



Citizens for a Healthy Bay

November 21, 2018

535 Dock Street
Suite 213
Tacoma, WA 98402
Phone (253) 383-2429
chb@healthybay.org
www.healthybay.org

Puget Sound Clean Air Agency
Attn: Public Comment on DSEIS, PSE LNG Project
1904 Third Ave, Suite 105
Seattle, WA 98101
publiccomment@psccleanair.org

Re: Comments on Puget Sound Energy (PSE) Tacoma LNG Facility draft Supplemental Environmental Impact Statement (SEIS)

Executive Director
Melissa Malott

To Whom It May Concern,

Thank you for providing the opportunity to review and comment on the PSE Tacoma LNG Facility SEIS.

Board of Directors
Brice Boland
Sherrie Duncan
Desiree Wilkins Finch
Bryan Flint
Barry Goldstein
Jerry Hallman
Kelly McCord
Sheri Tonn

Citizens for a Healthy Bay (CHB) is a 28-year-old organization whose mission is to represent and engage people in the cleanup, restoration, and protection of Commencement Bay, its surrounding waters and natural habitat. We are a 501(c)3 nonprofit providing practical, solutions-based environmental leadership in the Puget Sound area. We work side-by-side with residents, businesses, and government to prevent and mitigate pollution and to make our community healthier and more vibrant.

Staff and expert members of CHB's Policy and Technical Advisory Committee have reviewed the SEIS. Due to the significant amount of missing and outdated information, as well as our conclusion that this project will increase greenhouse gas (GHG) emissions, CHB is opposed to the completion of the LNG facility. We also found the SEIS to be extremely difficult to understand for lay people, which will prohibit the public from participating in this process. We ask the Puget Sound Clean Air Agency (PSCAA) to redraft the SEIS using accurate, up-to-date figures in its analysis, and reissue the SEIS for public review and comment. Our comments are outlined below, in addition to our letter dated October 26, 2018 and oral testimony from staff on October 30, 2018.

A tax-exempt
501(c)(3) Washington
nonprofit corporation

Background

In 2014, PSE proposed building a new LNG facility in the Tacoma Tidelands. PSE stated the project is needed to provide fuel to TOTE Maritime and other marine shipping customers to meet emissions standards and provide fuel to residential customers during times of increased energy demand. In early 2018, PSCAA determined that a SEIS was needed because the original EIS did not provide quantitative analysis of the GHG emissions from the proposed project. The SEIS serves as a life cycle assessment (LCA) of GHGs, from extraction to combustion.

Methane Gas Source and Leakage

The SEIS' conclusion that the LNG project will result in a GHG reduction hinges on the requirement that all the methane gas comes from British Columbia (BC). The SEIS assumes the BC network has less fugitive emissions because flaring is prohibited and because of their "comprehensive drilling and production regulations that reduce methane emissions." Literature shows that BC's methane leakage rate is 2.5-6 times higher than previously reported^[1, 2]. The LCA assumes the leakage rate in BC to be 0.32% - this leakage rate is extremely low and needs to be raised. **The SEIS should be revised by using a 3% leakage rate, to more accurately reflect the methane leakage that happens on the ground, and then reissued for public comment**^[3].

Additionally, as the latest version of the 2018 *Flaring and Venting Reduction Guideline* from the BC Oil and Gas Commission shows, methane flaring is permitted in BC^[4]. **This literature should be reviewed and the SEIS should be revised to show the emissions resultant from methane flaring in BC, and then reissued for public comment.**

Alternatives Considered

The SEIS uses WAC 197-11-620(1) to justify only considering two alternatives, the proposed and no action alternatives. The WAC states, "The SEIS should not include analysis of actions, alternatives, or impacts that is in the previously prepared EIS." Consequently, the SEIS *should* have considered alternatives that were not analyzed in the prepared EIS. On page 65 of Appendix C of the SEIS, several alternatives to meet the stated need are listed: marine gasoil, exhaust scrubbers, and low-sulphur fuel oil. In addition to these alternatives, the following operational changes can be employed to decrease emissions: optimized ship trim, slow steaming, hull cleaning, enhanced network routing, and engine maintenance^[5]. **The SEIS should be updated with additional alternatives that serve to meet the stated need, and then reissued for public comment.**

