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My comments fall into two categories. First I look at the issue of greenhouse gas emissions that this study so wonderfully examined with considerable care and research, to see the greenhouse gas emissions results of various scenarios depending on whether the Kalama Manufacturing and Marine Export Facility (KMMEF) is built, versus results if it is not built. Second, I look at the context for this study, and for the Washington State governor's and legislature's 2020 progress on charting an effective path to comply with guidelines framed by the world's experts (Paris Climate Accords, International Panel (IPCC ??)). In both cases, I look at not only market forces, but at forces increasingly being mustered to counter market pressures with regulations and incentives that prioritize environmental health and the long term survival of human and other species over market trends driven by profit incentives.

A. The depth and breadth of this SSEIS is impressive, as is the broad range of possibilities it must contend with. It suffers from errors, omissions, assumptions.

1. One unknown is how the methanol will be used. We do know that Northwest Innovation Works (NWIW), which is Chinese backed, told the Port of Kalama that the Kalama plant would primarily sell its methanol to markets for olefins in Asia, but when presenting the project to potential funders it emphasized profits from selling the methanol for use as fuel. This behavior does not inspire confidence, and does warn that NWIW will be manipulative to achieve a for-profit goal rather than speak out of a confirmed set of ethical guidelines incorporated into the operations of its business. (Why should we assume that NWIW will follow through with its promised voluntary mitigation plan?)

2. To try to account for the uncertainty about intended uses, the range of models in the SSEIS includes both fuel use and MTO (methanol to olefins), but looking at Fig 3.5.3 on p.65 we see that the Chinese use of methanol for fuel quintupled from 2006 to 2016 and it continues to rise. Why do we assume the use of fuel will not overtake the use for olefins? Beyond this example the number and combination of variables far exceeds the capability of meaningful modeling. While we do not know precisely what the methanol will be used for, we do know that it will add GHGs to our overtaxed atmosphere starting in just a couple of years and continuing for 40 years, including the most critical next two decades when we must reduce GHGs.

3. It is facile to want to partially justify the permitting of a facility that uses fossil fuels, emits GHGs in bringing its raw materials to its site, emits more in producing its product, and still more while conveying its product to Asia merely because it produces just slightly fewer emissions than other producers of its product!!

4. This report uses the IPCC4 100-year GWP values to calculate CO₂e, despite the fact that this chart was subsequently updated to more accurately reflect the significantly enormous GWP of methane in its first 20 years. On p. 90 it even says: "GWP values are periodically updated to reflect current science regarding the energy properties of GHGs and their lifetimes in the atmosphere." Thus the report should be using the most accurate and current GWP values, which are found in the IPCC's fifth Assessment Report's 20-year GWP. The reason it gives for using the IPCC4 100-year GWP is that they are, "The most commonly used GWP values," no doubt because they have been around longest!!! This will certainly bias all the results to minimize the GWP of all the methane emissions. It doesn't matter nearly so much what the total GWP will be over the next 100 years as what it is going to be between now and 2040.

5. The calculations of upstream emissions are not well presented, but seem to minimize the problem

of methane escape at extraction sites. This has been described in National Geographic: "Scientists have measured big increases in the amount of methane, the powerful global warming gas, entering the atmosphere over the last decade." The evidence: "The chemical signature of methane released from fracking is found in the atmosphere, pointing to shale gas operations as the culprit." (Robert Howarth, an ecologist at Cornell University and author of the study published Aug 14 in the journal *Biogeosciences*.)

6. The problem of emissions from pipeline leaks all along the way is not mentioned. Pipelines are made of lengths of pipe connected together by joints. Over time, joints fail, as surrounding earth is disturbed by a wide variety of impacts, or by earthquakes. Not only does this add to our burden of greenhouse gases, it adds threats to the health and safety of communities, rivers, and other ecosystems due to contamination and fire hazard. (Example: "On June 10, 1999, a gasoline pipeline operated by Olympic Pipeline Company exploded in Bellingham, Washington's Whatcom Falls Park." -from Wikipedia)

7. As the Department of Ecology News Release of Sept. 2 states, "The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year." And because the report uses the AR4 100-year GWP this under-reports the CO₂e for whatever portion of this happens to be methane, so we need to multiply that figure by 86. Not helpful when our 2009 goal bring our emissions down to 1990 levels by the end of 2020 has failed completely, and instead our emissions have increased by about 8 percent!!! What part of NO MORE EMISSIONS do we not understand?

8. This report does not consider the possibility that yet cleaner processes may soon make the Kalama technology with its "ultra-low emissions" obsolete. One possibility is producing methanol from the carbon dioxide in the atmosphere! ("Carbon dioxide-to-methanol process improved by catalyst," *Science Daily*, June 28, 2018, Penn State).

