



**SIERRA CLUB OF CANADA FOUNDATION COMMENTS ON THE DRAFT REPORT FOR THE
REGIONAL ASSESSMENT OF OFFSHORE OIL AND GAS EXPLORATORY DRILLING EAST OF
NEWFOUNDLAND AND LABRADOR**

February 21, 2020

About Sierra Club Canada Foundation

Sierra Club Canada Foundation empowers people to be leaders in protecting, restoring and enjoying healthy and safe ecosystems. We are a grassroots organization with a “think globally, act locally” philosophy. Members are encouraged to actively contribute to environmental causes that engage or inspire them, in a capacity that best suits their capabilities. We have four regional Chapters and a youth-led Chapter, Sierra Youth. The Sierra Club’s Atlantic Canada Chapter works through education and action to green the economy and protect the environment. We engage in projects designed to connect children to nature, protect wildlife and wild spaces, and to offer solutions to climate change.

Involvement in the Regional Assessment

Sierra Club Canada Foundation has worked for decades to protect marine ecosystems, endangered species, and coastal communities from the negative impacts of oil and gas exploration and development. Our activities have focussed on policy solutions, research, advocacy, coalition building, education and outreach.

Our organization was instrumental in the creation of the 1992 *Canadian Environmental Assessment Act*, and has engaged in advocacy to improve environmental impact assessment in Canada. Most recently, we provided input into the drafting of the new *Impact Assessment Act* (IAA) that came into force in August 2019. The present assessment of offshore oil and gas exploratory drilling east of Newfoundland and Labrador will be the first regional assessment performed under the new IAA, and through our participation in this process, we are committed to ensuring the regional assessment process meets the requirements of the IAA.

Our experts will focus primarily on two specific areas: preventing oil spills from affecting the marine environment through reducing risks to As Low As Reasonably Possible (ALARP), and accurately assessing GHG emissions associated with exploratory drilling and the cumulative

activities proposed in the research area. We reserve the right to provide additional comments on the issue of risks of oil spills and cumulative impacts for the March 19th submissions relating to the GIS.

Recommendations

1. The RA Draft Report falls short of obligations created under the *Impact Assessment Act* (IAA) regarding the importance of attention to climate change as regulators and proponents undertake impact assessments under the Act. Without accurately assessing GHG emissions associated with exploratory drilling and cumulative GHG emissions, the proposed regional assessment fails to identify significant implications for provincial, federal, and regional ¹ climate commitments. We have demonstrated that the impacts from exploratory drilling alone will make it unlikely Newfoundland and Labrador will achieve provincial GHG emission targets. The draft regional assessment report must accurately assess these impacts, and propose means to address them.
2. Offshore exploratory and production GHG emissions estimates must include fugitive and other elusive methane emissions from sources above and below water.
3. There is insufficient information and documentation provided to determine whether or not the risks associated with accidental events that could result in releases of oil and gas to the environment have been developed (Section 4.3). Rather, unsupported, general conclusions have been provided that there are no major 'spill' risks. The Committee acknowledges that there is a 'future need' for both qualitative and quantitative risk assessments but relies on the "history of offshore exploratory drilling" to conclude that the "risks have been reduced to as low as reasonably practicable." Given the fact that there have been three spills in the NL offshore in the past year - including a spill of estimated 250,000 L of crude oil - and none of the oil spilled was recovered, this history should not inspire confidence, and should not be the basis for maintaining the *status quo*..A major spill could be devastating to marine life and fisheries, potentially impacting international waters. In fact, the draft report concedes a major spill would "hinder" Canada's ability to meet its obligations under the *Convention on Biological Diversity*. We recommend that the need for qualitative and quantitative risk assessment is in the here and now, as part of this assessment, and not some "future" date. We will provide more information on reducing the risk of oil spills in our March 19th submission.
4. The draft report predicts that 136,140 km of 2D and 82,293 km² of 3D seismic testing could be acquired during the 2020-2028 period in the study area. We know the noise from seismic blasting has far-reaching impacts on marine habitats, as the noise from airgun blasts travels thousands of kilometres underwater. There are no new

¹ "In 2015, in recognition of the importance of tracking progress between 2020 and 2050, the province

requirements to reduce this impact proposed in the assessment, particularly on marine mammals, some of which are endangered, nor is there an assessment of the cumulative impacts of numerous seismic surveys on marine food webs, fisheries, and endangered species. We recommend the adoption of underwater noise management protocols to limit underwater noise from seismic testing, designation of areas off-limits to seismic because of impacts on marine life, and encourage alternative technologies that are less damaging to marine environment.

5. The regional assessment process has been *ad hoc*, rushed, and weighted heavily toward approval. If this is the model for regional assessment for the new Impact Assessment Act, it could have far-reaching implications for impact assessments in Canada. We recommend a review of the process and its outcomes before any decisions are made based on this assessment process, and that recommendations be made to improve any future regional assessments in Canada.
6. The draft regional assessment report provides inadequate information upon which the Minister of Environment and Climate Change could support a regulatory decision to eliminate project specific environmental assessments for exploratory drilling. It would be entirely inappropriate for the Minister to base a regulatory decision on this regional assessment.
7. The Regional Assessment Committee has focussed on the development of an online GIS map of the Eastern NL region, which could be a useful research outcome. However, a GIS database compiling existing information will not in and of itself provide advice to decision-makers of relative risks to support approval or rejection of projects. The data and quality of information input into the GIS database and map has not been independently reviewed, making the GIS tool questionable in terms of its rigour and accuracy. These issues need to be addressed before the assessment can be considered complete.
8. Given the shortcomings of this process and outputs, we recommend the RA Committee petition the responsible Ministers for the additional time needed to complete its work.

