Key Findings and Summary of Department of Ecology Second Supplemental EIS on Kalama Methanol and Marine Export Facility

December 2020

How did we get here?

- EIS Scoping Notice in October 2014
- Environmental Impact Study completed September 2016
- Cowlitz Superior Court requires additional GHG analysis in September 2017
- Final Supplemental EIS with supplemental GHG analysis published by Port of Kalama/Cowlitz County in August 2019
- Department of Ecology asked for more information about GHG analysis/mitigation plan and commenced Secondary SEIS
- Department of Ecology completed Draft SSEIS in September 2020
- Department of Ecology issued Final SSEIS in December 2020

Scope of Ecology's Analysis and Findings

- During the six years of analysis of the Kalama Methanol Facility, climate activists have asked regulators and courts many questions about the project's impact on global climate change.
- The Department of Ecology has now completed the third study on carbon emissions. This independent Second Supplemental EIS provides answers to those questions.
- The following is a summary of the major questions and the conclusions of the Department of Ecology's Final SSEIS.

Upstream Natural Gas Emission Rate

Question

- Some climate activists have commented that leakage of methane in upstream natural gas extraction, production, and transport were too low and that a higher rate of emissions should be considered, specifically requesting a 3% leakage rate.

Answer

- The Second Supplemental EIS published by the Department of Ecology analyzed the life-cycle GHG emissions using the 3% leakage rate and concluded that the KMMEF would reduce global GHGs by 5.46 million metric tons per year if that leakage rate was used.

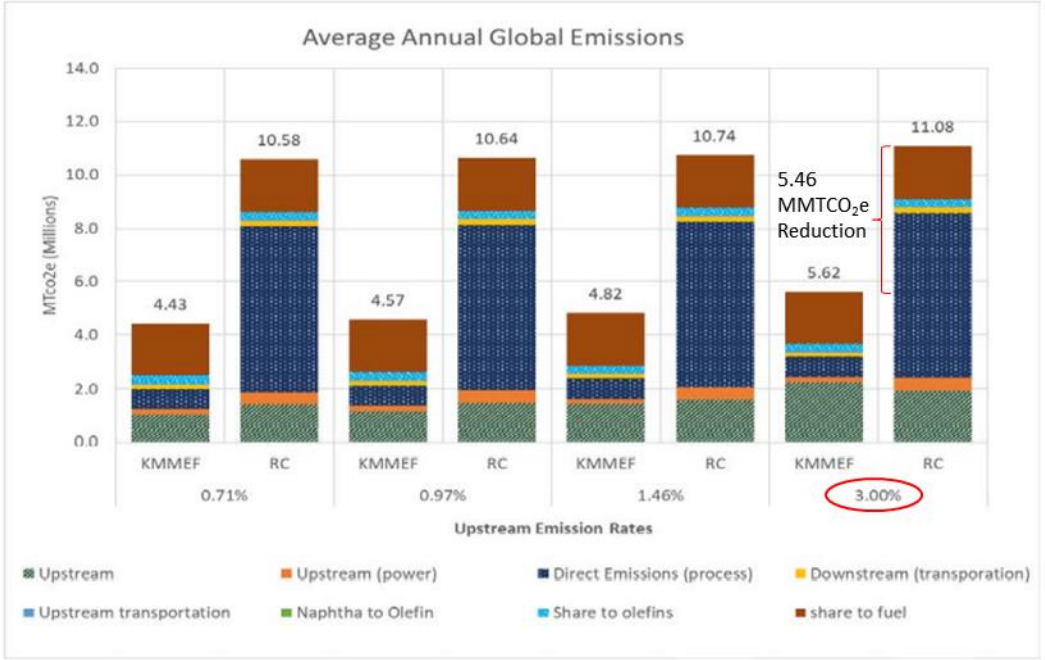

Figure 3.5-12. Average Annual LCA GHG Emission Estimates, with KMMEF the RC Using Upstream Emission Rate of 0.71, 0.97, 1.46, and 3.0

"…an upstream methane **emission rate of 3 percent was also included** as a high estimate in the ESM to explore the impact of a higher methane emission rate on the overall GHG emissions from KMMEF"

Second Supplemental EIS, page 77

Global Warming Potential

Question

- A number of commenters indicated that the reporting and analysis of GHG emissions utilizing the 100-year GWP was inappropriate and the Final Supplemental EIS should utilize the most recent 20-year GWP from the United Nations Intergovernmental Panel on Climate Change (IPCC).

Answer

- The FSEIS analysis concluded that global GHG reductions would be increased using a 20-year GWP by 1.5 million metric tons.

