

November 20th, 2018

Puget Sound Clean Air Agency
ATTN: Public Comment on DSEIS, PSE LNG Project
1904 Third Ave, Suite 105
Seattle, WA 98101

Dear Puget Sound Clean Air Agency,

We are a coalition of environmental, health, and social justice groups writing in response to the draft Supplemental Environmental Impact Statement (SEIS) for greenhouse gas (GHG) emissions for the Puget Sound Energy (PSE) liquefied natural gas (LNG) facility in the Port of Tacoma. We would like to thank you for requiring this GHG SEIS and for taking seriously the environmental impacts of this project. We also stand with the Puyallup Tribe in opposition to the LNG facility.

Having examined the draft SEIS, we have a number of serious concerns when it comes to the impact of this facility on public health and climate change. The entire list of these concerns is detailed in the attachment, but we would like to raise some of the main points directly in this letter. These include:

Not Using the Best Available Science - Our first concern is that the SEIS is not using the best available science in calculating its greenhouse gas emissions. The SEIS relies upon 11-year old global warming potential (GWP) values, for methane in particular, rather than the most recent scientific evidence from 2016.¹ Merely making this one modification in using the 2016 GWP values, reveals that the LNG plant will actually produce more GHGs than the No Action Alternative.

Using 100-year GWP values instead of 20-year values - We are also concerned that the SEIS uses the 100-year GWP values, and not the more immediate 20-year GWP values. We understand that the 100-year values have traditionally been used for this type of analysis, but the looming impacts of climate change warrant using the 20-year values. On the same day that the SEIS was released, the United Nations' Intergovernmental Panel on Climate Change (IPCC) released their latest report² outlining imminent climate change impacts. Their report indicates that we have only 12 years to change our energy fuel mix away from fossil fuels and towards renewable technologies, otherwise we will face severe environmental consequences in 2040. Their estimates are not based on 100 year projections, but 12 and 22 year projections. By appropriately analyzing the impacts over the next 20 years, the GHG model demonstrates that

¹ <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2016GL071930>

² https://www.ipcc.ch/news_and_events/pr_181008_P48_spm.shtml

the LNG project is actually more than 50% dirtier from a GHG perspective than the No Action Alternative.

British Columbia Methane Leakages Rates Used are Highly Suspect - We are also concerned about the purported B.C. methane leakage rates used in the GHG emissions modeling. The SEIS provides three references for B.C. methane leakage rates, all of which require further review to fully determine if they are legitimate representations of B.C.-wide fracked gas methane leakage rates. We know, for instance, that one of them (Brandt et al, 2017³) is derived from a Master's Thesis covering gas wells in Alberta, not B.C., that states that the emissions examined in the report are lower than industry average due to a variety of reasons. Therefore, it would be inappropriate to extrapolate the results of such a study to all B.C.-fracked gas wells. The SEIS also fails to incorporate recent, peer-reviewed reporting indicating that B.C. methane leakage rates are severely underreported⁴. As a result, we do not believe the SEIS's methane leakage rates are accurate; instead we believe that they need to be re-evaluated and likely revised to a higher value. We suspect that using a realistic methane leak rate would also show that the GHG emissions of the LNG plant are greater than the No Action Alternative.

No Guarantees that Gas will only come from B.C. - The draft SEIS requires that all of the gas for the facility will be sourced from British Columbia. During the recent gas pipeline explosion in B.C. on October 10th, it is our understanding that PSE used gas from North Dakota. The methane leak estimates from North Dakota are noticeably higher than those reported from B.C. PSE's own 2017 10K filing with the Securities and Exchange Commission (SEC) shows that in 2017 they obtained gas from British Columbia (54.8%), Alberta (19.1%) and the United States (26.1%). We have concerns that PSE will source gas from places other than B.C., as well as concerns about their accountability for their sourcing.

The remainder of our comments are described in the attachment. This draft SEIS does not account for the full climate impacts of fracked gas. In light of these serious concerns, we respectfully request that you address these concerns and reissue the SEIS with a new, full public comment period. We look forward to your response.

