March 10 2016

Lisa Walls
Regional Director
Canadian Environmental Assessment Agency

Dear Ms Walls

Re: Comments on Draft EA report for the Pacific NorthWest LNG project

Voters Taking Action on Climate Change (VTACC) applauds the Canadian government for recognizing the importance of assessing the upstream greenhouse gas ("GHG") emissions associated with the proposed Pacific NorthWest LNG Project (the "Project"). VTACC welcomes the opportunity to provide comments on the Draft EA report for the Project, particularly the report's conclusions on the impacts arising from upstream and direct GHG emissions associated with the Project.

VTACC agrees with the Draft EA's conclusion that the Project's direct and upstream GHG emissions would be "high in magnitude, continuous, irreversible and global in extent"[1] and that the Project is likely to cause significant adverse environmental effects ("SAEE") as a result of its upstream and direct GHG emissions.[2]

Given our current circumstances — the globally acknowledged need to urgently reduce the GHG emissions that contribute to worsening climate change and Canada's commitment to keep global average temperature rise to 1.5°C, in any event well below 2°C, over preindustrial levels[3] — VTACC submits that the Final EA report must maintain the above conclusions. Furthermore, VTACC urges the Minister of Environment and Climate Change to decide that the Project will cause SAEE and urges the Governor in Council to decide that those SAEE cannot be justified.

VTACC wishes to make additional comments on the Draft EA's estimation of upstream GHG emissions, as well as its failure to assess downstream emissions from the Project. These comments follow a summary of VTACC's interest in this issue, below.

Voters Taking Action On Climate Change
VTACC is a volunteer run non-profit society registered in 2007 in British Columbia.

---

[1] Canadian Environmental Assessment Agency, Draft Environmental Assessment Report - Pacific NorthWest LNG (10 February 2016), at 37. [Draft EA report]

[2] *Ibid,* at 39.

[3] UNFCCC, *Paris Agreement*, (12 December 2015), Art. 2.

VTACC is dedicated to encouraging all levels of government in Canada to take meaningful action to reduce greenhouse gas emissions that contribute to climate change, including encouraging law and policy reform to restrict the extraction and use of fossil fuels.

VTACC works to encourage the public, the media and governments to "connect the dots" between the urgent need to reduce climate-harming emissions and the fossil fuel export projects proposed in Canada that will increase those emissions. VTACC is interested in ensuring that all environmental assessment processes consider GHG emissions from the full lifecycle of all projects under review, including all associated upstream and downstream emissions that would be generated by projects.

VTACC fulfils its objectives through a variety of activities including public outreach and education, direct engagement with governments, enabling citizen participation in government decision making and policy development processes, and participating in public and regulatory processes related to its mandate.

VTACC's membership is composed of the society's Directors. VTACC maintains regular contact via email with approximately 3000 supporters, most of whom live in British Columbia. VTACC also engages with additional supporters and the wider public through social media channels such as Facebook and Twitter and through coverage of our work in mainstream news media.

VTACC works with religious leaders, academics, health and environmental experts, community groups and local governments to pursue strong climate policy and to challenge development projects that will increase greenhouse gas emissions.

VTACC has facilitated public engagement in government decision making around climate policy and fossil fuel exports at the local, regional, provincial and federal levels.

VTACC's early work focused on opposing coal fired power plants in BC and building wide support for a strong, economy wide carbon tax in BC among members of the public, businesses and faith groups. VTACC has also consistently worked to increase public and elected representative awareness of the need for urgent and significant action to reduce GHG emissions

VTACC's current work challenging a proposed new port on the Fraser River for the export of US thermal coal has repeatedly emphasized the need for environmental assessment processes to consider the full lifecycle GHG emissions of the project, including the downstream GHG emissions resulting when the exported coal would be burned. VTACC has worked to raise awareness among the public and with decision makers about the significant scale, within the Canadian context, of downstream GHG emissions associated with this thermal coal port proposal.

