ORDER NO. 25-017

ENTERED Jan 21 2025

# BEFORE THE PUBLIC UTILITY COMMISSION

# OF OREGON

UM 1893

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| In the Matter of<br><br>PUBLIC UTILITY COMMISSION OF OREGON,<br><br>Request for Approval of Energy Efficiency Avoided Cost data to be Used by Energy Trust. | ORDER |

DISPOSITION: STAFF'S RECOMMENDATION ADOPTED

At its public meeting on January 21, 2025, the Public Utility Commission of Oregon adopted Staff's recommendation in this matter. The Staff Report with the recommendation is attached as Appendix A.

BY THE COMMISSION:

**Alison Lackey**
Chief Administrative Law Judge

A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Circuit Court for Marion County in compliance with ORS 183.484.

**ITEM NO. RA1**

**PUBLIC UTILITY COMMISSION OF OREGON**
**STAFF REPORT**
**PUBLIC MEETING DATE: January 21, 2025**

**REGULAR** __X__ **CONSENT** ____ **EFFECTIVE DATE** __January 22, 2025__

**DATE:** January 13, 2025

**TO:** Public Utility Commission

**FROM:** Peter Kernan

**THROUGH:** Caroline Moore, JP Batmale, and Sarah Hall **SIGNED**

**SUBJECT:** OREGON PUBLIC UTILITY COMMISSION STAFF:
(Docket No. UM 1893)
Request for approval of energy efficiency avoided cost data to be used by Energy Trust.

**STAFF RECOMMENDATION:**

The Public Utility Commission of Oregon (Commission) should approve energy efficiency avoided cost data for use by Energy Trust of Oregon (Energy Trust).

**DISCUSSION:**

Issue

Whether to approve the attached energy efficiency avoided cost data for use by Energy Trust.

Applicable Rule or Law

OAR 860-030-0011(1) requires an energy utility to submit its data for calculation of energy efficiency avoided costs in the manner and method specified in a Commission-approved reporting form. The form must be submitted by October 15 of each year for use in the next energy efficiency program budget cycle. See OAR 860-030-0011(1).

Under OAR 860-030-0011(2), the Commission may approve, at its discretion, the use of data more recent than data used in the utility's last acknowledged Integrated Resource Plan (IRP) or general rate case in which the Commission has issued a final order.

Under OAR 860-030-0013, Energy Trust may not use utility-specific energy efficiency avoided cost data until it has been approved by the Commission. The Commission generally considers energy efficiency avoided cost data for approval within 60 days of submission.

## Background

*Analysis*

Energy efficiency avoided cost data for use by Energy Trust was last updated in April 2024 with Order No. 24-119, which approved an electric avoided costs increase of 37.6 percent and a gas avoided cost increase of 13.0 percent.[1] The April 2024 update is referred to as Phase 1. During summer 2024, Staff launched Phase 2 by hosting two workshops and public comment periods to explore methodological changes to further align energy efficiency avoided costs with electric utility planning after the passage of House Bill (HB) 2021.

In September 2024, Staff requested a six-week delay to allow additional time to finalize the data template, approved by the Commission.[2] In Order No. 24-314 the Commission required utilities to file their most recent avoided cost data by November 30, 2024. Subsequently on September 27, 2024, Staff published an update to Docket No. UM 1893 which reviewed the Phase 2 investigation and announced new electric and gas avoided cost data templates.[3] The values proposed for adoption in this memo represent the completion of Phase 2 and establish energy efficiency avoided costs for 2026.

During review of electric utility 2023 IRPs, Staff and utilities observed that changes to the avoided cost methodology may be needed to modernize avoided costs in line with state decarbonization policy. This topic was particularly salient in Portland General Electric's (PGE) 2023 IRP (LC 80), leading to Staff's Recommendation 4 in Staff Comments:

> Direct PGE to work with Staff to propose a new method for calculating avoided costs in Docket No. UM 1893. The avoided cost proposal should resolve the shortcomings identified by PGE and Staff, including but not limited to the shift from one avoided capacity value to annual values, the

[1] See Docket No. UM 1893, Order No. 24-119, (Apr. 30, 2024), https://apps.puc.state.or.us/orders/2024ords/24-119.pdf.
[2] See Order No. 24-314, Waiver of OAR 860-030-0011 for Utility Filing of Energy Efficiency Avoided Cost Report, Docket No. UM 1893, (Sep. 23, 2024), https://apps.puc.state.or.us/orders/2024ords/24-314.pdf.
[3] See Docket No. UM 1893, Docket Update, (Sep. 27, 2024), https://edocs.puc.state.or.us/efdocs/HAH/um1893hah331693025.pdf.

impact of constraints observed in the model, and the need to procure clean electricity not captured by forward market prices.[4]

PGE agreed and the Commission adopted Staff's recommendation, stating that in addition to Staff' recommendation, Commissioners "direct PGE to collaborate with Staff and [Energy Trust] to modernize the approach to long-term energy efficiency planning to use the best currently available information on energy efficiency and technical potential in future IRP and CEP updates."[5] Staff appreciates PGE's proactive participation to comply with Staff's recommendation. PGE published slides detailing requisite changes to align energy efficiency avoided costs with long-term planning on June 3, 2024.[6]

In this memo, Staff divides its analysis into three sections. Section I presents a summary of activities since the last report.[7] Section II presents Staff's recommendations regarding data for use by Energy Trust for energy efficiency avoided cost calculations, first for electric and then gas utilities. Section III summarizes the results of Energy Trust's analysis regarding overall impacts of using the recommended energy efficiency avoided costs.

Energy Trust analyzed the avoided costs data and prepared annual reports for Staff review and consideration by the Commission. Appendix A is the *Final 2026 Electric Avoided Cost Update Summary* and Appendix B is the *Final 2026 Gas Avoided Cost Update Summary.* Additionally, Staff prepared Appendix C to summarize the recommended data for electric and gas avoided costs. Appendix C does not include all data submitted by utilities, which can be found in the respective dockets online.[8]

*Section I: Summary of Activities*

Launching Phase 2, Staff hosted a first workshop on June 20, 2024. In it, Staff provided an overview of the role of avoided costs and the context for needing methodological changes due to the passage of HB 2021. Then PGE presented the slides and proposal for redeveloping energy efficiency avoided costs.

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[4] See Docket No. LC 80, *Staff Report for Acknowledgement of 2023 Integrated Resource Plan and Clean Energy Plan,* (December 14, 2024), p. 18, https://edocs.puc.state.or.us/efdocs/HAU/lc80hau325590032.pdf.
[5] See Docket No. LC 80, *Order No. 24-096,* (April 18, 2024), p. 21, https://apps.puc.state.or.us/orders/2024ords/24-096.pdf.
[6] See Docket No. UM 1893, *PGE's Phase II Slides,* (June 3, 2024), https://edocs.puc.state.or.us/efdocs/HAH/um1893hah329014025.pdf.
[7] Order No. 24-119, (April 30, 2024).
[8] Utilities submit data in utility-specific dockets as follows: Avista RG 85; CNG RG 86; NWN RG 87; PacifiCorp RE 181; PGE RE 182.

Staff hosted a second workshop on July 16, 2024, with three substantive topics. PacifiCorp shared its perspective on recent updates to its avoided cost process and how it planned to comply with changes. Energy Trust then presented research on the use of arrearages as a non-energy benefit in the utility cost test. Finally, there was a discussion of public comments and opportunity to ask questions of PGE and PacifiCorp.

On August 9, 2024, Staff published an update to Docket No. UM 1893 that reflected on the two workshops, outlined Staff priorities for the Phase 2 update, and reviewed the five public comments received at that juncture. An additional four public comments were received prior to the August 23 deadline, which were considered prior to Staff publishing a subsequent docket update on September 27. Staff noted that there was broad support to focus Phase 2 on changes to energy, capacity, and the addition of a transmission expansion credit. Staff responded to additional comments, particularly around the use of non-energy benefits and the societal cost test but did not include new guidance to address those in Phase 2.

Staff published an update detailing changes to respective electric and gas avoided cost data templates on September 27, 2024.[9] Staff's three priority changes included revised guidance for energy, capacity, and a new transmission expansion credit. Staff made several additional minor changes including removing renewable portfolio standard references and consolidating loss of load probability (LOLP) tables. Staff formalized the request that utilities submit recently filed IRP or IRP Update data, instead of solely relying on acknowledged IRP data. For the gas data template, Staff added new guidance on how utilities calculate avoided distribution capacity costs.

*Section II: Data Recommendations*

The utilities populated the updated UM 1893 worksheets using data either from their IRPs or most recent general rate case. In most cases, utilities submitted data from the most recently acknowledged IRP and used the alternate tabs of the workbook to submit more recent data. In situations where utilities provided alternate sets of data, Staff reviewed whether the data were reasonable.

Staff recommends using the most recent alternate data when available and reasonable. In some cases, Staff also proposes applying certain data recommendations, rather than what has been submitted by the utilities. Staff's data recommendations below, are organized by fuel and by avoided cost components.

[9] Docket No. UM 1893, Docket Update, Sep. 27, 2024.

**Electric Utility Data Recommendations**

A complete overview of electric avoided costs can be found in Appendix A, Energy Trust's *Final 2026 Electric Avoided Cost Update Summary,* including updates to electric cost categories receiving more routine updates. In the section below, Staff highlights three main recommendations for electric avoided costs.

1. **Energy**: Staff recommends adoption of PacifiCorp's alternate avoided energy submission, PGE's forward market data for 2026-2028, and PGE's avoided energy data for 2029 and beyond.
2. **Capacity**: Staff recommends adoption of PGE's main submission and PacifiCorp's alternate submission.
3. **Transmission Expansion**: Staff recommends adoption of utility submitted values, which are embedded in their avoided energy costs.

<u>Avoided Energy Costs</u>
In the updated data template, Staff requested that utilities submit two forms of avoided energy costs. The first is submission of forward market prices using the PacifiCorp Official Forward Price Curve (OFPC) format. The second form of avoided energy costs is titled *avoided energy*; utilities submit marginal energy costs which account for emissions constraints and reflect procurement of clean energy resources when those resources are marginal. The second, avoided energy cost, is also referred to as an "avoided build cost." While Staff solicits two different streams of avoided energy values, only one is recommended for use in avoided costs.

Based on the Phase 2 process, Staff recommended transitioning avoided energy submissions away from a monthly, heavy load hour and light load hour (2x12) construct, and to a monthly, average hour (12x24) granularity. The use of a 12x24 provides additional insight into which hours of each month are more valuable for energy efficiency to avoid. This can be particularly important when matching pricing with energy efficiency measures' savings shapes. Independent of what the revised energy data is, the increase in granularity will help identify the most valuable energy efficiency opportunities.

PacifiCorp submitted four avoided energy options, two OFPC's and two avoided build costs. The first submission reflects the OFPC which came from the Company's 2023 IRP Update and is dated September 2023. The alternative OFPC is dated September 30, 2024, and represents PacifiCorp's most recent data. The two OFPC submissions have different vintages but reflect the same process to generate the forecast.

PacifiCorp's two avoided energy submissions use the respective OFPC's as the basis, thus the differentiation of each can be thought of as a difference in vintage. The avoided energy values in each hour reflect the incremental cost of the proxy energy resource relative to the forward price curve value of its generation and its capacity value. Monthly-hourly forward price curve values are grossed up proportionately based on the annual incremental cost. In certain years, such as the near future where forecasted market prices are high, PacifiCorp's data suggest that the proxy renewable resource carries a negative incremental cost. For these years, PacifiCorp applies 0 percent as the incremental cost to market prices, as the market remains the marginal resource in those years and a least cost-portfolio would see procurement of the proxy resource to reduce power costs.

PGE submitted its OFPC with operational Mid-C price curves dated September 30, 2024, for the three-year period of 2026-2028. Aligned with the OFPC format, 2029 is an interpolation year and 2030-2043 reflect the long-term Aurora forecast from PGE's 2023 IRP. For the avoided energy submission, PGE selected the marginal energy resource by determining the most expensive levelized cost of electricity (LCOE) resource built in each year in PGE's final 2023 IRP preferred portfolio. To create average monthly hourly values (12x24), PGE used the levelized annual cost and shaped values using the hourly pricing forecast from PGE's 2023 IRP Aurora model.

Staff appreciates both PGE and PacifiCorp's efforts to characterize avoided energy values which reflect a portfolio compliant with HB 2021's emissions constraints. Staff offers the following observations and recommendations.

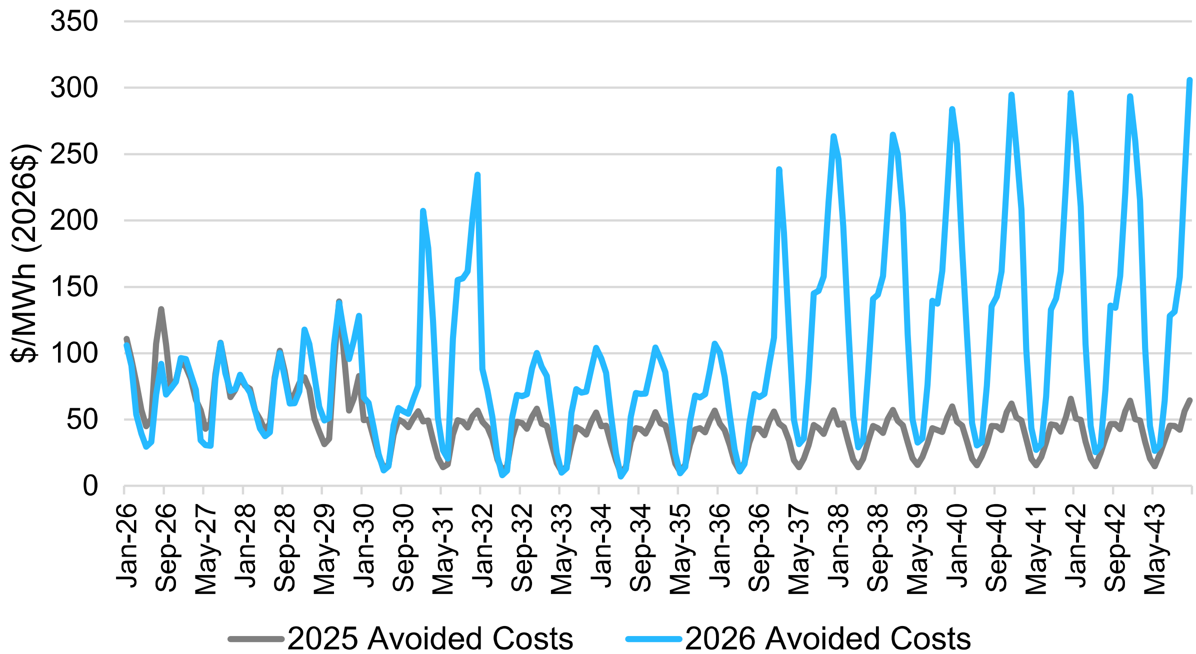
**The market remains the avoided energy resource in the near term.** Compared to the high values presented by utility OFPC's of Phase 1, OFPC values submitted in Phase 2 reflect a tempering in cost extremes. However, both PGE and PacifiCorp market prices remain elevated for the 2026-2028 period. IRP analysis from both companies suggest that procuring renewables in the near term would result in a net negative cost to ratepayers. PGE's preferred portfolio indicates that Gorge, Montana, and Southeast Washington wind resources each carry negative net cost of energy in 2026-2028. PacifiCorp's analysis using Utah Solar as the proxy resource indicates the same. However, despite IRP modeling, utility actions have not acquired clean energy at the requisite rates. Staff notes that PacifiCorp cancelled its 2022 all-source request for proposals (RFP) and PGE presented a 2023 RFP final short list which delayed procurement of energy resources to future years. These utility actions indicate that the market remains the avoided energy resource until 2028.

**Beyond 2028, avoided build costs are a better proxy for determining avoided energy costs.** Utility expectations are that market prices moderate beyond 2028, yet there is a coincident increase in the avoided energy costs related to new build resources. PacifiCorp's analysis of an avoided build cost relied on a single proxy resource, which has higher avoided costs. Staff notes that compared to PGE's analysis, which determined annual avoided build costs, PacifiCorp's analysis may underrepresent costs associated with other necessary resources which also must be built to comply with HB 2021. Staff supports PGE's use of the preferred portfolio to determine the built resources with the most expensive LCOE in each year. Staff notes that these LCOE values include the requisite transmission expansion needs to bring generation to load, such as the proxy Nevada solar resource.

Staff supports PGE's use of the avoided energy data for better alignment with PGE's 2023 IRP. In Docket No. LC 80 there was a substantial conversation around the selection of an additional 53 aMW of energy efficiency at elevated avoided costs. The UM 1893 energy efficiency avoided costs at the time of PGE's LC 80 filing would not have supported the acquisition of those resources. Yet, PGE's endogenous IRP modeling communicated an important change in avoided costs that this Phase 2 decision seeks to resolve. PGE's avoided energy values reflect why the additional efficiency was selected as it had a lower LCOE than the marginal build resources in many years.

Staff recommends the use of PacifiCorp's avoided energy cost (Alt1) submission, which is based on more recent forward prices and Utah South Solar as the proxy renewable resource. Staff recommends the use of PGE's forward price curve for 2026-2028. This is consistent with PacifiCorp's data, and the view that elevated market prices will set the avoided cost in those years. Beyond 2028, Staff recommends the use of PGE's avoided energy values representing avoided build resources from the IRP. **Figure 1** is copied from Energy Trust's *Final 2026 Electric Avoided Cost Update Summary* (Appendix A), and compares the currently approved, 2025 avoided costs to those proposed for 2026. Staff notes that embedded in the avoided energy values are the new, transmission expansion credits.

***Figure 1: Avoided Energy Costs Recommended for Commission Approval***




<u>Capacity Deferral Value</u>
Utilities provide capacity avoided costs in $/kW-yr to reflect the cost of generation capacity to the utility's system. Staff proposes adopting utility submissions, but also raises concerns with those submissions, and recommends directing utilities to work with Staff on developing revised values for future avoided costs. This section explores the utility-submitted values and Staff's alternate proposal.

In the recent past, both PGE and PacifiCorp relied on a gas simple cycle combustion turbine (SCCT) as the capacity resource to set the avoided cost. Gas SCCT are commonly viewed as a pure capacity resource; in theory, those resources do not operate unless there is a capacity need. When there is a capacity need, the SCCT is not energy limited—it has an effective load carrying capacity (ELCC) approaching 100 percent. The result is that the fixed cost of a SCCT reflects the capacity deferral value.

After the passage of HB 2021, the use of an emitting capacity resource is reduced and eventually eliminated. Thus, utilities are actively investing in non-emitting capacity. PGE acquired 475 MW of stationary storage from the 2021 request for proposals (RFP) and the final short list for the 2023 RFP includes 775 MW of nameplate capacity of four-hour storage.[10] PacifiCorp's preferred portfolio in the 2023 IRP update includes consistent additions of four-hour storage over the planning horizon.[11]

In Phase 2, utilities provided an annual avoided capacity resource and the associated avoided cost in each year for the planning horizon. This marks a departure from prior practice where a single, snapshot year's avoided capacity resource value was used. IRP analysis should be used to determine what the avoided capacity resource and net cost of capacity is in that year, which is dependent on both changing resource cost assumptions and changing effective load carrying capacity (ELCC) contributions. Inclusion of changing capacity resource values is a necessary change to align with long-term planning.

Both PGE and PacifiCorp identified four-hour batteries as the marginal capacity resource for each year of the planning horizon. PGE reported an average net cost of capacity at $146/kW-yr, down from the $228/kW-yr used in Phase 1. PGE's fixed cost assumptions were the same as in Phase 1, but the Company referred to different ELCC values from Appendix K of the 2023 IRP instead of the separate Phase 1 analysis. Lower ELCC values drive up net cost of capacity. PGE's net cost calculation reduces the fixed cost by the investment tax credit, the energy value, and flexibility value associated with the battery. That capacity cost is then divided by the ELCC value to arrive at the net cost of capacity.

PacifiCorp uses results from PLEXOS modeling to derive the net cost of capacity. PacifiCorp submitted a levelized net cost of capacity of either $46/kW-yr or $52/kW-yr for a four-hour battery using two different methods to estimate relevant ELCCs. Both values are a substantive decrease from the $105/kW-yr value associated with an SCCT in Phase 1. PacifiCorp calculated a net cost of the four-hour battery by reducing fixed costs by modeled net generation revenues and reserve revenues in PLEXOS. While PacifiCorp levelized the net costs over the planning horizon, individual years' net cost range both negative and largely positive.

Staff raises two primary concerns about the data submitted by both PGE and PacifiCorp. First, the use of a four-hour battery as the marginal capacity resource in each year of the planning horizon omits years in which the IRP selects more expensive

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[10] See Order No. 24-425, *PGE 2023 All-Source Request for Proposals,* (Nov. 25, 2024), p. 8, https://apps.puc.state.or.us/orders/2024ords/24-425.pdf. 775 MW is based on nameplate capacity of Group A projects.
[11] See Docket No. LC 82, *PacifiCorp 2023 Integrated Resource Plan Update,* (April 1, 2024), p. 78, https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2023_IRP_Update.pdf.

capacity. Second, Staff finds that utility fixed cost assumptions are materially different than more recent cost data reported by utilities in other dockets.

Staff also notes that ELCC assumptions vary significantly between the companies and within vintages of reporting within each company. However, absent alternative data, Staff accepts the ELCC submissions. Staff also accepts the underlying net cost adjustments including netting out of tax credits, energy value, and flexibility or reserves value. Staff has not vetted these adjustment numbers, so this acceptance is not an endorsement.

Staff observes that both PGE and PacifiCorp's most recent IRP updates select more expensive capacity than a four-hour battery. PGE's preferred portfolio, documented in a September 2023 response to Staff comments, selects a generic capacity resource starting in 2035.[12] PGE provided Staff with fixed cost assumptions for that generic capacity resource by year, which are 121 percent more expensive than PGE's submitted four-hour battery values for 2035-2043. PacifiCorp's 2023 IRP Update preferred portfolio selects additional peaking resources in 2029 and a nuclear generator in 2030. Without cost profiles for such resources, Staff reviewed the eight-hour net costs which PacifiCorp submitted in UM 1893. On a levelized, 20-year basis, eight-hour battery net capacity costs are 155 percent more expensive than four-hour battery net capacity costs. Staff finds the fact that preferred portfolios select more expensive capacity resources, but utilities did not reflect those in avoided capacity costs concerning.

