

March 1, 2016

Sent via email

Canadian Environmental Assessment Agency
410-701 West Georgia Street
Vancouver, British Columbia V7Y 1C6

To whom it may concern:

Re: Woodfibre LNG Project — analysis of anticipated greenhouse gas emissions

In response to the government's request for comment on the analysis of the anticipated greenhouse gas (GHG) emissions associated with the proposed Woodfibre LNG Project (the "Project"), we wanted to express our support to the federal government for including in the review process the upstream and midstream GHG emissions associated with the Project.

We believe that the upstream GHG emissions associated with the Project are significant. However, we want to reiterate that simply assessing the upstream emissions will not reduce their impacts. For this, more stringent plans and policies are required across the LNG and natural gas supply chain.¹

Transparency on assumptions

We are pleased that the Canadian Environmental Assessment Agency (CEAA) used the Pembina Institute's B.C. Shale Scenario Tool as one data source in its review of related upstream emissions associated with the Project. We think the tool would be more useful to reviewers if the input assumptions (e.g. origin of gas supply and environmental policies in place) were shared because these have significant bearing on the overall GHGs. Additionally, the CEAA analysis mentions that the Pembina tool does not account for differing emissions from production or processing facilities. Although the outputs are not readily separated into these groupings, the Pembina tool is able to disaggregate emissions from production, transmission and processing for each producing basin. We are happy to offer guidance to CEAA staff in using the tool to its fullest potential in assessing the GHG impacts from LNG development.

Underestimated methane

We also want to highlight that the analysis likely underestimates methane emissions. The Pembina tool uses emission factors from Clearstone Engineering (2014). These emission factors give a methane leakage rate of 0.20%, which is comparable to the B.C. Provincial Inventory Report (0.27%) and the B.C. Industrial Facility Greenhouse Gas Emissions Report (0.24%). It is not clear what methane leakage rates are included in the other GHG estimates in the report. For comparison, methane leakage reported by the U.S. Environmental Protection Agency across a comparable part of the supply chain (the production,

¹ For more information on how to incorporate upstream GHG emissions into the decision making process, please refer to the Pembina Institute's article "4 key questions for the Canadian government's new climate test" available at <http://www.pembina.org/blog/4-key-questions-for-the-canadian-governments-new-climate-test>

processing, and transmission stages) is 1.33%, or more than five times greater than what is currently reported in B.C.^{2,3}

Furthermore, recent research by the Intergovernmental Panel on Climate Change (IPCC) suggests the global warming potential assigned to methane will need to be increased compared to the standard factors in use today. The default global warming potential set in the Pembina tool is 21 to reflect the GHG reporting standards currently used in B.C.⁴ The most recent Assessment Report by the IPCC (AR5) suggests that this value should be 34 over a 100-year time frame and when including climate-carbon feedbacks.⁵

The potentially higher methane leakage rates and the higher global warming potential than currently used in provincial and national GHG reporting suggest that methane emissions for B.C.'s natural gas sector are likely underreported. Assuming the EPA leakage rate of 1.33% and correcting the global warming potential to 34, methane's contribution to gas sector emissions would grow from 1.4 Mt CO₂e to 14.7 Mt CO₂e, and annual GHG emissions for the entire sector would more than double to 23.5 Mt CO₂e.⁶

Opportunities to limit GHG emissions

The Pembina Institute acknowledges that Woodfibre LNG has taken measures to limit GHG emissions, including using electric motors to power the liquefaction process and using dry seals for compressors. However, the overall impact of the Project will still be larger than necessary because of untapped opportunities to reduce GHGs from upstream gas. For example, research by the consulting firm ICF International recently found that methane emissions from Canada's oil and gas sector could be reduced by 45% for less than \$3 per tonne CO₂e.

For these opportunities to be fully tapped, gaps in the policy framework need to be closed and existing policies need to be strengthened. For example, B.C.'s carbon tax does not apply to non-combustion sources such as the venting of formation CO₂ and methane as well as fugitive sources of methane that make up 36% of total reported gas sector emissions (or 72% assuming the EPA suggested leakage rates and a GWP of 34). Furthermore, B.C. is lagging other leading gas producers in North America in managing methane emissions through regulation. It is the only jurisdiction in the top 10 gas producing states and provinces that does not have some level of state/provincial and/or federal methane regulations in place.⁷

² Statistic Berkley. Retrieved from: <http://static.berkeleyearth.org/memos/epa-report-reveals-lower-methane-leakage-from-natural-gas.pdf>

³ Considering CH₄ emissions only from: Field Production, Processing and Transmission and Distribution – Table 3-44. EPA. US Greenhouse Gas Inventory 2013: Chapter 3 — Energy. Retrieved from: <http://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Chapter-3-Energy.pdf>

⁴ BC Greenhouse Gas Inventory Report (2012). Retrieved from: <http://www2.gov.bc.ca/assets/gov/environment/climate-change/reports-and-data/provincial-ghg-inventory-report-bcs-pir/pir-2012-full-report.pdf>

⁵ IPCC, Working Group 1 Contribution to the IPCC Fifth Assessment Report Climate Change (2013): The Physical Science Basis. Retrieved from: https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/drafts/fgd/WGIAR5_WGI-12Doc2b_FinalDraft_Chapter08.pdf

⁶ Calculated using the Pembina Shale Tool. Default settings, leakage rate of 1.33%, GWP of 34, and calculated for the year 2015.

⁷ Pembina Institute. Managing methane emissions from B.C.'s gas sector. Retrieved from: <http://www.pembina.org/blog/webinar-managing-methane-emissions-from-bcs-gas-sector>

The recommendations from the B.C. Climate Leadership Team — a cross-sectoral panel of experts — included a number of policies to reduce emissions from the gas sector. The team recommends that B.C. should increase the carbon tax and broaden it to cover all sources of emissions. In addition, the team recommends the reduction of fugitive and vented methane emissions by 40% by 2020 by setting leak detection and repair requirements in line with best practices in North America, developing best practices for methane reductions and seeking alignments with Canada and other jurisdictions, and to committing to developing a new strategy for reducing methane following the first five year review. If implemented, the Climate Leadership Team recommendations would ensure that GHGs from LNG and the gas sector are minimized.

Provincial and federal climate targets

The GHG emissions associated with the Project will be close to 1.0 Mt CO₂e per year. For B.C., this would represent 2% of the 2030 target recommended by the Climate Leadership Team, and 7% of the legislated 2050 target. Nationally, the 1.0 Mt represents 0.2% of Canada's 2030 target. These percentages do not account for the higher leakage rate and global warming potential for methane described above. We have not adjusted this because we would need to update the provincial and national inventories accordingly.

The Minister of Environment and Climate Change has described the 2030 target as a floor for Canada's ambitions. Provincially and federally, plans do not currently exist to meet medium or long-term targets, and the development of any LNG projects will make producing credible plans that much more challenging. If Canada is going to follow through on the commitments made in Paris, those plans will need to be developed quickly and they will need to be credible.

Yours sincerely,



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