VTACC's concerns about LNG proposals and the GHG emissions from the Project

VTACC is concerned about the climate, environment and public safety impacts associated with the extraction, processing, transport, liquefaction and export of natural gas. VTACC is particularly concerned about the greenhouse gas emissions that are released during all phases of the natural gas extraction and liquefaction process.

VTACC has long been concerned that the BC government has not given adequate consideration to the upstream, direct and downstream GHG emissions that would be generated if the

province is successful in developing an LNG export industry, especially given that these emissions will be significant in the context of BC's GHG emission reduction targets.

VTACC has encouraged and facilitated public commenting to government on the proposed Wespac Tilbury LNG terminal on the Fraser River via a website at www.RealLNGHearings.org. The website has emphasized the need for careful assessment of upstream and downstream GHG impacts associated with the Wespac Tilbury proposal.

VTACC provided a commenting tool on that website to enable the public to submit comments to the Canadian Environmental Assessment Agency (the "Agency", "CEAA") in May 2015 in support of a Federal Environmental Assessment for the Wespac Tilbury proposal. Over 1000 comments were sent to CEAA using the web tool during the May 2015 comment period.

In November 2015 VTACC provided a second commenting tool on the RealLNGHearings.org website to encourage the public to provide comment to the BC Environmental Assessment Office ("EAO") on the Application Information Requirements for the Environmental Assessment for the Wespac Tilbury proposal. Over 500 comments were sent to the BC EAO using the web tool during the November 2015 comment period.

VTACC's own submission to the BC EAO on the Wespac Tilbury proposal from December 2015 called for assessment of upstream and downstream GHG emissions that would be generated by the project.

In July 2015, along with the non-profit organization Skeena Wild, VTACC wrote to Transport Canada to provide comment on the Proposed Port of Prince Rupert Liquefied Natural Gas Facilities Regulations that were then posted for comment in the Canadian Gazette.[4]

The current comment period on the Draft EA for the Project is the first opportunity for the public to respond to the analysis of the Project's upstream GHG emissions. In fact, it is VTACC's understanding that this is the first assessment of upstream GHG emissions for *any* EA conducted under the *Canadian Environmental Assessment Act, 2012* ("*CEAA, 2012*"). This is a major milestone in environmental assessment in Canada and the outcome of this assessment process will set a precedent for future analyses of upstream GHG emissions.

The fact that the Agency has determined that the Project's upstream GHG emissions are significant, in the context of BC and Canadian emission reduction goals, makes it all the more important that the analysis in the Draft EA is thorough and complete.

The following paragraphs present our general support for the analysis of upstream GHG emissions in the Draft EA report, our concerns with some shortcomings in that analysis, and our objections to the exclusion of any analysis of downstream GHG emissions in the Draft EA.

---

[4] VTACC and Skeena Wild to Director, Ports Policy, Transport Canada. July 2015 http://www.v-tacc.org/content/pdf/Comments%20on%20LNG%20regulations%20Port%20of%20Prince%20Rupert.pdf

Support for the assessment of upstream GHG emission impacts from the Project

The Draft EA report for the Project is the first, for a major energy infrastructure project in Canada, to take account of upstream GHG emissions. This should be applauded. The Agency has jurisdiction under *CEAA, 2012* to take account of all project related GHG emissions, and such accounting is consistent with the environmental protection and sustainable development purposes of *CEAA, 2012*.

It is reasonable and prudent for the Agency to conclude that the Project's upstream GHG emissions will be within the range projected in Environment and Climate Change Canada's (ECCC) assessment[5], (the "Assessment") even though it was not an incremental analysis. It is consistent with the Agency's mandate to protect the environment and human health and apply the precautionary principle to make conclusions on upstream GHG emissions based on an assessment that yields a conservative upstream GHG emission figure. The Project proponent did not object to this methodology in its response to the Assessment.[6]

Deficiencies in the Assessment of upstream GHG emission impacts from the Project

The Assessment does not provide sufficient detail on two key issues to allow for a full response to its conclusions. As a result, VTACC is concerned that the upstream emission range projected by ECCC may in fact under estimate upstream GHG emissions from the project.

