CANADA'S CLEAN ENERGY TRANSITION POST-IRA

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*The global push to combat climate change has led major economies to rapidly evolve, adopting measures to reduce greenhouse gas emissions and transition to clean energy. Policymakers in these countries face the dual challenge of reducing emissions for long-term environmental benefits, while maintaining economic stability in the short term. The United States of America's (the "**U.S.**") Inflation Reduction Act (the "**IRA**"), enacted in August 2022, marks a pivotal move for the U.S. in that direction, with an estimated investment of over USD $370 billion in climate change initiatives and goal to stimulate around USD $3 trillion in clean energy investment. As the U.S. is Canada's largest trade and investment partner, this legislation is also likely to impact Canada. The IRA offers both challenges and opportunities for Canada as it strives to meet its own net-zero emissions target by 2050.*

The IRA uses fiscal incentives through tax credits to encourage investment in clean energy. It earmarks over USD $370 billion for these tax credits, which are designed to incentivize investment by businesses in clean energy projects, encourage households to undertake energy-efficient home improvements, and incentivize consumers to adopt cleaner technology such as electric vehicles, heat pumps, and biomass stoves. The IRA has already spurred over USD $278 billion of such investment as of April 2024 and is poised to create over one million jobs. Though the IRA has had some positive impacts for Canada, with some private sector actors citing the IRA as one of the reasons for keeping or moving their investment projects into Canada, other market participants have cited the IRA as one of the reasons for diverting their investment away from Canada to the U.S.

Canada's approach to energy and environmental regulation is shared between federal and provincial governments. This paper focuses on Canada's federal government policies, which include broad measures like carbon pricing and clean energy incentives under the Pan-Canadian Framework on Clean Growth and Climate Change. To date, the effects of these policies have been underwhelming, as current forecasts suggest that Canada is not on track to meet its emission targets while also facing a growing productivity crisis.

Canadian policymakers are encouraged to reconsider the strategies that are currently being used to stimulate investment in decarbonization and emission reduction in the energy sector and other industries. Canada should consider simplifying and unifying Canada's regulations, improving the clarity of its existing Canadian investment tax credits. Canada should focus on developing a more robust national industrial strategy that directly supports clean energy development and leverages Canada's existing strengths in areas like carbon capture and clean electricity. By aligning with global movements towards a cleaner energy mix and utilizing its geographical and existing resource strengths, Canada can ensure it not only meets its environmental targets but also creates a stronger and more resilient economy.

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I. INTRODUCTION

Several of the world's leading economies are rapidly evolving to combat climate change and reduce greenhouse gas ("**GHG**") emissions.[1] Global efforts to combat climate change have created a general shift in many countries towards clean energy. Policymakers are tasked with determining the best strategies to meet emissions reduction targets, while maintaining economic stability.

"Clean energy" generally refers to energy sources that don't pollute the environment, especially by avoiding GHG emissions like CO2.[2] This includes "renewable energy," which is energy that comes from natural sources that are regenerated more quickly than they are consumed, such as solar, wind, and hydro power.[3] Geothermal energy, bioenergy, and green hydrogen energy are also widely accepted as clean energy sources. Finally, nuclear power is often considered a clean energy, though it is not "renewable energy," due to its low CO2 emissions and its efficiency in generating large amounts of electricity from a small amount of nuclear fuel.[4]

In August 2022, the U.S. made a significant advancement in its transition towards a clean energy sector, when it introduced the IRA. The legislation aims to incentivize investment in clean energy technology, relying heavily on tax credits to build economic resilience, secure a stronger position for the U.S. in international supply chains, and foster a transition to net-zero emissions by reducing the costs of clean technology through scale.[5] The IRA provides more than USD $370 billion in a combination of grants, loans, tax credits and other incentives to accelerate the deployment of low-emission energy, vehicles, buildings, and manufacturing in order to fight climate change.[6] Some estimates show that the IRA is on track to encourage approximately USD $3 trillion in clean energy investment.[7] The Financial Post notes the legislation "almost single-handedly paved the way for some of the world's biggest manufacturing companies to change their supply-chain systems," which surely will have significant rippling effects on Canada's economy.[8]

Canada's ties with the U.S. are deep, dynamic, and multifaceted, with the U.S. being Canada's largest trade and investment partner. According to Statistics Canada, in 2020, exports to the U.S. supported

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[1] Government of Canada, Department of Finance*, A Made-In-Canada Plan: Affordable Energy, Good Jobs, and a Growing Clean Economy* (2023), online: <https://www.budget.canada.ca/2023/report-rapport/chap3-en.html> .
[2] Iberdola, "What is Clean Energy?" (27 May, 2024), online: <https://www.iberdrola.com/sustainability/clean-energy>.
[3] United Nations, "What is Renewable Energy?" (27 May, 2024), online: <https://www.un.org/en/climatechange/what-is-renewable-energy>.
[4] National Grid, "What is nuclear energy?" (27 May, 2024), online: <https://www.nationalgrid.com/stories/energy-explained/what-nuclear-energy-and-why-it-considered-clean-energy>.
[5] Brendan Haley, "Will the Response to the US Inflation Reduction Act reveal Canada's Lack of Green Industrial Policy" (19 March, 2023), online: < https://www.broadbentinstitute.ca/canadas-green-industrial-policy-response> [Haley].
[6] Naimul Karim, "One year on, how America's Inflation Reduction Act has changed Canada" (5 August 2023), online: <https://financialpost.com/commodities/mining/how-inflation-reduction-act-changed-canada> [Karim].
[7] Goldman Sachs, *The U.S. is poised for an energy revolution* (27 May, 2024), online: <https://www.goldmansachs.com/intelligence/pages/the-us-is-poised-for-an-energy-revolution.html>.
[8] Karim, supra note 6.

approximately 2.0 million jobs in Canada.[9] Additionally, data from 2022 shows that 77% of Canada's exports were directed to the U.S., accounting for a total trade value of CDN $960.9 billion. In the same year, the U.S. exported USD $427.7 billion worth of goods and services to Canada.[10] Further, in 2022, U.S. foreign direct investment in Canadian stock totaled USD $438.8 billion while Canadian foreign direct investment in U.S. stock totalled CDN $589.3 billion.[11] Prime Minister Pierre Trudeau once observed that being neighbors with the U.S. is akin to sleeping beside an elephant – we are affected by "every twitch and grunt."[12] Prime Minister Lester Pearson noted "to live alongside this great country is like living with your wife. At times it is difficult to live with her. At all times it is impossible to live without her."[13] The deep financial interdependence between these two countries means that economic policies or measures in one can have significant implications and consequences for the other.

As the IRA shapes the competitive landscape, Canada faces both challenges and opportunities as it strives to achieve its net-zero emissions goal by 2050.[14] This paper first reviews Canada's current policies, specifically those aimed at reaching the country's net zero targets and incentivizing investment in clean energy. It then analyzes the clean energy provisions in the IRA, along with its observed and potential impacts for both the U.S. and Canada. Following this analysis, this paper will propose potential strategies for policymakers in Canada to respond to the IRA more effectively. Specifically, Canadian policymakers should consider strategies that are designed to develop Canada's clean energy sector, maintain the country's competitive appeal to capital allocators, and accelerate Canada's transition toward a net-zero economy.

It should be noted that precisely comparing investment activity across jurisdictions is difficult, if not almost impossible.[15] This difficulty arises not only from varying timelines and methodologies in collecting data but also from forecasting, particularly the unpredictability of the adoption of various programs.[16] This paper will attempt to synthesize available data in both jurisdictions to draw high-level comparisons between each country's net-zero strategy for the purposes of providing considerations to Canadian policymakers.

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[9]Statistics Canada, (27 May, 2024), online: <https://www150.statcan.gc.ca/t1/tbl1/en/cv!recreate.action?pid=1210010001&selectedNodeIds=2D1,2D2,3D12,3D19,3D20,5D1&checkedLevels=0D1,3D1&refPeriods=20160101,20200101&dimensionLayouts=layout2,layout2,layout3,layout2,layout2,layout2&vectorDisplay=false>.

[10] Office of the United States Trade Representative, "Canada Trade and Investment Summary" (2023), online: <https://ustr.gov/countries-regions/americas/canada>.

[11]*Ibid.*

[12] David Crane, "Canada-US Economic Relations" (May 27, 2024), online: <https://www.thecanadianencyclopedia.ca/en/article/economic-canadian-american-relations>.

[13] *Ibid.*

[14] Government of Canada, *Net-zero emissions by 2050* (2023), online: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050.html>.

[15] European Union ECON Committee, *EU's response to the U.S. Inflation Reduction Act* (2023), online: < https://www.europarl.europa.eu/RegData/etudes/IDAN/2023/740087/IPOL_IDA(2023)740087_EN.pdf> at page 6.

[16] *Ibid* at page 6.

II. CANADA'S CURRENT ENERGY POLICIES

A. The Role of the Federal and Provincial Governments in Canadian Policy

The jurisdiction to regulate matters involving energy production and natural resources in Canada is divided between federal and provincial governments in accordance with the *Constitution Act*, 1867.[17] This division of power distinguishes Canada from other nations and creates unique challenges for implementing cohesive policy across the country.

The *Constitution Act,* 1867 grants provinces jurisdiction over property and civil rights, local works, and natural resources, thereby giving them broad power over environmental and energy-related regulatory matters.[18] This power provides provinces the right to explore, develop, and manage their own non-renewable natural resources, and regulate provincial energy supply to consumers. However, because provinces only have the jurisdiction to regulate within their provincial boundaries, their ability to control environmental and energy-related matters extending beyond their own boundaries is limited.

The federal government's ability to regulate energy and environmental matters primarily stems from its general power to make laws for the Peace, Order, and Good Government of Canada ("**POGG**"), as well as its power over interprovincial trade and commerce, and international and interprovincial energy infrastructure.[19] The POGG power allows the federal government to legislate over matters normally in provincial jurisdiction in cases of emergency or if the matter is of national concern.[20] In addition, the federal powers to regulate interprovincial trade and commerce and energy infrastructure grants the federal government the power to implement and regulate projects that cross provincial boundaries. Further, the federal government's power over taxation allows it broader control than its provincial counterparts in implementing environmentally focused fiscal measures and incentives,[21] although the provincial governments also have certain taxation powers within their jurisdiction.[22]

Despite the distinction between federal and provincial enumerated powers, Canada operates under a system of "cooperative federalism."[23] The principle of cooperative federalism "favours, where possible, the concurrent operation of statutes enacted by governments at both levels."[24] Based on this principle, the federal and provincial governments must coordinate to address issues of energy efficiency, environmental protection, and economic development. This paper will focus on key Canadian net-zero energy policies implemented at the federal level.

