Simulating Canada's 2030 Emissions Reduction Plan

Policy Assumptions

March 31, 2022

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Contents

Introduction

In this document, we present the assumptions used to characterize federal policies for our analysis of the recently announced 2030 Emissions Reduction Plan.

For the purposes of this analysis, we have categorized policies as *legislated/developed*, *developing*, or *announced*. We define *legislated/developed* policies as those that have been legislated, spending that has been detailed in the federal budget, or projects that are in the planning phase. Policies are categorized as *developing* if details regarding potential coverage, stringency and timelines have been published, but the policy has not yet been legislated and some uncertainty remains regarding final policy design. *Announced* policies include those for which the intent of implementation has been officially announced.

For many announced policies, there is significant uncertainty regarding coverage, design, stringency, and timelines. Our characterization of announced policies is illustrative and shows the level of greenhouse gas reductions that could be achieved if these policies were implemented as described in this document. For many announced policies, we have simulated a more and less stringent version to demonstrate a possible range of emission reductions depending on the timeline and stringency level chosen.

Note that the policy packages simulated in this analysis do not only include the legislated, developing, and announced federal policies outlined below, but also provincial and territorial policies. These regional level policies are included in all policy scenarios simulated in this analysis and are important drivers of total emission reductions.

1. Federal Fuel Charge

Policy	**Federal Fuel Charge**
Stringency and timeline	The federal fuel charge is a backstop policy that applies a tax on fossil fuels in provinces that don't have an equally stringent carbon pricing system. The federal government announced that the federal fuel charge will be annually increased by $15/tCO2e after 2022 until the tax reaches $170/tCO2e in 2030 and stays constant at that level thereafter.
Sectors	All sectors except large industrial emitters
Emissions covered	Emissions-intensive trade- exposed industries are excluded from the fuel charge. Fuel charge proceeds are returned to the province in which they were collected and 90% of proceeds are returned to households. The remaining 10% are returned to the rest of the covered sectors.
Policy Category	Developing
Assumptions	As it is uncertain how provinces will change their carbon pricing systems to comply with the federal stringency increase, we assume that the federal fuel charge backstop applies to all provinces and territories, except for Québec. Québec's cap is assumed to be sufficiently stringent in its current design.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information.html https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/putting-price-on-carbon-pollution.html

2. Output-Based Pricing System

Policy	**Output-Based Pricing System**
Stringency and timeline	The Output-Based Pricing System (OBPS) is a tradable emissions performance standard that puts a price on industrial emissions if a facility's emissions intensity exceeds the sectoral benchmark. The federal government announced that the OBPS carbon price will be annually increased by $15/tCO2e until it reaches $170/tCO2e in 2030. Furthermore, sectoral OBPS benchmarks will be annually increased in stringency by 2 percentage points starting in 2023. Electricity benchmarks will not be increased in stringency as the federal government intends to address this sector's emission intensity through a clean electricity standard.
Sectors	Large industrial emitters
Emissions covered	The OBPS applies to industrial facilities emitting more than 50 kilotonnes of CO2e annually in provinces that don't have an equally stringent performance standard or carbon price for industrial emitters.
Policy Category	Developing
Assumptions	As it is uncertain how provinces will change their carbon pricing systems to comply with the federal stringency increase, we assume that the OBPS will apply to all provinces and territories, except for Québec, and that an annual 2% tightening rate will apply to all sectoral benchmarks starting in 2023. OBPS proceeds are assumed to be used to fund low-carbon industrial technologies.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/output-based-pricing-system/2022-review-consultation.html

