

Closing the Gap

Reaching Canada's 2030 Emissions Target

Volume 3: Second Annual Report to the Minister of Environment and Climate Change

December 2024

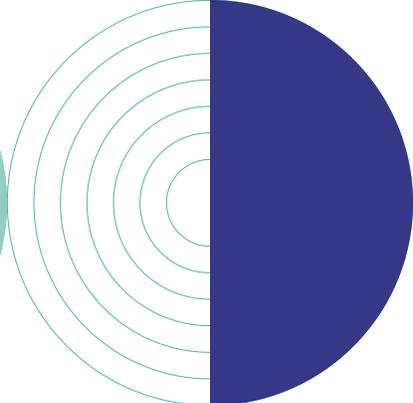
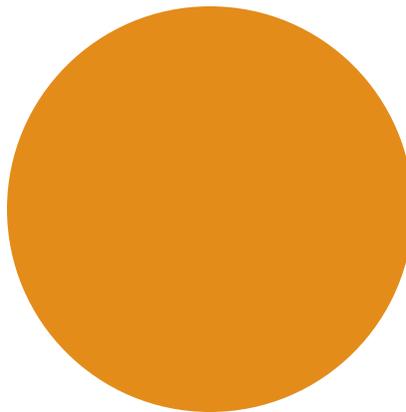
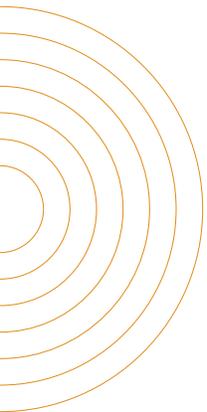


Table of Contents

Overview	3
Introduction: Reaching the 2030 target for Canada	4
Approach	9
Advice 1: Finalize announced measures	13
Advice 2: Address negative interactions	26
Advice 3: Strengthen industrial carbon pricing	28
Advice 4: Secure additional emission reductions from the oil and gas sector	34
Advice 5: Evaluate and pursue additional action	37
Conclusion	42
Glossary	45
Annex: Modelling caveats, scenarios, and results	46

Cat No.: EnI-95E-PDF
ISSN: 2818-5129

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Overview



In July 2023, the Minister of Environment and Climate Change requested advice from the Net-Zero Advisory Body (NZAB) on new incremental measures that the Government of Canada could implement to achieve its 2030 emissions reduction target of 40 to 45% below 2005 levels.

We do that, and we also offer advice on other ways to close the gap that does not solely rely on new measures. Over the past decade, the federal government has created an increasingly complex suite of climate policies that together form a federal net-zero policy framework. This framework, built out of existing, developing, and announced climate policies is indicative of the evolving and consultative approach to governing through the climate crisis. Like any policy framework, it is not perfect, but it can be improved. Our advice focuses on how to do just that: finish what has been started, improve what exists, and then implement new policies.

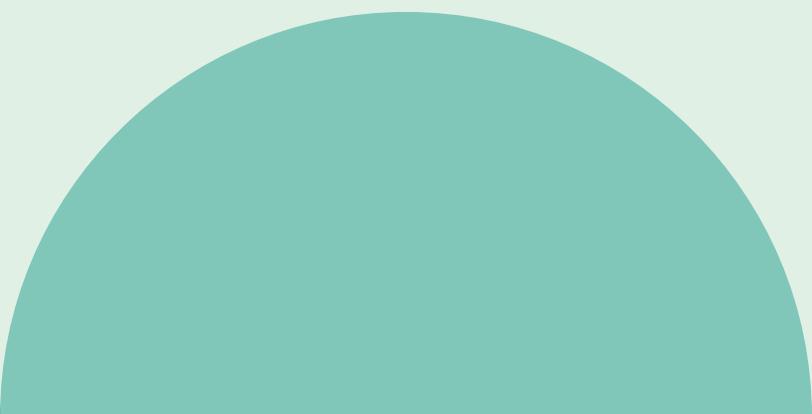
The Government of Canada has made significant progress on climate action to reduce emissions over the past eight years since signing the Paris Agreement in 2016. However, more aggressive and sustained action is necessary to reach our 2030 emissions target and to shift to a long-term net-zero pathway. Even with ideal implementation of announced policies and meeting of sectoral goals, Canada will fall short of its 2030 target. The first Progress Report on the 2030 Emission Reduction Plan from the Government of Canada estimated that even with full implementation and success of existing plans Canada could miss its 2030 target of reducing emissions by 40 to 45% below 2005 levels by approximately 29 Mt CO₂e, which would result in a 36% reduction in emissions from 2005 levels. A failure to achieve the 2030 target would mean that even greater and potentially more costly efforts will be required in the future.

Our report identifies significant opportunities to close the 2030 emissions gap. In short, we believe it is more effective for the Government to focus on a small number of the highest-impact actions and to implement them quickly given the short time until 2030 and the length of time it takes to implement new policies. Through our analysis and consultations, we reached consensus on the opportunities most likely to close the gap:

- 01 **finalize announced measures**
- 02 **address negative interactions**
- 03 **strengthen industrial carbon pricing**
- 04 **secure additional emissions reductions from the oil and gas sector**
- 05 **evaluate and pursue additional action**

Introduction

Reaching the 2030 target for Canada





In July 2021, Canada submitted its enhanced Nationally Determined Contribution under the Paris agreement, committing to reduce emissions by 40–45% below 2005 levels by 2030¹. This target, along with the commitment to net-zero emissions by 2050, is enshrined in legislation through the [*Canadian Net-Zero Emissions Accountability Act*](#). Per the requirements of the Act, the Government of Canada released the 2030 Emission Reduction Plan in March 2022 providing details of how Canada intends to reach the 2030 target.

The 2030 target, like all interim targets, helps ensure Canada is on the right path to achieving net zero by 2050, to course correct if needed, and to hold all orders of Government accountable to Canadians for delivering on commitments. The *Canadian Net-Zero Emissions Accountability Act* sets out a clear process for the federal government to set national emissions reduction targets and develop emissions reduction plans every five years to help achieve these targets with input from provinces and territories, Indigenous Peoples, NZAB, and interested Canadians. The Act also requires that the government explain why it did not meet a target if that occurs.

In July 2023, the Minister of Environment and Climate Change requested advice from the NZAB on additional incremental measures the Government of Canada could implement to achieve its 2030 emissions reduction target and are aligned with net-zero emissions by 2050.

Canada has made clear progress towards its 2030 emissions reduction goal. While emissions have rebounded post-pandemic in most sectors, climate policies and clean technology deployment are contributing to long-term reductions. Since 2005, emissions have decreased in heavy industry, waste, and notably in electricity, where emissions have dropped 59%².

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1. Environment and Climate Change Canada. 2021. [Government of Canada confirms ambitious new greenhouse gas emissions reduction target](#)
 2. Environment and Climate Change Canada. 2024. [National Inventory Report, 1990-2022](#) (Part 1, PDF)

For Canada to get closer to achieving its 2030 goal, more must be done.

The Government of Canada's own estimates indicate that it will miss the 2030 target by around 29 Mt CO₂e or only achieve 36% reduction from 2005 levels even with full implementation of existing plans³. Canadian Climate Institute modelling indicates 2030 emissions could reach 34% to 36% below 2005 levels⁴. While each of these projections use slightly different assumptions, both unequivocally indicate that swift implementation of planned policies that are not yet implemented is necessary to come close to the 2030 emissions reduction goal.

In Fall 2023, the Commissioner on Environment and Sustainable Development (CESD) examined the 2030 Emissions Reduction Plan, focusing on transparency and accountability⁵. The CESD found that only 45% of the measures in the Emissions Reduction Plan had an implementation deadline and that 95% of the measures noted in the plan lacked a target or expected emission reductions. Consistent with

NZAB's advice in its [first Annual Report](#), the CESD identified the need to improve Environment and Climate Change Canada modelling to address overly optimistic assumptions, limited analysis of uncertainties, and lack of peer review.

The Green Future Index, which ranks 76 nations and territories on their progress and commitment to a sustainable, low-carbon future, ranked Canada 6th in terms of climate policy commitments, but 45th for energy transition progress, 51st for clean innovation, and 57th for its track record at reducing greenhouse gas (GHG) emissions⁶. Similarly, the 2024 Climate Change Performance Index ranked Canada 59th out of a total of 63 countries and the EU, factoring in GHG emissions, renewable energy, energy use and climate policy⁷.

Taken together, these analyses indicate a gap in achieving the 2030 target. To reach the target, we need to do more, and we need to do it now.



3. Environment and Climate Change Canada. 2023. [2023 Progress Report on the 2030 Emissions Reduction Plan](#)
4. Sawyer et al. 2023. Canadian Climate Institute. [Independent Assessment of Canada's 2023 Emissions Reduction Plan: A Progress Report](#)
5. Office of the Auditor General of Canada. 2023. [Report 6—Canadian Net-Zero Emissions Accountability Act—2030 Emissions Reduction Plan](#)
6. MIT Technology Review. 2023. [The Green Future Index 2023](#)
7. Burck et al. 2023. Climate Change Performance Index. [Climate Change Performance Index 2024](#) (PDF)

Advice grounded in values and principles

Early in our mandate, NZAB developed a series of [10 values and principles](#) which we use to frame our work and our advice to the Government. While all are important, three guide us from incremental action to the transformative change necessary to reach Canada's 2030 and net-zero by 2050 goals:

- **Act early and urgently.** We must move now and keep innovating to effect necessary, system-level changes.
- **Be bold and proactive.** We need to be strategic and ambitious and understand the magnitude of changes required.
- **Beware of dead-ends.** It is important to avoid locking-in systems and technologies that will become emissions liabilities before 2050.

The third principle is of particular relevance to our advice on closing the 2030 emissions gap. Taking a narrow focus on incremental emissions reductions or near-term goals, rather than considering the transformational actions and long-term goals, could result in taking the wrong path. There are actions that could reduce emissions incrementally (by 10% or less in the near term) but are incompatible with eliminating emissions in the long term. Those actions risk locking us into technological systems that will eventually need to be replaced, often at great cost to taxpayers, and to workers.

Achieving the 2030 target will undoubtedly require a society-wide effort. While our advice is focused on the federal government, all Canadian society has a role to play in helping Canada to reduce its GHG emissions. Provinces, territories, municipalities, Indigenous governing bodies, experts, including Indigenous Knowledge Holders and scientists,

the private sector, and civil society can all make crucial contributions towards this important goal. Many unrealized opportunities exist to align efforts among these players, leverage existing responsibilities, and grow capacity to achieve climate targets and provide a clean environment, human health, and economic prosperity.

Approach

To respond to the Minister's request to identify opportunities to close the emissions gap to 2030, NZAB solicited written submissions from 62 experts and partners. NZAB's engagement mandate is set out in the *Canadian Net-Zero Emissions Accountability Act*, and includes conducting engagement activities related to achieving net-zero emissions. We work closely with other advisory bodies, both in Canada and internationally, engage with all orders of government, Indigenous governments and organizations, youth, civil society, industry, experts, including scientists and Indigenous Knowledge Holders, and international bodies.



Specifically, we sought suggestions on new emission reduction measures that the Government of Canada should implement in the next two to three years, on the identification of any major outstanding gaps in design or implementation of current or proposed federal climate policies, and on how these measures could be designed and implemented to advance reconciliation with Indigenous peoples as well as a process towards an equitable net-zero future. This stakeholder input was published in our [2022-2023 What We Heard Report](#). In short, respondents shared the need to fully implement all proposed climate policies, to focus new measures on public transport and buildings, to strengthen existing measures, and to create new measures that lay the groundwork for additional emission reductions.