Sincerely,

³ https://ngi.stanford.edu/sites/default/files/110_Brandt.pdf

⁴ <https://doi.org/10.5194/acp-17-12405-2017>

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Technical Concerns

The draft SEIS uses an outdated methane global warming potential (GWP) - GWP is a measure of how much heat a greenhouse gas traps in the atmosphere relative to carbon dioxide (CO₂). CO₂ has a GWP value of 1. Methane, however, has a much larger GWP for timescales of 500 years or less. The draft SEIS uses the United Nations' 2007 value of 25 for the 100-year GWP of methane. However, they should be using the peer-reviewed 2016 value of 32⁵. This single modification in SEIS GHG model makes the LNG plant dirtier from a greenhouse gas emissions perspective than if the LNG plant were not built. The following chart shows different GWP values for 20 and 100 year periods based on IPCC reports in 2007 and 2013, and an independent scientific study completed in 2016. The SEIS used the lowest values possible.

Report	20-year GWP	100-year GWP
2007 IPCC AR4	72	25
2013 IPCC AR5	84	28
2016 Scientific Study (authors include the lead scientist from 2013 IPCC report)	96	32

Methane is significantly more potent in the short-term, yet the SEIS analysis only looks at the long-term impact - Methane has a much higher GWP than carbon dioxide over time periods of less than 500 years. The draft SEIS analysis is based on the 100-year GWP of methane. The IPCC report released a report on October 8th, indicating that we must change our energy fuel mix in the next 12 years to avoid the worst effects of climate change. Therefore, the SEIS should use the 20-year GWP, as that is the timeframe when action is required. Using the most recent 20-year GWP value of 96 makes the LNG plant 50% dirtier than the No Action Alternative.

Lack of evidence that B.C. fracked gas is as clean as claimed - The draft SEIS falsely assumes that B.C. fracked gas would result in a GHG emissions reduction. The SEIS provides three references for B.C. methane leakage rates, all of which require further review to fully determine if they are legitimate representations of B.C.-wide fracked gas methane leakage rates or not. We know, for instance, that one of them (Brandt et al, 2017⁶) is derived from a Master's Thesis covering Canadian gas wells outside of B.C. that states that the emissions examined in the report are lower than industry average due to a variety of reasons. It is inappropriate to extrapolate the methane leakage rate from that report to all of B.C. fracking wells. Additionally,

⁵ <https://doi.org/10.1002/2016GL071930>

⁶ https://ngi.stanford.edu/sites/default/files/110_Brandt.pdf

the SEIS fails to incorporate methane leakage data from a 2017 peer-reviewed report⁷ and a 2018 non-profit foundation report⁸, that use empirical, independent physical studies at well sites. The 2018 report found that 85 percent of active wells are directly venting methane daily, and that those leakages have been historically underreported. The same report found that methane emissions in B.C. are significantly higher than reported by industry.

No guarantee that all of the fracked gas would come from B.C. - The draft claims that all of the gas will be coming to the facility from British Columbia. During the recent gas pipeline explosion in BC on October 10th, it is our understanding that PSE sourced gas from the Rocky Mountains or North Dakota. The methane leak estimates from North Dakota are noticeably higher than those reported from B.C. PSE's own 2017 10K filing with the Securities and Exchange Commission (SEC) shows that in 2017 they obtained gas from British Columbia (54.8%), Alberta (19.1%) and the United States (26.1%). We are not convinced that the facility will only use gas sourced from B.C.

No alternative sourcing plan in the event of larger than anticipated methane leaks - The SEIS requires the PSE LNG facility to get its fracked gas from Canada even in the case of larger methane leakage rates. If later studies show that actual leaks are considerably larger, it is unclear whether the facility will stop production and distribution.

Discrepancies between regulations and implementation - The SEIS claims that we should expect to see reductions in the amount of upstream fugitive emissions given B.C.'s new, tough regulations on fugitive methane emissions. However, simply because a regulation has been passed, implementation of that regulation in the field is typically not immediate. Regulations also depend upon political will and are therefore susceptible to change. The SEIS should only assume methane emission leak rates based on empirically collected data, and not on unsupported predictions.

Analysis assumes credit for extra maritime customers that currently do not exist - The analysis appears to assume that Puget LNG (the for-profit arm of this venture that will be selling the LNG to maritime customers) already has additional maritime customers, and so is claiming greenhouse gas emissions reduction credit for them. They have no such customers and so cannot legitimately claim such credit.

