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Can Pacific NorthWest LNG pass Canada's climate test?

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Key points

- Pacific NorthWest LNG (and its associated upstream activities) would generate 11.4 to 14.0 million tonnes of carbon pollution annually — placing it among the largest carbon polluters in Canada.
- As proposed, the project should not be approved because:
 - The project does not fit within a plan for B.C. to meet its climate targets.
 - The project's emissions are much higher than necessary.
- For B.C. to get back on track for its targets, the provincial government needs to implement the Climate Leadership Team recommendations.
- The federal government can also use the regulatory process and federal policy to limit carbon pollution from the project.
- Accounting for the emissions in Asia from LNG exports would not change these conclusions.

Two central questions for a climate test

Canada's new climate test should be applied to proposed projects with levels of carbon pollution that are material to the country's climate change targets. With a combined 11.4 to 14.0 million tonnes of annual carbon pollution,¹ Pacific NorthWest LNG (PNW LNG) would be among Canada's largest carbon polluters.²

The federal government should ask two important climate-related questions about PNW LNG and require a positive answer to each if the project is going to be permitted to proceed:

1. Does the carbon pollution from the project fit within a plan that allows B.C. to meet its climate targets? We have narrowed the focus to B.C. because the Pembina Institute's expectation is that each province will need to meet, and ultimately exceed, their individual targets for Canada to meet the commitments made in the Paris Agreement and Vancouver Declaration.
2. Will the carbon pollution from the project be minimized? For significant new energy projects, the difference between standard and best practice can be millions of tonnes of carbon pollution. As a result, it is important that the government's review process identifies those best practices and ensures that they are being used.

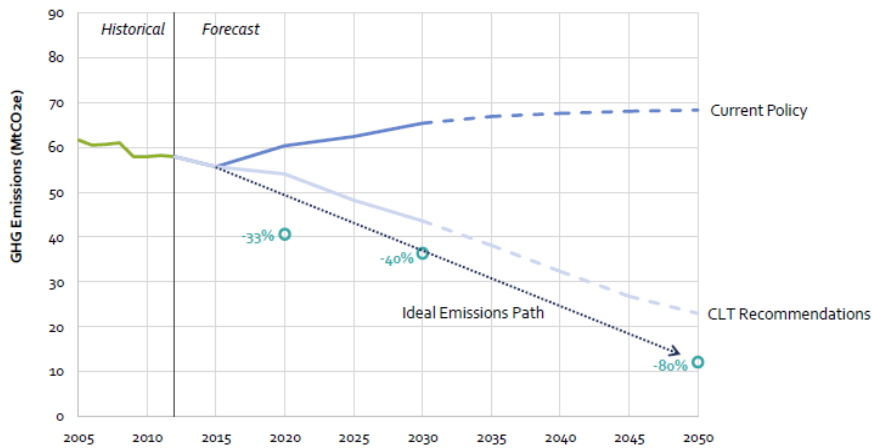
Inadequate progress on the B.C. Climate Leadership Plan

B.C.'s emissions are projected to rise

- B.C.'s emissions have started to rise again, and the province is not on track to achieve its climate targets. The B.C. Climate Leadership Team (CLT) forecasts a 16% increase in carbon pollution by 2030.³ Environment and Climate Change Canada forecasts a 26% increase by 2030.⁴
- The B.C. Climate Leadership Team provided a package of recommendations to get the province back on track.⁵ Regarding LNG and upstream gas, the CLT recommended increasing the carbon tax by \$10/tonne/year starting in 2018 (with an announcement in 2016); expanding carbon tax coverage in 2021; developing mechanisms to protect emissions-intensive trade-exposed sectors;

setting a methane reduction goal backed by regulation; and developing an electrification strategy for LNG and upstream gas.

Figure 1: B.C. emissions forecast with and without Climate Leadership Team recommendations



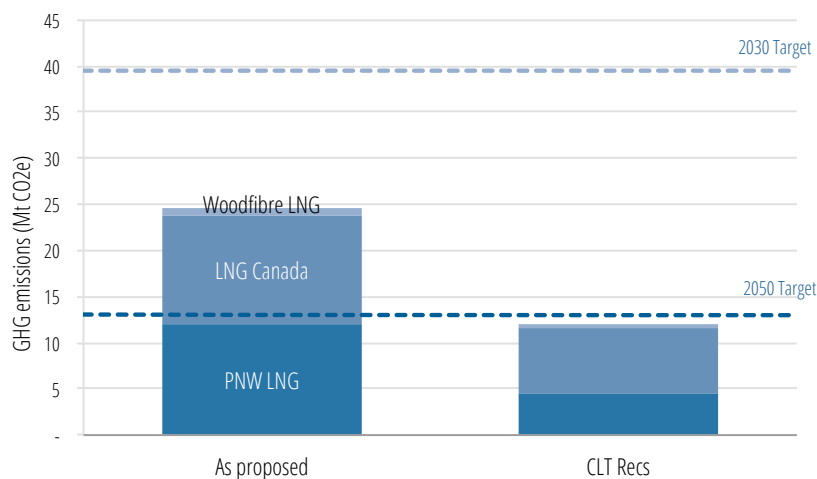
Source: B.C. Climate Leadership Team — Recommendations to Government

- To date, the B.C. government has not implemented the Climate Leadership Team recommendations, and as a result, B.C.'s emissions are still projected to rise significantly.