Comments and Analysis Relating to Climate Change and Related Issues

The comments provided herein on the Draft Report on the Regional Assessment (“RA”) of Offshore and Gas Exploratory Drilling East of Newfoundland and Labrador (“Draft Report”) are presented in four sections:

- Context
- Process Issues
- Substantive Issues
- Conclusion and Recommendations

Context

Taking the crisis into consideration

The context in which these comments and analysis of the Draft Report relating to climate change cannot be overstated: we are currently living in the uncharted territory of a climate crisis that has been hastened by a lack of attention to decades of warnings from the scientific community coupled with weak or absent action from all levels of domestic government as well internationally.

“The world urgently needs to put a laser-like focus on bringing down global emissions. This calls for a grand coalition encompassing governments, investors, companies and everyone else who is committed to tackling climate change.” – **Dr Fatih Birol, Executive Director, International Energy Agency**

There is now a steady drumbeat of news concerning the severity of global warming and its impacts. Recently, both the New York Times² and The Guardian³ saw fit to print stories about a new study, published in the journal *Nature*, news stories were warning that oil and gas production is a far bigger threat to the climate crisis than previously thought. According to the New York Times, “The findings...add urgency to effort to rein in methane emissions from the fossil fuel industry, which routinely leaks or intentionally releases the gas into air.”⁴ The researchers have been trying to understand why atmospheric concentrations of methane have more than doubled since the preindustrial era, and the answer is becoming clear. The Guardian explained that the study revealed that “human emissions of fossil methane have been underestimated by up to 40%” and that the research will pressure the oil and gas industry to

² Hiroko Tabuchi, “Oil and Gas May Be a Far Bigger Climate Threat Than We Knew”. New York Times, February 19, 2020, <https://www.nytimes.com/2020/02/19/climate/methane-flaring-oil-emissions.html>.

³ Jonathan Watts, “Oil and gas firms ‘have had far worse climate impact than thought’”. The Guardian, February 19, 2020, <https://www.theguardian.com/environment/2020/feb/19/oil-gas-industry-far-worse-climate-impact-than-thought-fossil-fuels-methane>.

⁴Supra, note 2.

take action like preventing leaks, reducing flaring and switching to renewables where possible.⁵ Stories like these also make it clear that governments must do all they can encourage a transition away from fossil fuels and, in the meantime, take action to hold oil and gas companies to account for their greenhouse gas emissions. This is the context in which we find ourselves with respect to commenting on the Draft Report and the RA.

The rationale for increased oil and gas production on the basis of global demand are questionable

The rationale for encouraging oil and gas development and production often stated by the governments of Newfoundland and Labrador and Canada is that global demand for Canada's hydrocarbon resources is alive and well, if not growing. Current projections from multiple sources, however, indicate clearly that the timing of demand in relation to when supply from offshore NL production does not match up.

The plan advanced in NL's *Advance 2030* document, which obviously served as one of, if not the key, drivers for the RA, encourages offshore oil and gas development and expresses a desire to see 100 new wells drilled and 650,000 barrels per day (bpd) both by 2030. Most of the exploratory drilling projects currently under federal assessment involve exploration programs of 10-12 years, with many ending around 2030. Setting aside the question of how the drilling of up to 100 wells during that time might translate into massive new production in roughly the same time frame, that is - by 2030 – current projections indicate that global demand will be declining or at least levelling off by then, with some projections the start of a decline well before 2030.

According to the most recent projection of global demand in the International Energy Agency (IEA) *World Energy Outlook 2019*⁶ even under the Stated Policies Scenario (which considers only specific policy initiatives that have *already* been announced), growth in global oil demand “slows to a crawl” after 2025:

“In the Stated Policies Scenario, demand growth is robust to 2025, but growth slows to a crawl thereafter and demand reaches 106 mb/d in 2040. In the Sustainable Development Scenario, the unprecedented scale, scope and speed of changes in the energy landscape paints a very different picture: demand soon peaks and drops to under 67 mb/d in 2040.”

⁵ Supra, note 3.

⁶ Published by the IEA Nov. 2019 and available online at <https://www.iea.org/reports/world-energy-outlook-2019/oil>.

The IEA projections from the WEO 2019,⁷ as well as projections by BP⁸ and McKinsey & Company,⁹ are shown in overlay fashion in a graph created by the Pembina Institute for one of its recent reports.¹⁰ (see **Figure 1**, below).