Supporting self-determined Indigenous climate action

Climate change directly threatens Indigenous ways of life with its impact on plant and animal harvesting, winter road “lifelines” and frequent, widespread wildfire evacuations. The impact of climate change on Indigenous Peoples is disproportionate and requires a correspondingly focused and self-determined response strategy. Enabling meaningful partnership with Indigenous Nations, governments, and communities is an important step to advance reconciliation with Indigenous Peoples, respecting their inherent, constitutional, and international rights, and increasing the likelihood that Canada can meet its 2030 emission reduction objectives through projects on or impacting Indigenous lands.

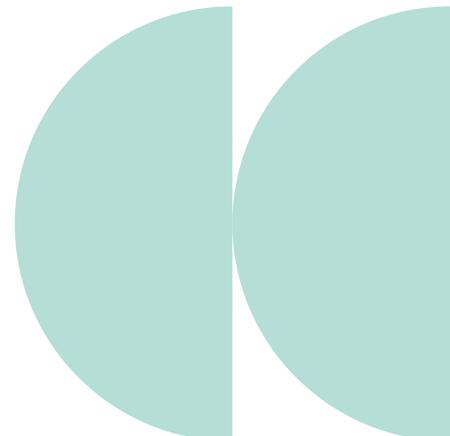
Two areas where we received clear input on is the implementation of the [United Nations Declaration on the Rights of Indigenous Peoples Act](#) and the National Indigenous Loan Guarantee Program.

In June 2023, the Government of Canada released the Action Plan to support the *United Nations Declaration on the Rights of Indigenous Peoples Act*. Measures 46 to 50 of this plan aim to support self-determined climate action for Indigenous Peoples. Implementation of the *United Nations Declaration on the Rights of Indigenous Peoples Act* and ensuring acceptable consent is a long-standing concern of First Nations, Inuit, and the Métis. To achieve net-zero objectives, net-zero projects will need to continue to be implemented across Canada in and/or through Indigenous territories (for example, build access roads). All governments must consistently and meaningfully

implement the *United Nations Declaration on the Rights of Indigenous Peoples Act*, particularly as it relates to free, prior, and informed consent. The Government of Canada’s Budget 2024 proposed up to \$5 billion towards the creation of a National Indigenous Loan Guarantee Program to reduce the barriers to Indigenous participation in energy projects, including co-ownership. In part due to the colonial legacy of the Indian Act, many Indigenous Peoples face challenges to access the level of at-risk capital needed to engage capital markets on reasonably priced loans. Expanding access to financial services is crucial for increasing Indigenous participation in equity investment in projects.

Beyond advancing economic reconciliation, Indigenous ownership of net-zero projects can accelerate the achievement of Canada’s net-zero goals in a socially just manner. It opens new sources of net-zero project capital, speeds up impact assessments, and positions Canada’s economy to succeed in a decarbonized future. Ultimately, expanding access to capital can increase the share of Indigenous-owned clean energy projects that respect and recognize the unique perspectives, rights, responsibilities and needs of Indigenous Peoples.

As the federal government implements this new program, we encourage the federal government to strategically work with First Nations, Inuit and Métis partners on how the National Indigenous Loan Guarantee Program could support Indigenous participation or ownership of net-zero aligned projects.



In addition to seeking written input from experts and partners, NZAB partnered with the Canadian Climate Institute to evaluate potential policies that could help close the 2030 emissions gap. This evaluation used existing and new modelling to explore the potential opportunities for additional emission reductions in Canada. The Canadian Climate Institute provided us with a series of policy measures for how to close the 2030 gap based on its modelling and qualitative analysis of the policy measures' strengths and weaknesses. With the Institute analysis in hand, we deliberated on which measures could form part of our advice, taking into account the range of stakeholder input received along with our own expert knowledge.

Our 2030 modelling, analysis, and advice is restricted to the existing climate policy framework and did not consider alternative pathways, based upon substantially different policy frameworks. We assumed that policies which have already been announced will be implemented. In the future, as we examine long-term pathways to net-zero, we will further evaluate the existing policy framework.

Methods

A phased approach was taken to this collaboration with Canadian Climate Institute. The first phase was conducted before the release of the 2023 Progress Report on the 2030 Emissions Reduction Plan to provide preliminary advice to the Minister in advance of COP28 in December 2023. Working with Navius Research Inc. (Navius), the Canadian Climate Institute modelled a backcasting scenario that identified the sectors and end-uses with economically-efficient reductions to meet the 2030 target. They then leveraged existing data (440 Megatonnes Emissions Pathway Tracker Database and Navius Research's Emissions Reduction Plan scenarios) to identify sectors where existing policies could be strengthened, and new policies could be applied.

Following the initial modelling and stakeholder feedback, we shared our preliminary advice on closing the 2030 emissions gap with the Minister in November 2023. Our advice focused on a) ensuring developing policies are fully finalized (that is, investment tax credits, Clean Electricity Regulations, light-duty zero-emission vehicle sales mandate), b) developing and executing announced policies (that is, oil and gas sector emissions cap, post-2026 light-duty vehicle GHG standards, Green Buildings Strategy, medium- and heavy-duty vehicle emissions and sales mandates, landfill methane emissions regulations, *United Nations Declaration on the Rights of Indigenous Peoples Act*), and c) strengthening existing and implementing additional measures (that is, strengthen federal carbon pollution pricing through carbon contracts for difference, tighten output-based pricing systems, finalize post-2030 carbon price schedule; strengthen oil and gas sector methane reduction mandate; develop a National Indigenous Loan Guarantee Program).

Subsequent to submission of NZAB's preliminary advice and publication of the 2023 Progress Report on the 2030 Emissions Reduction Plan, the Canadian Climate Institute and Navius updated the Emissions Reduction Plan policies in the model and revised the backcasting scenario, resulting in minor changes to the size, by sector and end-use, of the economically-efficient emission reductions to meet the 2030 target.

Next, the Canadian Climate Institute undertook two rounds of bottom-up modelling, simulating several policy packages that could potentially achieve the 2030 target. We worked closely with the Canadian Climate Institute to develop these policy packages, which simulated different approaches to reducing emissions (for example, heightened focus on subsidies or stronger methane regulations for the oil and gas sector). The Canadian Climate Institute first modelled two policy scenarios that tested NZAB's preliminary advice and the impact of increased subsidies and regulations. These scenarios did not meet the emissions target, so the Institute tested three additional scenarios that increased stringency and included additional policies. These three scenarios were each able to close the gap. The Institute then qualitatively assessed policies considering six dimensions: GHG reduction effectiveness, cost-effectiveness, implementation risk / doability, technological feasibility, competitiveness, and affordability. Lastly, the Institute provided us with a series of options for how to close the 2030 gap based on its modelling and qualitative analysis.

A summary of the Canadian Climate Institute's methodology, scenario assumptions, results, and analysis are published in this report's annex. The Institute has published a separate technical annex with additional details on the modelling.

Advice 1

Finalize announced measures

The Government of Canada should complete the GHG emission reduction policies that have already been announced or are partially developed:

- A) Clean economy investment tax credits
- B) Oil and gas sector emissions cap
- C) Clean Electricity Regulations
- D) Canada Green Buildings Strategy
- E) Landfill methane regulations
- F) Medium- and heavy-duty zero-emission vehicle sales standard
- G) Post-2026 light- and heavy-duty vehicle GHG emissions standards



While the Government of Canada has already implemented many measures to help meet the 2030 climate target, several key policies that can further close the emissions gap are in earlier stages of development having been announced or are under development but not yet finalized. Given the existing policy architecture and the short window for additional action to meet the 2030 target, NZAB recommends the federal government complete policies that have already been announced or are partially developed to close the gap. These announced and partially developed policies represent an expedient route to securing significant additional emissions reductions, even though NZAB has some concerns about the design features of certain policies.

Our advice to implement announced policies does not constitute an endorsement of those policies in every case nor does it necessarily represent how we would advise the government to proceed if we were designing the climate policy approach from scratch. That said, **adjusting current policies based on the best information available is good practice in terms of adaptive management, and can help secure emissions reductions in the near-term.**



Clean economy investment tax credits



Advice 1A:

The Government of Canada should finalize all clean economy investment tax credits. Many of the projects that these investment tax credits intend to unlock will take five years or more to build. **Immediate action is required to have an impact on 2030 emissions.**

Governments frequently use tax measures (or tax incentives/supports), such as tax credits for a percentage of investment in targeted sectors, to achieve policy objectives by encouraging private sector investment. Investment tax credits permit companies to reduce or postpone tax liabilities, shrinking public sector tax revenue. Canada has a long history of using tax measures as an effective industrial policy tool. We see investment tax credits as a necessary complementary measure to carbon pricing and a key measure to promote net-zero capital investment in the country, meet more ambitious decarbonization goals, and grow important private sector coalitions supportive of net-zero goals.

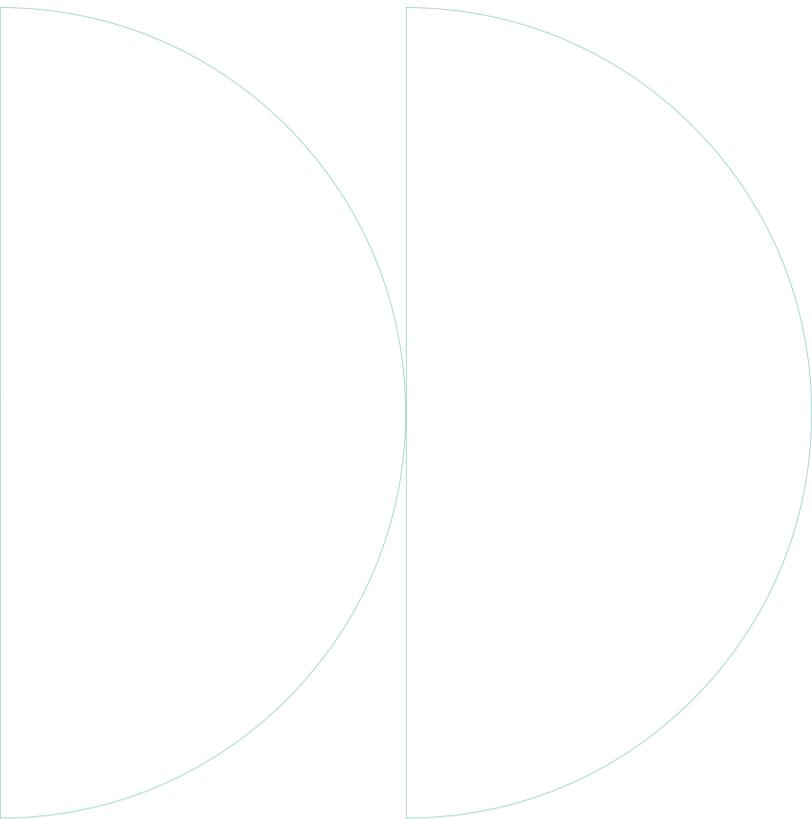
Since 2021, the federal government has announced a series of clean economy investment tax credits to support Canada's emission reduction and economic competitiveness goals. These tax credits will spur clean energy deployment, new jobs and technological innovations through investment, while the labour requirements associated with these investment tax credits (for example, higher tax credits provided to companies paying prevailing wages) will help ensure well-paid jobs. Investment tax credits for carbon capture, utilization and storage, and clean technology were finalized with the passing of the [2024 Budget Implementation Act](#). However, several investment tax credits have yet to be finalized: clean hydrogen, clean technology manufacturing, clean electricity, biomass, and electric vehicle supply chain.