Staff's second concern is related to fixed cost assumptions, which Staff believes utilities have access to more relevant and more recent data that is reflective of current market conditions. Staff notes that the Phase 2 capacity recommendation acknowledges that changes to fixed cost assumptions are expected to change over time. So, to the extent that market conditions suggest higher fixed costs right now, there may be reasonable expectations to revert to long-term trends such as the National Renewable Energy Lab's Alternative Technology Baseline after a few years. Such treatment is similar to avoided energy where both markets and long-term models are used.

Having noted concerns, Staff still recommends adoption of utility submitted values in this cycle, specifically PGE's main submission and PacifiCorp's alternate submission. Staff met with both PGE and PacifiCorp on multiple occasions to understand calculation of avoided capacity. However, Staff discovered the discrepancies too late in the process. Therefore, there was not enough time to develop an alternative in time to

[12] See Docket No. LC 80, *Portland General Electric Company's 2023 Clean Energy Plan and Integrated Resource Plan Reply to Round 1 Comments*, (September 6, 2023), p. 75, https://edocs.puc.state.or.us/efdocs/HAC/lc80hac131341.pdf.

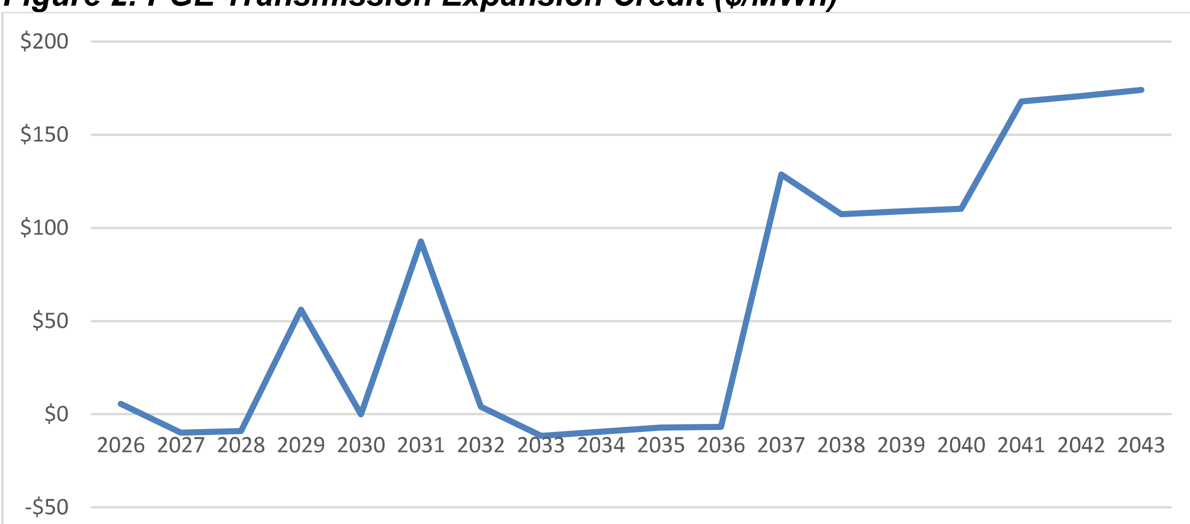
share with stakeholders and utilities. In future avoided cost proceeding, Staff finds that revised net costs of capacity values are justified and Staff will work with PGE and PacifiCorp on revisions for future filings.

Transmission Expansion Credit

In response to Order No. 24-096, PGE submitted a proposal in UM 1893 to align Energy Trust's avoided costs with PGE's long-term planning from its IRP process. A core feature of PGE's proposal is the addition of a transmission expansion credit that is connected to the IRP preferred portfolio. The credit will be separate and additional to the existing transmission deferral credit.

PGE used the method of documenting a preferred portfolio LCOE with and without transmission constraints. The LCOE difference between the marginal resource with and without transmission constraints represents the value of the transmission expansion credit. Figure 2 shows the $/MWh value of PGE's transmission expansion credit.

***Figure 2: PGE Transmission Expansion Credit ($/MWh)***




Staff provides two observations. First, in certain years the value of the credit is negative, which PGE attributes to vintages of the preferred portfolio. The final 2023 IRP preferred portfolio is used for the scenario with transmission constraints. The preferred portfolio without transmission constraints was generated for the July 2023 refresh addendum. Second, the magnitude of transmission costs in many of the years is substantial. Since these costs are embedded in the energy value of the preferred portfolio with constraints, the avoided energy costs discussed above include these costs. Thus, Figure 2 values are not additional to overall avoided energy costs.

PacifiCorp provided two separate analyses to calculate necessary investments in transmission expansion. First, PacifiCorp provided interconnection costs for standard renewable qualifying facility (QF) pricing in both an energy basis ($/MWh) and a capacity basis ($/kW-yr). As an alternative, PacifiCorp provided anticipated transmission expansion costs from the IRP Update preferred portfolio and generated a net cost of transmission on a capacity basis ($/kW-yr). The capacity-based methods for calculating net transmission costs produced results within 1.2 percent of each other, lending a degree of confidence to either method. Similar to PGE, PacifiCorp's transmission expansion credit is included in avoided energy costs.

Staff recommends inclusion of utility data for an avoided transmission expansion credit. Both PGE and PacifiCorp's avoided transmission expansion costs are included in their respective avoided energy costs. Data presented in Appendix C, express those costs in a single, 20-year levelized cost for transparency, but the value is not duplicative in Energy Trust's final analysis.

Remaining Electric Avoided Cost Values

Staff recommends accepting the remaining electric avoided costs values as submitted by utilities. These include the risk reduction value, transmission deferral credit, and distribution deferral credit. Staff notes that there were no changes to transmission and distribution loss assumptions or to the LOLP tables. Staff also maintains its Phase 1 recommendation to use capacity splits provided by utilities instead of rounding to the nearest 50 percentile.

The use of more recent data resulted in a 1.9 percent decrease to the inflation rate and a 4.6 percent increase to the discount rate. The most substantive change came from PGE's transmission and distribution deferral values. Instead of relying on the entire avoided cost, PGE converted each by assuming investments are deferred for ten years. This change in methodology resulted in a 63 percent decrease for PGE's values compared to 2025 avoided costs. Values presented in **Table 1** are weighted averages from both PGE and PacifiCorp and are recommended for Commission adoption.

***Table 1: Summary of Revenue Weighted Electric Avoided Cost Changes*[13]**

| | Final Blended Value for 2026 Avoided Costs (2026$) | Final Blended Value for 2025 Avoided Costs (2026$) | Percent Change in Component |
|---|---|---|---|
| **Inflation Rate** | 2.13% | 2.17% | -1.9% |
| **Real Discount Rate** | 4.30% | 4.11% | 4.6% |
| **Regional Act Credit** | 10.00% | 10.00% | 0.0% |
| **Transmission Deferral Credit** | $22.73 | $58.79 | -61.3% |
| **Distribution Deferral Credit** | $8.55 | $15.97 | -46.5% |
| **Risk Reduction Value** | $2.83 | $2.98 | -5.0% |

Future Analysis

**Energy and Capacity Interactions**

Because energy and capacity values are calculated separately in Energy Trust's benefit/cost analysis, avoiding the cost of capacity embedded in wholesale electricity prices is an important consideration in using market prices as a proxy for the avoided cost of energy. Two general means are available to avoid this double counting of capacity cost.

First, the use of median rather than mean prices may remove the skew of very high prices when regional resource intermittency drives prices toward the federally-set, Mid-Columbia, $1,000 per MWh, price cap. Staff's concern that PGE and PacifiCorp have been underestimating the avoided cost of energy is not driven by these acute spikes in power cost. Instead, Staff has been concerned that both electric companies are underestimating off-peak prices by assuming deeply negative prices derived from dated market outcomes. Markets do occasionally price power below $0 per MWh, however, the frequency and magnitude of this phenomenon may not match planning expectations.

Second, using a built-resource proxy for energy cost also provides a means of avoiding the embedded capacity cost in wholesale energy prices. Built resources have non-zero capacity contributions, yet Staff does not see a similar risk of double counting capacity cost from this method.

In finding the most reasonable proxy for energy, it is important to remember how the planning for capacity has changed. Before the recent growth in procuring variable

[13] See Energy Trust's *Final 2026 Electric Avoided Cost Update Summary*, included as Appendix A.

energy resources, building generation capacity to meet peak load meant building to serve maximum instantaneous load. Resource planning has transitioned from building out resources to meet the apex of load to planning for the avoidance of unserved energy during high LOLP hours, which may not necessarily be the hours with highest demand. Hours with similar or higher demand may become off-peak hours due to little risk to the system, such as summer afternoons. Therefore, the most reasonable proxy for energy cost is the most expensive generation technology in a utility's planned resource stack that meets load in normal LOLP hours. Staff supports that being either the market or a built resource, depending on the expected cost and the utility's planned procurement.

**Transmission Expansion**
Both utilities made a good faith effort in adding transmission expansion as an incremental avoided cost. Staff recommends the Commission approve them for this year, however, in discussing these numbers with parties to UM 1893, Staff sees two analytic issues that need further discussion. First, the utilities' submission appears to omit incremental wheeling costs of using new transmission lines that they do not own. Second, because this deferral credit hinges on building out transmission of a utility-owned line, each company needed to make assumptions about the timing of the expansion and what transmission construction could be avoided. Staff would like to explore a valuation approach, in both Docket Nos. UM 2000 and UM 1893, where the avoided cost of transmission captures both owned and rented transmission lines.

**Gas Utility Data Recommendations**

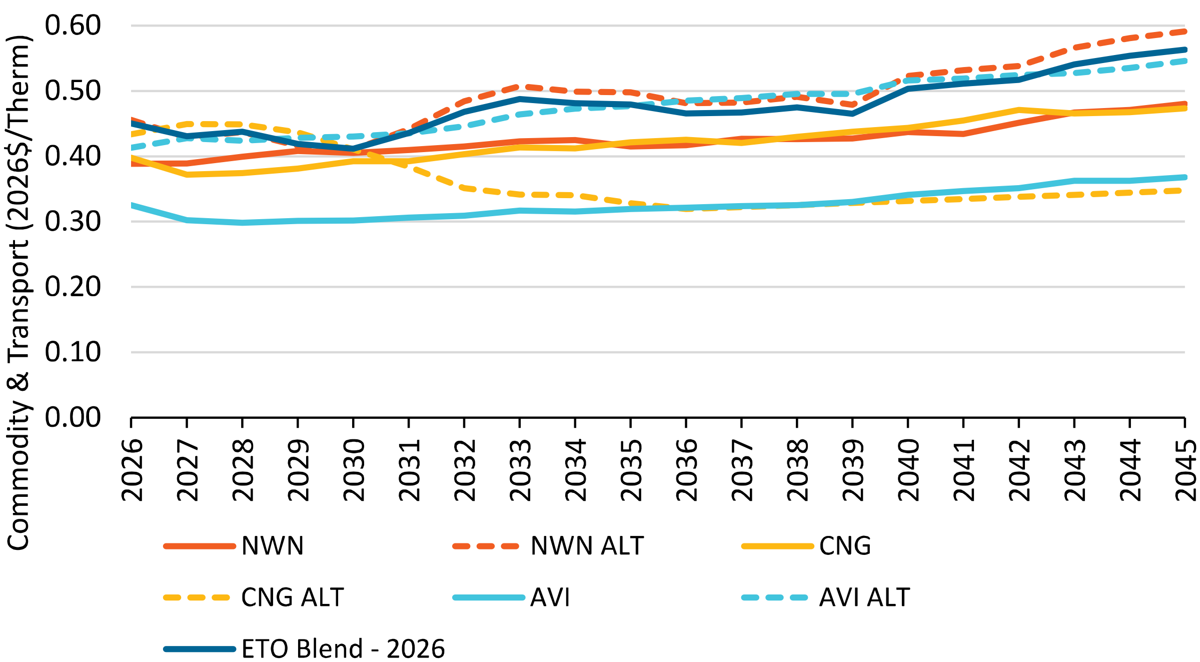
A complete overview of gas avoided costs can be found in Appendix B, Energy Trust's *Final 2026 Gas Avoided Cost Update Summary,* including updates to gas cost categories receiving more routine updates. In the section below, Staff highlights notable recommendations for gas avoided costs.

<u>Commodity and Transport Costs</u>
Each gas utility provided commodity and transport costs from its most recent IRP. For Northwest Natural Gas (NWN), the most current was the 2022 IRP, and for Cascade Natural Gas (CNG) and Avista, each company filed a 2023 IRP. All three forecasts for commodity and transport cost depict a uniform view of the near term and longer term horizon.

Staff also requested and utilities submitted a more recent commodity and transport costs. NWN and Avista provided forecasts from their upcoming 2025 IRP and IRP Update, respectively. CNG submitted a 2024 forecast which was shared in its 2023 IRP process. Per standard practice with avoided cost updates, Energy Trust adjusted all values to 2026 dollars for analysis, so the two data sets were the same. Consistent with Staff's recommendations throughout this update, Staff recommends adoption of the more recent submissions from each of the three gas utilities.

Avista and NWN's forecasts for their respective 2025 planning activities reflect a shared projection of commodity and transport costs increasing steadily into the 2040s. CNG's 2024 forecast depicts an expectation of declining costs to the mid-2030s before increasing modestly into the 2040s. Commodity and transport costs increased 18 percent compared to 2025 avoided costs. The range of submissions can be seen in **Figure 3**, which comes from Energy Trust's *Final 2026 Gas Avoided Cost Update Summary* (Appendix B).

***Figure 3: Gas Commodity and Transport Costs ($/therm)***




<u>Carbon Compliance Costs</u>

All gas utilities submitted carbon compliance costs amidst uncertainty. On November 21, 2024, the Oregon Environmental Quality Commission adopted the Climate Protection Program (CPP) 2024 rules after the Oregon Court of Appeals issued an opinion deeming the initial CPP rules invalid in December 2023.[14] Understanding of

[14] See NW Natural Gas Company v. Environmental Quality Commission, Oregon Court of Appeals, A178246, Opinion,

compliance with the new CPP is nascent, and all IRP modeling was conducted based on the previous program.

Without new modeling reflecting compliance with the revised CPP, Staff recommends continued use of the Community Climate Investment (CCI) credit contribution amount found in Table 6 of the Division 273 rules.[15] Staff finds that reliance on CCIs in setting an avoided carbon compliance cost balances fewer utility compliance needs in the near term with future needs for compliance instruments that may be more expensive than CCIs alone. Staff expects the next round of gas IRPs to provide additional insight into carbon compliance costs.

Infrastructure Avoided Costs

Staff made one change to the gas data template on September 27, 2024. Staff clarified its guidance in the template to request that the Distribution Infrastructure Capacity should reflect expenses to serve peak hour or peak day growth. The calculation should be based on expenses divided by growth and can be determined in two ways. First, utilities could determine a historical trend derived from a retrospective look at growth and expenses to meet that growth. Alternatively, a forecast of peak hour or peak day growth from IRPs can be used alongside the anticipated expense to serve that growth.

The most substantive change is to the distribution peak hour avoided costs. NWN updated its prior 2022 IRP analysis with additional data, which decreased its avoided cost from $514/therm-year to $285/therm-year. Both CNG and Avista submitted an avoided cost of distribution peak hour just under $8/therm-year. The blended levelized value recommended for approval is $236/therm-year, down from $434/therm-year.

Remaining Gas Avoided Costs

A summary of the gas avoided costs changes can be seen in **Table 2** below. For the supply capacity avoided cost, CNG submitted values of $0.00/therm-day. Avista submitted avoided supply capacity costs for the first time, and NWN updated values used in the 2022 IRP. Supply capacity values increased to $5.25/therm-year from $3.17/therm-year.

There was also an increase to the risk reduction value in this update from $0.09/therm to $0.12/therm. NWN's value increased to $0.14/therm and CNG submitted a value of $0.02/therm, which was previously set at $0.00/therm. Avista did not submit a value,

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https://ojd.contentdm.oclc.org/digital/pdf.js/web/viewer.html?file=/digital/api/collection/p17027coll5/id/35371/download#page=1&zoom=auto.

[15] OAR 340-273-9000, Table 6. CCI credit contribution amount, (Nov. 21, 2024), https://ormswd2.synergydcs.com/HPRMWebDrawer/Record/6828109/File/document.

and thus a blend of NWN and CNG's rates were applied to Avista's share of the avoided cost.

***Table 2: Summary of Revenue Weighted Gas Avoided Cost Changes[16]***

| Avoided Cost Component | 2025 AC Blended Value | 2026 AC (Updated) Blended Value | Percent Change |
|---|---|---|---|
| **Inflation rate** | 2.83% | 2.46% | -13% |
| **Real Discount rate** | 4.10% | 4.10% | 0% |
| **Regional Act Credit** | 10% | 10% | 0% |
| **20-year Levelized Value (2026$/therm)** | | | |
| **Commodity and Transport Prices** | $0.40 | $0.47 | 18% |
| **Distribution Capacity** | $444.48 | $235.50 | -47% |
| **Supply Capacity** | $3.25 | $5.26 | 62% |
| **CO2 Compliance** | $0.78 | $0.77 | -1% |
| **Risk Reduction** | $0.09 | $0.12 | 35% |

Utilities submitted peak factors to determine the amount of gas consumption that occurs on a peak day or peak hour. Energy Trust updated its methodology in 2024 and maintained that method in conducting analysis for 2026 gas avoided costs. The peak day and peak hour coincidence factors vary by end-use load shape with data from NWN and the Northwest Power and Conservation Council.

*Section III: Results of Recommended Avoided Costs Updates*

Energy Trust applied Staff's proposed data recommendations in this memo to produce high-level estimates on impacts to 2026 avoided costs. Electric avoided costs are projected to increase by 12.9 percent compared to values used for 2025. However, after the workshop and finalization of Energy Trust reports, Staff confirmed with PacifiCorp that its transmission expansion credit, while communicated separately for transparency, is already embedded in avoided energy costs. Subsequently, Energy Trust revised its model and determined that electric avoided costs will increase by 7.9 percent rather than the 12.9 percent communicated in Appendix A.

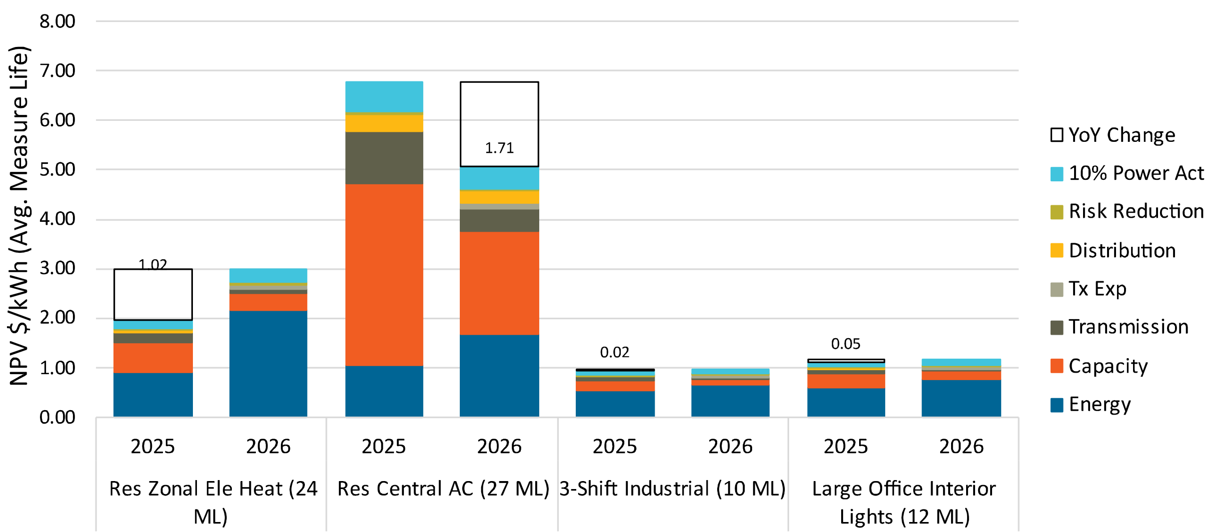
Staff notes that the 7.9 percent increase reflects the net movements of several values. Energy costs, which include transmission expansion costs, increased substantially, but were offset by decreases to avoided costs for capacity, transmission and distribution

[16] See Energy Trust's *Final 2026 Gas Avoided Cost Update Summary*, included as Appendix B.

deferrals, and the risk reduction credit. In exploration of avoided capacity concerns, Staff requested Energy Trust model an alternative scenario of keeping the current, 2025 avoided capacity costs. Rejecting utilities 2026 avoided capacity costs and keeping the 2025 values would increase overall electric avoided costs by 21.9 percent. However, Staff views the 7.9 percent increase as directionally correct and prioritizes finalizing values for use by Energy Trust's in multiyear planning. Therefore, Staff does not recommend delaying adoption of avoided costs to resolve the capacity value in this cycle.

In the Phase 1 UM 1893 update, Staff highlighted a definitive conclusion that coincident energy efficiency with capacity needs was more valuable than ever. That value is partially reversed with the utility-submitted capacity data. The Phase 2 data, with higher avoided energy costs indicates more value for the energy component of efficiency. Additionally, avoided energy costs were more granular in this cycle, where measures with morning and evening savings have higher value. With these shifts, measures with winter savings and long measure lives such as insulation and heat pumps see the largest increase in efficiency value. Figure 4, which comes from Energy Trust's Appendix A, illustrates these changes. Zonal heat measures see a large increase in value, whereas the value of residential central air-conditioning with high dependence on capacity costs decreases. This may not be the best planning signal in the near future.

