

Modelling future impacts of the oil and gas emissions cap

Contextualizing the Conference Board of Canada's analysis

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Summary

The Government of Alberta, in its technical submission to the Government of Canada regarding the proposed oil and gas sectoral emissions cap, cites analysis undertaken by the Conference Board of Canada. This report seeks to contextualise that analysis and some of the key assumptions that appear to underpin it.

We find that, overall, the Conference Board's findings regarding economic impacts of the cap in 2040 are based on modelling of oil and gas production that only extends to 2030, and does not appear to account for likely market-based declines in global demand and, therefore, Canadian production post-2030. As a result, the Conference Board concludes that a cap on emissions could only be achieved through arbitrary production cuts. This conclusion is not supported by the broader body of evidence on the likely global market for oil and gas post-2030.

The Conference Board's modelling of future emissions in the sector also does not include any decarbonization projects that have been proposed but are yet to begin construction. Notably, this means the oilsands Pathways Alliance consortium's proposed carbon capture and storage project, which the Government of Alberta itself regularly cites as an example of decarbonization work taking place in the sector without the need for an emissions cap, is not accounted for.

The Government of Alberta's submission to the Government of Canada highlighted a potential \$1 trillion loss to nominal GDP as a consequence of the emissions cap. We note, however, that this assumed loss was based on the Conference Board's least ambitious scenario on methane abatement, which the Conference Board itself states is the least likely scenario.

We recommend that all stakeholders carefully assess the assumptions that underpin any analyses cited in such submissions. Doing so would ensure that potential impacts of proposed policies – in this case, the economic impact of the emissions cap on Alberta's oil and gas sector and its broader economy – are neither inflated nor downplayed.

Introduction

In February 2024, the Government of Alberta released its response to the proposed regulatory framework for the federal oil and gas emissions cap, which included an economic impact analysis from the Conference Board of Canada.¹

The Conference Board's analysis finds potentially significant impacts to GDP, jobs, and government revenues in Canada and Alberta as a result of the emissions cap. This note summarizes the key findings of the Conference Board's report and aims to provide insight into its modelling assumptions and the impact of those assumptions on the report's findings.

Although this report highlights what the Pembina Institute regards as some problematic modelling assumptions made by the Conference Board, we also acknowledge that stakeholder engagement is a key principle of the Canadian regulatory process. As the emissions cap continues to be developed, the Conference Board's analysis adds to the growing body of work.

Key Findings

The Conference Board's analysis of the emissions cap includes three scenarios, which differ based on the amount of methane reductions that could be achieved by 2030. Scenario 1 assumes a 75 per cent reduction below 2012 levels of oil and gas methane by 2030, which is aligned with federal and many provincial commitments; Scenario 2 assumes a 60 per cent reduction; Scenario 3 assumes a 45 per cent reduction (which would in fact represent no further reduction in methane emissions to 2030).

The Conference Board emphasizes that Scenario 1 is the most likely, with which we concur given the feasibility and policy momentum for ambitious methane regulations from the federal and British Columbia governments (as well as other governments outside Canada), and a commitment to reach 75 per cent reduction by 2030 from the Alberta government.²

Aside from methane, the Conference Board assumes far fewer decarbonization projects will be implemented before 2030 than Environment and Climate Change Canada finds in its proposed regulatory framework for the emissions cap. These assumptions contribute to its finding that the oil and gas sector would have to cut production to meet the emissions cap. As a result of

¹ Government of Alberta, *Proposed federal oil and gas emissions cap regulatory framework : Government of Alberta technical submission* (February 2024), <https://open.alberta.ca/publications/proposed-federal-oil-and-gas-emissions-cap-regulatory-framework-go-technical-submission>

² Government of Alberta (2024), p 28

these projected production cuts, the analysis finds that real GDP declines by up to \$22.8 billion (in 2012 dollars) in 2030 (Scenario 1).³

However, there are several assumptions in the analysis which we believe may overstate these impacts to production levels and GDP. We recommend that in future analyses:

- Potential emissions reductions other than methane are included. This should be based on an analysis of the technical feasibility of other decarbonization projects (which the Pembina Institute regards as compelling), as well as existing commitments from the oil and gas industry – notably the oilsands Pathways Alliance consortium – to undertake decarbonization projects aside from methane abatement. By including a limited amount of emissions reductions other than methane, the Conference Board’s analysis exaggerates the impact of the emissions cap, which is assumed to be achieved through other measures – such as arbitrary production cuts.
- Production and emissions scenarios post-2030 are clarified, including the assumed emissions intensity forecasts, and market-based reduction in production due to global demand decline post-2030 is accounted for.
- Additional information influencing the key findings is explored, such as inflation rates.