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[17] *Constitution Act, 1867* (UK), 30 & 31 Vict, c 3, reprinted in RSC 1985, Appendix II, No 5 [*The Constitution Act*].
[18] *Ibid* at s 92.
[19] *Ibid* at s 91.
[20] *Friends of the Oldman River Society v Canada (Minister of Transport)*, [1992] 1 SCR 3, SCJ No 1.
[21] *The Constitution Act* at s 91.
[22] *The Constitution Act* at s 92.
[23] *Reference re Secession of Quebec*, [1998] 2SCR 217, SCJ No 61.
[24] *Rogers Communications Inc, v Châteauguay (City)*, 2016 SCC 23 at para 38.

B. Key Federal Energy Policies

Under the Paris Agreement, signed in 2016, Canada made international commitments to reduce domestic GHG emissions by 30% below 2005 levels by 2030.[25] As stipulated by Article 1 Section 9 of the Paris Agreement, in 2021, Canada updated its target to reduce emissions by 2030 to levels that are 40% - 45% below 2005 levels.[26] Canada has also announced its commitment to reach net-zero emissions by 2050.[27]

The Paris Agreement is described by the United Nations as a legally binding international treaty.[28] However, the treaty itself provides minimal enforcement mechanisms and does not impose penalties or fees on countries who fail to meet their emissions reduction pledges.[29] Under the Paris Agreement, each member country must update its emissions reduction pledge target every five years, but there is no minimum pledge target requirement, allowing countries to adjust their pledge by any amount. Member countries must also submit national emissions inventories and report their progress toward achieving their pledged targets.[30] If a member country fails to meet its pledged target, the only consequence is a mandated meeting with a global committee to develop a new plan of action. Overall, there are few formal mechanisms under the Paris Agreement to hold member countries accountable.

i. Targeted Policy Plans

Canada's ambitious emissions related commitments have prompted the implementation of a number of targeted federal policy measures over the past decade.[31]

In 2016, the federal government introduced the *Pan-Canadian Framework on Clean Growth and Climate Change* (the "**PCF**"). The PCF was developed in coordination with the provinces and territories and serves as the initial domestic strategy for meeting Canada's emissions reduction targets.[32] Under the PCF, both the federal government and provincial and territorial governments agreed on specific actions to address climate change in Canada.[33] Key elements of the PCF include a carbon pricing framework, GHG emissions

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[25] *The Paris Agreement*, 12 December 2015, UNTS No 54113, Article 4 at ss 1,2 & 9 (entered into force 4 November 2016).
[26] *Canadian Net-Zero Emissions Accountability Act*, SC 2021, c 22 [*Net-Zero*].
[27] International Energy Agency, "Canada 2022 Energy Policy Review" (27 May, 2024), online: <https://iea.blob.core.windows.net/assets/7ec2467c-78b4-4c0c-a966-a42b8861ec5a/Canada2022.pdf> [International Energy Agency].
[28] UNFCCC, "What is the Paris Agreement?" (27 May, 2023), online: <https://unfccc.int/process-and-meetings/the-parisagreement#:~:
text=What%20is%20the%20Paris%20Agreement%3F&text=The%20Paris%20Agreement%20is%20a
,force%20on%204%20November%202016>.
[29] Lila MacLellan, "Is the Paris Climate Agreement Legally Binding?" (27 May, 2024), online: <https://qz.com/2086578/is-the-paris-climate-agreement-legally-binding>.
[30] Kathryn Tso and Michael Mehling, "How are countries held accountable under the Paris Agreement?" (27 May, 2024), online: <https://climate.mit.edu/ask-mit/how-are-countries-held-accountable-under-paris-agreement>.
[31] Powering Canada Forward, *supra* note 31 at pages 25-26.
[32] Federal Government, Provincial and Territorial Governments, *Pan-Canadian Framework on Clean Growth and Climate Change* (2022), online: <https://publications.gc.ca/collections/collection_2017/eccc/En4-294-2016-eng.pdf> at page 11 [Pan-Canadian Framework].
[33] *Ibid* at page 12.

mitigation measures in various sectors including transportation, buildings, and industry, and research and development objectives for clean technologies.[34]

In 2020, the federal government expanded upon the foundation set by the PCF and introduced a new *Strengthened Climate Plan*, which contained 64 updated federal policies, programs, and focused investment strategies.[35] The Strengthened Climate Plan focuses on: (i) increasing energy efficiency in Canadian homes and buildings; (ii) creating and encouraging cleaner modes of transportation; (iii) maintaining a price on carbon emissions; and (iv) building an industrial advantage through performance standards, investments, and incentives.[36]

The *Net Zero Emissions Accountability Act* was enacted in 2021 and established national targets for emissions reduction. Following this, in 2022, Canada's first emissions reduction plan was released.[37] Known as the 2030 Emissions Reduction Plan (the "**ERP**"), it provided Canada's then current strategy toward cleaner energy and a stronger economy.[38] The ERP incorporates economy-wide measures such as carbon pricing and clean fuel generation, along with targeted measures for specific sectors such as transportation, building, industry, and agriculture.[39] In total, the ERP secures approximately CDN $9.1 billion in government investment to implement approximately 80 reduction measures, while also seeking to increase job and business opportunities in the energy sector.[40]

ii. Investment Strategies

In support of these overarching policy measures, and similar to the IRA, the federal government has initiated numerous investment strategies in the form of public financing, tax incentives, grants, and other contributions.[41] Key programs include:

- The Smart Renewables Electrification Pathways Program, which, as of January 31, 2024, has approved over CDN $1 billion in funding for over 106 energy deployment projects and capacity building. The Smart Renewable Electrification Pathways Program is intended to provide up to CDN $4.5 billion in contributions between 2021 and 2035.[42]

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[34] *Ibid* at page 19.
[35] Environment and Climate Change Canada, *A Healthy Environment and a Healthy Economy, Canada's Strengthened Climate Plan* (2020), online: <https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf> [Healthy Environment and Healthy Economy].
[36] *Ibid* at page 8.
[37] *Canadian Net-Zero Emissions Accountability Act*, SC 2021, c 22.
[38] Government of Canada, *2030 Emissions Reduction Plan* (2022), online: <https://publications.gc.ca/collections/collection_2022/eccc/En4-460-2022-eng.pdf> [Canada 2030 Emissions Reduction Plan].
[39] *Ibid* page 7.
[40] *Ibid* at page 7.
[41] Powering Canada Forward, *supra* note 31 at page 24.
[42] Government of Canada, *Smart Renewables and Electrification Pathways Program* (2023), online: <https://natural-resources.canada.ca/climate-change/green-infrastructure-programs/sreps/23566>.

- The Strategic Innovation Fund, which is designed to de-risk and encourage private investment in large scale transformative projects such as electric vehicle value chain projects.[43] To date, the Strategic Innovation Fund has provided funding of up to CDN $9.5 billion across 129 industrial transformation projects since its launch in 2017.[44] Notably, as of 2022, the projects that received funding were expected to generate upwards of CDN $72 billion of private sector investment in Canada.[45]

- The Low Carbon Economy Fund, which has supported projects to reduce GHG emissions through four streams of funding known as the Low Carbon Economy Challenge, the Indigenous Leadership Fund, The Implementation Readiness Fund, and the Low Carbon Economy Leadership Fund.[46]

- The Investing in Canada Infrastructure Program, which is intended to provide CDN $33 billion in investment in partnership with each province and territory for clean energy infrastructure through to 2033. More than 3,600 projects have been approved under this program since 2020, representing approximately CDN $10 billion in federal investment to date. [47]

The federal government also established the Canadian Infrastructure Bank ("**CIB**") in 2017 to invest in and attract private investment for revenue-generating infrastructure projects in Canada.[48] Under the 2023 federal budget, the CIB planned to invest at least CDN $10 billion in clean power projects for power generation, distribution, use, and storage systems, and another CDN $10 billion in green infrastructure projects such as retrofitting residential and commercial buildings, developing new water and waste water facilities, and developing electric vehicle charging and hydrogen refueling stations, positioning the CIB as the federal government's primary funding source for clean energy infrastructure projects.[49]

Most recently, the Canada Growth Fund has been established as an independent and arms-length public fund managing CDN $15 billion for the purpose of catalyzing private sector investment in Canadian businesses and clean energy projects, to be deployed over five years.[50] The Canada Growth Fund is designed to attract private capital to Canada's clean energy sector by using a variety of investment instruments that absorb risk.[51] For example, the Canada Growth Fund utilizes "contracts for difference" which are intended

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[43] Innovation, Science and Economic Development Canada, Strategic Innovation Fund Impact Report (2023), online: <https://ised-isde.canada.ca/site/strategic-innovation-fund/sites/default/files/documents/impact-report.pdf> at page 5.
[44] Innovation, Science and Economic Development Canada, *Investments: Strategic Innovation Fund* (2024), online: <https://ised-isde.canada.ca/site/strategic-innovation-fund/en/investments>.
[45] Innovation, Science and Economic Development Canada, *Strategic Innovation Fund Impact Report* (2023), online: <https://ised-isde.canada.ca/site/strategic-innovation-fund/sites/default/files/documents/impact-report.pdf> at page 9.
[46] Environment and Climate Change Canada, *The Low Carbon Economy Fund* (2024), online: <https://www.canada.ca/en/environment-climate-change/services/climate-change/low-carbon-economy-fund.html>.
[47] Powering Canada Forward, *supra* note 31 at pages 20-21.
[48] *Ibid* at page 21.
[49] *Ibid.*
[50] Canada Growth Fund Investment Management, "Canada Growth Fund" (27 May, 2024), online: <https://www.cgf-fcc.ca/>.
[51] CDEV, "Canada Growth Fund Inc., Innovative funding to help accelerate Canada's decarbonization strategy" (May 27, 2023), online: <https://cdev.gc.ca/canada-growth-fund-inc/>.

to provide predictability for investors in emissions reducing projects by backstopping the future price of carbon. For example, carbon credit offtake agreements guarantee the purchase price of carbon credits for abated emissions at a fixed price, thereby alleviating the risk of volatile increases in carbon pricing for investors.[52] To date, CDN $7 billion of the Canada Growth Fund's $15 billion has been committed to various contracts for difference and offtake agreements.[53]

Finally, over the past three years, the federal government has proposed a collection of investment tax credits ("**ITCs**"), each designed to boost investment and stimulate growth in key areas of Canada's clean energy sector, as well as support the development of clean technology. These ITCs are intended to be temporary, covering only pre-2035 expenditures. The primary ITCs include:

- The Clean Technology ITC;
- The Carbon Capture, Utilization and Storage ("**CCUS**") ITC;
- The Clean Hydrogen ITC;
- The Clean Technology Manufacturing ITC; and
- The Clean Electricity ITC.