3. GHG emissions cap on the oil and gas sector

Policy	GHG emissions cap on the oil and gas sector
Stringency and timeline	The federal government has announced its intention to cap greenhouse gas emissions from the oil and gas extraction sector.
Sectors	Oil and gas extraction (upstream and downstream sectors)
Emissions covered	The ERP does not provide detail on the policy mechanism that will be used to implement an emissions cap on oil and gas extraction. It also does not specify the level at which emissions will be capped but references a modelling analysis which projects that oil and gas sector emissions would decline to 110 Mt in 2030 under the most economically efficient pathway to achieving Canada's 2030 target.
Policy Category	Announced
Assumptions	We simulate this policy as a tradable performance standard in which the oil and gas sector is required to reduce its emissions intensity. Carbon intensity benchmarks are calculated to be consistent with the emissions cap. In line with the modeling analysis referenced in the ERP, we assume that the emissions cap will apply to total oil and gas extraction sector emissions, including direct combustion and non-combustion emissions in the upstream and downstream oil and gas sector. We assume that there are no restrictions to generating compliance credits under the OBPS and oil and gas emissions cap for the same reduction action, such as implementation of carbon capture and storage. As the emissions cap is uncertain, we explore the impact of a more and less stringent cap.
Less stringent	The less stringent scenario assumes that emissions are capped at 185 Mt in 2025 and 130 Mt in 2030.
More stringent	A more stringent scenario assumes that emissions are capped at 140 Mt in 2025 and 110 Mt in 2030.
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf

4. 75% reduction in oil and gas methane emissions

Policy	75% reduction in oil and gas methane emissions
Stringency and timeline	The federal government announced its commitment to implement regulations that will reduce methane emissions from the oil and gas sector by at least 75% below 2012 levels by 2030. This builds on the federal government's current methane regulations, which seek to achieve a 40% to 45% reduction in methane emissions in the upstream oil and gas sector below 2012 levels by 2025.
Sectors	Oil and gas extraction (upstream sectors)
Emissions covered	The current methane regulations cover upstream oil and gas emissions. To our knowledge, it has not yet been announced if the 75% reduction will apply to upstream oil and gas emissions or both upstream and downstream (including refineries, natural gas distribution, and LNG production) emissions.
Policy Category	Announced
Assumptions	The 75% methane reduction requirement is simulated as a regulatory requirement requiring increased uptake of abatement actions and technologies for surface casing vent flows, leaking, and venting, such as increased monitoring, flaring, and well reworking, in the upstream oil and gas sector.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/en/environment-climate-change/news/2021/10/canada-confirms-its-support-for-the-global-methane-pledge-and-announces-ambitious-domestic-actions-to-slash-methane-emissions.html https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-66/page-1.html#h-858529 https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf

5. Clean Electricity Standard

Policy	Clean Electricity Standard
Stringency and timeline	The federal government has stated its intention to implement a Clean Electricity Standard (CES), which will achieve net-zero emissions from electricity generation by 2035. The policy mechanisms that will be used to achieve this target have not yet been announced.
Sectors	Electricity generation
Emissions covered	The CES will cover electricity generation sold to the electricity grid. It is uncertain whether the CES will cover cogeneration providing electricity to the grid.
Policy Category	Announced
Assumptions	This policy is simulated as a national cap in form of a tradable performance standard with regional benchmarks for the emissions intensity of utility electricity generation. Emissions intensity benchmarks are calculated to be consistent with the emissions cap. We assume that cogeneration is excluded from the CES and that there are no restrictions on generating compliance credits under the OBPS and CES for the same reduction action. As the interim emissions requirements between now and net-zero in 2035 are uncertain, we include scenarios with a more and less stringent timeline.
Less stringent	The less stringent scenario assumes a delayed approach with an emissions cap for utility generation of 30 Mt in 2030 and net-zero in 2035.
More stringent	The more stringent scenario assumes an emissions cap for utility generation of 39 Mt in 2025, 7 Mt in 2030, and net-zero in 2035.
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/achieving-net-zero-emissions-electricity-generation-discussion-paper.html

6. Waste methane capture

Policy	Waste methane capture
Stringency and timeline	The ERP states the federal government's intention to create landfill methane regulations with the goal of reducing waste emissions through waste methane capture and treatment.
Sectors	Landfills
Emissions covered	Landfill methane emissions
Policy Category	Announced
Assumptions	We simulate a more and less stringent regulatory policy which requires the uptake of abatement actions and technologies such as flaring and methane capture and utilization in landfills.
Less stringent	In the less stringent scenario, we require a minimum of 25% of landfills in each province to adapt methane flaring or methane capture and utilization after 2025.
More stringent	In the more stringent scenario, we require 50% of all landfills to adapt methane flaring or methane capture and utilization after 2025.
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf

