EXH. RJR-30T
DOCKETS UE-220066/UG-220067 et al.
2022 PSE GENERAL RATE CASE
WITNESS: RONALD J. ROBERTS

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-220066** **Docket UG-220067**
In the Matter of the Petition of **PUGET SOUND ENERGY** **For an Order Authorizing Deferred Accounting Treatment for Puget Sound Energy's Share of Costs Associated with the Tacoma LNG Facility**	**Docket UG-210918**

PREFILED TESTIMONY (NONCONFIDENTIAL) OF

RONALD J. ROBERTS

ON BEHALF OF PUGET SOUND ENERGY IN SUPPORT OF THE MULTIPARTY SETTLEMENT FOR TACOMA LNG

AUGUST 26, 2022

PUGET SOUND ENERGY

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I. INTRODUCTION

Q. Are you the same Ronald J. Roberts who submitted prefiled direct testimony on January 30, 2022, on behalf of Puget Sound Energy ("PSE") in this proceeding?

A. Yes. On January 31, 2022, I filed the Prefiled Direct Testimony of Ronald J. Roberts, Exh. RJR-1CT, and twenty-eight supporting exhibits (Exh. RJR-2 through Exh. RJR-29) thereto.

Q. What is the purpose of this Testimony in Support of the Multiparty Settlement for Tacoma LNG?

A. The purpose of this testimony is to provide evidence to support the Settlement Stipulation and Agreement on Tacoma LNG (the "Tacoma LNG Settlement Stipulation"). This testimony also responds to claims made in testimony of certain parties that are not signatories to the Tacoma LNG Settlement Stipulation and provides additional information to support a determination that PSE's decision to develop and construct the regulated portion of the Tacoma LNG Facility was prudent.

Q. What parties are signatories to the Tacoma LNG Settlement Stipulations?

A. PSE, the Staff of the Washington Utilities and Transportation Commission ("Commission Staff"), the Alliance of Western Energy Consumers, Walmart, Inc., The Kroger Cos., and Nucor Steel Seattle, Inc. are all signatories to the Tacoma LNG Settlement Stipulation and agree that PSE's decision to develop and construct the regulated portion of the Tacoma LNG Facility was prudent.

II. THE COMMISSION'S PRUDENCE STANDARD

A. Overview

Q. Please explain PSE's understanding of the Commission's prudence standard.

A. As explained in the Prefiled Direct Testimony of Ronald J. Roberts,[1] the Commission reaffirmed the standard it applies in a prudence review in PSE's 2003 Power Cost Only Rate Case Proceeding, Docket UE-031725.

The test the Commission applies to measure prudence is what a reasonable board of directors and company management would have decided given what they knew or reasonably should have known to be true at the time they made a decision. This test applies both to the question of need and the appropriateness of the expenditures. The company must establish that it adequately studied the question of whether to purchase these resources and made a reasonable decision, using the data and methods that a reasonable management would have used at the time the decisions were made.[2]

[1] *See* Roberts, Exh. RJR-1CT, at 7.
[2] *WUTC v. Puget Sound Energy*, Docket UE-031725, Order 12 at ¶ 19 (Apr. 7, 2004).

The Commission has cited several specific factors that inform the question of whether a utility's decision to construct or acquire a new resource was prudent. These factors include:

- first, the utility must determine whether new resources are necessary; [3]
- once a need has been identified, the utility must determine how to fill that need in a cost-effective manner and analyze the resource alternatives using current information;[4]
- the utility should inform its board of directors and/or management about the purchase decision and its costs and involve the board of directors or management in the decision process;[5] and
- the utility must keep adequate contemporaneous records that will allow the Commission to evaluate its actions with respect to the decision process.[6]

The Commission recently affirmed that the prudence analysis is not based on hindsight but is determined at the point in time when a company made its decision. Once that point in time is identified, "the Commission can consider whether the Company's decision was prudent at the time it was made, in light of what the Company knew or should have known."[7]

[3] *See e.g., WUTC v. Puget Sound Power & Light Co.*, Dockets UE-921262, *et al.*, Nineteenth Supplemental Order at 11 (Sept. 27, 1994).
[4] *Id*. at 2, 11, 33-37, 46-47.
[5] *Id*. at 37, 46.
[6] *Id*. at 2, 37, 46.
[7] *WUTC v. Avista Corp.*, Dockets UE-200900 *et al.*, Order 08/05, ¶ 267 (Sept. 27, 2021).

Q. Did PSE adhere to the Commission's prudence standards in development of the Tacoma LNG Facility?

A. Yes. As discussed below, and in the Prefiled Direct Testimony of Ronald J. Roberts, Exh. RJR-1CT, PSE adhered to the Commission's prudence standard in developing and constructing the Tacoma LNG Facility.

B. PSE Established a Need for the Tacoma LNG Facility

Q. Please describe how PSE determines its natural gas resource needs for purposes of serving its natural gas distribution customers.

A. PSE uses two methods for determining its natural gas resource needs to serve its natural gas distribution customers, the formal biennial integrated resource planning ("IRP") process and an informal analysis of resource need each year between IRP cycles, primarily to determine if major changes to demand or future resource availability would signal a need for immediate action. Resource need is based on the Design Peak Day condition when all existing resources are fully utilized and there is still an un-served demand. Each load forecast scenario would have a unique calculated design peak volume per year. The design peak volume is based on PSE's planning standard, forecasted customer count, and customer use per degree day, taking into account recently observed actual loads and the impact of existing demand side resources. The IRP model attempts to find the least cost resource, either supply-side or demand-side to fill the need on the design peak day. Planning model runs would incorporate one design peak-day, with the balance of days based on normalized temperature.

Q. Did PSE establish a need for new peak-day resources to serve its retail natural gas customers?

A. Yes. PSE established a need (and a continuing need) for new peak-day resources to serve its retail natural gas customers:

- The potential need for an LNG storage facility to meet demand was first identified in the 2009 IRP,[8] which stated that PSE's gas sales portfolio had sufficient resources through the winter of 2014-2015 but that PSE would need additional gas supply resources thereafter.[9]

- The 2011 IRP[10] determined that PSE's gas load and resources were in balance until about 2017 and identified a lowest reasonable cost plan for meeting natural gas demand in 2017 and beyond through combined use of (i) demand-side resources, (ii) increasing reliance on natural gas from Northern British Columbia, and (iii) a regional LNG storage facility.[11]

- The 2013 IRP[12] demonstrated a need for peaking resources beginning in 2016-17 and projected PSE's deficit to grow to approximately 117,800 Dth per day by 2022-23 and 236,000 Dth per day by 2026-27.[13]

- The 2015 IRP[14] demonstrated a need for peaking resources beginning in 2016-17 and projected PSE's deficit to grow to approximately 119,000 Dth per day by 2021-22 and 214,000 Dth per day by 2026-27.[15]

- In the 2017 IRP,[16] PSE included 59.5 (growing to 69) MDth/day of Tacoma LNG as an established resource because PSE expected the Tacoma LNG Facility to be in service for the 2019/2020 heating season. Even with

[8] Puget Sound Energy, *2009 Integrated Resource Plan*, Docket UG-080949 (May 30, 2009).
[9] *See* Roberts, Exh. RJR-3, at 3; *see also* 2009 IRP at 6-29.
[10] Puget Sound Energy, *2011 Integrated Resource Plan*, Docket UG-100960 (May 30, 2011).
[11] *See* Roberts, Exh. RJR-3 at 3-4, *see also* 2011 IRP at 1-13.
[12] Puget Sound Energy, *2013 Integrated Resource Plan*, Docket UG-120767 (May 30, 2011).
[13] *See* Roberts, Exh. RJR-3 at 11-12, *see also* 2013 IRP at 1-13.
[14] Puget Sound Energy, *2015 Integrated Resource Plan*, Docket UG-141171 (Nov. 25, 2015).
[15] *See* Roberts, Exh. RJR-3 at 25-29, *see also* 2015 IRP at 1-23.
[16] Puget Sound Energy, *2017 Integrated Resource Plan*, Docket UG-160919 (Nov. 14, 2017).

Tacoma LNG included as a resource, the 2017 IRP showed a need for additional resources in 2024-2025.[17]

Q. Please explain what is meant by design peak-day condition.

A. PSE's design day standards have been developed over years of analysis and are discussed in the collaborative IRP process every two years. PSE's design day standard is intended to make sure gas supply resources are planned and available to meet firm loads on a 13-degree design peak day, which corresponds to a 52 Heating Degree Day ("HDD").[18] PSE's long-range forecasts are recalibrated yearly based on actual customer count, weather normalized customer use per degree-day, achieved conservation measures, and other factors. PSE must reasonably demonstrate that it has sufficient capability to deliver up to its design day peak demand each year because PSE is obligated to serve the actual demand of all of its customers under design day conditions. It is this standard that PSE must meet and be judged on when determining prudency of resources acquired and available to serve customers.

Q. Did PSE's load forecasts produce inaccurate results, as alleged by the Washington State Office of Attorney General Public Counsel Unit ("Public Counsel")?

A. No. Public Counsel incorrectly suggests that PSE's load forecasts produced inaccurate results. Public Counsel compares PSE's *actual maximum day sales for*

[17] *See* Roberts, Exh. RJR-3 at 56-57, *see also* 2017 IRP at 7-7 n.4, 7-13, and 7-18.

[18] *See, e.g.,* Roberts, Exh. RJR-3 at 3 ("Specifically, the 2011 IRP stated that PSE planned supply to meet firm loads on a thirteen (13) degree Fahrenheit design peak day, which corresponds to a 52 Heating Degree Day.").

the highest demand day of a year to PSE's *estimate of the Design Day peak load* for that year.[19] Public Counsel concludes that PSE's Design Day peak load forecasts must be "inaccurate" because the estimated peaking need "did not materialize"[20] and "there were no curtailments"[21] during any of the winters covered by the forecasts.[22]

Public Counsel's comparison of actual peak day sales to Design Day peak load is flawed and is a case of the proverbial comparison of apples to oranges. Furthermore, this comparison appears to misunderstand the basic reason PSE engages in forecasting and system planning—to ensure that PSE has sufficient capability to deliver up to the Design Day peak demand. Indeed, PSE is obligated to serve all of its firm customers on the coldest day of the year; planning to "achieve" only one or two curtailments in a year would be contrary to this obligation.

In its 2005 Least Cost Plan ("LCP"),[23] PSE completed a detailed cost-benefit analysis that considered customers' value of reliability of service with the incremental costs of the resources necessary to provide that reliability at various temperatures. Based on that analysis, PSE determined that it would be appropriate

[19] *See* Earle, Exh. RLE-1CT, at 16:3 – 24:15. Public Counsel is not the only party to make this improper comparison. The testimony on behalf of the Puyallup Tribe also confuses the utility planning forecast for design-peak day conditions and the occurrence of actual maximum day sales volumes. *See* Sahu, Exh. RSX-1T, at 10:1 – 12:16.

[20] *Id*. at 16:7.

[21] *Id*. at 16:Table 2.

[22] *Id*. at

[23] Puget Sound Energy, *2005 Least Cost Plan*, Docket UE-050664 (May 4, 2005).

to use the 52 HDD (13ºF) as the peak day planning standard.[24] The Commission accepted the 2005 LCP and PSE's use of the design day for planning purposes.[25]

PSE confirmed the appropriateness of its gas planning standard in the 2021 IRP. The 2021 IRP found: that PSE's gas planning standard is based on reliability and safety, and is in line with industry best practices; and that the results of the 2021 IRP analysis show that lower demand, which may result from a revised peak day planning standard, would not change the resource alternatives needed to serve future loads.[26]

Q. If Public Counsel's comparisons of design day peak sales forecasts and actual incurred annual peak day events is flawed, what would be a more appropriate comparison for analysis?

