Date: Friday, October 9, 2020
To: State of Washington Department of Ecology, Attn: Rich Doenges
From: Robert Briggs[1], 9514 SW Burton Drive, Vashon, WA 98070
Subject: NWIW SSEIS Comments

The Draft Second Supplemental Environmental Impact Statement for the Kalama Methanol Project (SSEIS) contains sufficient information on the project for the Department of Ecology to reject permits for the project. The project would dramatically increase greenhouse gas emissions in the state at a time when we are in a climate crisis and need to be dramatically reducing those emissions at the fastest rate humanly possible.

There are egregious errors and unsupportable assumptions in the study. Many of these are pointed out below.

The most fundamental problem with the study is captured in the following two sentences, which appear on page 49 of the SSEIS:

> "This analysis *[the new economic analysis]* is based on current policies and market trends. Scenarios with substantially different global policies (fossil fuel/plastics phase outs or bans for example) are too uncertain to include in this analysis."

Far from being "too uncertain to include in this analysis," the policy and technology developments that the study ignores are so profound and far-reaching that the analysis is virtually worthless without considering them.

For example, the Chinese government committed in a recent announcement to bring their net carbon emissions to zero by 2060.[2] The universal assumption among those who closely watch the development of climate policy globally is that emission commitments will become more ambitious not less, as the cost of reducing emissions continues to drop and the catastrophic nature of climate impacts becomes clearer. From my reading of the study, "the current policies and market trends" are to have emissions from the fossil-based methanol industry essentially unchanged over the 40-year life of the Kalama project. This is preposterous.

On what basis is it appropriate for this SSEIS to assume that the public policy commitments of the Chinese government to reduce their GHG emissions to zero within the life of the Kalama facility will end in no reductions at all and an utter policy failure. It is an unsupportable position for Ecology to be embracing. A far more reasonable reference case would be to assume that China will honor its international commitment and will implement the policy on a consistent linear basis over the coming 40 years.

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[2] Somini Sengupta, *China, in Pointed Message to U.S., Tightens Its Climate Targets: President Xi Jinping pledged, among other goals, to achieve "carbon neutrality by 2060." It was China's boldest promise yet on climate change*, NY Times, September 22, 2020. https://www.nytimes.com/2020/09/22/climate/china-emissions.html

Once the Kalama project is evaluated against a plausible future in which economies around the world are transitioning to carbon-free energy and the use of greenhouse-gas (GHG) emissions-free chemical feedstocks, the enormity of the climate costs of this facility become clear. Far from offsetting higher emitting sources of methanol, this project will compete directly with those GHG-free chemical feedstocks making it more difficult for these preferred feedstocks to acquire funding and to gain market share.

It is entirely inappropriate for Ecology to be evaluating permits for an enormous new greenhouse gas emitting facility in the state of Washington in a public policy and technology development vacuum. There are technological developments proceeding around the world that are likely to make Kalama Methanol obsolete before it ever operates. Renewable hydrogen producers in Australia are projecting cost declines that will make hydrogen from electrolysis using wind and solar at prices competitive with that from steam reforming of natural gas.[3] Major manufacturers of electrolyzers like Nel Hydrogen are only now automating production of equipment that has historically been made by hand, and the prices for industrial-scale electrolyzers are now plummeting.

The chemical processes capable of making methanol from fossil methane obsolete are well understood and have been applied in locations around the world for decades. Many of the key chemistries needed for olefin, methanol, and ammonia production are roughly one hundred years old; e.g., Fischer–Tropsch process (1925), Sabatier reaction (1897), and Haber–Bosch process (1910). The advent of inexpensive renewable hydrogen will soon make synthesis of these feedstocks cost-competitive with those from fossil sources.

The social cost of carbon mandated by CETA for use in utility planning and acquisitions more than triples the commodity cost of natural gas.[4] I don't believe that the social costs of Kalama Methanol greenhouse gas emissions are even mentioned in the SSEIS. Why not? Including the social cost of carbon in the evaluation of this facility, as is required for other large emitting projects in Washington, would appear to offer a useful lens for understanding the true cost of Kalama GHG emissions and whether the facility has a realistic prospect for being able to compete with non-emitting feedstocks in the future.

In many locations around the world, electricity from solar PV is now cheaper than electricity from natural gas. A recent study by Ramez Naam documents these historic cost trends and projects prices for electricity from solar to drop below $20/MWh in virtually all locations by 2040—even before Kalama Methanol will have seen half of its expected life.[5] At those prices, it will be cheaper to synthesize chemical feedstocks using renewable hydrogen than to continue to use fossil sources. Puget Sound Energy's own projections for power prices out of the Mid-Columbia market show large numbers of hours in every month of the year with prices below

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[3] Joshua S Hill, *Rapid fall to parity predicted for Australian renewable hydrogen costs*, Renew Economy - Clean Energy News and Analysis, 28 August 2020. https://reneweconomy.com.au/rapid-fall-to-parity-predicted-for-australian-renewable-hydrogen-costs-11266/

[4] The current rate in use is approximately $76 per metric ton.