7. Clean Fuel Regulation

Policy	**Clean Fuel Regulations**
Stringency and timeline	The federal government is developing a performance-based fuel supply standard requiring liquid fossil fuel suppliers to reduce the lifecycle greenhouse gas intensity of their fuels. The Canada Gazette Part I required a carbon intensity reduction of 2.4 g CO2e/MJ in 2022, increasing to 12 g CO2e/MJ in 2030. In the ERP, a potential increase in stringency to 14 g CO2e/MJ in 2030 has been stated. The CFR creates a credit-based compliance market which allows regulated liquid fuel suppliers and voluntary credit generators to trade compliance credits. At the end of each compliance period, regulated suppliers must present sufficient credits to comply with the reduction requirement. Credits can be produced by reducing upstream emissions associated with liquid fossil fuel production, blending low carbon fuels such as ethanol into the liquid stream, or end-use fuel switching in transport. To our knowledge it has not yet been specified if instream trading with gaseous credits, generated through supplying renewable gaseous fuels, will be a proposed compliance option in the soon to be updated policy design.
Sectors	Transportation
Emissions covered	Under the currently proposed CFR standard (as of March 2022) the following fuels will be regulated under the CFR: gasoline, diesel, kerosene, and jet fuel (note that the GHG intensity reduction requirement is not planned to increase in stringency for jet fuel).
Policy Category	Developing
Assumptions	We simulate this policy as outlined in the Canada Gazette Part I and with the following policy updates: 1) Only liquid fuels will be regulated under the CFR. There are no emissions intensity reduction requirements for solid and gaseous fuels. 2) Light and heavy fuel oils are excluded from the list of regulated liquid fuels.
Less stringent	In the less stringent scenario, we assume that instream credit trading remains a CFR credit creation pathway which can be used towards 10% of liquid compliance.
More stringent	In the more stringent scenario, we assume that instream credit trading will be removed as a compliance pathway and that the carbon intensity reduction requirement will be increased to 6.5 gCO2e/MJ in 2025 and 14 gCO2e/MJ in 2030.
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf http://www.gazette.gc.ca/rp-pr/p1/2020/2020-12-19/html/reg2-eng.html

https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/actions-healthy-environment-economy.html

8. Light-duty Emissions Standard

Policy	Light-duty Emissions Standard
Stringency and timeline	The ERP states that the federal government plans to implement a light-duty zero emissions vehicle (ZEV) sales mandate. The ZEV mandate will require at least 20% of all new light-duty vehicle sales to be ZEVs by 2026, 60% by 2030, and 100% by 2035.
Sectors	Light-duty transportation
Emissions covered	We expect this policy to apply to light-duty vehicle manufacturers.
Policy Category	Announced
Assumptions	As there are currently no details on policy design available, we assume that a policy similar to Québec's ZEV mandate will be implemented. After a recently announced stringency increase, Québec 's ZEV mandate will require at least 17.5% low-carbon (plug-in hybrids) and zero-emission (battery electric and fuel cell electric) vehicle sales in 2026, rising to 65% in 2030 and 100% in 2035. Each year, vehicle manufacturers need to retire a certain number of credits in compliance with these targets. Credits are generated through the sale of low-carbon and zero-emission vehicles. Vehicles with a wider electric range are thereby awarded more credits.
Less stringent	In the less stringent scenario, we assume the first sales target comes into force in 2026 at 12.5% (equal to Québec's 2025 target) and increases in stringency, following Québec's timeline but a year delayed, to a 50% sales target in 2030.
More stringent	In the more stringent scenario, we assume the sales target comes into force in 2025 at 12.5% and follows Québec's stringency and timeline (17.5% sales target in 2025 and 65% in 2030).
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf