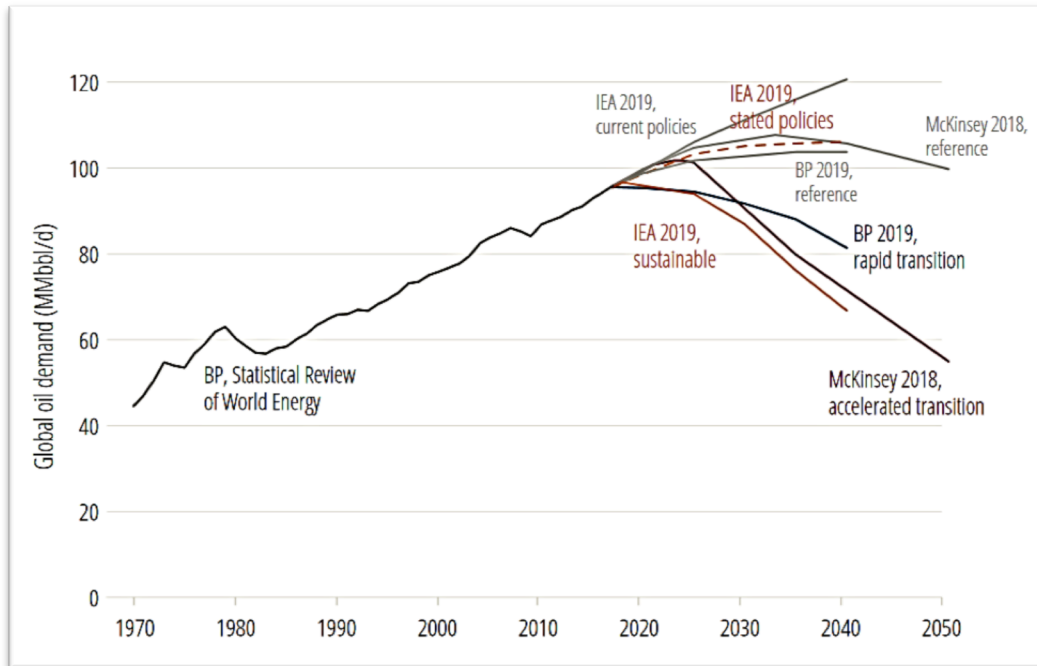


Figure 1: Current global oil demand projections from leading sources

As the graph above shows, all but one of the projections – the IEA’s “current policies” projection¹¹ – begin to level off before 2030. It is also essential to note that projections such as these – with the possible exception of IEA’s “sustainable development” scenario – do not attempt to project global demand in a world that meets or exceeds carbon reduction targets under the Paris Agreement because most jurisdictions have not yet enacted effective policies that let them meet their targets under the agreement.

⁷ Ibid.

⁸ BP, “Statistical Review of World Energy.” <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>, and BP, “BP Energy Outlook.” <https://www.bp.com/en/global/corporate/energy-economics/energy-outlook.html>.

⁹ McKinsey & Company, “Global Energy Perspective: Accelerated Transition,” *Energy Insights*. <https://www.mckinsey.com/industries/oil-and-gas/how-we-help-clients/energy-insights/global-energy-perspective-accelerated-transition>.

¹⁰ Benjamin Israel, Jan Gorski, Nina Lothian, Chris Severson-Baker & Nikki Way. Pembina Institute, *The oilsands in a carbon-constrained Canada*, February 19, 2020, <https://www.pembina.org/reports/the-oilsands-in-a-carbon-constrained-canada.pdf>, p. 19.

¹¹ The current policies scenario is intended to show what happens if the world continues “business as usual”, with no policy changes.

NL's *Advance 2030* plan, which again underpins the RA, and which is mentioned in the Draft Report,¹² seems essentially predicated on the notion that global demand will continue to climb because countries around the world will continue to move at a glacial pace (or not at all) in putting low-carbon economy, substantial GHG-reduction policies into place. At this moment in history, as we are faced with a full-on climate crisis, a plan that takes such an approach is not one that governments should enable.

Process Issues

Draft Report prior to GIS and Modules: It must be said at the outset that the 30-day period to react to the Draft Report is insufficient, given the fact that the Draft Report refers repeatedly to information included in the various “Modules” that are contained in the GIS tool, which did not become available for review until Feb 3, 2020, over 10 days after the comment period for the Draft Report began. We understand that the reasons for this two-stage process flow from the Ministers and not from the RA Committee itself, but that does not negate the fact that piecemeal release of the RA content, by issuing the Draft Report first and the GIS tool with the Modules later, is inefficient for the public and stakeholders as well as for the Committee, and does not lend itself to a careful or even accurate consideration of the content.

Leaving gaps unfilled prior to preparing the Draft Report: Another important process issue that has had, in our view, a negative impact on the quality and completeness of the Draft Report is that while the RA Committee began to identify a number of knowledge gaps across a wide range of topics relatively early in the RA process, it did not take sufficient steps to fill those gaps through input from government agencies and bodies. Rather than continue its work on the basis of incomplete information, the RA committee could have – and should have – compelled production of scientific data and information from agency sources or others in order to fill the gaps.

Uneasy relationship between a “living”, evolving RA and a published regulation: While the Draft Report appears to indicate that the RA is a “living” assessment and that some gaps will be filled in the future via an advisory committee, this provides somewhat cold comfort given the fact that the process is clearly aimed at providing information upon which a federal regulation will be based. Without belabouring the point, the RA has many gaps to fill and issues to resolve before a Final Report can be prepared that might properly serve as the basis for a new regulation.

¹² Draft Report, p. 166.

It also remains unclear exactly how the Regulation could be effectively updated in a timely fashion following modifications to a “living document”. While we understand that this is the domain of the legislator, and not the RA Committee, it would be advisable and helpful to provide a clearer sense of that process in the Report.