Innovative companies are constantly creating new technologies that can reduce costs and GHG. The federal government should establish a standard and regular process to evaluate new technologies and if these technologies should be added to the list of eligible technologies under the clean economy investment tax credits.

Case study 1: Growing renewable and non-emitting energy production and investment

The clean technology investment tax credit will rapidly accelerate the deployment of renewable energy and energy storage—technologies that are experiencing rapid growth in Canada. The installed capacity of wind, solar and energy storage grew by 11.2% in 2023, reaching a new total of 21.9 GW⁸. Alberta captured 92% of the growth, despite the provincial moratorium on new projects proceeding in the latter part of 2023, and some growth was also seen in parts of Atlantic Canada and the Territories. While Canada’s renewables growth

is not on par with global growth, more capacity is under development or expected, particularly with many provinces announcing net-zero pathways and green procurement plans⁹. The number of major clean technology projects currently under construction or planned continued to grow with a total investment of \$159 billion in projects in 2023¹⁰. The new clean technology investment tax credit will help Canada attract further investment and more swiftly deploy technologies that can help close the 2030 emissions gap.



8. Canadian Renewable Energy Association. 2024. [New 2023 data shows 11.2% growth for wind, solar & energy storage](#)

9. Ibid.

10. Natural Resources Canada. 2023. [Energy Factbook 2023-2024](#)

Oil and gas sector emissions cap

Advice 1B:

The Government of Canada should finalize the oil and gas sector emissions cap regulations no later than 2025 or ensure stringency of other policies applied to the oil and gas sector. Oil and gas sector emissions reduction targets should be coherent with national targets and represent a fair share of emission reductions relative to other sectors.

Oil and gas emissions increased 11% from 2005 to 2022, more than any other economic sector, and represent 31% of national emissions. NZAB's previous advice on the Emissions Reductions Plan noted that the 2030 target will not be achieved without a substantial reduction of oil and gas emissions.

To ensure the necessary emission reductions from this sector occur, the federal government has proposed a new national GHG emissions cap and trade system for the oil and gas sector that would complement existing climate policies such as industrial carbon pricing and policies that cover the refining and combustion of oil and gas (for example, *Clean Fuel Regulations*, vehicle GHG emissions standards, federal fuel charge). The implementation of an ambitious emissions cap for Canada's largest source of energy-related emissions would be one of the principal drivers of additional 2030 emissions reduction beyond existing measures. Recent analysis from the Canadian Climate Institute estimates that the proposed oil and gas emissions cap could be responsible for 7% to 34% of total incremental emissions reductions between the baseline and full Emissions Reduction Plan Progress Report policy scenarios in 2030¹¹. Cap and trade systems are a proven and widespread economically efficient policy to limit pollution by providing companies a financial incentive to find cheaper, less polluting alternatives.

In Fall 2021, the Minister of Environment and Climate Change and the Minister of Natural Resources asked the NZAB to provide key guiding principles to inform the development of an oil and gas sector emissions cap. In [our advice on the 2030 Emissions Reduction Plan](#), we indicated that Canada needs an oil and gas emissions cap and detailed 13 principles that can shape its development. Crucially, the cap must be set in the context of broader efforts to reduce emissions from the Canadian economy by 40% to 45% below 2005 levels by 2030. Should the oil and gas sector not proportionally meet Canada's 2030 target or meet its own sectoral cap, other sectors would be required to do even more for Canada to achieve its target, or other approaches like carbon removal would need to be deployed at a wider scale.

Members agree that oil and gas sector emissions reduction targets should be coherent with national targets and should be made legally binding, though have a range of views on how to address emissions from the sector. Additional advice on how to strengthen the oil and gas emissions sector cap or other mechanisms to achieve emissions reduction from the sector can be found in Advice 4A in this report.

As indicated in Advice 2, the oil and gas emission cap must be designed to mitigate potential negative interactions with other policies. Otherwise, there is risk that the cap will reduce the effectiveness of other policies like the industrial pricing system and not lead to the desired whole economy emissions reductions.

11. Beugin et al. 2024. 440 Megatonnes: Tracking Canada's path to net zero. Canadian Climate Institute. [Which Canadian climate policies will have the biggest impact by 2030?](#)

Clean Electricity Regulations

Advice 1C:

The Government of Canada should finalize the Clean Electricity Regulations in 2024. Swift implementation sends a clear signal that will encourage and enable the investment needed now to meet the 2035 regulatory objective while making a significant contribution to Canada's 2030 emissions reduction target.

To meet Canada's net-zero goals, we need to electrify transportation, home heating, and many other industries. This increased energy demand, alongside many energy efficiency measures, means that electricity generation capacity will need to increase 2.2 to 3.4 times by 2050 compared to today¹².

In August 2023, the federal government published the draft Clean Electricity Regulations. They send a regulatory signal to provinces, territories, and power producers to discourage further investment in emissions-generating assets without carbon capture and storage. The intent is to drive the emissions intensity of existing assets towards net-zero, while maintaining electricity affordability and grid reliability.

In February 2024, the federal government published an update on the Clean Electricity Regulations for consultation on additional flexibility measures under consideration based on the comments received on the first draft, including concerns about the impact on affordability and reliability. We underscore the importance of providing flexibility within the Clean Electricity Regulations to ensure system reliability and affordability; we believe this can still be prioritized if the Regulations are structured in a way that ensures that all non-emitting options are fully considered prior to allowing the use of emitting generation to support peaking and emergency needs.

This advice reaffirms our views in our first Annual Report, [Compete and Succeed in a Net-Zero Future](#), that the regulations must:

- Prevent new unabated gas plants from being built per NZAB's principle to "be aware of dead-ends" (that is, by avoiding locking-in systems and technologies that will become emissions liabilities before 2050). To avoid dead end pathways, "abated" systems must ultimately achieve a 90% or more capture rate to operate in 2050 and support Canada's net-zero commitment.
- Encourage early emissions reductions and strictly limit the use of offsets and compliance flexibilities that only operate as time-limited support where absolutely needed to help transition.

The federal government anticipates finalizing the Clean Electricity Regulations by the end of 2024. This timing was also recommended by the Canadian Electricity Advisory Council in their final report *Powering Canada: A blueprint for success*, provided the federal government undertakes the necessary consultations and incorporates greater flexibility to covered entities than in the draft regulations¹³.

12. Dion et al. 2022. Canadian Climate Institute. [The Big Switch: Powering Canada's net zero future](#)

13. Canadian Electricity Advisory Council. 2024. [Powering Canada: A blueprint for success](#)

Canada Green Buildings Strategy



Advice ID:

The Government of Canada should implement the Canada Green Buildings Strategy. Accelerate implementation of the Canada Greener Homes Affordability Program by letting provinces and territories determine regionally appropriate eligibility and operational requirements.

The buildings sector—both residential and commercial—remains a particularly difficult decarbonization challenge given the long-lived nature of energy infrastructure for buildings and the distributed nature of the problem. It also is a sector where significant additional emission reductions are possible. For example, recent analysis by the Canadian Climate Institute found that a system-wide shift from gas to electric heat is the lowest cost path to decarbonize the building sector¹⁴.

In July 2024, the federal government published the Canada Green Buildings Strategy; however, a comprehensive set of policies to achieve the vision has not yet been implemented¹⁵. Building on our previous advice, we recommend full implementation of the Canada Green Buildings Strategy, as well as pursuing additional measures related to phasing down fossil fuel heating and cooling and creating a building performance standard for new commercial buildings (Advice 5).

The federal government, along with provinces and territories, has an important role in providing funding to low-to-moderate income homeowners and renters to ensure affordable access to energy for basic residential needs. The right to adequate housing is a right in the [Universal Declaration of Human Rights](#).

Budget 2024 proposed \$800 million over five years, starting in 2025–2026, to launch the Canada Greener Homes Affordability Program which will support the direct installation of energy efficiency retrofits for Canadian households with low- to median-incomes. This program is urgently needed to improve energy affordability for lower-income households. Unlike the previous Canada Greener Homes Grant, the new targeted program will not require any upfront payment from households.

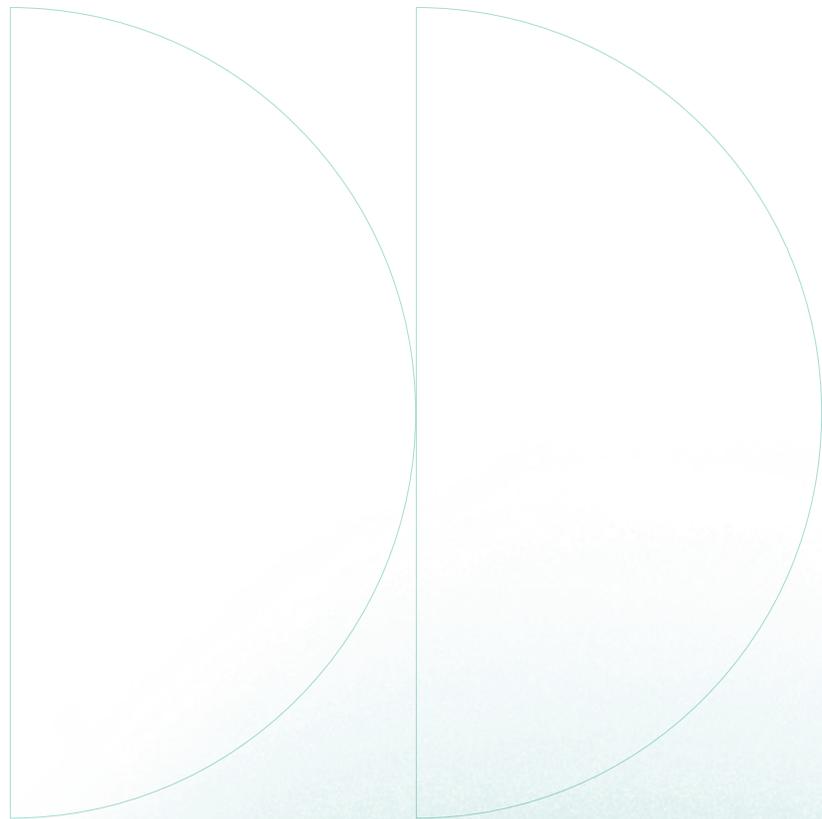
However, we are concerned about potential job losses for energy auditors arising from the year lag between the end of the Canada Greener Homes Grant program and the new program. This loss can be somewhat mitigated by requiring energy audits for new federal affordable housing funding.

14. The Canadian Climate Institute. 2024. [Heat Exchange: How today's policy choices will drive or delay Canada's transition to clean, reliable heat](#)

15. Natural Resources Canada. 2024. [The Canada Green Buildings Strategy](#)

The new Canada Greener Homes Affordability Program will be delivered by an expansion of existing provincial and territorial programs. We strongly encourage the federal government to empower provinces and territories to develop exact eligibility criteria. Motivated by our foundational value of recognizing and respecting regional differences and circumstances, provinces and territories should determine the exact income cutoff, design components, and delivery or outreach requirements. Otherwise, more federal restrictions will likely result in implementation delays. As provinces and territories

seek to expand their low-income energy efficiency programs with this new funding, they could consider how energy affordability is highly influenced by other social factors. For example, gender, Indigeneity, and other identity factors could be considered in the administration of this program. California's Weatherization Assistance Program provides preference to low-income households with people over 60 years of age, families with one or more members with a disability, or families with children that could serve as a model for an expanded program in Canada¹⁶.