9. Medium- and Heavy-duty Emissions Standard

Policy	Medium- and Heavy-duty Emissions Standard
Stringency and timeline	The ERP announced plans to develop a medium- and heavy-duty ZEV sales mandate with the goal of achieving 35% ZEV sales by 2030 and 100% by 2040 in selected medium- and heavy-duty categories, based on feasibility. Furthermore, interim targets for pre-2030 years will be explored.
Sectors	Medium- and heavy-duty transportation
Emissions covered	There are currently no details on policy design available but the federal government previously expressed interest in developing a policy similar to California's Advanced Clean Trucks Regulation, which also aims to achieve 100% ZEV sales by 2040 in selected vehicle categories. California's regulation applies to manufacturers of on-road medium- and heavy-duty vehicles, excluding transit buses.
Policy Category	Announced
Assumptions	We assume that Canada will implement a medium- and heavy-duty emissions standard aligned with California's Advanced Clean Trucks Regulation. California's medium- and heavy-duty emissions standards require that 7% to 11% of new vehicle sales be ZEVs in 2025 and 30% to 50% in 2030, depending on vehicle weight class. Each year, vehicle manufacturers need to retire a certain number of credits in compliance with these targets. Credits are generated through the sale of low-carbon emission vehicles. For full battery electric and fuel cell electric vehicles, the number of credits generated depends on the vehicles' weight class. For plug-in electric vehicles, credit generation also depends on electric range.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf https://www.canada.ca/content/dam/eccc/documents/pdf/cepa/21199_HDV%20Discussion%20Document_Dec%2016_MinO%20Approved_Final_EN.pdf https://www.canada.ca/en/environment-climate-change/news/2021/12/government-launches-consultations-on-commitment-to-

require-all-new-cars-sold-in-canada-be-zero-emission-by-2035.html

https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/zepcert/froattb.pdf

https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/fro2.pdf

10. National Net-zero Emissions Building Strategy

Policy	National Net-zero Emissions Building Strategy
Stringency and timeline	The ERP mentions that $150 million will be invested to develop the Canada Green Buildings Strategy, a national net zero by 2050 buildings strategy. As part of the strategy, regulatory standards to phase out fossil-fuel heating in buildings will be developed. The Liberal Party also included the following statements on the 2021 Election Platform: "Launch a National Net-zero Emissions Building Strategy, which will chart a path to net-zero emissions from buildings by 2050 with ambitious milestones along the way" and "accelerate the development of the national net-zero emissions model building code for 2025 adoption." To our knowledge, there is currently no further information available regarding timelines and the policy mechanisms that will be used.
Sectors	Buildings
Emissions covered	To our knowledge, there is currently no information available regarding the buildings and technologies that will be covered under this policy.
Policy Category	Announced
Assumptions	As there is little information on this policy available, a more and less stringent scenario were designed.
Less stringent	In this scenario, we assume a minimum efficiency requirement above the baseline for new building shells and heating technologies after 2025.
More stringent	In this scenario, we assume the same efficiency standards as under the less stringent scenario as well as requiring new heating systems to not use oil after 2025.
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf https://liberal.ca/our-platform/a-retrofit-economy-that-cuts-pollution-and-creates-jobs/ https://pm.gc.ca/en/mandate-letters/2021/12/16/minister-natural-resources-mandate-letter

11. Investment tax credit for CCUS

Policy	Investment tax credit for CCUS
Stringency and timeline	Budget 2021 proposed an investment tax credit for carbon capture utilization and storage capital investments. The target of this measure is to reduce emissions by at least 15 Mt of CO2e per year. To our knowledge, there is currently no information regarding the timeline and tax credit level of this policy.
Sectors	Large industrial emitters
Emissions covered	We expect that the tax credit would be available to all new carbon capture and storage or use facilities.
Policy Category	Announced
Assumptions	As there are no details available on this policy, we include a more and less stringent scenario.
Less stringent	In the less stringent scenario, we assume that the investment tax credit will translate into a subsidy equal to 25% of incremental capital costs. Incremental capital costs are the difference between an operation with and without investing into a carbon capture and utilization or storage facility.
More stringent	In the more stringent scenario, we assume that the investment tax credit will translate into a subsidy equal to 50% of incremental capital costs. Incremental capital costs are the difference between an operation with and without investing into a carbon capture and utilization or storage facility.
References	https://www.budget.gc.ca/2021/home-accueil-en.html

