BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

DOCKET UG-230968

CROSS-ANSWERING TESTIMONY OF DR. ROBERT L. EARLE ON BEHALF OF THE WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL PUBLIC COUNSEL UNIT

EXHIBIT RLE-1CT

September 12, 2024

Shaded Information is Designated Confidential Per WAC 480-07-160

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I. INTRODUCTION AND SUMMARY

Q. Please state your name and business address.

A. My name is Robert Earle. My business address is 1388 Haight St. #49, San Francisco, CA, 94117.

Q. By whom are you employed and in what capacity?

A. I am employed by Alea IE, LLC as the owner.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the Public Counsel Unit of the Washington Attorney General's Office (Public Counsel).

Q. Please describe your professional qualifications.

A. I have over two decades of experience in the electric power and natural gas industries. This includes working on infrastructure planning, environmental mitigation, and analysis of gas and electric power markets. I taught graduate level classes in statistical machine learning at the University of Zürich for five years and supervised two masters' theses. I have Ph.D. and M.S. degrees from Stanford University in operations research, and an A.B. in mathematics from the College of William and Mary. My curriculum vitae is attached as Exhibit RLE-2.

Q. What exhibits are you sponsoring in this proceeding?

A. I am sponsoring the following exhibits:

- Exhibit RLE-2 Curriculum Vitae of Robert L. Earle
- Exhibit RLE-3C PSE's Response to Public Counsel Data Request No. 2
- Exhibit RLE-4C Technical Note on Use of the Normal Distribution
- Exhibit RLE-5 PSE's Response to Public Counsel Data Request No. 3

Q. Please give an overview of your testimony.

A. My testimony addresses the proposals by UTC Staff (Staff) and the Joint Environmental Advocates (JEA) for a risk sharing mechanism (RSM) for the cost of allowances under the Climate Commitment Act (CCA) for the Puget Sound Energy (PSE or the Company) gas utility. As detailed in my testimony, neither Staff's proposal nor the JEA's is fit for purpose. The proposals do not adequately share risk and/or provide little to no incentives for PSE to prudently manage the cost of CCA allowances, and burden consumers with essentially all of the risk.

Q. Why did Public Counsel not provide responsive testimony to PSE's initial proposal?

A. Public Counsel was aware that both Staff and JEA were going to make counter-proposals. After evaluating the counter-proposals, Public Counsel determined that the Washington Utilities and Transportation Commission (Commission) does not have a proposal for a risk-sharing mechanism that will meet the Commission's purpose for incentivizing a company to manage CCA allowance costs. Taking Staff and JEA's proposals as a starting point, Public Counsel asked me if the principles from Staff's secondary proposal and JEA's proposal could be modified to be made more effective at incentivizing PSE to manage allowance costs. My testimony will describe how focusing on ex post review of PSE's trading strategy and modifying Staff and JEA's use of trading

prices can create an effective incentive system that would both reward good allowance strategy and penalize poor strategy.

II. OVERVIEW OF THE NEED FOR A RISK-SHARING MECHANISM

Q. Please give an overview of the need for an RSM.

A. The CCA requires gas utilities to reduce their emissions or cover their emissions through emission allowances or offsets. Gas utilities in Washington are granted no-cost emission allowances based on their 2015 through 2019 averages. For PSE this annual average was 5.3 MT CO_2e.[1] The amount of no-cost allowances decreases by seven percent each year for the first compliance period from 2023 to 2026. For the first compliance period 2023 to 2026, PSE's no cost allowance allocation decreases from 4.9 MT CO2e in 2023 to 3.8 MT CO2e in 2026. The reduction in no cost allowances continues in future compliance periods so that absent a reduction in emissions, PSE will be required to acquire more allowances to cover its emissions.[2] Moreover, as the number of no-cost allowances declines, the number that must be consigned to auction for the benefit of ratepayers increases from 65 percent in 2023 to 100 percent by 2030 and thereafter.[3] This "squeeze" potentially means higher and more volatile allowance prices that,