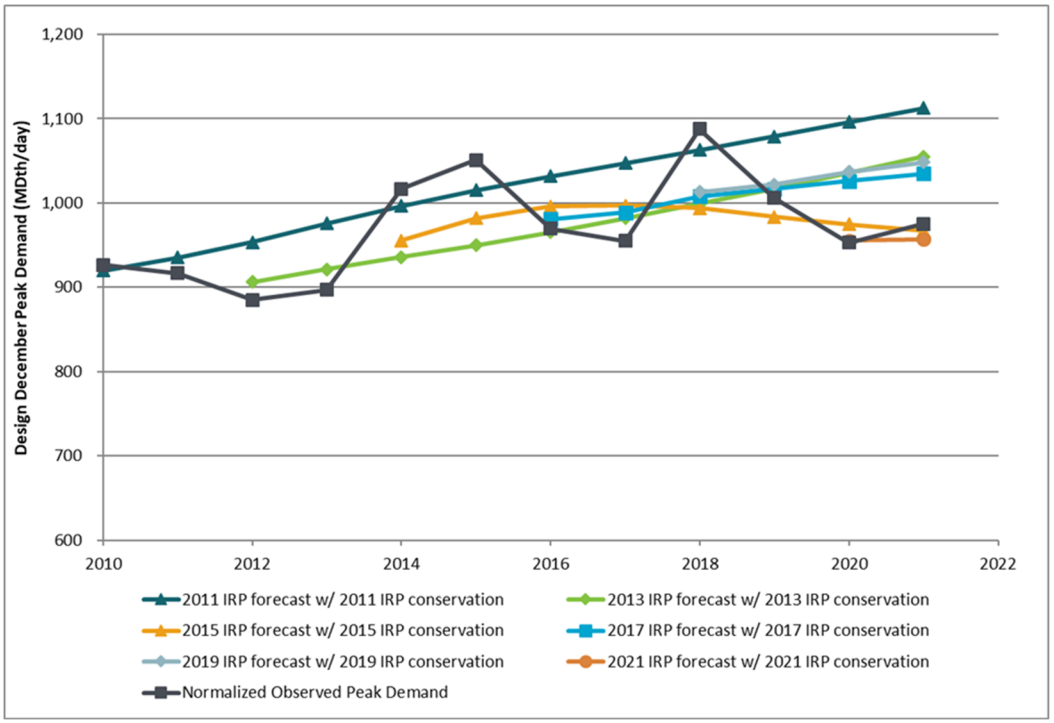
A. If Public Counsel had compared the weather-normalized actual maximum day sales volumes (i.e., adjusting volumes from the actual temperature to the design standard temperature of 13 degrees Fahrenheit) to PSE's net design peak forecast (i.e., after effect of planned conservation), then such a comparison would not have been as dramatic. Please see Figure 1 below for a comparison of PSE's weather-normalized actual maximum day sales volumes to its net design peak forecasts.

[24] *See 2005 Least Cost Plan* at Appx. 1 (Gas Planning Standard).

[25] *Puget Sound Energy 2005 Least Cost Plan for Electricity and Natural Gas Operations*, Docket No. UE-050664, Acknowledgment Letter at 4-5 (Aug. 25, 2005) ("For its 2003 LCP, [PSE] revised down its peak day from 52 heating degree-days (HDD) to 51 HDD. This small change freed up excess pipeline capacity that PSE sold in the winter, providing a source of revenue. [PSE] presented a benefit-cost analysis of this decision in a technical meeting. While the data underlying that analysis is now dated, the analytical approach was appropriate. The Commission commends the company for its work in this area.")

[26] *See*, *e.g.*, 2021 IRP at 9-67 and 9-68.; 2021 IRP at Appx. L (Temperature Trend Study).

Figure 1. Comparison of PSE's Weather-Normalized Actual Maximum Day Sales Volumes to its Net Design Peak Forecasts



As shown in Figure 1 above, PSE's weather-normalized actual maximum day sales have been both below and above PSE's forecasted net (i.e., net of conservation) design peak forecasts. In fact, Figure 1 demonstrates that PSE adjusted to actual maximum day sales information in the development of each subsequent forecast by adjusting subsequent starting points higher or lower and incorporating other adjustments based on assessment of mitigating factors. It should be noted that PSE reacted moderately (and did not over-react) to both lower and higher normalized actual data by adjusting each subsequent forecast.

Q. Why might PSE's net design peak forecasts (i.e., net of conservation) be higher or lower than weather-normalized actual maximum day sales volumes?

A. There are several reasons why PSE's net design peak forecasts (i.e., net of conservation) might be higher or lower than weather-normalized actual maximum day sales volumes. PSE bases the peak demand forecast on economic and demographic behavior, conservation, customer count, customer usage, and weather. For economic and demographic forecasts, PSE relies on forecasts from Moody's Analytics. After the Great Recession of 2008, Moody's Analytics assumed that the housing market would bounce back faster than expected. This resulted in higher customer count forecasts than actuals for the 2011 IRP and the 2013 IRP. Additionally, Moody's Analytics forecasted a small recession in 2020 but did not (and could not) forecast the economic toll caused by the COVID-19 pandemic.

The peak demand forecast also reflects cost-effective conservation programs for PSE. Customers can adopt energy-efficient technologies that exceed utility-sponsored programs, which can result in the peak demand forecasts being too high. Additionally, as time passes, different amounts of conservation can be deemed cost-effective, making previous forecasts out of date.

PSE has accelerated the natural gas conservation by five percent (5%) per year since the 2017 general rate case. Previous forecasts do not consider this accelerated timeline.

Finally, PSE's net peak demand forecasts assume that the design peak will occur on a weekday in the month of December. Actual peak days, however, have occurred on weekends or holidays. For example, PSE's actual peak days in calendar years 2013 and 2017 fell on weekends. PSE's actual peak days in calendar years 2010, 2012, and 2015 fell on New Year's Eve. The peak day for calendar year 2018 fell on Boxing Day (the day after Christmas). Usage on these days is likely to be different from usage on a typical non-holiday weekday peak. Weather-normalized actual maximum day volumes for these dates may not reflect net peak day forecasts because the usage patterns on these weekend days and holidays are atypical.

Q. Are there other flaws in Public Counsel's analysis of PSE's assessment of need?

A. Public Counsel's entire analysis of PSE's need assessment, including Figures 2 through 6 and Figures 10 and 11, is predicated on the erroneous comparison of actual observed (not normalized) peak volumes to PSE's appropriate forecasts that incorporate the design peak planning standard. The weather normalized observed peak data shown in Figure 1 above clearly demonstrates that PSE's design peak forecast is not materially different from PSE's IRP forecasts that clearly demonstrate the need for the Tacoma LNG peaking resource.

Q. Was PSE management somehow deficient in notifying the Board of Directors of differences between actual maximum day sales volumes to PSE's net design peak forecasts, as suggested by Public Counsel?

A. No. PSE management was not deficient in notifying the Board of Directors of differences between actual maximum day sales volumes to PSE's net design peak forecasts, as suggested by Public Counsel. As demonstrated in Figure 1 above, there were no unusual or unexplained variances encountered in the reconciliation of annual maximum day sales to the modeled forecast design day peak requirement. PSE management presented the PSE Board of Directors with each new annual design-peak forecast, along with an explanation of variances reflected in the recalibration of each new forecast. Each year's new forecast indicated a resource need in the immediate future, in order to serve the design day peak load.

Q. Was the Tacoma LNG Facility a "stop-gap" measure[27] as suggested by Public Counsel?

A. No. The assertion that the Tacoma LNG Facility is a "stop-gap" measure is incorrect. In deciding to develop the Tacoma LNG Facility as a peaking resource, PSE had the expectation that the facility would be an integral part of its resource stack to serve core gas customers for a very long period of time. PSE includes the Tacoma LNG Facility as an available resource in the resource stack at the time the next incremental resource is actually implemented. The fact that PSE would need incremental resources to meet future loads is unremarkable. Indeed, the fact that

[27] *See* Earle, Exh. RLE-1CT, at 24:15 – 26:6.

PSE would need incremental resources to meet future loads validates the current need for the Tacoma LNG Facility.

In asserting that the Tacoma LNG Facility is merely a "stop gap" measure, Public Counsel relies upon Figure 2 below, which is from the 2017 IRP (and was included in Public Counsel's Testimony as Figure 8):

Figure 2. 2017 IRP Gas Sales Portfolio Peak Day Load/Resource Balance

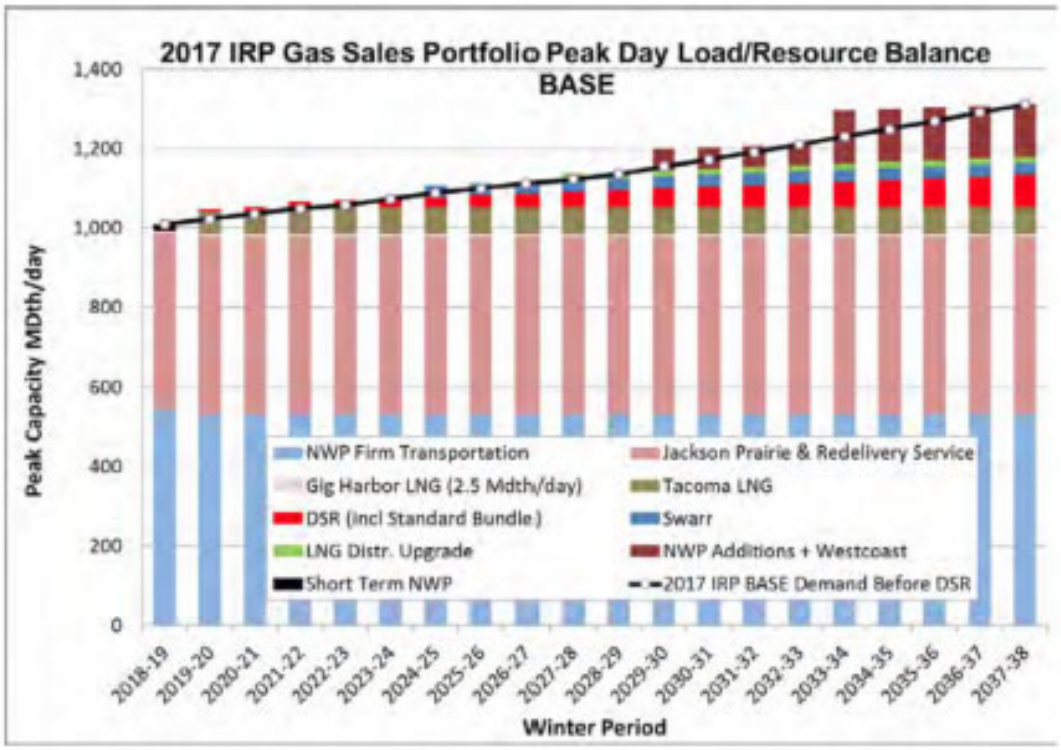


Figure 2 clearly demonstrates PSE's intention to utilize the Tacoma LNG Facility as a long-term resource to serve design peak day demand. The portion of the bar graph representing the Tacoma LNG Facility is present in each of the winter periods depicted in Figure 2. Nothing in Figure 2 suggests that the Tacoma LNG Facility is a "stop gap" measure. Figure 2 does project that additional resources may be necessary to meet peak day load, but that only demonstrates that even

with the Tacoma LNG Facility, PSE would not meet all of the peak day load projected in Figure 2.

Q. Could PSE have implemented other "temporary" measures until a better solution was found to meet the gas resource need identified in the several IRPs as claimed by Public Counsel as part of its stop-gap argument?

A. No. The Tacoma LNG Facility is a cost-effective dual-use facility that provides a needed gas-peaking resource to PSE customers at a cost below that of other alternatives. At least three other regional gas utilities (Northwest Natural Gas Company in Oregon, Intermountain Gas Company in Idaho, and Fortis BC in British Columbia) use LNG peaking resources. Two of those utilities use LNG peaking resources to meet customer load on very cold days while providing a relatively small level of transportation fuel. PSE developed the Tacoma LNG Facility as a dual-use facility from the start. As a dual-use facility, the Tacoma LNG Facility provides for two distinct—but complementary—uses that achieve an economy of scale and a sharing of costs. The Tacoma LNG Facility was, and is, the least-cost resource available to PSE and remains the better resource to meet projected gas needs.

Q. Does the Tacoma LNG Facility only meet "PSE's needs for five years"[28] as suggested by the Puyallup Tribe of Indians (the "Puyallup Tribe")?

A. No. The assertion by the Puyallup Tribe that the Tacoma LNG Facility will meet "PSE's needs for five years" is incorrect for the very same reasons that Public

[28] Sahu, Exh. RSX-1T, at 12:11-16.

Counsel is incorrect in asserting that the Tacoma LNG Facility is a "stop gap measure." As shown in Figure 2 above, the five years to which Public Counsel refers is the projected period after the Tacoma LNG Facility was to be operational and before PSE projected a need for additional resources to balance load. In other words, Figure 2 above projects that PSE would need new resources in addition to the Tacoma LNG Facility to meet peak load in the winter of 2023-24.

The Puyallup Tribe's statement that the Tacoma LNG Facility only meets "PSE's needs for five years"[29] relies on a misstatement in the Supplemental Environmental Impact Statement ("SEIS") prepared by/for the Puget Sound Clean Air Agency. The SEIS contained an erroneous statement—one not supported by any statement or indication by PSE—that the Tacoma LNG Facility would serve as a peak shaving facility for only five to ten years.

Q. Did PSE challenge the statement in the SEIS that the Tacoma LNG Facility would serve as a peak shaving facility for only five to ten years?

A. No. PSE chose not to dispute the erroneous statement in the SEIS because the environmental impact of peak-shaving resulted in a more conservative environmental impact statement. In other words, the environmental impact of the facilities for peak-shaving was less than the facilities for marine fuel projection, thereby resulting in an SEIS that was more conservative than if the SEIS used forty years of peak-shaving service for the same portion of the capacity.