Excluding oil and gas production impacts from the RA, particularly for greenhouse gases (GHGs)

Estimates for production impacts must be accounted for within this RA, because if not now, when? In other words, if production impacts are not accounted for in the present RA, through what specific process would production emissions be estimated and analyzed prior to a decision approving a production project? Are we to expect that there will be another RA for production projects only? Without clear answers, the credibility of the entire process is at risk. This very large “elephant in the room” needs to be explicitly addressed either by the RA Committee or by the Ministers overseeing this process, but be that as it may, the lack of a clear explanation thus far on how and when production impacts would be assessed prior to production project approval is unhelpful.

We believe that production impacts should be estimated along with exploration impacts because they are clearly part of looking at cumulative impacts, and regional assessments typically include a strong focus on cumulative impacts (more is said on this issue later in this submission).

Our main concern is that if estimates of production emissions are excluded from the present RA, then they risk being ignored or undercounted during the final evaluation of impacts and approval process. Furthermore, if a regulation is to be made that will in any way affect the subsequent approval of offshore oil and gas production projects, then the RA and Final Report upon which such a regulation is based must include potential impacts once exploration projects are approved.

Further below in this submission, we have made some preliminary estimates, using some of the information in the Stantec report in Module 2 and we have explained our method, which involves making estimates based on reasonably possible scenarios about the number of production projects that might go forward following the exploration activity with which the RA is concerned. (For our estimate of emissions from exploration projects, we also base our estimates on reasonable scenarios about the number of exploration project that may go forward).

Lastly, evaluating production estimates earlier in the process – during the evaluation of a go/no-go decision on exploration, would seem to be more efficient overall.

Concluding comments on the process: The Draft Report and RA are, at this time, insufficient based on process issues alone. Many gaps must be filled before the assessment can be considered complete and a final report can be issued that might serve as the basis for a regulation. The substantive gaps and problems, discussed below, further justify this conclusion.

Substantive Issues

GHG emissions from exploratory drilling projects will likely make NL’s 2030 GHG target unattainable

Accurate estimates of GHG emissions are necessary in order to understand how new exploratory drilling projects may impact NL’s emissions and its ability to meet its 2030 emissions target of 6.9Mt.

In Module 2 in the GIS, a Stantec report dated Oct. 2019 provides a range of GHG emissions estimates for five (5) exploratory drilling programs, derived from information in EIS and other documents for those programs. The GHG emissions estimates range from **75,000 to 186,091 metric tons of GHG CO₂ equivalents/year (CO₂eq/yr)**.¹³ From this data, we can derive a **figure of 117,080 tons of CO₂eq/yr, or approximately .12 megatonnes (Mt) for exploration projects, on average.**

The next step is to decide upon some reasonably possible scenarios on the number of exploration projects that might go forward. A look at NL offshore history provides some help in this regard. As the Draft Report notes, the drilling of 106 exploratory wells in the RA Study Area between July 1971 and August 2019 led to four large production projects and one proposed project. Presuming roughly the same rate of success, it seems reasonable to expect that 100 new wells may lead to 4 of more production projects. Nalcor Executive VP Jim Keating has indicated that it’s “inconceivable” that there are not at least four more projects waiting to be developed offshore NL.¹⁴ Some recent news stories have indicated even higher aims: “the

¹³ Module 2, Description of offshore exploratory drilling and associated activities, Stantec Report, [Summary of Air Emissions Calculations Conducted for Recent Exploratory Drilling Projects in the Study Area. Prepared by Stantec Consulting \(October 2019\)](#), Table 5, p. 11.

¹⁴Quentin Casey, “Big Oil sinking \$4 billion into a deepwater hunt for Newfoundland’s next monster project”. Financial Post, November 28, 2019
<https://business.financialpost.com/commodities/energy/big-oil-sinking-4-billion-into-a-deepwater-hunt-for-newfoundlands-next-monster-project>.

companies involved in exploration had proposed 10 drilling projects over the next two to four years, with upwards of 100 wells proposed in their applications.”¹⁵ It should be noted that this does not necessarily mean 10 totally new projects: some will likely involve “tie-backs” to existing platforms or FPSOs. But it does indicate that the industry is setting its sights on multiple new exploration projects.

For present purposes in the calculations below, we will adopt two scenarios: one in which five new exploration projects go forward, and one in which 10 go forward. Using the .12Mt GHG figure we derived above for exploratory projects, this would mean:

- 5 new exploration projects would create an additional .6 Mt of GHGs; and
- 10 new exploration projects would create an additional 1.2 Mt of GHGs.

Next we need to estimate the potential impact that these exploration-related GHG emissions may have on the ability of NL to meet its **most recent GHG target of 6.9Mt by the year 2030**, which is roughly around the year that most of the exploration projects currently under assessment are slated to finish. To accomplish this, we first need to know the approximate quantum of GHGs already being emitted from existing production projects, and then add to that the exploration-related figure under the two scenarios above. The Canadian Energy Regulator (CER) provides an estimate, albeit from several years ago due to reporting lags, etc. **In 2016, the portion of NL’s total GHG emissions (10.8Mt of CO₂eq) “attributable to offshore oil production” in particular, was 1.6 Mt CO₂eq.**¹⁶

Using the 1.6 Mt figure for 2016 as the “starting point” for GHG emissions from NL offshore oil production, we can estimate the increases in emissions that will come from adding the GHGs estimated for each of the two scenarios – five vs. ten new exploration projects – in **Table 1**, below. For purposes of this exercise, we presume that the 1.6 Mt of GHG emissions from production projects will come from the four existing projects, bolstered by production at certain satellite operations connected to existing projects.