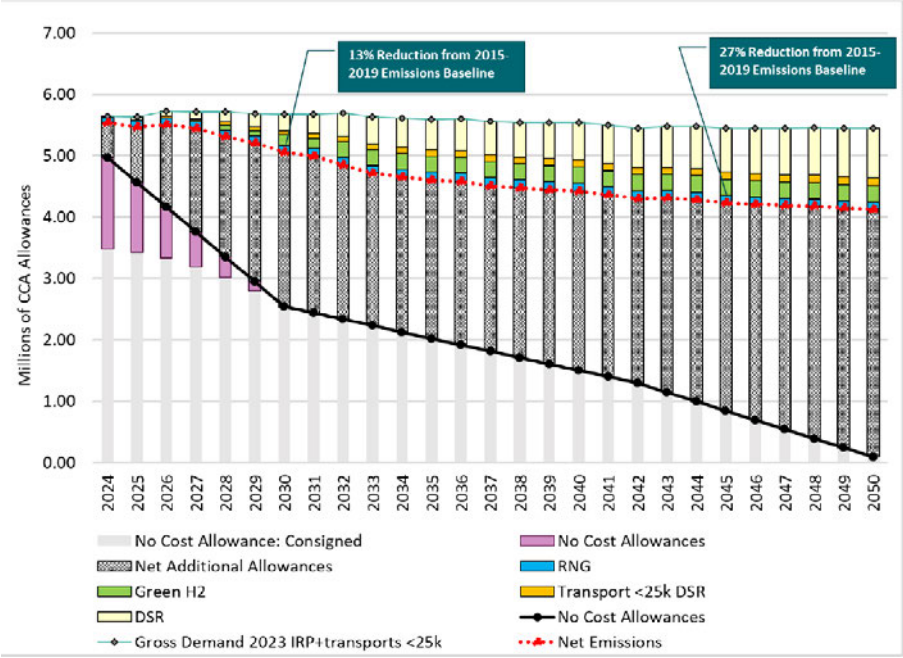
[1] WA State Dept. of Ecology, *Cap-and-Invest Auctions and Market* https://ecology.wa.gov/Air-Climate/Climate-Commitment-Act/Cap-and-invest/Auctions-and-market (last visited Sept. 11, 2024). MT CO_2e is metric ton carbon dioxide equivalent.
[2] In addition, an increasing percentage of allowances must be consigned to Ecology's auctions where the proceeds must be used for the benefit of ratepayers. These could potentially include electrification programs.
[3] RCW 70A.65.130(2)(a).

absent appropriate cost-allocation and incentive mechanisms for gas utilities, means higher prices for consumers.[4]

For a gas utility, lowered sales to ratepayers can address the increased need for allowances. Lowered sales could come about in a variety of ways such as conservation, more efficient gas appliances subsidized by rebates, decreased demand due to climate change, or electrification.

Figure 1 shows PSE's planned emissions for its gas utility.

Figure 1
Emissions From PSE's Gas Operations[5]



The line at the top of the graph with the diamond shapes shows the emissions from gross demand on the system.[6] Emissions from gross demand

[4] Similar considerations apply to electric power utilities.
[5] Puget Sound Energy, *2023 Gas Utility Integrated Resource Plan*, at 2.21 (Figure 2.11: Emissions Reduction and Net Additional Allowances Needed in the Preferred Portfolio). https://www.pse.com/en/IRP/Past-IRPs/2023-IRP.
[6] The transports <25k is a very small part of the system and consists of gas sales customers plus transport gas customers with emissions less than 25,000 tons per year.

means the projected emissions from demand before measures to reduce demand are introduced. As the figure shows, there is little reduction in gross demand for emissions from now until 2050.

The red dotted line shows the net emissions on the system after green hydrogen (the green bars), DSR (demand side resources such as energy efficiency, the light-yellow bars), RNG (renewable natural gas, the blue bars), and DSR for smaller transport customers (dark-yellow bars) are taken into account. In the short term, efforts to reduce emissions through reduced consumption or alternative fuels such as RNG or green hydrogen are limited in their impact.

The black line shows the number of no-cost allowances projected to be allocated to PSE. The number of no-cost allowances is broken out by the number of no cost allowances to be consigned for auction (light-grey bars) and the number of no cost allowances that do not have to be consigned to auction (pink-bars). As the graph shows, by 2030, all of the no-cost allowances must be consigned to auction.

Finally, the net additional allowances (cross-hatched bars) show the number of allowances needed under the CCA.

Figure 1 illustrates three important concepts. First, PSE is not planning on electrification to reduce gas demand. Indeed, PSE has stated that it believes that the cost of electrification exceeds the social cost of carbon.[7] Second, the need for net additional allowances more than doubles by 2030. While there is a decline in emissions of 27 percent from the 2015 to 2019 baseline, part of the decline is

[7] *Supra*, *2023 Gas IRP* at 1.4.

made up of DSR (light-yellow and dark-yellow bars) and part of the decline is made up of RNG and Green H2. Finally, the net additional allowances (cross-hatched bars) show the number of allowances needed under the CCA. The impact of these purchases on consumers could be significant. By 2030, PSE will need to purchase approximately five million allowances to cover emissions in that year.[8] The resulting cost could range from $277 million to $504 million, potentially increasing a typical residential customer bill by 18 to 33 percent.

While the larger policy issues such as how to address already incurred costs that are a part of rate base are beyond the scope of this testimony, it highlights the need to ensure that the costs of allowances for gas companies remain as low as possible. It is possible that the level of trading of allowances will run into the hundreds of millions of dollars or more per year, easily equal to half or more of the current revenue requirements of its core customers.[9] An RSM that provides sufficient incentives to a gas utility so that it improves its trading of allowances by just 10 percent, could result in a five percent reduction in overall bill levels based on current rates.

[8] Corrected Appendix F Data Input File to PSE's 2023 Final Gas Utility Integrated Resource Plan, Docket UG 220242 shows emissions of five million MT for 2030. The graph seems to indicate many fewer needed, but it overlaps with allowances consigned to auction. If the allowances consigned for auction are not used to decrease the number of allowances needed because they are used, for instance, to protect low income ratepayers, then all of the five million MT of emissions will need to have allowances acquired for them.
[9] The revenue requirements in this calculation do not include the cost of allowances. It does not mean that all of the cost of allowances will be borne by customers because of the no-cost allowances granted to the gas utilities, but that the magnitude of the cost of allowances traded could rival the revenue requirements of the gas utility.

