PSE Response to WUTC Staff Data
Request No. 031

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Docket UG-230393
Puget Sound Energy
Tacoma LNG Tracker

WUTC STAFF DATA REQUEST NO. 031:
REQUESTED BY: Crystal Oliver

Re: Communication with PSCAA

In response to Public Counsel's Data Request No. 46, PSE responded that "PSE has proposed to PSCAA to limit production at the facility to 250,000 gpd including boil-off gas that is re-liquefied and recycled back into the storage tank unless and until PSCAA confirms that it agrees with PSE's understanding. PSE called PSCAA's attention to the distinction between the production of LNG from pipeline natural gas and the total LNG transferred to the storage tank, as identified in PSE's Response to Public Counsel Data Request No. 45 on August 11, 2023, and followed up with additional information on September 6, 2023."

a. Provide a copy of PSE's proposal to PSCAA regarding boil-off gas that is re-liquefied and recycled back into the storage tank.
b. Provide a copy of communications PSE sent to PSCAA calling attention to distinction between LNG that is "produced" and "transferred."
c. Provide a copy of the "additional information" provided on September 6, 2023.
d. What sort of processing is required in order for boil-off gas to be recycled back to the tank?

Response:

a. Attached as Attachments A and B to Puget Sound Energy's ("PSE") Response to WUTC Staff Data Request No. 031 are copies of letters regarding PSE's proposal to PSCAA regarding boil-off gas that is re-liquefied and recycled back into the storage tank.

b. Please see the Attachments referenced in subpart a above.

c. Please see the Attachments referenced in subpart a above.

d. Boil-off gas does not require processing in order to be recycled back into the storage tank. Processing refers to the multiple steps employed to remove the unwanted contaminants (e.g., CO_2, heavy hydrocarbons, mercury) from pipeline gas prior to it being chilled/liquefied. Gaseous contaminants are routed to the

flare for destruction. Liquid contaminants are stored and ultimately transported offsite. This processing only occurs once when pipeline natural gas first enters the system. By contrast, the boil-off gas is just compressed to bring it up to the same pressure as the processed pipeline gas and then liquefied. No contaminant streams are generated as a result of this recycling of the boil-off gas. During idle periods where liquefaction is not occurring, the boil-off gas is returned to the gas line which services the facility.

ATTACHMENTS A-B to
PSE's Response to
WUTC Staff Data Request No. 031

PUGET SOUND ENERGY

Puget Sound Energy
P.O. Box 97034
Bellevue, WA 98009-9734
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August 11, 2023

BY EMAIL

Mr. Ralph Munoz (RalphM@pscleanair.org)
Puget Sound Clean Air Agency
1904 3rd Avenue, Suite 105
Seattle, WA 98101-3317

Re: Tacoma LNG (Registration No. 30022)
Condition 33: Notification of Possible Permit Deviation

Dear Ralph:

This letter is intended to alert you to a possible deviation related to condition 33 of the Puget Sound Energy (PSE) Tacoma LNG facility's Order of Approval for NOC No. 11386A (permit).

Condition 33 of the permit requires that the Tacoma LNG facility not produce and/or process more than 250,000 gallons per day (gpd) of liquefied natural gas (LNG). This limitation was identified by PSE in the Notice of Construction application as a means to cap the quantity of off-gas routed to the flare from the pretreatment and heavies removal steps. PSE has never produced more than 250,000 gpd of LNG from pipeline natural gas. However, once LNG is produced, it is routed to the storage tank. A small percentage of the LNG in the storage tank boils off daily as a normal part of the process. This boil off gas (BOG) has already gone through all of the treatment steps and so is routed to dedicated BOG compressors that only handle this recycled/previously treated gas. The compressed BOG is then mixed with fully treated pipeline gas and passed through the liquefaction unit to convert the mixed gas streams to a liquid state. The LNG is then returned to the storage tank.

We are conservatively reporting an exceedance of the condition 33 limit on May 18, 2023. Although we maintain that the limit was intended to constrain the amount of pipeline gas being processed through the amine pretreatment system and heavy hydrocarbon removal steps (and not include the amount of BOG run back through the liquefaction system), the permit is not clear on this point. Therefore, we are conservatively reporting this event with the understanding that the report will be withdrawn if PSCAA agrees that BOG being re-liquefied is not counted towards the 250,000 gpd limit in condition 33.

PSE acknowledges that if condition 33 applies to the combined treated gas and reliquefied LNG, this report is being filed late. There has not been a clear understanding as to the scope of condition 33. We hope that by filing this report we can initiate a formal determination of what gas flows are counted towards the production limit.

We look forward to further discussion on condition 33. In the meantime, if you have any questions, please do not hesitate to contact me at (425) 456-2908 or at Dustin.Cornidez-Pittman@pse.com.