16. California Department of Community Services and Development. [Weatherization Assistance Program](#)

Landfill methane emissions regulations



Advice 1E:

The Government of Canada should finalize the landfill methane emissions regulations as soon as possible to increase the likelihood of emission reductions being achieved by 2030

Regulating methane emissions from landfills is a cost-effective way to limit near-term global warming and Canada can do more to reduce this significant pollution source. In 2022, methane emissions from Canada's municipal solid waste landfills represented 19 Mt CO₂e or 2.8% of total emissions, with a 4.4% decrease since 2005¹⁷. Currently, 58% of landfill methane emissions directly vent to the atmosphere^{18,19}.

Canada's 2022 Methane Strategy committed to developing new regulations to increase the recovery and destruction of methane from large municipal solid waste landfills by about 50% by 2030 from 2019 levels²⁰. The federal government released a [proposed regulatory framework](#) in April 2023 and [draft regulations](#) in June 2024. We advise the federal government to finalize these regulations as soon as possible.

Prioritizing benefits beyond emissions reductions

Beyond the climate impacts, landfills can also cause negative impacts for neighbouring communities through water pollution. Indigenous, Black, and other underprivileged communities in Canada are disproportionately affected by landfills in terms

of proximity, exposure, and lack of representation in related decision-making bodies. Enhanced management of landfills can purposively improve the day-to-day lives of local communities.

17. Environment and Climate Change Canada. 2024. [National Inventory Report, 1990-2022 \(Part 1, PDF\)](#)

18. Winter. 2023. University of Calgary (School of Public Policy). [Comment on 'Reducing Canada's landfill methane emissions: Proposed regulatory framework](#)

19. Dobson et al. 2023. International Review of Environmental and Resource Economics. [If It Matters, Measure It: A Review of Methane Sources and Mitigation Policy in Canada](#)

20. Environment and Climate Change Canada. 2022. [Faster and Further: Canada's Methane Strategy](#)

Medium- and heavy-duty zero emission vehicle sales mandate

Advice 1F:

We recommend that the Government of Canada implement a medium- and heavy-duty zero-emission vehicles sales mandate by 2025. This mandate should reflect, at minimum, the federal government's goal that 35% of medium- and heavy-duty vehicles sold in 2030 be zero-emission vehicles, increasing to 100% by 2040, where feasible.

Medium- and heavy-duty vehicles emissions are growing steadily and now account for 34% of all road transportation emissions. Emissions from these vehicles have increased 8% since 2005 and are on track to surpass those of passenger vehicles by 2030, becoming the largest emissions source in the transportation sector²¹. While existing climate policies such as carbon pricing and the *Clean Fuel Regulations* will reduce these emissions, strengthened or additional policies will be needed to meet 2030 emission reduction targets.

The federal government's goal is that 35% of medium- and heavy-duty vehicles sold in 2030 be zero-emission vehicles, increasing to 100% by 2040, where feasible. Modelling by the Pembina Institute indicates that a sales standard could successfully encourage higher adoption levels²². This sales mandate would help to realize the federal goal by requiring manufacturers to increase the supply of zero-emission vehicles. The 2023 Progress Report of the 2030 Emissions Reduction Plan notes that a draft medium- and heavy-duty zero emissions vehicle sales mandate will be published in 2024 with final regulations published in 2025. We urge the federal government to meet these targets. We support the development of this mandate but do note that any mandate must carefully consider the technology availability and the cost impacts on consumers.

21. Environment and Climate Change Canada. 2021. [Discussion paper for heavy-duty vehicles and engines in Canada: transitioning to a zero-emission future](#)

22. Kasteel et al. 2022. Pembina Institute. [Medium- and heavy-duty vehicle \(MHDV\) Recommendations](#)

Case study 2: Canada's rapid increase in zero emission buses

Between 2022 and 2023, the number of zero emission buses in Canada increased 346% from 1,214 to 5,426²³. This rapid adoption enabled the federal government to surpass its goal of introducing 5,000 zero emission buses by 2026 two years ahead of schedule. This rapid adoption has enabled fuel savings for bus operators and economic growth for bus manufacturers.

Road transportation is the most common mode of freight transport in Canada, both for internal trade and with the United States. The federal government should ensure that any potential barriers to efficient supply chains within Canada and with the United States be removed. Now that a major block of U.S. states (that is, California, Massachusetts, New Jersey, New York, Oregon and Washington) have adopted a medium- and heavy-duty zero emission vehicle sales mandate, adoption of a similar mandate in Canada would encourage not only the reduction of emissions but also the build out of charging, refuelling and maintenance infrastructure necessary to service the growing number of zero emission medium- and heavy-duty vehicles.

Implementing a sales mandate for medium- and heavy-duty zero emission vehicles would result in incremental emission reductions but requires careful attention to potential policy interactions (for example, with the *Clean Fuel Regulations* and the fuel charge) and to supplementary policies that will aid manufacturers to achieve the sales targets. Since high-up front costs and access to charging stations remain key barriers to uptake of medium and heavy-duty zero-emission vehicles, the federal government should continue purchase incentives and support for public and private charging infrastructure for these vehicles.

23. Canadian Urban Transit Research & Innovation Consortium. 2023. [Canadian ZEB Database™ report – Current ZEB landscape 2023](#)

Light- and heavy-duty vehicle GHG emissions standards



Advice 1G:

We recommend that Canada match the United States' post-2026 light-duty vehicle GHG emissions standards and the new U.S. Heavy-Duty Phase 3 CO₂ Emissions Standards as soon as possible.

Since 2010, Canada has regulated the amount of GHG emissions that light-duty vehicles (that is, passenger automobiles and light trucks) can emit. Canada's current light-duty vehicle GHG standards, which apply to all new cars sold in Canada and are aligned with the United States, are set to stop increasing following the 2026 model year. Unlike the *Electric Vehicle Availability Standard* which mandates the percentage of new vehicles for sale which must be electric vehicles to ensure availability, GHG standards help reduce the emissions from all new fossil-fueled vehicles, which currently make up most light-duty vehicle sales in Canada. Given the deep integration of the North American automobile industry, Canada has historically had similar emissions standards as the United States, since most vehicles produced in Canada are sold into the U.S. market.

Canada's standards have not been finalized although the 2023 Progress Report on the 2030 Emissions Reduction Plan relied on modelling of post-2026 light-duty vehicle GHG standards that aligned with the U.S. Environmental Protection Agency's proposed standards. The 2023 Progress Report also noted that draft Canadian regulations are expected in 2024, following the U.S. Final Rule publication. The U.S. Final Rule was published in March 2024, and will result in nearly a 50% drop in tailpipe CO₂ emissions from model year 2027 (170 g CO₂/mile) to model year 2032 (85 g CO₂/mile). The federal government should follow through on its stated commitment to share its draft regulations in 2024 and those regulations should match the US standard.





Canada's *Heavy-duty Vehicle and Engine Greenhouse Gas Emissions Regulations* increase stringency between model years 2021 and 2027 and are aligned with existing U.S. Heavy-Duty Phase 2 CO₂ Emission Standards. In March 2024, the U.S. Environmental Protection Agency finalized more stringent U.S. Heavy-Duty Phase 3 CO₂ Emission Standards (model year 2027–2032)²⁴. These new standards will be up to 60% stronger for heavy-duty vocational (or job-specific) vehicles such as delivery trucks, school buses, or refuse haulers, depending on vehicle type, compared to the previous Phase 2 standards for model

year 2032. Emission standards for tractor-trailer trucks will be up to 40% stronger, depending on the vehicle type, compared to the previous Phase 2 standards for model year 2032. The 2023 Progress Report of the 2030 Emissions Reduction Plan indicates that heavy-duty vehicle emission regulations will align with the U.S. regulations and will be finalized after the medium- and heavy-duty sales mandate. Given its deep trade integration with the United States, Canada should not wait until a sales mandate is finalized to harmonize its GHG emissions standards with the United States.

Case study 3: Accelerating adoption of electric vehicles

The market share of electric vehicles in 2023 was 11.7%, up from 8.9% in 2022 with electric vehicles accounting for 1 in 9 new vehicles registered in Canada²⁵. In line with the global trend for electric vehicles, the Canadian Climate Institute reported

that gas-powered vehicle sales have peaked in Canada, as their sales have been declining at an average annual rate of 6.3% since 2017, as zero emission and hybrid vehicle sales have continued to grow²⁶.

24. U.S. Environmental Protection Agency. 2024. [Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles: Phase 3 – Regulatory Announcement](#)

25. Standard & Poor's Global Mobility. 2024. [Automotive Insights – Q4 2023 Canadian EV Information and Analysis](#)

26. Zhang. 2024. 440 Megatonnes: Tracking Canada's path to net zero. Canadian Climate Institute. [Gas-powered vehicle sales have peaked in Canada](#)

Advice 2

Address negative interactions

The government should proactively address the negative interactions between some federal climate policies and output-based pricing systems.

As part of an effort to decarbonize all sectors, addressing these interactions can result in additional emission reductions from oil and gas, electricity, and heavy industry beyond those currently contemplated and further close the 2030 emissions gap.

As Canada's climate policy architecture responds to the deepening climate crisis, the volume and ambition of policies that help Canadians to reduce emissions will correspondingly increase. There is potential for positive, mutually reinforcing interactions among these policies (for example, clean economy investment tax credits and *Clean Fuel Regulations* both provide incentives for the installation of zero-emission vehicle charging or refueling infrastructure) or a range of co-benefits (for example, improving affordability and human health outcomes).

Conversely, there is also a risk for negative policy interactions, where one policy can weaken the effectiveness of other policies or create unnecessary and cumbersome policy overlap.

Our analysis indicates that the suite of climate policies included in the 2030 Emissions Reduction Plan has negative interactions that should be addressed. In particular, the proposed oil and gas sector emissions cap and the Clean Electricity Regulations could vastly increase the number of credits available in large emitter trading systems, which could reduce the effectiveness of these trading systems. Another example is that, if the light-duty zero-emission vehicle sales mandate, the proposed Clean Electricity Regulations and the oil and gas sector emissions cap drive fuel carbon intensity reductions greater than the *Clean Fuel Regulations*, the compliance credits created under the *Clean Fuel Regulations* could weaken the price signal in these adjacent policies, resulting in fewer reductions for each policy than if each policy was implemented in isolation.

Large-emitter trading systems are a form of industrial carbon pricing that uses emissions credit trading to lower the cost of reducing emissions while achieving emission reduction goals. In Canada, provinces and territories have the choice between using the federal output-based industrial carbon pricing system, explained in Advice 3, or their own output-based systems that meet or exceed the federal standard.

Well-designed policy should minimize the risk of negative interactions and maximize the likelihood of positive interactions and co-benefits. Negative interactions introduce unnecessary uncertainty and diminish the incentives in some of the federal government's flagship emission reduction policies. As a result, industrial emitters may have reason to discount the anticipated price signals created by these policies and reduce decarbonization investments. Eliminating or minimizing these negative interactions can therefore create more certainty for large emitters and reduce GHG emissions. Similar to finalizing

announced policies, modifying existing policies to rectify negative interactions would take less time than introducing new policies and would require fewer public sector resources than creating new emission mitigation policies.