III. STAFF'S PROPOSED RSM

A. Overview of Staff's Proposal

Q. Please describe Staff's proposed RSM.

A. Staff has two proposals. Its primary proposal is to "eliminate the CCA tracker (Schedule 111) and instead include CCA compliance costs in the Company's base rate revenue requirement calculation."[10] Before the rate-effective date of PSE's next GRC, Staff recommends implementing PSE's proposed RSM with a modified earnings test.[11]

Staff's secondary proposal is that in the event that the Commission declines to eliminate the CCA tracker, that PSE's proposal be implemented with a revised earnings test.[12]

B. Staff's Primary Proposal

1. Eliminating the Tracker and Putting Allowance Costs into Base Rates

Q. Why does Staff advocate eliminating the tracker and putting allowance costs into base rates?

A. Staff provides an extensive discussion of trackers in general and develops proposed policy criteria as to whether, in general, the Commission should adopt a tracker.[13] Staff summarizes its position as:[14]

> Staff's position with respect to the need to establish policy standards for authorizing trackers is based on the recognition that trackers shift risk onto ratepayers, disrupt the utility's incentive to control its costs (further exacerbating the risk that is shifted onto ratepayers), and add to the Commission's administrative burden. Because trackers have

[10] Response Test. of Chris R. McGuire, Exh. CRM-1T at 3:8–10.
[11] *Id.* at 3:11–15.
[12] Response Test. of Kody McConnell, Exh. KM-1T at 10:11–16.
[13] McGuire, Exh. CRM-1T at 5:1–26:5.
[14] *Id.* at 19:9–14.

these negative effects, authorizing a tracker is, as a general matter, inconsistent with the public interest.

Q. Do you agree with Staff's position on trackers?

A. I do not agree with Staff's position on trackers. Each of the three reasons Staff gives for saying a tracker is inconsistent with the public interest are incorrect when applied to the case of CCA allowance costs with an appropriate RSM. Staff claims that compared with embedding costs into rates, trackers shift risk onto ratepayers, disrupt the utility's incentive to control its costs, and add to the Commission's administrative burden. None of these claims are true in the case of CCA allowance costs with an appropriate RSM.

Q. Why does a tracker for CCA allowance costs shift less risk onto ratepayers compared to embedding costs in rates?

A. An underlying assumption behind Staff's claim is that CCA allowance costs are or will be easy to forecast. However, in contrast to costs such as operations and maintenance costs that are embedded in rates, there is not a long history of CCA allowance costs that can form the basis for the forecast of costs.

In the California market, which Washington may potentially join, prices have been very volatile over the past three years, more than doubling during this period. Predicting the new levels of prices would have been difficult given the previous history.

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Figure 2
Carbon Market Prices in California[15]

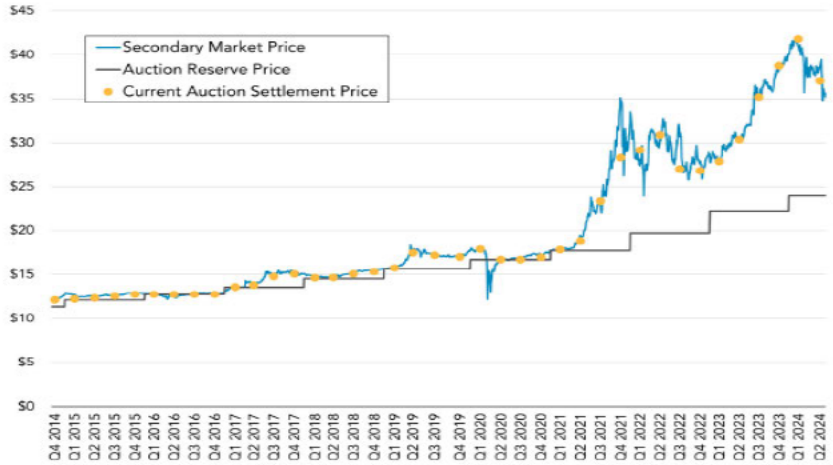


Figure 3 shows Washington allowance prices doubling in six months and then falling back towards the level of original prices.

Figure 3
Washington Allowance Prices[16]

[redacted]

[15] California Air Resources Board, *Cap-and-Trade Program Data Dashboard: Carbon Allowance Prices.* https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-data/cap-and-trade-program-data-dashboard (last visited Sept. 5, 2024).
[16] Data from Robert L. Earle, Exh. RLE-3 (PSE Response to Public Counsel Data Request No. 2 with Confidential Attachment A).

Along with the volatility of prices, a utility is faced with volatility in demand due to weather conditions or other factors. In other words, the forecasting problem is not just beset by price volatility, but also demand volatility. Allowance costs are the product of both price and demand.