***Figure 4: Comparison of Load Shape Value by Component***




Gas avoided costs are projected to decrease by 5 percent compared to 2025 avoided costs. Increases to avoided costs for commodity and transport cost are more than offset by the reduction to distribution capacity.

Conclusion

These avoided cost recommendations mark the close of Phase 2 in 2025. Significant strides were made in this cycle to align electric avoided costs with long term utility IRP planning. Electric avoided costs received particular attention in Phase 2 due to the significance of electric utilities submitting inaugural IRPs and Clean Energy Plans, which sought to meet the clean energy targets of HB 2021. Staff expects that future cycles and IRP data will continue to improve the accuracy of energy efficiency avoided costs. Staff supports the electric avoided cost increase as it better aligns with the planning signals of PGE and PacifiCorp's respective 2023 IRPs.

Energy Trust's reports in Appendix A and B, show that implementing the recommended avoided cost data would result in an increase of approximately 12.9 percent for electric and a decrease of five percent for gas. Due to the double counting of the transmission expansion credit when those reports were finalized, electric avoided costs are only expected to increase by 7.9 percent.

Avoided capacity costs are important for energy efficiency; they are also important for utility demand response and flexible load offerings. Therefore, Staff will work with PGE in Docket No. UM 2141 and with PacifiCorp in Docket No. ADV 1691 to address avoided capacity cost concerns in the near term. Staff expects that discussion of methodology and valuation in those dockets, will mean revised values will be ready for utility submission with the next UM 1893 cycle starting October 15, 2025.

Staff believes the attached data are ready for Commission approval and for use by Energy Trust in planning and budgeting for 2026 avoided costs.

**PROPOSED COMMISSION MOTION:**

Approve the attached energy efficiency avoided cost data for use by Energy Trust.

RA1 - UM 1893

EnergyTrust of Oregon

# Draft Memo

**To:** Peter Kernan, Oregon PUC

**From:** Brian Conlon, Energy Trust of Oregon

**Date:** January 8, 2025

**Re:** Draft 2026 Electric Avoided Cost Update Summary

This memo provides a summary of the updates to Energy Trust's 2026 Electric Avoided Cost buildup, including an overview of the utility inputs provided, a discussion of the results, and a comparison of the final updated blended values to current 2025 Avoided Cost values.

**Utility Provided Inputs and PUC Direction**

Pursuant to AR 621, each funding utility provides Energy Trust with Avoided Cost inputs for use in the Energy Trust Final 2026 Blended Avoided Costs. Each utility provides the individual components in Table 1 below from the most recently acknowledged IRP (IRP Column) and an optional additional input for the OPUC to consider (Update Column). Table 1 shows the values currently utilized in 2025 Avoided Costs, the inputs provided by each electric utility from their most recently acknowledged IRPs, and alternative submissions for consideration in 2026 Avoided Costs. The last column for each utility identifies the direction from OPUC staff as to which of the various submittals Energy Trust should incorporate into the final 2026 Avoided Costs; these values are also highlighted in gold.

Appendix A

*Table 1. Utility Inputs Pursuant to AR 621 for use in the Final Energy Trust 2026 Blended Avoided Costs*

| | | Pacific Power | | | | Portland General Electric | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Current | IRP | Update | Selection | Current | IRP | Update | Selection |
| Avoided Cost Element | | PAC Current (2025 AC) | PAC IRP Submission | PAC Updated Submission | Final Inputs for 2026 Avoided Cost | PGE Current (2025 AC) | PGE IRP Submission | PGE Updated Submission | Final Inputs for 2026 Avoided Cost |
| Global Assumptions | Inflation Rate | 2.27% | 2.28% | 0.00% | IRP | 2.10% | 2.02% | 0.00% | IRP |
| | Real Discount Rate | 4.40% | 4.31% | 0.00% | IRP | 4.02% | 4.67% | 0.00% | IRP |
| | Regional Act Credit | 10.00% | 10.00% | 10.00% | IRP | 10.00% | 10.00% | 10.00% | IRP |
| | | | | | | | | | |
| T&D Line Losses | Transmission Loss Factor | 3.50% | 3.50% | 0.00% | IRP | 2.07% | 2.07% | 0.00% | IRP |
| | Distribution Loss Factor, Commercial | 3.69% | 3.69% | 0.00% | IRP | 4.02% | 4.02% | 0.00% | IRP |
| | Distribution Loss Factor, Industrial | 3.20% | 3.20% | 0.00% | IRP | 1.96% | 1.96% | 0.00% | IRP |
| | Distribution Loss Factor, Residential | 4.46% | 4.46% | 0.00% | IRP | 4.20% | 4.20% | 0.00% | IRP |
| | | | | | | | | | |
| Transmission Capacity Value | Transmission Deferral Credit | $5.09 | $7.10 | $0.00 | IRP | $87.34 | $32.02 | $0.00 | IRP |
| | Seasonal Capacity Split - Summer | 39% | 95% | 0% | IRP | 50% | 50% | 0% | IRP |
| | Seasonal Capacity Split - Winter | 61% | 5% | 0% | IRP | 50% | 50% | 0% | IRP |
| | Deficiency start year | 2025 | 2025 | 0 | IRP | 2026 | 2026 | 0 | IRP |
| | | | | | | | | | |
| Distribution Capacity Value | Distribution Deferral Credit | $10.46 | $10.46 | $0.00 | IRP | $17.21 | $6.31 | $0.00 | IRP |
| | Seasonal Capacity Split - Summer | 90% | 100% | 0% | IRP | 50% | 50% | 0% | IRP |
| | Seasonal Capacity Split - Winter | 10% | 0% | 0% | IRP | 50% | 50% | 0% | IRP |
| | Deficiency start year | 2025 | 2025 | 0 | IRP | 2026 | 2026 | 0 | IRP |
| | | | | | | | | | |
| Generation Capacity Value | Generation Capacity Credit | $105.36 | $46.14 | $51.70 | Alt 1 | $228.00 | $145.86 | $0.00 | IRP |
| | Seasonal Capacity Split - Summer | 82.8% | 83% | 83% | IRP | 50.0% | 50% | 0% | IRP |
| | Seasonal Capacity Split - Winter | 17.2% | 17% | 17% | IRP | 50.0% | 50% | 0% | IRP |
| | Deficiency start year | 2025 | 2027 | 2027 | IRP | 2026 | 2026 | 0 | IRP |
| | | | | | | | | | |
| Other Values | Risk Reduction Value | $1.92 | $1.89 | $0.00 | IRP | $3.00 | $3.00 | $0.00 | IRP |
| | Transmission Expansion Value | N/A | $13.34 | $0.00 | IRP | N/A | $41.98 | $0.00 | Alt1 |
| | Energy Prices | | | | Energy Alt1 | | | | FP Alt1 |

Energy Trust took these inputs and blended them into electric Avoided Cost values that can be used throughout Energy Trust territory. The blended values are weighted averages where the weighting is based on forecasted 2026 electric utility expenditures from Energy Trust's 2024-2025 budget. For consistency with the natural gas avoided costs, Energy Trust uses a single discount rate, which weights utility-submitted discount rates by the forecasted expenditures for the two electric and three natural gas investor-owned utilities in Oregon.

Some additional notes on Table 1:

1) The values provided in this table are in the dollar years provided by the utility. These values will be inflated to 2026$ for use in the 2026 Avoided Costs.
2) The values labeled IRP are sourced from the latest published IRPs or IRP Updates as well as workpapers for upcoming IRPs.
3) The table does not include all options for generation capacity credit and energy prices. These are described below.
4) PGE did not provide alternative global input values for 2026 Avoided Costs.

Table 2 below provides a comparison of the blended 2025 Avoided Cost Component Values to the updated final 2026 Avoided Cost Component values and their percent change from 2025.

*Table 2. Comparison of Component Values from 2025 Avoided Costs to the blended Final 2026 Avoided Costs Values (2026 $)*

| Avoided Cost Component | 2026 (Updated) Blended Value | 2025 Blended Value | Percent Change |
|---|---|---|---|
| Inflation Rate | 2.13% | 2.17% | -1.9% |
| Real Discount Rate | 4.30% | 4.11% | 4.6% |
| Northwest Power Act 10% Credit | 10.00% | 10.00% | 0.0% |
| Risk Reduction Value ($/MWh) ($ 2026) | $2.83 | $2.98 | -5.0% |
| Transmission Loss Factor | 2.65% | 2.65% | 0.0% |
| Transmission Loss Credit ($/kW-yr.) ($ 2026) | $22.73 | $58.79 | -61.3% |
| Transmission Expansion Credit ($/MWh) ($ 2026) | $5.43 | N/A | N/A |
| Distribution Loss Factor, Commercial | 3.89% | 3.89% | 0.0% |
| Distribution Loss Factor, Industrial | 2.46% | 2.46% | 0.0% |
| Distribution Loss Factor, Residential | 4.31% | 4.31% | 0.0% |
| Distribution Credit ($/kW-yr.) ($ 2026) | $8.55 | $15.97 | -46.5% |
| Generation Deferral Credit ($/kW-yr.) ($ 2026) | $107.57 | $199.28 | -46.0% |

**Final Results Summary**

Once the updated values provided by electric utilities were blended, Energy Trust compared each of the 184 electric load shapes updated in the 2026 Avoided Costs to the current 2025 iteration of Avoided Costs and compared the overall impact of the changes based on end use load profiles from the Energy Trust measure mix from 2023 and 2024. This savings portfolio-weighted average was $1.391/kWh for 2026 Avoided Costs. **Compared to the $1.232/kWh net present value (NPV) weighted average from the 2025 Avoided Costs, this is an increase of 12.9 percent or $0.159/kWh.**

As shown in Figure 1, the overall increase relative to the 2025 avoided costs is attributable to a relatively large increase in the value of energy along with the addition of the transmission expansion credit. Generation, distribution, and transmission capacity values are significantly lower than the 2025 vintage, and risk reduction value is slightly lower than 2025. The overall change in avoided costs is mirrored by the 10% Power Act credit, which is applied to the other values.

*Figure 1. Changes in avoided cost components relative to 2025 – weighted average based on 2023-24 measure mix*

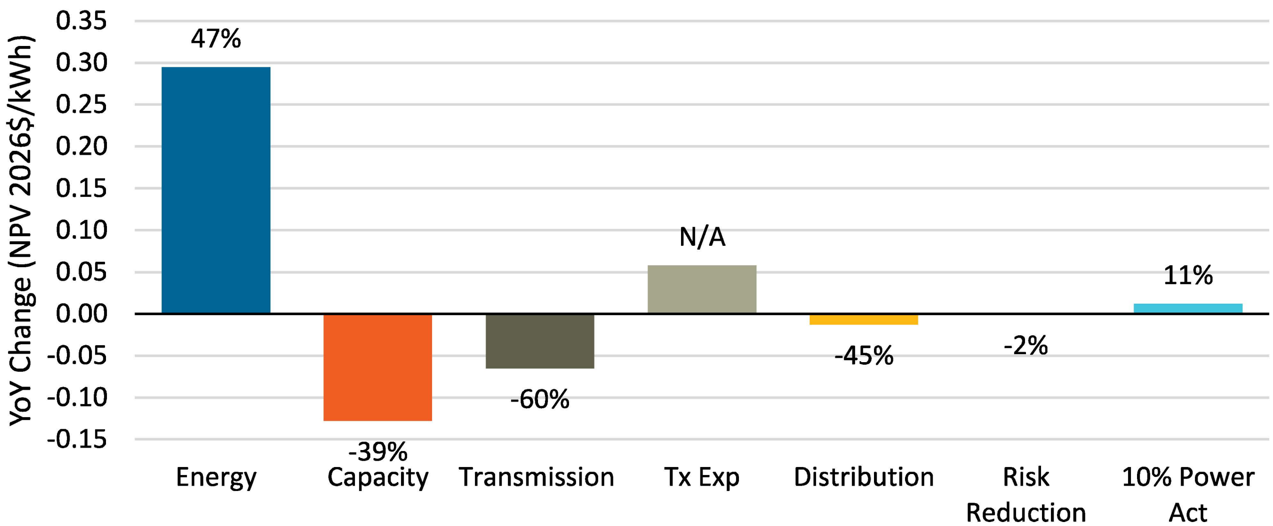
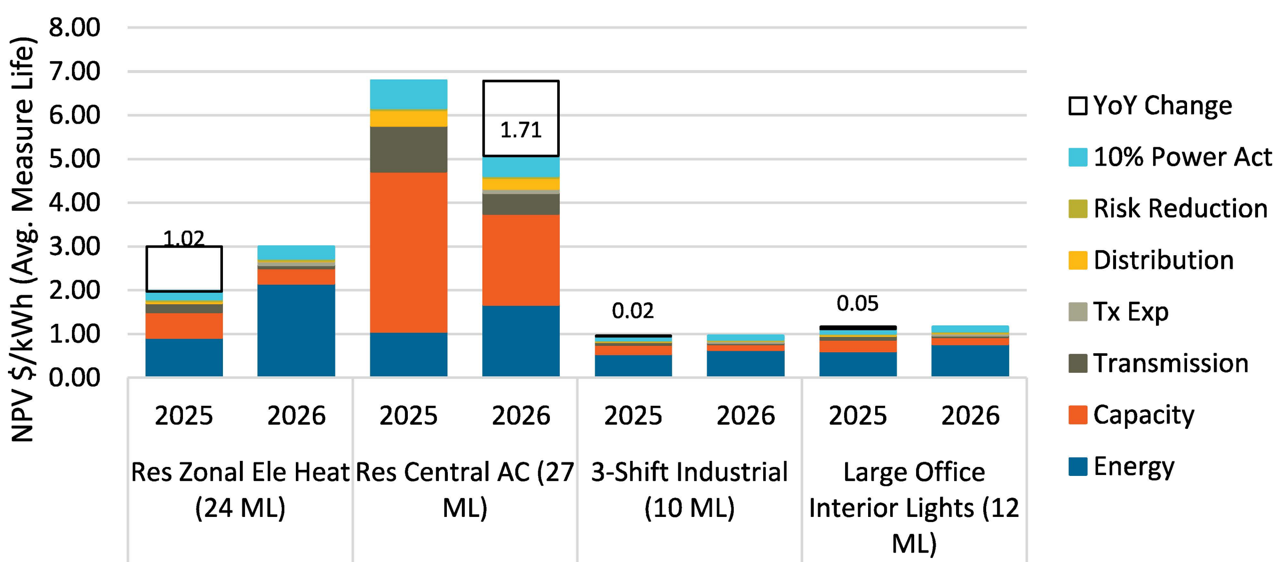



Figure 2 below shows the impact of the individual component parts for both the 2026 and 2025 Avoided Costs based on a sample of illustrative end use load profiles. These load shapes are used for illustrative purposes and do not necessarily represent end uses that make up large portions of Energy Trust's portfolio.

*Figure 2. Comparison of Load Shape Value by Component*




The next section of this memo details the changes to each component of the Avoided Costs update.

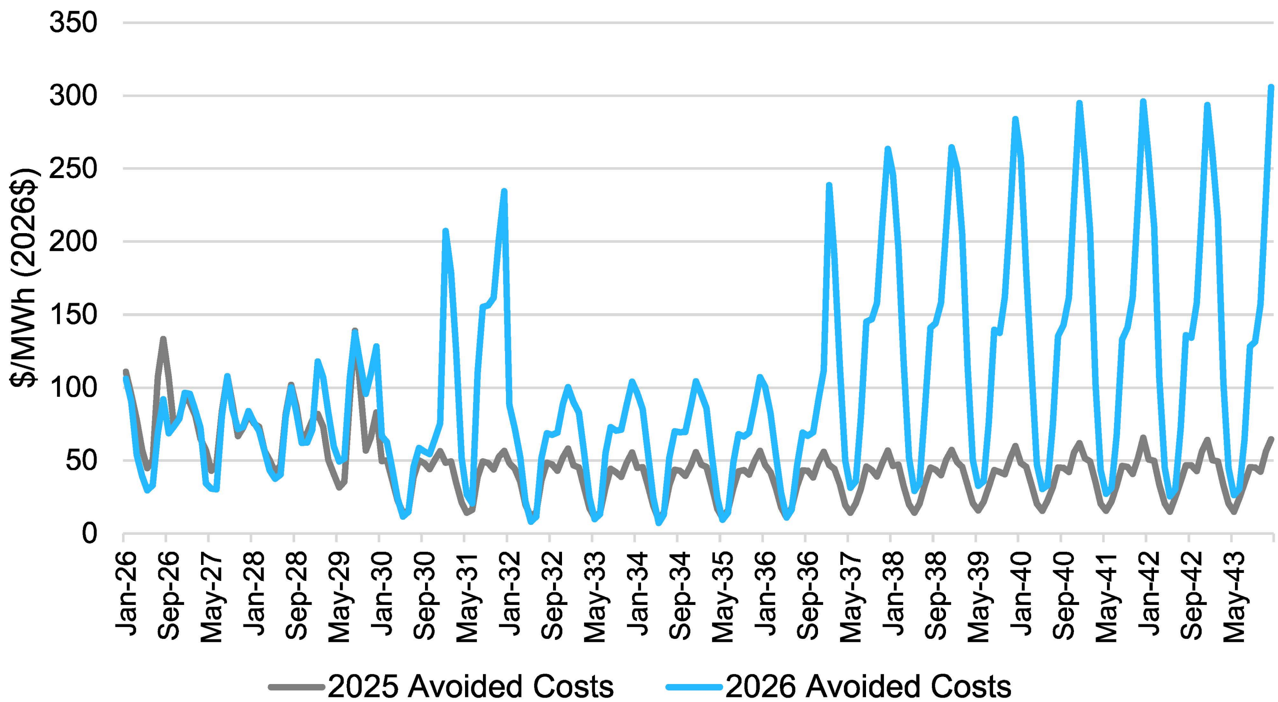
**Final 2026 Electric Avoided Cost Component Changes and Impacts**

***Avoided Energy Value***

For the 2026 avoided cost update, two major changes were made to the avoided energy cost component. First, utilities submitted both market-based forward price forecasts and longer term model-based energy forecasts. Second, the temporal granularity was refined from a single heavy load hour and light load hour for each month (2x12) to hourly averages for each month (12x24). For all years of their forecasting horizon, utilities submitted values in a month-hourly format. As the 2x12 efficiency end use savings shapes used in previous avoided cost cycles had been derived from NWPCC ProCost data in a 3-day-type by 24-hour by 12-month format, the ProCost data was easily converted to a 12x24 format, maintaining consistency with prior updates.[1] This change improves the representation of diurnal and seasonal patterns in energy value – which are becoming increasingly impactful due to higher penetrations of intermittent renewable generation and electrified heating and transportation load.

On average the energy prices went up in 2026 compared to 2025 – particularly from 2030 onward, as reflected in Figure 3.

*Figure 3. Blended Avoided Energy Value*




Utilities submitted a number of options to be considered for avoided energy value. Table 3 summarizes the underlying methodology, along with the mean and range of monthly prices for the first twenty years of the forecast horizon. As indicated by the ranges, month-to-month variability

[1] https://rtf.nwcouncil.org/work-products/supporting-documents/procost/

increases significantly in most cases. While the selected PGE values are lower than 2025 on average, this decrease is outweighed by the large increase in PAC's forward prices.

*Table 3. Summary of avoided energy value series submitted by utilties 2026-43 (2026 $/MWh)*

| Utility | Category | Template Tab | Description | Min | Max | Mean |
|---|---|---|---|---|---|---|
| PAC | | | 2025 Avoided Costs | 19.31 | 151.07 | 59.01 |
| | Forward Prices | 2 | 2023 IRP Update | 4.37 | 263.74 | 49.44 |
| | Avoided Energy | 3 | 2024 Standard QF Filing | 5.69 | 263.74 | 56.05 |
| | Forward Prices | 2a | 2024 Price Forecast | 3.08 | 266.77 | 51.58 |
| | Avoided Energy* | 3a | 2024 Standard QF (Recent Update) | 3.72 | 266.77 | 57.47 |
| PGE | | | 2025 Avoided Costs | -0.56 | 219.27 | 35.45 |
| | Forward Prices | 2 | 2026-2028: Operational Power Curve<br>2029: Interpolation Year<br>2030-2043: IRP Curve | -30.55 | 160.57 | 34.46 |
| | Avoided Energy | 3 | Marginal LCOE resource costs shaped by AURORA model | -5.83 | 474.08 | 120.49 |
| | Blend* | | 2026-2028: Forward Prices<br>2029-2043: Avoided Energy | -5.83 | 474.08 | 126.96 |

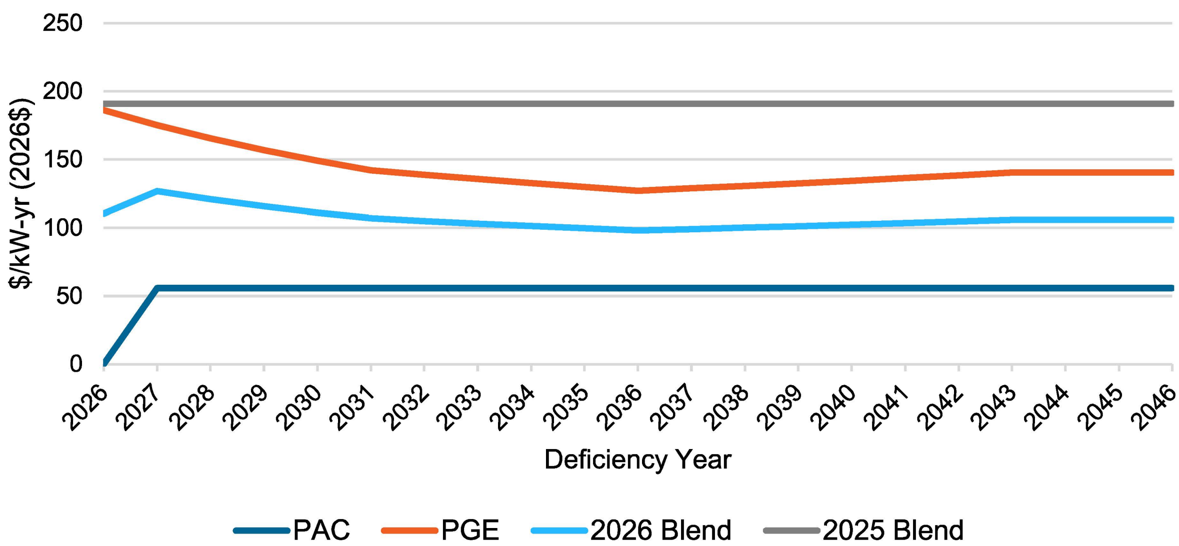
** Selected avoided energy value series for weighted average blend*

***Generation, Transmission, and Distribution Capacity Values***

For the 2026 update, utilities submitted annual forecasts of generation capacity value, instead of the single value methodology used in previous cycles. Traditionally, a simple-cycle natural gas combustion turbine with well-known and consistent costs was used as the proxy marginal resource to value generation capacity. However, in moving towards a high renewables future, the marginal capacity resource will vary in technology and cost. Including annual capacity values in the avoided costs better reflects this dynamic future.