Table 4-1 Effect of GWP in million metric tonnes CO_2e per year

	AR-4 100	AR-4 20	AR-5 100	AR-5 20
Project emissions	2.17	2.89	2.24	3.09
Displaced emissions	-13.69	-15.76	-13.91	-16.33
Net emissions	-11.53	-12.87	-11.67	-13.24

FSEIS, page 4-2

1.5 $MMTCO_2e$ benefit from 20-year GWP analysis compared to 100-year GWP

Methanol End-Use as Fuel

Question

- A number of comments noted that methanol can be used as fuel and requested that the analysis fully account for the potential GHG emissions if the methanol from the proposed project is used as fuel.

Answer

- The Second Supplemental EIS published by the Department of Ecology analyzed the life-cycle GHG emissions using the assumption that 100% of KMMEF methanol was used as fuel and concluded that, even in that case, the project would reduce GHG emissions by 5.92 million tons per year.

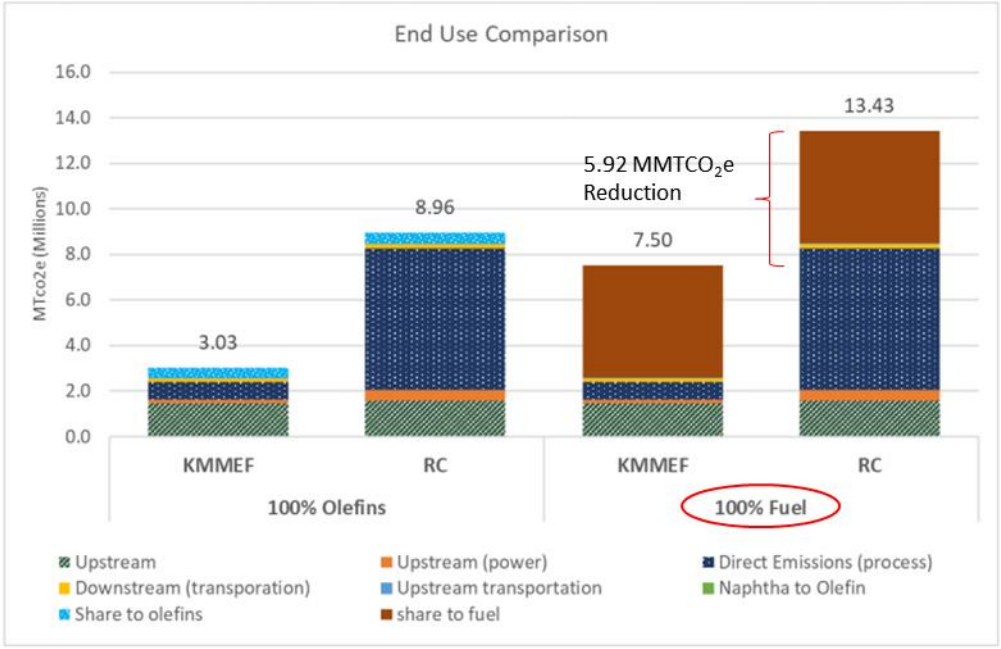

Figure 3.5-11. Total LCA GHG Emissions with KMMEF and Under the RC, Assuming 100 percent Use as Olefins (on the left) and 100 Percent Use as Fuel (on the right)

"This analysis concludes that under either end use, net annual GHG emissions are the same, 5.92 MMTCO2e. **This result persists regardless of how KMMEF methanol is allocated between fuel use and the production of olefins**."

Second Supplemental EIS, page 76

Use Naphtha for Olefin Production

Question

- Several commenters suggest that creating olefins from naphtha or other methods would result in fewer GHG emissions than the ULE methanol method proposed by the project.

Answer

- The Second Supplemental EIS published by the Department of Ecology determined that the KMMEF project has the lowest-carbon intensity for the production of olefins.

Table 3.5-10. Estimated Life Cycle GHG Emissions per Metric Ton of Methanol Produced for Substitute Pathways – Middle Estimate Used for ESM Inputs

Source	Emissions in ($MT CO_2e$/ MT Methanol or equivalent)
KMMEF	0.64
Coal based methanol	3.8
Natural gas-based methanol from China	1.2
Naphtha equivalent to substitute for methanol in olefin production	0.68
Imports from other countries	0.80

"For the naphtha pathway, emissions are shown in terms of the emissions associated with producing the quantity of olefin that is equivalent to the amount of olefin produced by one MT of methanol. **Based on this analysis, methanol produced by KMMEF results in lower emissions than other methanol production pathways**."

Second Supplemental EIS, page 73

Will KMMEF Displace Coal?

Question

- Comments were provided regarding whether or not the project will displace coal-based production of methanol in China or other less-carbon intensive sources.