[29] *Id*.

Any suggestion in the Puyallup Tribe's testimony that "limited use as a peak shaver drove the outcome of the SEIS in PSE's favor"[30] misrepresents the outcome of the SEIS. The outcome of the SEIS was in PSE's favor *despite* the erroneous assumption that the Tacoma LNG Facility would be used as a peak-shaving facility for only five to ten years. If the SEIS had contained the correct assumption that PSE would use the Tacoma LNG Facility as a peak-shaving resource for forty years, then the SEIS would have been even more favorable to PSE.

Q. Is the testimony on behalf of the Puyallup Tribe correct in asserting that PSE sized the Tacoma LNG Facility "based on six consecutive days of need without any basis for its determination that 6 days was needed or prudent given the historic demand"?[31]

A. PSE is not aware of any document or decision in which PSE has suggested that vaporization at the Tacoma LNG Facility would occur on six consecutive days. In fact, PSE has observed that the region frequently has experienced cold spells lasting in duration between two to four days more than once in each winter. This observation is partially supported by the table at the top of page 11 of the testimony on behalf of the Puyallup Tribe, which shows peak periods of two and three days in several years. For example, there were two cold weather events of two days or more in the five-month period beginning November 2013 and ending March 2014.

[30] Sahu, Exh. RSX-1T, at 13:9-10.
[31] Sahu, Exh. RSX-1T, at 11:17-18.

C. PSE Evaluated Other Resource Alternatives

Q. Did PSE evaluate other resource alternatives in the 2013 IRP as part of its determination to develop and construct the Tacoma LNG Facility?

A. Yes. The 2013 IRP projected that PSE would utilize a combination of resources to meet its growing design peak-day need including: (1) demand-side resources; (2) an LNG peaking project; (3) upgrading the SWARR propane facility; (4) Mist storage with additional pipeline capacity; and (5) additional pipeline capacity through expansions of Northwest and Westcoast pipelines, as well as the Northwest and Kingsvale-Oliver Reinforcement Project.[32] For the analysis, the alternatives were gathered into seven combinations that included gas purchases from specific market hubs joined with various upstream and directly-connected pipeline alternatives and storage options as well as demand-side resources.

Q. Did PSE evaluate other resource alternatives in the 2015 IRP as part of its determination to develop and construct the Tacoma LNG Facility?

A. Yes. The 2015 IRP recommended a resource plan that included an LNG facility (called the "PSE LNG Project") that was evaluated alongside other potentially available resource options and selected as part of the 2015 IRP least-cost solution. PSE considered a range of demand- and supply-side resource options, including the following resource alternatives:

- an upgrade to the Swarr Propane-Air Facility;
- the PSE LNG Project;

[32] *See* Roberts, Exh. RJR-5C, at 402-03 (providing a presentation dated July 2, 2014, to the PSE Board of Directors that includes, among other information, the alternatives considered by PSE in the 2013 IRP).

- short-term NWP capacity and Sumas gas supply;
- NWP and Westcoast Energy pipeline capacity and Station 2 or Sumas gas supply;
- Cross-Cascades pipeline, upstream pipeline and AECO gas supply;
- Cross-Cascades pipeline, downstream pipeline and Malin or Rockies Gas Supply;
- Mist Storage and NWP interstate pipeline capacity; and
- Kingsvale-Oliver Reinforcement Project (KORP), Westcoast Energy Pipeline Capacity and AECO Gas Supply.[33]

Since interstate pipeline capacity in PSE's service territory is generally fully subscribed, and given the level of PSE's resource needs, the resource alternatives analysis evaluated expansion of the regional pipeline grid. For its 2015 IRP, PSE developed the following ten scenarios to consider various levels of customer demand, long-term gas prices, and a range of CO_2 emissions prices:

Figure 3. 2015 IRP Gas Price Scenarios[34]

	Scenario	Demand	Gas Price	CO2 Price
1	Low	Low	Low	None
2	Base	Mid	Mid	Mid
3	High	High	High	High
4	Base + Low Gas Price	Mid	Low	Mid
5	Base + High Gas Price	Mid	High	Mid
6	Base + Very High Gas Price	Mid	Very High	Mid
7	Base + No CO2	Mid	Mid	None
8	Base + High CO2	Mid	Mid	High
9	Base + Low Demand	Low	Mid	Mid
10	Base + High Demand	High	Mid	Mid

[33] *See* Roberts, Exh. RJR-5C, at 1668.
[34] Roberts, Exh. RJR-5C, at 1665.

The Tacoma LNG Facility was chosen as a preferred resource in all ten scenarios presented in the 2015 IRP.[35]

To further determine the cost or benefit of the Tacoma LNG Facility versus the alternatives for each scenario, PSE compared two cases in the 2015 IRP: one where 100 percent of the fixed capacity resource of the Tacoma LNG Facility is included ("with"), and another where the Tacoma LNG Facility is not an available resource ("without").[36] The comparison shows there are portfolio benefits (cost savings) from including the Tacoma LNG Facility as a resource in every scenario and that the Tacoma LNG Facility was a least-cost resource to serve customer demand in various future scenarios.[37]

It should be noted that many of the pipeline and storage proposals studied in 2013 IRP and the 2015 IRP would have likely required other participants to achieve commercial viability and subsequently did not attract others and their sponsors terminated the proposed projects.

Q. Did PSE evaluate other resource alternatives in the 2017 IRP as part of its determination to develop and construct the Tacoma LNG Facility?

A. No. PSE included the Tacoma LNG Facility as an existing resource in its gas portfolio in the 2017 IRP. At that time, the PSE Board of Directors had approved moving forward with the Tacoma LNG Facility; the project was under construction, and expected to be in service and available by the winter of 2019.

[35] Roberts, Exh. RJR-5C, at 1669.
[36] Roberts, Exh. RJR-5C, at 1664-65.
[37] Roberts, Exh. RJR-5C, at 1671-72.

Q. Did PSE evaluate other alternatives outside of the biennial IRP process as part of its determination to develop and construct the Tacoma LNG Facility?

A. Yes. PSE performed evaluations of the Tacoma LNG Facility and other alternatives in both 2016 and 2018.

Q. Did the evaluation conducted by PSE in 2016 demonstrate that the Tacoma LNG Facility represented a lowest reasonable cost resource alternative to meet gas sales peak-day needs?

A. Yes. The evaluation conducted by PSE in 2016 demonstrated that the Tacoma LNG Facility represented the lowest reasonable cost resource alternative to meet gas sales peak-day needs. On August 4, 2016, just seven weeks before the PSE Board of Directors authorized the start of construction of the Tacoma LNG Facility, PSE management provided the PSE Board of Directors a comprehensive overview of the Tacoma LNG Facility, including the prudence of the peaking portion of the facility based on a determination of need and analysis of alternatives.[38]

The portfolio benefit analysis presented to the PSE Board of Directors on August 4, 2016, demonstrated that the Tacoma LNG Facility peaking resource provided a projected net present value portfolio benefit of $54 million to customers when compared to alternative resources over the 20-year period from 2016 through 2035.

[38] *See* Roberts, Exh. RJR-5C, at 1386-1693 (providing the presentation to the PSE Board of Directors dated August 4, 2016).

Figure 4. Portfolio Benefit of the Tacoma LNG Project in the Presentation to the PSE Board of Directors dated August 4, 2016[39]

	Gas Portfolio Costs Net Present Value (2016$ in millions)			Tacoma LNG Project Resource Chosen
2015 IRP SCENARIO	WITH 100% LNG	WITHOUT LNG	Benefit / (Cost) of LNG	MDth per day
BASE	9,366.9	9,464.7	97.8	85
LOW	6,258.0	6,294.7	36.7	73
HIGH	12,963.3	13,052.5	89.1	85
BASE + LOW GAS	8,212.6	8,263.9	51.3	69
BASE + HIGH GAS	10,719.8	10,823.6	103.8	85
BASE+VERY HIGH GAS	11,906.0	11,994.8	88.8	85
BASE+NO CO2	7,775.7	7,846.2	70.4	84
BASE+HIGH CO2	10,465.7	10,565.4	99.7	85
BASE+LOW DEMAND	9,031.7	9,040.1	8.4	41
BASE+HIGH DEMAND	10,450.5	10,550.9	100.4	85
2016 BASE RE-EVALUATION in 2019$	9,141.6	9,195.7	54.1	82

This analysis reaffirmed the conclusion in the 2015 IRP that the Tacoma LNG Facility represented a least-cost resource alternative to meet gas sales peak-day needs.[40]

Q. Did the evaluation conducted by PSE in 2018 demonstrate that the Tacoma LNG Facility represented a lowest reasonable cost resource alternative to meet gas sales peak-day needs?

A. Yes. The evaluation conducted by PSE in 2018 demonstrated that the Tacoma LNG Facility continued to represent the lowest reasonable cost resource alternative to meet gas sales peak-day needs. As part of the early 2018 evaluation,

[39] Roberts, Exh. RJR-5C, at 1672.
[40] *See* Roberts, Exh. RJR-3 at 45-46.

PSE considered the costs and benefits of the Tacoma LNG Facility by considering the project with and without sunk costs and compared those scenarios to a portfolio without LNG. To bookend the costs for the "With Tacoma LNG" portfolio, PSE considered a "With Tacoma LNG and 47 percent CAPEX" scenario, which represented the incremental cost to complete the project; and a "With Tacoma LNG and 100 percent CAPEX" scenario, which represented the total cost of the project from start to finish. The "Without Tacoma LNG" scenario, assumed the Tacoma LNG Facility was not available.[41]

The "With Tacoma LNG" and "Without Tacoma LNG" comparison confirmed that the Tacoma LNG Facility continued to be the least-cost resource alternative to meet PSE's gas peak-day resource need. When compared to the "Without Tacoma LNG" scenario, the "With Tacoma LNG and 100% of CAPEX" scenario demonstrated a $112.5 million benefit to the existing gas portfolio.

Table 1. Summary of February 2018 Portfolio Benefit Analysis[42]

Scenario	NPV @7.777 - 2018-2070 (millions)	Portfolio benefit compared to Without Tacoma LNG scenario (millions)
With Tacoma LNG (only 47% CAPEX to go)	$13,109	$190.6
With Tacoma LNG (full 100% CAPEX to go)	$13,187	$112.5
Without Tacoma LNG (includes sunk CAPEX and termination costs)	$13,300	

[41] *See* Roberts, Exh. RJR-3 at 63.
[42] Roberts, Exh. RJR-3, at 63.

Q. Are the suggestions by Public Counsel[43] and the Puyallup Tribe[44] that PSE could use natural gas pipeline capacity that PSE has acquired for power generation as an alternative to the Tacoma LNG Facility for purposes of meeting PSE's design day peaking needs?

A. No. The suggestions of Public Counsel and the Puyallup Tribe that PSE use pipeline capacity acquired for power generation to meet gas peak-shaving needs are unreasonable. If PSE were to adopt this unreasonable approach, then PSE would plan to treat pipeline capacity needed for power generation during peak periods as an alternative for its core gas customers. PSE has two distinct sets of customer bases–natural gas customers and electric customers. Approximately one-half of PSE's electric customers are also PSE gas customers (i.e., dual-use customers). Therefore, a large portion of PSE's customer base are gas customers or electric customers but not dual-use customers. PSE's gas, electric, and common costs are allocated to gas service and electric service so that PSE's gas customers pay the costs attributable to natural gas service and PSE's electric customers pay the costs attributable to electric gas service. Accordingly, the suggestions of Public Counsel and the Puyallup Tribe that PSE use pipeline capacity acquired for power generation to meet gas peak-shaving needs would result in impermissible cross-subsidization of natural gas customers by electric customers.

Moreover, each of PSE's power supply and gas supply functions has a separate and distinct portfolio of assets and contracts, including natural gas pipeline

[43] *See* Earle, Exh. RLE-1CT, at 27:1 – 30:22.
[44] *See* Sahu, Exh. RSC-1T, at 12:11-16

capacity. The Commission approved this arrangement when Puget Sound Power and Light Company merged with Washington Natural Gas to form Puget Sound Energy. The order in that docket approved a settlement among parties to that proceeding (including Public Counsel) mandating that transactions between the power supply and gas supply portfolios were to be at arm's length, there would be no cost shifting between the gas and electric divisions, and neither fuel type would be advantaged over the other.[45]

Q. Why is it important to allocate costs of pipeline capacity purchased for power supply separately from costs of pipeline capacity purchased to meet design day peak gas needs?