12. Canada Infrastructure Bank Spending

Policy	Canada Infrastructure Bank Spending
Stringency and timeline	The Healthy Environment and Healthy Economy federal climate plan states that the Canada Infrastructure Bank (CIB) has a long-term investment target of $5 billion for clean power projects. It further outlines that the CIB has committed $1.5 billion for zero emission buses, $2.5 billion for low-carbon power projects, including storage, transmission and renewables, over 3 years, and $2 billion for commercial building retrofit upfront costs. The ERP mentions that CIB will receive a total of $35 billion with priorities to invest in green infrastructure ($5 billion), public transit ($5 billion) and clean power ($5 billion).
Sectors	Transit, electricity generation, commercial buildings
Emissions covered	Buildings and other infrastructure, transit, electricity generation
Policy Category	Legislated/ Developed
Assumptions	CIB spending is simulated as a $1.5 billion subsidy for zero-emission buses, $500 million for electric charging and hydrogen refueling infrastructure (included in the "16. Funding for charging stations" policy), a $5 billion subsidy for renewable electricity generation and storage, and $2 billion for commercial high efficiency building shells and heating technologies over three years.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf

13. Net Zero Accelerator

Policy	**Net Zero Accelerator**
Stringency and timeline	The Strengthened Climate Plan (Healthy Environment and a Healthy Economy) announced an investment of $3 billion over 5 years for the Net Zero Accelerator, which provides funding for development and adoption of low-carbon technologies in all industrial sectors. Budget 2021 provided an additional $5 billion over seven years for the Net Zero Accelerator.
Sectors	Large industrial emitters
Emissions covered	Funding is available to low-carbon industrial technologies.
Policy Category	Legislated/ Developed
Assumptions	The Net Zero Accelerator is simulated as an $8 billion subsidy over seven years for industrial low-carbon technologies, including carbon capture and storage technologies, electrification of industrial heat production and compression, fuel switching to wood waste and hydrogen for industrial heat production, efficient electric motors, and direct air capture.
Less stringent	n/a
More stringent	n/a
References	https://www.budget.gc.ca/2021/home-accueil-en.html https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf

14. ZEV tax write-off

Policy	ZEV tax write-off
Stringency and timeline	Businesses can receive a 100% tax write-off when purchasing a zero-emission vehicle before 2024. The tax write-off rate declines to 75% in 2024, 25% in 2025, and 0% in 2028.
Sectors	Transportation
Emissions covered	The increased tax write-off rate is available to businesses purchasing light-, medium-, or heavy-duty on-road zero emission vehicles, including plug-in hybrids, battery electric and fuel cell electric vehicles. Vehicles that received subsidies from the iZEV program are not eligible for the tax write off.
Policy Category	Legislated/ Developed
Assumptions	The increased tax write-off for businesses is simulated as a per vehicle subsidy for medium- and heavy-duty ZEVs. Businesses purchasing light-duty ZEVs are assumed to use the federal iZEV incentive and forgo the tax write off.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/about-your-tax-return/tax-return/completing-a-tax-return/deductions-credits-expenses/line-22900-other-employment-expenses/capital-cost-allowance/classes-depreciable-properties/zero-emission-vehicles.html https://tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles/incentives-purchasing-zero-emission-vehicles