Staff's proposal to forecast CCA allowance costs in the general rate case (GRC) proceedings further complicates the forecasting problem. Because the opportunity to buy and sell allowances to cover a utility's obligations extend through the four-year compliance period plus 10 months, allowance cost forecasts for a GRC period must consider the demand over the four-year compliance period, and prices over the whole four-year compliance period plus the additional 10-month true-up period. A GRC period that includes a 10-month true-up period must include forecasts for both the current compliance period as well as the next. For example, if PSE's next GRC for the years 2027 and 2028, is filed in 2026, under Staff's proposal, PSE would have to sometime in late 2025 forecast prices and demand levels for 2026 through October 31, 2031. It would also have to use these forecasts to determine its strategy for through October 31, 2031, to forecast its costs. The Company is incentivized under Staff's proposal to overestimate its costs, and with so many unknowns at play, it could likely make a plausible case for its overestimate. In turn, Staff, Public Counsel, and other intervenors would need to examine the Company's forecasts and perhaps develop forecasts of their own. With so many unknowable factors, Staff's proposal therefore unnecessarily increases risk for both ratepayers and the Company.

A tracker with an appropriate RSM, on the other hand, reduces risk for both ratepayers and PSE. With an RSM the prices and quantities are known when collecting prudently incurred costs from ratepayers rather than having to forecast prices and quantities six years ahead of time. Moreover, PSE's strategy does not have to be forecast, but PSE can shift its strategy as it deems appropriate. Risk for both ratepayers and the utility is thereby lessened.

Q. Why does a tracker for CCA allowance costs give better incentives for a utility to control its costs compared to embedding costs in rates?

A. While it is true that if CCA allowance costs were embedded in rates, PSE would have the incentive to reduce its CCA allowance costs, embedding the CCA allowance costs in rates would only incentivize the Company to reduce its CCA costs for the time period covered by the GRC. Under Staff's proposal, a utility would be incentivized not only to overestimate its costs in a GRC period, but also to underspend and return the difference to shareholders. In the subsequent GRC period, the utility could reasonably ask for more than it would otherwise to compensate for its previous underspending. Staff's proposal will not only require forecasting prices and utility actions *ex ante*, it will also require *ex post* review of utility actions. Staff's proposal distorts and disrupts PSE's incentives.

In contrast, using a tracker with a well-designed RSM would remove the utility's incentive to over-estimate its CCA allowance costs and to manipulate those estimates between GRC periods. A well-designed RSM would rely on actual market prices and ratepayer demand. PSE's performance would be judged

against actual market outcomes, and it would be incentivized to lower CCA allowance costs as much as possible.

Q. Why does a tracker for CCA allowance costs lessen the regulatory burden compared to embedding costs in rates?

A. As discussed above, embedding allowance costs in rates necessitates the forecast of allowance prices and customer demand for gas many years into the future. Moreover, it necessitates specifying utility strategy in the face of those prices and demand. Under Staff's proposal, much time and effort would inevitably be spent arguing about the forecasting of prices, the forecasting of demand, and the forecasting of PSE's allowance cost strategy. Forecasting the utility's appropriate allowance cost strategy is unlike forecasting the utility's operation and maintenance practices. Operation and maintenance practices are usually well-defined by regular schedules, inspection of equipment, and historical practices. Forecasting the utility's strategy for allowances, on the other hand, involves numerous assumptions about a volatile market. Debates on utility forecasting waste the Commission's time and should be avoided.

In contrast, a tracker with an appropriate RSM would avoid the need for forecasting anything. The Commission would not have to sort through forecasts subject to high variance, nor pick a forecast as to what PSE's strategy should be ahead of time when changing market conditions could shift that strategy. Staff, Public Counsel, and other intervenors would not have to spend effort examining PSE's price, demand, and strategy forecasts. Finally, PSE for its part, would be relieved of the burden of producing all these variance suffering forecasts, which

would subject them to discovery, submitting direct testimony, producing rebuttal testimony, participating in hearings, and preparing briefs.

Thousands of hours of time would likely be saved by using a tracker with an appropriate RSM for CCA allowance costs rather than embedding those costs in rates.

Q. Staff proposes three criteria for whether a tracker is in the public interest that the Commission should adopt. What are those criteria, and do you agree with them?

A. Staff proposes three criteria. These are:

1. "For a specified set of costs, does the utility cost control incentive interfere with progress toward meeting an important public policy objective?"[17]

2. "For a specified set of costs for which the Commission has authorized deferred accounting treatment, is allowing the deferral balance to continue to accumulate through the utility's next GRC likely to create severe intergenerational inequities?"[18]

3. "For a specified set of costs, is the variance risk so high that cost increases outside of the utility's ability to control are reasonably likely to have a substantial impact on the utility's earnings?"[19]

While each of these criteria has some merit, they miss the larger picture described in the discussion above about embedding CCA allowance costs in rates. Criterion one, for example, assumes trackers have no incentives for cost control.

[17] McGuire, Exh. CRM-1T at 20:16–18.
[18] *Id.* at 21:3–6.
[19] *Id.* at 21:18–20.

While it is true that some may not, what is at issue here is a tracker with an RSM, that is a utility incentive mechanism, not a tracker without an incentive mechanism. None of Staff's criteria consider the important issue of how reliably costs can be forecasted and the potentially significant impact those forecasted costs would have if they were embedded in rates.