Relative to 2025 avoided costs, PGE's generation capacity deferral value decreased by 40% and PAC's decreased by 55%. These values represent the utilities' net capacity cost of a 4-hour lithium-ion battery. To arrive at these figures, the utilities forecasted the ELCC-adjusted battery installation costs and subtracted the energy and ancillary service benefits the battery would provide.

*Figure 4. Generation Capacity Deferral Values*




Compared to 2025, the blended transmission deferral credit value that was used as an input to 2026 avoided cost calculations went down 60%. The blended distribution credit input value in the 2026 avoided cost calculations decreased by 44%. These decreases are due to a change in PGE's methodology. In previous years, the value reflected the complete avoidance of a transmission or distribution system upgrade. In this cycle, the methodology reflects a 10-year deferral of those upgrades.

To reflect the additional value associated with expanding the transmission system, a transmission expansion component is introduced in this update. While PGE's is embedded in its energy value, PAC's $13.34/MWh yields a weighted average of $5.43/MWh, which is applied to all energy savings.

For PAC, the seasonal allocation factor for transmission swung from 39% summer / 61% winter for 2025 to 95% summer / 5% winter for 2026. Similarly, PAC's distribution allocation went from 90% to 100% summer. Consistent with updates in UM 1893 proceedings for 2025 Avoided Costs, a seasonal 50% summer/50% winter split was used for PGE generation, transmission, and distribution capacity value.

***Risk Reduction & NW Power Act Credit***

Risk Reduction values that were used as inputs to avoided cost calculations decreased about 5% in the 2026 Avoided Costs. The same 10% NW Power Act Credit value was also utilized in the 2026 Avoided Costs. This credit is applied to each of the Avoided Cost components and therefore its impact is proportional to the changes in other individual components of each load shape.

***Measure Level Impacts***

On a measure level, the overall impact of the input changes varies by measure and load profile due to changes in the submitted values. Currently the peak coincident factors for transmission and distribution are specific to each utility and then blended.

The following figures show changes in NPV Avoided Costs per unit of savings for representative measures across each sector. The NPV is shown according to each measure's typical measure life. The measures shown in these graphs are meant to show differential impacts across end uses and do not necessarily represent measures that make up most of the savings within each sector.

*Figure 5. Residential Avoided Cost Comparison of Example Measures*

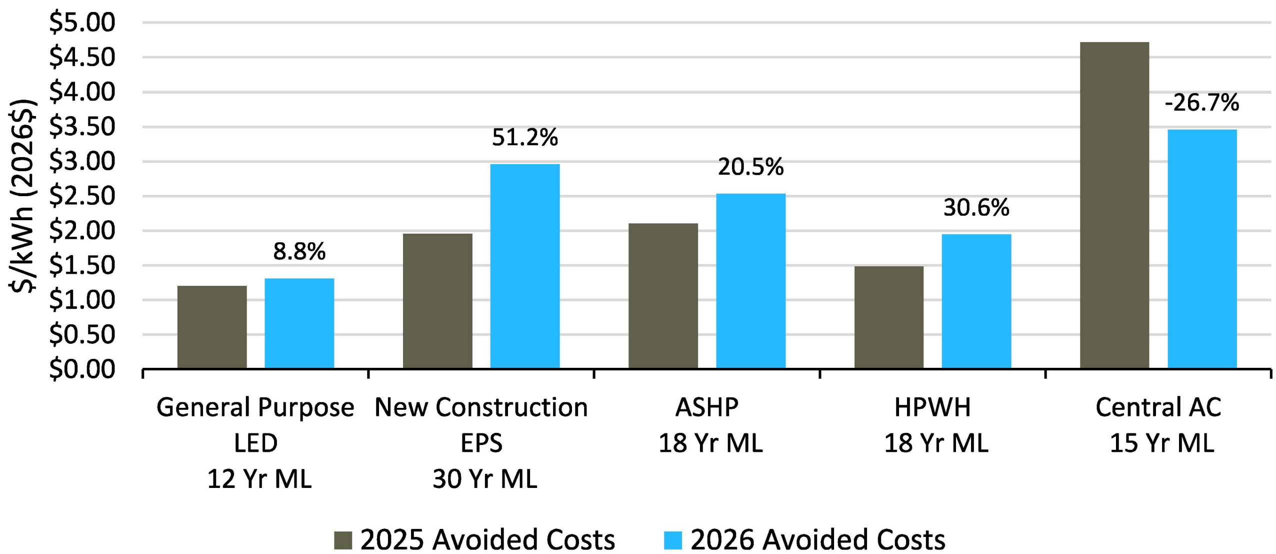



*Figure 6. Commercial Avoided Cost Comparison of Example Measures*

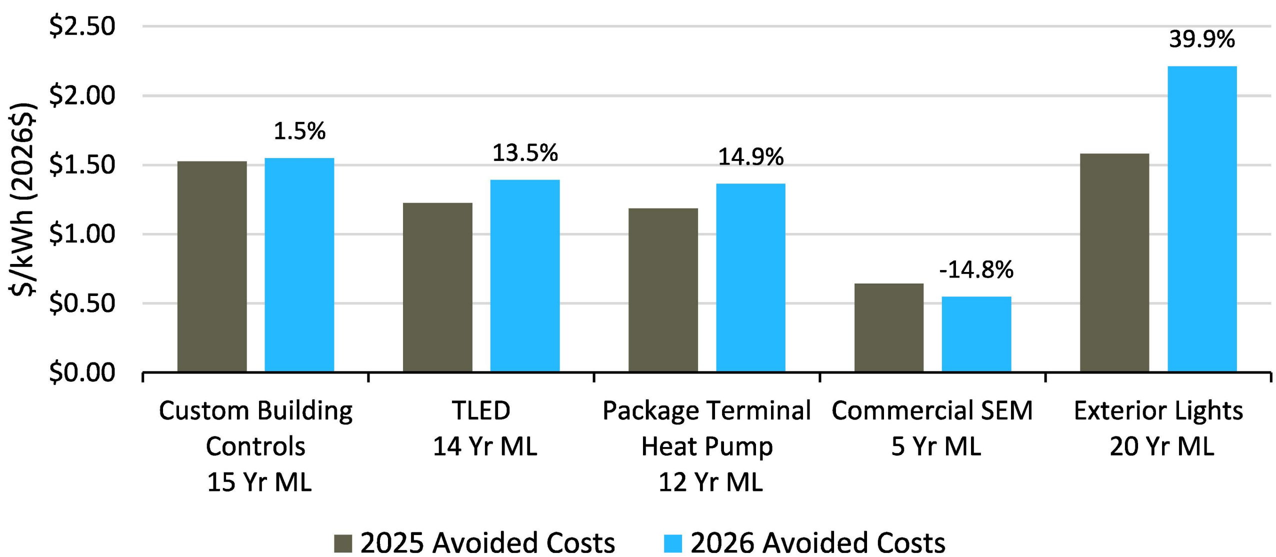
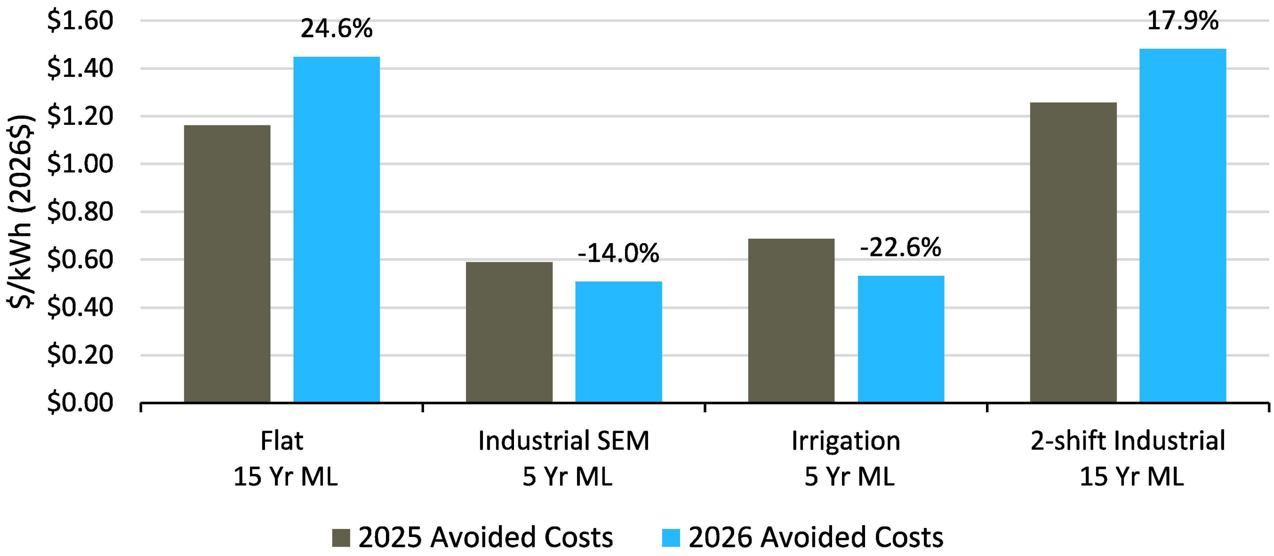


Figure 7. Industrial Avoided Cost Comparison of Example Measures



EnergyTrust of Oregon

# Memo

**To:** Peter Kernan, Oregon PUC

**From:** Brian Conlon, Energy Trust of Oregon

**Date:** January 8, 2025

**Re:** 2026 Natural Gas Avoided Cost Update Summary

This memo provides a summary of the updates to Energy Trust's 2026 Natural Gas Avoided Cost buildup, including an overview of the utility inputs provided, a discussion of the results, and a comparison of the updated blended values to current 2025 Avoided Cost values.

**Utility Provided Inputs and PUC Direction**

Pursuant to UM 1893, each funding utility provides Energy Trust with Avoided Cost inputs for use in 2026 Blended Avoided Costs. Each utility provides each component in the table below from the most recently acknowledged IRP and an optional additional input for the OPUC to consider. Table 1 below shows the values currently utilized in 2025 Avoided Costs, the inputs provided by each gas utility from their most recent IRPs and updated utility submissions for consideration in 2026 Avoided Costs. The table also shows the values that Energy Trust used in 2026 Avoided Cost calculations as directed by OPUC staff; these values are identified in their own rows as well as being highlighted in orange. Finally, Table 1 compares the blended values used to calculate Avoided Costs for the current 2025 vintage with the blended values used to calculate Avoided Costs for the 2026 vintage.

*Table 1. Utility Inputs for use in Energy Trust 2026 Blended Avoided Costs*

| Input Vintage Description | Avoided Cost Element | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Inflation Rate | Discount Rate | Regional Act Credit | Commodity & Transport | Distribution Capacity - Hourly | Supply Capacity | CO2 Compliance | Risk Reduction |
| | Percentage | Percentage | Percentage | $/Therm | $/Therm/Year | $/Therm/Year | $/Therm | $/Therm |
| **Northwest Natural** | | | | | | | | |
| Selected Input for 2025 Avoided Cost (2026$) | 2.85% | 3.40% | 10% | $0.40 | $497.46 | $3.96 | $0.78 | $0.10 |
| Current Submission - IRP (2026$) | 2.85% | 3.40% | 10% | $0.42 | $513.76 | $4.07 | $0.68 | $0.12 |
| Current Submission - ALT (2026$) | 2.45% | 3.87% | 10% | $0.48 | $285.02 | $3.96 | $0.65 | $0.14 |
| **Selected Input for 2026 Avoided Cost (2026$)** | **2.45%** | **3.87%** | **10%** | **$0.48** | **$285.02** | **$3.96** | **$0.77** | **$0.14** |
| **2026 Avoided Cost Input Source** | **NWN Update** | **NWN Update** | **2022 IRP** | **2025 IRP Model** | **2022 IRP Updates** | **2022 IRP Updates** | **DEQ** | **2025 IRP Model** |
| **Cascade Natural Gas** | | | | | | | | |
| Selected Input for 2025 Avoided Cost (2026$) | 3.36% | 3.79% | 10% | $0.39 | $7.93 | $0.00 | $0.79 | $0.00 |
| Current Submission - IRP (2026$) | 3.37% | 3.77% | 10% | $0.42 | $7.91 | $0.00 | $0.72 | $0.02 |
| Current Submission - ALT (2026$) | 2.91% | 4.24% | 10% | $0.37 | $0.00 | $0.00 | $2.89 | $0.00 |
| **Selected Input for 2026 Avoided Cost (2026$)** | **2.91%** | **4.24%** | **10%** | **$0.37** | **$7.91** | **$0.00** | **$0.77** | **$0.02** |
| **2026 Avoided Cost Input Source** | **Woods & Poole** | **2023 IRP** | **2023 IRP** | **CNG Update** | **2023 IRP** | **2023 IRP** | **DEQ** | **2023 IRP** |
| **Avista** | | | | | | | | |
| Selected Input for 2025 Avoided Cost (2026$) | 2.00% | 4.52% | 10% | $0.32 | $442.49 | $0.00 | $0.78 | $0.00 |
| Current Submission - IRP (2026$) | 2.00% | 4.52% | 10% | $0.32 | $0.00 | $0.00 | $0.73 | $0.00 |
| Current Submission - ALT (2026$) | N/A | 4.52% | 10% | $0.47 | $7.89 | $25.38 | $0.66 | $0.00 |
| **Selected Input for 2026 Avoided Cost (2026$)** | **2.00%** | **4.52%** | **10.00%** | **$0.47** | **$7.89** | **$0.00** | **$0.77** | **$0.12** |
| **2026 Avoided Cost Input Source** | **2023 IRP** | **2023 IRP** | **2023 IRP** | **2025 IRP Work** | **AVI Update** | **AVI Update** | **DEQ** | **NWN/CNG** |
| **Energy Trust** | | | | | | | | |
| **Old Blended Input for 2025 Avoided Cost (2026$)** | **2.83%** | **4.10%** | **10%** | **$0.40** | **$444.48** | **$3.25** | **$0.78** | **$0.09** |
| **New Blended Input for 2026 Avoided Cost (2026$)** | **2.46%** | **4.10%** | **10%** | **$0.47** | **$235.50** | **$5.26** | **$0.77** | **$0.12** |
| **Percent Difference** | **-13%** | **0%** | **0%** | **18%** | **-47%** | **62%** | **-1%** | **35%** |

Energy Trust took these inputs and blended them into gas Avoided Costs values that can be used throughout Energy Trust territory. The blended values are weighted averages where the weighting is based on forecasted 2025 gas utility expenditures from Energy Trusts 2024-2025 budget.

Some additional notes on Table 1.

1) The values provided by utilities were in dollar years specific to their source. These values were inflated to 2026$ for use in the 2026 Avoided Costs.
2) Submitted input values are multiyear forecasts. The first 20 years are levelized to produce the values in this table.
3) All values are sourced from each respective utility's IRP or alternate submission with the exception of Avista's risk reduction value. These values rely on a utility expenditure-weighted average of values from the other two respective utilities for input.
4) The carbon compliance values selected are based on the Climate Protection Program 2024, Oregon Administrative Order No. DEQ-18-2024.

Table 2 below provides a comparison of the blended 2025 Avoided Cost Component Values to the updated 2026 Avoided Cost Component values and their percent change from 2025.

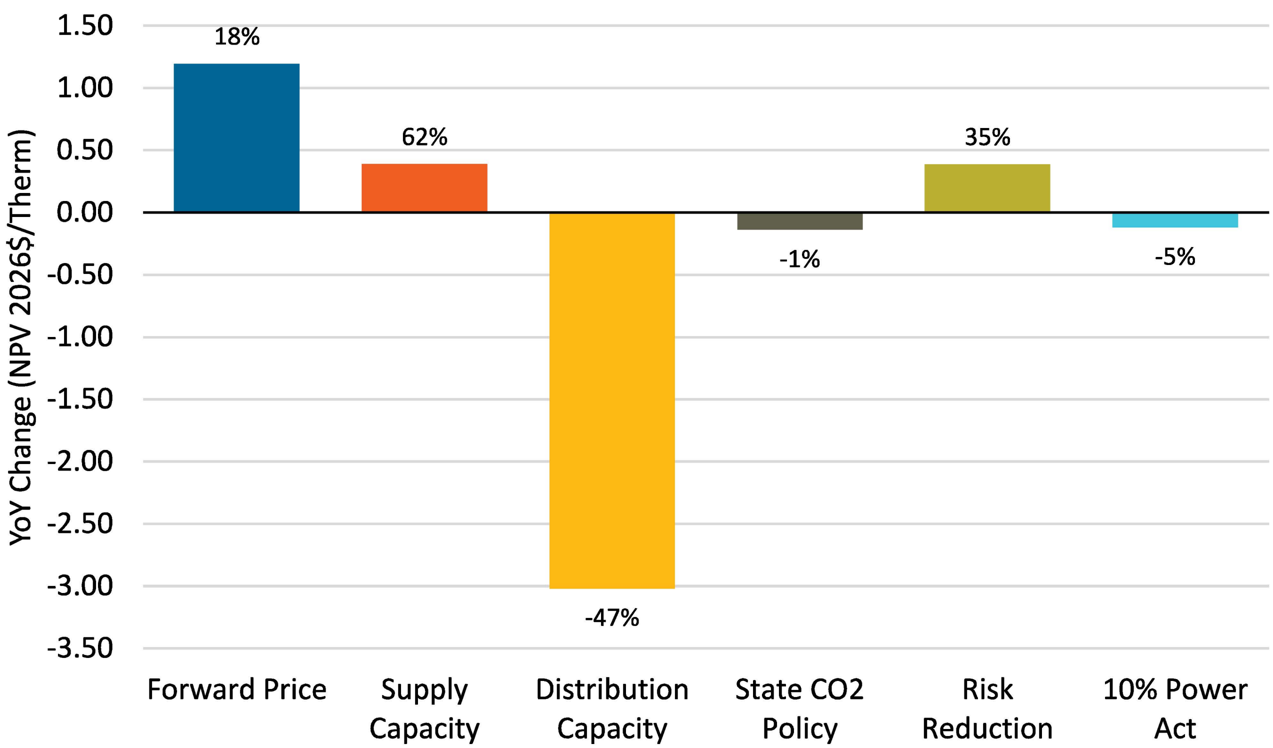
*Table 2. Comparison of Component Values from 2025 Avoided Costs to 2026 Avoided Costs*

| Avoided Cost Component | 2025 AC Blended Value | 2026 AC (Updated) Blended Value | % Change |
|---|---|---|---|
| Inflation rate | 2.83% | 2.46% | -13% |
| Real Discount rate | 4.10% | 4.10% | 0% |
| Regional Act Credit | 10% | 10% | 0% |
| **20-year Levelized Value (2026$/Therm)** | | | |
| Commodity and Transport Prices | $0.40 | $0.47 | 18% |
| Distribution Capacity | $444.48 | $235.50 | -47% |
| Supply Capacity | $3.25 | $5.26 | 62% |
| CO2 Compliance | $0.78 | $0.77 | -1% |
| Risk Reduction | $0.09 | $0.12 | 35% |

**Results Summary**

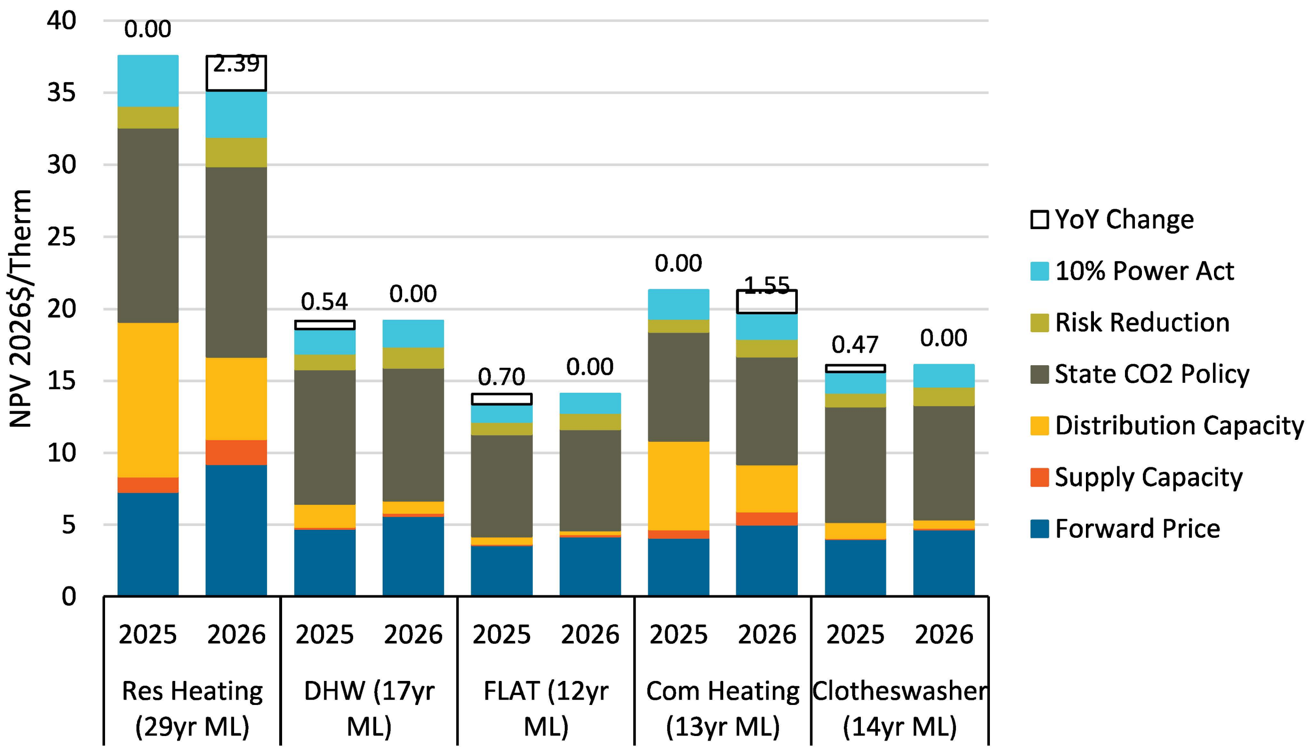
Once the updated values provided by the gas utilities were blended, Energy Trust compared the respective value components of the updated 2026 Avoided Costs to the current 2025 iteration of Avoided Costs. To gauge an overall impact of the changes, the avoided costs were weighted by the Energy Trust measure mix from 2023 and 2024. **Overall, the weighted net present value (NPV) 2026 natural gas Avoided Costs decreased by 5 percent or $1.30/Therm** compared to current 2025 Avoided Costs. Figure 1 shows the underlying components of this change.