We explore these recommendations in further detail below.

Assumptions regarding potential non-methane emissions reductions have a significant effect on scale of the proposed emissions cap’s impact.

The key difference between the Conference Board findings on production levels required to meet the proposed cap, and Environment and Climate Change Canada’s (ECCC) proposed framework, is the amount of potential non-methane emissions reductions that are assumed to have taken place by 2030.

ECCC conducted analysis of technically achievable emissions reductions “based on an assessment of the abatement technologies that can feasibly be deployed within the sector by 2030, considering the status of available technologies, the availability of equipment and labour, as well as timelines for permitting and approvals”.⁴ On this basis, ECCC finds 29 Mt of non-methane reductions could feasibly be made by 2030.

³ The Conference Board of Canada, *Economic Impacts of a Greenhouse Gas Emissions Cap on the Oil and Gas Sector* (2024), <https://open.alberta.ca/publications/economic-impacts-ghg-emissions-cap-on-oil-and-gas-sector>

⁴ Environment and Climate Change Canada, *Regulatory Framework for an Oil and Gas Sector Greenhouse Gas Emissions Cap* (Dec 2023), <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/oil-gas-emissions-cap/regulatory-framework.html>

By contrast, the Conference Board finds only 10.5 Mt of non-methane reductions, based on “the observed trend in emissions intensity between 2005 and 2019”.⁵ The 10.5 Mt is said to represent “the efficiency gains we can be very confident in achieving, around half of which are accounted for by **newly installed or under construction** carbon capture, utilization and storage projects in the oil and gas sector and the rest of which reflects other efficiency gains”.⁶ As such, the full extent of the Pathways Alliance’s foundational carbon capture and storage project, which Pathways has announced will capture some 10-12 Mt per year by 2030,⁷ is not included in the Conference Board’s assumptions as it is neither installed nor under construction.

We strongly recommend that future iterations of this analysis include existing industry commitments to decarbonize, in particular the full extent of the Pathways Alliance foundational project. This is especially important to assessing the economic impacts of the cap, given that this project (and others) will be a source of jobs as the sector works to reduce emissions. In addition, any citations of this analysis from key stakeholders, including the Government of Alberta, should state clearly the scenario being cited, its likelihood, and any the underlying assumptions – especially regarding potential emissions reductions.

Table 1: Different assumptions of emissions reductions that are technically achievable by 2030⁸

Mt CO2e	Government of Canada Proposed Regulatory Framework for the oil and gas emissions cap ⁹	Conference Board Scenario 1: 75% methane reduction (most ambitious)	Conference Board Scenario 3: 45% methane reduction (least ambitious)
2030 GHG baseline emissions (without abatement)	199	199	199
Potential non-methane reductions		-10.5	-10.5
—Oil Sands	-20		

⁵ Conference Board (2024), p. 7

⁶ Conference Board (2024), p.7

⁷ Pathways Alliance, *Foundational Project – Regulatory* (2024), <https://pathwaysalliance.ca/foundational-project/regulatory/>

⁸ Adapted from *Proposed Regulatory Framework* (ECCC 2023) and Table 2 in *Economic Impacts of a Greenhouse Gas Emissions Cap on the Oil and Gas Sector* (Conference Board of Canada 2024).

⁹ Production forecast and technical feasibility analysis is based on Canada Net-zero Scenario

—Conventional oil	-2		
—Natural Gas production & processing	-6		
—Liquified Natural Gas (LNG)	-1		
—Methane (all sub-sectors)	-37	-37.6	-20.7
Total 2030 GHG emissions (with abatement)	134	150.9	167.8
Remaining emissions in excess of 2030 emissions cap level	0	(16.9)	(33.8)

The 75 per cent methane reduction scenario is the most relevant and has the least negative economic impact in the Conference Board’s findings.