¹⁵ Ibid.

¹⁶ Government of Canada, Canadian Energy Regulator, Provincial and Territorial Energy Profiles – Newfoundland and Labrador, <https://www.cer-rec.gc.ca/nrg/ntgrtd/mrkt/nrgsstmprfls/nl-eng.html>.

| 5 exploratory projects (.12 Mt x 5 =.6 Mt/yr) | | 10 exploratory projects (.12 Mt x 10 =1.2 Mt/yr) | |
|---|------------------------------------|--|------------------------------------|
| 1.6 Mt | Existing Prod GHGs (based on 2016) | 1.6 Mt | Existing Prod GHGs (based on 2016) |
| + .6 Mt | Exploration GHGs | + 1.2 Mt | Exploration GHGs |
| = 2.2 Mt | Total oil GHGs 2030 | = 2.8 Mt | Total oil GHGs 2030 |
| 32% of 6.9 Mt target 2030 | | 41% of 6.9 Mt target 2030 | |

Table 1. GHG estimates for 2030 under two exploratory drilling scenarios

While they may seem modest, the emissions estimates for both the 5-project and 10-project exploration programs would almost certainly make reaching NL’s 2030 target of 6.9Mt GHGs unattainable, particularly in light of the fact that these figures are for oil production only, and gas production – while small – is greater than zero. As the CER observes, oil and gas production is the 2nd largest emitting sector in NL, amounting to 25% of all GHG emissions in the province. Both scenarios explored above would push oil and gas production beyond one-third to two-fifths of total emissions, leaving all other provincial emissions to squeeze into the remaining portion of the emissions pie.

These scenarios and estimates, of course, involve no new, major production projects coming online by 2030, and according to the Advance 2030 plan, NL’s aim is to produce 650,000 barrels of oil per day by that year, which represents over a tripling of the amount of production in 2016 (210,260 bpd) and about two and one-half times the province’s current offshore oil production (261,674 bpd in 2019). With this in mind, it is helpful to estimate the GHG emissions anticipated from that increase.

The production goal of 650,000 bpd represents an increase of 209% over 2016 production levels. It is reasonable to expect that we would see a concomitant increase in GHG emissions, which would take us from 1.6 Mt in 2016 to 4.9 Mt in 2030. This represents a 3.3 Mt increase. Thus, if we add this 3.3Mt increase, representing additional emissions from new and existing production projects, we end up with total GHGs in 2030 that are simply untenable in terms of the 2030 target of 6.9 Mt GHGs, as Table 2, below, makes clear.

| 5 exploratory projects | | 10 exploratory projects | |
|---------------------------|------------------------------------|---------------------------|------------------------------------|
| 1.6 Mt | Existing Prod GHGs (based on 2016) | 1.6 Mt | Existing Prod GHGs (based on 2016) |
| + .6 Mt | Exploration GHGs | + 1.2 Mt | Exploration GHGs |
| + 3.3 Mt | New Prod GHGs | + 3.3 Mt | New Prod GHGs |
| = 5.5 Mt | Total oil GHGs 2030 | 6.1 Mt | Total oil GHGs 2030 |
| 80% of 6.9 Mt target 2030 | | 88% of 6.9 Mt target 2030 | |

Table 2. GHG estimates for existing production, exploration, new production with 2030 target impacts

| 5 exploratory projects | | 10 exploratory projects | |
|---------------------------|----------------------------------|---------------------------|----------------------------------|
| + .6 Mt | Exploration GHGs | + 1.2 Mt | Exploration GHGs |
| + 3.3 Mt | All Prod GHGs (existing and new) | + 3.3 Mt | All Prod GHGs (existing and new) |
| = 3.9 Mt | Total oil GHGs 2030 | 4.5 Mt | Total oil GHGs 2030 |
| 57% of 6.9 Mt target 2030 | | 65% of 6.9 Mt target 2030 | |

Table 3 GHG estimates for exploration and all production with 2030 target impacts

We further address estimates of GHG emissions from various scenarios involving new production projects, below.

GHG emissions estimates from new production drilling should be included in the RA and Report

Before presenting our estimate of emissions from production drilling, one point in need of clarification in the Draft Report must be mentioned. As previously mentioned, the Draft Report indicates (and the RA Committee members mentioned during meetings) that all the exploration wells drilled in the Study Area --106 between July 1971 and August 2019 -- have led to only 4 existing and one proposed production projects. It's important for the public audience to know, however, that each production project involves multiple wells. This should be clarified in the body of the Draft Report. Thus, in 2019:

- Hibernia project extracted oil from 43 wells

- Terra Nova project extracted oil from 18 wells
- White Rose & North Amethyst (satellite) extracted oil from 25 wells
- Hebron (newest) extracted oil from 10 wells¹⁷

Altogether, there were 96 production wells operating in the RA Study Area in 2019, and together these wells produced nearly 262,000 barrels of oil per day.

Since all four of these projects have been producing for at least several years, GHG emission data exists in ECCC’s Greenhouse Gas Inventory Data within the data set on large facilities.¹⁸ Each offshore production project extracts oil through a single production “facility” – either a platform or a floating, production, storage and offloading vessel or “FPSO”.