Extraction Method

The SEIS fails to outline how the method of natural gas extraction. As stated on page 36 of Appendix C, "GHG emissions from petroleum production depend on the crude oil type and the extraction method." The same is true for methane gas. Methane gas extraction itself has associated fugitive emissions, and can contaminate ground and surface water^[6]. **The SEIS should be revised to include the methane gas extraction method, and then reissued for public comment.**

[1] Atherton et. al. (2017). Mobile measurement of methane emissions from natural gas developments in northeastern British Columbia, Canada. *Atmospheric Chemistry and Physics*, 17, 12405–12420.

[2] Wisen et. al. (2017). *A Portrait of Oil and Gas Wellbore Leakage in Northeastern British Columbia, Canada*. Conference Paper for Geo Ottawa. Oct. 2017.

[3] Larson, K. et. al. (2015). *Untapped Potential: Reducing Global Methane Emissions from Oil and Natural Gas Systems*. Rhodium Group.

[4] BC Oil and Gas Commission. (2018). *Flaring and Venting Reduction Guideline. Version 5.1 May 2018*.

[5] Wan, A. et. al. (2018). Decarbonizing the international shipping industry: Solutions and policy recommendations. *Marine Pollution Bulletin*, 126, 428-535.

[6] Sovacool, B.K. (2014). Cornucopia or curse? Reviewing the costs and benefits of shale gas hydraulic fracturing (fracking). *Renewable and Sustainable Energy Reviews*, 37, 249-264.

Fugitive Emissions

The language in the SEIS is misleading concerning what fugitive emissions are being included in the LCA.

LNG Storage

Page 2-3 states, "The storage tank would be vapor- and liquid-tight without losses to the environment." The very following paragraph says, "GHG emissions would also occur from fugitive losses that occur from valves associated with the LNG storage tank." **This language and subsequent emissions calculations should be revised to accurately reflect the volume of fugitive emissions that occur from LNG storage, and the SEIS reissued for public comment.**

LNG Delivery to TOTE and Others

Page 2-4 states, "Fugitive GHG emissions would occur from valves and piping associated with the transfer of LNG to TOTE's ships, and from LNG loading to other marine vessels." But then goes on to say on page 2-5 "LNG bunkering of ships at the TOTE terminal would not produce any fugitive emissions." **This language and subsequent emissions calculations should be revised to accurately reflect the volume of fugitive emissions that occur from bunkering operations, and the SEIS reissued for public comment.**

Local LNG Transport

Page 30 and 31 of Appendix C states, "Since the natural gas for the Tacoma LNG project is supplied directly by a transmission pipeline, the fugitive emissions associated with transmission line will be attributed to Tacoma LNG emissions, but the local delivery or distribution portion will be estimated as zero." Fugitive methane emissions occur at every juncture between extraction and combustion^[3, 6]. Fugitive emissions will result from trucking LNG from the Tacoma facility to the Gig Harbor facility, and by whatever other means are used to transport LNG. **This language and subsequent emissions calculations should be revised to accurately reflect the volume of fugitive emissions that occur from local transport operations, and the SEIS reissued for public comment.**

No Action Alternative

The description of the No Action alternative (NAA) is inaccurate, and makes the NAA seem worse than it actually is by assuming a 1:1 displacement of LNG with heavy diesel fuel (Appendix C p. 36). The described NAA does not reflect the reality of the current situation, and needs to be updated.