Q. Should the Commission adopt Staff's criteria for evaluating whether authorizing a tracker serves a specific public interest purpose?

A. No, for two reasons. First, as demonstrated above, Staff's criteria are too narrow and fail to account for a CCA allowance tracker with an effective RSM. Second, Staff has proposed these criteria in the very narrow context of this Docket and the current PSE general rate case docket.[20] If the Commission were to adopt Staff's proposed criteria beyond PSE's particular issues, then intervenors not involved in these dockets, including Avista and PacifiCorp, would be disadvantaged by denying them the ability to respond to Staff's proposal. While Public Counsel is loath to suggest yet another docket on the Commission's agenda, the Commission should consider an opportunity for a full discussion across all interested parties.

2. Implementing PSE's Proposed RSM with a Modified Earnings Test

Q. As an interim proposal, before embedding CCA allowance costs in PSE's next and subsequent GRCs, what does Staff propose?

A. Before the rate-effective date of PSE's next GRC, Staff recommends implementing PSE's proposed RSM with a modified earnings test.[21] Most of the

[20] Revised Test. of Chris McGuire, Exh. CRM-1Tr at 29:4–70:2, *Wash Utils. & Transp. Comm'n v. Puget Sound Energy*, Dockets UE-240004, UG-240005, and UE-230810 (*consolidated*) (Aug. 27, 2024).
[21] McGuire, Exh. CDM-1T at 3:11–15.

flaws of this pre-GRC phase of Staff's proposal will be addressed in the section concerning Staff's secondary proposal, which shares the same flaws. In the case of Staff's primary proposal, Staff applies PSE's proposed RSM to only part of the CCA compliance period. This problem appears to be avoided in Staff's secondary proposal. What matters to consumers is the costs that they pay, not the costs incurred by a utility over a subset of time. The total compliance period costs (including the 10-month true-up period) are what matters. If year one and two in a compliance period have high costs, but the costs in years three and four and the 10-month true-up result in below average prices paid for CCA allowances, then this benefits ratepayers. Any regulatory structure that does not take into account all of the costs covering the whole compliance period distorts incentives for the utility and benefits for ratepayers.

Q. What is your recommendation concerning Staff's primary proposal?

A. The Commission should reject Staff's primary proposal because embedding CCA allowance costs in rates will increase risk for both ratepayers and the utility. Moreover, its interim proposal to implement an RSM on an abbreviated compliance period is ineffective and unfair to both consumers and the utility.

C. Staff's Secondary Proposal

Q. What is Staff's secondary proposal?

A. Staff's secondary proposal is that in the event that the Commission declines to eliminate the CCA tracker, the Commission should permit PSE to implement its RSM proposal with a revised earnings test.

Q. Please describe the RSM under Staff's secondary proposal.

A. Staff's RSM has two steps. The first is a calculation of potential penalties, the second applies an earnings test to the potential penalties. In the first step, if the average price paid for allowances in a compliance period by PSE exceeds the 75th percentile of the market price but is less than the 97.5th percentile, then PSE pays 10 percent of the cost above the 75th percentile rather than its customers paying the full amount. If the average price paid for allowances by PSE exceeds the 97.5th percentile, then it would pay 10 percent of the cost above the 75th percentile and an additional 10 percent for the cost above the 97.5th percentile.[22]

For example, suppose the market price ranged from zero to $100.00 per allowance with an average price of $50 per allowance, and the 75th percentile was equal to $75.00. If the *average* price paid by PSE for allowances exceeded $75.00, but was less than $97.50, it would pay 10 percent of the amount exceeding $75.00. So, if PSE paid $80.00 on average for allowances, its shareholders bear a cost of 50 cents per allowance,[23] and customers would pay $79.50 per allowance. In other words, customers would pay 99.4 percent of the cost even though PSE grossly exceeded the market price.[24]

To continue the example, if PSE paid on average $100 per allowance, that is, at the top of the market, then shareholders would bear 10 percent of the cost above $75.00, or $2.50, and an additional 10 percent of the cost above $97.50, or $0.25, for a total of $2.75 per allowance. Customers would pay $97.25 per

[22] Direct Test. of Christopher T. Mickelson, Exh. CTM-1CT at 14:3–15:8, Figure 2.
[23] $0.50 = (($80.00-$75.00)*10 percent).
[24] 99.4% =100* $79.50/80.00.

allowance. That is, PSE's customers would pay 97.25 percent of the cost even though PSE paid the highest possible price in the market. Staff's RSM adopted from PSE shares risk in name only.

In its earnings test, Staff's proposal would limit the Company's financial exposure for the compliance periods by limiting it to a total of 10 basis points of Return on Equity (ROE) per calendar year.[25]

Q. Does Staff's proposed RSM provide reasonable incentives to the Company for the prudent purchase and sale of allowances?

