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Pacific NorthWest LNG Project
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RE: Comment – Draft Environment Assessment
report

Clean Energy Canada is pleased to comment on the Canadian Environmental Assessment Agency's review of the Pacific Northwest LNG Project. We are an initiative of Simon Fraser's Centre for Dialogue and aim to accelerate a transition to renewable energy across Canada.

In British Columbia (B.C.) we have closely studied LNG, its emissions and mitigation measures and Clean Energy Canada's executive director, Merran Smith, was a member of B.C.'s climate leadership team. Our comments in this letter draw from our three main LNG reports – *Cleanest LNG in the World*, *Lock in Jobs, Not Pollution* and *Proposed British Columbia LNG Facilities and Renewable Power – Feasibility Assessment* – and Merran's role as part of the climate leadership team.

The Pacific Northwest project is not designed in-line with B.C.'s legislated targets nor B.C.'s climate leadership team recommendations. The project could incorporate commercial technologies, especially renewable energy, that could reduce LNG terminal, and upstream emissions to 6.3 MTCO_{2eq}, a 67% to 45% reduction depending on baseline estimates.¹ This letter summarizes greenhouse gas reduction potential at the Pacific NorthWest terminal, upstream natural production reduction potential and links to B.C.'s climate leadership team recommendations.

Terminal (GHG reduction potential 50% to 90%):

The Pacific NorthWest LNG facility is expected to have a greenhouse gas intensity of 0.27 tonnes CO_{2eq}/tonne LNG. However, Pacific NorthWest could reduce that intensity to 0.13 tonnes CO_{2eq}/tonne LNG by using electric drives, in place of natural gas turbines. A combination of renewable electricity and natural gas fired electricity would supply the electric drives for both compression and ancillary load at the facility. This approach would reduce annual emissions by 50% from 5.2 MTCO_{2eq} per year to 2.5 MTCO_{2eq} per year at full build out.

Our analysis shows that powering the facility would require:

- 780 MW of new wind capacity
- 200 MW of B.C. electrical grid capacity

¹ 67% our initial estimate of LNG projects in *Cleanest LNG in the World* or 45% below CEEA's low estimate.

- 800 MW of flexible natural gas capacity²

The full details of our analysis are available in the *Proposed British Columbia LNG Facilities and Renewable Power – Feasibility Assessment*³.

In addition to the greenhouse gas reduction benefits, this design would:

- Increase local, permanent employment by 40% by adding 430 jobs to the region
- Decrease air emissions by 70%
- Maintain LNG reliability and scheduling requirements
- Limit cost impacts – this package would increase the sales of cost of the gas by 1%.

This approach depends on Pacific Northwest LNG installing electric drives, a commercial technology, that Woodfibre LNG in British Columbia and Freeport LNG in the United States are planning to use. General Electric considers electric drives an improved technology for LNG facilities “In the past, deploying this kind of electrical infrastructure [electric drives] was technically challenging but the last few decades of innovation have seen electrification drive efficiency gains compared to mechanical systems, reduce physical footprints and diminish environmental impact”⁴

Another benefit of electric drives is that project proponents would have the ability to reduce onsite greenhouse gas emissions to near-zero over-time by increasing the amount of renewable electricity supplying the electric drives. In Pacific NorthWest’s current design the proponent will have difficulty reducing greenhouse gas emissions in the future and so would be less resilient to increasing carbon prices or other regulations to reduce emissions.

Upstream (GHG reduction potential 50%):

Our *Cleanest LNG in the World?*⁵ report concluded that natural gas production, processing and transportation emissions could be reduced by 50% through a mix of renewable energy and storage and reducing leakage. Pacific NorthWest could use a combination of strategies and tools such as electrification—using electricity instead of natural gas to process natural gas—and low-bleed valves and plunger lifts, which reduce leaks and venting. When combined these choices could reduce upstream emissions by 3.8 MTCO_{2eq} from 7.7 MTCO_{2eq} to a total of 3.8 MTCO_{2eq}⁶.

Links to B.C.’s climate leadership team recommendations and Clean Economy and Jobs report

² These values are calculated based on the conclusions of the Proposed British Columbia LNG Facilities and Renewable Power report. That report considered a generic LNG facility, not Pacific NorthWest’s project specifically.

³ Steve Davis & Associates, Navius Research (2014) *Proposed British Columbia LNG Facilities and Renewable Power*. <http://cleanenergycanada.org/settingitstraight/>

⁴ Falco, Francesco (2014) *Electrification and the Rise of Liquefied Natural Gas*. <http://www.gepowerconversion.com/inspire/rise-lng>

⁵ Clean Energy Canada (2013) *Cleanest LNG in the World?* <http://cleanenergycanada.org/work/cleanest-lng-in-world/>

⁶ Calculations based on analysis for Cleanest LNG in the World adapted to the Pacific Northwest Project

Our estimated reductions at the LNG terminal and upstream are consistent with B.C.'s climate leadership team recommendations. B.C.'s climate leadership team recommendations call for:

- Increasing the carbon tax by \$10/year starting in 2018, and expanding it to non-combustion emissions
- Establishing a goal of reducing fugitive and vented methane emissions by 40%
- Regulating leak detection and repair programs⁷

Following these recommendations and others, the Climate Leadership Team concluded that a LNG industry could exist in B.C. but with a much lower emissions intensity than current project proposals.

Conclusion

The Pacific Northwest Project design should be consistent with B.C.'s climate leadership team recommendations and B.C.'s legislated target to reduce emissions by 80%, from 2007 levels by 2050. The current design would increase B.C.'s greenhouse gas emissions by 8.5%. Pacific NorthWest has options like renewable energy and technologies to reduce leakage in the upstream to reduce emissions by 50% to 67% with the potential to go further in the future. The project should not proceed unless the proponent can demonstrate how the project could exist if the B.C.'s climate leadership team recommendations are implemented.

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⁷ Climate Leader Team (2015) Recommendations to Government.
http://engage.gov.bc.ca/climateleadership/files/2015/11/CLT-recommendations-to-government_Final.pdf

APPENDIX – Infographic