The Canadian Climate Institute's analysis shows that addressing credit oversupply in Canadian large-emitter trading systems, including by setting stricter performance standards, can reduce economy-wide emissions by an additional 15 Mt CO₂e in 2030, equivalent to the annual energy use of 3,512,881 homes.

Advice 3

Strengthen industrial carbon pricing

The Government of Canada should take actions to strengthen industrial carbon pricing:

- A) confirm the 2026 assessment of the Output-based pricing system will be part of a systematic, transparent, and regularized process that monitors credit creation and adjusts benchmarks to guard against credit oversupply and negative policy interactions
- B) begin consultations on options for tightening the Output-based pricing system before the end of 2024
- C) signal that further strengthening of performance benchmarks can be expected and will tighten the credit market
- D) base the 2026 federal assessment of provincial and territorial large emitter trading systems upon compatibility with the 2030 emissions reduction target
- E) implement a broad-based carbon contract for difference program as soon as possible to achieve emissions reductions prior to 2030 and counter concerns about policy uncertainty that risks undermining investment decisions in decarbonization

Output-based pricing system

Established under the [Greenhouse Gas Pollution Pricing Act](#), the federal output-based pricing system provides a price incentive to large industrial emitters to reduce their GHG emissions and promote innovation while ensuring these companies remain internationally competitive and dissuading companies from moving to jurisdictions to avoid paying for carbon pollution.

The Output-based pricing system applies to industrial operators of facilities that emit 50 kt CO₂e or more per year—equivalent to the annual energy use of 11,710 homes—in provinces or territories that do not have their own equivalent carbon pricing

system. Regulated facilities are exempt from the federal fuel charge. They must report stationary fuel combustion emissions, industrial process emissions, industrial product use emissions, venting emissions, flaring emissions, leakage emissions, on-site transportation emissions, waste emissions and wastewater emissions. Those facilities whose emissions fall below their emissions allowance can generate a credit that can be sold or saved to meet future obligations. Facilities that exceed their own annual emissions allowance are required to either pay an excess emissions charge payment or remit compliance units, namely surplus credits, federal offset credits, or other recognized units.

While the already announced policies are important, they will be insufficient to close the gap to meet the 2030 target. Some policies, like industrial carbon pricing, will have to be strengthened in implementation.

The Canadian Climate Institute identifies industrial carbon pricing as the single biggest contributor to Canada's 2030 target in its analysis of Canadian climate policy effectiveness to date and projected impacts on emissions out to 2030²⁷. However, credit oversupply and weak performance benchmarks threaten to undermine this contribution. Thankfully, there are steps the federal government can take to shore up this important climate policy. As the federal carbon pollution pricing system matures, it is incumbent upon policymakers to evaluate progress and, if necessary, offer course corrections.

Recent analysis by Climate Change Institute indicates future large emitter trading system market prices do not always hold at the national carbon

price, notably in Alberta, due to an oversupply of credits²⁸. Credit oversupply can happen for a variety of reasons, including when firms are granted more credits than needed for compliance, technology investments spurred by subsidies generate large volumes of credits, and overlapping policies double count reductions. As mentioned earlier, the Canadian Climate Institute's analysis shows that addressing credit oversupply in Canadian large emitter trading systems, including by setting stricter performance standards, can reduce economy-wide emissions by an additional 15 Mt in 2030.

Improvements can be implemented quickly because the industrial carbon pricing system is already in place and a commitment exists to revisit it in 2026. The federal government plans to conduct an interim assessment in 2026 of provincial and territorial systems to confirm that systems continue to meet the benchmark criteria for the 2027–2030 period, taking stringency into account as the primary factor.

27. Beugin et al. 2024. 440 Megatonnes: Tracking Canada's path to net zero. Canadian Climate Institute. [Which Canadian climate policies will have the biggest impact by 2030?](#)

28. Canadian Climate Institute. 2023. [Independent Assessment of Canada's 2023 Emissions Reduction Plan Progress Report](#)



Advice 3A:

Confirm the 2026 assessment of Output-based pricing system will be part of a systematic, transparent, and regularized process that monitors credit creation and adjusts benchmarks to guard against credit oversupply and negative policy interactions



Advice 3B:

Begin consultations on options for tightening the Output-based pricing system before the end of 2024



Advice 3C:

Signal that further strengthening of performance benchmarks can be expected and will tighten the credit market

The policy fix is straightforward. Regulators of large emitter trading systems need to routinely monitor and update GHG performance standards to make them stricter by increasing the tightening rate. Further, to prepare for the 2026 assessment, the federal government should begin consultations on options for tightening the Output-based pricing system before the end of 2024. These consultations would also signal to large emitters that further strengthening of performance benchmarks can be

expected and will tighten the emission reduction credit market. We strongly recommend prioritizing Output-based pricing system consultation with the electricity sector given the interactions between the pricing system and the Clean Electricity Regulations, which in turn would allow investors to have increased policy certainty to inform the significant new investment decisions that will need to be taken between now and 2035.





Advice 3D:

Base the 2026 federal assessment of provincial and territorial large emitter trading systems upon compatibility with the 2030 emissions reduction target

Benchmarks ensure fairness and guard against a race to the bottom by regulating a minimum performance standard. The federal output-based pricing system is intended to do just that across the thirteen provinces and territories. However, the [Commissioner of the Environment and Sustainable Development](#) has noted the uneven coverage of emissions across provinces (for example, 54% in Prince Edward Island to 87% in Nova Scotia) and weak federal benchmark criteria and guidance for provincial and territorial large emitters²⁹. Further, the share of emissions facing a compliance obligation under the series of provincial industrial pricing systems in Canada is not consistent with the magnitude of emissions reduction required by the Emissions Reduction Plan³⁰.

To ensure that provincial and territorial large emitter trading systems are adequately meeting the benchmark federal output-based pricing system and aligned with the national 2030 emissions reduction target, the 2026 federal assessment of these subnational systems should examine their ability to contribute to the 2030 target of 40% to 45% below 2005 levels. As noted in the Commissioner of Environment and Sustainable Development's report, the federal government has a role in ensuring alignment between national and subnational performance standards, in addition to broad alignment with 2030 goals.



Advice 3E:

Implement a broad-based carbon contracts for difference program as soon as possible to achieve emissions reductions prior to 2030 and counter concerns about policy uncertainty that risks undermining investment decisions in decarbonization

Industrial carbon pricing as currently designed has not provided sufficient certainty for heavy emitters and their investors that the system will function as intended, both because the schedule of pricing increases might be amended by current or future governments and because industrial emitters lack confidence in the future value of carbon credits. For industrial emitters to move forward with investments in the hundreds of millions, if not billions, of dollars, they require more long-term certainty in the economic incentives that carbon pricing should provide.

Implementing a broad-based program of carbon contracts for difference can provide investors with stable and predictable revenue from reducing carbon emissions and lower the cost of capital. Carbon contracts for difference should provide certainty on both the headline price trajectory, as well as the carbon credits generated through output-based pricing systems. To date, two out of four carbon contracts for difference projects via the Canada Growth Fund have focussed on carbon capture in the oil and gas industry. A broad-based carbon contracts for difference program would ensure that multiple technologies and industries will be able to access the program.

29. Commissioner of the Environment and Sustainable Development. 2022. [Report 5 – Carbon Pricing – Environment and Climate Change Canada](#)

30. Bishop and Bernstein. 2022. Clean Prosperity. [Tightening TIER for Alberta's Decarbonization](#)

Carbon contracts for difference

Carbon contracts for difference are a tool to improve investor certainty when making large decarbonization investments. For systems like the federal output-based pricing system, where the future price of performance credits and the carbon price beyond 2030 are both uncertain, carbon contracts for difference can reduce that uncertainty. They can offer a guaranteed price for investors for performance credits generated by a project. As a result, future revenue from credits becomes bankable, meaning sufficiently reliable to be included in companies' financial projections when considering projects. This lowers the cost of capital and increases the likelihood that these emission-reducing projects will be built.

Without a carbon contracts for difference program, a meaningful share of the emissions reduction that is currently forecasted within the Government of Canada's climate models are unlikely to materialize if the pricing signal is weakened or eliminated, exacerbating the already significant gap to the 2030 emissions reduction goal. Carbon contracts for difference are a tool to set strong expectations. Further, these contracts can help to lower mitigation costs³¹, to incentivize net-zero infrastructure, as seen with the Netherlands' Sustainable Energy Transition Scheme³², and to compete with the U.S. Inflation Reduction Act³³.

The risk of an oversupply of carbon credits crashing the credit price and requiring the federal government to pay out is not insignificant. One way to manage this risk, as recommended above, is to regularly monitor credit creation and adjusting benchmarks. Another way is to increase the amount of contingent liabilities for carbon contracts for difference on the federal government's books to create additional pressure for the federal government to raise the stringency of industrial carbon pricing. That said, if carbon pricing systems are maintained and strengthened so that the carbon price is binding, they could come at little to no cost to the federal government.

31. Richstein and Neuhoff. 2022. iScience. [Carbon contracts-for-difference: How to de-risk innovative investments for a low-carbon industry?](#)

32. NetZero Pathfinders. [Carbon Contracts for Difference: The Netherlands](#)

33. Allan and Bernstein. 2023. [Creating-a-Canadian-Advantage: Policies to help Canada compete for low-carbon investment](#)

In the 2023 Fall Economic Statement, the Government of Canada took an initial step and announced that the Canada Growth Fund will be the principle federal entity issuing carbon contracts for difference. The Canada Growth Fund will allocate, on a priority basis, up to \$7 billion of its existing capital to issue all forms of contracts for difference and offtake agreements. Some projects that have received carbon contracts for difference include a natural gas plant using carbon capture and storage, a waste-to-energy facility using carbon capture and storage, an oil sands project with carbon capture and storage, and a waste heat-powered district energy system. Budget 2024 announced that the Canada Growth Fund would develop an expanded range of carbon contracts for difference offerings tailored to different markets.

We would like to see this expanded program be sufficiently broad to support contracts with a wide range of technologies, such as renewables and green hydrogen.

A broad-based carbon contracts for difference program would maximize the potential emissions reductions from industrial carbon pricing. Modelling from Clean Prosperity and Navius Research found that carbon contracts for difference could accelerate up to 33 Mt of new low-carbon projects by 2030^{34,35}. Such a program would enable most, if not all, emitting facilities regulated by industrial carbon pricing to gain access to a contract for difference, in contrast to the current program from the Canada Growth Fund which is expected to be much more limited.



34. Clean Prosperity. 2024. [Canada could fall short of climate targets without expanded contracts for difference program](#)

35. The Clean Prosperity analysis used a different scenario structure (exploring the impact of contracts for difference in an existing policy scenario where uncertainty of future carbon prices is high) and assumed higher existing stock turnover rates in some scenarios than used in our Canadian Climate Institute/Navius modelling, which uses Navius' baseline stock turnover assumptions. Higher stock turnover results in more new investment decisions that are impacted by contracts for differences.

Advice 4

Secure additional
emission reductions
from the oil
and gas sector

The oil and gas sector is Canada's largest emitting sector, representing 31% of national emissions. Of all the economic sectors, oil and gas has seen the biggest increase in emissions: between 2005 and 2022 emissions increased from 195 Mt to 217 Mt. According to the Canadian Climate Institute, there is potential for additional cost-effective emissions reduction in this sector beyond those already contemplated.

More needs to be done to secure emissions reductions from the oil and gas sector.

NZAB members have a range of views on the most effective policy options the Government of Canada should pursue to secure additional emission reductions and have developed two distinct approaches reflecting the different views.