A. No, it does not. The likelihood of PSE exceeding either the 75th percentile threshold or the 97.5th percentile threshold is extremely low. If only one purchase was made, and on a random trading day, then the likelihood of exceeding the 75th percentile threshold or the 97.5th percentile threshold would be 25.0 percent and 2.5 percent, respectively. If two purchases are made at random, then the probability of the average exceeding either threshold decreases, because even if the first purchase exceeds a threshold, the second purchase must be high enough for the average of the two purchases to exceed the threshold.[26] With two random purchases, the probability of exceeding the 75th percentile threshold drops to 13.3 percent.[27] With increasing number of purchases, the chance that the average exceeds either threshold further diminishes.

[25] McConnell, Exh. KM-1T at 9:13–16. PSE's proposal would eliminate any penalties if PSE under earned. If PSE overearned, any penalties would be limited to be no more than the amount overearned. Mickelson, Exh. CTM-1CT at 20:11–21.
[26] For instance, if first purchase price was at the maximum market price of $100, then the second purchase would have to be at least at $95 for the 97.5th percentile to be exceeded (assuming uniformly distributed prices).
[27] Using the simulation setup discussed below.

To further demonstrate this point, a Monte Carlo simulation was employed using a sample size of one million using the prices from 2023 and the same number of purchase transactions PSE made in 2023.[28] Purchases were made on randomly chosen trading days as if a blindfolded monkey was throwing darts at a dartboard. The simulation showed that average price of the random transactions never exceeded the 97.5th percentile, and only exceeded the 75th percentile 0.3 percent of the time.[29] In other words, even if PSE trades no better than a blindfolded monkey with no understanding of the market, it is highly unlikely to face penalties for poor trading.[30] The RSM proposed by Staff will provide no incentives for PSE to trade prudently, nor will it adequately share risks. It is completely ineffective and not fit for purpose.

Q. Do you have other concerns with Staff's proposed RSM?

A. Yes, I do. First, while there are some evanescent incentives to avoid paying too much for allowances, Staff's proposal gives no incentives to PSE to pay as little as possible for allowances. To put it a different way, Staff's proposal is all sticks with no carrots. But, given the nature of the penalties, it might be better described as all twigs with no carrots. A balanced RSM would share risks on both the upside and the downside.

Second, Staff's proposal completely neglects that PSE could both buy and sell allowances through a compliance period and its 10-month resolution period in

[28] PSE made [redacted] separate purchases of 2023 allowances in 2023. Mickelson, Exh. CTM-3C.
[29] The amounts as well as the trading day were randomized. By randomizing the trading amount any issues with foresight were resolved.
[30] Though the simulation only involved one year, the RSM proposed by PSE covers all the years of the compliance period. This means decreased likelihood of exceeding either threshold because more transactions are likely involved over the four-year period.

order to balance its account. If PSE bought an excessive number of allowances at a price less than the 75th percentile, but sold them at an even lower price, then under this "buy high and sell low" scenario,[31] PSE's consumers would pay for all of the losses. Likewise, if PSE "bought low and sold high," it might not receive the credit for its effective management of CCA allowance costs. An effective RSM would account for both sales and purchases.

Third, Staff's earnings test mechanism even as modified from PSE's proposal is completely inappropriate. Staff incorrectly states that "Similar to wholesale energy markets, carbon emissions markets expose PSE to potential risks that can be largely outside of its ability to influence or control in the short term and can have significant impacts on its rate of return."[32] Under an appropriate RSM in a tracker such as the one proposed by Public Counsel, PSE is not exposed to potential risks outside its control.[33] The risk that PSE is exposed to is its own performance versus the market. PSE has complete control over its own performance. The Power Cost Adjustment (PCA) is not subject to an earnings test, and utilities have much less control over their power costs Moreover, incentives for PSE to prudently trade allowances have no connection to its earnings and should not depend on them. As PSE acknowledges, its RSM is not a performance incentive mechanism (PIM)[34] so an earnings test is inappropriate.

[31] The opposite of a profitable "buy low, sell high" approach.
[32] McConnell, Exh. KM-1T at 8:16-19.
[33] Under Staff's proposal to put allowance costs into rates, PSE is at risk because of the difficulties of forecastings its costs.
[34] Mickelson, Exh. CTM-1CT at 3:6–11.

Q. Granting the framework of Staff's RSM proposal, do you have any technical concerns with its proposed implementation?

A. Yes, Staff sets a ceiling on the price where it will absorb any of the unreasonable market costs.[35] This is set at the auction price ceiling. While the Department of Ecology sets this as an auction ceiling, PSE could still mismanage and exceed the auction price ceiling. For example, with a ceiling of $84.00 per allowance, if the average price paid by PSE for allowances was $80.00 and the 75th percentile was $60.00, PSE would pay a part of the cost of the allowances. However, if PSE paid $85.00 on average for allowances, PSE would not share in any of the costs. Under Staff's proposal, PSE has an incentive to overpay so that it exceeds the auction price ceiling and so bears no penalty for mismanagement.

I have an additional technical note on use of the normal distribution in Exh. RLE-4.

Q. What is your recommendation concerning Staff's proposals?

A. Public Counsel recommends rejecting Staff's primary and secondary proposals and adopting Public Counsel's proposal detailed below.