*Figure 1. Changes in Avoided Cost Components Relative to 2025 – Weighted Average Based on 2023-24 Measure Mix*




On an end use basis represented per loadshape, the contribution of each individual Avoided Cost component differs depending on how much that loadshape coincides with defined utility peak periods. Figure 2 below illustrates the differential impact of the individual component parts of 2025 and 2026 Avoided Costs associated with specified end use load profiles. The contributions of the value components of the load profiles shown in this graph are based on characteristic measure lives. This figure does not represent the proportional contribution of each loadshape to Energy Trust's overall portfolio.

*Figure 2. Comparison of Load Shape Value by Component*




The next section of this memo details the changes to each component of the Avoided Costs update.

## Natural Gas Avoided Cost Component Changes and Impacts

### *Commodity and Transport Forward Prices*

Figure 3 compares blended commodity and transport forward prices from 2025 Avoided Cost inputs and 2026 Avoided Cost inputs. Overall blended commodity and transport prices increased by 18%.

*Figure 3. Blended Commodity and Transport Price Comparison*

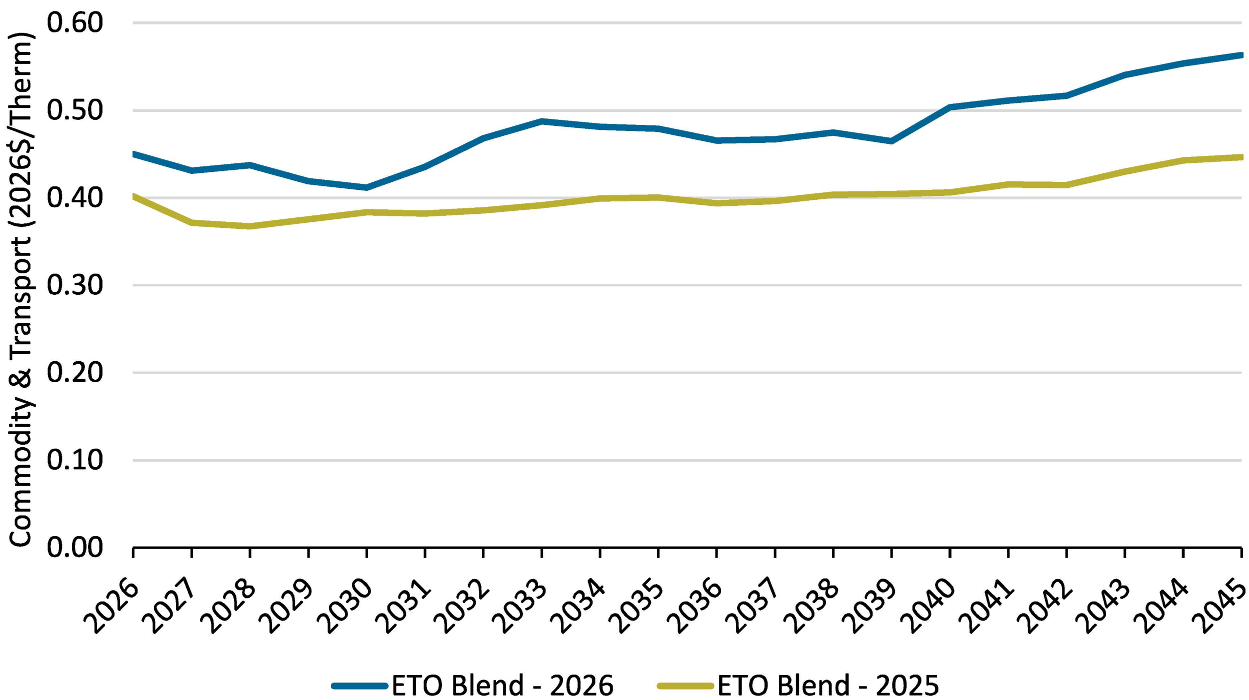
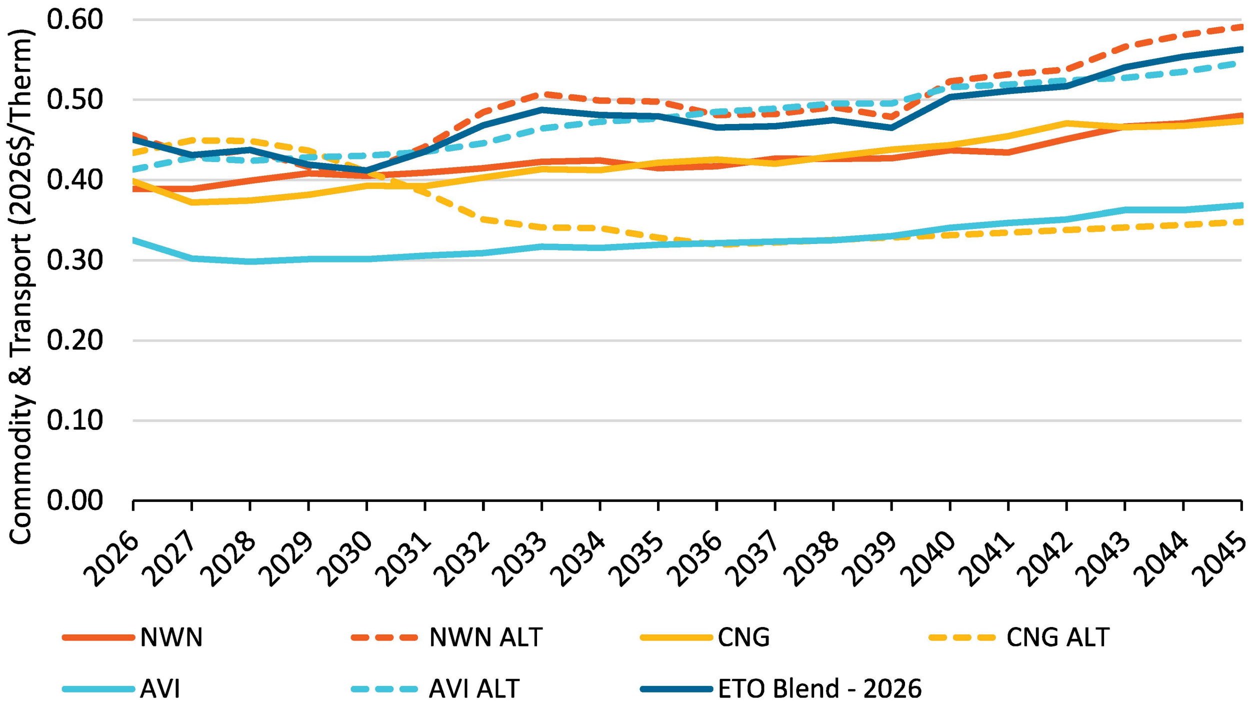


*Figure 4. Comparison of Utility-specific Commodity and Transport Price for 2026 Avoided Costs*



### *Peak Factors*

Energy Trust uses peak factors to determine the proportion of end-use consumption that takes place on a peak day or a peak hour for natural gas utilities. Peak day and peak hour factors are defined for each of the end-use load profiles that Energy Trust utlizes in avoided cost calculations.

Supply capacity values are shaped using peak day factors, which represent the proportion of annual end-use consumption that falls on a peak day. A peak day is assumed to be the maximum daily coincidence of end-use consumption on a December or January weekday. Distribution capacity values are shaped using peak hour factors, which represent the proportion of end-use consumption that falls on a peak hour.

Historically, Energy Trust relied on peak hour factors that were calculated seperately from peak day factors. This separate calculation resulted in some instances where the peak hour factor was less than 1/24$^{th}$ of a peak day factor. As a result, starting with the 2021 Avoided Costs, Energy Trust altered its method for calcuating peak hour factors for space heating end-uses. For space heating end-uses, a peak hour factor is calculated based on the proportion of consumption during the maximum hour on the peak day as characterized by peak day factors in Table 3. This method was applied for the 2025 Avoided Costs and is also applied to the 2026 Avoided Costs.

For non-space heating end-uses a peak hour is characterized as the maximum hourly coincidence of end-use consumption on a December or January weekday morning from 7-10 A.M. Peak day and peak hour factors are derived from a combination of electric analog end-use load profiles from the Northwest Power and Conservation Council (NWPCC) and Northwest Natural regression modeling. Table 3 and Table 4 show each of the peak factors used in 2026 Avoided Costs and their respective sources.

*Table 3. Daily Peak Factors for 2026 and 2025 Avoided Costs*

| End-Use Load Shape | 2026 Peak Day Factor | Peak Day Factor Source | 2025 Peak Day Factor | Peak Day Factor Source |
|---|---|---|---|---|
| Residential Space Heating | 0.0198 | Northwest Natural 2022 IRP | 0.0198 | Northwest Natural 2022 IRP |
| Commercial Space Heating | 0.0177 | Northwest Natural 2022 IRP | 0.0177 | Northwest Natural 2022 IRP |
| Domestic Hot Water | 0.0036 | NWPCC | 0.0036 | NWPCC |
| Flat | 0.0030 | NWPCC | 0.0030 | NWPCC |
| Clotheswasher | 0.0020 | NWPCC | 0.0020 | NWPCC |

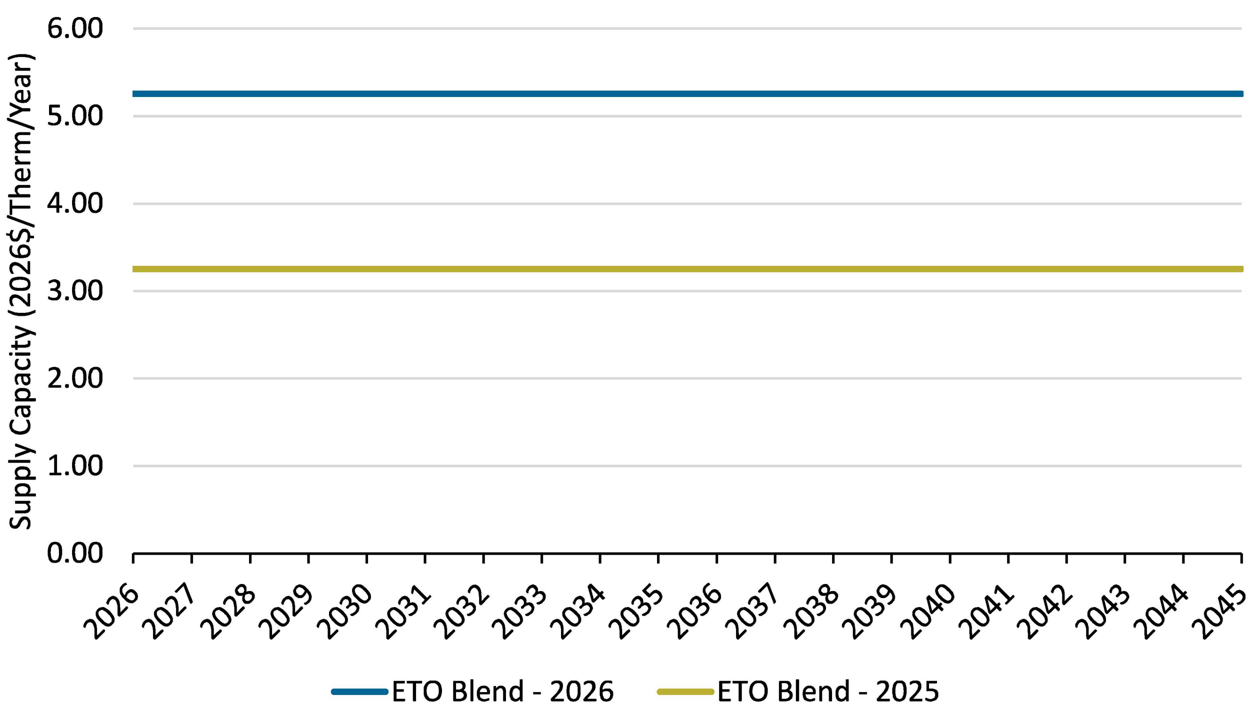
*Table 4. Hourly Peak Factors for 2026 and 2025 Avoided Costs*

| End-Use Load Shape | 2026 Peak Hour Factor | Peak Hour Factor Source | 2025 Peak Hour Factor | Peak Hour Factor Source |
|---|---|---|---|---|
| Residential Space Heating | 0.00144 | NWPCC & Northwest Natural 2022 IRP | 0.00144 | NWPCC & Northwest Natural 2022 IRP |
| Commercial Space Heating | 0.00140 | NWPCC & Northwest Natural 2022 IRP | 0.00140 | NWPCC & Northwest Natural 2022 IRP |
| Domestic Hot Water | 0.00030 | NWPCC | 0.00030 | NWPCC |
| Flat | 0.00013 | NWPCC | 0.00013 | NWPCC |
| Clotheswasher | 0.00024 | NWPCC | 0.00024 | NWPCC |

***Supply Capacity***

The blended supply capacity values that were used as inputs to avoided cost calculations increased by 62% from the prior round of Avoided Costs submissions. Blended supply capacity values used in the 2025 and 2026 avoided costs are illustrated in Figure 5.

*Figure 5. Blended Supply Capacity Values for 2026 and 2025 Avoided Costs*



### *Distribution Capacity*

The blended distribution capacity values that were used as inputs to avoided cost calculations decreased by 47% from the prior round of Avoided Costs submissions. Two factors account for this large decrease. First, NWN's most recent calculation is 43% lower than the value in their 2022 IRP. Second, Avista did not submit a distribution capacity value for 2025, so it was represented with a proportional blend of NWN and CNG values. Because the expenditure share in this case is 89% NWN and 11% CNG, the blended value was closer to NWN's much larger distribution capacity value.

Table 5 illustrates the change in distribution capacity costs for each end use load profile from 2025 blended avoided costs to the current 2026 blended avoided cost.

*Table 5. 70-year Average Blended Distribution Capacity Value by Loadshape*

| Blended Avoided Costs | DHW | FLAT | Res Heating | Com Heating | Clotheswasher |
|---|---|---|---|---|---|
| **2025 Vintage** | $1.55 | $0.66 | $7.51 | $7.28 | $1.24 |
| **2026 Update** | $0.82 | $0.35 | $3.98 | $3.86 | $0.66 |
| **Percent Change** | -47% | -47% | -47% | -47% | -47% |

### *Carbon Policy Compliance Value*

Carbon compliance values decreased by 1% from the prior blended value of $0.78 per Therm to $0.77 per Therm.

To calculate carbon value in 2026 Avoided Costs, Energy Trust used the Community Climate Investment (CCI) credit schedule published by DEQ in the adopted Climate Protection Program 2024.[1] The dollar per metric ton schedule starts at $129 in 2025 and can be found in Table 6 of Administrative Order No. DEQ-18-2024.

Each gas utility submitted utility-specific carbon intensity values (MTCO2e/Dth). Energy Trust calculated a blended carbon intensity using the values provided by the utilities. This blended carbon intensity value was then multiplied with the published DEQ schedule in order to calculate the final blended dollar per therm values for carbon compliance in the 2026 Avoided Costs. These values are shown in Table 6.

*Table 6. Utility-specific Carbon Intensity Values*

| Utility | Carbon Intensity (MTCO2e/Dth) |
|---|---|
| Northwest Natural | 0.053100 |
| Cascade Natural Gas | 0.057757 |
| Avista | 0.053061 |
| Energy Trust Blended | 0.053561 |

[1] https://www.oregon.gov/deq/rulemaking/Pages/CPP2024.aspx

Additionally, each gas utility provided primary and alternative carbon cost submissions. Figure 6 illustrates the respective carbon cost values provided by each natural gas utility and the blended value for use in Energy Trust avoided cost.

*Figure 6. Comparison of ETO Adopted DEQ Carbon Costs with Utility Carbon Costs*

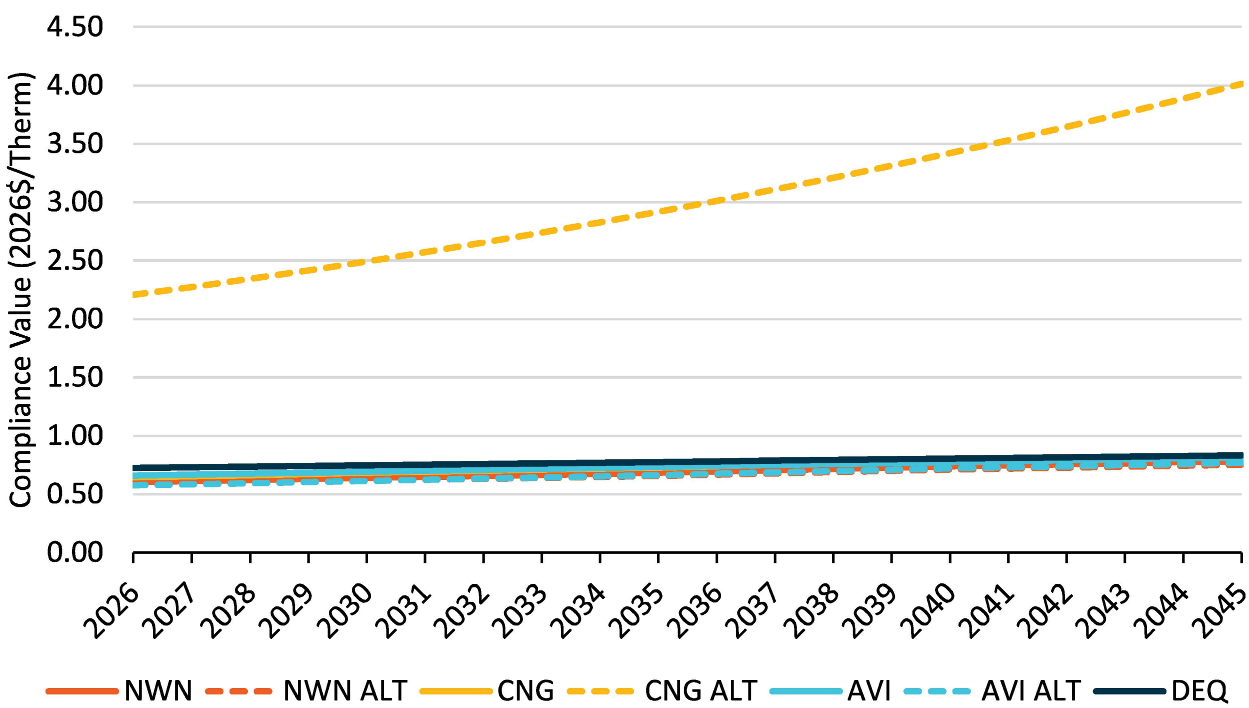
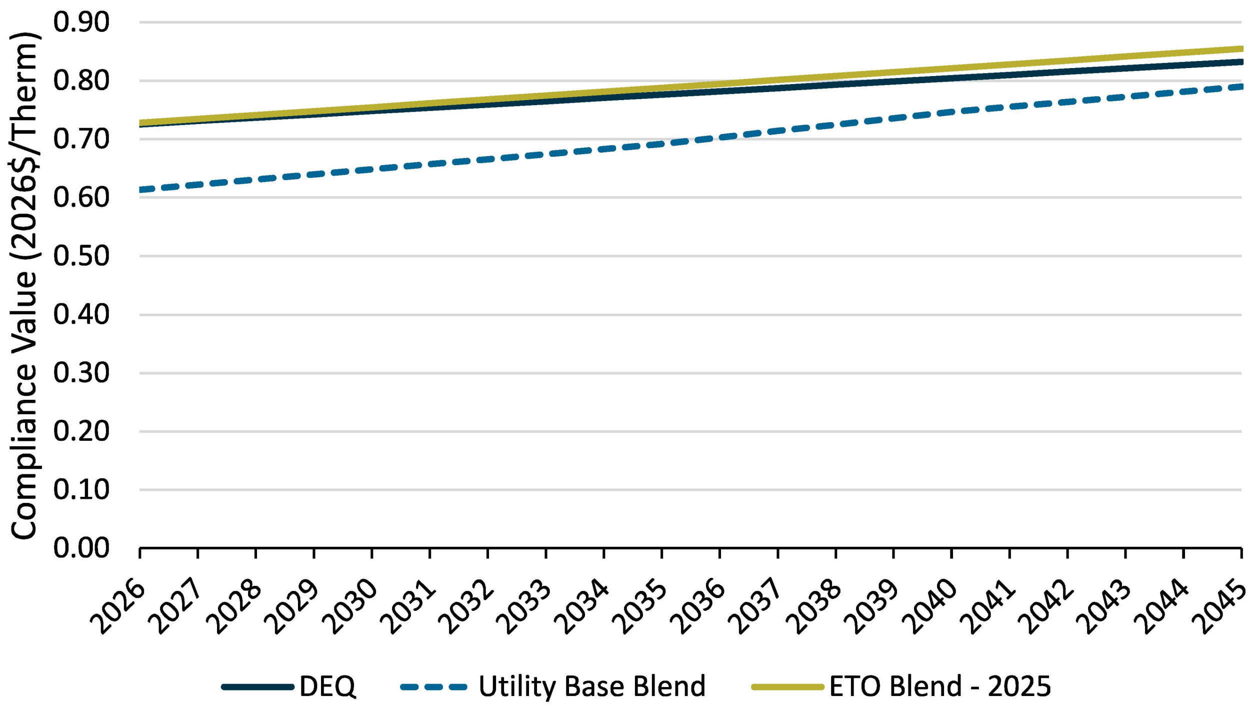


*Figure 7. Blended Carbon Compliance Values for 2026 and 2025 Avoided Costs*



### *Risk Reduction & NW Power Act Credit*

Risk reduction has historically been $0/Therm due to previous agreement that $0 value will be applied in the blended avoided cost calculation if utilities submit negative risk reduction values. The submissions for 2025 and 2026 Avoided Costs included positive risk reduction values.

