest project information. Avista indicated the possible new load would be sizeable and represent a lump-load addition as opposed to an incremental increase.

As discussed in Avista's Reply Comments, Avista is collaborating with Energy Trust of Oregon to identify areas where targeted energy efficiency can offset future system enhancements or upgrades.¹⁰⁶ Avista suggested leveraging this partnership to consider pairing electrification with energy efficiency where efficiencies on their own cannot offset the entire need. For example, in response to Staff data request 95, Avista explained that it worked with Energy Trust to determine if targeted energy efficiency could remove enough demand to offset upgrades at the Sutherlin gate station. Avista explained that they concluded targeted energy efficiency would not remove enough demand and suggested that with explicit Commission guidance it could explore targeted electrification to further offset the demand. Avista stated it would need guidance on program requirements and cost recovery expectations.¹⁰⁷ Following submission of this data request, the Commission approved the settlement agreement in Docket No. UG 461, which requires Avista to consider electrification as an NPA. Staff expects Avista to apply Staff's distribution system planning practices as outlined in Attachment C to the Sutherlin project and that it continue to explore targeted electrification to offset demand at the Sutherlin gate station.

7.2 – UG 461 and Line Extension Allowance

The Second Settlement Stipulation in Order No. 23-384 included Item 14, which phased out LEAs beginning in 2024, reaching \$0 in 2027. Staff notes this change will impact the Company's revenue requirement and that scenario analysis in future IRPs should reflect these changes. In particular, costs should accurately reflect investment changes between portfolios, especially portfolios with different load forecasts. Staff requested that Avista discuss in Reply Comments how the phasing out of LEAs would impact the Company's revenue requirement and scenario analysis in future IRPs.

In response to Staff's request for discussion on the impact of changes to LEA on the Company's revenue requirement and scenario analysis, Avista replied that the timing of the Second

¹⁰⁶ See Docket No. LC 81, Avista Reply Comments, page 9
<https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

¹⁰⁷ Avista response to Staff DR 95.

Settlement Stipulation did not allow for analysis in this IRP. However, the Company will carefully review and consider the impact on customer expectations and revenue requirements in future IRPs.

Staff Analysis and Conclusions

In Reply Comments, Staff was hoping to see a more robust discussion of how the change to the LEA may impact the Company's revenue requirement and scenario analysis. However, Staff requests that the possible impacts (at least on the Company's revenue requirement and scenario analysis) of line extension allowance elimination be taken up by the TAC with the goal of determining how to best reflect expected impacts in future IRPs.

7.3 – Summary of Recommendations, Expectations, and Requests

Expectations

Expectation 22: Avista should update its distribution system planning practices and its future IRP processes as outlined in Attachment C.

Expectation 23: Avista should apply distribution system planning practices as outlined in Attachment C to the Sutherlin project and should continue to explore targeted electrification to offset demand at the Sutherlin gate station.

Requests

Request 4: Staff requests that the latest information on possible distribution projects, including any proposed traditional investments or proposed NPA, be included in future IRP Updates.

Request 5: Staff requests that the possible impacts (at least on the Company's revenue requirement and scenario analysis) of line extension allowance elimination be taken up by the TAC with the goal of determining how to best reflect expected impacts in future IRPs.

8: Demand-Side Resources

Nick Sayen, Senior Utility Analyst

Staff is comfortable with Avista’s coordination with the Energy Trust to estimate and model efficiency potential and appreciates the development and launch of new programs, as well as revisions to existing programs resulting in 568,000, 590,000, and 614,000 therms of savings in 2024-2026.¹⁰⁸ Avista should report to the TAC on the low-income hybrid heating pilot, engage the TAC in vetting demand response modeling parameters, and in considering how the value of Interruptible loads can be folded into resource planning. Avista should engage current Interruptible customers to learn about possible participation in demand response offerings.

8.1 – Oregon Efficiency Potential

In Opening Comments Staff expressed general comfort with efficiency potential as modeled in the IRP, especially after further examining technical potential, achievable potential, cost-effective achievable potential, and deployed savings potential with the Energy Trust of Oregon. Staff raised a concern about an apparent decline in potential and requested that Avista clarify in Reply Comments why the cumulative, 20-year savings potential drops from 18 million therms in the 2021 IRP (LC 75) to 15.3 million therms in this IRP.¹⁰⁹

No Stakeholders provided feedback on Oregon energy efficiency potential.

Avista explained that there was not a drop in potential from 18 million therms in the 2021 IRP to 15.3 million therms in this IRP: instead, Staff confused cost-effective achievable potential in the 2021 IRP with deployed savings potential in this IRP. To resolve the confusion Avista provided a Table in Reply Comments, which Staff includes as Table 3.¹¹⁰

Table 3: 20-Year Cumulative Savings Potential by IRP vintage (Millions of Therms)

	2023 IRP	2020 IRP	Difference
Technical	27.6	24.9	2.7
Achievable	22.3	22.2	0.1
Cost-Effective	21.6	18.0	3.6
Deployed	15.3	14.8	0.5

Staff Analysis and Conclusions

Staff appreciates Avista’s correction and has no further direction on this topic at this time.