A. PSE's power supply portfolio acquired discounted firm pipeline capacity contracts of approximately 54 MDth/day to serve its dual-fuel peaker plants that are connected to Northwest Pipeline in winter months. The flexibility in those pipeline capacity contracts, when combined with the other contracts held by the power supply portfolio, allow PSE to have firm gas supply for either a partial day at full volume or a full day at reduced volume at the Fredonia and Frederickson peaker plants. (At full volume for the full day those plants have gas consumption totaling approximately 125 MDth/day).

[45] *See In the Matter of the Application of Puget Sound Power & Light Company and Washington Natural Gas Company for an Order Authorizing the Merger of Washington Energy Company and Washington Natural Gas Company with and into Puget Sound Power & Light Company, and Authorizing the Issuance of Securities, Assumption of Obligations, Adoption of Tariffs, and Authorizations in Connection Therewith*, Docket No. UE-960195, Fourteenth Supplemental Order Accepting Stipulation; Approving Merger (Feb. 5, 1997); *see also id* .at Appx. A (providing the Settlement Stipulation).

This firm pipeline capacity is an integral part of PSE's power supply risk mitigation strategy to provide reliable power to PSE's electric customers in design peak situations. PSE power supply chose to hold this firm pipeline capacity to mitigate the risk of failed backup fuel delivery, potential air permit limitations on the use of oil, the potential for shortages in the secondary power market, and the lower cost to hold the capacity and run the generating plants on gas. The costs of this firm pipeline capacity are paid by PSE's electric customers and that capacity is not available for resale. Under actual circumstances, the power supply portfolio may not need that firm pipeline capacity, but PSE plans to have it available to serve the design-peak hour and day for electric customers. It would not be prudent utility resource planning to plan to use power supply portfolio resources to supply gas portfolio needs. Moreover, when PSE was considering development of the Tacoma LNG Facility, PSE's gas supply portfolio was faced with projections that it would need, over time, far more than the 54 MDth/day then held in the PSE power supply portfolio.

Q. How does PSE interpret Public Counsel's frequent mention of the PSE Board of Directors' obligation to find a solution that was best for PSE rate payers?

A. PSE has obligations to both its electric customers and its gas customers. Confiscation of pipeline capacity of the power supply portfolio by the gas supply portfolio may, as suggested by Public Counsel, be a better solution for PSE gas customers, but it is not a viable solution for PSE electric rate customers for whom such action could result in reduced reliability. Prudent utility planning includes

being prepared to provide gas and power to each gas or power customer under design day standard conditions.

Q. Did PSE state, as suggested by Public Counsel and the Puyallup Tribe, in a proceeding before the Puget Sound Clean Air Agency that it could "curtail gas-for-power generation"[46] or "divert[] gas from its electric generating facilities"[47] to meet gas system peak-shaving needs?

A. No. The testimonies on behalf of Public Counsel and the Puyallup Tribe respectively, use a PSE response to the Puget Sound Clean Air Agency out of context. In that response, PSE was addressing a hypothetical scenario in which the Tacoma LNG Facility were not available for use nearly five years after the date that PSE had planned for the use of the facility. PSE recognized there would be insufficient lead-time for another resource to be built. In that scenario, PSE's only alternative within its control would have been to curtail the availability of gas-fired generation and use that capacity to keep the gas system at sufficient pressure. PSE explained this fully in PSE's Response to Public Counsel Data Request No. 312(d):

> Firm pipeline capacity is reserved in order to prudently plan and prepare for reliable gas distribution and electric service. At the time of the response to [the Puget Sound Clean Air Agency (PSCAA)] … there was insufficient lead-time to plan and obtain other alternative resources to meet gas system demand. Therefore, from an operational perspective, pipeline capacity currently reserved to serve some of the fuel needs for the referenced electric peaker plants would instead be repurposed for service to the PSE gas system. Thus, all things being equal, less gas would be available for PSE gas-fired generation at the referenced plants. PSE already relies

[46] *See* Earle, Exh. RLE-1CT, at 27:8-22.
[47] *See* Sahu, Exh. RSX-1T, at 12:5-13.

> heavily on power market purchases and dedicated transmission capacity to supplement PSE's own generation. It was presumed that if a peak event occurs, both PSE gas system needs and gas generation needs may very likely be coincident, thus putting extreme pressure on the entire gas and electric grid. In such an event, PSE's market purchases and transmission capacity may already be maximized and all PSE generation, including dual-fuel generation, would be required. If gas pipeline capacity is not available because it is being used to serve gas system demand, the referenced plants would need to run on fuel-oil.[48]

Although the use of pipeline capacity purchased for the power supply's capacity to meet gas system peaking needs would be an expensive and unsustainable long-term option, it may have been the only option available to PSE in the hypothetical scenario given the time necessary for (i) a gas pipeline expansion (a likely minimum lead-time of four years) or (ii) updates to the propane-air facility (a likely minimum lead time of two years).

Q. What conclusions does PSE draw from the analysis conducted on behalf of Public Counsel[49] that attempts to demonstrate that there is very low correlation between gas system demand and gas-for-power generation demand?

A. Public Counsel's analysis that attempts to demonstrate that there is very low correlation between gas system demand and gas-for-power generation demand is another proverbial case of comparing apples to oranges. Figure 9 in the testimony on behalf of Public Counsel demonstrates that there are many days of high

[48] Earle, Exh. RLE-10, at 2-3.
[49] *See* Earle, Exh. RLE-1CT, at 29:Fig. 9.

demand for both the gas system and gas-for-power generation (i.e., the upper-right side of the graph).

It should be observed, however, that gas-for-power generation demand only reflects the gas-fired generation that PSE chose to dispatch on any given day. On many days, PSE may have chosen to purchase power rather than run its generation because it was more economical to purchase than to generate the power. If insufficient power was available to purchase in the market to meet electric load due to a weather-related (e.g., extreme cold) or non-weather-related event (e.g., downed transmission lines), then PSE would have had no choice other than to use gas pipeline gas capacity to provide fuel to its gas-fired generators to supply electricity. This is yet another example of comparing (i) planning to meet actual past occurrences, whether typical or not, and (ii) planning to meet a design day standard. PSE has to plan for and be prepared to serve its gas and electric customers in all circumstances. It is not PSE's policy to take the risk that sufficient gas or power will always be available to meet design-peak demand for either gas or electric customers.

Q. Could PSE have simply used its capacity rights to the Jackson Prairie Storage Facility to meet peak-shaving needs, as asserted in the testimony on behalf of the Puyallup Tribe?[50]

A. No. At the outset, the statistics cited for the Jackson Prairie Storage Facility in the testimony on behalf of the Puyallup Tribe appear to reflect a misunderstanding

[50] *See* Sahu, Exh. RSX-1T, at 9:16-20, 11:20 – 12:11, and 25:8-9.

regarding PSE's rights to the use of the Jackson Prairie Storage Facility. PSE does not own or have a right to use all of the Jackson Prairie Storage Facility, which the statistics cited in the testimony appear to suggest. PSE has an ownership interest and right to use one-third of the Jackson Prairie Storage Facility; other parties own and have a right to use the remaining two-thirds of the facility.

PSE primarily uses its ownership of and right to use one-third of the capacity of the Jackson Prairie Storage Facility and the associated Northwest Pipeline firm storage redelivery service transportation capacity to meet the intermediate peaking requirements of core gas customers. (i.e., to meet seasonal load requirements, balance daily load, and minimize the need to contract for year-round pipeline capacity to meet winter-only demand). All of the deliverability and storage capacity of the Jackson Prairie Storage Facility held by PSE (i.e., both the capacity PSE owns outright and the capacity it has under contract with Northwest Pipeline) are already factored into PSE's design day peak demand studies. Additionally, the Jackson Prairie Storage Facility capacity owned by Northwest Pipeline is fully contracted and is unavailable for PSE to acquire on a peak day. The Jackson Prairie Storage Facility capacity owned by Avista is unavailable for sale or lease to others.

Moreover, even assuming that additional capacity at the Jackson Prairie Storage Facility were available (it is not), there is no firm pipeline capacity available for PSE to acquire to move additional storage withdrawals from the Jackson Prairie Storage Facility to its distribution system. PSE could not rely on interruptible

pipeline capacity to meet its peaking needs because it is a near certainty that interruptible pipeline capacity will not flow on a very cold peak day.

Contrary to claims argued on behalf of the Puyallup Tribe, the Jackson Prairie Storage Facility is simply not available to PSE as an alternative to the Tacoma LNG Facility.

Q. Does PSE agree with the testimony on behalf of the Puyallup Tribe that PSE could use the Gig Harbor Satellite LNG Facility to meet its peaking shaving needs?[51]

A. No. The Gig Harbor Satellite LNG Facility is located in the Gig Harbor area on the Kitsap Peninsula in the State of Washington. The Gig Harbor Satellite LNG Facility provides gas supply during peak weather events for a distribution system that is geographically isolated by the Puget Sound from the rest of PSE's distribution system. The Gig Harbor Satellite LNG Facility receives, stores, and vaporizes LNG that, historically, has been liquefied at other LNG facilities. Beginning in 2022, PSE began to supply the Gig Harbor Satellite LNG Facility exclusively with LNG liquefied at the Tacoma LNG Facility. The Gig Harbor Satellite LNG Facility represents an incremental supply source, and like Jackson Prairie, its capacity is already included in the peak day resource stack. Therefore, the Gig Harbor Satellite LNG Facility is not an alternative to the Tacoma LNG Facility to meet a projected gas need that is in excess of the PSE gas resource portfolio that includes the Gig Harbor Satellite LNG Facility.

[51] *See* Sahu, Exh. RSX-1T, at 9:16-20 and 25:8-9.

D. PSE's Board of Directors Was Fully Informed About and Made the Ultimate Decision to Construct the Tacoma LNG Facility

Q. Did PSE keep its Board of Directors fully informed when it was considering the Tacoma LNG Facility as an option for meeting its gas resource needs?

A. Yes. PSE first presented a business case for an LNG storage facility to the PSE Board of Directors at a meeting held on May 9, 2012.[52] PSE management continued to present reports and information to the PSE Board of Directors so it could evaluate the business case, and later, the development, decision to build, and construction of the Tacoma LNG Facility. As described previously, PSE management gave a comprehensive presentation on natural gas resource need to the PSE Board of Directors on August 4, 2016, just before seeking authorization to construct the Tacoma LNG Facility in September 2016.[53] PSE management presented a re-evaluation in March 2018 that showed PSE continued to need the Tacoma LNG Facility and it was the least-cost alternative.[54]

Table 6 in the Prefiled Direct Testimony of Ronald J. Roberts, Exh. RJR-1CT,[55] provides a list of decisions made by the PSE Board of Directors through the development and construction phases of the Tacoma LNG Facility. In addition, the Second Exhibit to the Prefiled Direct Testimony of Ronald J. Roberts, Exh. RJR-3, provides a comprehensive narrative timeline of the development and construction of the Tacoma LNG Facility, including descriptions of the dozens of

[52] *See* Roberts, Exh. RJR-5C, at 3-61.
[53] *See* Roberts, Exh. RJR-5C, at 1386-1693.
[54] *See* Roberts, Exh. RJR-5C, at 1766-1796.
[55] *See* Roberts Exh. RHR-1CT, at 58 – 60: Table 6 (Major Actions of the PSE Board of Directors).

reports and presentations that were provided to the PSE Board of Directors. Finally, the Fourth Exhibit to the Prefiled Direct Testimony of Ronald J. Roberts, Exh. RJR-5C, includes over 1,800 pages of documents that were provided to the PSE Board of Directors over the course of its evaluation and decision to develop and construct the Tacoma LNG Facility.

E. PSE Retained Documentation to Support its Decision to Develop and Construct the Regulated Portion of the Tacoma LNG Facility

Q. Did PSE retain documentation to support the decision to develop and construct the regulated portion of the Tacoma LNG Facility?

A. Yes. As mentioned previously, the Fourth Exhibit to the Prefiled Direct Testimony of Ronald J. Roberts, Exh. RJR-5C, includes over 1,800 pages of written information and materials communicated to the PSE Board of Directors—from the first identification of the potential need for an LNG storage facility, during development of a proposed LNG storage facility, through the decision to construct the Tacoma LNG Facility and the 2018 re-evaluation of that decision, and during construction of the Tacoma LNG Facility. The Commission has an extensive record on which it can evaluate PSE's decision-making process with respect to the Tacoma LNG Facility.

Q. Did PSE fail to update the PSE Board of Directors regarding the regulated portion of the Tacoma LNG Facility, as alleged by Public Counsel?[56]

A. No. PSE management provided regular updates to the PSE Board of Directors concerning the Tacoma LNG Facility, including updates on construction and permitting activities, and has done so throughout the two-year period to which the testimony on behalf of Public Counsel refers. Most of the recent updates were oral reports regarding the construction timeline, the status of litigation regarding the Tacoma LNG Facility, and updates on the budget. Reports on the status of the Tacoma LNG Facility were also included in monthly letters sent by PSE's Chief Executive Officer to the PSE Board of Directors Asset Management Committee.