Peak Shaving

The NAA assumes that PSE will fuel peak shaving generators using diesel fuel, despite currently using natural gas to achieve peak shaving needs. **This language and subsequent emissions calculations should be revised to show that NAA peak shaving operations are achieved using natural gas, not diesel, and the SEIS should be reissued for public comment.**

On Road Trucking and Truck-to-Ship Bunkering

The NAA assumes all trucking is achieved with the use of diesel fuel, even though biodiesel and renewable diesel are available, as referenced on page 35 of Appendix C. What evidence supports this assumption that all associated trucking is currently achieved with heavy diesel fuel? **This language in the SEIS and subsequent emissions calculations should be revised to accurately reflect the fuel type and emissions that occur from NAA on road trucking and truck-to-ship bunkering, and the SEIS should be reissued for public comment.**

Use of Marine Diesel as a Marine Fuel

The NAA assumes without LNG, all marine vessels would operate on heavy marine diesel. This is not true of the current shipping fleet. TOTE itself is currently meeting emissions standards by operating on ultra-low sulphur diesel marine gasoil [7].

Matson, another large shipping company in the Port of Tacoma, has actively removed LNG infrastructure from its new vessels, and plans on using this ultra-low sulphur gasoil to meet standards [8]. Additionally, the NAA assumes that without LNG, no marine shipping companies will adopt new fueling protocols to meet the International Maritime Organization's new emissions standards, even though they will be required to do so. **This language in the SEIS and subsequent emissions calculations should be revised to accurately reflect the fuel type and emissions that occur from NAA shipping operations, and the SEIS should be reissued for public comment.**

Proposed Alternative

The description of the proposed alternative (PA) is inaccurate, and makes the PA seem better than it actually would be by assuming a 1:1 displacement of LNG with heavy diesel fuel (Appendix C p. 36). The described PA does not reflect reality, and needs to be updated.

Use of LNG in non-TOTE Marine Vessels

The LCA assumes 46.3-69.15% of the total LNG produced will be sold to marine application customers other than TOTE, despite this assumption not being outlined in the original EIS, and despite not having any confirmed customers other than TOTE. **Because there are no other confirmed customers, the PA end use applications should be adjusted to reflect this, subsequent GHG emissions should be recalculated, and the SEIS should be reissued for public comment.**

Use of LNG in On-Road Trucks

The LCA assumes with the LNG facility in place, all on-road trucking will be fueled by LNG. The assumption that all trucks are LNG capable and ready is not reflective of reality. **Because not all associated trucks are capable or ready to run on LNG, the PA end use applications should be adjusted to reflect this, subsequent GHG emissions should be recalculated, and the SEIS should be reissued for public comment.**

Peak Shaving

The LCA assumes that LNG will be used for peak shaving needs for only 10 years, and then will "presumably [be sold] for additional marine fuel applications." (Appendix C p. 24). To stay consistent with the 1:1 displacement assumption, the NAA should show diesel being used to fuel peak shaving for the first 10 years, and then revert back to natural gas. **The PA end use applications should be adjusted to show peak shaving switching back to natural gas after 10 years, subsequent GHG emissions recalculated, and the SEIS should be reissued for public comment.**

[7] Schuler, M. (2018, February 26). " TOTE Maritime Completes 'Phase 1' of Orca-class LNG Conversions." *gCaptain*. Accessed from <https://gcaptain.com/tote-maritime-completes-phase-1-of-orca-class-lng-conversions/> on November 17, 2018.

[8] *Personal communication with Matson employee – Erin Dilworth (September 6, 2018).*

[9] Anderson, M., Salo, K. & Fridell, E. (2015). Particle and gaseous emissions from an LNG powered ship. *Environmental Science & Technology*, 49(20), 12568-12575.