Risk reduction increased by 35% from the 2025 Avoided Costs with a blended value of $0.09 per therm to a blended value of $0.12 per therm for 2026 Avoided Costs.

The NW Power Act Credit is applied to each of the avoided cost components and therefore its impact is relative to the changes in other individual components of each loadshape. The NW Power Act Credit continues to be 10% of avoided cost value.

**Measure Level Impacts**

For some measures, particularly space heating measures, the change in Avoided Costs tend to be greater due to the increase in distribution capacity values relative to other profiles. These end-uses have higher peak hour coincident factors than other profiles, and therefore their value increased more from 2025 to 2026 avoided costs relative to other profiles.

The following figures show changes in NPV Avoided Costs per unit of savings for representative measures across each sector. The NPV is shown according to each measure's typical measure life. The measures shown in these graphs are meant to show differential impacts across end uses and do not necessarily represent measures that make up the majority of savings within each sector.

*Figure 8. Residential Avoided Cost Comparison of Representative Measures*

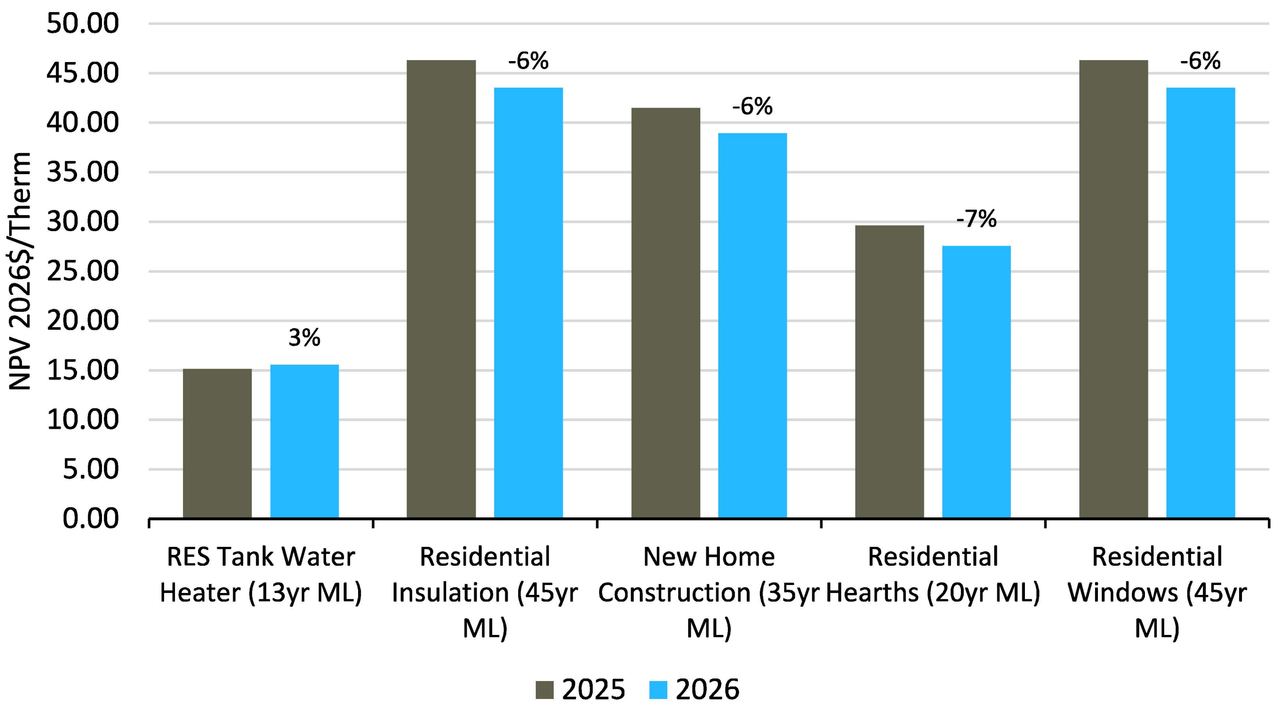


*Figure 9. Commercial Avoided Cost Comparison of Representative Measures*

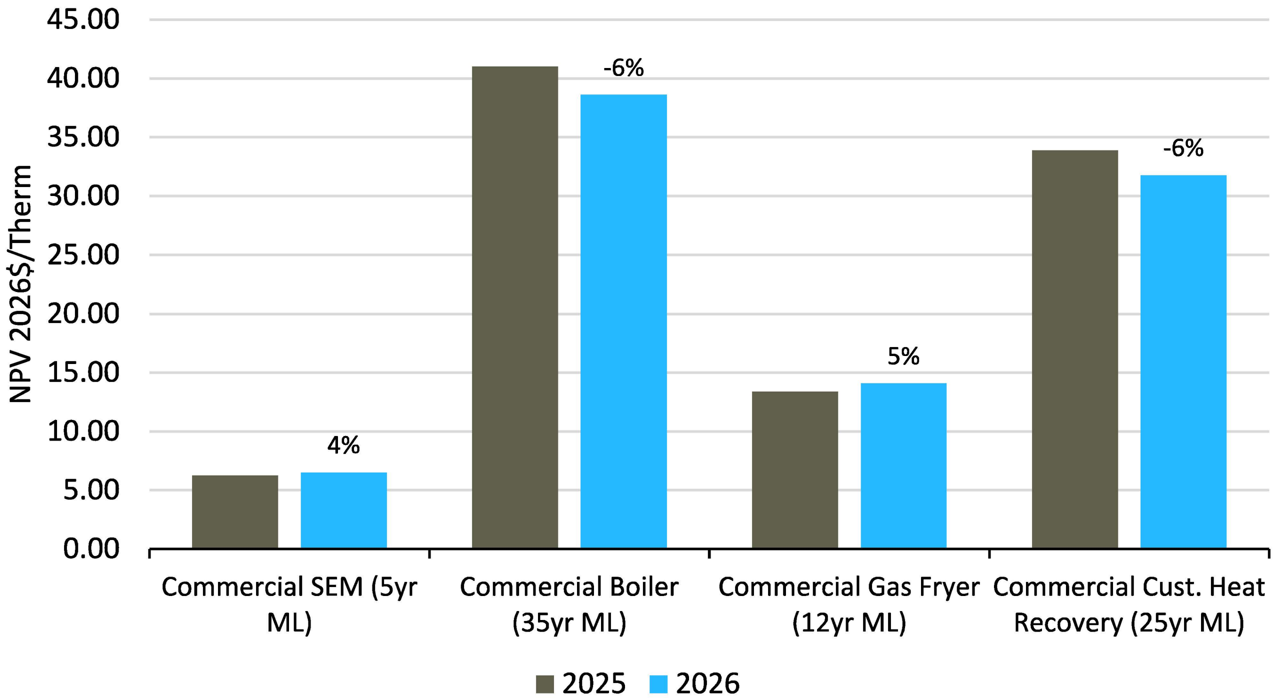
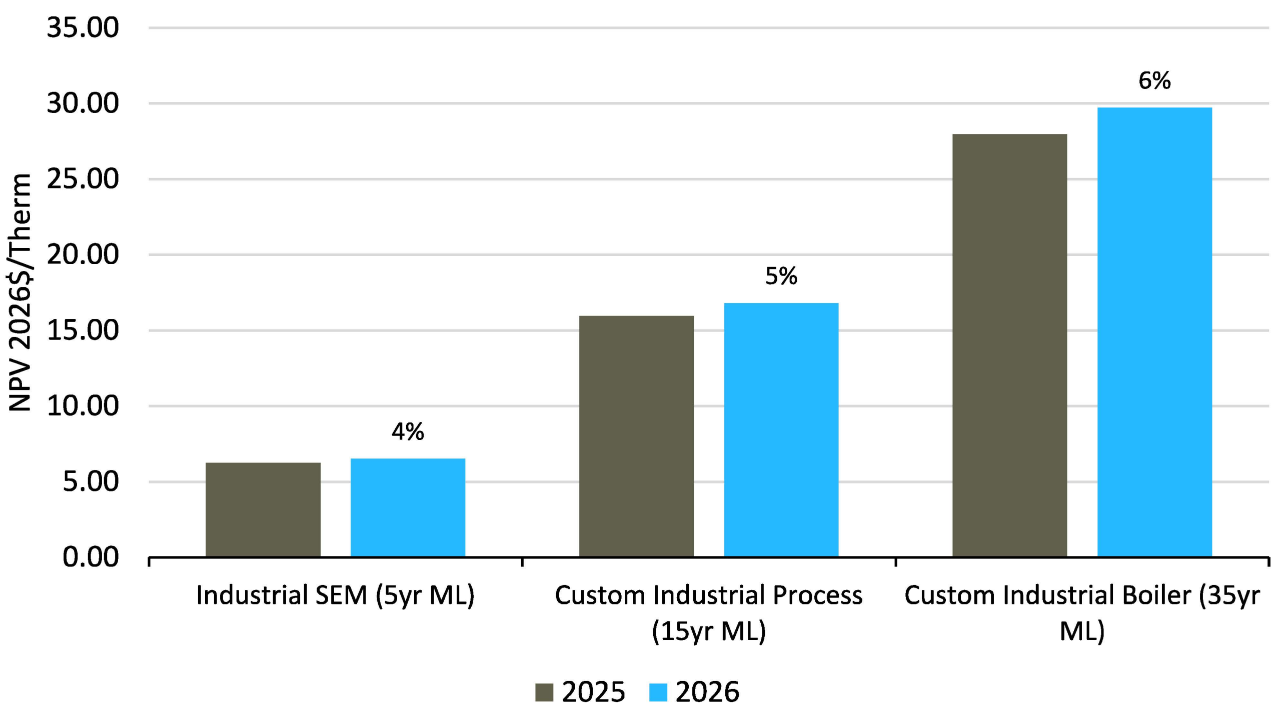



*Figure 10. Industrial Avoided Cost Comparison of Representative Measures*



Data References

Original submissions and source documentation can be found in the following dockets

| Utility | Report Docket | Submission set (main or alternate) unless otherwise specified |
|---|---|---|
| PacifiCorp | RE 181 | Main submission; Alt 1 avoided energy costs (more current); Staff capacity recommendation; Tx expansion credit as part of Alt 1 avoided energy |
| PGE | RE 182 | Main submission (2023 IRP), Forward prices (2026-2028); Avoided energy (2029-2045); Tx expansion included in avoided energy |
| Avista | RG 85 | Main global inputs; Alt 1 Commodity; Alt 1 Infrastructure; Weighted avg NWN/CNG risk reduction |
| Cascade | RG 86 | Alt 1 global inputs; Alt 1 Commodity; Main infrastructure capacity and risk reduction |
| Northwest Natural | RG 87 | Alt 1 global inputs; Alt 1 Commodity; Alt 1 infrastructure capacity; Alt 1 risk reduction |

**Global Assumptions Electric**

| | | PacifiCorp | | PGE | |
|---|---|---|---|---|---|
| **Avoided Cost Element** | **Units** | **Value** | **Dollar Year** | **Value** | **Dollar Year** |
| Inflation Rate | Percent | 2.28% | N/A | 2.02% | N/A |
| Real Discount Rate | Percent | 4.31% | N/A | 4.67% | N/A |
| | | | | | |
| Regional Act Credit | Percent | 10% | N/A | 10% | N/A |
| | | | | | |
| Transmission Loss Factor | Percent | 3.50% | N/A | 2.09% (summer); 2.04% (winter) | N/A |
| Distribution Loss Factor, Commercial | Percent | 3.69% | N/A | 4.02% | N/A |
| Distribution Loss Factor, Industrial | Percent | 3.20% | N/A | 1.96% | N/A |
| Distribution Loss Factor, Residential | Percent | 4.46% | N/A | 4.20% | N/A |
| | | | | | |
| Risk Reduction Value | $/MWh | *$1.89* | 2023 | $3.00 | 2020 |
| | | | | | |
| Transmission Deferral Credit | $/kW-yr | $7.10 | 2025 | $32.02 | 2024 |
| Seasonal Capacity Split - Summer | Percent | 95.00% | N/A | 50% | N/A |
| Seasonal Capacity Split - Winter | Percent | 5.00% | N/A | 50% | N/A |
| Summer Peak Period Definition | Month/Day/Hour | Trans. 12x24 profile | N/A | N/A | N/A |
| Winter Peak Period Definition | Month/Day/Hour | Trans. 12x24 profile | N/A | N/A | N/A |
| Deficiency start year | Year | 2025 | N/A | 2026 | N/A |
| | | | | | |
| Distribution Deferral Credit | $/kW-yr | $10.46 | 2022 | $6.31 | 2024 |
| Seasonal Capacity Split - Summer | Percent | 100.00% | N/A | 50% | N/A |
| Seasonal Capacity Split - Winter | Percent | 0.00% | N/A | 50% | N/A |
| Summer Peak Period Definition | Month/Day/Hour | Dist. 12x24 profile | N/A | N/A | N/A |
| Winter Peak Period Definition | Month/Day/Hour | Dist. 12x24 profile | N/A | N/A | N/A |
| Deficiency start year | Year | 2025 | N/A | 2026 | N/A |
| | | | | | |
| Generation Capacity Credit | $/kW-yr | $51.70 | 2024 | $145.86 | 2024 |
| Seasonal Capacity Split - Summer | Percent | 83.00% | N/A | 50% | N/A |
| Seasonal Capacity Split - Winter | Percent | 17.00% | N/A | 50% | N/A |
| Deficiency start year | Year | 2027 | N/A | 2026 | N/A |
| | | | | | |
| Transmission Expansion Credit | $/MWh | $13.65 | 2027 | $47.40 | 2023 |
| Already included in energy prices? | Y/N | Yes | N/A | Yes | N/A |

Avoided Energy Cost
PAC Recommendation Tab 3a) Avoided Energy Costs (Alt1)
PGE Recommendation Tab 2) Forward Prices for 2026-2028; Tab 3) Avoided Energy Costs for 2029-2045

| Date | PacifiCorp Average ($/MWh) | PGE Average ($/MWh) |
|---|---|---|
| 1/1/2026 | $ 106.67 | $ 105.53 |
| 2/1/2026 | $ 91.51 | $ 90.01 |
| 3/1/2026 | $ 54.54 | $ 53.53 |
| 4/1/2026 | $ 40.57 | $ 38.53 |
| 5/1/2026 | $ 31.14 | $ 28.49 |
| 6/1/2026 | $ 35.07 | $ 31.99 |
| 7/1/2026 | $ 71.64 | $ 66.97 |
| 8/1/2026 | $ 95.48 | $ 89.56 |
| 9/1/2026 | $ 71.43 | $ 67.00 |
| 10/1/2026 | $ 73.88 | $ 73.14 |
| 11/1/2026 | $ 79.12 | $ 78.20 |
| 12/1/2026 | $ 96.58 | $ 96.08 |
| 1/1/2027 | $ 99.09 | $ 96.80 |
| 2/1/2027 | $ 88.10 | $ 84.57 |
| 3/1/2027 | $ 75.13 | $ 73.38 |
| 4/1/2027 | $ 37.43 | $ 33.72 |
| 5/1/2027 | $ 32.66 | $ 30.44 |
| 6/1/2027 | $ 33.13 | $ 29.52 |
| 7/1/2027 | $ 86.06 | $ 80.63 |
| 8/1/2027 | $ 114.65 | $ 106.98 |
| 9/1/2027 | $ 89.75 | $ 84.87 |
| 10/1/2027 | $ 73.24 | $ 73.01 |
| 11/1/2027 | $ 66.56 | $ 80.12 |
| 12/1/2027 | $ 75.92 | $ 92.25 |
| 1/1/2028 | $ 74.92 | $ 82.58 |
| 2/1/2028 | $ 74.62 | $ 72.50 |
| 3/1/2028 | $ 57.52 | $ 59.89 |
| 4/1/2028 | $ 36.36 | $ 51.13 |
| 5/1/2028 | $ 29.05 | $ 45.96 |
| 6/1/2028 | $ 34.75 | $ 47.05 |
| 7/1/2028 | $ 75.54 | $ 88.61 |
| 8/1/2028 | $ 94.00 | $ 111.53 |
| 9/1/2028 | $ 74.95 | $ 92.83 |
| 10/1/2028 | $ 64.12 | $ 65.25 |
| 11/1/2028 | $ 56.02 | $ 71.21 |
| 12/1/2028 | $ 59.41 | $ 84.33 |
| 1/1/2029 | $ 52.67 | $ 175.04 |
| 2/1/2029 | $ 64.07 | $ 147.77 |
| 3/1/2029 | $ 42.30 | $ 119.48 |
| 4/1/2029 | $ 35.30 | $ 82.79 |

| | | |
|---|---|---|
| 5/1/2029 | $ 24.26 | $ 71.89 |
| 6/1/2029 | $ 35.42 | $ 67.67 |
| 7/1/2029 | $ 65.64 | $ 146.00 |
| 8/1/2029 | $ 71.39 | $ 197.89 |
| 9/1/2029 | $ 58.11 | $ 167.89 |
| 10/1/2029 | $ 50.07 | $ 137.21 |
| 11/1/2029 | $ 54.59 | $ 158.96 |
| 12/1/2029 | $ 64.03 | $ 185.92 |
| 1/1/2030 | $ 54.66 | $ 84.63 |
| 2/1/2030 | $ 65.47 | $ 69.64 |
| 3/1/2030 | $ 42.75 | $ 50.81 |
| 4/1/2030 | $ 34.67 | $ 20.62 |
| 5/1/2030 | $ 22.74 | $ 5.75 |
| 6/1/2030 | $ 36.46 | $ 2.37 |
| 7/1/2030 | $ 63.03 | $ 40.56 |
| 8/1/2030 | $ 68.74 | $ 60.37 |
| 9/1/2030 | $ 59.21 | $ 62.38 |
| 10/1/2030 | $ 51.48 | $ 64.46 |
| 11/1/2030 | $ 56.59 | $ 80.18 |
| 12/1/2030 | $ 66.07 | $ 92.91 |
| 1/1/2031 | $ 57.67 | $ 346.59 |
| 2/1/2031 | $ 69.35 | $ 286.22 |
| 3/1/2031 | $ 43.08 | $ 202.65 |
| 4/1/2031 | $ 37.43 | $ 70.87 |
| 5/1/2031 | $ 20.70 | $ 35.76 |
| 6/1/2031 | $ 35.89 | $ 13.87 |
| 7/1/2031 | $ 64.28 | $ 162.13 |
| 8/1/2031 | $ 69.30 | $ 241.46 |
| 9/1/2031 | $ 59.31 | $ 250.45 |
| 10/1/2031 | $ 52.51 | $ 265.21 |
| 11/1/2031 | $ 58.85 | $ 334.55 |
| 12/1/2031 | $ 66.64 | $ 391.14 |
| 1/1/2032 | $ 58.87 | $ 127.22 |
| 2/1/2032 | $ 71.30 | $ 87.82 |
| 3/1/2032 | $ 41.67 | $ 70.63 |
| 4/1/2032 | $ 37.05 | $ 16.52 |
| 5/1/2032 | $ 19.90 | $ 1.64 |
| 6/1/2032 | $ 33.80 | $ (1.11) |
| 7/1/2032 | $ 69.25 | $ 50.83 |
| 8/1/2032 | $ 68.13 | $ 83.83 |
| 9/1/2032 | $ 57.75 | $ 89.00 |
| 10/1/2032 | $ 54.51 | $ 94.28 |
| 11/1/2032 | $ 61.96 | $ 126.06 |
| 12/1/2032 | $ 69.22 | $ 143.23 |
| 1/1/2033 | $ 72.50 | $ 125.00 |
| 2/1/2033 | $ 89.62 | $ 99.60 |
| 3/1/2033 | $ 52.11 | $ 72.62 |

