Diane Dick

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Washington State Department of Ecology
Olympia, Washington

Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.

Greenhouse gas emissions are insufficiently explained in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.

Upstream emissions are based on speculative and incorrect information.
To begin, over 99% of the natural gas feedstock source for upstream emissions is assumed to come from British Columbia, specifically the Montney Formation (FSEIS Appendix A, p. 41).

Fort St. John, BC, centered in the formation, is located 964 miles north of Kalama, WA.

The gas transmission pipelines map, Figure 3.4-1, labels the pipeline distance to the BC gas source as 629 miles. Clearly this is incorrect. The distance to a Wyoming gas source is likely similar or shorter.

The assumption the feedstock gas will be sourced in British Columbia is unqualified and speculative. The KMMEF SEPA Final Environmental Statement 7.3.2 states, "At this time, NWIW has not entered into contracts for the supply of natural gas to the proposed project." There has been no report this has changed.

The cascade of errors in upstream emissions continues by using the GHGenius modeling tool for life cycle analysis with questionable results.
As noted on SSEIS p. 40, "In the First SEIS, the GHGenius model was used to estimate upstream emissions for natural gas from BC (S&T Squared 2013). The GREET model was used to provide estimates for the U.S. Rocky Mountain natural gas source (ANL 2017)."

The GHGenius model used in the first GHG analysis is outdated (highly revised edition 5.0 released in April 2018) and apparently does not provide the same output data for transmission emissions as the GREET model. This is apparent in comparing the transmission emissions for the BC gas source and the WY source.

Table A-2 Low Emissions Scenario in Appendix A compares the emissions data from the GHGenius model for BC gas with the GREET data for North American gas. It uses GHGenius data from the first GHG analysis. While the data is like that presented in the first analysis, some

categories have been combined which blurs the source of some of the emissions, particularly those from pipeline transmission. Transmission emissions, fugitive and storage, appear to be almost three times the value given for BC transmission emissions.

The KMMEF SEPA Final Environmental Impact statement provided a description of factors in determining upstream emissions. "Natural gas extraction involves the operation of compressors and separation equipment at the wellhead and gas processing facilities. Figure 3-8 shows the upstream emissions pathways for natural gas. GHG emissions are calculated based on the energy inputs from aggregate data, which are inputs to the GHGenius and GREET models. The models calculate the life-cycle emissions, including the upstream emissions, to produce fuels for gas extraction and processing. The GREET model also calculates energy inputs and emissions from compressors used for natural gas transport and includes provisions for fugitive methane emissions at all stages of the extraction and
transportation processes. These models do not include emissions associated with the preproduction phases of the upstream emissions (natural gas well development) and emissions from this phase are not included in the calculations as no well development is attributable to the proposed project." FSEIS 3-17 [emphasis added]

By omission, this statement implies the GHGenius model may not include all the emission factors included in the GREET model, which could explain the greater emission rate yielded by the GREET model for North American gas.
Emissions from pipeline transmission in the GHGenius model for BC gas are insufficiently calculated, producing an inaccurate emission rate for upstream emissions. As previously noted, the pipeline transmission distance from Kalama to the BC gas source is incorrect. Pipeline distance matters in determining emissions. As stated in Appendix A of the SEIS, KMMEF Supplemental GHG Analysis, 2018, p. 29, Natural Gas Transport- "Natural gas fueled compressor engines compress and move gas along the pipeline network...Natural gas flows through a pipeline at constant pressure and the pressure drops as gas is removed from the pipeline and due to pipe friction. As more gas is moved through the pipeline, additional compression energy would be required to move the gas, which is part of the upstream analysis." [emphasis added] Additional compressors needed on longer pipeline routes require more energy and increase fugitive emissions.

This raises doubt about the reliability of the GHG emission rate produced in the first GHG analysis and used again without correction in this second analysis.

In the first GHG analysis the upstream emission rate of 0.71% calculated 0.2848 tonnes CO2e per tonne methanol for BC gas feedstock and 0.3403 tonnes CO2e for North American gas, and possibly more. The baseline and market mediated rate were determined to be 0.289 tonnes CO2e/tonne methanol.

I believe these numbers are unreliable and low-balled. However, these numbers are brought into the second supplemental EIS uncorrected where they create a cascade of dubious conclusions. The 0.71% emission rate and 0.288 tonnes CO2e/tonne methanol are now considered 2nd SEIS low values. (SEPA 2nd SEIS, Sept 2020, p. 82) An upstream methane emission rate of 0.97 percent and 0.333 tonnes CO2e/tonne methanol, or the middle value, is considered more plausible. SSEIS, p. 80. This is the emission rate the EPA Shale GREET model produced for North American gas, Table A-3 Medium Emissions Scenario SSEIS.

While the plausible upstream emission rate is 0.97 percent, the analysis of alternate pathways for methanol imports to China sets KMMEF upstream emission rate at the low and questionable 0.71 percent. See Table A-7 where the GHG emission from upstream is set at 0.289 tonnes CO2e/T methanol, corresponding to the 0.71 percent emission rate. To further skew this input in KMMEF's favor, this same value is assigned to all other reviewed methanol producers.

The reasoning given is, "A key distinction in how the ESM handles emissions from this pathway compared to China-based natural gas methanol, is that upstream emissions related to natural gas extraction and processing is set equal to that of KMMEF. This assumption was made based on the lack of emissions data from the methanol exporters evaluated in this study and the uncertainty around upstream methane emissions from natural gas extraction and processing (Gan et al. 2020)." SSEIS, p. 62. [emphasis added]

Incongruously this statement follows the statement in the previous paragraph that, "The difference in life cycle GHG emissions is mostly due to upstream natural gas emission rates and the difference between KMMEF's ULE technology and the combined reforming technology used by some of the 29 existing facilities. To a lesser degree the emissions difference is attributed to electricity and transportation emissions. The lifecycle GHG emissions of imported methanol may decrease over time as new facilities come on-line using ULE technology or even newer processes."

Table A-7 compares other global producers to KMMEF using the same implausible upstream emission rate despite acknowledging much of the difference in life cycle emissions is due to upstream emissions. The low upstream emission rate attributed to KMMEF British Columbia gas feedstock compared to other producers seems more unrealistic considering BC gas will be transported and emitting along almost a thousand miles of pipeline compared to methanol producers on the Persian Gulf in Iran sited less than 100 miles from petroleum reserves ranking in the top five globally.

Further analysis based on data with such inaccuracies and unjustified assumptions on upstream gas emissions would seem an exercise in futility.

KMMEFF should be denied permits based on the multiple verifiable analyses the refinery will produce millions of tonnes of greenhouse gases in Washington.

Thank you,
Diane L. Dick
Longview