IV. THE JOINT ENVIRONMENTAL ADVOCATES' PROPOSAL

Q. Please describe the JEA's proposal for a risk sharing mechanism.

A. JEA expresses concern that rather than seeking to reduce emissions, PSE will use the ability to comply with the limits imposed by the CCA by purchasing allowances.[36] JEA proposes a risk-sharing mechanism that "triggers risk-sharing

[35] *Id.* at 17:1–14. The formulas in Mickelson Exh. CTM-3C appear to eliminate any penalty if the average is over the ceiling.
[36] Response Test. of William Gehrke, Exh. WG-1T at 26:1–11.

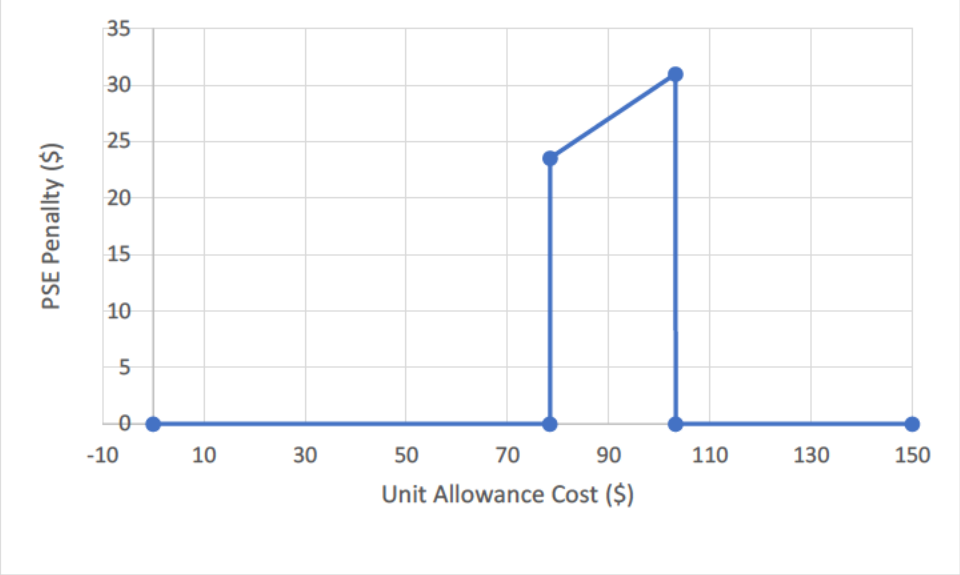
under certain conditions, specifically where PSE resorts to high-cost allowances to comply with the CCA."[37]

The mechanics of JEA's proposal are to share costs for any allowance whose price is at or above the 97.5th percentile of market costs and below the compliance period max ceiling.[38]

Q. Is JEA's proposal effective for achieving its goal of deterring PSE from resorting to high-cost allowances to comply with CCA?

A. As JEA describes, it does not appear to be for several reasons. Figure 4 illustrates some of the issues.

Figure 4
JEA Proposal for Penalties Based on Unit Allowance Costs



JEA's penalty applies to the cost of each unit purchased rather than to the average costs of allowances. As a result, allowances that cost less than the 97.5th

[37] Response Test. of Lauren McCloy, Exh. LM-1T. at 17:2–4.
[38] Gehrke, Exh. WG-1T at 23:6–20.

percentile (calculated as $78.40 in JEA's example[39]) incur no penalty. Starting at $78.40 as shown in the figure, the penalty jumps from zero to $23.52, increases linearly to $30.96 (when the allowance price equals the ceiling price of $103.20 calculated in JEA's example), then drops abruptly to zero at $103.21.

The first problem is that because penalties under JEA's RSM drop to zero at $103.21, then a utility would profit by paying any price over the ceiling price in order to avoid penalties. Even if the prices on the open market were below the ceiling price, the utility could contract with a seller for something more than the ceiling price and thus avoid penalties.[40] JEA assumes that market prices are bounded by the limits in auctions. However, market prices have obtained values both in Washington and California not limited by the price limits in the auctions as shown in Figure 5 (replicated from Figure 2).

Figure 5
Carbon Market Prices in California[41]

[39] Gehrke, Exh. WG-3.
[40] Perhaps, a prudence review would capture this problem, but it far from guaranteed that it would, and far from guaranteed that such a deal could not be structured as to make it difficult to detect.
[41] California Air Resources Board, *Cap-and-Trade Program Data Dashboard: Carbon Allowance Prices.* https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-data/cap-and-trade-program-data-dashboard (last visited Sept. 5, 2024).

Figure 5 shows the carbon market prices in California. Market prices in California dropped below the auction reserve price in 2020. In Washington, PSE reports that the market price spiked above the auction Tier 2 price in the auction on August 9, 2023[42]. Thus, there is no guarantee that the market prices will be absolutely contained by the auction price limits.

A second problem is the discontinuous or lumpy increase in the penalty at the floor of $78.40. At any price up to $78.39, the utility incurs no penalties, but suddenly, at $78.40, it incurs $23.52. Because the floor is unknown until the compliance period of four years and true-up of 10 months is over, the utility will be cautious about purchases that near its estimate of what the 97.5th percentile will be. This is illustrated by PSE's estimate of the 97.5th percentile based on 2023 data of $69.00, and JEA's estimate based on 2023 and 2024 data of $78.40. In other words, the level at which the utility is safe from penalty moves over time. So, the lumpy incentive could distort rational economic behavior. For instance, the utility might buy more allowances at medium level prices, but later have to dump them at lower prices, because it no longer needs them. This results in an unnecessary cost to consumers.