Q. Your testimony above demonstrates that PSE closely adhered to the Commission's prudence standard in developing and constructing the Tacoma LNG Facility. How does PSE respond to the Commission Staff testimony that because PSE determined not to immediately build the Bonney Lake lateral, 24 percent of the Tacoma LNG Facility is not used and useful?[57]

A. It is not reasonable to argue that because one component of the Tacoma LNG Facility, the vaporizer, does not *appear* to be fully utilized, the recovery of all costs of the Tacoma LNG Facility should be reduced to the alleged "utilization factor" of 76 percent. It is possible that Staff drew its conclusion based on a misunderstanding of the design of the Tacoma LNG Facility.

[56] *See* Earle, Exh. RLE-1CT, at 23:9 – 24:11.
[57] *See* McGuire, Exh. CRM-1T, at 35:18 - 37:19.

PSE analysis had indicated that by 2018 the firm demand connected to the Tacoma distribution system was approximately 50 MDth/d under design peak conditions, as limited by the North Tacoma gate station outlet pressure. PSE specified that the facility should provide a minimum of 50 MDth/d of vaporization capacity and sought a CBI recommendation for the most efficient "standard sized" vaporization equipment to meet that specification. CBI recommended the installed standard sized equipment which has a capability of vaporizing 66 MDth/d. PSE understood that specifying a custom vaporizer of 50 MDth/d would have been more expensive than specifying the standard sized vaporization equipment of 66 MDth/d. Thus, there was no incremental cost for a vaporizer of 66 MDth/d as compared to the requested 50 MDth/d.

PSE also recognized that the transportation fuel service provided by the Tacoma LNG Facility (later determined to be Puget LNG) would be utilizing 19.3 MDth/d of inlet gas to liquefy at the same time PSE was seeking vaporization supplies. It would not be possible to vaporize and liquefy at the same time. Therefore, it was determined that under peak conditions PSE would suspend liquefaction and divert the supply intended for Puget LNG use to other PSE gas system gate stations on the pipeline and replace Puget LNG's gas with LNG via an in-tank title transfer. The effect is to create a peaking resource of 69.3 MDth. The diverted supply concept was a factor in determining the ultimate tank size and allocation between the regulated use by PSE and the non-regulated use by Puget LNG.

PSE was aware that by installing the Bonney Lake lateral it could effectively connect a larger customer base to the Tacoma system (by lowering the outlet

pressure at the North Tacoma gate station) and that portion of the system would add in excess of 16 MDth/d of design peak demand, that could then fully utilize the maximum output of the vaporization equipment, as measured on a daily basis. This expanded demand base for vaporization volumes would bring the peaking capability to 85.3 MDth per day.

Thus, the Bonney Lake lateral, which would involve only the cost of distribution piping and no added cost for increased vaporization, effectively became a very inexpensive future resource option for PSE. In fact, the addition of the Bonney Lake lateral has been studied in the 2017 IRP and 2019 IRP and it remains a least cost future supply option. PSE was prudent to postpone construction of the Bonney Lake lateral until such time as an incremental supply source is needed.

Q. Does the lower daily vaporization utilization mean that some of the storage volume is superfluous?

A. No. The stored volumes provide a level of security of supply; the gas supply is on PSE's system available for use at any time -- even in summer months. The only real limit on vaporization volumes is the 240 hours per year limit established in the air permit issued by the Puget Sound Clean Air Agency. However, that limit does not compromise the ability to use the full 538 MDth (6.3 million gallons of LNG) of storage capacity allocated to PSE.

Q. What is the current vaporization capacity of the Tacoma LNG Facility?

A. PSE tested the vaporization capability of the Tacoma LNG Facility in February 2022 as a part of commissioning the plant. The vaporization equipment was able

to vaporize at a rate of just over 66 MDth/day for a one-hour period, indicating that the equipment works as designed. The vaporization capacity is not limited by the Tacoma LNG Facility, but rather by the connected load under design day peak conditions.

In addition, PSE has made certain relocation and modifications to valves and piping at the North Tacoma gate station to address unrelated distribution system concerns. PSE has estimated that the Tacoma LNG Facility can now provide peaking service of approximately 60 MDth/day. The facility changes were not those originally planned but had a positive impact on the ability of the distribution system to absorb vaporized volumes under Design Peak Day conditions. PSE will analyze other distribution upgrades in future IRPs that will bring the effective vaporization capacity up to 66 MDth/day.

Q. Is the entire portion of the Tacoma LNG Facility allocated to PSE used and useful?

A. Yes. First, none of the other components of the Tacoma LNG Facility are affected by the size or utilization of the vaporizer, all are fully utilized. The liquefaction equipment, storage tank, ground lease, truck-loading equipment, control room, etc., are all required, regardless of the size or utilization of the vaporizer.

Second, the full 66 MDth per day flow rate of the vaporizer can and will be used for short periods of time (less than a full 24 hours in a day), providing 140% of the average hourly rate of customer demand. The early morning and early evening peak hours are when customer demand is the highest during the day and can be

140% or more of an average hour in the day. On many gas distribution systems, including PSE, customer demand during the 3 hour "morning pull" and the 3 hour "evening pull" can account for 36% of volumes for the day, even though those 6 hours represent only 25% of the hours in the day. This higher hourly utilization is not limited by the outlet pressure at the North Tacoma gate station.

Third, as the customer base on the Tacoma and Bonney Lake systems grow, design day peak demand will likely grow beyond 60 MDth per day, even with deployment of increasing amounts of conservation.

III. THE TACOMA LNG FACILITY WILL NOT CAUSE OR CONTRIBUTE TO HUMAN HEALTH IMPACTS OR INEQUITABLY AFFECT SURROUNDING COMMUNITIES

Q. Is the assertion in the testimony on behalf of the Puyallup Tribe accurate that the Tacoma LNG Facility creates significant negative externalities that inequitably affect surrounding communities due to what it claims to be "significant adverse air pollution"?[58]

A. No. Claims of "significant adverse air pollution" raised in the testimony on behalf of the Puyallup Tribe are not based on the facts. The Tacoma LNG Facility does not create "significant adverse air pollution."

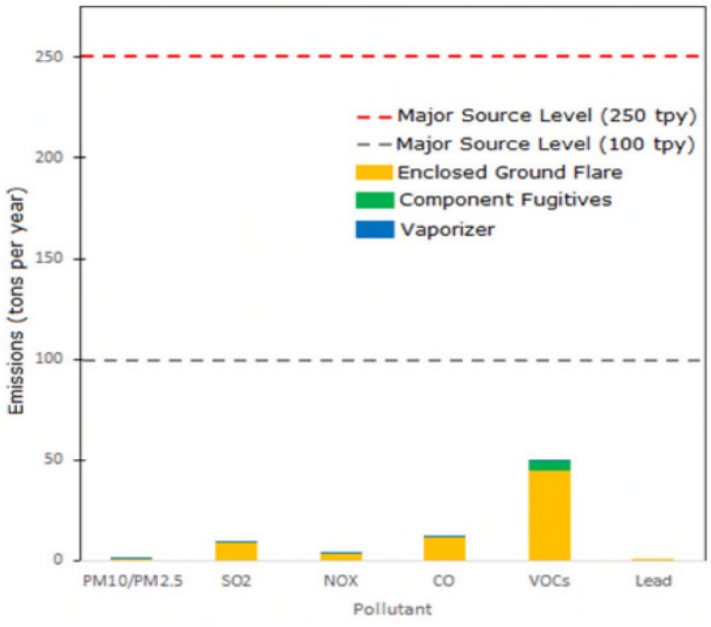
Dr. Ranajit Sahu, the individual who provides testimony on behalf of the Puyallup Tribe in this proceeding, was also a lead witness presented by the Puyallup Tribe and raised concerns about pollutant emissions before the Pollution Control

[58] Sahu, Exh. RSX-1T at 19:2; *see generally id.* at 17:9 – 21:9

Hearings Board in case number PCHB No. 19-087c. PSE's expert, Dr. Sheri Libicki, characterized the total emissions from the Tacoma LNG Facility to put in context the scale of emissions associated with the facility. Please see the First Exhibit to the Prefiled Testimony of Ronald J. Roberts in Support of the Multiparty Settlement for Tacoma LNG, Exh. RJR-31, for relevant excerpts from the testimony of Dr. Libicki.

As Dr. Libicki explained, and as is illustrated in the following graph, emissions from the Tacoma LNG Facility are extremely low when compared to the thresholds that characterize sources large enough to trigger more stringent permitting requirements (i.e., "major sources"):[59]

Tacoma LNG Criteria Air Pollutant Emissions Compared to PSD Major Source Level



[59] *See* Roberts, Exh. RJR-31, at 9.

The Pollution Control Hearings Board agreed with the conclusion of Dr. Libicki in its final decision in the case. Please see the Second Exhibit to the Prefiled Testimony of Ronald J. Roberts in Support of the Multiparty Settlement for Tacoma LNG, Exh. RJR-32, for a copy of Pollution Control Hearings Board Decision 11448 in PCHB No. 19-087c. The decision of the Pollution Control Hearings Board states as follows: "As analyzed in ¶¶ 65-105, [the Tacoma LNG Facility] is not a major source."[60] The decision of the Pollution Control Hearings Board further states that, "[i]n sum, the [Pollution Control Hearings Board] concludes that Appellants did not meet their burden of proving in Issue 4d that [the Puget Sound Clean Air Agency] erroneously concluded that [the Tacoma LNG Facility] is not a major source of one or more pollutants, [volatile organic compounds (VOCs)]."[61] The assertion on behalf of the Puyallup Tribe that the Tacoma LNG Facility creates negative externalities that inequitably affect surrounding communities due to "significant adverse air pollution" is false.

Q. Does PSE agree with testimony offered on behalf of the Puyallup Tribe that claims the Tacoma LNG Facility poses a series of alleged human health impacts that create negative externalities inequitably affecting surrounding communities, including the Puyallup Reservation and neighborhoods with substantial minority and low-income populations?

A. No. As explained below, both the Puget Sound Clean Air Agency and the Pollution Control Hearings Board have determined that the Tacoma LNG Facility

[60] Roberts, Exh. RJR-32, at 32.
[61] Roberts, Exh. RJR-32, at 58.

is a minor source and that its emissions are consistent with statutory requirements designed to *protect human health* and the environment. Any assertion of an inequitable impact is specious because the impacts themselves are negligible.

Q. Did PSE undertake any outreach to the Puyallup Tribe or the local community in the vicinity of the Tacoma LNG Facility as it was considering construction of the Tacoma LNG Facility?

A. Yes. PSE undertook many forms of outreach to provide meaningful opportunities for the Puyallup Tribe, the local community, and the public to gain a good understanding of and share their views about the Tacoma LNG project. PSE made significant efforts in 2014 and 2015 to engage with the Puyallup Tribe. These efforts included hand-delivering letters to the Puyallup Tribe and its Chair to introduce the Tacoma LNG project and seek a meeting with the Tribe and its leadership to discuss the Tacoma LNG project. The PSE permitting manager for the Tacoma LNG project left a telephone message for the Puyallup Tribe Chair requesting to schedule a meeting with the Puyallup Tribe and its leadership. PSE received no responses to the letters or the phone call.

PSE in-house legal counsel electronically contacted the Puyallup Tribe's environmental legal counsel to advise her of the City of Tacoma's SEPA review of the Tacoma LNG Facility. PSE technical staff met with Puyallup Tribe legal and technical staff following close of comments on the DEIS.

PSE leadership and Puyallup Tribe leadership met at a City of Tacoma-sponsored meeting to discuss the Tacoma LNG Project. In addition, during the Shoreline

Hearings Board proceedings described below, PSE technical, permitting, and legal staff met with Puyallup Tribe environmental, technical, and legal staff.

In addition to its outreach to the Puyallup Tribe, PSE used various communication strategies to provide information to the local community and its customers about the Tacoma LNG project. PSE conducted focus groups and telephone polls to gauge the public's understanding of LNG and gather information about concerns. PSE used input it received to develop an education and outreach strategy to provide information and an opportunity for input to all stakeholders.

In addition, PSE briefed neighborhood councils, local community and business groups, and Port of Tacoma tenants; provided comment at City Council meetings; and provided tours of the Tacoma LNG project site. PSE also provided the same informational content about LNG through a website (with a dedicated email for project questions or comments), fact sheets, a newsletter, social media, and digital and TV ads. PSE participated in public meetings and hearings starting in 2014 to and held telephone town halls and an open house in 2016. PSE's efforts to create an inclusive decision-making process are further described in the Prefiled Direct Testimony of Ronald J. Roberts.[62]

Q. Please describe beneficial impacts associated with the Tacoma LNG Facility.

A. In addition to reducing air emissions from vessel and truck traffic (as described in the Prefiled Direct Testimony of Ronald J. Roberts),[63] construction of the Tacoma

[62] *See,* Roberts, Exh. RJR-1CT, at 40:10 - 42:19; *see also*, Exh. RJR-5C at 201, 211, 231-233, 363-373, 629,742-754, 1105-1116.