Methane Leakage Rates
The Assessment does not specify what assumptions, if any, are made about methane leakage rates used in the analyses of any of the emission forecasts presented.

Clearly identified methane leakage rates are a key aspect to upstream GHG assessment. The methane emissions of shale gas production, processing and transport are the "primary knowledge gap related to the impact of GHG emissions associated with shale gas development."[7]

---

[5] ECCC February 2016 Pacific Northwest Liquefied Natural Gas (LNG) Project, Review of Related Upstream Greenhouse Gas (GHG) Emissions Estimates. https://www.ceaa.gc.ca/050/documents/p80032/104795E.pdf

[6] Pacific Northwest Energy to Lisa Walls, CEAA, February 2016 http://www.ceaa.gc.ca/050/documents/p80032/104791E.pdf

[7] Council of Canadian Academies, Environmental Impacts of Shale Gas Extraction in Canada, The Expert Panel on Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction (2014), at 112 online: http://www.scienceadvice.ca/uploads/eng/assessments%20and%20publications%20and%20news%20releases/shale%20gas/shalegas_fullreporten.pdf.

Higher methane leakage rates can mean shale gas production has an equivalent or greater amount of lifecycle GHG emissions than coal.[8]

The science shows that methane leakage is universal in shale gas development.[9] Methane leakage rates in the scientific literature are estimated in the range of 0.5% - 8.0% of gas extracted.[10] Rates of leakage are highly uncertain but highly consequential given methane's powerful heat trapping ability (its global warming potential compared to carbon dioxide — addressed below). While mitigation technologies exist they are influenced by the particularities of the shale gas play being developed.[11]

In this context, the Project's upstream GHG assessment should be based on emission forecasts that assume a methane leakage rate on the higher end of the range. We reiterate that some level of methane leakage in upstream activities is unavoidable. However, the science on methane leakage rates is unsettled. Given these facts assuming a higher leakage rate is consistent with a precautionary approach to consideration of the Project that will help avoid SAEE and serve the purposes of *CEAA, 2012*.

Global Warming Potential for Methane

The Assessment does not specify what global warming potential (GWP) is used in calculating the carbon dioxide equivalency of methane emissions used in any of the presented emissions forecasts. While methane is a short-lived GHG versus carbon dioxide, it has a much higher heat trapping potential. That potential is highlighted, or de-emphasized, depending on the time frame over which methane's GWP is calculated. Averaged out over a 100 year period, the GWP for methane is only 34 greater than carbon dioxide. Calculated over a 20 year period, the GWP for methane is 86 greater than carbon dioxide.[12]

---

[8] Library of Parliament, Shale Gas in Canada: Environmental Risks and Regulation (26 February 2015), at 10-11, ["Library of Parliament"] online: www.parl.gc.ca/Content/LOP/ResearchPublications/2015-18-e.pdf.

[9] This fact has been squarely acknowledged by Prime Minister Trudeau and U.S. President Obama in their calls for new regulations to achieve ambitious reductions of methane emissions in both countries' oil and gas sectors, "the world's largest industrial methane source": see *U.S.-Canada Joint Statement on Climate, Energy, and Arctic Leadership* (10 March 2016), online: http://pm.gc.ca/eng/news/2016/03/10/us-canada-joint-statement-climate-energy-and-arctic-leadership.

[10] *Ibid*, at 11, citing Comité de l'évaluation environnementale stratégique sur le gaz de schiste, *Rapport Synthèse: Évaluation environnementale stratégique sur le gaz de schiste* (January 2014), at 95, online: http://www.mddelcc.gouv.qc.ca/evaluations/Gaz-de-schiste/rapport-synthese.pdf.

[11] Library of Parliament, at 11.