The Clean Technology ITC offers up to a 30% tax credit on the capital cost of eligible clean technology property.[54] Eligible equipment for the purposes of this ITC includes equipment used to generate electricity from solar, wind and water sources; stationary electricity storage equipment that does not use fossil fuels in its operation; equipment to generate heat or electricity from small modular nuclear reactors; low-carbon heating equipment, including active solar heating, air-source heat pumps and ground-source heat pumps; and industrial zero-emission vehicles and related charging or refueling equipment.[55]

The CCUS ITC provides a 37.5% - 50% tax credit for expenditures incurred related to carbon capture, storage, transportation, and utilization. The requirements to qualify for this ITC are extremely detailed and complex. At a high level, a taxpayer is required to submit a formal plan including a front-end engineering study for any project they wish to qualify as a "Qualified CCUS Project" and the Ministry of Natural

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[52] Clean Prosperity, "Budget 2024 makes important progress on carbon contracts for difference" (27 May, 2024), online: <https://cleanprosperity.ca/budget-2024-makes-important-progress-on-carbon-contracts-for-difference/#:~:text=Carbon%20contracts%20for%20difference%20act, investments%20in%20low%2Dcarbon%20projects>.

[53] See Canada Growth Fund, *2023 Annual Report* (2023), online: <https://www.cgf-fcc.ca/content/documents/cgf-2023-annual-report.pdf>.

[54] Environment and Climate Change Canada, Press Release, "Minister Guilbeault highlights the big five new Clean Investment Tax Credits in Budget 2023 to support sustainable made-in-Canada clean economy" (5 April 2023), online: <https://www.canada.ca/en/environment-climate-change/news/2023/04/minister-guilbeault-highlights-the-big-five-new-clean-investment-tax-credits-in-budget-2023-to-support-sustainable-made-in-canada-clean-economy.html>; <https://www.blg.com/en/insights/2024/ri/canadas-2024-federal-budget-update-on-green-itcs>.

[55] Robert Nearing & Greg Rafter, "Canada's 2030 Emissions Reduction Plan and the expansion of tax credits for green technology" (27 May, 2024), online: <https://www.blg.com/en/insights/2022/12/canadas-2030-emissions-reduction-plan-and-the-expansion-of-tax-credits-for-green-technology>.

Resources is required to issue an initial project evaluation.[56] The taxpayer is also required to meet various ongoing reporting requirements such as annual reporting on project results relative to the initial estimates. Where the deviation between the project results and estimated outcomes is too large, then some or all of the previously claimed tax credits may be clawed back. Additionally, the amount of the tax credit itself is dependent on the particular activity undertaken and the year in which the expenditure was occurred.

The Clean Hydrogen ITC provides a 15% - 40% tax credit for investment in hydrogen production projects. Eligible expenditures under this ITC include expenditures on equipment that produces hydrogen from CO2 emission-abated natural gas reforming or electrolysis.[57] Like the CCUS ITC, the amount of the credit is dependent on the carbon intensity of the hydrogen being produced.

The Clean Technology Manufacturing ITC provides a 30% tax credit on investments in eligible property used in clean technology manufacturing and critical mineral extraction and processing. Eligible manufacturing and processing equipment under this ITC must be used in one of two qualifying activities performed in Canada.[58] The first qualifying activity is extracting, processing, or recycling key minerals such as cobalt, lithium, nickel, copper, and graphite. The second qualifying activity is the manufacturing and processing of various kinds of clean energy equipment including electrical energy storage equipment, equipment used for renewable (solar, water, wind, geothermal) or nuclear energy generation, zero-emission vehicle components such as batteries and charging equipment, and air- and ground-source heat pumps. The 2024 federal budget clarified that where a project involves the extraction, processing, or recycling of multiple minerals, the project must primarily involve critical minerals and that eligibility thresholds for the tax credit will be based on the value of the minerals produced.[59]

The Clean Electricity ITC provides a tax credit of up to 15% for investments in projects that generate, store, or transmit clean electricity between provinces and territories. Eligible investments under this ITC may be made in the non-emitting electricity systems such as wind, solar, or hydro systems; equipment used to generate electricity from nuclear fission, geothermal energy, concentrated solar energy, and waste biomass; stationary electricity storage systems and equipment such as batteries that do not operate on fossil fuels; and inter provincial electricity transmission equipment.[60] Notably, equipment used in natural gas fired electricity generation is also eligible, but only if emissions stay below a specified limit; CO2 emissions are captured and stored in accordance with the requirements of the CCUS ITC; the project is pre-approved by Natural Resources Canada; and reporting requirements are met.

The 2024 federal budget also announced a new Electric Vehicle Supply Chain ITC to support the establishment of electric vehicle supply chains in Canada.[61] The Electric Vehicle Supply Chain ITC will

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[56] Steve Suarez, "Canada's 2024 Federal Budget: Update on green investment tax credits" (27 May, 2024), online: <https://www.blg.com/en/insights/2024/ri/canadas-2024-federal-budget-update-on-green-itcs>.
[57] *Ibid*.
[58] *Ibid*.
[59] *Ibid*.
[60] S *Ibid*.
[61] Emma Jarratt, "Federal budget highlights: money for ZEV rebates, EV plant construction, clean electricity production and storage" (17 April, 2024), online: < https://electricautonomy.ca/news/2024-04-17/budget-2024-energy-ev-supply-chain-funding/>.

provide an additional 10% tax credit on the cost of buildings used for electric vehicle assembly, battery production, and cathode active material production.[62] The timing of the introduction of this ITC is imperative considering the recent pullback by automakers in the production of electric vehicles.[63] In 2023 General Motors scrapped its target of producing approximately 1 million new electric vehicles by mid 2024, and Ford extended its timeline to reach its sales target of 600,000 new electric vehicles per year.[64] Sales forecasts and ambitious targets for electric vehicle growth projected by automakers in previous years are looking to be overly optimistic and based on temporary spikes in demand during 2021 and 2022.[65] Despite the continued rise in electric vehicle sales, growth rates are slower than expected.[66] According to a study undertaken by the Boston Consulting Group, potential consumers expect to see shorter charging times (under 20-minutes), longer driving range (over 550 kilometers), and lower prices (under USD $50,000), before they will seriously consider switching to an electric vehicle.[67] Further development and increased innovation in the electric vehicle sector will be necessary to ensure future electric vehicles are meeting consumer expectations.

In total, including the recently announced Electric Vehicle ITC, the proposed ITCs are expected to cost the federal government approximately CDN $93 billion between their implementation in 2024 and ultimate phase out in 2034.[68]

Beyond ITCs, the 2024 federal budget also announced a CDN $607 million top-up for zero-emission vehicle rebates, CDN $800 million for a new Canada Greener Homes Affordability Program that will support the direct installation of energy efficiency retrofits for Canadian households, CDN $73.5 million to modernize existing energy efficiency programs and develop better, more ambitious, business codes, and CDN $30 million to support a nation-wide approach to home energy labelling.[69]

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[62] PWC, "2024 Federal Tax Budget analysis" (April 2024), online: < https://www.pwc.com/ca/en/services/tax/budgets/2024/2024-federal-budget-analysis.html>.
[63] Michael Wayland, "EV euphoria is dead. Automakers are scaling back or delaying their electric vehicle plans" (13 March, 2024), online: <https://www.cnbc.com/2024/03/13/ev-euphoria-is-dead-automakers-trumpet-consumer-choice-in-us.html>.
[64] Meghan McCarty Carino, "Electric vehicles face reality check as automakers dial back production targets" (2 November, 2023), online: <https://www.marketplace.org/2023/11/02/ev-demand-production-reality-check/>.
[65] Michael Wayland, "EV euphoria is dead. Automakers are scaling back or delaying their electric vehicle plans" (13 March, 2024), online: <https://www.cnbc.com/2024/03/13/ev-euphoria-is-dead-automakers-trumpet-consumer-choice-in-us.html>.
[66] Peter Lyon, "EV Sales Slow As Buyers Want 20-Minute Charging And 350 Mile Range" (24 March, 2024), online: <https://www.forbes.com/sites/peterlyon/2024/03/24/why-arent-evs-selling-as-experts-predicted/?sh=73bb4c3e2d23>.
[67] *Ibid.*
[68] Department of Finance Canada, *2024 Federal Budget Chapter 4: Economic Growth for Every Generation* (2024), online: <https://budget.canada.ca/2024/report-rapport/chap4-en.html>.
[69] Clean Energy Canada, News Release, "A budget for building homes—and clean-energy-powered affordability" (16 April, 2024), online: <https://cleanenergycanada.org/a-budget-for-building-homes-and-clean-energy-powered-affordability/>.

iii. Specific Measures

Using overarching policy plans and investment strategies, the federal government has established several specific measures in key areas:

- Carbon pricing;
- Transitioning electricity generation;
- CCUS;
- Decarbonizing upstream oil and gas production;
- Efficiency within the building and transportation sectors; and
- Clean fuels.[70]

This section on specific measures will briefly address certain of Canada's key clean energy regulations, though a detailed review and analysis of such regulations are largely outside the scope of this paper. The purpose of addressing these regulations is to provide better insight into Canada's net-zero strategy from a policy perspective and how such strategy will affect Canada's overall competitiveness in the energy sector.

(a) Carbon Pricing

The carbon pricing scheme established under the *Pan-Canadian Approach to Pricing Carbon Pollution* ("**PCA**") is a cornerstone of Canada's clean energy policies.[71] The PCA requires that all provinces and territories implement a carbon pricing system that adheres to a minimum stringency standard known as the "federal benchmark."[72] Each province and territory may either implement its own carbon system, like a cap-and-trade system, or opt for the federal backstop system, which is a carbon pricing system.