15. Incentives for Zero-Emission Vehicles Program

Policy	Incentives for Zero-Emission Vehicles Program
Stringency and timeline	The ERP announced an additional $1.7 billion to extend the iZEV program for another three years. The iZEV program provides rebates of up to $5,000 for light-duty zero emission vehicles.
Sectors	Light-duty transportation
Emissions covered	The rebate program provides subsidies to on-road light-duty plug-in hybrids, battery electric vehicles, and fuel cell electric vehicles.
Policy Category	Developing
Assumptions	We simulate this as a 1.7 billion subsidy, additional to historic and remaining iZEV funds for zero emission light-duty vehicles, including battery electric vehicles, plug-in hybrids, and fuel cell electric vehicles, over three years. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf https://www.budget.gc.ca/efu-meb/2021/report-rapport/EFU-MEB-2021-EN.pdf https://tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles/program-statistics

16. Funding for charging stations

Policy	Funding for charging stations
Stringency and timeline	The ERP states that an additional $400 million will be allocated to ZEV charging stations. In addition, $500 million in Canada Infrastructure Bank funds will be invested into improving the electric charging and hydrogen refueling infrastructure.
Sectors	Transportation
Emissions covered	Funding is available for electric charging and hydrogen fuel cell refueling network improvements.
Policy Category	Developing
Assumptions	This is simulated as a $900 million subsidy for light-, medium-, and heavy-duty zero emission vehicles, including plug-in hybrids, battery electric and fuel cell electric vehicles, over five years. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf https://www.budget.gc.ca/2021/home-accueil-en.html

17. Large Truck Retrofits

Policy	Large Truck Retrofits
Stringency and timeline	The ERP includes a $199.6 million subsidy for retrofitting large trucks currently on the road.
Sectors	Medium- and heavy-duty transportation
Emissions covered	To our knowledge, there is currently little information regarding the retrofit actions that would qualify for funding under this policy.
Policy Category	Announced
Assumptions	This is simulated as a $199.6 million subsidy for efficient heavy-duty vehicles. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf

18. Interest-free home retrofit loan

Policy	Interest-free home retrofit loan
Stringency and timeline	Budget 2021 allocated $4.4 billion on a cash basis ($778.7 million on an accrual basis over five years, starting in 2021-22, with $414.1 million in future years), to the Canada Mortgage and Housing Corporation to provide interest-free loans up to $40,000 to low-income homeowners for home retrofits. The ERP announced an additional investment of $458.5 million into the low-income loan program.
Sectors	Residential buildings
Emissions covered	Funding is available to low-income households for efficiency upgrades of residential building shells and heating technologies.
Policy Category	Legislated/ Developed & Developing
Assumptions	This is simulated as a $1.2 billion subsidy ($778.7 million + $458.5 million) over seven years for efficient residential building shells and heating technologies. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf https://www.canada.ca/en/department-finance/news/2021/04/budget-2021-a-healthy-environment-for-a-healthy-economy.html

19. Residential efficiency retrofits

Policy	Residential efficiency retrofits
Stringency and timeline	Budget 2021 included $2.6 billion for residential energy efficiency improvements over seven years.
Sectors	Residential buildings
Emissions covered	Funding is available to households for efficiency upgrades of residential building shells and heating technologies.
Policy Category	Legislated/ Developed
Assumptions	This is simulated as a $2.6 billion subsidy for efficient residential building shells and heating technologies over seven years. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.budget.gc.ca/2021/home-accueil-en.html

20. Replace home-heating oil

Policy	Replace home-heating oil
Stringency and timeline	The Liberal Party stated on its 2021 Election Platform that it aims to accelerate electrification in home-heating and would invest $250 million to help low-income home-owners replace heating oil.
Sectors	Residential buildings
Emissions covered	Funding available to low-income households for replacing home heating with heating oil.
Policy Category	Announced
Assumptions	This is simulated as a $250 million subsidy over five years for electric heating technologies. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://liberal.ca/our-platform/a-retrofit-economy-that-cuts-pollution-and-creates-jobs/

21. Community buildings upgrade

Policy	Community buildings upgrade & low carbon economy fund
Stringency and timeline	Budget 2021 proposed to invest $1.5 billion over three years for repairs and efficiency upgrades in community buildings and for building new energy efficient community buildings.
Sectors	Community buildings
Emissions covered	Funding is available for efficiency upgrades of building shells and heating technologies in community buildings.
Policy Category	Legislated/ Developed
Assumptions	This is simulated as a $1.5 billion subsidy over three years for community and commercial efficient building shell and heating technologies. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.budget.gc.ca/2021/home-accueil-en.html