Option A) Strengthen the oil and gas emissions cap:

- **exclude methane emissions reductions from credit creation**
- **pilot, on a limited basis, the proposed flexibility mechanisms under the oil and gas sector emission cap**
- **evaluate expanding the oil and gas cap to include mid/downstream emissions and pursue the policy design if warranted**

The federal government has committed to, and is actively implementing, a new national GHG emissions cap and trade system for the oil and gas sector. The new policy is meant to complement existing climate policies that cover the refining and combustion of oil and gas (for example, industrial carbon pricing, *Clean Fuel Regulations*, vehicle GHG emissions standards, federal fuel charge). Unlike these other policies, some of which rely on emissions intensity performance benchmarks, the cap sets a specific emissions outcome for the sector. In Advice 1, we recommended that the federal government implement the cap as proposed. In this advice, we recommend going even further with the cap to further reduce oil and gas sector emissions.

Further strengthening the oil and gas emissions cap beyond what has been proposed by the federal government can further close the 2030 emissions gap. Excluding methane emissions reductions from credit creation helps avoid the credit oversupply, mitigates the negative interactions identified in Advice 2, and recognizes key distinctions between carbon dioxide and methane. Regulating methane and carbon dioxide differently is appropriate because of important differences in the sources of the two gases, their warming effect, and their lifetimes in the atmosphere. Moreover, excluding methane also helps manage the uncertainty created by the current inaccurate methane emission estimates. As discussed further in Advice 5, atmospheric measurements of methane from oil and gas operations are significantly larger than land-based estimates provided by oil and gas operators.

The proposed design of the oil and gas emissions cap includes flexibility mechanisms to allow facilities to compensate for a limited quantity of emissions. We support the piloting of international credit creation, on a limited basis, to provide additional flexibility for emitters. However, any flexibility mechanism should be designed to minimize bad faith behaviour from companies to manipulate credit or offset markets.

The Canadian Climate Institute's modelling indicates the potential for additional cost-effective emissions reductions from the oil and gas sector by expanding the coverage of the policy to include midstream and downstream emissions and by tightening the stringency of the cap. In 2022, midstream

and downstream emissions in the oil and gas sector amounted to 32 Mt CO₂e or 15% of total oil and gas sector emissions³⁶. To drive additional emission reductions from the oil and gas sector, the federal government could expand the coverage of the oil and gas sector emissions cap beyond upstream emissions (for example, oil and gas production) and liquified natural gas (LNG) facilities to include midstream and downstream emissions (for example, refineries, natural gas distribution, and oil, natural gas, and CO₂ transmission). This scope expansion, which covers a broader range of sources, would drive more emissions reductions and enable various companies access to more flexible and cost-effective options for meeting their reduction targets.

Option B) Strengthen the OPBS performance standards in all sectors and expand the carbon contracts for difference program

In lieu of the oil and gas cap, the federal government could strengthen performance standards in the output-based pricing systems for all regulated sectors including oil and gas in tandem with an expanded and broad-based contracts for difference program, as described in Advice 3. This policy option could be implemented relatively quickly, compared to the

development of the oil and gas emissions cap. Further, this approach avoids the uncertainty inherent in creating new regulations that could face years of legal challenges. It also avoids overlapping systems while generating cost-effective emissions reductions through the flexibility to trade with other regulated sectors.

36. Environment and Climate Change Canada. 2024. [National Inventory Report, 1990-2022](#) (Part 1, PDF)

Advice 5

Evaluate and pursue additional action

To address the remaining 2030 emissions gap, the Government of Canada should consider pursuing one or more of the following policies:

- A) strengthen oil and gas methane regulation to an 80% reduction
- B) finalize and publicly state the post-2030 carbon price schedule, and ensure it is inflation-adjusted
- C) promote policies that encourage shift to less-emitting transportation modes
- D) phase down the sale of new and replacement fossil fuel heating and cooling devices in residential and commercial buildings, beginning no later than 2030
- E) create a building performance standard for new commercial buildings

Implementation of the measures already identified in this report will still leave a gap to the 2030 emissions reduction target. **To further close the gap, the NZAB recommends the federal government focus on a small number of highest-impact additional actions for quick implementation, rather than seek to implement a long list of difficult-to-achieve new policies.**

We believe the Government of Canada should consider pursuing one or more of the following policies, which were selected because they have high emissions reduction potential, are cost-effective, and are implementable in the near-term.



Advice 5A:

Strengthen oil and gas methane regulations to an 80% reduction

According to the 2024 National Inventory Report, between 2005 and 2022, fugitive methane emissions from the oil and gas sector decreased 25% to 56 Mt CO₂e. Despite this decrease, the sector remains the largest contributor to national methane emissions. Most atmospheric measurement studies indicate that methane emissions from Western Canadian oil and gas operations could be 1.5 to 3 times that reported using official inventory methods^{37,38}. New satellite-based measurements (for example, MethaneSat) may bring further attention to likely underestimates of methane emissions from the sector.

Sharply reducing oil and gas sector methane emissions is a high priority and a strategic opportunity for near-term emission reductions. Methane's oversized near-term climate impact (over a 20-year period, methane is 81-83 times more potent than carbon dioxide³⁹), the significant uncertainty over existing methane emission estimates and the availability of cost-effective, off-the-shelf abatement technologies makes enhanced mitigation of oil and gas sector methane emissions a prudent choice. Beyond its climate impact, reducing methane emissions improves the health of communities adjacent to polluting oil and gas infrastructure.

To achieve the 2030 emissions target, Canada must become a leader in reducing emissions from the oil and gas sector. Canada was one of the first countries to regulate this emissions source and the first country to commit to develop a plan to regulate a reduction of at least 75% by 2030 from 2012 levels. In December 2023, the federal government published [draft enhanced regulations](#) for the upstream oil and gas sector requiring at least a 75% reduction in methane emissions from 2012 levels by 2030. Final regulations are targeted for publication in 2024.

Achieving a 75% reduction in methane by 2030 is increasingly seen as a floor, not a ceiling, of what's possible. The federal government can continue its leadership role by further strengthening these regulations. Many oil and gas firms (for example, Oil and Gas Climate Initiative's Aiming for Zero initiative, Chevron, ExxonMobil, Shell, United Arab Emirates' Abu Dhabi National Oil Company) have already pledged to achieve near-zero methane emissions by 2030. The Alberta Energy Regulator's methane emission regulations for the Peace River region resulted in near-zero methane emissions in 2016. British Columbia plans to achieve near-zero methane emissions from all industrial sources by 2035⁴⁰.

37. MacKay et al. 2021. Scientific Reports. [Methane emissions from upstream oil and gas production in Canada are underestimated](#)

38. Chan et al. 2020. Environmental Science & Technology. [Eight-Year Estimates of Methane Emissions from Oil and Gas Operations in Western Canada Are Nearly Twice Those Reported in Inventories](#)

39. Intergovernmental Panel on Climate Change. 2021. [Climate Change 2021: The Physical Science Basis](#)

40. Pembina Institute. 2022. [Success in eliminating methane in Alberta's Peace River Region](#) (PDF)

The federal government should strengthen its proposed regulations to require at least an 80% reduction in methane emissions from the oil and gas sector by 2030, and it should improve measurement, reporting, and verification to properly benchmark, track, and reduce methane

emissions from the oil and gas sector. This advice is drawn from expert knowledge on the emissions reduction potential from the sector, the modelled results and consultations with the Canadian Climate Institute and Navius on the modelling and assumptions (see Annex).



Advice 5B:

Finalize and publicly state the post-2030 carbon price schedule, and ensure it is inflation-adjusted

The effectiveness and fairness of Canada's GHG pollution pricing system is based upon a transparent and predictably increasing price on carbon. This carbon price—reflected in both the consumer fuel charge and the output-based pricing system for large industry—represents a minimum national standard, which provinces and territories must demonstrate they can achieve. In 2016, Canada proposed an initial price schedule starting at \$20 per tonne CO₂e in 2019 rising to \$50 per tonne CO₂e in 2022. In 2021, the federal government published a [strengthened federal benchmark](#) for carbon pricing from 2023 (\$65 per tonne CO₂e) to 2030 (\$170 per tonne CO₂e).

To reach net-zero emissions by 2050, the federal government will need to consider whether to increase the federal carbon price beyond 2030 within the fuel levy system and the output-based pricing systems as this is the most cost-effective tool to achieve deeper emissions reductions. An extended pricing schedule will help provide additional certainty to businesses, households and investors when they make important decisions. An increase in the Canada Carbon Rebate would need to accompany any increase in the carbon price for households, such that most households continue to receive more money back than what is paid. In combination with carbon contracts for difference, clarity on the post-2030 pricing schedule for large emitter trading systems will induce further emissions reductions prior to 2030,

reducing the need for additional, potentially more costly, emission reduction policies, and importantly, reducing the government's risk exposure from the contracts for difference program.

As discussed earlier, the 2023 Progress Report on the 2030 Emissions Reduction Plan notes that the federal government has launched an interim review of carbon pricing in Canada and the federal benchmark for completion by 2026. This interim review and its associated consultation provide an opportunity for the federal government to advance a post-2030 carbon pricing schedule.

To prepare for the 2026 assessment, the federal government should begin consultations on options for tightening the output-based pricing system before the end of 2024. These consultations would also signal to large emitters that further strengthening of performance benchmarks can be expected and will tighten the emission reduction credit market.

Indexing the carbon price to inflation can enhance the carbon price signal for large emitters as well as those covered by the fuel charge, notably consumers, large institutional emitters and small- and medium-sized enterprises. Indexing the carbon price to inflation ensures that as the prices of goods and services increase in the economy, so too does the carbon price.



Advice 5C:

Promote policies that encourage a shift to less-emitting transportation modes

Canada's vast size, low population density and weather extremes have shaped and will continue to shape how we move people and goods across our country. Our increasing reliance on large personal vehicles and freight trucks, along with population and economic growth and urban sprawl, has caused transportation to be one of the largest and fastest-growing sources of GHG emissions in Canada. Indeed, transportation is Canada's second largest source of GHG emissions and remains persistently high: 156 Mt CO₂e in 2022—the same level as in 2005.

Beyond the policies already mentioned (that is, post-2026 light-, medium- and heavy-duty vehicle GHG emission standards and the medium- and heavy duty zero emission vehicle sales standard), more policies are needed to help shift the country

towards less-emitting transportation options. This includes policies that encourage the use of less polluting alternatives to heavy-duty diesel trucks, such as rail (electric if possible), and for passenger transportation, the use of public and active transportation where available. Switching how we move ourselves and our goods can also have the added benefit of making our streets and highways safer, reducing traffic congestion, and improving our health through reduced air pollution and increased physical activity.

As with all our recommendations, the federal government should be sensitive to important differences across Canada (including geographic, climatic, urban v. rural, and income group disparities) with respect to the suitability and affordability of less-emitting transportation modes.