The federal backstop system is comprised of two components: (i) an output-based pricing system ("**OBPS**") for large industrial emitters, and (ii) a fuel charge. The OBPS works by pricing the amount of carbon pollution emitted from industrial facilities which emit 50,000 tons or more of CO2 equivalent per year. Other facilities that emit less than 10,000 tons per year are also eligible to participate on a voluntary basis. Facilities are capped at an annual emissions limit and are charged on any emissions exceeding that limit. Where facilities emit less than their designated limit, they are granted surplus credits by the Minister of Environment which can be used to offset charges on emissions in following years. Additionally, surplus credits that have been awarded can be purchased and transferred to other facilities covered under the OBPS.[73] Fuel charges, on the other hand, are applied to 21 fossil fuels and are generally paid by fuel

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[70] International Energy Agency, *supra* note 27.
[71] Pan-Canadian Framework, *supra* note 32 at page 12.
[72] International Energy Agency, *supra* note 27.
[73] Government of Canada, "Output-Based Pricing System" (2024), online: <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/output-based-pricing-system.html>.

producers and distributors. Although producers and distributors are directly affected by the federal fuel charge, the resulting increase in costs tend to be partially flowed through to the end consumer.[74] In 2023, for every litre of gasoline purchased, end consumers paid approximately CDN 14 cents of carbon levies.[75] With the rise in carbon prices as of April 2024, consumers are expected to pay approximately CDN 3.3 cents more per litre of gasoline.[76]

Revenue collected under the federal backstop system is supposed to be returned to the province where it was collected. 90% of proceeds generated by the federal government through the federal fuel charge are returned directly to Canadian families through the Canada Carbon Rebate, which is a quarterly tax-free payment. The amount received in rebates for each household depends on the size of the household, the province, and whether the household is in a rural or metropolitan area.[77] The amount of fuel consumed by each household will not affect the rebate that they receive. The remaining 10% of proceeds generated by the federal fuel charge are returned to businesses, farmers, and indigenous groups.[78]

Under its Strengthened Climate Plan, the Canadian government has announced that it will continue to increase the price on carbon on an annual basis leading up to 2030. Carbon emissions were initially priced at CDN $20 per ton in 2019 and will continue to rise by CDN $15 per ton per year until the price reaches CDN $170 in 2030.[79] As may be expected, rising carbon prices have led to significant commentary focused on industry operating costs and loss of competitiveness.

Currently, Manitoba, Prince Edward Island, Yukon, and Nunavut are the only provinces and territories that have opted solely for the federal backstop system.[80] Alberta, Saskatchewan, Ontario, New Brunswick, Nova Scotia, and Newfoundland have each opted to use the federal fuel charge but have their own pricing systems for industrial facilities, and British Columbia, Quebec, and the Northwest Territories have their own carbon pricing system altogether.[81] As a result of provinces and territories being able to choose and design their own carbon pricing system, there are now five distinct carbon pricing systems co-existing across Canada.[82]

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[74] Robson Fletcher, "How do your federal carbon tax costs compare to your rebates? This tool helps you calculate that" (20 July, 2023) [Fletcher], online: <https://www.cbc.ca/news/canada/calgary/cbc-federal-carbon-tax-calculator-2023-24-year-65-dollars-per-tonne-1.6891467>;
CTV News, "Carbon pricing in Canada: What it is, what is costs and why you get a rebate" (1 November, 2023), online: <https://www.ctvnews.ca/politics/carbon-pricing-in-canada-what-it-is-what-it-costs-and-why-you-get-a-rebate-1.6627245#:~: text=Currently%20the%20price%20is%20set, Canadian%20natural%20gas%20heating%20bill> [CTV Carbon Pricing].
[75] *Ibid.*
[76] Fiona Campbell, "Canada's Carbon Tax Increase: What You Need to Know" (3 April, 2024), online: <https://www.forbes.com/advisor/ca/personal-finance/canada-carbon-tax-increase/>.
[77] Fletcher, *supra* note 74.
[78] Environment and Climate Change Canada, *How Carbon Pricing Works* (2024), online: <https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/putting-price-on-carbon-pollution.html>.
[79] Canada 2030 Emissions Reduction Plan*, supra* note 38 at page 24.
[80] *The Management and Reduction of Greenhouse Gases (Standards and Compliance) Regulations*, RRS c M-201 Reg 4.
[81] CTV Carbon Pricing, *supra* note 74.
[82] Environment and Climate Change Canada, *2020 Expert Assessment of Carbon Pricing Systems* (2020), online: <https://publications.gc.ca/collections/collection_2021/eccc/En4-434-2021-eng.pdf> at page 16.

Differences in the available exemptions and application thresholds between the provincial and territorial systems and the federal system has led to a lack of uniformity in carbon pricing across Canada. For example, Saskatchewan's large emitter program automatically applies to facilities emitting 25,000 tons or more of CO2 equivalent per year, while facilities emitting between 10,000 to 25,000 tons of CO2 equivalent per year can opt in voluntarily. Conversely, Alberta's large emitter program only applies mandatorily to facilities that emit 100,000 tons or more of CO2 equivalent per year and applies to other emitters on a voluntary basis.[83]

Similar to the general application thresholds, the coverage of emissions sources, and the available exemptions from the carbon price also vary across jurisdictions. In British Columbia some exemptions to the fuel charge include fuels used for agriculture, fuels sold on reserve land, and fuels used in industrial processes that are not combusted. In Northwest Territories, fuels used for aviation, containers of fuel under 10 litres, and fuel purchased by visiting military forces are exempt from the fuel charge. Nova Scotia's regulations exempt GHG emissions from non-combustion sources in the waste and agriculture sectors and offshore oil and gas production. Though there are similarities between many of the provincial systems, the overall carbon pricing system in Canada is scattershot based on the design choices of the various provinces and territories.

(b) Clean Electricity Transition

Canada has implemented a plan to phase out coal-fired power generation by 2030.[84] In 2012, Canada was the first country to implement federal regulations for unabated coal-fired electricity, which initially applied to new coal-fired electricity generation units in 2015. Regulatory amendments in 2018 require higher performance standards, and new regulations were enacted to ensure any new natural gas-fired generators met a higher standard than the coal-fired units they were replacing. In conjunction with the phase-out of coal-fired electricity generation, the federal government has also made commitments to phase out tax measures that provide preferential treatment to non-renewable fossil fuels, such as the ability to reclassify certain oil and gas development expenses as more favourably treated exploration expenses,[85] the use of flow through shares for oil and gas companies which allow the initial purchaser to claim a tax deduction equal to the amount invested,[86] and tax benefits such as the deep drilling infrastructure credit in British Columbia.[87]

The federal government is working to replace coal and other unabated fossil fuels with hydro and other renewable energy sources, including nuclear power. Currently, wind and solar energy account for less than

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[83] Government of Alberta, *Technology Innovation and Emissions Reduction Regulation* (2023), online: <https://www.alberta.ca/technology-innovation-and-emissions-reduction-regulation#jumplinks-0>.
[84] International Energy Agency, *supra* note 27 at page 47.
[85] Office of the Auditor General of Canada, *2017 Spring Reports of the Auditor General of Canada to the Parliament of Canada Report 7—Fossil Fuel Subsidies* (2017), online: <https://www.oag-bvg.gc.ca/internet/english/parl_oag_201705_07_e_42229.html>.
[86]CAPP, *Inefficient Fossil Fuel Subsidies and Canada's G20 Commitment* (May 6, 2022), online: <https://www.ourcommons.ca/Content/Committee/441/ENVI/Brief/BR11758022/br-external/CanadianAssociationOfPetroleumProducers-e.pdf> at page 9.
[87] Vanessa Corkal, Philip Gass, "Unpacking Canada's Fossil Fuel Subsidies" (11 December, 2020), online: <https://www.iisd.org/articles/unpacking-canadas-fossil-fuel-subsidies-faq#howmuch>.

10% of Canada's electricity generation.[88] To expand these energy sources, the federal government initiated the Emerging Renewable Power Program, which aims to allocate up to CDN $200 million toward the expansion of commercially viable renewable energy generation projects across the provinces and territories. Eligible or "commercially viable" projects are defined as being technologically proven, comprised of eligible power generating technologies including offshore wind, geothermal, instream tidal, or concentrated photovoltaic, having a minimum net capacity of at least 4 megawatts, and producing electricity intended for sale or use in Canada.[89]

Additionally, the federal government has been developing proposed *Clean Electricity Regulations* ("**CER**") which will mandate a gradual phase-out of unabated fossil fuel-based electricity generation.[90] These regulations are being developed for the purpose of enabling progress towards a cleaner energy grid. The CER introduces a performance standard for electricity generators, specifically requiring any electricity generating facility that uses fossil fuels to generate over 25 megawatts of electricity to emit less than 30 tons of CO2 per gigawatt hour.[91] Within the regulations, distinct categories have been created to differentiate applicability timelines of the performance standard for different facilities.