Proposed and permitted LNG projects make B.C.'s targets impossible to achieve

- The combined annual emissions from PNW LNG, LNG Canada and Woodfibre LNG (and their associated upstream development) would be 24.6 million tonnes in 2030 based on their current designs (the left column in Figure 2).⁶ This would represent 62% of B.C.'s recommended 2030 target and 189% of the legislated 2050 target, and that doesn't account for the emissions from other industries, transportation or buildings.
- The same amount of LNG (45 million tonnes) developed under the CLT recommendations would be responsible for 12.0 million tonnes of carbon pollution (the right column in Figure 2).⁷ While still a significant amount, it would be 51% less polluting than if development proceeds as proposed.

Figure 2: Emissions from three LNG projects with and without CLT recommendations



- On its own, the PNW LNG project and associated upstream development would result in 11.4 to 14.0 Mt CO₂e. This accounts for 29% to 35% of B.C.'s recommended 2030 target, and 2.2% to

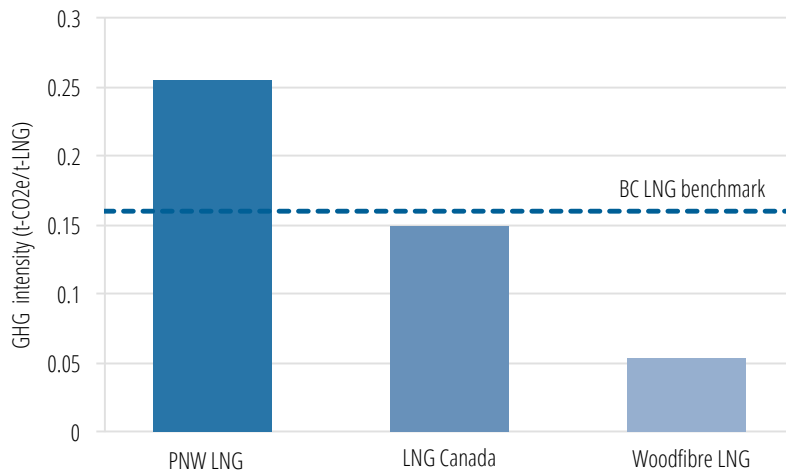
2.7% of Canada’s 2030 target, which the federal government has described as a floor. The project would operate past the middle of the century and would account for 75% to 108% of B.C.’s legislated 2050 target, making it unlikely that B.C. will meet this target.⁸

Inadequate efforts to limit carbon pollution from Pacific NorthWest LNG

PNW LNG is not designed to best practices

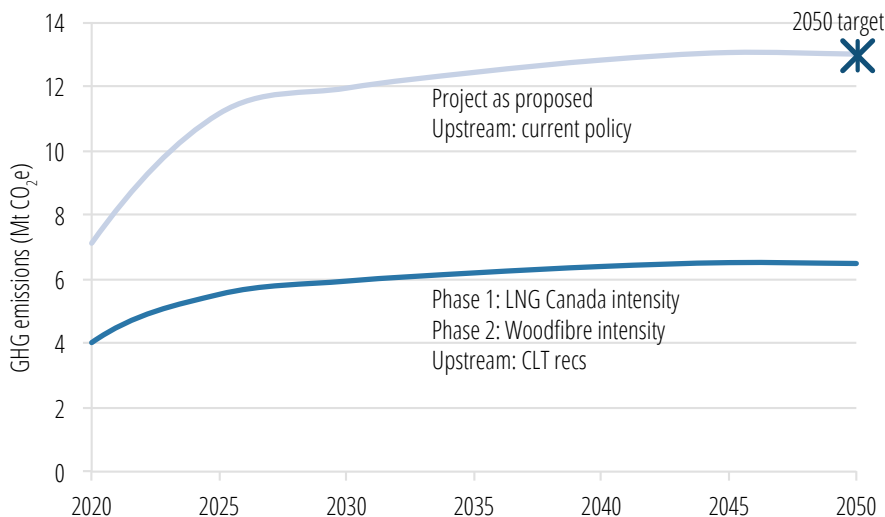
- The project will have a terminal emission intensity of 0.255 t-CO₂e/t-LNG, significantly above the B.C. benchmark of 0.16 t-CO₂e/t-LNG and other proposed B.C. projects. In comparison, the LNG Canada proposal achieves an intensity of 0.15t-CO₂e/t-LNG or 41% better than PNW LNG. The Woodfibre LNG proposal achieves 0.054 t-CO₂e/t-LNG or 79% better than PNW LNG.

Figure 3: Emissions intensity from three LNG projects as currently proposed



- The carbon pollution from PNW LNG and its associated upstream activities could be reduced significantly by relying on improved technologies at the terminal and upstream. For example, if phase 1 of the project were built to the standard of the LNG Canada proposal, phase 2 were built to the standard of the Woodfibre LNG project, and upstream development met the standards anticipated by the Climate Leadership Team, carbon pollution would be 50% lower.