Advice 5D:

Phase down the sale of new and replacement fossil fuel heating and cooling devices in residential and commercial buildings, beginning no later than 2030

In 2022, the buildings sector contributed 13% to Canada's total emissions and have increased 5% between 2005 and 2022. Phasing down the sale of new and replacement fossil fuel heating and cooling devices in residential and commercial buildings is a crucial regulatory change that would start to align this sector with a net-zero pathway. By design, a sales target or economy-wide standard could accommodate regional differences in the cost, performance, and availability of heat pumps throughout Canada while still ensuring significant emission reductions. A phase down should begin as soon as possible, no later than 2030, given the important role of building decarbonization

to achieve a 2035 emission reduction goal and the time it takes for stock turnover. Such a phase down would also encourage pre-2030 investment and result in near-term emission reductions. This policy would have high upfront costs that impact households, particularly low-income ones, and should be paired with the enhanced funding for low-to-moderate income homeowners and renters, as detailed above. It should also factor in the existing diversity in geography and climate across Canada and the suitability, reliability, availability, and affordability of non-emitting heating and cooling technologies.

Case study 4: Increase adoption of residential heat pumps

Heat pumps were reported as being used in 7% of Canadian homes in 2023, continuing their steady rise in use⁴¹. Heat pumps were the number one retrofit requested by Canadians through the

federal government Greener Homes Grant program over the past three years, with uptake surpassing expectations⁴², given they are the lowest-cost option for heating and cooling most homes in Canada⁴³.



Advice 5E:

Create a building performance standard for new commercial buildings

Building performance standards are outcome-based policies that require buildings to meet energy or GHG emissions-based performance targets. When combined with enhanced building codes, performance standards can significantly improve the energy and climate goals of the buildings sector.

Budget 2024 committed \$73.5 million over five years for the development of more ambitious building codes and to improve existing energy efficiency programs such as the Energy Star Portfolio Manager Program and ISO 50001 Energy Management Systems that help building owners benchmark, track, and improve energy use. Over a third of commercial and institutional building floor space in Canada—over 42,000 buildings—already use the Energy Star Portfolio Manager Program. Energy management systems are crucial precursors to the successful implementation of building performance standards.

These five policies above were selected because both the modelling and our own analysis confirmed that they could be key sources of additional emission reductions. Beyond these measures, other opportunities exist but require further scrutiny to evaluate their suitability and feasibility. NZAB recommends the federal government study the following actions, the first three of which Climate Change Institute has also indicated could help close the 2030 emissions gap:

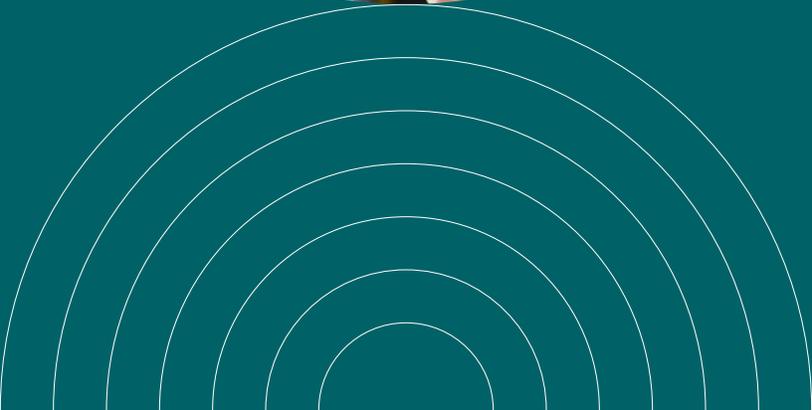
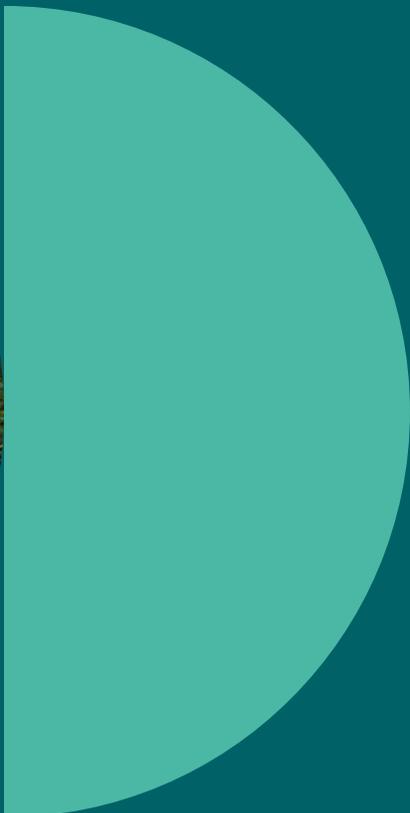
- increase stringency of the *Clean Fuel Regulations*
- implement a stronger medium- and heavy-duty vehicle sales mandate than is currently proposed
- implement efficiency mandate for low-temperature industrial heat
- further ambitiously target light-duty vehicle emission reductions

41. Statistics Canada. 2023. [Canadian Social Survey: Energy use](#)

42. Natural Resources Canada. 2024. [Canada Greener Homes Initiative](#)

43. Canadian Climate Institute. 2023. [Heat pumps pay off: Unlocking lower-cost heating and cooling in Canada](#)

Conclusion



On the path to net-zero, 2030 represents a crucial milestone from which to take stock of Canada's progress, and ensure we remain on track to meet our climate goals. We can do it, but we need to move now.

To give itself the best chance of meeting the 2030 emissions goal, the federal government should finalize the suite of policies needed to close the 2030 emissions gap as soon as possible. The federal government has produced a credible plan that modelling suggests can come close to achieving the 2030 emissions reduction target if fully implemented and successful, but significant work remains.

To that end, and working within the existing policy framework, this report presents five core pieces of advice for the Government of Canada to close the gap and achieve the 2030 target: 1) finalize announced measures, 2) address negative interactions, 3) strengthen industrial carbon pricing, 4) secure additional reductions from the oil and gas sector, and 5) evaluate and pursue additional action.

Working within the existing climate policy architecture can help decrease the time it takes to reduce emissions by not starting a lengthy policy process from scratch. These policies can be fully implemented and, in certain instances, strengthened.

In assessing these and other future policies, the federal government can improve how it manages uncertainties in modelling assumptions, such as publishing sensitivity analyses on innovation penetration rates, critical metal availability, and renewable energy costs, or improving how land use, land use-change, and forestry-related emissions are estimated.

Our advice demonstrates the importance of adopting policies that will address major sources of emission and help shift Canada on to a net-zero pathway. Specifically, we recommend implementing and strengthening actions to address emissions from the oil and gas and transportation sectors—Canada's largest emitting sectors and sectors where emissions have shown little past decline—as well as heavy industry.

Beyond simply reducing emissions, the federal government must also consider how it develops, implements, and communicates policy. Holistic sustainability needs should be considered in decarbonization decision-making, such as the impact on natural ecosystems and human health.

Incorporating Indigenous knowledge and partnerships to advance net-zero pathways should be standard practice. To inform net-zero pathways, Indigenous knowledge must be deeply integrated, and partnerships must be sought. This involves supporting self-determined Indigenous climate action and the full implementation of the *United Nations Declaration on the Rights of Indigenous Peoples Act*.



The government should also hold the affordability concerns of Canadians paramount, ensuring the final design and execution of these policies does not undermine vitally important public perceptions of fairness. These actions, which uphold our foundational value of putting people first, will reduce uncertainty and stimulate the additional private sector and household investments needed to attain Canada's 2030 goal.

Investing in Canadians' understanding of climate change and climate solutions will help create the support needed for these policies to be successful.

In addition to raising public awareness about specific policies, the federal government should support communication initiatives undertaken by multiple stakeholders that communicates why we are pursuing these policies, that industrial polluters are being held accountable and doing their fair share, the co-benefits to Canadians in terms of health and environmental protection, and that Canada is not acting alone but with the rest of the world as it seeks to cut GHG emissions.

Society-wide effort required to close 2030 emissions gap

The federal government alone will not be able to achieve Canada's climate change targets. All of Canadian society has a role to play in helping Canada to reduce its GHG emissions. Beyond the federal government, provinces, territories, municipalities, Indigenous governing bodies, experts, including Indigenous Knowledge Holders and scientists, the private sector, and civil society all

have important roles in bringing Canadians along to realize our 2030 and 2050 decarbonization goals. Many opportunities exist to align efforts among these players, leverage existing responsibilities, grow capacity to achieve climate targets, and provide a clean environment, human health and economic prosperity.

Glossary

Carbon contracts for difference provide a guaranteed minimum price for carbon credits sold by a company on the carbon market. When the market price is lower than this minimum, the entity offering the contract compensates the company for the difference, reducing its investment risk. Conversely, if the market price exceeds the guaranteed minimum, the company reimburses the difference to the entity offering the contract, enabling both parties to share in the profits.

Emissions gap is the disparity between an emissions reduction target by a certain deadline and the estimated emission reductions that are achievable within the same timeframe.

Investment tax credits incentivize private sector investment in specific sectors by offering tax breaks, in terms of less delayed payments, on a portion of investments.

Oil and gas sector emissions cap focuses on reducing emissions by setting a maximum allowable emission limit on the oil and gas operations.

Output-based pricing system establishes emissions limits for regulated facilities based on their emissions-intensity performance standards. Facilities emitting below their limit earn credits they can sell or save. Those exceeding their limit must compensate for excess emissions. This system ensures all industrial emissions are incentivized under the carbon price, while limiting costs to maintain competitiveness and prevent carbon leakage.

Vehicle GHG emissions standard sets limits on the emissions of different vehicle classes and engines.

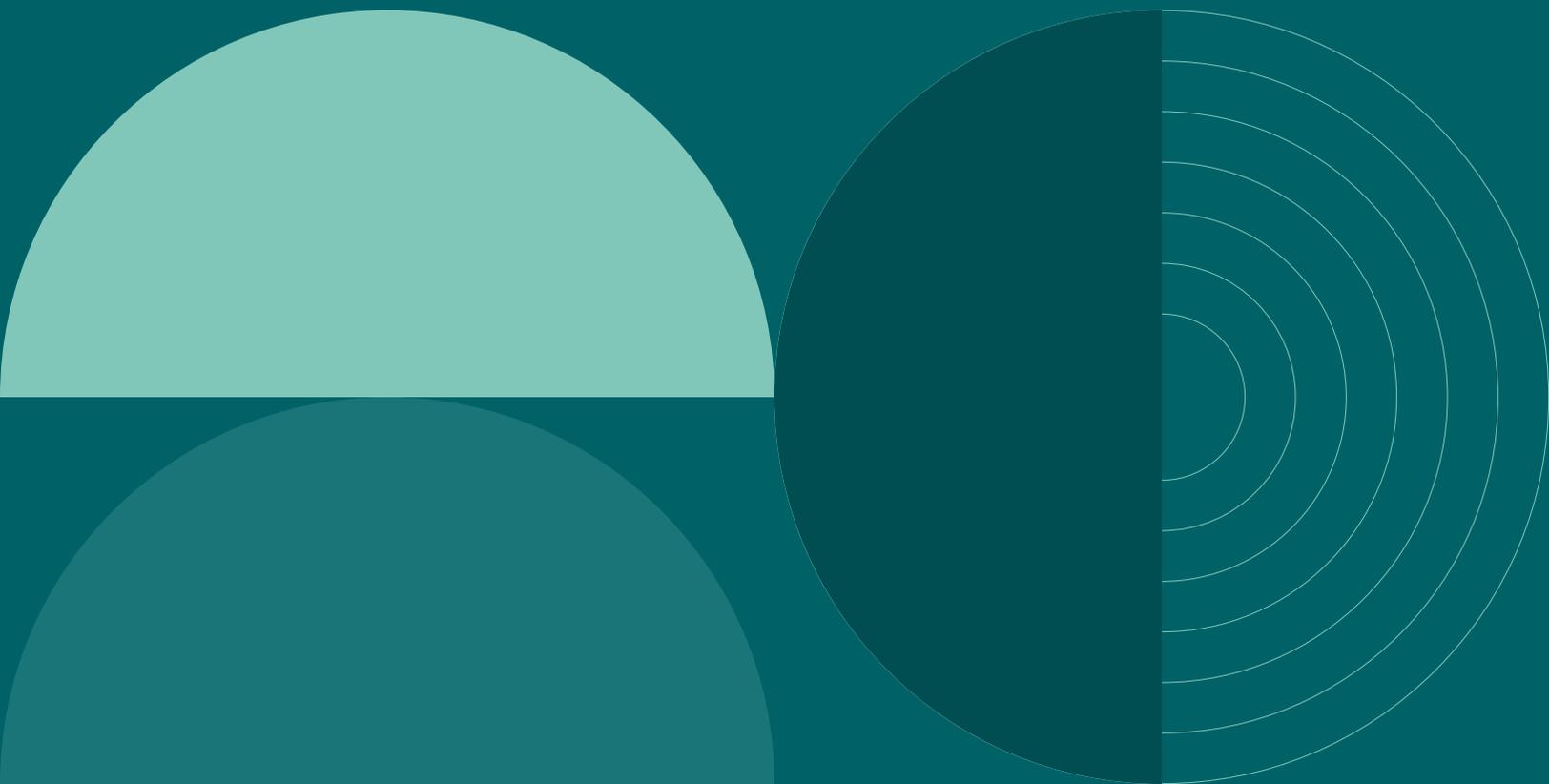
Zero-emission vehicles are vehicles that have the potential to produce no tailpipe emissions such as battery-electric and hydrogen fuel cell powered vehicles. They may still have a conventional internal combustion engine but must be able to operate without using it. Emissions may still be generated during the life cycle of the vehicle, for example during production of the vehicle and their components.