¹⁰⁸ See Docket No. LC 81, Avista Reply Comments, Attachment A, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

¹⁰⁹ See Docket No. LC 81, Staff Opening Comments, Request for Reply Comments 3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

¹¹⁰ See Docket No. LC 81, Avista Reply Comments, page 5, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

8.2 – Additional Program Offerings

In March 2023 Energy Trust began an efficiency program for Avista’s interruptible commercial and industrial customers. In July 2023 Avista began working with the Energy Trust to design and run efficiency programs for its transportation customers.¹¹¹ The Company also this year modified its Avista Low Income Energy Efficiency (AOLIEE) Program to expand program reach, and to prioritize energy burdened customers.¹¹² The energy savings potential for these three new offerings is presented in the IRP and is included in the overall Oregon potential. Staff appreciates the development and launch of these new programs, as well as their inclusion in this IRP. Staff requested that Avista provide in Reply Comments an update on the development of all new program offerings.¹¹³

CUB appreciated the assessment of low-income needs in order to identify and better understand customers who may benefit the most from energy assistance programs. CUB noted that energy efficiency provides valuable CPP compliance benefits by lowering overall system emissions without putting upward pressure on rates.¹¹⁴

In Reply Comments Avista updated progress on new efficiency offerings:

- In spring 2023 an efficiency program was launched for Interruptible customers (Schedule 440). In fall 2023 a program for Transport customers (Schedule 456) will be launched.
- Avista is working with Energy Trust to offer additional programs for low-income customers, as well as studying the viability of a targeted efficiency program offering in two service areas to launch in 2024.
- Energy Trust anticipates exceeding the 2023 savings goal of 427,000 therms by achieving an estimated 493,868 therms. In Energy Trust’s 2024 Budget and Action planning process Avista reiterated the need to achieve all cost-effective savings and was fully committed to funding energy efficiency as it relates to least cost planning.
- Engagement will be ramped up to Interruptible, Transport, and low-income customers to further support participation in new offerings, as well as energy savings.
- A low-income hybrid heating pilot will be launched in October 2023.

Staff Analysis and Conclusions

Staff appreciates Avista’s update on new program offerings. Staff requests that the Company report to the TAC in late 2024 on the low-income hybrid heating pilot. The report should include all relevant program details, progress to-date and any lessons learned, any findings

¹¹¹ See *In the Matter of Avista Corporation Request for Waiver of OAR 860-0086-0040(2)(j)*, Gas Utility Customer Information and Transfer of Data, Docket No. UM 1631, Order No. 23-253 (July 13, 2023).

¹¹² See Docket No. ADV 1452, Advice No. 22-11-G – Avista Utilities’ Revisions to Schedules 469 and 485 (Nov. 15, 2022).

¹¹³ See Docket No. LC 81, Staff Opening Comments, Request for Reply Comments 4, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

¹¹⁴ See Docket No. LC 81, CUB Opening Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

about the potential of such a program to meet CPP compliance and to mitigate upward rate pressure, and any learnings on how to model such a program in future IRPs.

8.3 – Demand Response and Interruptible Programs

For this IRP, Avista performed the Company’s first natural gas demand response potential study, which considered five offerings for residential, commercial, and industrial customers. The study made assumptions about critical program parameters and resulted in potential demand savings and total cost estimates for each program. Demand response was not selected as a resource.

In Opening Comments Staff expressed interest in the potential for two of the five offerings, smart thermostat direct load control, and contracting with customers for firm curtailment, as strategies for mitigating distribution system investments. Staff’s interest was underscored by the Commission direction in Order No. 23-281 which acknowledged NW Natural’s plans for a residential and small commercial demand response program, and directed that five years should be allowed for evaluation and analysis of demand response for areas where system reinforcement may be needed. Staff was also interested in learning about how Avista engages current interruptible customers and submitted data requests to better understand whether, and how, the Company conceives of interruptible customers as a resource, as well as current program characteristics.

CUB appreciated the examination of demand response potential and noted that demand response provides valuable CPP compliance benefits by lowering overall system emissions without putting upward pressure on rates.¹¹⁵

The Company offered no further comment on this topic.

Staff Analysis and Conclusions

As the Company continues to gain familiarity with, and understanding of, demand response offerings, Staff requests Avista vet demand response modeling parameters (such as costs, increments, potential, and ramp rates) with TAC members.

Staff appreciates the Company providing information about Interruptible customers in response to Staff DRs 85 and 86. These responses help Staff better understand whether and how the Company engages these customers through the lens of a program to manage peak loads. Staff now understands:

- Avista does not currently consider interruptible loads for resource planning and only considered interruptible loads in the 2023 IRP for purposes of CPP compliance.¹¹⁶
- Avista has limited peak demand data available for many customers enrolled in the interruptible program as not all customers have metering or telemetry in place that

¹¹⁵ See Docket No. LC 81, CUB Opening Comments, page 8, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

¹¹⁶ See Avista response to Staff DR 86.

provides such information.¹¹⁷ And though the Company has called only one event in the past five years, Avista states that the program “aids in mitigating the risk of system stress during periods of constraints as it can rely on interrupting the customers on the schedule. Effectively, the tariff provides a risk reduction from events that may occur.”¹¹⁸

- Approximately half (80 out of 177) of customers eligible for interruptible tariff schedules are currently enrolled in such a tariff. Of those, the vast majority (76 out of 80) are Oregon customers.¹¹⁹

Staff requests Avista engage the TAC in a discussion of how the value of Interruptible loads can be folded into resource planning. This is especially important should the next IRP propose a distribution system upgrade. Staff notes as an example, understanding how Avista’s distribution system modeling incorporates interaction with interruptible customers when assessing the size and timing of a distribution system upgrade.¹²⁰ In order to inform possible future demand response offerings, specifically contracting directly with customers for firm curtailment, Staff requests Avista engage a representative set of Interruptible customers to study interest in participating in such offerings, and under what conditions. Staff requests that results be shared with the TAC.

8.4 – Summary of Recommendations, Expectations, and Requests

Requests

Request 6: Staff requests that the Company report to the TAC in late 2024 on the low-income hybrid heating pilot including relevant program details, progress to-date, lessons learned, findings about the potential of such a program to meet CPP compliance and to mitigate upward rate pressure, and learnings on how to model such a program in future IRPs.

Request 7: Staff requests Avista vet demand response modeling parameters (such as costs, increments, potential, and ramp rates) with TAC members.

Request 8: Staff requests that Avista engage the TAC in a discussion of how the value of Interruptible loads can be folded into resource planning.

Request 9: Staff requests Avista engage a representative set of Interruptible customers to study interest in participating in demand response offerings, and under what conditions, with results to be shared with the TAC.

¹¹⁷ See Avista supplemental response to Staff DR 85.