Sincerely on behalf of PSE,

Dustin Cornidez-Pittman

cc (by email):

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Lorna Luebbe
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Tom Wood

PUGET SOUND ENERGY

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September 6, 2023

BY EMAIL

Mr. Ralph Munoz (RalphM@pscleanair.org)
Puget Sound Clean Air Agency
1904 3rd Avenue, Suite 105
Seattle, WA 98101-3317

Re: Tacoma LNG (Registration No. 30022)
Condition 33 Compliance Strategy

Dear Ralph:

This letter is in follow up to my letter dated August 11, 2023 in which I explained Puget Sound Energy (PSE) Tacoma LNG facility's strategy for complying with condition 33 of the Order of Approval for NOC No. 11386A (permit).

Condition 33 of the permit requires that the Tacoma LNG facility not produce and/or process more than 250,000 gallons per day (gpd) of liquefied natural gas (LNG). The facility contracting as well as the permit application were based on the assumption that this limit applied to the amount of LNG produced each day from natural gas (i.e., the net production). The limit was not intended to include the boil-off gas (BOG) generated in the storage tank and that is recycled back into the storage tank. The BOG does not go through any of the processing steps that generate air emissions. [1]

In my August 11 letter, I informed you of this ambiguity and that on May 18, 2023 the gross LNG volume transferred into the storage tank exceeded 250,000 gpd. I subsequently reviewed the net production values and gross quantities of LNG moved into the storage tank dating back to the facility start-up date (January 5, 2022) and prepared Table 1 below. As you can see, the production of LNG from pipeline natural gas has never exceeded 250,000 gpd. However, on a handful of days the gross quantity of LNG transferred into the storage tank was more than 250,000 gpd. This reflects BOG that was recycled into the storage tank. The first three of these days occurred during the acceptance testing where the EPC contractors were required by contract to demonstrate that the facility could produce 237,500 gpd of LNG from pipeline natural gas. February 21, 2022 was the first day of stack testing where, consistent with the testing protocol, the plant was producing close to its maximum allowable capacity so as to

[1] Once LNG is processed/produced, it is routed to the storage tank. A small percentage of the LNG in the storage tank boils off daily as a normal part of the process. This BOG has already gone through the extensive treatment process and so is routed directly to dedicated BOG compressors without any processing. The compressed BOG is then mixed with fully treated pipeline gas and passed through the liquefaction unit to convert the mixed gas streams to a liquid state. The LNG is then returned to the storage tank.

create the worst case operating scenario for demonstrating compliance with the NOx, CO, SO2, PM and volatile organic compound emissions. As was detailed in our April 27, 2022 letter to you, during the 1-hour stack test runs, production was averaging between 241,000 and 246,000 gpd. We operated the processing equipment venting to the flare during emissions testing close to the maximum level so as to create the most difficult conditions in which to demonstrate compliance. As the testing report documented, even under these challenging conditions, the plant was compliant with its permit requirements.

Table 1.

Date	LNG Volume Added to Tank (gallons)	LNG Production Volume (gallons)
January 7, 2022	264,898	244,585
January 8, 2022	260,794	240,687
January 9, 2022	264,159	243,611
February 21, 2022	259,401	239,907
May 11, 2023	253,035	239,396
May 17, 2023	256,547	233,780
May 18, 2023	257,508	234,076
May 19, 2023	250,026	227,016
May 21, 2023	250,060	227,869

Table 1 also identifies each of the days in May 2023 where LNG production was below 250,000 gpd, but the gross volume of LNG transferred to the storage tank exceeded 250,000 gpd. On no other days besides those in Table 1 did the total amount of LNG transferred into the storage tank exceed 250,000 gallons. On no day at any time did production volume of LNG from pipeline natural gas exceed 250,000 gpd.

We conservatively reported an exceedance of the condition 33 limit relating to the quantity of LNG transferred into the storage tank on May 18, 2023. We continue to believe that the condition 33 limit constrains the amount of pipeline gas being processed through the amine pretreatment system and heavy hydrocarbon removal steps and not the amount of LNG transferred into the storage tank (which includes recompressed/liquefied BOG). Nonetheless, I wanted to ensure that you were aware of each of the days since plant startup where the amount of LNG transferred into the storage tank exceeded 250,000 gallons. Also, until we confirm with you that the agency agrees with our understanding of condition 33, we have imposed the following procedures to limit the amount the LNG transferred to the storage tank to 250,000 gpd or less:

1. Trained the shift operators that the condition 33 limit should be assumed to apply to the amount of LNG transferred to the storage tank unless and until notified differently;
2. Established a totalizer that alarms when 220,000 gallons of LNG have been transferred to the storage tank in any calendar day. This allows the operator to adjust the production rate to ensure that more than 250,000 gallons of LNG are not transferred to the storage tank in a day; and
3. Set flow control to 170 gallons per minute which equals no greater than 244,800 gpd of transfer to the storage tank.

We look forward to further discussion on condition 33. In the meantime, if you have any questions, please do not hesitate to contact me at (425) 456-2908 or at Dustin.Cornidez-Pittman@pse.com.

Sincerely on behalf of PSE,

Dustin Cornidez-Pittman

cc (by email):

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Evy Kontos
Ruth Juris
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