Zero-emission vehicle sales mandate is a regulatory policy that mandates automakers and importers to sell a certain percentage of vehicles with zero emissions within a specified timeframe.



Annex

Modelling caveats, scenarios, and results



Modelling caveats and scenarios

The modelling conducted for NZAB's advice comes with some important caveats. As stated in our first annual report, decision makers must use caution in assessing emissions model outputs since all modelling is necessarily a simplification.

Our 2030 modelling, analysis, and advice is restricted to the existing climate policy framework and did not consider alternative pathways, based upon substantially different policy frameworks. We assumed that policies which have already been announced will be implemented. In the future, as we examine long-term pathways to net-zero, we will further evaluate the existing policy framework.



A description of the key modelling assumptions and limitations is summarized below:

- To mitigate the risk of overestimating the impact of policies on near-term emission reductions, we excluded the use of nature-based climate solutions and emissions from agricultural soils (-13 Mt CO₂e), which was included in the federal government's 2030 Emissions Reduction Plan, as well as oil and gas emissions cap compliance flexibilities (-25 Mt CO₂e that could be obtained through the federal offset system or through internationally transferred mitigation outcomes), from our modelling.
- Similar to the Emissions Reduction Plan Progress Report, we included a land use, land use-change, and forestry accounting contribution of -32 Mt CO₂e.
- Global warming potential of methane – Navius' model was calibrated to the latest National Inventory Report (2023) at the time of modelling, which assumed a global warming potential of 25 over 100 years.
- Federal fuel charge and industrial carbon pricing – Foresight over how the carbon price will change in future years is represented over a five-year period but not longer. Decisions from 2026 to 2030 mostly use the 2030 carbon price (\$170/t) even when equipment will last longer than 5 years. However, the carbon price is currently not scheduled to increase above \$170/t after 2030.
- Industrial carbon pricing – The model parameters for industry benchmarks (free allocations) were revised for the policy scenarios with the goal of keeping the carbon price binding. The modelling for the 2030 Emissions Reduction Plan policies uses the provinces' industry-specific benchmarks, including distinction for trade exposure variance. Under the policy scenarios, benchmarks by industry were adjusted to ensure the binding carbon price in each province. Due to time constraints, for each province the same factor for adjusting benchmarks was used across all industries. This means that the tightening of industry benchmarks used to close the gap may differ slightly from stated provincial objectives.
- Representation of methane reduction technologies and the 75% methane regulation – While Navius regularly updates its database of technologies, the technologies and processes for detection and capturing methane are also rapidly changing. In our policy scenarios, the model hit a maximum of 78% reduction of methane below 2012 levels by 2030 due to the model's current technology specification. Achieving an 85% reduction below 2012 levels by 2030 therefore required the maximum uptake of methane abatement technologies and management actions represented in the model as well as forced production declines. However, we expect that, in practice, deeper reductions could be achieved by additional emerging technology uptake (for example, use of satellite images to detect methane leaks).
- *Clean Fuel Regulations* – Given the uncertainty regarding certain compliance pathways for the regulations, the modelling assumed a) 10% of light-duty vehicle home charging will be adequately sub-metered to generate credits under the regulations, based on the Regulatory Impact Analysis Statement⁴⁴ for the *Clean Fuel Regulations* published in the *Canada Gazette*, Part II and b) generic quantification credits (for example, methane conservation and refinery process improvements) are non-incremental due to policy overlap and capital stock turn over.

44. [Clean Fuel Regulations](#) 2022. Canada Gazette, Part II, 156 (14)

- While the Western Climate Initiative (California and Quebec’s cap and trade system) is explicitly represented in the model, the notional impact of net traded emissions credits was excluded from this analysis (that is, Quebec’s “real” GHG emissions are used not accounting for “imported” reductions from California or “exported” reductions to California). In the 2023 Progress Report on the 2030 Emissions Reduction Plan, the federal government assumed less than 1 Mt of additional reductions through net imported credits from this program in 2030⁴⁵.
- For this modelling, policy packages rather than individual policies were simulated. Subsequently, emission reductions cannot be attributed to individual policies in this analysis. Instead, post-modelling analysis indicated which sectors faced the greatest implementation risks from developing and announced policies and which sectors have the greatest potential for cost-effective emission reductions to inform policy options.
- The Institute’s modelling did not quantify distributional and other justice-related policy impacts and did not include a sensitivity analysis on input assumptions.

45. Environment and Climate Change Canada. 2023. [2023 Progress Report on the 2030 Emissions Reduction Plan](#)

Table 1: Policies and adjustments in each scenario

Policy	Previous ERP-PR modelling	First iteration of scenarios		Second iteration of scenarios		
		Policy package 1	Policy package 2	Policy package 3	Policy package 4	Policy package 5
Federal fuel charge	Y	Y	Y	+	+	+
Large emitter trading systems	Y	aim for binding price by tighter benchmarks		increasing carbon price and aim for binding price		
Oil and gas emissions cap	Y	+	+	+	+	+
<i>Clean Fuel Regulations</i>	Y	+	Y	++	++	++
Investment tax credits	Y	Y	+	+	+	+
Medium and heavy vehicle emissions standard	Y	Y	+	+	+	Y
Efficiency mandate for low temperature industrial heat	N	N	Y	Y	Y	N
Regulated reduction in oil and gas methane emissions	Y	+	+	++	+	+
Renewable natural gas and hydrogen blending mandate	N	N	Y	+	Y	Y
Net Zero Accelerator and Clean Fuels Fund	Y	Y	Y	+	Y	Y
Light vehicle GHG standard	Y	Y	Y	Y	Y	Y
National net-zero building strategy	Y	Y	Y	Y	Y	Y
Waste methane capture	Y	Y	Y	Y	Y	Y
Canada Infrastructure Bank spending	Y	Y	Y	Y	Y	Y
Clean Electricity Regulations	Y	Y	Y	Y	Y	Y

Notes:

- Y** the policy is applied using the ERP-PR (2023 Progress Report on the 2030 Emissions Reductions Plan) policy design and stringency
- N** policy not applied
- +** policy is applied with greater stringency than the ERP-PR
- ++** policy is applied with much greater stringency than the ERP-PR

Previous ERP-PR modelling refers to the Announced Less Stringent scenario from the Canadian Climate Institute’s [previous analysis](#). The backcasting scenario is designed to be policy agnostic and not included in this table.

Source: Canadian Climate Institute

Modelling results

Of the five policy packages modelled, three were able to reach the 2030 target (see Table 2). Each of the five policy packages modelled stricter performance standards in the large emitter trading systems to address credit oversupply and ensure a binding carbon price in each province. Canadian

Climate Institute analysis shows that this policy change can reduce economy-wide emissions from Canada’s existing suite of policies by an additional 15 Mt CO₂e in 2030. Additional modelling results are available in a separate technical annex published by Canadian Climate Institute.

Canada’s 2030 target is within reach but requires significant action.

After finding that the first two policy packages we modelled were unable to reach the 2030 target, we developed three additional policy scenarios with increased policy stringency. All three additional policy scenarios were able to achieve the 2030 target. The modelling indicated large emission reduction potential from policy changes in the oil

and gas and transportation sectors—Canada’s largest emitting sectors and sectors where emissions have shown little past decline—as well as heavy industry. More detailed descriptions of these scenarios can be found in a separate technical annex published by the Canadian Climate Institute.

Table 2: Range of potential GHG emission reductions (Mt) compared to ERP announced less stringent by economic sector based upon the five policy packages

Oil and gas	8
Electricity	17-19
Transportation	1-22
Passenger transport	0-3
Freight transport	0-19
Other: recreational, commercial and residential	0-1
Heavy industry	2-14
Buildings	0-7
Agriculture	0-6
Waste	1-5
Coal production	0
Light manufacturing, construction & forest resources	-1 to 11

Note: These ranges included our two policy scenarios that did not achieve the 2030 target. Total emissions differ across all policy scenarios.

Source: Canadian Climate Institute

Table 3: Modelled GHG Emissions in 2030 by economic sector and scenario

	Previous ERP-PR modelling	Backcasting* to meet 2030 target	First iteration of scenarios		Second iteration of scenarios		
			Policy package 1	Policy package 2	Policy package 3	Policy package 4	Policy package 5
Modelled GHG emissions							
Oil and gas	152	144	144	144	144	144	144
Electricity	26	4	9	9	7	7	7
Transportation	132	104	130	131	110	110	111
Passenger transport	80	76	79	80	77	77	77
Freight transport	41	17	41	41	22	23	23
Other: recreational, commercial and residential	11	10	10	11	10	10	10
Heavy industry	73	55	71	66	59	61	62
Buildings	68	76	68	66	61	64	64
Agriculture	63	73	63	60	57	57	58
Waste	10	15	9	5	5	5	5
Coal production	2	1	2	2	2	2	2
Light manufacturing, construction & forest resources	26	15	27	23	15	16	18
Sub-total, modelled GHG emissions	552	472	522	506	459	466	470
Non-modelled GHG emissions							
Accounting contribution by land use, land use-change, and forestry	-32	-32	-32	-32	-32	-32	-32
Nature-based climate solutions and agricultural soils	-13	n/a	n/a	n/a	n/a	n/a	n/a
Oil and gas cap flexibilities	-25	n/a	n/a	n/a	n/a	n/a	n/a
Net GHG emissions, total	482	440	490	474	427	434	438

*Note: The backcasting scenario is designed to meet the emissions target in 2030 through economically-efficient reductions and does not represent policies.

Previous ERP-PR modelling refers to the Announced Less Stringent scenario from the Canadian Climate Institute's previous analysis on the 2023 Progress Report of the 2030 Emissions Reduction Plan.

Source: Canadian Climate Institute