Based on the most recent ECCC data (2017), which was referred to in the Stantec October 2019 report, **offshore oil and gas production projects emit an average of approximately 543,000 metric tons, or .54Mt, of CO₂eq/yr.** As will be discussed further below, the ECCC data does not sufficiently capture methane releases, and as such this should be treated as a conservative figure.

As we discussed in connection with the exploratory drilling project estimates, we don’t know, of course, how many new production projects will result from the 100 exploratory wells. The NL government’s *Advance 2030* document does not specify how many production projects it expects to see: it simply states that it foresees projects in “multiple basins producing over 650,000 barrels of oil equivalent per day”.¹⁹

Based on the assumption that 100 new exploration wells will lead to multiple new production projects with per-project emissions comparable to the average GHG emissions for existing projects, here are four reasonably possible scenarios on numbers of new production projects, along with estimates of their expected GHGs. For each scenario, we use the .54Mt of CO₂eq/yr factor to create the estimates (.54Mt times the number of production projects per scenario):

- **3 new production projects would create approx. 1.6 Mt/year of additional GHGs**

¹⁷ C-NLOPB. Statistical Information, Resource Management Statistics (data on well production by for production projects by year). <https://www.cnlopb.ca/information/statistics/#rm>.

¹⁸ Government of Canada, Greenhouse gas emissions from large facilities, <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions/large-facilities.html>.

¹⁹ Government of Newfoundland and Labrador, *The Way Forward on Oil and Gas - Advance 2030: A Plan for Growth in the Newfoundland and Labrador Oil and Gas Industry*, March 2019, p.8. <https://www.gov.nl.ca/nr/files/advance30-pdf-oil-gas-sector-final-online.pdf>.

- **4 new production projects would create approx. 2.2 Mt/year of additional GHGs**
- **5 new production projects would create approx. 2.7 Mt/year of additional GHGs**
- **6 new production projects would create approx. 3.3 Mt/year of additional GHGs**

As was explained in the previous sub-section, when GHG values such as these are combined with emissions from exploratory drilling projects, they can quickly add up to put NL's target of 6.9 Mt by 2030 in jeopardy.

These are very conservative estimates because they are based on ECCC data that do *not* account for fugitive emissions. As in some other jurisdictions, Canada's GHG methodology²⁰ relies on an "emissions factor" approach designed around attributing emissions values related to fuel combustion in the context of specific general sources, e.g., electric utilities, pipelines, Industrial, Manufacturing Industries, etc. Interestingly, while the Canadian emissions factors do include fugitive emission factors for coal mining, there are no fugitive emission factors for oil and gas activities. As explained in a recent Brown University study on mapping, measuring and managing methane, the emissions factor approach is part of a "bottom up" modeling method, and "is not the best way to assess real-time methane emissions or accidents. Other approaches are often far better indicators of methane emitted in non-routine situations".²¹

And again, these are the GHG estimates for production only: they do not incorporate GHG emissions from the exploratory and delineation wells that precede production.

Methane emissions from offshore drilling have been undercounted, affecting GHG estimates

One of the most serious omissions in the Draft Report's treatment of GHG emissions is that the Draft Report makes no mention of methane as a GHG of concern in the offshore context. Quite simply, the Draft Report is out of step with both the state of the science as well as the state of regulatory and in some cases industry practice concerned with measuring methane emissions. As was touched on at the beginning of this submission, methane is increasingly being recognized as something that must be monitored, measured and controlled, due to its power global warming potential and resulting outsized impact on climate change.

²⁰ Government of Canada, National Inventory Report 1990-2017: Greenhouse Gas Sources and Sinks in Canada, Annex 6 "Emission Factors", http://publications.gc.ca/collections/collection_2019/eccc/En81-4-2017-2-eng.pdf.

²¹ Deborah Gordon and Frances Reuland, "Mapping, Measuring, and Managing Methane: The Critical Role of a Potent Climate Pollutant." Watson Institute for International and Public Affairs, Brown University, November 2019, <https://watson.brown.edu/files/watson/imce/news/ResearchMatters/2019/Methane%20Report-6%20November%202019.pdf>, p. 4.

In describing its approach to estimating methane emissions from global oil and gas operations, the IEA explains that the 2017 US Greenhouse Gas Inventory includes data on fugitive, vented and incomplete flaring emissions for offshore production as well as onshore.²² The IEA references the categories of emissions sources and intensities used in the US as key input to its own oil and gas methane emissions model.

A recent (Nov. 2019) Brown University study goes beyond the IEA and US approaches on measuring methane in oil and gas production, including offshore, and underscores the importance of measuring and tracking offshore methane emissions.²³ The UK also tracks methane and other GHG emissions for offshore oil and gas.²⁴

The undercounting of methane emissions is, in the context of the climate crisis, something that must be rectified in the RA and the resulting Final Report. When fugitive and other methane emissions not appropriately monitored, measured or recorded, then any estimates provided on the quantum of GHG emissions for offshore exploratory drilling and/or production will be improperly low and misleading.