[63] *See, e.g.*, Roberts, Exh. RJR-1CT, at 18:3-17.

LNG Facility improved onsite environmental conditions as compared to pre-construction conditions. PSE built the Tacoma LNG Facility on a brownfield site that contained historic warehouses, chipping lead paint, asbestos, and uncontrolled stormwater releases. PSE demolished an old, dilapidated warehouse, cleaned up the site, planted vegetation along portions of the 50-foot marine buffer, and installed a stormwater system that provides for treatment of diffuse water sources prior to discharge into the Hylebos waterway. The Shorelines Hearings Board noted these material improvements at the site of the Tacoma LNG Facility in a decision denying an appeal by the Puyallup Tribe of the Shoreline Substantial Development Permit issued by the City of Tacoma.[64] Please see the Third Exhibit to the Prefiled Testimony of Ronald J. Roberts in Support of the Multiparty Settlement for Tacoma LNG, Exh. RJR-33, for a copy of Shorelines Hearings Board Decision 9283 in SHB No. 16-002.

Off-site mitigation associated with the Tacoma LNG Facility also aids in improved ecological function in and around the Blair and Hylebos waterways. To mitigate for impacts associated with the construction of the new fuel loading facilities on the Blair Waterway, PSE removed creosote-treated piles from the Blair Waterway and Sperry Ocean Terminal, removed creosote-treated overwater decking from the Hylebos Waterway and Sperry Ocean Terminal, all to an off-site mitigation site. As found by the Shorelines Hearings Board in Decision 9283,

> [t]he [Shorelines Hearing] Board finds that the evidence presented establishes that the removal of creosote-treated materials will

[64] Roberts, Exh. RJR-33, at 17:8 - 18:6.

benefit surface water quality and salmonid habitat by removing a source of contamination.[65]

A. Both the Puget Sound Clean Air Agency and the Pollution Control Hearings Board Determined that Emissions from the Tacoma LNG Facility Would Not Contribute to a Violation of the Ambient Air Quality Standards, Which Are Designed to Protect Human Health with an Adequate Margin of Safety

Q. Does the Tacoma LNG Facility diminish the health of people in its vicinity through emissions of a wide range of pollutants to the air?[66]

A. No. Prior to issuing its Order of Approval for Notice of Construction (NOC) No. 11386 (Permit) (the "Air Permit"), the Puget Sound Clean Air Agency— an agency with specialized air quality expertise and authority— was required to determine that emissions of criteria air pollutants from the Tacoma LNG Facility would not cause or contribute to a violation of any Ambient Air Quality Standards. *See* WAC 173-400-113(3). The Ambient Air Quality Standards are set at a level *designed to protect human health and the environment with an adequate margin of safety*. Issuance of the Air Permit by the Puget Sound Clean Air Agency demonstrates that emissions from the Tacoma LNG Facility will not diminish the health of people in the vicinity.

Q. Did the Pollution Control Hearings Board determine that projected emissions from the Tacoma LNG Facility would exceed screening thresholds for emissions of fine particulate matter ($PM_{2.5}$) or nitrogen dioxide ("NO_2")?

A. No. Dr. Sahu, the lead witness for the Puyallup Tribe in both the proceeding before the Puget Sound Clean Air Agency and in this proceeding, presented

[65] Roberts, Exh. RJR-33, at 31:11-13.
[66] Sahu, Exh. RSX-1T, at 16:9-10.

arguments on appeal of the Air Permit before the Pollution Control Hearings Board in an open record hearing that lasted two weeks. Following the hearing, the Pollution Control Hearings Board determined there was no evidence that emissions of fine particulate matter ($PM_{2.5}$) or NO_2 would result in a violation of any Ambient Air Quality Standards.

Q. Did the Pollution Control Hearings Board determine that projected emissions from the Tacoma LNG Facility would exceed screening thresholds for emissions of sulfur dioxide ("SO_2")?

A. Yes. The Pollution Control Hearings Board determined that projected emissions from the Tacoma LNG Facility would exceed screening thresholds for emissions of SO_2. The Pollution Control Hearings Board required that PSE install a continuous emission monitoring system ("CEMS") to ensure that no violations of the Ambient Air Quality Standards for SO_2 would occur.

Q. Did the Pollution Control Hearings Board determine that projected emissions from the Tacoma LNG Facility would exceed screening thresholds for emissions of carbon monoxide ("CO")?

A. No. No party alleged that projected emissions from the Tacoma LNG Facility would exceed screening thresholds for emissions of CO.

Q. What can the Commission conclude with respect to the findings of the Pollution Control Hearings Board?

A. The determinations of the Pollution Control Hearings Board provide compelling evidence to the Commission that any allegations regarding the potential human

health impacts associated with the Tacoma LNG Facility air emissions are baseless. When it comes to criteria air pollutants (i.e., are air pollutants that are regulated due to their potential human health impacts), the Pollution Control Hearings Board—the state agency charged with making such determinations—concluded that emissions from the Tacoma LNG Facility would not contribute to a violation of the Ambient Air Quality Standards, which again are designed to *protect* human health with an adequate margin of safety.

B. Both the Puget Sound Clean Air Agency and the Pollution Control Hearings Board Determined that Emissions of Toxic Air Pollutants or Hazardous Air Pollutants from the Tacoma LNG Facility Would Not Exceed Acceptable Source Impact Levels

Q. Will the emission of toxic air pollutants or hazardous air pollutants from the Tacoma LNG Facility harm the surrounding neighborhoods, as suggested in the testimony on behalf of the Puyallup Tribe?[67]

A. No. The emission of toxic air pollutants or hazardous air pollutants from the Tacoma LNG Facility will not harm the surrounding neighborhoods.

Prior to issuing the Air Permit to PSE, the Puget Sound Clean Air Agency assessed the impacts of emissions of toxic air pollutants from the Tacoma LNG Facility, as required by WAC 173-460-070. On appeal, the Pollution Control Hearings Board determined that the Puget Sound Clean Agency's analysis of toxic air pollutants "was appropriate and did not underestimate emissions and/or impacts."[68] The Pollution Control Hearings Board further concluded that toxic air

[67] *See* Sahu, RSX-1T, at 19:8 – 20:6.
[68] Roberts, Exh. RJR-32, at 83:4-6.

pollutants from the Tacoma LNG Facility were not shown to exceed acceptable source impact levels. Having lost on this issue before both the Puget Sound Clean Air Agency and the Pollution Control Hearings Board, the Puyallup Tribe should not be allowed to re-litigate the same question here.

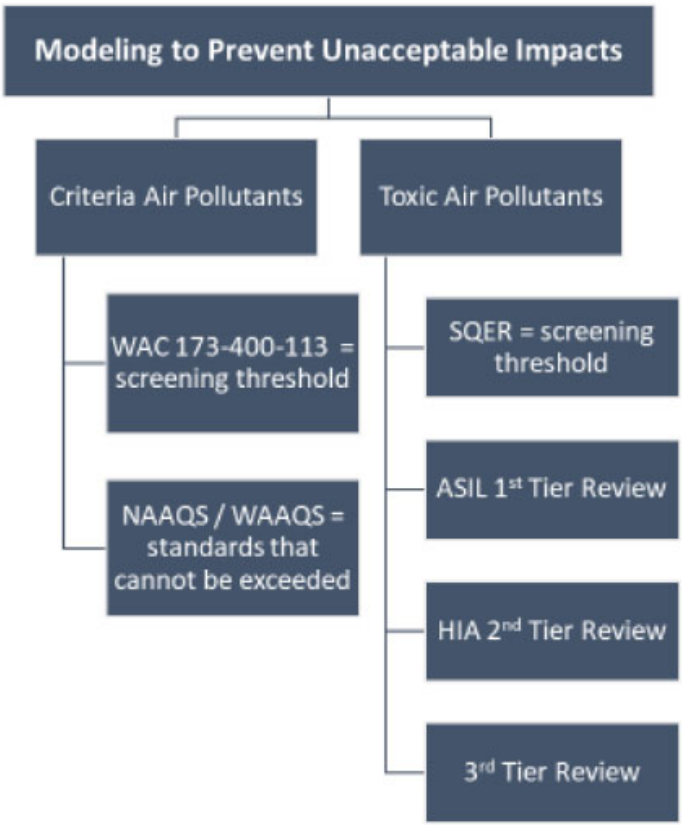
In addition, statements in the testimony on behalf of the Puyallup Tribe regarding hazardous air pollutants are misleading, incorrect, and without evidentiary support. The statements in the testimony on behalf of the Puyallup Tribe in this proceeding are as unsupported as they were when raised before the Pollution Control Hearings Board. In that proceeding, the Pollution Control Hearings Board rejected assertions of the Puyallup Tribe, stating that "[a]ppellants' sole witness, Dr. Sahu, also makes passing assertions that [the Tacoma LNG Facility] is a significant source of hazardous air pollutants, but the [Pollution Control Hearings Board] rejects any argument on the issue of whether [the Tacoma LNG Facility] is a major source of hazardous air pollutants as it is devoid of supporting evidence."[69]

The Pollution Control Hearings Board concluded that the Tacoma LNG Facility will emit toxic air pollutants and hazardous air pollutants in very small amounts. When assessing the potential impact of toxic air pollutant and hazardous air pollutant emissions, the Puget Sound Clean Air Agency compares the predicted emissions to thresholds established by regulation, which, if exceeded, trigger

[69] Roberts, Exh. RJR-32, at 41 n.18.

increasingly stringent analyses. Pollution Control Hearings Board Decision 11448 includes, among other information, the following figure:

Figure 10. Modeling to Prevent Unacceptable Impacts from Pollution Control Hearings Board Decision 11448[70]



The lowest level screening threshold is called the small quantity emission rate. If emissions of a toxic air pollutant are lower than the small quantity emission rate, then no further analysis is required. Most of the toxic air pollutants projected for the Tacoma LNG Facility did not exceed the small quantity emission rate. Those toxic air pollutants that exceeded the small quantity emission rate (i.e., those identified in the testimony on behalf of the Puyallup Tribe in this proceeding as

[70] Roberts, Exh. RJR-32, at 23.

being "above specified thresholds")[71] had to undergo a further review. In the first level review, which involves dispersion modeling, the concentration of the toxic air pollutants is compared to acceptable source impact levels. If the modeled concentrations do not exceed the acceptable source impact levels, then the emissions are deemed to be acceptable by regulation, and no second tier or third tier review is required.

For the Tacoma LNG Facility, the first level review conducted by the Puget Sound Clean Air Agency revealed that no toxic air pollutant emissions would exceed acceptable source impact levels. Indeed, with respect to some of the pollutants to which testimony on behalf of the Puyallup Tribe in this proceeding refers,[72] the Pollution Control Hearings Board found (based on evidence presented by PSE's expert Dr. Shari Libicki) that concentrations were orders of magnitude below the relevant acceptable source impact levels:

> Indeed, Dr. Libicki's modeling results revealed that benzene concentrations from flaring would have to increase by a factor of more than 7,000 times to approach [acceptable source impact levels], and toluene concentrations would have to increase by 8 million times. … Dr. Sahu acknowledged these results, and candidly testified that he did not have a basis to opine that [toxic air pollutant] emissions will exceed [acceptable source impact levels].[73]

Notwithstanding the admission of Dr. Sahu in the proceeding before the Pollution Control Hearings Board, the testimony on behalf of the Puyallup Tribe in this proceeding continues a practice of making incorrect statements without

[71] *See* Sahu, Exh. RSX-1T, at 19:8-12.
[72] *See* Sahu, Exh. RSX-1T, at 19:8-12.
[73] Roberts, Exh. RJR-32, at 80:15 – 81:13.

supporting evidence, notwithstanding the fact that both the Puget Sound Clean Air Agency and the Pollution Control Hearings Board have already considered and resolved such allegations.

C. Both the Puget Sound Clean Air Agency and the Pollution Control Hearings Board Determined that Emissions of Particulate Matter from the Tacoma LNG Facility Showed No Violation of Ambient Air Quality Standards

Q. Do the contentions regarding particulate matter emissions in the testimony on behalf of the Puyallup Tribe[74] change PSE's opinion as to whether the Tacoma LNG Facility will negatively impact the health of surrounding communities?