[12] IPCC, *Climate Change 2013; The Physical Science Basis*, Ch 8 "Anthropogenic and Natural Radiative Forcing" (2013), Table 8.7 at 714, online: http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf

The selection of a time frame for the calculation of a GWP for methane is arbitrary. It is not based on scientific argument, but instead reflects a value judgement prioritizing short term versus longer term harm to the climate.[13] In the case of the Assessment, a 20 year time factor for estimating the GWP of methane is warranted, for two reasons.

First, the federal government has itself identified that climate change is *currently* causing harm to the environment, and that the need for action is urgent. Minister McKenna has eloquently made this point in the House of Commons:

> Climate change is real, climate change is happening now, and it is the challenge of our generation. Canadians know this. Across our country Canadians can see the real impacts of climate change: from forest fires in British Columbia, to flooding in Alberta, to coastal erosion on Prince Edward Island, to melting ice in the north. The signs are there. This is real. Warmer winters are limiting access to winter roads, which isolates a number of communities and negatively affects their quality of life. Wildlife habits are changing, which has a big impact on the traditional ways of life of hunters. This is why our government is determined to address this challenge through concrete actions here at home.[14]

Second, the time frame for the Project's upstream GHG Assessment is itself much shorter than 20 years (from start up to 2030), so there is absolutely no justification for using a 100 year time scale for factoring the GWP for methane when assessing the potential harm to the environment from the project.

Comparative Assessments of Upstream GHG Emissions

Below, VTACC addresses both of the identified shortcomings in the Assessment by offering three comparative scenarios of the emissions from the project using the Intergovernmental Panel on Climate Change ("IPCC") 20 year GWP of 86 for methane and a range of leakage rates for methane drawn from the scientific literature.

UPSTREAM GHG EMISSION SCENARIO COMPARISON (All MT CO2eq)					
Scenario 1: 0.5% leakage	Scenario 2: 1.33% leakage	Scenario 3: 8% leakage	CEAA Low	CEAA High	Petronas
12.8	27.1	142.1	6.5	8.7	5.0
Above: all assume 20 yr CH4 GWP of 86			Above: unknown leakage rate and GWP for CH4		

[13] *Ibid,* at 711.

[14] Canada, Parliament, *House of Commons Debates*, 42nd Parl, 1st Sess, Vol 148, No 010 (27 January 2016) at 1515.

- Scenarios 1-3 developed using the Pembina Institute BC Shale Scenario Tool[15], with modifications as follows:
    - Scenarios 1 -3 all incorporate the IPCC-recognized 20 year methane GWP of 86.
    - Scenarios 1 and 3 present the range of methane leakage rates identified in *Shale Gas in Canada: Environmental Risks and Regulations* (2015).[16]
    - Scenario 2 presents the leakage rate identified in a 2013 US EPA estimate of upstream emissions from natural gas systems.[17]
- CEAA Low, CEAA High and Petronas estimates of upstream GHG emissions are all drawn from the Draft EA report.

The difference between the comparison scenarios and the CEAA Low and High scenarios is stark. Again, it is unclear if the lower CEAA estimates result from ECCC's use of a lower 100 year GWP for methane, lower assumed values for methane leakage rates, or both.

In any case, the precautionary approach suggests that, given the uncertainty in leakage rates, a rate at the higher end of that identified in the scientific literature should be applied. On that basis alone VTACC concludes that ECCC has likely under estimated upstream emissions from the Project.

Further, the reality that climate change is an unfolding crisis requiring an immediate and forceful response argues for use of the higher 20 GWP for methane when analyzing the GHG emissions from the project. Again, on this basis VTACC concludes that ECCC has likely under estimated upstream emissions from the project.

It is crucial that CEAA make explicit the GWP and methane leakage rate selected for its analysis — and the value judgements and assumptions embedded in these selections — prior to determining if the Project will produce SAEE and if those SAEE are justified.

Impact of Project's downstream GHG emissions on climate should also be assessed

The ECCC Assessment did not consider downstream GHG impacts of the Project though it clearly believed these impacts are relevant and could have been considered.