[5] Ramez Naam, *Solar's Future is Insanely Cheap (2020)*, May 14, 2020. https://rameznaam.com/2020/05/14/solars-future-is-insanely-cheap-2020/

$10/MWh emerging over the next two decades due to the build-out of renewable energy sources. Renewable sources of carbon for methane synthesis in Washington are plentiful in forestry, agricultural, and municipal wastes, among other sources.

There is so much going on in the field of low-emission feedstocks, particularly in Europe, that claiming that developments are "too uncertain to include" is willful ignorance. It is simply not reasonable to assume that fossil-based methanol introduced into the world market from Kalama will simply compete against even more polluting sources of methane and continue to do so for the next 40 years. Far more plausibly, Kalama methanol will compete slightly more effectively than dirtier sources with emerging climate-safe substitutes, meaning more climate forcing not less. The net emissions aspects of this analysis in this study is highly speculative and very cynical. It should be rejected.

The introduction of Kalama methanol into China seems unlikely to displace automobiles operating using even more polluting methanol-fueled from countries like Iran. Rather, Kalama methanol will adversely affect the climate by competing with electric vehicles that will increasingly be fueled using fossil-free sources. The economic and technological trends driving this are evident throughout the world.

How conceivably can this SSEIS pretend that these changes are not taking place or that somehow they will stop and that China is going to remain stuck using costly, highly polluting internal combustion transportation technologies for the next 40 years? Given cost of ownership trends that favor electric vehicles, the notion that in 2050 Kalama methanol is going to be providing a climate benefit by displacing dirtier methanol in passenger vehicles is absurd. But even if this did happen in some small percentage of cases, the climate benefits of cleaner methanol is marginal in comparison with the large climate benefits from electrification.

On page 53 of the study I see this: "Because methanol will increasingly replace higher-emission transportation fuels such as gasoline and bunker fuel for ships..." This unreferenced speculation appears to stand at odds with the quoted statement above that scenarios with different market trends would be "too uncertain to include." The International Maritime Organization (IMO) has made commitments to decarbonize shipping. Industry leaders like Maersk are committing to be carbon free by 2050, long before Kalama has reached the end of its planned life. How is methanol from Kalama going to reduce emissions from shipping at a time when the maritime industry is rushing to find a GHG-emissions-free path forward. Major shippers are rejecting LNG in spite of its current attractive price.

Kalama methanol will not be displacing bunker fuel for ocean shipping but will be competing with one or more of the non-emitting candidate fuels for maritime use, which include hydrogen, ammonia, DME, or some synthesized alkane blend, among others. Far from offsetting dirtier fuel, Kalama will serve to impede the nascent transition now underway to decarbonize ocean shipping.

There are numerous additional errors in this SSEIS. The errors are all in the same direction, in that they serve to understate the severity of the climate impacts from Kalama Methanol. At the very least, Ecology should provide justification for using out-dated values or for failing to

provide adequate sensitivity values for assumptions on which there is legitimate uncertainty or grounds for disagreement.

Why does the SSEIS use GWP values from AR-4, when values from AR-5 have been available for years? The values were updated in AR-5, because the values in AR-4 were shown to be inaccurate. Governor Inslee's Directive 19-18 requires use of up-to-date science. I believe the Department of Ecology knows this. What is the justification for using these out of date values? The SSEIS needs to provide that justification.

Why does the SSEIS use a 100-year GWP for methane at a time when the IPCC has said with great clarity that we have just ten years to dramatically reduce GHG emissions to avoid very dire and likely irreversible climate impacts? The SSEIS makes no attempt to justify the use of this assumption, which diminishes the impact of leaked methane by roughly a factor of three for the policy-relevant time frame.

The assumptions for upstream leakage rate as a percentage of methane delivered are similarly skewed in the direction of minimizing climate impacts. The addition of the 3% leakage rate is appropriate, but it would be more appropriate to declare it the high sensitivity in lieu of the current 1.46 value. Even the 3% rate does not account for the global spike in atmospheric methane concentrations that many believe attributable to the hydraulic fracturing boom. The legitimate purpose of sensitivity analyses is to bracket uncertainty, and there certainly is high uncertainty surrounding the role of non-routine methane leakage and the source of unexplained atmospheric methane that has accumulated over the past 15 years.

Kalama Methanol has all the appearances of a stranded asset in the making. It is an investment in yesterday's technology that MUST be shut down if we are to have a livable climate. Building a facility that will be idled early in its life will not be good for Kalama, it will not be good for the state of Washington, and it will not be good for NW Innovation Works. There is great irony that a Chinese company is now bringing to the United States a high-polluting industry and obsolete technology in order to extract natural resources to be used in high-value manufacturing back in China. This kind of exploitative relationship has historically been reserved for third world countries.

Ecology should reject the permit but suggest to NWIW that they will get a far more positive reception in Washington if they come back with a new proposal that involves using cutting-edge technology to produce carbon-free methanol from renewable hydrogen and carbon from the region's forest and agricultural residues or other readily-available sources of non-fossil carbon.