¹¹⁸ See Avista response to Staff DR 86.

¹¹⁹ See Avista supplemental response to Staff DR 85.

¹²⁰ See *In the Matter of Cascade Natural Gas, 2020 Integrated Resource Plan Update*, Docket No. LC 76, Order No. 23-023, Attachment A at 22(Feb. 6, 2023), <https://apps.puc.state.or.us/orders/2023ords/23-023.pdf>.

9: Customer Impacts in a Decarbonizing System

Claire Valentine-Fossum, Senior Energy Policy Analyst and Nick Sayen, Senior Utility Analyst

In Opening Comments, Stakeholders elevated and broadened the discussion of customer impacts addressed in this IRP. These include system costs borne by fewer customers and increasing rates for energy intensive businesses. Staff supports doing everything possible to eliminate unnecessary investments in the gas distribution system and minimize the risk of stranded assets.

9.1 – Possible Impacts of Electrification and Stranded Assets

In the 2023 IRP, Avista introduced a discussion of equity impacts to low-income customers in the context of electrification.¹²¹ Avista noted the substantial costs of electrification may increase financial burdens for low-income gas customers, as more affluent customers electrify. The Company further explained that, if enough customers electrify and leave the gas system, Avista’s historical investments would be divided among fewer customers. In which case, rates for remaining customers would need to increase to cover those investments.

In Opening Comments, Staff called for future IRPs to include the existing and forecasted distribution system costs, procurement contracts, and capacity costs as inputs in portfolio optimization to improve visibility into future system costs and how they are impacted by investments.¹²² Staff had no explicit energy burden requests for the Company, but expressed interest in further exploring how energy system planning can be informed by programs and regulatory tools that address these types of impacts.

CUB warned that investments in a gas system built for a large customer base but paid for by a shrinking customer base will lead to inequitable allocation of system costs.¹²³ Climate Advocates argued widespread electrification will lead to new gas infrastructure investments becoming stranded assets, no longer used and useful, well before they are fully amortized.¹²⁴ They worried that low-and moderate-income customers are at risk of shouldering stranded

¹²¹ See Docket No. LC 81, Avista 2023 Integrated Resource Plan, page 3-15,

<https://edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf>.

¹²² See Docket No. LC 81, Staff Opening Comments, Request for Reply Comments 20,

<https://edocs.puc.state.or.us/efdocs/HAC/lc81hac153035.pdf>.

¹²³ See Docket No. LC 81, CUB Opening Comments, page 9,

<https://edocs.puc.state.or.us/efdocs/HAC/lc81hac16152.pdf>.

¹²⁴ See Docket No. LC 81, Climate Advocates Opening Comments, page 12,

<https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

asset costs and higher energy costs of the gas system, if not managed for an electrification transition.¹²⁵

Avista did not address CUB's or Climate Advocates' concerns directly in Reply Comments but did provide an updated list of Oregon projects which shows that there are no high-pressure capital projects planned for the next four years, nor is there an expected need for distribution upgrades until 2026. Avista states that mitigation opportunities with energy efficiency, demand response, and other non-pipe alternatives will help avoid distribution system costs where possible.

Staff Analysis and Conclusions

Staff is very supportive of eliminating unnecessary investments in the gas distribution system and minimizing stranded assets. Future IRPs should strive to reduce risk to customers associated with decarbonized fuel costs by considering proactive strategies to minimize growth related investments in the distribution system. Staff has included several recommendations toward this goal in Section 7 on Distribution System Planning.

Staff recognizes that the settlement agreement in Avista's recent rate case, Docket No. UG 461, resolved issues adjacent to those raised by CUB and Climate Advocates in Opening Comments. These included limiting certain gas system costs, expanding non-pipe alternative (NPA) analysis, and ensuring that the Avista Low Income Energy Efficiency (AOLIEE) program does not lock low-income households to the gas system. Nonetheless, Staff remains concerned that the risk that some gas infrastructure will be underutilized or stranded before capital investment costs have been fully recovered has not been assessed in the IRP. Staff believes this topic, and potential impacts of stranded assets, merit broader discussion.

9.2 – Possible Impacts of CPP Compliance Costs

The IRP includes estimated rate impacts of the PRS. Oregon residential price impacts are estimated at approximately \$0.95 per therm in 2023 rising to a peak of approximately \$1.70 per therm in 2042, before declining to approximately \$1.50 per therm in 2045. Oregon Commercial price impacts are estimated at approximately \$0.90 per therm in 2023 rising to approximately \$1.50 per therm in 2045. Oregon industrial price impacts are estimated at approximately \$0.95 per therm in 2023 rising to \$1,40 per therm in 2045.¹²⁶

In Opening Comments, AWEC called out the rate impacts anticipated by Oregon's Energy Intensive Trade Exposed (EITE) businesses.¹²⁷ Because energy is often one of the highest

¹²⁵ See Docket No. LC 81, Climate Advocates Opening Comments, page 3,

<https://edocs.puc.state.or.us/efdocs/HAC/lc81hac15125.pdf>.

¹²⁶ See Docket No. LC 81, Avista 2023 Integrated Resource Plan, Figures 6.29 through 6.32,

<https://edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf>.