The ECCC Assessment notes scientific acceptance (as outlined by IPCC WG1 in their contribution to the Fifth Assessment Report) of the position "that the rise in global average surface temperature will be determined by the cumulative amount of global greenhouse gas emissions." The Assessment also notes that "the incremental increase in emissions from the Project adds to

---

[15] http://www.pembina.org/pub/BCShaleTool

[16] Library of Parliament

[17] US Environmental Protection Agency. US Greenhouse Gas Inventory 2013: Chapter 3 — Energy. Table 3-44. http://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Chapter-3-Energy.pdf Documented in Pembina Institue March 2016 at http://www.pembina.org/reports/woodfibre-lng-ceaa-20160301.pdf

the overall global carbon emissions and the subsequent increase in global average temperature."[18]

ECCC stated that with more time and access to more reliable data and methodologies it could have assessed downstream GHG emissions.[19]

At a general level, the GHG emissions from downstream activities associated with the Project can be expected to be even greater than the Project's direct and upstream GHG emissions. VTACC estimates the Project's downstream GHG emissions to be on the order of 60 MT CO_2e per year from the combustion of the exported natural gas.[20]

Given the scale and significance of the Project's downstream GHG emissions, the 365 day time limit for the EA should have been extended to allow ECCC to assess them.

Legally, the time limit could still be extended under *CEAA, 2012* to allow for downstream assessment.[21] The time limit should be extended to allow for an assessment of the Project's downstream GHG emissions because:

- The Agency has jurisdiction to consider the Project's downstream GHG emissions under *CEAA, 2012*.
- This is the first EA report on a major energy project since Canada committed to keeping global average temperature rise to 1.5°C, in any event well below 2°C, over preindustrial levels, in the Paris Agreement.
- The Final EA report will go to the Minister while the national climate change plan is still in development. That plan will not be finalized until at least October 2016. The Draft EA report recognizes the importance of information on the Project's upstream GHGs to the development of that plan; the Project's downstream GHGs are no less important.

Conclusion

The Draft EA report's assessment of upstream GHG emissions from a fossil fuel export project in Canada is a major improvement in the EA process that reflects the urgent need to acknowledge and reduce the anthropogenic GHG emissions driving global climate change. CEAA and ECCC should be applauded for their work in this area.

We believe the Final EA report should maintain the conclusion that the Project's direct and upstream GHG emissions are SAEE. Furthermore, we respectfully request that the Minister of Environment and Climate Change decide that the Project will cause SAEE and call on the Governor in Council to decide that those SAEE cannot be justified.

---

[18] Draft EA, at 36.

[19] ECCC February 2016, at 2.

[20] Assuming 19.2 Mtpa export of 100% Montney NG. Including emissions from the transport of LNG to export markets would increase downstream emissions somewhat more.

[21] *CEAA, 2012*, ss. 25(3) and (4).

This decision that Project SAEE are not justified can be made on the basis of upstream and direct GHG emissions from the Project alone, which, as we have shown above, are likely higher than have been estimated in the ECCC Assessment.

Further, if ECCC were to analyze and incorporate downstream emissions into its Assessment for CEAA's consideration— a consideration that is within CEAA's jurisdiction and entirely appropriate given Canada's stated commitment to reducing GHG emissions — the argument that the Project will cause SAEE, and that those SAEE are not justified, would be strengthened. For this reason we strongly urge the Minister and/or the Governor in Council[22] to extend the time limit for the EA to 1) allow for a more thorough assessment of upstream emissions (explicitly incorporating appropriate methane leakage rates and the most recent IPCC 20 year GWP for methane) and 2) allow for thorough assessment of the downstream emissions associated with the Project.

Sincerely,

Kevin Washbrook
Director
Voters Taking Action on Climate Change

[22] Under *CEAA, 2012*, s. 25(3) the Minister has authority to extend the time limit for the EA by 3 months to take into account circumstances that are specific to the project; under s. 25(4) the Governor in Council may extend the time limit further for an indefinite period on recommendation of the Minister.