22. Low Carbon Economy Fund

Policy	**Low Carbon Economy Fund**
Stringency and timeline	The ERP announced that $2.2 billion will be provided to the Low Carbon Economy Fund, which supports territorial, provincial and municipal governments, schools, colleges, universities, businesses, NGOs, hospitals and Indigenous organizations and communities in their effort to reduce GHG emissions.
Sectors	Territorial, provincial and municipal governments, schools, colleges, universities, businesses, NGOs, hospitals and Indigenous organizations and communities
Emissions covered	Funding is available for a variety of abatement actions and programs, including efficiency upgrades of building shells and heating technologies in community and commercial buildings.
Policy Category	Developing
Assumptions	This is simulated as a $2.2 billion subsidy over three years for community and commercial efficient building shell and heating technologies. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.budget.gc.ca/2021/home-accueil-en.html

23. Renewable Electricity Investments

Policy	Renewable Electricity Investments
Stringency and timeline	The Healthy Environment and Healthy Economy federal climate plan states that $964 million over four years will be invested in renewable electricity generation. The ERP announced that an additional $600 million will be invested in renewable electricity and grid modernization and $250 million to supporting large clean electricity projects.
Sectors	Electricity generation
Emissions covered	Funding available for renewable electricity generation.
Policy Category	Legislated/ Developed & Developing
Assumptions	This is simulated as a $1.8 billion subsidy ($964 million + $850 million) over four years flowing into the renewable electricity generation sector. Subsidy values are assumed to be nominal.
Less stringent	n/a
More stringent	n/a
References	https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf https://www.budget.gc.ca/2021/home-accueil-en.html https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf

24. Hydrogen projects

Policy	Hydrogen projects
Stringency and timeline	There are two major hydrogen projects planned in Alberta. The Suncor and ATCO plant will become operational in 2028 and produce more than 300,000 tonnes of low-carbon hydrogen per year of which 20% could be used in Alberta's natural gas distribution system. Most of the remainder will be used by refineries. The Air Products project will come online in 2024 and produce 30 tonnes of liquid low-carbon hydrogen per day which will be available for the merchant market. Air products will further produce low-carbon hydrogen for refineries and electricity generation for its own operations and the grid.
Sectors	Hydrogen production
Emissions covered	n/a
Policy Category	developed
Assumptions	We assume that by 2030, 24 PJ of low-carbon hydrogen, available for the merchant market and electricity production, would be produced through Air Products' project and an additional 13.5 PJ through Suncor and ATCO's project.
Less stringent	n/a
More stringent	n/a
References	Air Products Announces Multi-Billion Dollar Net-Zero Hydrogen Energy Complex in Edmonton, Alberta, Canada Suncor and ATCO partner on a potential world-scale clean hydrogen project in Alberta | Suncor

25. Ontario steel plant upgrades

Policy	Ontario steel plant upgrades
Stringency and timeline	Two major steel companies in Ontario, ArcelorMittal and Algoma, announced that they will upgrade their steel plants, which will result in greenhouse gas reductions of about 3 Megatonnes in each plant.
Sectors	Steel production
Emissions covered	Steel production
Policy Category	developed
Assumptions	This is simulated as a switch to less carbon intensive forms of steel production, such as direct reduced iron steel production, and achieves about a 6 Megatonnes reduction in GHG emissions in 2030 relative to 2020.
Less stringent	n/a
More stringent	n/a
References	https://www.globenewswire.com/news-release/2021/11/11/2332532/0/en/Algoma-Steel-Announces-Final-Investment-Decision-for-Electric-Arc-Steelmaking.html https://corporate.arcelormittal.com/media/press-releases/arcelormittal-and-the-government-of-canada-announce-investment-of-cad-1-765-billion-in-decarbonization-technologies-in-canada