The Conference Board finds that Scenario 1, where Canada’s target of reducing methane by 75 per cent below 2012 levels by 2030 is achieved, is the most likely scenario. As stated earlier, the Pembina Institute agrees with this assessment, given the significant momentum from numerous governments and industry behind ambitious methane reduction targets, underpinned by a high degree of technical feasibility (numerous proven, cost-effective methods to address methane emissions already exist).¹⁰

As such, the Conference Board finds that, in Scenario 1, the emissions cap has the least impact on production and GDP, because maximum methane reductions are realized. However, we note that the potential \$1 trillion dollar loss in nominal GDP included in the Government of Alberta’s submission to the Government of Canada on the proposed emissions cap is in fact based on the least ambitious 45 per cent methane reduction scenario (which is aligned with 2025 targets both provincially and federally, but assumes no additional action on methane is taken).¹¹ As such, this impact to nominal GDP would result from no further action being taken on methane, despite the Government of Alberta’s own commitment to reduce oil and gas methane emissions by 75-80% by 2030.¹²

¹⁰ Dunskey Energy and Climate Advisors , *Canada’s Methane Abatement Opportunity* (July 2023) <https://www.dunskey.com/methane-abatement-opportunities-in-the-oil-gas-extraction-sector/>

¹¹ Government of Alberta (2024)

¹² Government of Alberta, *Emissions Reduction and Energy Development Plan* (April 2023), <https://open.alberta.ca/publications/alberta-emissions-reduction-and-energy-development-plan>

The longer-term assumptions on production levels do not appear to align with the Canada Energy Regulator’s Canada net-zero scenario.

The Conference Board states that it has used the Canada Energy Regulator’s (CER) Canada net-zero scenario to determine oil and gas production forecasts up to 2030, to align with the demand forecast used by ECCC for its proposed regulatory framework. As shown in Figure 1, the CER’s Canada net-zero scenario is its mid-level scenario that assumes that Canada achieves our net-zero by 2050 targets but the rest of the world moves more slowly to reduce emissions. In this scenario, the CER projects a decline in Canadian oil and gas production post-2030, as a result of global demand decline (Figure 1).

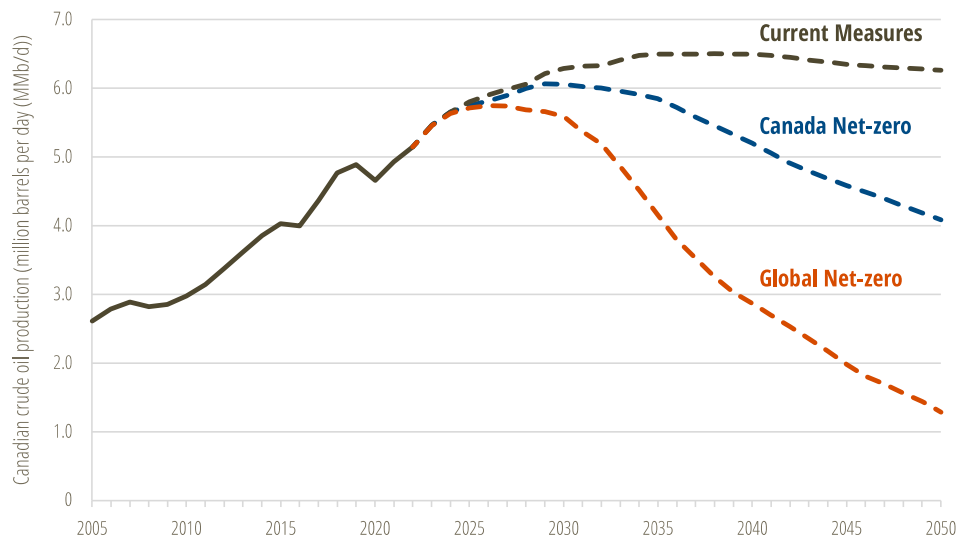


Figure 1. Canadian oil production under the Canada Energy Regulator's net-zero scenarios

The Government of Canada’s proposed regulatory framework is aligned with the CER’s Canada Net-zero scenario, which forecasts a global market-driven decline in demand for oil and gas that results in a decline in Canadian crude oil production after 2030. Adapted from: Canada Energy Regulator¹³

However, it is not clear what production scenario is used by the Conference Board post-2030. As we discuss below, if the CER’s Canada net-zero scenario is used all the way to 2050, we would expect to see emissions naturally decline after 2030 as a result of a market-based decline in global demand and, subsequently, Canadian production. We recommend that in future iterations of this modelling, the production scenario (and its effect on emissions) that is being used beyond 2030 is made clear.