Answer

- The SSEIS published by the Department of Ecology analyzed the market dynamics of methanol production and use in China and provided a range of displacement values—from a lower coal-based (LCC) to a higher-coal-based production (HCC). A reference case (RC) was their most likely outcome. All cases showed significant GHG reductions.

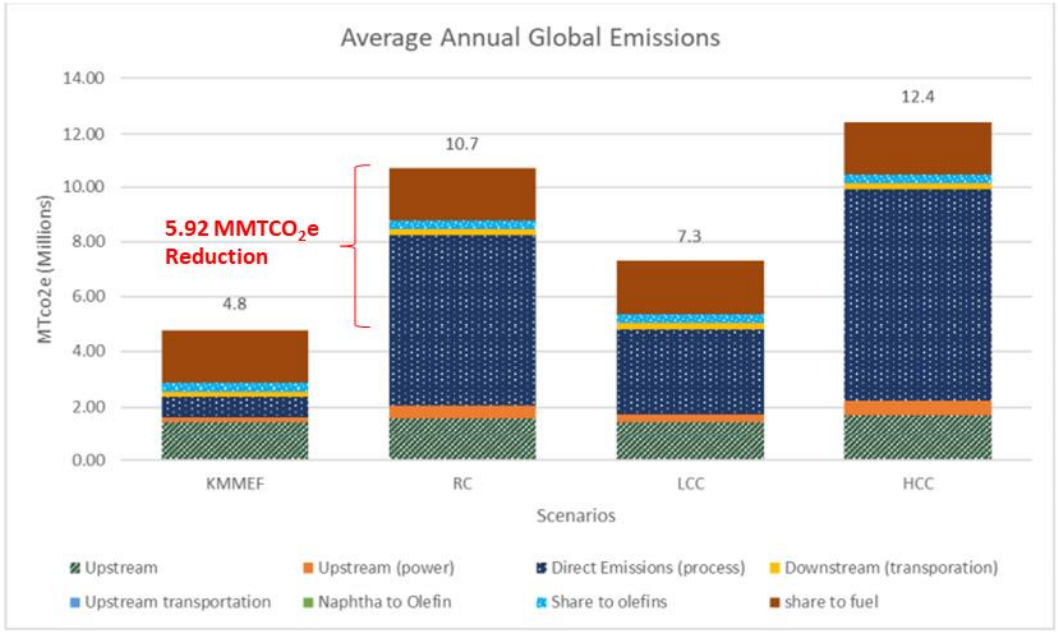

Figure 3.5-9. Average Annual Global Emission Estimates, 2020 – 2059 by Life Stage, KMMEF, RC, LCC, and the HCC

"...this analysis has concluded that emissions from KMMEF will always be lower than emissions from other substitute methanol pathways…"

Second Supplemental EIS, page 83

Summary of Results to Questions Raised

Question	Answer	Global GHG Emissions Result
What if the analysis uses a higher methane leakage rate?	Ecology used 3% leakage rate as requested by some commenters in the final SSEIS	5.46 $MMTCO_2e$ reduction of global GHG.
What if Global Warming Potential of 20-years is used instead of 100-year?	KMMEF will result in larger GHG reductions with 20-year GWP	Additional 1.5 $MMTCO_2e$ reduction of global GHG.
What if the methanol is used as fuel instead of olefin production?	Ecology determined that the project will result in significant GHG reduction	5.92 MMTCO2e reduction of global GHG.
How does KMMEF compare to Naptha as olefin feedstock?	Methanol produced by KMMEF results in lower emissions than other methanol production pathways	5.92 MMTCO2e reduction of global GHG.
What if KMMEF doesn't solely displace coal-based production of methanol?	Ecology studied a range of displacement values.	2.5-7.6 range of MMTCO2e reduction of global GHG.

Many Questions Have Been Raised…

- The answers are now unequivocal
- After years of analysis and now an independent study by the State's lead environmental regulator, the answers to climate activists' questions are complete. Their conclusion is that…

Building the Kalama Methanol plant will reduce global climate change impacts by a massive amount

Massive GHG Reductions

- The net emissions using best estimate…show a difference of -5.92 [million metric tons] MTCO2e per year for the reference case. A negative result for the net emissions indicates that KMMEF emissions are less than emissions expected to occur otherwise under the reference case. (SSEIS, page 84)

- Nearly 6 million metric tons of GHG reduction per year is equivalent to:
  - The annual emissions from the cities of Seattle, Bellevue and Tacoma combined.
  - Two times the amount projected to be reduced by the Clean Fuels Standard in 2030, if the legislation is passed by the WA Legislature.
  - Seven and a half times the amount projected to be reduced by the entire Sound Transit system in 2040.