(c) CCUS

The Canadian federal government has identified carbon management as a crucial strategy for reducing emissions to meet Canada's 2030 and 2050 targets.[92] The federal government's approach to carbon management uses five technology-based strategies. These strategies include:

- using point-source carbon capture to reduce emissions in industrial sectors such as cement, iron and steel, and fertilizer industries where fixed process emissions and high temperatures create challenges for reducing emissions;[93]

- increasing hydrogen production by using low-cost natural gas paired with carbon capture to mitigate emissions;[94]

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[88] Statista, "Electricity generation in Canada in 2022, by energy source" (August 30, 2023), online: <https://www.statista.com/statistics/248155/electricity-generation-in-canada-by-type/>.
[89] Natural Resources Canada, *Emerging Renewable Power Program Applicant Guide*, (2018), online: <https://publications.gc.ca/collections/collection_2018/rncan-nrcan/M164-14-2018-eng.pdf>.
[90] Government of Canada, *Clean Electricity Regulations* (2024), online: <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/clean-electricity-regulation.html>.
[91] Evan Pivnick & Jason Dion, "Understanding the proposed Clean Electricity Regulations (part 1)" (9 June, 2023), online: <https://climateinstitute.ca/understanding-the-proposed-clean-electricity-regulations-part-1/>.
[92] Government of Canada, *Canada's Carbon Management Strategy,* (2023), online: <https://natural-resources.canada.ca/climate-change/canadas-green-future/capturing-the-opportunity-carbon-management-strategy-for-canada/canadas-carbon-management-strategy/25337#a3> ; "Role of carbon management in the path to net zero", International Energy Agency, *supra* note 27 at page 69.
[93] Government of Canada, *Canada's Carbon Management Strategy,* (2023), online: <https://natural-resources.canada.ca/climate-change/canadas-green-future/capturing-the-opportunity-carbon-management-strategy-for-canada/canadas-carbon-management-strategy/25337#a3>.
[94] *Ibid.*

- incentivizing the pairing of gas-fired power generation and other dispatchable power generation with CCUS technologies as a way to significantly reduce emissions from the electricity grid;[95]

- utilizing captured carbon by converting it into fuels, chemicals, building materials or integrating it into industrial processes as a way to strengthen the business case for investment into carbon management projects;[96] and

- investing heavily in the growth and innovation of carbon dioxide removal technologies in support of its goals to offset emissions in industrial sectors.[97]

In support of these strategies, Canada's 2021 federal budget proposed approximately CDN $319 million over 7 years to fund research and development into CCUS technologies.[98] To date, a total of just over CDN $50 million of government funding has been applied in CCUS projects across Canada.[99] Further, in 2023, draft legislation was produced for the CCUS ITC, which provides an income tax credit of between 37.5% and 50% for expenditures incurred related to carbon capture, storage, transportation, and utilization projects.

(d) Decarbonizing Upstream Oil and Gas

In 2022, Canada's oil and gas sector was responsible for approximately 25% of the country's total GHG emissions.[100] According to the ERP, the federal government aims to reduce oil and gas sector emissions to 30% below 2005 levels by 2030.[101] Efforts to decarbonize the oil and gas sector can be seen in economy-wide policy initiatives such as the carbon pricing scheme, carbon management strategy, and clean fuel regulations. Additionally, the CDN $675 million Emissions Reduction Fund Onshore Program ("**ERFOP**") has been launched to incentivize Canadian onshore oil and gas companies to invest in efficient emissions reduction solutions.[102] The ERFOP provides funding for investment in green solutions and infrastructure targeted at reducing methane emissions.[103] If a project is approved, the ERFOP will fund up to 75% of the project cost and such funding must be repaid within 5 years of project completion. Similarly, the Clean Growth Program ("**CGP**") has allocated CDN $155 million for investment into clean technology research and development for the oil and gas sector, as well as the mining and forestry sectors.[104] The CGP focuses on five key environmental challenges affecting Canada's natural resource operations, being the reduction of GHG and air-polluting emissions, minimizing landscape disturbances and improving waste management,

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[95] *Ibid.*
[96] *Ibid.*
[97] *Ibid.*
[98] International Energy Agency, *supra* note 27 at page 69.
[99] Government of Canada, *Current Investments* (2024), online: <https://natural-resources.canada.ca/the-office-the-chief-scientist/funding-partnerships/opportunities/current-investments/21146#invenstment>.
[100] International Energy Agency, *supra* note 27 at page 13.
[101] Canada 2030 Emissions Reduction Plan*, supra* note 38 at page 138.
[102] *Ibid* at page 49.
[103] Government of Canada, *Emissions Reduction Fund – Onshore Program* (2022), online: <https://natural-resources.canada.ca/the-office-the-chief-scientist/funding-partnerships/opportunities/current-funding-opportunities/emissions-reduction-fund/onshore-program-emissions-reduction-fund/23050>.
[104] Canada 2030 Emissions Reduction Plan*, supra* note 38 at page 49.

producing and using energy efficiently, reducing water use and impact on aquatic ecosystems, and producing and using advanced materials and bioproducts.[105]

Methane-specific regulations targeting Canada's oil and gas sector were adopted in 2020, aiming to reduce methane emissions from oil and gas facilities by 40% - 45% below 2012 levels by 2025.[106] Since these methane regulations have come into effect, Canada has set a more ambitious methane reduction target of at least 75% below 2012 levels by 2030.[107]

In further efforts to decarbonize the oil and gas sector, the federal government has committed, under the ERP, to cap and cut emissions at a rate required to reach net-zero emissions by 2050, advance CCUS technologies, and phase out public financing for inefficient fossil fuels.[108] On December 7, 2023, the federal government published a Regulatory Framework for an Oil and Gas Sector Greenhouse Gas Emissions Cap[109] to outline key design details of the proposed approach to setting a cap on emissions and seek public comment, which were due on February 5, 2024.[110]

Essentially, an emissions cap will set a limit on emissions of 35% - 38% below 2019 levels for oil and gas producers to be phased in between 2026 and 2030. Emissions allowances will be given to oil and gas facilities encompassed by the system and, over time, the federal government will give out fewer allowances. In order to comply, facilities will either have to reduce their emissions or purchase allowances from other facilities that have reduced their emissions.[111] An initial draft of these regulations is planned to be produced by the federal government in mid-2024. Reactions to the proposed emissions cap have been mixed. The Premier of Saskatchewan has publicly stated that these emissions regulations would burden the oil and gas sector with red tape. Similarly, the Alberta government has released a statement calling this cap punitive and an intentional attack on the Alberta economy.[112] Conversely, British Columbia's Minister of Environment and Climate Change Strategy reported that he was pleased to see the announcement of the federal emissions cap, and sees it as an important step for combatting the climate crisis.[113]

(e) Energy Efficiency (Buildings and Transportation)

The federal government has made several strides in increasing the efficiency of buildings and transportation. In 2017, the federal government launched a building strategy known as "Build Smart", which, in collaboration with the provinces and territories, aims to decarbonize Canadian homes and

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[105] Natural Resources Canada, *Clean Growth Program* (2023), online: <https://natural-resources.canada.ca/climate-change/canadas-green-future/clean-growth-programs/20254>.
[106] International Energy Agency, *supra* note 27 at page 14.
[107] *Ibid*.
[108] Canada 2030 Emissions Reduction Plan*, supra* note 38 at pages 50-51.
[109] Government of Canada, "Canada's Regulatory Framework for an Oil and Gas Sector Greenhouse Gas Emissions Cap" (7 December, 2023), online: <https://www.canada.ca/en/environment-climate-change/news/2023/12/canadas-regulatory-framework-for-an-oil-and-gas-sector-greenhouse-gas-emissions-cap.html>.
[110] *Ibid.*
[111] *Ibid.*
[112] Aaron Wherry, "A federal cap forces a reckoning with oil and gas emissions" (8 December 2023), online: <https://www.cbc.ca/news/politics/oil-gas-carbon-emissions-cap-climate-canada-1.7052562>.
[113] British Columbia Government, News Release, "Ministers' statement on new federal emissions cap framework" (7 December, 2023), online: <https://news.gov.bc.ca/releases/2023ENV0071-001944>.

buildings. Aligned with the PCF, the Build Smart strategy includes plans for the implementation of a stringent national model energy code for new and existing buildings and specifies a "net zero energy ready" requirement for all new buildings by 2030. Multiple federal government investments have also been made in recent years, including CDN $950 million in 2019 to help municipalities improve the efficiency of buildings and homes, CDN $2.6 billion over seven years to provide grants to homeowners for energy-efficient home improvements, CDN $1.5 billion for green and community inclusive buildings, and CDN $2 billion for financing energy efficient improvements and retrofits to commercial buildings.[114]

For transportation, under the ERP, the federal government has set out sales targets and requirements for new zero-emission vehicles, aiming for 100% of light-duty vehicle sales to be zero-emission by 2035 and 100% of medium- and heavy-duty vehicle sales to be zero-emission by 2040.[115] In order to meet this goal, the federal government has proposed numerous incentives aimed at increasing the availability and affordability of zero-emission vehicles, building the proper infrastructure to sustain zero-emission vehicles, and generally support research and development in this area.[116] In 2022, through the Zero-Emission Vehicles Program, the federal government allocated CDN $1.7 billion over 3 years to incentivize individual consumers to purchase zero-emission vehicles.[117] Further, CDN $547.5 million was invested by the federal government to provide incentives for Canadian businesses to adopt medium and heavy-duty zero-emission vehicles. In 2021, the Zero-Emission Transit Fund was launched, which is a CDN $2.75 billion program created to assist transit agencies and school bus operators plan for and purchase zero-emission infrastructure and vehicles.[118] Additionally, prior to 2022, the federal government allocated CDN $376 million to increase the accessibility of charging and refueling stations for zero-emission vehicles, and a further CDN $400 million after 2022, specifically to Natural Resources Canada for deploying necessary zero-emission vehicle infrastructure.[119] CDN $500 million has also been invested by the CIB for revenue-generating zero-emission vehicle charging and refueling infrastructure.

In conjunction with zero-emission vehicle investment and sales mandates, the federal government has also developed the Critical Mineral Strategy supported by a nearly CDN $4 billion investment toward research and development in, and building sustainable infrastructure related to, the production and processing of critical minerals for electric vehicle batteries.[120] Specific funding programs under the Critical Minerals Strategy include the Critical Minerals Infrastructure Fund, which will provide up to CDN $1.5 billion in federal funding over 7 years towards clean energy and transportation infrastructure projects required for the development of critical minerals in Canada.[121] An additional CDN $1.5 billion of funds targeted at the development of critical minerals, with priority given to lithium, nickel, graphite, cobalt, copper, and rare

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[114] International Energy Agency, *supra* note 27 at page 66.
[115] 2030 Emissions Reduction Plan, *supra* note 38 at page 168.
[116] Government of Canada, *Canada's Action Plan for Clean On-Road Transportation* (2022), online: https://tc.canada.ca/sites/default/files/2023-03/ROAD-04-ON ROAD_ACTION_PLAN_REPORT_EN_V09.pdf> at page 4.
[117] *Ibid* at page 7.
[118] *Ibid* at page 8.
[119] *Ibid* at page 9.
[120] *Ibid* at page 15.
[121] Government of Canada, *Critical Minerals Infrastructure Fund* (2024), online: <https://www.canada.ca/en/campaign/critical-minerals-in-canada/federal-support-for-critical-mineral-projects-and-value-chains/critical-minerals-infrastructure-fund1.html>.