¹²⁷ The acronym "EITE" has been used to describe both "energy intensive trade exposed" and "emission intensive trade exposed" businesses. AWEC chooses to use "energy intensive trade exposed" and Staff has chosen to follow that terminology in an effort to maintain clarity. Docket No. LC 81, AWEC Opening Comments, page 2,

<https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>.

operating costs for EITE business, and because they compete against businesses not subject to this or similar regulation, AWEC warned that forecasted CPP costs will challenge Oregon's EITE businesses to remain competitive in regional, national and global markets. AWEC noted that Oregon's CPP lacks the kind of compliance cost mitigations that exist for EITE businesses in Washington's Climate Commitment Act, and referenced CPP rules regarding when and whether CPP rule changes might be considered to ameliorate relative costs increases in Oregon.¹²⁸ AWEC recommended that Avista accelerate the industrial energy efficiency program for interruptible and transport customers introduced in Action Items 2 – 4.¹²⁹

Avista did not address AWECs comments directly in Reply Comments but did identify new energy efficiency programs including those for interruptible and transport customers.¹³⁰

Staff Analysis and Conclusions

Staff expects rates to increase due to increasing demand and the need for emission reductions to meet CPP requirements. In response to Staff Information Requests (IR) 96 and 97, Avista explained that it intends to recover CPP compliance costs as a volumetric charge on an equal cents per therm basis from all customer classes, including transportation and interruptible customers.¹³¹ Avista clarified that all customers would pay the same rate per therm with no corresponding obligation based on peak demand.¹³² Staff understands this to mean that CPP compliance costs would be based on the volumes of gas transported and stored and not volumes of gas consumed. Staff also understands that this charge would not be adjusted to correspond with income or customer class, nor would new customers pay a different rate from existing customers.¹³³

Staff supports the Company's efforts to expedite the launch and growth of efficiency offerings for interruptible and transport customers. Staff questions whether those avoided costs can offset increased CPP compliance costs resulting from the introduction of new load. Given these implications, Staff remains concerned that the greatest CPP costs will fall on captive customers, such as Oregon's EITE businesses, low-income customers, renters that cannot elect to electrify appliances, and those already experiencing high energy burdens.¹³⁴ Staff notes future rate cases as the space to resolve these concerns, but to better inform current and ongoing

¹²⁸ See Docket No. LC 81, AWEC Opening Comments, pages 2-3, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>

¹²⁹ See Docket No. LC 81, AWEC Opening Comments, page 7, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac143340.pdf>

¹³⁰ See Docket No. LC 81, Avista Reply Comments, page 6, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

¹³¹ Avista response to Staff DRs 96 and 97(b); see also See Docket No. LC 81, Avista Reply Comments, page 17, <https://edocs.puc.state.or.us/efdocs/HAC/lc81hac125055.pdf>.

¹³² Avista response to Staff DR 96.

¹³³ Avista response to Staff DR 96.

¹³⁴ See Docket No. UM 2178, *Staff's Final Report*, Natural Gas Fact Finding per Executive Order 20-04, at 19 (Jan. 31, 2023).

discussions, requests that Avista include a table of expected CPP compliance costs in the IRP Update.

Staff notes that in Order No. 23-281 the Commissioners expressed concerns about rate impacts, noting, that they see “[A] need for all IRPs to improve their treatment of the tradeoffs between long-term value and short-term rate impacts and intend to take this up in revising our planning guidelines.” Staff notes that topics raised in this docket that may help inform this discussion.

9.3 – Summary of Recommendations, Expectations, and Requests

Requests

Request 10: In the IRP Update, Staff requests that Avista include a table of expected CPP compliance costs.

10: Current Supply-Side Resources

Claire Valentine-Fossum, Senior Energy Policy Analyst

Avista's forecasts reflect reasonable factors impacting future natural gas prices. Avista should align its avoided cost methodology with its new high-priced resource selection. Future IRPs should model capacity contracts and discuss winter reliability risks for supply-side resources.

10.1 – Natural Gas Price Forecast

Avista's conventional natural gas forecasts are consistent with other gas utilities in the region. Avista uses forecasts from third-party sources widely used in the field, and Staff found these forecasts to be based on reasonable factors impacting future conventional natural gas prices and to appropriately reflect volatility in gas prices. Avista explained these forecasts include increased demand from the resulting loss of coal fired electric generation on a national level and/or electric load increases.¹³⁵ Avista explained that these forecasts do not model any changes to the natural gas price forecast due to changes in the demand of RNG take into account the rise of alternative fuels.¹³⁶

10.2 – Avoided Costs

Staff Opening Comments noted that gas utilities use the price of natural gas to determine avoided costs. In the past, when each portfolio included natural gas as the supply-side resource to meet demand, use of the natural gas price as the benchmark was acceptable. Now that portfolios can have varying resource selections, including increasing volumes of more costly lower emission fuels, an avoided cost analysis must consider these higher cost fuels. Put another way, Staff reflected that the higher forecasted fuel price for RNG, natural Gas + CCIs, and synthetic methane would have a corresponding effect of making demand-side alternatives more cost-effective than when compared to the lower price for natural gas.

Staff asked the Company to explain in Reply Comments how it intends to determine cost-effectiveness given this changing resource portfolio. The Company explained that cost-effectiveness will be determined using the PLEXOS model and resource assumptions. Avista noted that it may discuss using other methods and models for resource evaluation during the TAC process. For future IRPs, Staff expects the Company to discuss in a TAC meeting how Avista envisions avoided costs determinations aligning with resource portfolios made up of higher priced fuels and declining natural gas, and how that will be reflected in its next IRP.

10.3 – Transportation and Storage Capacity Resources

Staff notes two FERC determinations announced since Opening Comments that impact Staff's analysis of Avista's transportation and storage capacity reserves. First, in October, FERC issued a certificate of public convenience and necessity to GTN to construct and operate the GTN Xpress

¹³⁵ Avista response to Staff DR 47.

¹³⁶ Avista response to Staff DR 46.

Project.¹³⁷ The Project will expand the capacity of the GTN pipeline. Avista included the TransCanada – GTN pipeline in its IRP. It is not clear to Staff whether Avista contemplated the GTN Xpress as capacity resource. In the IRP update, Avista should clarify whether it has precedent agreements or other contracts for the GTN Xpress for capacity on this new expansion. In the next IRP, Avista should include utilization rates and fixed fees paid on each unit of capacity under contract for its firm capacity and provide an update on potential or existing plans to retire firm capacity contracts.