In the Conference Board analysis, the level of the emissions cap does not decrease over time in line with net-zero by 2050, but is “held constant at 2030 levels”.¹⁴ However, in its proposed

¹³ Canada Energy Regulator, *Canada’s Energy Future 2023*, Figure ES.8. <https://www.cer-rec.gc.ca/en/data-analysis/canada-energy-future/2023/index.html>

framework, the Government of Canada has indicated it is likely the emissions cap will decline over time, to align the sector with net-zero by 2050.

We must add this assumption (that the level of the cap remains flat) to the Conference Board's other stated assumption that emissions intensity in the sector decreases at least in line with historical trends. These two factors combined, when applied to the projected fall in demand/production levels post-2030 (as per the CER's Canada net-zero scenario), would therefore lead us to expect that any emissions that are in excess of the cap in 2030 would in fact begin to decrease over time.

However, all three of the Conference Board's scenarios show excess emissions remaining relatively constant from 2030-2040.¹⁵ This would either imply that, post-2030, emissions intensity does not continue to decrease (or indeed that it increases), or that the Conference Board model must rely on an alternative production scenario post-2030 (one that does not project a decline in global demand for oil and Canadian production).

The Conference Board analysis does not appear to account for any further emissions reductions after 2030.

As we note above, the Conference Board concludes that 10.5 Mt of non-methane emissions reductions are feasible by 2030, and does not include projects that have been proposed but are yet to begin construction. However, even if currently proposed decarbonization projects (such as those announced by the Pathways Alliance) do not come fully online before 2030, it is a reasonable expectation that they would at some point afterwards. The Conference Board's report therefore does not appear to account for the possibility that the sector, operating under an emissions cap, would continue to invest in technologies and projects to reduce its emissions after 2030.

Impacts on GDP and government revenues appear to be overstated.

As mentioned earlier, the Government of Alberta included in its submissions to the Government of Canada regarding the economic impact of the cap on the Conference Board's least ambitious 45 per cent methane reduction scenario.

In addition to the problematic inclusion of this scenario, which the Conference Board itself acknowledges is not the most likely, we also note that the impacts on nominal GDP from 2030-

¹⁴ Conference Board (2024) p 6

¹⁵ Conference Board (2024), Appendix- Table of Results

2040 in this scenario imply an **average** annual inflation rate of approximately 7%.¹⁶ For reference, annual inflation (expressed as GDP deflator) in 2021 was 7.7%, a 30-year high precipitated by the economic shock associated with the COVID-19 pandemic; rates from 2010-2019 ranged from -0.9-3.2% .¹⁷

Such a high inflation rate over this period has implications throughout the results – on GDP, but also on government revenues – potentially intensifying the modelled “cost” of the emissions cap. For instance, the Government of Alberta cited a potential \$1 trillion dollar impact on the Canadian economy as a result of the emissions cap – which is based on the cumulative impacts on **nominal** GDP from 2030 to 2040 in the 45 percent methane reduction scenario, and is therefore likely an artificially high figure at least in part due to the high implied average annual inflation rate. These results are based on complex models that are not made publicly available, and we recommend that additional details are included on the relationship between the results and these types of macro indicators in future modelling, in order to contextualize these results.

¹⁶ We calculated this implied inflation rate based on information provided in Appendix- National Key Indicators (45% methane). We found this average annual inflation rate by first calculating the GDP Deflator in the years 2030-2040 using the change in both nominal and real GDP listed in the Appendix, and then solving for the average inflation rate based on the changes to nominal GDP listed in the Appendix.

¹⁷ World Bank, *Inflation, GDP deflator (annual %)—Canada*, <https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG?locations=CA>