earth elements will be deployed through the Strategic Innovation Fund.[122] Coupled with these hefty investments, the federal government has also introduced a 30% Critical Mineral Exploration Tax Credit for 15 critical minerals used in the production of batteries and permanent magnets used in zero-emission vehicles, including nickel, lithium, cobalt, graphite, copper and others.[123] Notably, eligibility for the Critical Mineral Exploration Tax Credit is not available for 16 of the critical minerals named on Canada's Critical Minerals List of 2021.[124]

(f) Clean Fuels

Clean fuels such as hydrogen, renewable natural gas, biofuels, and synthetic fuels have been identified as key to decarbonising sectors that are difficult to modify, such as heavy-duty transport, oil and gas, cement, and steel.[125] In 2021, the federal government launched the Clean Fuels Fund, committing CDN $1.5 billion over 5 years to assist with the building and expansion of clean fuel production facilities.[126] Additionally, the Clean Fuel Regulations proposed by the federal government in 2020, will require the gradual reduction of carbon intensity in liquid fossil fuels such as gas and diesel that are either produced in or imported into Canada.[127]

Regarding hydrogen fuels specifically, the Minister of Natural Resources published a Hydrogen Strategy designed to stimulate investment in hydrogen production and foster global partnerships for the supply of Canadian hydrogen abroad. This strategy was premised on the critical role that hydrogen fuels are expected to play in achieving net-zero emissions.[128] In total, the Hydrogen Strategy includes 32 recommendations that focus on expanding applications of hydrogen fuels to sectors such as long-range transport, developing new infrastructure, and blending hydrogen and natural gas projects.[129]

C. Economic and Environmental Impacts of Canada's Current Policies

Canada's evolving energy policy will shape the country's economic landscape. The federal government's approach to managing the transition toward a net-zero energy sector has the ability to influence investment patterns, capital allocation, employment opportunities, trade dynamics, and of course, environmental sustainability. This section will examine the realized economic impacts of Canada's energy policy and will explore expected impacts for 2024 and beyond.

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[122] Government of Canada, *Critical Minerals* (2023), online: <https://ised-isde.canada.ca/site/strategic-innovation-fund/en/investments/current-investment-priorities/critical-minerals>.
[123] Government of Canada, *The Canadian Critical Minerals Strategy* (2022), online: <Critical-minerals-strategyDec09.pdf>. at page 20; Emmanuel Sala, Shereen Cook, Victor Qian, "Canada's new 30% critical mineral exploration tax credit: Recent updates" (February 27, 2023), online: <https://www.dentonsmininglaw.com/canadas-new-30-critical-mineral-exploration-tax-credit-recent-updates/>.
[124] Natural Resources Canada, *Canada's Critical Minerals List 2021* (2021), online: <https://natural-resources.canada.ca/sites/nrcan/files/mineralsmetals/pdf/Critical_Minerals_List_2021-EN.pdf>.
[125] International Energy Agency, *supra* note 27 at page 71.
[126] Canada 2030 Emissions Reduction Plan*, supra* note 38 at page 28.
[127] Canada Gazette, *Part I, Volume 154, Number 51: Clean Fuel Regulations* (2020), online: <https://gazette.gc.ca/rp-pr/p1/2020/2020-12-19/html/reg2-eng.html>.
[128] Canada 2030 Emissions Reduction Plan*, supra* note 38 at page 28.
[129] Natural Resources Canada, *Hydrogen Strategy for Canada* (2020), online: < https://natural-resources.canada.ca/sites/nrcan/files/environment/hydrogen/NRCan_Hydrogen-Strategy-Canada-na-en-v3.pdf>.

i. Economic Impact

(a) Capital Expenditure, Gross Domestic Product, and Investment in the energy sector

A significant portion of private sector capital expenditure in Canada is spent in the energy sector, which was tallied at approximately CDN $80 billion in 2022.[130] This expenditure is up roughly 35.6% from an eleven-year low of approximately $59 billion in 2020, and 21.2% from CDN $66 billion in 2021.[131] Oil and gas extraction remains the dominant area of investment, accounting for roughly 39% of the total investment in the energy sector, followed by electrical power generation at 34.5%.[132]

One may be led to believe that these upward trends show that private investment in Canada's energy sector is positively correlated with the restrictions and incentives recently introduced by the federal government. However, empirical evidence to support that conclusion is not readily available. Information from Statistics Canada classifies the above noted expenditures in oil and gas extraction as "exploration and evaluation, capitalized or expensed (leases and licenses, seismic, exploration drilling)." However, the statistics do not specify whether these expenditures included spending related to innovation or technological advancement. Therefore, it is not clear that the uptick in expenditures relate to innovation or technological advancements aimed at emission reductions, or increased spending in traditional production methods. Further information is required in that regard.

Canada also experienced a dramatic rise in the energy sector's gross domestic product ("**GDP**"), which grew from CDN $168 billion in 2020 to CDN $309 billion in 2022 – an 83% increase. In net zero projection scenarios, the GDP of the Canadian clean energy sector is expected to expand up to six times its current value by 2050, while in the same time frame, the GDP of the Canadian fossil fuels sector would be cut in half.[133] Such projections suggest that while Canadians are seeing a decrease in GDP from a more traditional energy mix, that decrease is expected to be more than counteracted by the growth in clean energy.

Looking specifically at energy-related projects, in 2023, a total of 223 planned major energy projects valued at approximately CDN $294 billion were either announced, under review, or already approved.[134] Concurrently, 120 major energy projects worth approximately CDN $180 billion were already under construction in 2023. Of the 343 major energy projects either planned or in construction in 2023, 233 of them, or 68%, were clean energy projects with an approximate value of CDN $159 billion. In comparison, in 2021, a total of 305 major energy projects worth approximately CDN $449 billion were in the planning stage, while 97 major energy projects worth CDN $139 billion were already under construction.[135]168 of

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[130] Canadian Centre for Energy Innovation, *Energy Fact Book, 2023-2024: Investment* (2023), online: <https://energy-information.canada.ca/en/energy-facts/investment>.ctric
[131] Natural Resources Canada*, Energy Fact Book 2021-2022* (2021) at page 19; Natural Resources *Canada, Energy Fact Book 2022-2023* (2022) at page 20.
[132] Natural Resources Canada*, Energy Fact Book 2023-2024* (2023) at page 20.
[133] Clean Energy Canada, "A Pivotal Moment" (2023), online: < https://cleanenergycanada.org/wp-content/uploads/2023/03/A-Pivotal-Moment-Report.pdf> [A Pivotal Moment] at page 7.
[134] Natural Resources Canada*, Energy Fact Book 2023-2024* (2023) at page 24.
[135] Natural Resources Canada*, Energy Fact Book 2021-2022* (2021) at page 22.

the 402 major energy projects were clean energy projects worth a total of CDN $92.1 billion, making up 42% of all projects but only 15% of total value.[136]

This data suggests that although total private investment in clean energy projects has increased by nearly 75%, the overall value of major energy projects generally has declined by 19.4% between 2021 and 2023. These figures indicate a marked transition toward clean energy projects, but a significant decrease in private investment in energy as a whole. Such decrease in overall investment suggests that non-government capital typically allocated to oil and gas energy projects, is not being similarly invested in clean energy projects. Incentives and investment opportunities in clean energy projects under Canada's current energy policy may not be seen to have the same appeal as that of oil and gas energy projects under previous policy regimes. However, the effect of ITCs announced in the federal government's 2023 budget will not be visible until after their full implementation in 2024.

Despite the decreasing value of energy-related projects in 2023, figures show that from 2021 to 2022, foreign direct investment ("**FDI**") in the Canadian energy sector increased by 11.9%, reaching a total of CDN $146 billion.[137] In 2022, FDI in the energy sector made up 12% of overall FDI in Canada, which was a 1% increase from the previous year. However, as noted, such figures do not consider the economic response to policy implementations under the ERP or suggested policy plans set to be implemented in 2024.

(b) Impact of carbon pricing

Estimates suggest that Canada's carbon pricing regime has a negligible impact on overall GDP.[138] According to the Bank of Canada Governor, Tiff Macklem, only 0.15% of the inflation increase can be attributed to carbon pricing.[139] However, this relatively small number is associated with the direct impact of the carbon tax, meaning only the direct increases in the price of fossil fuels such as gasoline and natural gas. This statistic does not consider ripple effects that the carbon tax has throughout the economy, such as the increase in product prices due to the increase in fuel costs for producers or suppliers.

Additionally, the carbon price in Canada will continue to increase from CDN $80 per ton, where it currently sits in 2024, to CDN $170 per ton by 2030. As the carbon price increases, its effect on prices for Canadians and on overall GDP will become more substantial. While increasing the price of carbon to CDN $170 per ton is expected to reduce emissions upward of 25% by 2030, projections suggest that such price will also reduce the country's overall GDP by an average of 1.8%.[140]

Notably, the federal government's current pricing model, on its own, leads to approximately 164 million tons of reduced emissions, falling 63 million tons short of Canada's target under the Paris Agreement. In

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[136] *Ibid*.
[137] *Ibid.*
[138] A Pivotal Moment, *supra* note 133.
[139] Jason Markusoff, "There's now a Bank of Canada number for carbon tax's impact on inflation. It's small" (8 September, 2023), online: <https://www.cbc.ca/news/canada/calgary/carbon-tax-inflation-tiff-macklem-calgary-1.6960189>.
[140] Ross McKitrick and Elmira Aliakbari, *Estimated Impacts of a $170 Carbon Tax in Canada,* (2021), online: <https://www.fraserinstitute.org/sites/default/files/estimated-impacts-of-a-170-dollar-carbon-tax-in-canada.pdf> at page 13.

order to meet Canada's emissions reduction target under the Paris Agreement, the carbon price would need to increase to upwards of CDN $240 and would result in a total GDP cut of 3.6%. Avoiding such high economic costs may require the federal government to explore other options in attempting to meet its 2030 and 2050 targets.

Carbon pricing may also have unintended negative effects on financial lenders and borrowers involved in carbon intensive businesses.[141] The rise in carbon prices may result in greater risk of default for high emitting carbon industries. As estimated in a study undertaken by the University of Waterloo, approximately CDN $256 billion is at risk of being lost by borrowers and banks as a result of these potential defaults. Additionally, the potential loss by borrowers and banks will inevitably have a spillover effect in the form of general price increases, based on the tendency by companies to pass increased costs onto their consumers. To combat this risk, banks may start to consider carbon pricing effects in their credit risk assessments, leading to lower overall investments in carbon heavy industries.