Offshore exploratory and production GHG emissions estimates must include fugitive and other elusive methane emissions from sources above and below water

Above-water sources

Above-water sources of methane can be emitted from the portion of the drilling rigs that are above the surface of the water. This true for both exploratory drilling and production rigs. Exploratory drilling rigs include semi-submersible rigs, drillships, and – for shallower operations – jack-up rigs. Production rigs generally comprise production platforms (e.g., Hibernia or Hebron) and FPSOs (e.g., SeaRose and Terra Nova vessels). Both types of production rigs include large-scale storage tanks.

A recent Princeton study of production platforms in the North Sea²⁵ detected methane emissions from platforms even when platforms are not actively flaring gas (to reduce pressure

²² IEA, World Energy Model Documentation, 2019 version
https://iea.blob.core.windows.net/assets/d496ff6a-d4ca-4f6a-9471-220addf0efd/WEM_Documentation_WEO2019.pdf, See espec. Table 8.

²³ Ibid note 17.

²⁴ UK Environment Report 2018: <https://oilandgasuk.co.uk/wp-content/uploads/2019/05/OGUK-Environment-Report-2018.pdf>.

²⁵ Riddick, S. N. et al (2019) "Methane emissions from oil and gas platforms in the North Sea", *Atmos. Chem. Phys.*, 19, 9787–9796, <https://doi.org/10.5194/acp-19-9787-2019>. See also Sullivan, J. (2019) Office of Engineering Communications, Princeton University,

during oil extraction) or engaged in oil transfer or unloading. While they were not flaring gas, the platforms studied did have a pilot light on the top of the flare stack was burning gas. The researchers suggested that downwind measurements of methane from the platforms “could be associated with incomplete combustion of natural gas feeding the pilot light at the top of the platform, or it could be associated with gas being emitted at the working deck level.”²⁶ Earlier studies as well have examined emissions on offshore oil and gas platforms, including from cold venting and fugitive emissions.²⁷

Given certain similarities between production and exploration rigs, it seems reasonable to expect some methane emissions from the above-water surfaces of commonly used exploration rigs such as semi-submersible rigs.

The RA Draft report also largely omits information from other countries as well as the oil and gas industry on the now common practice of monitoring, measuring and mitigating methane in the offshore industry and in the oil and gas sector generally. This is highly unfortunate given the importance of methane measurement and mitigation, as well as the fact that a substantial body of literature now exists on this topic. For example, Bylin et al published, in 2010, a comprehensive paper on “Designing the Ideal Offshore Platform Methane Mitigation Strategy.”²⁸ We would be pleased to provide a list of resources on methane mitigation and

"Offshore oil and gas rigs leak more greenhouse gas than expected", Aug. 15, 2019, <https://www.princeton.edu/news/2019/08/15/offshore-oil-and-gas-rigs-leak-more-greenhouse-gas-expected>.

²⁶ Ibid p. 9791.

²⁷ Husdal, G., Osenbroch, L., Yetkinoglu, Ö., Østebrot, A., (2016) “Cold venting and fugitive emissions from Norwegian offshore oil and gas activities, Summary Report”. Prepared for the Norwegian Environment Agency, 12 April 2016,

<https://www.miljodirektoratet.no/globalassets/publikasjoner/m515/m515.pdf>; Nara, H.,

Tanimoto, H., Tohjima, Y., Mukai, H., Nojiri, Y., & Machida, T., (2014) “Emissions of methane from offshore oil and gas platforms in Southeast Asia”, Scientific Reports 4, 6503; DOI:

10.1038/srep06503 (2014)

https://www.researchgate.net/publication/266325378_Emissions_of_methane_from_offshore_oil_and_gas_platforms_in_Southeast_Asia.

²⁸ Bylin, C., U.S. Environmental Protection Agency; Schaffer, Z., ICF International; Goel, V., ICF International; Robinson, D., ICF International; do N. Campos, A., COPPE/UFRJ; Borensztein, F., Devon Energy do Brasil Ltda. (2010) “Designing the Ideal Offshore Platform Methane Mitigation Strategy” [SPE 126964], Paper presented at the SPE International Conference on Health, Safety and Environment in Oil and Gas Exploration and Production held in Rio de Janeiro, Brazil, 12–14 April 2010. <https://www.epa.gov/natural-gas-star-program/designing-ideal-offshore-platform-methane-mitigation-strategy>

related methane issues pertinent to offshore operations upon request, or submit them as part of SCCF's submission on the GIS tool.

Below-water sources

Methane at the seabed can be disturbed by shallow-water drilling (150m or less) then make its way to the surface for release to the atmosphere. This is a well-studied phenomenon²⁹ and yet mentioned nowhere at all in either the Draft Report or the Module on Atmospheric Emissions in the GIS tool.

For example, a 2017 study found significant methane emissions caused by abandoned offshore oil and gas wells in the shallow ocean waters of the North Sea. In the relatively shallow sea, approximately 42 % of the methane emissions leaking from the abandoned wells reached the atmosphere. This has important implications because obviously many of the new wells drilled in the shallow-water projects will, if history is a guide, be capped and abandoned rather than put into production.

While many of the exploration licenses (Els) in the Study area are located in deep ocean, such as those in the Flemish Pass, we have identified at least five (5) that are located at shallow depths, according to information provided by the proponents in EIS and related documents. These include Els 1151, 1152 and 1155, held by Husky (average depth 75m), EL 1161 held by Suncor (depths between 61 and 87m) and EL 1137, held by Exxon Mobil (depths between 70 and 115m).