Second, FERC and the North American Electric Reliability Corporation (NERC) released the final report on Winter Storm Elliott, the December 2022 storm that contributed to massive power outages in the Eastern United States.¹³⁸ The report recommends Congress and state lawmakers establish reliability rules for natural gas infrastructure, covering cold weather preparedness, regional coordination including coordination between electric and gas utilities, and critical infrastructure.¹³⁹ In response to Staff DR 47, Avista noted that last winter the West Coast saw capacity constrained price increases compared to the rest of the nation due to a limitation to import natural gas to meet both electric and natural gas load requirements.¹⁴⁰ Staff appreciates this information and would like to understand what risks exist to transport and storage fuel availability and system infrastructure. In future IRPs, Staff expects Avista to include a discussion of cold weather reliability standards including foreseeable cold weather risks to its supply-side resources including transportation and storage capacity resources.

10.4 – Summary of Recommendations, Expectations, and Requests

Recommendations

Recommendation 8: In the IRP update, Avista should clarify whether it has precedent agreements or other contracts for the GTN Xpress. If so, Avista should explain its capacity on this new expansion.

Expectations

Expectation 24: For future IRPs, the Company should discuss in a TAC meeting how Avista envisions avoided costs determinations aligning with resource portfolios made up of higher priced fuels and declining natural gas, and how that will be reflected in its next IRP.

Expectation 25: In the next IRP, Avista should include a workpaper of the fixed fees paid on each unit of capacity under contract and provide an update on potential or existing plans to retire firm capacity contracts.

¹³⁷ *Gas Transmission Northwest, LLC*, 185 FERC ¶ 61,035 at ordering para. (A) (2023) (order issuing certificate).

¹³⁸ Inquiry into Bulk-Power System Operations During December 2022 Winter Storm Elliot: FERC, NERC and Regional Entity Staff Report (October 2023), https://www.ferc.gov/sites/default/files/2023-11/24_Winter-Storm_Elliot_1107_1300.pdf.

¹³⁹ See Inquiry into Bulk-Power System Operations During December 2022 Winter Storm Elliot: FERC, NERC and Regional Entity Staff Report, at page 20 (October 2023)

¹⁴⁰ Avista response to Staff DR 47.

Expectation 26: In future IRPs, Avista should include a discussion of cold weather reliability standards including foreseeable cold weather risks to its supply-side resources including transportation and storage capacity resources.

Summary

Recommendations

Recommendation 1: Do not acknowledge 8.64 million therms of RNG in 2023.

Recommendation 2: Recommendation 2: For the IRP Update the Company should update the load forecast with a downscaling methodology using Multivariate Adaptive Constructed Analogs as employed by Oregon State University's Institute of Natural Resources.

Recommendation 3: Regardless of the analytical approach taken to create the PRS, future IRPs should include alternative resource portfolios that represent different utility decisions.

Recommendation 4: Future IRPs should include stress testing of the RPS and alternative resource portfolios and provide metrics comparing the severity and variability of risk in alternative portfolios.

Recommendation 5: In the next IRP should include modeling of all relevant distribution system costs and capacity costs, including additional projects that would be needed in high load scenarios as well as costs that would not be incurred in lower load scenarios.

Recommendation 6: Avista work with the TAC to develop additional scenarios and sensitivities for the next IRP, including for example: greater price variation for low carbon resources, high-cost for low carbon resources, omission of any highly uncertain resource, or utilization of only existing resources.

Recommendation 7: To start to understand baseline electrification occurring naturally, Staff recommends Avista use advanced metering infrastructure data and Form 10Q data to capture customer behavior as discussed in Section 6.3. At the IRP update, Avista should present that information in the attached worksheet templates (Attachment B).

Recommendation 8: In the IRP update, Avista should clarify whether it has precedent agreements or other contracts for the GTN Xpress. If so, Avista should explain its capacity on this new expansion.

Expectations

Expectation 1: At a TAC meeting for the next IRP, Avista should provide an estimate of the capacity in MW of electrolyzers, renewable generation, and methanation equipment needed in each year to include synthetic methane in the Oregon PRS. The Company should also provide the cost and quantity of CO₂ needed in each year in key portfolios to support synthetic methane production. Lastly, the Company should seek alignment from participants regarding price and availability forecasts and approaches for modeling risk.

Expectation 2: Avista should provide an RNG procurement update in its next IRP Update including a comparison of projected and actual procurement; RNG prices secured; a description of how the Company has leveraged other carbon markets to reduce RNG costs; and how the Company is applying the environmental attributes of the RNG procured to CPP compliance.

Further, where actuals volumes of RNG used for CPP compliance are less than those projected, the Company should describe its plan to address those compliance deficiencies.

Expectation 3: The next IRP should show a load forecast that reflects GCM trends by downscaling the model appropriately onto the Company's Oregon service territory.

Expectation 4: For the next IRP, engage the TAC regarding the GCM model downscaling methodology proposed for the next IRP.

Expectation 5: For the next IRP, include a scenario of future weather informed by the RCP 6.0 model.

Expectation 6: For the next IRP, include a scenario of no future customer growth beyond 2027.

Expectation 7: Continue to work with TAC members on how to model customer growth impacts from HB 3409 and the potential for further Oregon electrification policies reflecting those in place in Washington.

Expectation 8: For the next IRP, update its customer growth modeling to reflect the line extension allowance decision flowing from Docket No. UG 461.

Expectation 9: For the next IRP, update its application of IRA credits to all applicable resources, including electrification resources.

Expectation 10: Scenarios and sensitivities developed for the next IRP should include complex possible futures that capture plausible sources of risk due to uncertainty; Avista should explore its resource portfolios against these scenarios. Avista should run stochastic analysis for price and demand assumptions consistent within scenarios and report risk severity metrics for each scenario.

Expectation 11: Avista should engage stakeholders and the TAC to seek input on any additional modeling methodologies or techniques to better capture risk.

Expectation 12: Avista should work with Staff and the TAC to investigate PLEXOS' ability to integrate risk aversion.