Questionable Methane Slippage Rates for TOTE Vessels - The SEIS appears to be using unacceptably small methane slippage rates (the amount of unburned methane that will escape into the atmosphere) for the TOTE maritime vessels that will be burning the LNG. In fact, even in PSE's own greenhouse gas life cycle analysis included in the SEIS, their external peer

⁷ <https://www.atmos-chem-phys-discuss.net/acp-2017-109/>

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<https://davidsuzuki.org/wp-content/uploads/2018/01/investigating-fugitive-emissions-abandoned-suspended-active-oil-gas-wells-montney-basin-northeastern-british-columbia.pdf>

reviewer questioned PSE's assumption of their methane slippage rate indicating that they should be using the higher rate, as that is considered best practice.

Cut Off Threshold - The SEIS includes a 1% cutoff threshold, such that any emissions source which produces less than 1% of the total GHGs for the system is automatically excluded from the overall calculations. We would like to know all of the sources that fall into this cutoff threshold category and the estimated percentage of GHG emissions coming from those sources. Our concern is that if the analysis incorporates multiple sources less than 1%, but cumulatively these add up to a significant percentage of the overall GHG emissions (say, three 0.8% sources adding up to 2.4%), then this could significantly under represent the true GHG emissions value.

No fuel alternative options for ships is a false assumption - Currently TOTE Maritime is the only shipping company in the Port of Tacoma that has committed to converting their vessels to run on LNG, yet all of the shipping companies are required to meet the 2020 International Maritime Organization (IMO) low sulfur emissions requirements. TOTE is already compliant with this requirement; it has been using ultra-low sulfur diesel (ULSD) since February 2017. Therefore they have no regulatory need to convert to LNG. Other companies are either also using ULSD or are incorporating scrubbers into their vessels to meet the IMO requirement. Additionally, TOTE converted to using electric, shore-based power when they are in port in Tacoma. Finally, the Washington State Ferries were considering converting to using LNG, but have since abandoned that in favor of electric engines in order to reduce their carbon footprint and cut costs.⁹

Peak shaving demand for PSE electricity customers can be met by other means - The peak shaving component of the LNG plant will be used to generate electricity for PSE electricity customers. Currently, without the LNG plant, PSE must burn diesel to generate this extra electricity on a peak-shaving day. The SEIS indicates that the Frederickson combined cycle turbine is where the peak shaving will occur and that an additional 26 MW of power can be created during peak-shaving operations. We would like to be provided with more details concerning the peak shaving need, such as the full power and energy required for peak shaving operations. These are not explicitly stated in the draft SEIS. PSCAA should then use that information to perform GHG emissions analysis for other technology alternatives such a battery storage or even purchasing wholesale electricity from Tacoma Power (which is 97% fossil-fuel free).

Analysis does not incorporate all emissions - The vast majority (85 - 98% as of 2016^{10,11}) of the gas wells in British Columbia are fracking wells and fracking requires large consumption of

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<https://www.seattletimes.com/seattle-news/transportation/washington-state-ferries-plans-to-convert-its-biggest-vessels-to-electric-power/>

¹⁰ <https://www.bcohc.ca/node/14704/download>

¹¹ <https://www.bcohc.ca/node/11416/download>

water and sand for its operation. The SEIS, however, does not include the GHG emissions from the trains and diesel trucks used to transport the water and sand to the wells. It is our understanding that sand for fracking may come from places as far away as Wisconsin which would incur significant transportation emissions.

The draft SEIS is incomplete - The report has inconsistencies, missing data, or simply incorrect units of measurement. These errors appear in multiple places throughout the document, making it difficult to provide a thorough analysis. In one instance, the report uses inconsistent units of measurement; in calculating the B.C. methane leakage rate, the amount of leaked gas measured in billions of cubic meters is directly compared to the total gas produced in billions of cubic feet. There are also multiple locations of missing data. For instance, CO₂ emission factors for natural gas are indicated merely as placeholder values, with a corresponding note that the data had been requested. These few examples raise obvious questions about the completeness and accuracy of the SEIS. We recommend a robust revision and reissue of the document to include complete and accurate information, as well as a new period for public comment.