²⁹ See e.g., Helmholtz Centre for Ocean Research Kiel (GEOMAR), (2017) "Oil and gas wells as a strong source of greenhouse gases: New study demonstrates methane leaks around North Sea boreholes", Science Daily, 28 August 2017, <https://www.sciencedaily.com/releases/2017/08/170828102707.htm>; Vielstädte, L. et al. (2017) "Shallow Gas Migration along Hydrocarbon Wells—An Unconsidered, Anthropogenic Source of Biogenic Methane in the North Sea", *Environ. Sci. Technol.* 2017, 51, 17, 10262-10268, <https://pubs.acs.org/doi/full/10.1021/acs.est.7b02732>; Steinle, L. et al. (2016) "Linked sediment and water-column methanotrophy at a man-made gas blowout in the North Sea: Implications for methane budgeting in seasonally stratified shallow seas", *Limnol. Oceanogr.* 2016, 61, 367-386, https://www.researchgate.net/publication/309740202_Linked_sediment_and_water-column_methanotrophy_at_a_man-made_gas_blowout_in_the_North_Sea_Implications_for_methane_budgeting_in_seasonally_stratified_shallow_seas; Zhang Y. and and Zhai W.-D. (2015) "Shallow-ocean methane leakage and degassing to the atmosphere: Triggered by offshore oil-gas and methane hydrate explorations", *Front. Mar. Sci.* 2: 34, <https://doi.org/10.3389/fmars.2015.00034>.

Information on cumulative impacts, including GHG emissions, is wholly insufficient

Cumulative GHG emissions are critical for informing the ECCC on progress toward targets, and must include methane from *all* sources and at *all* stages of the supply chain connected to offshore oil and gas extraction. Specifically, cumulative emissions must include:

- GHG emissions from exploratory drilling (all phases temporally and substantively)
- GHG emissions from production drilling (all phases temporally and substantively)
- GHG emissions from downstream sources

Cumulative impacts are a critical part of a RA and yet are all but ignored in the Draft Report...except where they concern job or economic benefits. Module 15 in the GIS, which we understood was supposed to contain the analysis and information on cumulative impacts, simply links to a document that has zero to do with cumulative impacts: the document mentions the word “cumulative” only with respect to cumulative calls for bids in relation to potential exploration oil and gas activity for 2020-2028.

This is particularly discouraging because this report was prepared by the C-NLOPB, which according to the Draft Report, would be the body in charge of looking further at cumulative impacts in the study area (essentially, the topic of cumulative impacts was kicked down the road and the C-NLOPB was identified as the agency to handle it).

To include information on job impacts and other downstream economic impacts but exclude information on downstream environmental impacts is misleading, disingenuous, and as such provides a poor and insufficient basis for decision-making.

The RA Draft Report falls short of obligations created under the *Impact Assessment Act (IAA)*³⁰

The Draft Report indicates that the IAA now provides the legislative framework within which the RA is carried out. In contrast to its predecessor, *CEAA 2012*,³¹ the IAA contains several provisions, as well as a clause in the Preamble, aimed at underscoring the importance of attention to climate change as regulators and proponents undertake impact assessments under the Act. The IAA was touted as an improvement over the *CEAA 2012* in part because it contained provisions designed to ensure that new project approvals were made with an eye

³⁰ S.C. 2019, c. 28, s. 1.

³¹ S.C. 2012, c. 19, s. 52.

toward encouraging proponents and regulators to respect Canada's international and domestic obligations to meet its climate commitments.

The Preamble states:

Whereas the Government of Canada recognizes that impact assessment contributes to Canada's ability to meet its environmental obligations and its commitments in respect of climate change;

The IAA requires that the Agency or Review Panel conducting an impact assessment under the Act a series of factors, including:

22(1)(i) the extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change;

In light of the insufficiency of the information concerning climate impacts, including a complete lack of attention to the serious and pressing issue of methane leaks and releases at oil and gas operations, including offshore, it cannot be said that the RA, thus far, has lived up to either the spirit or the letter of that provision.

This insufficiency will make it impossible for the Minister to fulfill his obligations under the Act with respect to the public interest determination under section 63(e), which is worded similarly to the provision above.

SCCF reserves the right to submit additional comments concerning the climate change provisions of the Act and its resulting obligations for the March 19 deadline to submit comments on the GIS and Modules.

Conclusion

Against the backdrop of the climate crisis and near daily headlines with serious climate change related news, it is imperative that the Draft Report, and more generally the RA process, be put on hold until such time as a comprehensive, complete and fair evaluation is made of the potential climate change impacts of exploratory drilling projects offshore NL.

From our analysis, it seems abundantly clear that additional offshore exploration will lead, directly or indirectly, to increased GHGs at levels, which will simply put NL's climate target out of reach. NL has already missed the target once. Given the seriousness of the climate crisis, the Province cannot afford to miss it twice.

Furthermore, from both a process and substance perspective, the information provided in the Draft Report is insufficient for the purpose of informing a new regulation on offshore oil and gas. This stems fundamentally, from the fact that the RA is substantially incomplete. More time is needed to complete the RA and be able to prepare a report for the Ministers that is thorough, credible and reliable. As such, proceeding to a regulatory phase on the basis of incomplete information is ill advised. The RA Committee should petition the responsible Ministers for the additional time needed to complete its work.