Third, while JEA helpfully provides a discussion of moral hazard,[43] JEA's proposal, because of the lumpy incentives, fails to address allowance costs below the 97.5th percentile, thus not providing any incentive to lower costs below that

[42] Direct Test. of Trica L. Fisher, Exh. TLF-1CT at 16:14–18.
[43] Gehrke, Exh. WG-1T at 20:3–11.

level or decrease emissions if unit costs are below the 97.5th percentile, as is JEA's stated goal.

Fourth, while I am sympathetic to JEA's goal of reducing emissions from the utility, there is an element of unfairness in penalizing the utility for the unit purchase price. If the average cost of allowances was less than the average market price, JEA would still penalize the utility for any unit costs over the 97.5th percentile.

Q. Will JEA's proposal provide incentives to reduce the cost of CCA purchases?

A. JEA's proposal does not provide an overall incentive for PSE to reduce the cost of CCA purchases. By focusing not on average costs, which is what impacts consumer bills, but unit purchase costs, PSE has no incentive to lower average CCA allowance costs and thus lower consumer bills. For example, under JEA's proposal, average costs up to the 97.5th percentile would not be penalized.

Q. Are there other technical problems with JEA's proposal?

A. Yes. In adopting other parts of Staff's and PSE's proposal such as not including sales as well as purchases in the net cost of allowances, PSE's statistical model, and a financial earnings test, JEA's proposal replicates many of the other problems in Staff's and PSE's proposals discussed above.[44]

V. PUBLIC COUNSEL'S RECOMMENDATION

Q. Given the Inadequacy of Current Proposals, Does Public Counsel have a Recommendation?

[44] Even if JEA's financial earnings test is better than PSE's, JEA does not appear to provide a reason to have an earnings test.

A. Yes, the Commission should direct PSE and the Parties to provide refined proposals that will effectively incentivize the Company to control CCA allowance costs. Power costs are difficult to forecast *ex ante* and judge performance *ex post*. CCA allowances costs are even more difficult to forecast *ex ante*, however, judging performance *ex post* is relatively easy. Performance *ex post* can be judged by comparing the performance of the utility to the market. This approach is commonplace for rewarding the executive management of a firm, rewarding employees in profit sharing schemes, hedge fund managers, mutual fund managers, and so on. Indeed, part of Staff's primary proposal and its secondary proposal rely on this notion (as does PSE). Staff and PSE should be directed to refine their proposals for an RSM to measure performance against the market, either in this Docket, or in the CCA policy docket. Given that there is still significant time before the first four-year compliance period ends, and the current uncertainty over the future of the CCA, creating a performance-based metric for purchasing allowances over the compliance period is feasible. This metric could use the net cost of allowances for the entire compliance period, including allowances purchased in the 10-month true-up period. Logically, the total cost equals the expenditures on purchase minus revenues from the sales of allowances, excluding no-cost allowances consigned for auction. This makes it possible to calculate an average allowance cost from the allowances turned over to the Department of Ecology to meet PSE's obligation.

PSE's performance should be benchmarked against the performance of a random trader in the market. The average prices obtained by trading at random

(Average Random Trading Prices, ARTP) are a distribution of outcomes for a random trader who trades a fixed number of times. Each time the random trader trades, it trades a random amount with the sum of trading amounts normalized to one. Randomizing the purchase amounts removes issues of foresight with respect to the total amount of purchases needed.[45] The ARTP can be derived in a straightforward manner using a direct sampling procedure. The ARTP are approximately normally distributed so one can use the standard mechanics of obtaining percentiles as discussed in PSE's testimony.

Market performance could then be judged by comparison with the percentile distribution of the average prices for the random trader. Random trading results, on average, in performance that is equal to the market average price. Performance that is significantly worse than random is subject to refund to customers, while performance that is significantly better than random results in the utility capturing some of the benefit. In other words, the approach could have both carrots and sticks. Using dead and sharing bands around an average performance could be used to provide an appropriate target range.

Further system details to measure PSE's performance in purchasing allowances can be developed by PSE and the parties. For now, however, the current proposals are inadequate to purpose. None will actually incentivize cost containment; instead, they are designed to limit the worst case scenarios. The

[45] It may be the case that this method over-corrects for problems of foresight because the utility starts the compliance period with an estimate of its needs which it will refine over the course of the compliance period, and know its exact needs (or very nearly so) during the 10 month true-up period.

Commission should reject the current proposals and direct the parties to continue working to create an effective RSM.

Q. Should any proposal include a financial earnings test?

A. No. None of the proposals by Staff, JEA, or PSE provide a compelling reason for why there should be a financial earnings test. Any of the proposed financial earnings tests would limit the utility's exposure to poor decision making and are not justified.

Q. Does this conclude your testimony?

A. Yes, it does.