(c) Employment

In projection scenarios where Canada's policy remains stagnant relative to that existing in 2023, there are projected to be a total of 3.56 million energy jobs in Canada by 2050, including both clean energy and oil and gas related jobs.[142] Clean energy jobs, specifically, are expected to grow from a total of 484,000 in 2025, to 2.44 million in 2050. This number increases to 2.68 million in net zero projection scenarios. Of the clean energy jobs available in 2050, clean transportation jobs are expected to make up more than half.[143] Aside from clean transportation, clean energy supply will be the second largest job generator in the clean energy sector. With the rise in clean energy jobs, there is expected to be a corresponding fall in fossil fuel related jobs. Projections suggest that in 2025 approximately 2.25 million jobs will be available in the fossil fuel sector.[144] However, in a net zero scenario, only 776,000 jobs will remain in the fossil fuel sector by 2050. Notably, even if parts of the federal government's current energy policy are rolled back, specifically, carbon pricing measures, oil and gas jobs are still expected to decline by as much as 93%.[145] This suggests that regardless of whether certain climate policies are in place, jobs in the fossil fuel sector will inevitably decline.

(d) Conclusion

Overall, the priorities of the federal government's current energy policy have initiated an obvious transition toward clean energy projects and a shift away from traditional sectors like oil and gas as evidenced by near 75% uptick in the value of planned clean energy projects between 2021 and 2023. As Canada continues through this energy transition, ongoing assessment and adjustment to policy measures will be imperative to balance the country's economic and environmental objectives. Any policy adjustments moving forward

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[141] University of Waterloo, "Canada's carbon pricing poses a $256 billion financial risk for borrowers and banks" (12 June, 2023), online: <https://uwaterloo.ca/news/media/canadas-carbon-pricing-poses-256-billion-financial-risk>.
[142] A Pivotal Moment, *supra* note 133 at page 11.
[143] *Ibid* at page 9.
[144] *Ibid* at page 7.
[145] *Ibid* at page 11.

must strive to optimize investment incentives, foster innovation, and mitigate potential economic disruptions.

ii. Environmental Impact

Recent studies indicate that Canada is not reducing its emissions quickly enough to reach the 2030 target of 40% - 45% below 2005 levels by 2030. Canada's emissions in 2022 were 685 million tons of CO2 equivalent, an increase of 2.1% from 2021.[146] Further, Canada's 2022 emissions levels are only 6.3% below 2005 levels. The rise in emissions between 2021 and 2022 can primarily be attributed to GHG emissions from the oil and gas sector and from energy used for constructing, heating, cooling, and lighting homes and businesses, which accounted for nearly three quarters of the total increase.[147] Both sectors have displayed longer-term trends of rising emissions as displayed by a 15.5% increase in emissions from oil and gas production and an 8.8% increase in emissions from buildings since 2005.[148] Despite not being on track with Canada's emissions reduction target, there is evidence that Canadian energy policies, as of 2022, have reportedly led to a reduction of approximately 22.9 million tons of CO2 equivalent.[149]

Various projection scenarios also suggest that, even with the policies implemented and announced under the ERP, Canada is unlikely to meet its pledged emissions reduction target under the Paris Agreement without more stringent action.[150] Under policies legislated as of December 2023, projections show that emissions will decrease to roughly 549 million tons of CO2 equivalent by 2030, only 25% below 2005 levels.[151] When recently announced and developing policies as of December 2023, are also considered, greater reductions in emissions are expected.[152] In scenarios where oil and gas emissions caps and adjustments to large-emitter performance standards are implemented, emissions are expected to decrease to roughly 467 million tons of CO2 equivalent by 2030, approximately 36% below 2005 levels.[153]

According to these projections, Canada's policy measures lack the stringency and effectiveness required to reach its pledged emissions reduction targets under the Paris Agreement. Updates to Canadian policy will be required to meet the country's international commitments. However, such policy updates must carefully consider potential implications for the Canadian economy and investment appeal.

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[146] Canadian Climate Institute, Independent assessment of Canada's 2023 (Canada 2023), online: <https://climateinstitute.ca/wp-content/uploads/2023/12/ERP-assessment-2023-EN-FINAL.pdf> [Canadian Climate Institute] at page 10.
[147] *Ibid.*
[148] *Ibid*.
[149] *Ibid.*
[150] Officer of the Auditor General of Canada, *Report 6: Canadian Net-Zero Emissions Accountability Act – 2030 Emissions Reduction Plan* (Canada, 2023), online: https://www.oag-bvg.gc.ca/internet/docs/parl_cesd_202311_06_e.pdf> at page 6.
[151] Canadian Climate Institute, *supra* note 146 at pages 19 and 20.
[152] *Ibid* at page 20.
[153] *Ibid.*

III. IRA AND ITS IMPACTS

A. The IRA

The IRA marked the "most significant action Congress has taken on clean energy and climate change in the [U.S.'s] history."[154] It seeks to address climate change while stimulating economic growth and addressing economic inequality. President Biden, who spearheaded the legislation, set the following goals: [155]

- Achieve 100% carbon pollution-free electricity by 2035;
- Reduce net GHG pollution by 50-52% from 2005 levels by 2030; and
- Reach net zero emissions economy-wide by no later than 2050.

To achieve these goals, the IRA allocated more than USD $370 billion over 10 years for investments aimed at promoting clean energy and climate resilience.[156] This includes several tax provisions and significant grant and loan programs to support the development and deployment of clean energy technology.[157] Specifically, it includes tax credits, a USD $27 billion allocation to the Greenhouse Gas Reduction Fund, and USD $40 billion in loan guarantees for pioneering clean energy projects.[158] The tax credits cover various initiatives, including renewable electricity generation, renewable technology investments, carbon capture, renewable fuel production, and clean energy manufacturing. Almost all of these tax credits can be directly paid or transferred, allowing state, local, and tribal governments, as well as other tax-exempt organizations, to benefit. [159]

Central to the IRA is the 30% investment tax credit for qualifying renewable projects that comply with specific labour standards, with additional bonus credits available for projects located in economically disadvantaged and fossil fuel-dependent areas.[160] It also extended significant tax incentives for energy-efficient property upgrades and solar installations, expected to lower energy bills and enhance economic stability for families and small businesses.

The IRA also strongly encouraged the introduction of new, high-paying jobs. It did this by offering increased credit and deduction amounts to qualifying project owners that meet specified labour standards.[161] The IRA's climate and clean energy tax incentives are projected to support over 1 million jobs in the energy sector and related manufacturing.

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[154] The White House, *Building a Clean Energy Economy Guidebook* (2023), online: < https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf> at page 5.
[155] *Ibid* at page 9.
[156] *Ibid*.
[157] *Ibid*.
[158] *Ibid*.
[159] *Ibid* at page 11.
[160] U.S. Department of the Treasury, Press Release, "FACT SHEET: How the Inflation Reduction Act's Tax Incentives Are Ensuring All Americans Benefit from the Growth of the Clean Energy Economy" (20 October 2023), online: <home.treasury.gov/news/press-releases/jy1830> at para 9.
[161] *Ibid* at para 13.

In response to rising energy costs, the IRA provided significant financial relief for families and small businesses that undertake energy-efficient property upgrades and the installation of rooftop solar panels. This included credits of up to USD $1,200 for eco-friendly renovations and a 30% tax rebate for rooftop solar and battery storage. This is expected to lower energy costs for participants and help protect them against energy price volatility.

Further, the IRA enables state, local, and tribal governments, along with non-profit organizations and other tax-exempt groups, to obtain funds directly from the government for clean energy projects.[162]

i. Tax Credits

The IRA made certain tax credits directly payable and others transferable.[163] Directly payable tax credits essentially act like a grant for entities like nonprofits.[164] Conversely, transferrable tax credits enable a taxpayer to transfer the credit to a third party for cash, meaning that if an entity invests in a project that does not have a large enough tax bill to use the credit, they are able to monetize the credit by transferring it to a taxpayer that can use it, for cash.[165]

There are bonus credits for almost all of the credits in the IRA for projects that use domestic content, are in low-income or energy communities, and meet labour standards.[166] These incentives are designed to encourage domestic production and support communities affected by the energy transition.

(a) Production Tax Credits

The IRA introduced several new tax credits relating to the production of clean energy, including the Clean Hydrogen Production Tax Credit, the Advanced Manufacturing Production Tax Credit, the Nuclear Power Production Tax Credit, and the New Clean Electricity Production Tax Credit.[167]

The Clean Hydrogen Production Tax Credit created a new 10-year incentive for clean hydrogen production with four tiers ranging from a maximum hydrogen tax credit of USD $0.60 per kg of hydrogen for carbon intensities between 2.50 - 4.00, and USD $3.00 for carbon intensities between 0.00 – 0.45. To be eligible, projects must begin construction by 2033.[168]

The Advanced Manufacturing Production Tax Credit created a tax credit for the production of clean energy technology components that are produced by U.S. corporations. Eligible components include solar

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[162] *Ibid* at para 17.
[163] National Bureau of Economic Research, *Economic Implications of the Climate Provisions of the Inflation Reduction Act* (2023), online: <nber.org/papers/w31267> at page 9.
[164] *Ibid*.
[165] *Ibid* at page 10.
[166] National Bureau of Economic Research, *Economic Implications of the Climate Provisions of the Inflation Reduction Act* (2023), online: <nber.org/papers/w31267> [NBER Economic Implications of IRA] at page 10.
[167] Bipartisan Policy Center, "Inflation Reduction Act Summary: Energy and Climate Provisions" online (pdf): <bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/08/Energy-IRA-Brief_R04-9.26.22.pdf> [Bipartisan Policy Center, IRA Summary] at pages 3-5.
[168] Measured in kilograms of CO2 equivalent per kilogram of hydrogen.

components, wind turbine and offshore wind components, inverters, many battery components, and the critical minerals needed to produce these components.

The IRA also extended the existing production tax credit for renewable energy sources such as solar, wind, geothermal, biomass, landfill gas, municipal solid waste, hydropower, and marine and hydrokinetic facilities through to 2024, while introducing a new technology-neutral Clean Electricity Production Tax Credit (45Y) starting in 2025.[169] This tax credit offers a rate of USD 1.5 cents per kWh, offers a 10% bonus for using domestic materials and for facilities in energy communities, and increases certain credits to full value (they were previously halved).