| | | | | |
|---|---|---|---|---|
| 4/1/2033 | $ | 41.04 | $ | 19.75 |
| 5/1/2033 | $ | 21.79 | $ | 4.38 |
| 6/1/2033 | $ | 37.11 | $ | 0.49 |
| 7/1/2033 | $ | 78.77 | $ | 53.31 |
| 8/1/2033 | $ | 82.58 | $ | 85.13 |
| 9/1/2033 | $ | 70.89 | $ | 88.20 |
| 10/1/2033 | $ | 65.33 | $ | 93.34 |
| 11/1/2033 | $ | 72.25 | $ | 122.03 |
| 12/1/2033 | $ | 84.32 | $ | 144.11 |
| 1/1/2034 | $ | 75.69 | $ | 138.77 |
| 2/1/2034 | $ | 91.76 | $ | 106.35 |
| 3/1/2034 | $ | 51.76 | $ | 71.61 |
| 4/1/2034 | $ | 40.58 | $ | 20.97 |
| 5/1/2034 | $ | 20.25 | $ | 0.37 |
| 6/1/2034 | $ | 37.23 | $ | 0.13 |
| 7/1/2034 | $ | 78.28 | $ | 49.48 |
| 8/1/2034 | $ | 78.73 | $ | 85.18 |
| 9/1/2034 | $ | 70.03 | $ | 89.67 |
| 10/1/2034 | $ | 63.09 | $ | 94.63 |
| 11/1/2034 | $ | 73.65 | $ | 121.77 |
| 12/1/2034 | $ | 86.58 | $ | 147.39 |
| 1/1/2035 | $ | 77.86 | $ | 139.51 |
| 2/1/2035 | $ | 97.59 | $ | 106.90 |
| 3/1/2035 | $ | 54.40 | $ | 70.21 |
| 4/1/2035 | $ | 43.19 | $ | 20.04 |
| 5/1/2035 | $ | 18.43 | $ | 6.60 |
| 6/1/2035 | $ | 36.04 | $ | 4.57 |
| 7/1/2035 | $ | 74.00 | $ | 48.15 |
| 8/1/2035 | $ | 80.47 | $ | 83.04 |
| 9/1/2035 | $ | 69.90 | $ | 87.09 |
| 10/1/2035 | $ | 63.11 | $ | 96.82 |
| 11/1/2035 | $ | 73.37 | $ | 126.44 |
| 12/1/2035 | $ | 89.57 | $ | 155.70 |
| 1/1/2036 | $ | 88.90 | $ | 146.89 |
| 2/1/2036 | $ | 107.09 | $ | 96.52 |
| 3/1/2036 | $ | 58.57 | $ | 69.69 |
| 4/1/2036 | $ | 48.51 | $ | 24.15 |
| 5/1/2036 | $ | 16.39 | $ | 11.47 |
| 6/1/2036 | $ | 35.00 | $ | 10.45 |
| 7/1/2036 | $ | 78.49 | $ | 43.59 |
| 8/1/2036 | $ | 88.80 | $ | 82.54 |
| 9/1/2036 | $ | 73.84 | $ | 87.85 |
| 10/1/2036 | $ | 68.65 | $ | 96.28 |
| 11/1/2036 | $ | 81.95 | $ | 132.36 |
| 12/1/2036 | $ | 100.14 | $ | 162.42 |
| 1/1/2037 | $ | 87.60 | $ | 442.15 |
| 2/1/2037 | $ | 109.87 | $ | 326.55 |

| | | | | |
|---|---|---|---|---|
| 3/1/2037 | $ | 58.58 | $ | 203.74 |
| 4/1/2037 | $ | 46.46 | $ | 73.89 |
| 5/1/2037 | $ | 18.33 | $ | 53.69 |
| 6/1/2037 | $ | 35.13 | $ | 51.46 |
| 7/1/2037 | $ | 80.04 | $ | 114.88 |
| 8/1/2037 | $ | 85.91 | $ | 246.88 |
| 9/1/2037 | $ | 76.88 | $ | 256.88 |
| 10/1/2037 | $ | 67.58 | $ | 285.95 |
| 11/1/2037 | $ | 85.61 | $ | 390.58 |
| 12/1/2037 | $ | 99.72 | $ | 486.41 |
| 1/1/2038 | $ | 99.04 | $ | 460.78 |
| 2/1/2038 | $ | 110.53 | $ | 345.04 |
| 3/1/2038 | $ | 58.61 | $ | 215.12 |
| 4/1/2038 | $ | 51.22 | $ | 77.31 |
| 5/1/2038 | $ | 19.89 | $ | 49.20 |
| 6/1/2038 | $ | 37.54 | $ | 49.10 |
| 7/1/2038 | $ | 86.25 | $ | 126.70 |
| 8/1/2038 | $ | 91.67 | $ | 240.55 |
| 9/1/2038 | $ | 80.70 | $ | 254.59 |
| 10/1/2038 | $ | 71.36 | $ | 290.85 |
| 11/1/2038 | $ | 88.02 | $ | 388.37 |
| 12/1/2038 | $ | 107.71 | $ | 494.79 |
| 1/1/2039 | $ | 112.80 | $ | 471.05 |
| 2/1/2039 | $ | 137.78 | $ | 356.08 |
| 3/1/2039 | $ | 64.32 | $ | 206.64 |
| 4/1/2039 | $ | 50.96 | $ | 76.05 |
| 5/1/2039 | $ | 20.63 | $ | 57.67 |
| 6/1/2039 | $ | 38.46 | $ | 52.68 |
| 7/1/2039 | $ | 97.17 | $ | 101.66 |
| 8/1/2039 | $ | 97.94 | $ | 239.54 |
| 9/1/2039 | $ | 84.65 | $ | 243.61 |
| 10/1/2039 | $ | 81.90 | $ | 299.13 |
| 11/1/2039 | $ | 100.33 | $ | 412.98 |
| 12/1/2039 | $ | 127.04 | $ | 535.86 |
| 1/1/2040 | $ | 117.11 | $ | 495.89 |
| 2/1/2040 | $ | 141.67 | $ | 303.98 |
| 3/1/2040 | $ | 65.66 | $ | 210.30 |
| 4/1/2040 | $ | 53.89 | $ | 69.84 |
| 5/1/2040 | $ | 20.07 | $ | 54.56 |
| 6/1/2040 | $ | 37.68 | $ | 48.31 |
| 7/1/2040 | $ | 93.37 | $ | 105.86 |
| 8/1/2040 | $ | 94.04 | $ | 239.05 |
| 9/1/2040 | $ | 83.36 | $ | 262.67 |
| 10/1/2040 | $ | 77.71 | $ | 308.67 |
| 11/1/2040 | $ | 99.08 | $ | 443.24 |
| 12/1/2040 | $ | 127.74 | $ | 572.36 |
| 1/1/2041 | $ | 115.46 | $ | 503.28 |

| | | |
|---|---|---|
| 2/1/2041 | $ 155.12 | $ 370.53 |
| 3/1/2041 | $ 68.91 | $ 188.29 |
| 4/1/2041 | $ 47.51 | $ 67.23 |
| 5/1/2041 | $ 18.02 | $ 49.97 |
| 6/1/2041 | $ 35.52 | $ 47.99 |
| 7/1/2041 | $ 88.88 | $ 93.80 |
| 8/1/2041 | $ 95.99 | $ 238.20 |
| 9/1/2041 | $ 87.37 | $ 262.99 |
| 10/1/2041 | $ 75.96 | $ 317.16 |
| 11/1/2041 | $ 102.38 | $ 450.51 |
| 12/1/2041 | $ 128.92 | $ 587.81 |
| 1/1/2042 | $ 116.20 | $ 520.11 |
| 2/1/2042 | $ 158.93 | $ 382.91 |
| 3/1/2042 | $ 71.48 | $ 200.91 |
| 4/1/2042 | $ 56.99 | $ 67.38 |
| 5/1/2042 | $ 16.47 | $ 48.25 |
| 6/1/2042 | $ 38.33 | $ 45.65 |
| 7/1/2042 | $ 89.26 | $ 109.29 |
| 8/1/2042 | $ 98.28 | $ 250.13 |
| 9/1/2042 | $ 84.98 | $ 255.30 |
| 10/1/2042 | $ 76.16 | $ 316.71 |
| 11/1/2042 | $ 99.22 | $ 447.08 |
| 12/1/2042 | $ 125.41 | $ 598.33 |
| 1/1/2043 | $ 126.94 | $ 531.95 |
| 2/1/2043 | $ 180.45 | $ 390.11 |
| 3/1/2043 | $ 70.86 | $ 199.17 |
| 4/1/2043 | $ 56.60 | $ 69.39 |
| 5/1/2043 | $ 20.54 | $ 48.87 |
| 6/1/2043 | $ 38.12 | $ 47.64 |
| 7/1/2043 | $ 94.21 | $ 89.85 |
| 8/1/2043 | $ 99.73 | $ 237.54 |
| 9/1/2043 | $ 85.48 | $ 254.69 |
| 10/1/2043 | $ 77.12 | $ 321.48 |
| 11/1/2043 | $ 105.27 | $ 479.40 |
| 12/1/2043 | $ 131.11 | $ 637.57 |

**Loss of Load Probability Heat Map Input Electric**

**PacifiCorp**

Source and page #: 2021 IRP: Support for Appendix K - Capacity Contribution

Source Link or File Name: 2030 ENS results index 13668 CONF.xlsb

**WEEKDAYS & WEEKENDS**

| Count | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hr Ending | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.003 | 0.005 | 0.000 | 0.000 | 0.000 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.005 | 0.004 | 0.013 | 0.000 | 0.000 | 0.000 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.003 | 0.006 | 0.000 | 0.000 | 0.000 |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.004 | 0.006 | 0.000 | 0.000 | 0.000 |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.003 | 0.005 | 0.014 | 0.000 | 0.000 | 0.000 |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.009 | 0.023 | 0.000 | 0.000 | 0.000 |
| 7 | 0.020 | 0.013 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.005 | 0.023 | 0.000 | 0.000 | 0.004 |
| 8 | 0.029 | 0.013 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.004 | 0.009 | 0.000 | 0.000 | 0.006 |
| 9 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 |
| 10 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 |
| 11 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 |
| 12 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 |
| 13 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.001 | 0.003 | 0.000 | 0.000 | 0.000 |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.006 | 0.003 | 0.000 | 0.000 | 0.000 |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 |
| 16 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.008 | 0.008 | 0.003 | 0.000 | 0.000 | 0.000 |
| 17 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.004 | 0.013 | 0.009 | 0.000 | 0.000 | 0.001 |
| 18 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.005 | 0.027 | 0.037 | 0.000 | 0.000 | 0.000 |
| 19 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.020 | 0.034 | 0.036 | 0.000 | 0.000 | 0.001 |
| 20 | 0.001 | 0.013 | 0.000 | 0.000 | 0.000 | 0.020 | 0.046 | 0.037 | 0.031 | 0.000 | 0.000 | 0.001 |
| 21 | 0.001 | 0.013 | 0.000 | 0.000 | 0.000 | 0.020 | 0.045 | 0.034 | 0.027 | 0.000 | 0.000 | 0.000 |
| 22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.029 | 0.031 | 0.018 | 0.000 | 0.000 | 0.000 |
| 23 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.006 | 0.013 | 0.005 | 0.000 | 0.000 | 0.000 |
| 24 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.006 | 0.011 | 0.005 | 0.000 | 0.000 | 0.000 |

Note: This information is provided to Energy Trust to identify peak definitions.

**PGE**

Source and page #: 2023 IRP Updated Analysis

Source Link or File Name: 2026_LOLPHeatmap_.xlsx

**WEEKDAYS & WEEKENDS**

| Count | 31 | 28 | 31 | 30 | 31 | 30 | 31 | 31 | 30 | 31 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 |
| 6 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 |
| 7 | 0.004 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.010 |
| 8 | 0.007 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.015 |
| 9 | 0.007 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.015 |
| 10 | 0.007 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.002 | 0.015 |
| 11 | 0.007 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.000 | 0.000 | 0.002 | 0.015 |
| 12 | 0.007 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.005 | 0.000 | 0.000 | 0.002 | 0.015 |
| 13 | 0.007 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.005 | 0.009 | 0.000 | 0.000 | 0.002 | 0.014 |
| 14 | 0.006 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.008 | 0.014 | 0.000 | 0.000 | 0.002 | 0.013 |
| 15 | 0.007 | 0.001 | 0.000 | 0.000 | 0.000 | 0.002 | 0.011 | 0.020 | 0.001 | 0.000 | 0.002 | 0.014 |
| 16 | 0.008 | 0.002 | 0.000 | 0.000 | 0.000 | 0.002 | 0.012 | 0.025 | 0.002 | 0.000 | 0.004 | 0.020 |
| 17 | 0.009 | 0.002 | 0.000 | 0.000 | 0.000 | 0.002 | 0.014 | 0.030 | 0.002 | 0.000 | 0.004 | 0.022 |
| 18 | 0.010 | 0.002 | 0.000 | 0.000 | 0.000 | 0.002 | 0.014 | 0.032 | 0.003 | 0.000 | 0.005 | 0.024 |
| 19 | 0.010 | 0.003 | 0.000 | 0.000 | 0.000 | 0.003 | 0.016 | 0.045 | 0.005 | 0.000 | 0.005 | 0.024 |
| 20 | 0.011 | 0.003 | 0.000 | 0.000 | 0.000 | 0.003 | 0.022 | 0.052 | 0.005 | 0.000 | 0.005 | 0.025 |
| 21 | 0.011 | 0.003 | 0.000 | 0.000 | 0.000 | 0.003 | 0.020 | 0.046 | 0.004 | 0.000 | 0.006 | 0.026 |
| 22 | 0.010 | 0.003 | 0.000 | 0.000 | 0.000 | 0.002 | 0.005 | 0.016 | 0.001 | 0.000 | 0.005 | 0.024 |
| 23 | 0.003 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.003 | 0.000 | 0.000 | 0.002 | 0.005 |
| 24 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 |

Note: This information is provided to Energy Trust to identify peak definitions.

## Global Assumptions Natural Gas

| | | Avista | Cascade | Northwest Natural |
|---|---|---|---|---|
| **Avoided Cost Element** | **Units** | **Value** | **Value** | **Value** |
| Discount Rate (Company's Real after-tax weighted average cost of capital (WACC) | Percent | 4.52% | 4.24% | 3.87% |
| | | | | |
| **Inflation Rate** | Percent | 2.00% | 2.91% | 2.45% |
| | | | | |
| **Regional Act Credit** | Percent | 10.00% | 10.00% | 10.00% |
| | | | | |
| **Forecast Period Calendar Start Year** | Year | 2023 | 2025 | 2025 |
| | | | | |
| **Real Dollar Base Year** | Year | 2022 | 2023 | 2023 |
| | | | | |
| **System Peak Definition** | Calendar Month/Day/Hour | February 28th & December 20th | Day | Day for Gas Supply, Hour for Distribution System Planning |
| | | | | |
| **System Peak Coincident Day Factor (if needed)** | Peak Day/Annual Load Ratio | 0.0094 | 0.0086 | |
| | | | | |
| **System Peak Coincident Hour Factor (if needed)** | Peak Hour/Annual Load Ratio | 0.0004 | 0.0005 | |

**Avista**
**Gas Commodity and Transportation/Storage Costs - ($/Dth)**

| Year | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2026 | $3.69 | $4.24 | $3.94 | $3.80 | $3.88 | $4.02 | $4.21 | $4.22 | $4.14 | $4.12 | $4.45 | $4.82 |
| 2027 | $4.37 | $4.93 | $4.42 | $4.06 | $3.96 | $4.15 | $4.27 | $4.28 | $4.19 | $4.29 | $4.60 | $4.87 |
| 2028 | $4.26 | $5.01 | $4.56 | $4.14 | $4.14 | $4.17 | $4.27 | $4.29 | $4.10 | $4.17 | $4.84 | $4.96 |
| 2029 | $5.05 | $5.15 | $4.67 | $4.25 | $4.28 | $4.24 | $4.36 | $4.32 | $4.15 | $4.36 | $4.68 | $5.03 |
| 2030 | $5.07 | $5.28 | $5.06 | $4.64 | $4.56 | $4.26 | $4.31 | $4.30 | $4.09 | $4.42 | $4.86 | $5.03 |
| 2031 | $5.07 | $5.05 | $4.83 | $4.76 | $4.92 | $4.49 | $4.55 | $4.55 | $4.33 | $4.86 | $4.97 | $5.28 |
| 2032 | $5.31 | $5.07 | $4.94 | $5.06 | $5.28 | $4.62 | $4.71 | $4.74 | $4.61 | $5.12 | $5.29 | $5.50 |
| 2033 | $5.56 | $5.54 | $5.38 | $5.46 | $5.74 | $4.93 | $5.05 | $5.04 | $4.76 | $5.38 | $5.47 | $5.67 |
| 2034 | $5.71 | $5.71 | $5.50 | $5.75 | $6.07 | $5.14 | $5.22 | $5.24 | $4.97 | $5.68 | $5.66 | $5.82 |
| 2035 | $5.87 | $5.81 | $5.59 | $5.93 | $6.31 | $5.27 | $5.29 | $5.34 | $5.15 | $5.95 | $5.84 | $6.00 |
| 2036 | $5.97 | $5.96 | $5.82 | $6.24 | $6.68 | $5.43 | $5.57 | $5.54 | $5.32 | $6.22 | $5.96 | $6.25 |
| 2037 | $6.43 | $6.15 | $5.95 | $6.43 | $6.89 | $5.50 | $5.64 | $5.60 | $5.43 | $6.45 | $6.12 | $6.35 |
| 2038 | $6.65 | $6.33 | $6.05 | $6.64 | $7.22 | $5.68 | $5.84 | $5.71 | $5.63 | $6.62 | $6.47 | $6.57 |
| 2039 | $6.28 | $6.57 | $6.22 | $6.84 | $7.51 | $5.79 | $5.91 | $5.79 | $5.64 | $6.82 | $6.67 | $6.83 |
| 2040 | $6.95 | $6.96 | $6.55 | $7.20 | $7.95 | $6.17 | $6.30 | $6.15 | $6.05 | $7.27 | $7.06 | $7.09 |
| 2041 | $6.79 | $7.14 | $6.82 | $7.41 | $8.24 | $6.23 | $6.36 | $6.26 | $6.19 | $7.49 | $7.51 | $7.38 |
| 2042 | $7.04 | $7.33 | $7.12 | $7.63 | $8.58 | $6.48 | $6.51 | $6.39 | $6.28 | $7.77 | $7.81 | $7.40 |
| 2043 | $7.29 | $7.55 | $7.04 | $7.72 | $8.84 | $6.54 | $6.67 | $6.60 | $6.49 | $7.97 | $8.15 | $7.72 |
| 2044 | $8.09 | $7.75 | $7.64 | $7.89 | $9.19 | $6.80 | $6.94 | $6.73 | $6.72 | $8.26 | $7.78 | $7.90 |
| 2045 | $8.37 | $7.96 | $7.56 | $8.14 | $9.52 | $7.05 | $7.13 | $6.90 | $6.92 | $8.58 | $8.95 | $8.37 |

**Cascade**
**Gas Commodity and Transportation/Storage Costs - (Real 2024$/Dth)**

| Year | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2026 | $7.13 | $5.88 | $3.76 | $2.62 | $2.43 | $2.65 | $3.23 | $3.27 | $3.24 | $2.94 | $4.94 | $7.06 |
| 2027 | $7.22 | $6.19 | $4.09 | $2.57 | $2.52 | $2.65 | $3.27 | $3.31 | $3.28 | $3.05 | $5.26 | $7.49 |
| 2028 | $7.45 | $6.53 | $4.08 | $2.54 | $2.55 | $2.67 | $3.20 | $3.24 | $3.19 | $3.08 | $5.59 | $6.72 |
| 2029 | $6.85 | $6.41 | $4.72 | $2.44 | $2.45 | $2.59 | $2.95 | $3.00 | $2.98 | $3.05 | $5.57 | $6.48 |
| 2030 | $6.10 | $5.59 | $4.91 | $2.35 | $2.37 | $2.48 | $2.81 | $2.84 | $2.80 | $2.85 | $5.40 | $5.99 |
| 2031 | $5.83 | $5.50 | $4.91 | $2.17 | $2.21 | $2.32 | $2.64 | $2.68 | $2.63 | $2.68 | $4.69 | $5.27 |
| 2032 | $5.45 | $3.92 | $3.62 | $2.72 | $2.09 | $2.20 | $2.53 | $2.58 | $2.52 | $2.57 | $4.51 | $5.09 |
| 2033 | $5.29 | $3.76 | $3.45 | $2.57 | $1.94 | $2.08 | $2.44 | $2.49 | $2.49 | $2.55 | $4.51 | $5.09 |
| 2034 | $5.29 | $3.78 | $3.61 | $2.82 | $2.14 | $2.15 | $2.37 | $2.41 | $2.42 | $2.47 | $4.31 | $4.81 |
| 2035 | $4.89 | $3.55 | $3.51 | $2.79 | $2.11 | $2.13 | $2.34 | $2.39 | $2.39 | $2.45 | $4.16 | $4.49 |
| 2036 | $4.60 | $3.31 | $3.46 | $2.74 | $2.06 | $2.08 | $2.29 | $2.34 | $2.34 | $2.40 | $4.11 | $4.44 |
| 2037 | $4.64 | $3.34 | $3.49 | $2.77 | $2.09 | $2.10 | $2.32 | $2.37 | $2.37 | $2.42 | $4.14 | $4.47 |
| 2038 | $4.67 | $3.37 | $3.52 | $2.80 | $2.12 | $2.13 | $2.35 | $2.39 | $2.40 | $2.45 | $4.17 | $4.50 |
| 2039 | $4.70 | $3.41 | $3.55 | $2.82 | $2.14 | $2.16 | $2.38 | $2.42 | $2.43 | $2.48 | $4.20 | $4.53 |
| 2040 | $4.74 | $3.44 | $3.58 | $2.85 | $2.17 | $2.18 | $2.40 | $2.45 | $2.45 | $2.51 | $4.23 | $4.56 |
| 2041 | $4.77 | $3.47 | $3.61 | $2.88 | $2.20 | $2.21 | $2.43 | $2.48 | $2.48 | $2.54 | $4.26 | $4.59 |
| 2042 | $4.81 | $3.51 | $3.65 | $2.91 | $2.23 | $2.24 | $2.46 | $2.51 | $2.51 | $2.57 | $4.29 | $4.63 |
| 2043 | $4.84 | $3.54 | $3.68 | $2.94 | $2.25 | $2.27 | $2.49 | $2.54 | $2.54 | $2.60 | $4.32 | $4.66 |
| 2044 | $4.88 | $3.57 | $3.71 | $2.96 | $2.28 | $2.30 | $2.52 | $2.57 | $2.57 | $2.63 | $4.35 | $4.69 |
| 2045 | $4.91 | $3.61 | $3.74 | $2.99 | $2.31 | $2.33 | $2.55 | $2.60 | $2.60 | $2.66 | $4.38 | $4.72 |
| 2046 | $4.95 | $3.64 | $3.77 | $3.02 | $2.34 | $2.36 | $2.58 | $2.63 | $2.63 | $2.69 | $4.41 | $4.76 |
| 2047 | $4.99 | $3.68 | $3.81 | $3.05 | $2.37 | $2.38 | $2.61 | $2.66 | $2.66 | $2.72 | $4.44 | $4.79 |
| 2048 | $5.02 | $3.71 | $3.84 | $3.08 | $2.40 | $2.41 | $2.64 | $2.69 | $2.69 | $2.75 | $4.48 | $4.82 |
| 2049 | $5.06 | $3.75 | $3.87 | $3.11 | $2.43 | $2.44 | $2.67 | $2.72 | $2.72 | $2.78 | $4.51 | $4.86 |
| 2050 | $5.10 | $3.79 | $3.91 | $3.14 | $2.46 | $2.47 | $2.70 | $2.75 | $2.75 | $2.82 | $4.54 | $4.89 |