Methods

Emissions to be Reviewed

End-use emissions from use of LNG in TOTE and other marine vessels are included in the LCA. The SEIS fails to include the emissions resultant from the incomplete combustion of methane in marine engines, known as methane slip. Emissions from uncombusted methane are anywhere from 7-36g/kg LNG, depending on the engine load and combustion temperature ^[9]. **This language in the SEIS and subsequent emissions calculations should be updated to accurately reflect the rate of methane slip, and the SEIS should be reissued for public comment.**

GHGs used as Life Cycle Criteria

This life cycle assessment only analyzes carbon dioxide, methane and nitrous oxide. Given that the stated need of the project is a "cleaner" fuel source for marine applications, this LCA should include particulate matter, as particulate matter is both a contributor of global warming and a product of both diesel and LNG combustion ^[9]. **The SEIS should be updated to include particulate matter as a GHG, and then reissued for public comment.**

This LCA uses the 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report as its reference for Global Warming Potential (GWP) values, despite the availability of the IPCC's more recent 2013 Fifth Assessment. Additionally, this LCA uses the 100-year GWPs for all GHGs analyzed, stating that "[t]he 100-year GWP is consistent with the time horizons for the Tacoma LNG project." This assertion is demonstrably false, as the Tacoma LNG project will only be operational for 40 years, and methane, the primary component of LNG, is 85-times more potent than carbon dioxide in the first 20-years after it is emitted ^[10]. Using the 100-year GWP obscures the real climate change impacts of this project by effectively smoothing the rate of global warming over a longer period of time. When the 20-year GWPs from the 2013 report are used to calculate the GHG emissions from scenarios A and B, the LNG project produces 307,825.60 - 666,975.32 more tons of GHG emissions per year, compared to the NAA (see attached Excel file). **The SEIS should be updated using the 20-year GWPs from the 2013 IPCC report, and then reissued for public comment.**

Cut Off Criteria

Emissions that represent less than 1% of the total GHG emissions from well to combustion are excluded from this LCA. The choice to exclude these emissions was not justified with peer-reviewed guidelines or research - this decision requires justification, which should be included as a reference in the SEIS. Additionally, these smaller sources of emissions should be included in the LCA, as multiple small sources of emissions that are excluded could add up to a big impact. Especially since the SEIS touts such a small GHG benefit, smaller emission sources from the proposed alternative should be included, as they could flip the SEIS' conclusion. **The SEIS should be updated with credible references that justify the cut off criteria and should include emission sources less than 1% of the total in the LCA, and then should be reissued for public comment.**

Analysis

Carbon Content of LNG

Both pages 71 and 74 of Appendix C state, "Note that the emissions from the LNG facility plus upstream emissions are higher than those of the no action alternative. However, the carbon content of LNG results in lower end use emissions; so, the net life cycle GHG emissions are reduced under most circumstances." Page 117 of Appendix C shows "placeholder values" being used for the fuel properties of natural gas, which would then be used to calculate the fuel properties - including the carbon content - of LNG. It is completely unacceptable to

[10] IPCC (2013). *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

release a LCA that uses placeholder values, especially for the components of the analysis that are responsible for "result[ing] in lower end use emissions." Further, page 88 of Appendix C shows that the values of direct emissions from the LNG facility operation "are representative and actual data have been requested." This LCA is not complete until accurate data on the fuel properties of the natural gas to be used have been attained and incorporated into the analysis. Furthermore, what are the circumstances under which the end use emissions from LNG do not result in a net reduction of GHGs? These scenarios need to be fully described to allow for complete and transparent review from the public. **The SEIS should be revised by using accurate fuel property data of the natural gas, and then reissued for public comment.**

Due to the significant amount of missing and outdated information, as well as our conclusion that this project will increase GHG emissions, CHB is opposed to the completion of the LNG facility. We ask PSCAA to redraft the SEIS using accurate, up-to-date figures in its analysis, and reissue the SEIS for public review and comment. Please contact me if there are questions regarding my comments. Thank you for the opportunity to provide feedback on the Tacoma LNG SEIS.

Sincerely,

A handwritten signature in black ink that reads "Melissa Malott". The signature is written in a cursive, flowing style.

Melissa Malott
Executive Director, Citizens for a Healthy Bay
mmalott@healthybay.org, (253) 383-2429