Expectation 13: In its next IRP, Avista include a qualitative risk matrix in the next IRP that consolidates risk assessment for each resource in one chart, and provides a narrative risk assessment about each resource option's potential for negative outcomes due to uncertainty.

Expectation 14: The Company should conduct a review, comparing projections from this IRP to actuals of their resource assumptions, quantitative least-cost/least risk predictions, and forecasts.

Expectation 15: Avista should work with the TAC to develop electrification modeling that reflects refined customer attrition assumptions.

Expectation 16: The next IRP include electrification modeling assumptions that decrease capacity costs, distribution system costs, and other appropriate expenses corresponding with reduced demand from electrification.

Expectation 17: Future IRPs should include a scenario with significantly increased residential heat pump adoption and the corresponding shift in winter load from the gas system to the electric system.

Expectation 18: Avista should work with the TAC to more fully explore and model the potential of dual fuel heat pumps in the next IRP, for example by ensuring that the use of some dual fuel heat pumps is represented in Monte Carlo risk analysis.

Expectation 19: Before the next IRP, Staff expects Avista to work with the TAC to consider Staff's revised Electrification Incentive Strategy (see Attachment A).

Expectation 20: Staff expects Avista to work with the TAC to identify a PacifiCorp IRP scenario reflecting electrification that Avista might use to generate a load forecast for its next IRP. Before the next IRP, Avista should work with PacifiCorp to collect the load forecasts used in planning that most closely reflects a building electrification scenario for the overlapping territories. With these load forecast results, Avista should discuss with PacifiCorp supporting commentary regarding supply-side and demand-side resource impacts, rate impacts, and associated GHG emissions with each scenario/portfolio. Avista should discuss with the TAC the extent to which the Company might be able to model the equivalent in its next IRP.

Expectation 21: Before the next IRP, Staff expects Avista to host electrification workshops, addressing the issues listed in Section 6.4 to support a discussion on a proactive resource strategy.

Expectation 22: Avista should update its distribution system planning practices and its future IRP processes as outlined in Attachment C.

Expectation 23: Avista should apply distribution system planning practices as outlined in Attachment C to the Sutherlin project and should continue to explore targeted electrification to offset demand at the Sutherlin gate station.

Expectation 24: For future IRPs, the Company should discuss in a TAC meeting how Avista envisions avoided costs determinations aligning with resource portfolios made up of higher priced fuels and declining natural gas, and how that will be reflected in its next IRP.

Expectation 25: In the next IRP, Avista should include a workpaper of the fixed fees paid on each unit of capacity under contract and provide an update on potential or existing plans to retire firm capacity contracts.

Expectation 26: In future IRPs, Avista should include a discussion of cold weather reliability standards including foreseeable cold weather risks to its supply-side resources including transportation and storage capacity resources.

Requests

Request 1: Future IRPs should include a clearer explanation of the PRS, and a more transparent presentation of the assumptions and processes used in creating the PRS, including examples noted by Staff.

Request 2: Staff requests Avista engage the TAC in discussion of the value of NPVRR analysis relative to levelized-cost analysis.

Request 3: Avista engage the TAC in considering the merits and drawbacks of modeling state-specific resource and system investments.

Request 4: Staff requests that the latest information on possible distribution projects, including any proposed traditional investments or proposed NPA, be included in future IRP Updates.

Request 5: Staff requests that the possible impacts (at least on the Company's revenue requirement and scenario analysis) of line extension allowance elimination be taken up by the TAC with the goal of determining how to best reflect expected impacts in future IRPs.

Request 6: Staff requests that the Company report to the TAC in late 2024 on the low-income hybrid heating pilot including relevant program details, progress to-date, lessons learned, findings about the potential of such a program to meet CPP compliance and to mitigate upward rate pressure, and learnings on how to model such a program in future IRPs.

Request 7: Staff requests Avista vet demand response modeling parameters (such as costs, increments, potential, and ramp rates) with TAC members.

Request 8: Staff requests that Avista engage the TAC in a discussion of how the value of Interruptible loads can be folded into resource planning.

Request 9: Staff requests Avista engage a representative set of Interruptible customers to study interest in participating in demand response offerings, and under what conditions, with results to be shared with the TAC.

Request 10: In the IRP Update, Staff requests that Avista include a table of expected CPP compliance costs.

This concludes Staff's Final Comments.

/s/ Nick Sayen
Senior Utility Analyst
Oregon Public Utility Commission

Attachment A

Electrification Incentive Strategy

Ratepayer Incentive Value

The Ratepayer Incentive Value includes both the cost of the ratepayer to convert and the benefit the ratepayer's decision to electrify provides to gas system operations and downstream costs. Staff expects the feasibility of conversion to be constrained by the equipment lifecycle costs (equipment costs and operation costs over the lifetime of the appliance) and available electric grid capacity. Equipment cost calculations could foreseeably leverage precedent used within the Docket No. UM 1893, available policy incentives, and data collected from regional electric appliance sales and Energy Trust of Oregon heat pump programs. Staff is not convinced that electric rates are the best indicator of operation costs. Instead, Staff requests Avista work with Energy Trust and electric utilities to consider bill impacts or other metrics to measure operation costs by end-use. In any event, given the sensitivity of lifecycle costs to region, Staff stresses that Avista use regionally appropriate efficiencies, equipment and operation costs, and weather forecasts for Avista's service territory.¹⁴¹ Moreover, Staff believes that understanding the Ratepayer Incentive Value of electrification will require some form of scenario and data sharing between gas and electric utilities to identify where electrification is feasible based on available capacity on the electric grid to handle the new entry of electric appliances.

To determine the benefits the ratepayer provides to the system through their decision to electrify, Staff requests the Company consider how the decision provides downstream benefits such as reduced emissions, reduced need for higher-cost alternative fuels, reduced transportation and distribution costs over the long term. The decision to electrify may also provide reliability benefits to the gas system during winter peak through released firm pipeline capacity. In determining a compensation cost for these savings and gas system operation benefits Staff sees benefit in considering existing electric sector incentives, including time-of-use rates, net metering, and capacity payments.