A. No. The emissions of particulate matter from the Tacoma LNG Facility will not impact human health in surrounding communities. The testimony on behalf of the Puyallup Tribe quotes *American Trucking Associations, Inc. v. Environmental Protection Agency*,[75] an opinion issued by the U.S. Court of Appeals for the D.C. Circuit in the following statement:

> Tacoma LNG will also emit significant levels of fine particulate matter, for which Courts have recognized there is a "lack of a threshold concentration below which [particulate matter and ozone] are known to be harmless."[76]

The testimony on behalf of the Puyallup Tribe, however, takes the quote from the opinion of the U.S. Court of Appeals for the D.C. Circuit out of context. In that case, the quoted portion of the opinion summarized the U.S. Environmental Protection Agency's then-current knowledge about the adverse health effects

[74] *See* Sahu, Exh. RSX-1T, at 20:7-16.
[75] *Am. Trucking Associations, Inc. v. E.P.A.*, 283 F.3d 355, 359-60 (D.C. Cir. 2002).
[76] Sahu, Exh. RSX-1T, at 20:7-9.

associated with particulate matter emissions. It did not make a determination that there is no safe level of fine particulate matter concentrations. Rather, the court stated in the very same opinion that

> [i]n [the Environmental Protection Agency's] judgment … [particulate matter] may be … a non-threshold pollutant—that is, a pollutant that causes adverse health effects at any non-zero atmospheric concentration.[77]

The court's opinion went on to state that

> [t]he lack of a threshold concentration below which these pollutants are known to be harmless makes the task of setting primary [National Ambient Air Quality Standards] difficult, as EPA must 'select ... standard level[s] that ... reduce risks sufficiently to protect public health' even while recognizing that 'a zero-risk standard is [not] possible.' Ozone [National Ambient Air Quality Standards], 62 Fed. Reg. at 38,863.[78]

As discussed above, the ambient air quality standards for particulate matter are set at a level designed to protect human health, and the Tacoma LNG Facility will not cause or contribute to a violation of the relevant ambient air quality standards.

Q. Is the testimony on behalf of the Puyallup Tribe correct in suggesting that the Pollution Control Hearings Board "recently acknowledged that Tacoma LNG will emit toxic fine particulate matter in excess of the regulatory threshold set out in WAC 173-400-113."[79]

A. The testimony on behalf of the Puyallup Tribe suggesting that the Pollution Control Hearings Board acknowledged that the Tacoma LNG Facility will emit

[77] *Am. Trucking Associations, Inc.* 283 F.3d at 359-60.
[78] *Id.* at 360.
[79] Sahu, Exh. RSX-1T, at 22:12-14.

toxic fine particulate matter in excess of the regulatory threshold set out in WAC 173-400-113 is misleading in this proceeding just as it was misleading when the same argument was proffered before the Pollution Control Hearings Board. This statement erroneously treats a screening threshold as if it is a potential violation of the National Ambient Air Quality Standards. This is incorrect. Although the predicted particulate matter ($PM_{2.5}$) concentrations referred to by the Pollution Control Hearings Board are slightly above the screening threshold set forth in WAC 173-400-113, this triggered a further analysis to determine whether such emissions would cause or contribute to a violation of the relevant particulate matter ($PM_{2.5}$) ambient air quality standard. The Puget Sound Clean Air Agency conducted this analysis and determined that no violation would occur. The Pollution Control Hearings Board then rejected arguments offered on behalf of the Puyallup Tribe suggesting that the Puget Sound Clean Air Agency had not correctly undertaken its analysis and that the Tacoma LNG Facility would cause a violation of the relevant particulate matter ambient air quality standard:

> In sum, the Board concludes that because the modeled $PM_{2.5}$ value was the same as the threshold value, additional analysis was conducted, which showed no violation of ambient air quality standard. … Without evidence demonstrating that using a different emission value would increase $PM_{2.5}$ emissions to the point of violating [National Ambient Air Quality Standards], [the Puyallup Tribe] did not meet their burden in Issue 4f, with respect to $PM_{2.5}$.[80]

[80] Roberts, Exh. RJR-32, at 69:8-12.

The Puyallup Tribe's misleading suggestion that the Pollution Control Hearings Board has acknowledged that the Tacoma LNG Facility will emit toxic fine particulate matter in excess of the regulatory screening threshold does not establish that the Tacoma LNG Facility will cause impacts to human health.

D. PSE Extensively Studied and Designed the Tacoma LNG Facility to Ensure That It Could Be Built and Operated Safely

Q. How does PSE respond to allegations in the testimony offered on behalf of the Puyallup Tribe[81] suggesting that the Tacoma LNG Facility presents "significant safety risks, including the risks of explosion and catastrophic events"?[82]

A. The allegations contained in the testimony on behalf of the Puyallup Tribe suggesting that the Tacoma LNG Facility presents significant safety risks are unsupported and false. The question of the safety of the Tacoma LNG Facility has now been put to rest by the Final Environmental Impact Statement and Pollution Control Hearings Board Decision 11447 in Case No. 19-087c. Please see the Fourth Exhibit to the Prefiled Testimony of Ronald J. Roberts in Support of the Multiparty Settlement for Tacoma LNG, Exh. RJR-34, for a copy of the Pollution Control Hearings Board Decision 11447 in Case No. 19-087c.

Safety is of paramount importance to PSE, and the construction and operation of the Tacoma LNG Facility is no different. During the facility design processes, PSE engaged third party consultants and engineers to evaluate seismic and

[81] *See* Sahu, Exh. RSX-1T, at 21:10 – 23:4.
[82] Sahu, Exh. RSX-1T, at 21:14-15.

explosion risks. GexCon US, Inc., prepared a report entitled *Tacoma LNG – Dispersion Modeling* (July 16, 2015), which it then supplemented in the report entitled *Flammable Gas Dispersion Analysis for the Tacoma LNG Site at the TOTE Dock* (Sept. 17, 2015). PSE's project design engineers, Chicago Bridge & Iron, requested these studies on behalf of PSE to model and evaluate dispersion simulations to confirm that in the unlikely event a flammable vapor cloud ever arose, it would be contained to the area under the facility's control and would not impair the any emergency ingress/egress routes.

Safety was also a central consideration in the Final Environmental Impact Statement for the Tacoma LNG Facility. As part of the Final Environmental Impact Statement, the City of Tacoma conducted its own solicitation and engaged a third-party engineering firm, Braemar Technical Services' Engineering & Naval Architecture Group ("Braemar"), to independently peer-review and evaluate the facility's design, layout and function for safety, code compliance, and industry best practices. Braemar specializes in LNG services, and it evaluated the general arrangement and technical function of plant components for compliance to codes, standards, and industry best practices. Braemar also evaluated the design and layout for safety, reliability, and sustainability within the Tacoma LNG Facility for minimum required equipment spacing, and property boundary setbacks. This evaluation resulted in the report entitled *EIS Technical Review of Tacoma LNG Facility* report (June 25, 2015) provided to the City of Tacoma for use in the Environmental Impact Statement. This report found the Tacoma LNG Facility to

be of sound engineering and recommended that continued compliance with safety standards be demonstrated as design engineering continued.

Later, the Tacoma City Fire Department engaged Braemar to evaluate the proposed design and siting for compliance of the Tacoma LNG Facility to validate that its fire protection and safety systems conformed to applicable LNG codes and standards. This evaluation resulted in a report entitled *Tacoma LNG Fire and Safety Review* (July 2, 2018), which evaluated the proposed design and siting for compliance of the Tacoma LNG Facility during the execution phase of the project to validate that fire protection and safety systems conformed to applicable LNG codes and standards. Please see the Fifth Exhibit to the Prefiled Testimony of Ronald J. Roberts in Support of the Multiparty Settlement for Tacoma LNG, Exh. RJR-35, for a copy of the *Tacoma LNG Fire and Safety Review* (July 2, 2018) prepared for the Tacoma City Fire Department by Braemar. The fire and safety report prepared by Braemar summarized its review of the Tacoma LNG Facility as follows

> The technical review of Tacoma LNG's fire and safety systems did not reveal any fatal flaws or visible design deficiencies. Tacoma LNG was designed to the applicable codes and standards with significant attention to detail, and a perceived objective of becoming a best in class LNG facility. Some Tacoma LNG design features go beyond code compliance to provide additional layers of protection from an unsafe event. Examples are full containment LNG tank type, mounded refrigerant and heavies' removal vessels, and discretionary vents to the flare.
>
> The full containment type LNG tank has a robust design suited for the local conditions. The LNG tank features include integral secondary containment, foundations on piles with seismic isolators, lateral spreading barriers to control soil liquefaction, concrete coated roof, and no penetrations below liquid level in the primary

> container. The LNG tank design is per [National Fire Protection Association] 59A 2006 edition that requires a safe shutdown earthquake (SSE) design without a loss of containment. No credible failure scenarios were identified for the full containment LNG storage tank.
>
> Over the past 50 years [Chicago Bridge & Iron] has constructed a large portion of the US LNG utility and base load facilities bringing significant design and construction experience to this project. [Chicago Bridge & Iron's] portfolio of completed LNG projects includes some of the world's largest import and export LNG facilities.[83]

Q. Did the Pollution Control Hearings Board consider evidence regarding the safety of the Tacoma LNG Facility in its proceeding?

A. Yes. In the Pollution Control Hearings Board proceeding, PSE presented witnesses regarding the safety of the facility, including lead engineer Matthew Stobart and Dr. Fillipo Gavelli, an expert on LNG facilities and safety regulations. Dr. Gavelli performed his own calculations using information specific to the Tacoma LNG Facility to inform his testimony and support his determination that the Tacoma LNG Facility did not constitute a credible scenario for catastrophic failure under the Pipeline and Hazardous Materials Safety Administration regulations. Dr. Gavelli is a recognized expert in the field and has conducted over fifty site hazard evaluations for LNG facilities, including on behalf of the Pipeline and Hazardous Materials Safety Administration.

The Pollution Control Hearings Board concluded that the testimony offered by Mr. Stobart and Dr. Gavelli was credible and persuasive. In doing so, the

[83] Roberts, Exh. RJR-35, at 64.

Pollution Control Hearings Board gave greater weight to the testimony of Mr. Stobart and Dr. Gavelli than to Dr. Sahu, witness for the Puyallup Tribe:

> The [Pollution Control Hearings] Board finds and concludes that the testimony from Stobart and Dr. Gavelli was credible and persuasive. The [Pollution Control Hearings] Board gives greater weight to Stobart and Dr. Gavelli's testimony based on their expertise with LNG facilities, experience with state and federal regulations for these facilities, and direct knowledge and evaluations of the [Tacoma LNG Facility] design changes.[84]

Accordingly, the Pollution Control Hearings Board rejected the Puyallup Tribe's challenge to the adequacy of the safety review for the Tacoma LNG Facility.

It should be noted that, in the proceeding before the Pollution Control Hearings Board, Dr. Gavelli testified—and the Pollution Control Hearings Board cited in support—that "[t]he siting requirements of 49 C.F.R 193, to which [the Tacoma LNG Facility] is subject, cover the methods and means of managing risks from spills, or design spills, at the facility."[85] Nonetheless, the testimony of the Puyallup Tribe in this proceeding invites the Commission to discount the relevance of these federal safety regulations,[86] which regulations are expressly adopted by reference by the Commission in WAC 480-93-999. Rather than speak to the applicable safety regulations issued by the Pipeline and Hazardous Materials Safety Administration and adopted by this Commission, the testimony on behalf of the Puyallup Tribe speculatively concludes, without analysis or fact, that the Tacoma LNG Facility must necessarily present a safety risk.

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84 Roberts, Exh. RJR-34, at 75:18 – 76:1.
85 Roberts, Exh. RJR-34, at 69:7-8.
86 *See* Sahu, RSX-1T, at 22:20 – 23:4.

Finally, the testimony offered on behalf of the Puyallup Tribe erroneously suggests that the fact the Pipeline Safety section of this Commission asked for additional information about facility safety—as the section is required to do—must necessarily infer that the Tacoma LNG Facility is unsafe.[87] This suggested inference does not correlate with the facts. It is the responsibility of the Pipeline Safety section to delve deeply into and probe a facility's compliance with safety regulations. The only inference to be drawn from the request from the Pipeline Safety section of the Commission for additional information is that it did its job to ensure that the Tacoma LNG Facility is properly designed and engineered to meet the safety regulations governing LNG facilities.