Figure 4: PNW LNG and associated upstream emissions under current and improved scenarios



- The federal government has options to limit the project’s carbon pollution through the regulatory process (by rejecting it or imposing conditions), through federal climate policy, and by encouraging stronger B.C. climate policy.

Global context

Exporting LNG will not help reduce global emissions

- It is often argued that LNG from B.C. will reduce global emissions even if there are significant increases in Canada. The argument is based on the premise that LNG will displace coal in Asia, which is an assumption not supported by evidence. The global climate impact of LNG cannot be ascertained simply by comparing it to coal. The overall mix of natural gas, coal, nuclear, renewable energy and energy efficiency determines overall GHG emissions, and considering natural gas and coal in isolation misses this bigger picture.
- At least three studies have assessed the GHG implications of increased availability of natural gas and they all come to the conclusion that it does not help reduce GHGs. For example, a 2014 study drawing from the results of five teams using different global energy models found that increased use of natural gas is not a substitute for climate change mitigation policy: “market-driven increases in global supplies of unconventional natural gas do not discernibly reduce the trajectory of greenhouse gas emissions or climate forcing.”⁹
- There is also an inherent assumption that natural gas demand will increase as the world begins to reduce emissions. The opposite is true. For example, the 2015 World Energy Outlook forecasts that the stronger the climate policy, the less gas demand there is globally.¹⁰ In 2040, global gas demand is 28% lower in the ‘450’ scenario compared to the ‘Current Policies’ scenario.
- A separate consideration is that the discussion on the role of LNG exports in global emissions is largely irrelevant to Canada’s climate commitments. International reporting standards, including those included in the Paris Climate Accord, require countries to reduce their domestic emissions. In exporting LNG, Canada is responsible for the emissions occurring from producing and liquefying the gas, while importing countries are responsible for ensuring the end-use emissions fit within the targets they have agreed to.

Acknowledgements

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¹ Terminal emissions range from 4.9 Mt to 5.28 Mt CO₂e, based on information provided by the proponent and from CEAA. Upstream emissions are based on analysis by the CEAA, which estimates upstream emissions to range from 6.5 Mt to 8.7 Mt CO₂e. The CEAA upstream analysis is available at ceaa.gc.ca/050/documents/p80032/104795E.pdf

² Canada’s two largest polluters in 2013 were the Syncrude mines and upgrader at 12.5 Mt CO₂e, and the Sundance coal power plant at 12.2 Mt CO₂e.

³ The Climate Leadership Team report does not report a specific percentage. The 16% was estimated based on Figure 1 in this document.

⁴ Environment and Climate Change Canada, *Canada's Second Biennial Report on Climate Change* (2016). <https://www.ec.gc.ca/GES-GHG/default.asp?lang=En&n=02D095CB-1>

⁵ B.C. Climate Leadership Team, *Climate Leadership Team — Recommendations to Government* (2015). http://engage.gov.bc.ca/climateleadership/files/2015/11/CLT-recommendations-to-government_Final.pdf

⁶ Numbers calculated using the Pembina Shale Scenario Tool. The key assumptions are: LNG terminal intensity: PNW LNG = 0.255 t-CO₂e/t-LNG; LNG Canada = 0.15 t-CO₂e/t-LNG; Woodfibre LNG = 0.054 t-CO₂e/t-LNG. Plants come online in: PNW LNG phase 1 – 2021, phase 2 – 2023; LNG Canada phase 1 – 2020, phase 2 – 2022;

Woodfibre LNG – 2025. Policy and gas supply is set as business as usual. Methane global warming potential is set at 34. The tool is available at <http://www.pembina.org/pub/BCShaleTool>

⁷ We reproduced the CLT recommendations in the Pembina Shale Scenario Tool. Assumptions used for the LNG terminals are: LNG Canada phase 1 has an liquefaction GHG intensity of 0.15 t-CO₂e/t-LNG (as currently proposed); LNG Canada phase 2, PNW LNG phases 1 and 2 and Woodfibre LNG have a GHG intensity of 0.054 t-CO₂e/t-LNG, which represents an efficient electric drive system similar to what is proposed for Woodfibre LNG. Upstream emissions are adjusted to reflect ambitious adoption of electrification and methane controls.

⁸ The B.C. government has used an assumption that 75% of the gas would come from B.C., with the remainder sourced from Alberta. In this scenario, the Project would be responsible for between 9.8 and 11.4 Mt in B.C., which would account for between 75% and 87% of B.C.'s 2050 target. PNW LNG has stated their intention is to rely on gas from Progress Energy's holdings in northeast B.C.

⁹ McJeon et al., "Limited impact on decadal-scale climate change from increased use of natural gas," *Nature*, 514 (2014). <http://www.nature.com/nature/journal/v514/n7523/full/nature13837.html>

¹⁰ International Energy Agency, "World Energy Outlook" (2015). worldenergyoutlook.org/weo2015/#d.en.148701