Northwest Natural

**Gas Commodity and Transportation/Storage Costs (Real 2023$/Dth)**

| Year | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2026 | $6.07 | $4.98 | $4.16 | $3.75 | $3.52 | $3.54 | $3.59 | $3.56 | $3.62 | $4.03 | $4.46 | $5.16 |
| 2027 | $5.09 | $4.15 | $3.62 | $3.47 | $3.33 | $3.39 | $3.41 | $3.45 | $3.56 | $3.87 | $4.40 | $5.71 |
| 2028 | $5.38 | $4.21 | $3.77 | $3.61 | $3.44 | $3.46 | $3.46 | $3.51 | $3.55 | $3.84 | $4.48 | $5.67 |
| 2029 | $5.50 | $4.37 | $3.75 | $3.42 | $3.28 | $3.23 | $3.29 | $3.26 | $3.31 | $3.64 | $4.18 | $4.81 |
| 2030 | $4.75 | $4.10 | $3.56 | $3.41 | $3.33 | $3.31 | $3.35 | $3.34 | $3.44 | $3.69 | $4.26 | $4.81 |
| 2031 | $4.78 | $4.33 | $3.88 | $3.75 | $3.68 | $3.67 | $3.64 | $3.61 | $3.72 | $3.93 | $4.65 | $5.23 |
| 2032 | $5.17 | $4.91 | $4.14 | $3.94 | $3.86 | $3.85 | $3.85 | $3.85 | $3.98 | $4.15 | $5.48 | $6.42 |
| 2033 | $6.37 | $4.99 | $4.59 | $4.00 | $3.83 | $3.78 | $3.87 | $3.90 | $4.02 | $4.17 | $5.72 | $6.90 |
| 2034 | $6.82 | $5.37 | $4.58 | $3.90 | $3.74 | $3.69 | $3.78 | $3.84 | $3.93 | $4.14 | $5.16 | $6.26 |
| 2035 | $5.94 | $5.07 | $4.40 | $4.11 | $3.97 | $3.97 | $4.03 | $4.02 | $4.19 | $4.40 | $5.22 | $5.75 |
| 2036 | $5.69 | $4.83 | $4.29 | $3.96 | $3.85 | $3.83 | $3.85 | $3.93 | $4.09 | $4.39 | $4.92 | $5.61 |
| 2037 | $5.31 | $4.54 | $4.14 | $4.02 | $3.89 | $3.93 | $3.98 | $4.03 | $4.17 | $4.26 | $5.18 | $5.91 |
| 2038 | $5.88 | $4.79 | $4.35 | $4.21 | $4.07 | $4.09 | $4.06 | $4.13 | $4.24 | $4.37 | $4.76 | $5.36 |
| 2039 | $5.26 | $4.63 | $4.14 | $4.01 | $3.92 | $3.91 | $3.94 | $4.01 | $4.14 | $4.33 | $5.07 | $5.60 |
| 2040 | $5.50 | $4.91 | $4.50 | $4.45 | $4.38 | $4.39 | $4.39 | $4.41 | $4.50 | $4.59 | $5.48 | $6.38 |
| 2041 | $6.14 | $5.11 | $4.62 | $4.43 | $4.28 | $4.26 | $4.32 | $4.38 | $4.53 | $4.86 | $5.59 | $6.32 |
| 2042 | $6.25 | $5.61 | $4.96 | $4.39 | $4.27 | $4.26 | $4.36 | $4.34 | $4.45 | $4.66 | $5.78 | $6.18 |
| 2043 | $6.12 | $6.09 | $5.41 | $4.93 | $4.83 | $4.78 | $4.70 | $4.71 | $4.82 | $4.84 | $5.42 | $5.98 |
| 2044 | $5.93 | $5.91 | $5.21 | $5.06 | $4.97 | $4.99 | $5.03 | $5.03 | $5.16 | $5.04 | $5.84 | $6.11 |
| 2045 | $6.04 | $5.81 | $5.26 | $4.95 | $4.88 | $4.88 | $4.92 | $4.94 | $5.13 | $5.37 | $6.21 | $6.97 |
| 2046 | $6.89 | $5.90 | $5.29 | $4.87 | $4.72 | $4.68 | $4.78 | $4.83 | $4.99 | $5.12 | $6.35 | $6.74 |
| 2047 | $6.63 | $6.29 | $5.80 | $5.49 | $5.41 | $5.37 | $5.35 | $5.35 | $5.49 | $5.64 | $6.65 | $7.15 |
| 2048 | $6.96 | $5.95 | $5.43 | $5.00 | $4.91 | $4.88 | $5.06 | $5.12 | $5.24 | $5.41 | $6.35 | $6.73 |
| 2049 | $6.51 | $6.05 | $5.38 | $5.10 | $5.09 | $5.07 | $5.24 | $5.33 | $5.58 | $6.05 | $6.65 | $7.00 |
| 2050 | $6.91 | $6.68 | $5.81 | $5.19 | $5.06 | $4.98 | $5.09 | $5.11 | $5.28 | $5.63 | $6.27 | $6.64 |
| 2051 | $6.48 | $6.35 | $5.82 | $5.76 | $5.66 | $5.68 | $5.74 | $5.76 | $5.93 | $5.89 | $7.29 | $6.10 |

**Environmental Compliance Natural Gas - Carbon Intesity (MTCO2e/Dth)**

**Staff recommended use of values from OAR 340-271-9000, CCI credit contribution amount, Table 7, https://www.oregon.gov/deq/rulemaking/Documents/ghgcr2021div71.pdf. Values below are for reference to what utilities submitted, but are not recommended for use by Energy Trust**

| Year | **Avista** | **Cascade** | **Northwest Natural** | |
|---|---|---|---|---|
| 2026 | $6.590 | $5.097 | $4.832 | |
| 2027 | $6.809 | $5.170 | $4.901 | |
| 2028 | $7.035 | $5.244 | $4.971 | |
| 2029 | $7.267 | $5.318 | $5.040 | |
| 2030 | $7.501 | $5.392 | $5.110 | |
| 2031 | $7.740 | $5.466 | $5.179 | |
| 2032 | $7.982 | $5.540 | $5.249 | |
| 2033 | $8.232 | $5.614 | $5.318 | |
| 2034 | $8.490 | $5.687 | $5.388 | |
| 2035 | $8.756 | $5.761 | $5.457 | |
| 2036 | $9.029 | $5.835 | $5.546 | |
| 2037 | $9.311 | $5.983 | $5.636 | |
| 2038 | $9.601 | $6.057 | $5.725 | |
| 2039 | $9.899 | $6.131 | $5.814 | |
| 2040 | $10.208 | $6.204 | $5.904 | |
| 2041 | $10.523 | $6.278 | $5.973 | |
| 2042 | $10.850 | $6.352 | $6.042 | |
| 2043 | $11.187 | $6.426 | $6.112 | |
| 2044 | $11.535 | $6.500 | $6.181 | |
| 2045 | $11.892 | $6.574 | $6.251 | |
| 2046 | | $6.648 | $6.340 | |
| 2047 | | $6.795 | $6.429 | |
| 2048 | | $6.869 | $6.519 | |
| 2049 | | $6.943 | $6.608 | |
| 2050 | | $7.017 | $6.697 | |

**Infrastructure Costs Natural Gas**

| | Avista | | | Cascade | | | Northwest Natural | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Supply | Dist Peak Day | Dist Peak Hour | Supply (Real 2021$/ Dth/Day) | Distribution Peak DAY (Real 2021$/ Dth/Day) | Distribution Peak HOUR (Real 2021$/ Dth/Hour) | Supply (Real 2021$/ Dth/Day) | Distribution Peak DAY (Real 2021$/ Dth/Day) | Distribution Peak HOUR (Real 2021$/ Dth/Hour) |
| 2026 | $0.668 | $0.712 | $0.032 | $0.000 | $1.966 | $0.082 | $0.100 | N/A | $0.300 |
| 2027 | $0.668 | $0.712 | $0.032 | $0.000 | $1.363 | $0.057 | $0.100 | N/A | $0.300 |
| 2028 | $0.668 | $0.712 | $0.032 | $0.000 | $0.984 | $0.041 | $0.100 | N/A | $0.300 |
| 2029 | $0.668 | $0.712 | $0.032 | $0.000 | $0.881 | $0.037 | $0.100 | N/A | $0.300 |
| 2030 | $0.668 | $0.712 | $0.032 | $0.000 | $1.009 | $0.042 | $0.100 | N/A | $0.300 |
| 2031 | $0.668 | $0.712 | $0.032 | $0.000 | $1.266 | $0.053 | $0.100 | N/A | $0.300 |
| 2032 | $0.668 | $0.712 | $0.032 | $0.000 | $1.155 | $0.048 | $0.100 | N/A | $0.300 |
| 2033 | $0.668 | $0.712 | $0.032 | $0.000 | $0.734 | $0.031 | $0.100 | N/A | $0.300 |
| 2034 | $0.668 | $0.712 | $0.032 | $0.000 | $0.520 | $0.022 | $0.100 | N/A | $0.300 |
| 2035 | $0.668 | $0.712 | $0.032 | $0.000 | $0.468 | $0.019 | $0.100 | N/A | $0.300 |
| 2036 | $0.668 | $0.712 | $0.032 | $0.000 | $0.545 | $0.023 | $0.100 | N/A | $0.300 |
| 2037 | $0.668 | $0.712 | $0.032 | $0.000 | $0.711 | $0.030 | $0.100 | N/A | $0.300 |
| 2038 | $0.668 | $0.712 | $0.032 | $0.000 | $0.438 | $0.018 | $0.100 | N/A | $0.300 |
| 2039 | $0.668 | $0.712 | $0.032 | $0.000 | $0.398 | $0.017 | $0.100 | N/A | $0.300 |
| 2040 | $0.668 | $0.712 | $0.032 | $0.000 | $0.274 | $0.011 | $0.100 | N/A | $0.300 |
| 2041 | $0.668 | $0.712 | $0.032 | $0.000 | $0.325 | $0.014 | $0.100 | N/A | $0.300 |
| 2042 | $0.668 | $0.712 | $0.032 | $0.000 | $0.443 | $0.018 | $0.100 | N/A | $0.300 |
| 2043 | $0.668 | $0.712 | $0.032 | $0.000 | $0.400 | $0.017 | $0.100 | N/A | $0.300 |
| 2044 | $0.668 | $0.712 | $0.032 | $0.000 | $0.240 | $0.010 | $0.100 | N/A | $0.300 |
| 2045 | $0.668 | $0.712 | $0.032 | $0.000 | $0.160 | $0.007 | $0.100 | N/A | $0.300 |
| 2046 | $0.668 | $0.712 | $0.032 | $0.000 | $0.144 | $0.006 | $0.100 | N/A | $0.300 |
| 2047 | $0.668 | $0.712 | $0.032 | $0.000 | $0.173 | $0.007 | $0.100 | N/A | $0.300 |
| 2048 | $0.668 | $0.712 | $0.032 | $0.000 | $0.249 | $0.010 | $0.100 | N/A | $0.300 |
| 2049 | $0.668 | $0.712 | $0.032 | $0.000 | $0.142 | $0.006 | $0.100 | N/A | $0.300 |
| 2050 | $0.668 | $0.712 | $0.032 | $0.000 | $0.127 | $0.005 | $0.100 | N/A | $0.300 |
| 2051 | $0.668 | $0.712 | $0.032 | $0.000 | $0.084 | $0.004 | $0.100 | N/A | $0.300 |
| 2052 | $0.668 | $0.712 | $0.032 | $0.000 | $0.063 | $0.003 | $0.100 | N/A | $0.300 |
| 2053 | $0.668 | $0.712 | $0.032 | $0.000 | $0.173 | $0.007 | | | |
| 2054 | $0.668 | $0.712 | $0.032 | $0.000 | $0.249 | $0.010 | | | |
| 2055 | $0.668 | $0.712 | $0.032 | $0.000 | $0.142 | $0.006 | | | |
| 2056 | $0.668 | $0.712 | $0.032 | $0.000 | $0.127 | $0.005 | | | |
| 2057 | $0.668 | $0.712 | $0.032 | $0.000 | $0.084 | $0.004 | | | |
| 2058 | $0.668 | $0.712 | $0.032 | $0.000 | $0.063 | $0.003 | | | |
| 2059 | $0.668 | $0.712 | $0.032 | $0.000 | $0.173 | $0.007 | | | |
| 2060 | $0.668 | $0.712 | $0.032 | $0.000 | $0.249 | $0.010 | | | |
| 2061 | $0.668 | $0.712 | $0.032 | $0.000 | $0.142 | $0.006 | | | |
| 2062 | $0.668 | $0.712 | $0.032 | $0.000 | $0.127 | $0.005 | | | |
| 2063 | $0.668 | $0.712 | $0.032 | $0.000 | $0.084 | $0.004 | | | |
| 2064 | $0.668 | $0.712 | $0.032 | $0.000 | $0.063 | $0.003 | | | |
| 2065 | $0.668 | $0.712 | $0.032 | $0.000 | $0.173 | $0.007 | | | |

**Risk Reduction Value Natural Gas**

| | Avista | Cascade | Northwest Natural |
|---|---|---|---|
| Year | Risk Reduction Value ($/Dth) | Risk Reduction Value (Real 2021$/Dth) | Risk Reduction Value (Real 2023$/Dth) |
| 2026 | Weighted average of NWN/CNG | -$0.013 | $1.026 |
| 2027 | | $0.001 | $1.294 |
| 2028 | | $0.014 | $1.039 |
| 2029 | | $0.046 | $1.217 |
| 2030 | | $0.077 | $1.064 |
| 2031 | | $0.175 | $1.151 |
| 2032 | | $0.239 | $1.381 |
| 2033 | | $0.204 | $1.463 |
| 2034 | | $0.146 | $1.125 |
| 2035 | | $0.125 | $1.206 |
| 2036 | | $0.256 | $1.269 |
| 2037 | | $0.235 | $1.337 |
| 2038 | | $0.168 | $1.204 |
| 2039 | | $0.225 | $1.415 |
| 2040 | | $0.263 | $1.394 |
| 2041 | | $0.296 | $1.181 |
| 2042 | | $0.296 | $1.300 |
| 2043 | | | $1.436 |
| 2044 | | | $1.453 |
| 2045 | | | $1.366 |
| 2046 | | | $1.398 |
| 2047 | | | $1.453 |
| 2048 | | | $1.470 |
| 2049 | | | $1.440 |
| 2050 | | | $1.429 |

Note: Negative values will be applied as zero.

**End Use Load Profiles Natural Gas**

This information is provided for Energy Trust to have available. Energy Trust determines what source to use for load profiles
**Avista**

| | | | | | OR Peak Day | OR Peak Hour | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **End Use Profiles** | **Monthly Share of Normal Weather Annual Load** | | | **2023** | **90,114** | **3,999** | | | | | | | | **Peak to Annual Normal Weather Usage Ratios** | |
| End Use | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | 2023 | Peak Day | Peak Hour |
| Com-New | 0.0026 | 0.0031 | 0.0037 | 0.0054 | 0.0086 | 0.0119 | 0.0131 | 0.0127 | 0.0117 | 0.0060 | 0.0035 | 0.0023 | 3,855 | 0.0094 | 0.0004 |
| NEEA-MartetTX | 0.0029 | 0.0036 | 0.0042 | 0.0061 | 0.0097 | 0.0135 | 0.0148 | 0.0144 | 0.0132 | 0.0068 | 0.0039 | 0.0026 | 4,362 | | |
| Com-ROB | 0.0012 | 0.0014 | 0.0017 | 0.0024 | 0.0039 | 0.0054 | 0.0060 | 0.0058 | 0.0053 | 0.0027 | 0.0016 | 0.0011 | 1,754 | | |
| Com-SEM | 0.0005 | 0.0006 | 0.0007 | 0.0010 | 0.0016 | 0.0022 | 0.0024 | 0.0023 | 0.0021 | 0.0011 | 0.0006 | 0.0004 | 697 | | |
| Com-RET | 0.0072 | 0.0089 | 0.0105 | 0.0152 | 0.0242 | 0.0336 | 0.0369 | 0.0358 | 0.0330 | 0.0168 | 0.0097 | 0.0066 | 10,868 | | |
| Ind-RET | 0.0045 | 0.0055 | 0.0066 | 0.0094 | 0.0150 | 0.0209 | 0.0230 | 0.0223 | 0.0205 | 0.0105 | 0.0061 | 0.0041 | 6,762 | | |
| Ind-SEM | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| Ind-ROB | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| Res-ManufNH | 0.0006 | 0.0007 | 0.0009 | 0.0013 | 0.0020 | 0.0028 | 0.0030 | 0.0030 | 0.0027 | 0.0014 | 0.0008 | 0.0005 | 897 | | |
| Res-NewHomes | 0.0018 | 0.0022 | 0.0026 | 0.0037 | 0.0059 | 0.0082 | 0.0090 | 0.0088 | 0.0081 | 0.0041 | 0.0024 | 0.0016 | 2,661 | | |
| Res-MarketTx | 0.0089 | 0.0110 | 0.0130 | 0.0187 | 0.0299 | 0.0416 | 0.0457 | 0.0443 | 0.0408 | 0.0208 | 0.0120 | 0.0081 | 13,431 | | |
| Res-Tstat | 0.0020 | 0.0025 | 0.0029 | 0.0042 | 0.0067 | 0.0093 | 0.0102 | 0.0099 | 0.0091 | 0.0047 | 0.0027 | 0.0018 | 3,010 | | |
| Res-TstatOpt | 0.0000 | 0.0000 | 0.0001 | 0.0001 | 0.0001 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0001 | 0.0000 | 0.0000 | 55 | | |
| Res-WaterHeat | 0.0002 | 0.0002 | 0.0002 | 0.0004 | 0.0006 | 0.0008 | 0.0009 | 0.0008 | 0.0008 | 0.0004 | 0.0002 | 0.0002 | 253 | | |
| Res-Shell | 0.0012 | 0.0015 | 0.0017 | 0.0025 | 0.0040 | 0.0055 | 0.0060 | 0.0059 | 0.0054 | 0.0028 | 0.0016 | 0.0011 | 1,779 | | |
| Res-Heat-ROB | 0.0009 | 0.0012 | 0.0014 | 0.0020 | 0.0031 | 0.0044 | 0.0048 | 0.0047 | 0.0043 | 0.0022 | 0.0013 | 0.0009 | 1,415 | | |
| MF-RET | 0.0001 | 0.0002 | 0.0002 | 0.0003 | 0.0004 | 0.0006 | 0.0007 | 0.0006 | 0.0006 | 0.0003 | 0.0002 | 0.0001 | 194 | | |
| MF-ROB | 0.0005 | 0.0006 | 0.0008 | 0.0011 | 0.0017 | 0.0024 | 0.0026 | 0.0026 | 0.0024 | 0.0012 | 0.0007 | 0.0005 | 775 | | |
| Large-Project Adder | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| Com-Cooking | 0.0012 | 0.0015 | 0.0018 | 0.0026 | 0.0042 | 0.0058 | 0.0063 | 0.0062 | 0.0057 | 0.0029 | 0.0017 | 0.0011 | 1,868 | | |
| Total | 1,508,248 | 1,226,557 | 1,032,032 | 716,392 | 449,619 | 323,232 | 294,167 | 303,319 | 329,330 | 645,657 | 1,116,457 | 1,652,419 | | | |

This information is provided for Energy Trust to have available. Energy Trust determines what source to use for load profiles
**Cascade**

| **Monthly Share of Normal Weather Annual Load** | | | | | | | | | | | | | **Peak to Annual Normal** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **End Use** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | **Peak Day** | **Peak Hour** |
| All | 0.1589 | 0.1304 | 0.1105 | 0.0728 | 0.0445 | 0.0308 | 0.0277 | 0.0281 | 0.0339 | 0.0736 | 0.1212 | 0.1676 | N/A | N/A |

This information is provided for Energy Trust to have available. Energy Trust determines what source to use for load profiles
**Northwest Natural**

| | **Monthly Share of Normal Weather Annual Load** | | | | | | | | | | | | **Peak to Annual Normal Weather** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **End Use** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | **Peak Day** | **Peak Hour** |
| Residential Space Heating | 0.204 | 0.145 | 0.123 | 0.070 | 0.033 | 0.006 | 0.000 | 0.001 | 0.008 | 0.062 | 0.129 | 0.218 | 0.0176 | 0.0010 |
| Residential Hearths and Fireplaces | 0.204 | 0.145 | 0.123 | 0.070 | 0.033 | 0.006 | 0.000 | 0.001 | 0.008 | 0.062 | 0.129 | 0.218 | 0.0176 | 0.0005 |
| Commercial Space Heating | 0.204 | 0.145 | 0.123 | 0.070 | 0.033 | 0.006 | 0.000 | 0.001 | 0.008 | 0.062 | 0.129 | 0.218 | 0.0157 | 0.0012 |
| Water Heating | 0.101 | 0.096 | 0.092 | 0.088 | 0.083 | 0.079 | 0.073 | 0.068 | 0.069 | 0.073 | 0.081 | 0.095 | 0.0033 | 0.0003 |
| Cooking | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.0036 | 0.0007 |
| Process Load | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.083 | 0.0027 | 0.0001 |