IV. PSE DID NOT INCUR "UNNECESSARY" COSTS IN DEVELOPING, CONSTRUCTING, AND DEFENDING ITS DECISION TO CONSTRUCT THE TACOMA LNG FACILITY

A. PSE's Decision to Develop the Tacoma LNG Facility as a Dual-Use Facility Sited at the Port of Tacoma Was Reasonable and Beneficial to Gas Customers

Q. Is the testimony on behalf of the Puyallup Tribe correct in claiming that the main driver of the costs of the Tacoma LNG Facility was PSE's decision to develop the Tacoma LNG Facility to serve TOTE's marine fuel needs?[88]

A. No. The testimony conveniently ignores or fails to acknowledge the fact that PSE was able to achieve economies of scale by constructing a dual-use facility that made possible the construction of an LNG facility for peak shaving. The costs the

[87] *See* Sahu, RSX-1T, at 21:21 – 22:2.
[88] *See* Sahu, Exh. RSX-1T, at 24:18 – 28:18.

testimony on behalf of the Puyallup Tribe claims are "mainly driven by the design to accommodate TOTE"[89] are, in fact, costs that would be incurred in the development, construction, and operation of any LNG storage facility, regardless of the end-use of the gas liquefied and stored at the facility. The Tacoma LNG Facility has two key purposes: to provide a regulated peak-shaving resource for PSE; and to provide a non-regulated transportation fueling service to the marine and trucking industries. The major benefit to PSE's gas customers from the Tacoma LNG Facility is that PSE was able to construct and operate the least-cost resource identified in its earlier extensive resource planning.

Q. What does PSE make of the testimony offered by the Puyallup Tribe that PSE could have selected a more remote location if the Tacoma LNG Facility had not been intended to provide marine fuel to TOTE?[90]

A. This argument offered on behalf of the Puyallup Tribe ignores the fact that TOTE committed to take LNG for marine fuel, and this commitment was a necessary predicate for the development of the Tacoma LNG Facility due to the economies of scale achieved by the two uses of the dual-use facility.

[89] Sahu, Exh. RSX-1T, at 25:18.
[90] *See* Sahu, Exh. RSX-1T, at 23:18-24.

B. Pretreating Natural Gas is Necessary for the Gas to be Liquefied, Not for Fueling Marine Vessels

Q. Is the testimony offered on behalf of the Puyallup Tribe[91] correct that pretreating pipeline quality gas is needed only for fueling TOTE vessels and "[t]he costs associated with pretreatment … provide no benefit to ratepayers"?[92]

A. No. The unsupported statements that pretreatment is only necessary to meet TOTE's LNG specifications are contrary to all evidence. There is no significant difference between the gas quality needed for TOTE's engines and the gas quality needed for use by PSE's retail gas customers. Pretreatment is necessary for liquefaction. Feed gas entering the Tacoma LNG Facility will contain quantities of nitrogen ("N"), carbon dioxide ("CO_2"), sulfur compounds ("H_2S and odorants"), and water ("H_2O"). If left untreated, CO_2 and H_2O in the feed gas would freeze during the liquefaction process. Therefore, pretreatment is necessary to remove these molecules to avoid riming of the platefin heat exchangers. After pretreatment, but prior to liquefaction of the natural gas, heavy hydrocarbons that may freeze at the cryogenic temperatures encountered downstream would be removed by partial refrigeration.

Furthermore, the suggestion in the testimony on behalf of the Puyallup Tribe that the deposition testimony of a PSE witness supports the suggestion that "[p]retreatment is necessary only because PSE must provide TOTE LNG with a

[91] *See* Sahu, Exh. RSX-1T, at 26:13 – 27:7.
[92] Sahu, Exh. RSC-1T, at 27:3-5.

minimum Methane Number of 80 for use in its vessels"[93] misconstrues the cited deposition testimony. In fact, the cited deposition testimony makes no mention of a "Methane Number."[94] Mr. Stobart was asked elsewhere in his deposition about the Methane Number of the natural gas to be provided to TOTE. Mr. Stobart's testimony merely confirmed that TOTE expected LNG with a minimum Methane Number of 80 and did not link this Methane Number to the need to pretreat feed gas.

C. The Costs Incurred by PSE Due to Significant Changes in the Composition of the Feedstock Were Necessary and Not Excessive

Q. Does PSE agree with the suggestion in the testimony offered on behalf of the Puyallup Tribe that it was unreasonable for PSE to not anticipate a significant change in gas feedstock and that the costs associated with the change are therefore excessive and unnecessary?[95]

A. No. The testimony offered on behalf of the Puyallup Tribe offers no evidence that the historic gas composition on the Northwest Pipeline system had ever been anywhere near the levels seen since 2016. PSE knows that no such evidence exists because it has been connected to the Northwest Pipeline system and has been receiving gas originated in British Columbia since 1957. PSE had never seen any gas quality close to the redesigned level during the sixty-year period that it received gas from British Columbia. When PSE completed the initial design of the Tacoma LNG Facility, the plant had the capability to handle gas of the quality

[93] Sahu, Exh. RSX-1T, at 26:18-20 and n.47 (citing deposition of Matthew Stobart (Feb. 18, 2021)).
[94] *See*, *e.g.*, Sahu, Exh. RXS-24.
[95] *See* Sahu, Exh. RSC-1T, at 28:25 – 29:24.

that was then available. PSE had discussed the changing feedstock with pipelines and producers that produce and sell gas and understood the circumstances that gave rise to increases in ethane content in the 2013-14 period. The most dramatic changes occurred thereafter. The deposition testimony of Mr. Donahue in the Pollution Control Hearings Board proceeding cited in the Puyallup Tribe's testimony addressed this issue. In that testimony, Mr. Donahue testified that the recent increase in the British thermal unit (BTU) factor was beyond what had been seen in the prior forty years.

Furthermore, the cost of the redesign was approximately $5.4 million, and there is no reason to believe that the redesign resulted in significant added costs to the project than if the subsequent gas quality had been known at the time of initial design. The only real incremental costs were the engineering hours to complete the redesign; the installed facility costs would likely have been the same.

D. PSE's Litigation Strategy and Costs Were Responsive to the Scale and Scope of Litigation Initiated by the Puyallup Tribe and Other Appellants

Q. Did PSE's litigation staffing and strategy result in excessive legal fees, as suggested in the testimony on behalf of the Puyallup Tribe?[96]

A. No. The testimony offered on behalf of the Puyallup Tribe is incorrect in suggesting that PSE's litigation staffing and strategy resulted in excessive legal fees in the proceedings defending the decision to construct the Tacoma LNG Facility.

[96] *See* Sahu, Exh. RSX-1T, at 30:1-17.

On December 19, 2019, Advocates for a Cleaner Tacoma, Sierra Club, Washington Environmental Council, Washington Physicians for Social Responsibility, and Stand Earth (collectively, the "Other Appellants") and the Puyallup Tribe each separately appealed the order of the Puget Sound Clean Air Agency issuing the Air Permit to PSE to construct the Tacoma LNG Facility. Those appeals challenged both the Air Permit and the Supplemental Environmental Impact Statement issued under the State Environmental Protection Act.

In the consolidated appeals, the Puyallup Tribe and Other Appellants raised over forty issues. In addition, the administrative record reflects the protracted discovery and voluminous motions filed by the Puyallup Tribe and Other Appellants. There were twenty-five prehearing motions, and PSE was compelled to produce approximately 70,000 documents. Approximately, 140 hours of depositions were taken over a series of weeks. The parties filed approximately 1,500 exhibits to the record, of which around 50 exhibits were ultimately admitted by the Pollution Control Hearings Board. The defending parties, the Puget Sound Clean Air Agency and PSE, successfully eliminated eighteen of the issues before the hearing through various dispositive motions. Most of the remaining issues involved highly technical analysis and complex scientific principles spanning a broad range of topics that required testimony of different expert witnesses in a variety of specialty areas.

On November 19, 2021, following an evidentiary hearing that lasted ten days, the Pollution Control Hearings Board issued two orders—PCHB Decision 11447[97] and PCHB Decision 11448[98]—addressing the remaining twenty-three issues. These two orders reflected the Pollution Control Hearings Board's review of the 350 admitted exhibits and testimony from nineteen witnesses regarding State Environmental Protection Act issues (five on behalf of the Puyallup Tribe and Other Appellants, ten on behalf of PSE, and four on behalf of the Puget Sound Clean Air Agency) and thirteen witness regarding Air Permit issues (one on behalf of the Puyallup Tribe and the Other Appellants; nine on behalf of PSE; and three on behalf of the Puget Sound Clean Air Agency). By any measure, the Puyallup Tribe and the Other Applicants aggressively litigated issues related to both State Environmental Protection Act and Air Permit in a far-reaching and wide-ranging appeal that required multiple attorneys to defend.

Nonetheless, the testimony on behalf of the Puyallup Tribe accuses PSE of having a "very large (and presumably expensive) legal team."[99] PSE's response to the appeals of the Puyallup Tribe and the Other Appellants was directly responsive to the number and scope of issues raised by those parties and the aggressive tactics used in discovery. PSE's legal spend was largely driven by the Puyallup Tribe, through Dr. Sahu raising numerous issues and misleading claims (some of which, as discussed previously, are raised again in this proceeding) across a broad range of niche specialties (all of which he claimed expert knowledge) that were

[97] *See* Roberts, Exh. RJR-34.
[98] *See* Roberts, Exh. RJR-32.
[99] Sahu, Exh. RSX-1T, at 30:7.

unsupported and repeatedly rejected by the Pollution Control Hearings Board. This long list of spurious legal issues substantially increased PSE's legal costs.

Dr. Sahu's claimed expertise in multiple areas required lawyers and witnesses covering different specialities to be present during portions of his deposition which addressed and often conflated multiple issues. For example, his prefiled testimony in the Pollution Control Hearings Board appeal presented eleven separate "opinions" covering allegations:

(1) of emissions impacts on the Puyallup Tribe;

(2) of lack of rigor in the Puget Sound Clean Air Agency's analysis;

(3) that the Tacoma LNG Facility was a major source of air emissions;

(4) that air modeling for SO_2 and particulate matter ($PM_{2.5}$) were flawed;

(5) that the Puget Sound Clean Air Agency's conclusion finding that hazardous air pollutants and toxic air pollutants were within regulatory threshold was unreliable;

(6) that the underlying process design was not sufficiently mature for permitting;

(7) that the Puget Sound Clean Air Agency's best available control technology for toxins (tBACT) analysis was insufficient;

(8) that the Puget Sound Clean Air Agency's best available control technology analysis was insufficient

(9) that PSE withheld information from the Puget Sound Clean Air Agency;

(10) that Condition 41 of the permit does not appropriately constrain the Tacoma LNG Facility to the use of Canadian gas; and

(11) that nitrous oxide ("N_2O") emissions were materially underestimated.

The breadth of this unsupported laundry list of opinions certainly contributed to PSE's defense needs and resulting legal fees.

Q. Is PSE aware of any instance in which the Pollution Control Hearings Board agreed with any opinions or arguments offered by Dr. Sahu?

A. No. Time and time again, the Pollution Control Hearings Board rejected Dr. Sahu's contentions, including:

(1) at pages 24-28 and page 31 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board rejects Dr. Sahu's argument that meteorological data utilized in modeling was not representative of site conditions;

(2) at pages 44-45 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board rejects Dr. Sahu's contention that the Tacoma LNG Facility is a fuel conversion facility;

(3) at page 45 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board rejects volatile organic compound emissions are underestimated stating, that "Dr. Sahu presented no calculations or analysis to support his opinion…";

(4) at page 46 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board rejects Dr. Sahu's conclusion that bypass emissions should be included in emissions calculation and finding "clear and convincing evidence that Dr. Sahu's position is contrary to the air agencies' practice….";

(5) at page 47 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board finds that "Dr. Sahu's opinion runs counter to the definition of potential to emit in WAC 173-400-030(76)….";

(6) at page 49 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board rejects Dr. Sahu's allegations that the flare would not achieve a 99% destruction of volatile organic compoiunts, finding that "Dr. Sahu did not perform any analysis to evaluate the flare's anticipated performance";

(7) at page 65 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board finds that PSE's testimony "refuted Dr. Sahu's testimony" about exit gas temperature;

(8) at page 68 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board critiques Dr. Sahu's "algebraic calculations" and "scant evidence";

(9) at page 81 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board cites that Dr. Sahu admitted that he did not have support for his critique of toxic air pollutant analysis; and

(10) at pages 92-93 of Decision 11448, Exh. RJR-32, the Pollution Control Hearings Board rejected Dr. Sahu's analysis of Condition 41 of the permit.

Even where the decisions of the Pollution Control Hearings Board do not expressly identify testimony offered on behalf of the Puyallup Tribe by Dr. Sahu, the Pollution Control Hearings Board decisions reject almost every single contention offered by Dr. Sahu on behalf of the Puyallup Tribe regarding emissions analyses, best available control technology analyses, air modeling, and sufficiency of the Air Permit and the permitting process. In sum, the strategy of the Puyallup Tribe and Dr. Sahu to raise numerous unsupported issues before the Pollution Control Hearings Board without regard to strength of argument or legitimacy significantly and unequivocally contributed to the magnitude of legal fees of which the testimony on behalf of the Puyallup Tribe now seeks to complain.

V. CONCLUSION

Q. Does this conclude your prefiled testimony in support of the multiparty settlement for the Tacoma LNG Facility?

A. Yes, it does.