9. There is no mitigation that can adequately compensate for adding GHGs to earth's atmosphere at this time in history. Is it OK to just add a little oxygen to a raging house fire?

B. The context for this permitting process is not average. This is a precedent-setting moment, when every person and every life form on the planet is facing a crisis with a magnitude as great as the one that destroyed the dinosaurs. We cannot behave as though it's business as usual, and the best-written set of justifications and excuses wins a work-around to avoid the rules.

1. RCW70A says, under Intent \diamond 2020 c 79: "(3) The longer we delay in taking definitive action to reduce greenhouse gas emissions, the greater the threat posed by climate change to current and future generations, and the more costly it will be to protect and maintain our communities against the impacts of climate change. Unchecked, climate change will bring ever more drastic decline to the health and prosperity of future generations, particularly for the most vulnerable communities."

A new methanol plant in Washington would hinder the difficult task that is so urgent right now: to turn our GHG emissions around. With every passing month, more damage is done because of the effects of climate change, and some of the processes unleashed by global warming are actually accelerating its damage and speed (for example: the thawing of tundra is releasing additional methane that had been sequestered in the frozen tundra!) Climate change is increasing in momentum, so that some damages we can still hope to avert by reducing GHGs this year, will become inevitable if we wait to act until next year.

2. The United States has until recently enjoyed one of the most stable democracies in the world, with time-honored institutions that enabled us to have the rule of law to protect our human rights and welfare. But we have not shouldered the responsibilities that come with our extensive privileges and wealth. According to the Center for Climate and Energy Solutions, the United States leads the

world in Per Capita Greenhouse Gas Emissions, with over 18 tons of CO2 equivalent per person in 2017. Russia follows with a bit more than 15, then Japan with a bit less than 10, and the European Union is at about 8. The U.S. is responsible for 25% of the cumulative emissions of GHGs from 1751-2017, followed by the EU at about 22%. It's high time to step up. No simple for-profit venture, the possibility of initiating a successful new corporate enterprise, can take priority over this existential necessity.

3. Department of Ecology's Perry Lund states in his letter of October 9, 2019, to Dr. E. Elaine Placido, Cowlitz County, that "By law, Ecology must review all CUPs for compliance with the following: 1) The Shoreline Management Act (RCW 90.58)." In RCW 90.58.020, in "Legislative findings ♦ State policy enunciated ♦ Use preference," the third paragraph lists seven uses of state shorelines to guide the development of master programs for shorelines, "in the following order of preference which: (1) Recognize and protect the statewide interest over local interest; (2) Preserve the natural character of the shoreline; (3) Result in long term over short term benefit; (4) Protect the resources and ecology of the shoreline. . ."

Although a Kalama methanol plant may bring jobs and an economic boost to the local folks, the broader statewide interest will be better served with less GHGs and a healthier shoreline. The long term benefit will be much better served by NOT siting an enormous methanol plant where it can jeopardize "the resources and ecology of the shoreline."

This shoreline is closely associated with the magnificent Columbia River estuary, and its health and water quality can affect large communities of marine life both locally and downstream, extending to shorelines north and south along the Washington and Oregon coasts. Further, this ecosystem lies at a critical bottleneck for a majority of Washington's vital salmon runs, which travel from the Pacific Ocean back up the Columbia to numerous feeder rivers draining both the eastern Cascades and the western Rockies, spanning all of eastern Washington and part of British Columbia. These waters must be protected for the sake of innumerable beleaguered salmon stocks that have already been decimated by dams and premature melting of snowpack causing excessive warming of spawning streams that consequently cannot hold adequate oxygen to keep spawning salmon alive. On these salmon runs depend not only fisheries that have supported indigenous fisheries since time immemorial, and more recent commercial and recreational fisheries, but also the iconic Southern Resident Killer Whales of Puget Sound, now unable to find sufficient forage year-round to sustain healthy reproductive adults. It is unwise to allow any more dangers to further transform one of their key habitats into a gauntlet beset with hazards.

RCW 90.58.020 also states, "Uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline." There is no industrial plant that is immune to accidents. The siting of a large methanol facility in such a sensitive shoreline with the potential to cause lethal harm to so many already struggling species with both extremely high economic value and incomparable iconic northwest significance poses unacceptable risks of the sort this law warns against.

In summary, the backdrop of climate change against which this methanol plant is proposed, dwarfs all other considerations with its multiple threats and exigencies. We must look at this decision with eyes wide open, and make a decision that will help slow the unraveling of the planetary systems on which biological life depends. Deny the conditional use permit.

Sincerely,
Rayna Holtz