Staff recognizes that the price to switch out appliances and electric rates rising above marginal cost are key considerations in a property owner's decision to electrify. If the benefit of the ratepayers' investment is greater than the costs, it can indicate new entry of the electric unit and a corresponding retirement of the gas unit.

Policy Incentives

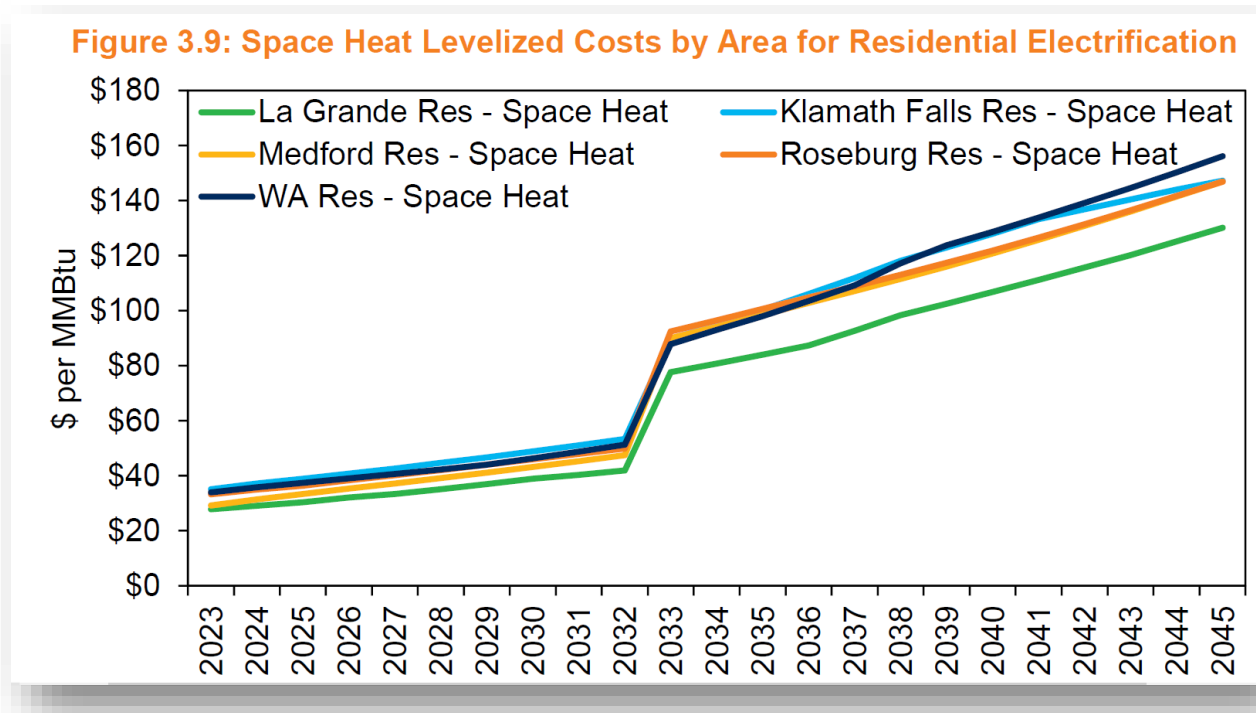
Policy incentives include external, non-ratepayer funding sources. These can supplement an incentive strategy without impacting gas rates. For example, the IRA provides tax credits and rebates to reduce the purchase cost for electric panel upgrades and heat pumps, whose high

¹⁴¹ See e.g., ACEEE, *Analysis of Electric and Gas Decarbonization Options for Homes and Apartments*. Steven Nadel and Lyla Fadali (July 2022) at 37-38 (presenting a detailed comparison of space and water heat lifecycle costs by region, fuel, and equipment types). ACEE notes that in the Pacific Region, electric heat pumps minimize life-cycle costs in 82–83% of the homes in their sample.

costs can be a barrier to electrification.¹⁴² Notably, maximizing IRA incentives is crucial in the near term, as available IRA incentives decrease annually and are unavailable after 2032. As shown in the figure below, in the workpapers accompanying the IRP, Avista forecasts that the cost of electrification will increase year over year and spike in 2032 with the termination of IRA financing. This suggests that it will be incrementally more expensive for Avista to incentivize electrification over time.

Figure 7 below shows Avista’s forecasted cost for electric space heat inclusive of a 50 percent reduction in conversion costs for IRA incentives and increasing electric rates.¹⁴³

Figure 7: Forecast Space Heat Costs



Company Cost Value

The Company Cost Value portion of the incentive strategy looks at the cost to the Company to proactively incentivize electrification. In other words, what portion of the Ratepayer Incentive Value is the Company willing to pay? Staff recognizes that electrification reduces consumption. This manifests as a cost to the LDC through reduced returns and lost capital investment opportunities. Unless the company can anticipate a return on the investment, their willingness to incentivize electrification is lower because of these reduced revenue requirements. Using avoided cost calculations may help to understand Avista’s willingness to pay. Staff anticipates

¹⁴² The IRA’s High-Efficiency Electric Home Rebate Program provides up to \$14,000 per household for qualified electric purchases 42 U.S.C. §6294(a).

¹⁴³ See Docket No. LC 81, Avista 2023 Integrated Resource Plan, Fig. 3.9, <https://edocs.puc.state.or.us/efdocs/HAA/lc81haa114738.pdf>.

working with the Company to deepen conversation around electrification and avoided cost within the Docket No. UM 1893.

Conclusion

As discussed in more detail in Section 6.4, Staff is interested in hearing from stakeholders when identifying the right incentive level. Staff recognizes that this will likely require the sharing of data and scenarios between gas and electric utilities and recommends possible pathways in Section 6.3. Moreover, an electrification incentive strategy should be considered alongside other energy efficiency and weatherization programs.

Attachment B

Draft customer meter data worksheet template

1. Please provide the quarterly meter data for residential customers for the past three years. In your response, please decompose the class data as noted in the table below.

Class Data Type	Dec. 31, 2020	March 31, 2021	June 30, 2021	Sept. 30, 2021	Dec. 31, 2021	March 31, 2022	June 30, 2022	Sept. 30, 2022	Dec. 31, 2022	March 31, 2023	June 30, 2023	Sept. 30, 2023
New Construction												

2. Please provide the quarterly meter data for residential customers for the past three years. In your response, please decompose the class data as noted in the table below.

Class Data Type	Dec. 31, 2020	March 31, 2021	June 30, 2021	Sept. 30, 2021	Dec. 31, 2021	March 31, 2022	June 30, 2022	Sept. 30, 2022	Dec. 31, 2022	March 31, 2023	June 30, 2023	Sept. 30, 2023
“Conversion” (existing buildings converting from elec/ oil/propane /etc.)												

3. Please provide the quarterly meter data for residential customers for the past three years. In your response, please decompose the class data as noted in the table below.

Class Data Type	Dec. 31, 2020	March 31, 2021	June 30, 2021	Sept. 30, 2021	Dec. 31, 2021	March 31, 2022	June 30, 2022	Sept. 30, 2022	Dec. 31, 2022	March 31, 2023	June 30, 2023	Sept. 30, 2023
Disconnections												

4. Please provide the quarterly meter data for residential customers for the past three years. In your response, please decompose the class data as noted in the table below.

Class Data Type	Dec. 31, 2020	March 31, 2021	June 30, 2021	Sept. 30, 2021	Dec. 31, 2021	March 31, 2022	June 30, 2022	Sept. 30, 2022	Dec. 31, 2022	March 31, 2023	June 30, 2023	Sept. 30, 2023
Load value of 250-300 terms												

5. Please report the number of residential retail customer who experienced a year-over-year decrease in natural gas use of 100 therms, 300 therms, and 500 terms. In your response, please decompose the class data as noted in the table below.

Class Data Type	Dec. 31, 2020	March 31, 2021	June 30, 2021	Sept. 30, 2021	Dec. 31, 2021	March 31, 2022	June 30, 2022	Sept. 30, 2022	Dec. 31, 2022	March 31, 2023	June 30, 2023	Sept. 30, 2023
Load value decrease of 100 therms												
Load value decrease of 300 therms												
Load value decrease of 500 therms												

6. Please provide the quarterly meter data for residential customers for the past three years. In your response, please decompose the class data as noted in the table below.

Class Data Type	Dec. 31, 2020	March 31, 2021	June 30, 2021	Sept. 30, 2021	Dec. 31, 2021	March 31, 2022	June 30, 2022	Sept. 30, 2022	Dec. 31, 2022	March 31, 2023	June 30, 2023	Sept. 30, 2023
Total Meters												

Attachment C

The Company should update its DSP practices and IRP processes to include:

1. Future distribution system planning should identify the rationale for projects as either Safety/General System Reliability, or Customer Growth/Reliability Related to Growth.
 - a. When proposing growth-driven projects in IRPs the utility should be prepared to present project data on: relationship to CPP compliance strategy, modeling and verified measurement, local load forecast, and assessment of alternatives through the NPA framework.
2. Future distribution system planning should include an NPA framework in Oregon. The framework should include:
 - a. NPA analysis will be performed for supply-side resources (these include but are not limited to all resources upstream of Avista's distribution system and city gates, and supply-side contracts) and for distribution system reinforcements and expansion projects that exceed a threshold of \$1 million for individual projects or groups of geographically related projects (a group of projects that are interdependent or interrelated).
 - b. NPA analysis will include cost benefit analysis that reflects an avoided GHG compliance cost element consistent with a high-cost estimate of future alternative fuels prices. Non-Energy Impacts must be included as part of the NPA analysis.
 - c. NPA analysis will include electrification, targeted energy efficiency, targeted demand response, and other alternative solutions.
 - d. NPA analysis should look forward five years to allow ample time for evaluation and implementation.
 - e. NPA analysis will include an explanation of solutions considered and evaluated including a description of the projected timeline and annual implementation rate for the solutions evaluated, the technical feasibility of the solutions, and the strategy to implement the solutions evaluated.
 - f. NPA analysis should include an explanation of the resulting investment selection (either NPA or a traditional investment) including the costs and ranking of the solutions, and the criteria used to rank or eliminate them.
 - i. If a NPA is not selected and the reason is insufficient implementation time, it should include steps the Company will take to perform NPA analysis to provide sufficient implementation time for future projects.
3. Future IRPs should include the results of distribution system planning, including project data and NPA analysis for any proposed traditional investments, and NPA analysis for any proposed NPA.
4. Future IRPs should include a database containing information about feeders, in service dates of pipes, and lowest recent observed pressures.

Attachment D

The requests below were in Staff's Opening Comments. Staff includes them here, along with Avista's response from Reply Comments.

Request for Next IRP 1: Avista's scenario analyses should reflect the potential for Oregon policies mandating electrified space and water heating, reductions in line extension allowances, and other such policies that might reduce customer count expectations.

Response: Avista will include this request in the 2025 IRP

Request for Next IRP 2: Avista should describe its strategy for synthetic methane procurement through the lens of on-system ownership of green hydrogen and/or carbon capture facilities and off-system contracts.

Response: Avista is open to dialogue regarding this question in the 2025 IRP process and not as a specific action item.

Request for Next IRP 3: The next IRP should include an update of Avista's approach to hydrogen acquisition as it relates to build versus buy to ensure Avista's proposed levels of synthetic methane usage.

Response: Avista is open to dialogue regarding this question in the 2025 IRP process and not as a specific action item.

Request for Next IRP 4: In its next IRP, Avista should continue to include and update its build versus buy decision-making approach and engage with stakeholders on this topic in a TAC meeting.

Response: Avista is open to dialogue regarding this question in the 2025 IRP process and not as a specific action item.