(b) Clean Energy Investment Tax Credits

The IRA also amended and introduced several tax credits relating to clean energy investment.

The IRA extended the existing energy investment tax credit (the "**Energy IRA ITC**") through 2024 for various technologies, which will be replaced by a tech-neutral clean electricity tax credit in 2025.[170] It maintains a 30% credit for properties like solar, geothermal, wind, and several others constructed before January 1, 2025, and introduces a similar 30% credit for new technologies like energy storage and biogas. Additionally, a 30% credit is available for geothermal heat pump projects until 2033, after which it will decrease to 26% in 2033 and 22% in 2034. A 10% credit continues for microturbine projects until 2024. The legislation also included a 10% bonus for projects using domestically sourced materials and for those located in energy communities, defined as brownfield or fossil fuel sites.

The IRA also extended the existing 30% investment tax credit available for clean energy projects, to support the production and recycling of clean energy projects.[171] Further, it expanded the credit to include projects at manufacturing facilities committed to reducing their GHG emissions by at least 20%. This tax credit is funded at USD $10 billion and applies to a range of technologies, including low-carbon industrial heat, carbon capture, and energy efficiency systems. It also includes provisions for transferability.

The IRA established a tech-neutral investment tax credit, which will replace the existing Energy IRA ITC at the end of 2024, offering an emissions-based, flexible incentive available for various clean electricity technologies.[172] The Energy IRA ITC will provide a 30% credit on investments made during the year the facility is placed in service, along with additional bonuses for projects in energy communities, using domestic materials, and located in low-income or tribal areas. Taxpayers can choose between a Production Tax Credit and this Energy IRA ITC.

(c) Vehicle and Fuel Tax Credits

The new clean fuel production credit offers a two-year tax credit for producing low-carbon transportation fuels, with a maximum credit of USD $1 per gallon, or USD $1.75 per gallon for sustainable aviation fuel,

[169] Bipartisan Policy Center, IRA Summary, *supra* note 167 at page 4.
[170] *Ibid* at page 5.
[171] *Ibid* at page 7.
[172] *Ibid* at page 6.

depending on the emissions factor.[173] The IRA also extended incentives for second-generation biofuels and biodiesel through 2024. This credit amount begins at USD $1 per gallon if labour requirements are met, with increases available depending on the emissions and intensity of the fuel.[174]

With respect to clean vehicles, the IRA maintained the existing USD $7,500 credit for anyone purchasing a ***new*** electric, plug-in hybrid, or hydrogen fuel cell vehicle that meets specific conditions regarding the sourcing and assembly of vehicle components to encourage local production.[175] Further, a portion of the critical minerals and battery components must originate from North America or a U.S. free-trade partner, with the required portion increasing post-2024. USD $3,750 of the credit depends on the battery components and another USD $3,750 depends on the critical minerals.[176] Additionally, the individual's income and the vehicle's MSRP must not exceed certain limits.[177]

The IRA also provided a USD $4,000 credit for used electric vehicles that are over ***two years old*** and have a purchase price under USD $25,000, subject to the buyer meeting certain income requirements.[178] Additionally, it extended credits up to USD $1,000 for home electric vehicle charging for individuals and up to USD $100,000 for business installations, subject to labour standards.[179]

(d) Carbon Storage Tax Credit

The IRA extended the existing tax credit for carbon capture and direct air capture, known as the Carbon Capture and Sequestration Tax Credit (Section 45Q), which has existed since 2007 and provides an incentive for corporations to capture and store carbon underground.[180] It extended the construction deadline for projects to January 1, 2033, and increased the credit amount from USD $50 to USD $85 per ton for carbon capture and storage at industrial facilities and power plants using saline geologic formations. [181] It increased the credit amount from USD $35 to USD $60 per ton for utilization of captured CO2 and its precursor carbon monoxide to produce low and zero-carbon fuels, chemicals, building materials and other products, or for enhanced oil recovery, Finally, for direct air capture, the credit amount has increased from USD $50 to USD $180 per ton for storage and from USD $35 to USD $130 per ton for utilization or enhanced oil recovery. It also made the credit directly payable and transferable.

External modelers anticipate this will encourage significant investment in carbon management across both industrial and power sectors.[182] This is because the combined cost of carbon capture, transport, and storage varies greatly by application – usually, the more diluted the stream of CO2, the more expensive it is to

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[173] *Ibid* at page 7.
[174] NBER Economic Implications of IRA, *supra* note 166 at page 8.
[175] Glen Hodgson, "Game On: The Implications of the US Inflation Reduction Act for Canadian Competitiveness" (C.D. Howe Institute, 2023) [Hodgson].
[176] *Ibid.*
[177] *Ibid.*
[178] NBER Economic Implications of IRA, *supra* note 166 at page 9.
[179] *Ibid* at page 9.
[180] Graham Diedrich, "How will the Inflation Reduction Act impact forest and carbon management?" (22 August 2022), online (pdf): <canr.msu.edu/fccp/FCCP-ORL/IRA_analysis.pdf> [Diedrich] at page 3.
[181] *Ibid* at page 9.
[182] NBER Economic Implications of IRA, *supra* note 166 at page 7.

capture.[183] These projects also often already have very thin profit margins.[184] As such, developers must extract as much value as possible from the credit to finance the greatest number of carbon capture facilities.[185] Since the new 45Q credit is directly payable, developers without a sufficiently large tax liability to offset the credit against can opt to receive a fully refundable tax credit.[186] Before, they would have had to enter a tax equity partnership to essentially sell the right to use their tax credits to a larger investor in exchange for financing, introducing additional costs and reducing the appetite of investors for carbon capture projects.[187]

(e) Residential Energy Efficiency

The IRA maintained the existing credit for residential solar, wind, geothermal, and biomass fuel, and adjusts the project dates so a 30% credit applies for projects starting between 2022 and 2032, with the credit decreasing to 26% for projects starting in 2033 and 22% for projects starting in 2034.[188] The IRA also enhanced the existing credit for energy efficient home improvements, extending the credit through to 2032 and increasing the credit from 10% - 30%. It replaced the lifetime cap on credits with a USD $1,200 annual limit.

Individuals are projected to use almost USD $40 billion in tax credits for investments in clean energy and energy efficiency, including home solar, battery storage, and energy-efficient upgrades, with rebates varying by energy savings and household income.[189]

Individual taxpayers have limits on claims for certain investments, like USD $150 for a home energy audit and USD $2,000 for a heat pump, and on total annual credits.[190] However, there's no limit on the overall amount of credits.[191] Unlike other business-focused credits, there are no extra benefits for choosing specific types of labour.[192]

ii. Direct Expenditures

The IRA allocated over USD $20 billion to boost agricultural and forestry conservation projects, with a significant amount of these funds being flowed through existing programs.[193] The IRA also expanded the U.S. Department of Energy's loan capabilities by about USD $100 billion, creating a new Energy and

[183] Matt Bright, "The Inflation Reduction Act creates a whole new market for carbon capture" (22 August 2022), online: <catf.us/2022/08/the-inflation-reduction-act-creates-a-whole-new-market-for-carbon-capture/> at para 6.
[184] *Ibid* at para 9.
[185] *Ibid*.
[186] *Ibid*.
[187] *Ibid*.
[188] Bipartisan Policy Center, IRA Summary, *supra* note 167 at page 11.
[189] NBER Economic Implications of IRA, *supra* note 166 at page 8.
[190] *Ibid* at page 8.
[191] *Ibid*.
[192] *Ibid*.
[193] *Ibid* at page 11.

Infrastructure Reinvestment Program that aims to retool existing energy infrastructure. It also offers support for renewable energy adoption among farmers and rural landowners.[194]

Further, the IRA invested over USD $10 billion in energy efficiency programs, including grants for whole-house energy saving retrofit programs and for energy savings for other existing affordable housing programs.[195] It provided $5 billion for industrial decarbonization, supporting projects that reduce emissions in high-emission industries.[196]

Other notable investments include USD $27 billion for the Environmental Protection Agency's Greenhouse Gas Reduction Fund, which will award competitive grants on clean energy projects that benefit low-income communities.[197] The IRA also includes a Methane Emissions Reduction Program, which introduces a charge on methane emissions to encourage regulatory compliance.[198]

(a) Low Carbon Materials and Buildings

The IRA allocated USD $4.5 billion into federal investments for low-carbon materials in federal buildings and projects to promote sustainable practices and standardized environmental impact disclosures.[199] This includes:[200]

- USD $250 million to the Environmental Protection Agency (the "**EPA**") for developing standardized GHG emission declarations for construction materials.

- USD $100 million for the EPA, in collaboration with the Federal Highway Administration and General Services Administration (the "**GSA**"), to identify and label low-carbon materials for use in federal buildings and transport projects.

- USD $2 billion to offer a 2% incentive for federal transportation projects that use low-carbon construction materials, provided these materials cost the same or slightly more than traditional materials.

- USD $2.15 billion to the Federal Buildings Fund for GSA to acquire and install low-carbon building materials and products.

Additionally, forest management and biomass utilization are supported with USD $150 million in grants aimed at carbon removal and innovative uses of forestry residues.

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[194] *Ibid*.
[195] *Ibid*.
[196] *Ibid*.
[197] *Ibid* at page 12.
[198] *Ibid*.
[199] Diedrich, *supra* note 180 at page 4.
[200] *Ibid* at page 10.

(b) Energy Efficiency

In addition to the tax credits designed to incentivize investments that increase residential energy efficiency, the IRA allocated USD $4.3 billion through 2031 to the Department of Energy ("**DOE**") to assist state energy offices in administering a Home Energy Performance-Based Whole House Rebates ("**HOMES**") rebate program, which provides for comprehensive energy-saving retrofits in residential buildings.[201] Under the HOMES program, households can receive up to USD $14,000 in rebates, which includes various rebates for heat pumps, water heaters, electric stoves, electric panel wiring, and improving home insulation or sealant.[202]

Eligibility for these rebates requires household income to be below 150% of the area median income.[203] Additional financing is available for low- and moderate-income individuals earning less than 80% of the area's median income.

The IRA also provided USD $200 million through 2031 for the DOE to provide state energy offices with grants for the training of contractors to carry out energy efficiency upgrades.[204]

(c) Energy Innovation

The advanced industrial facilities deployment program will be managed by the Office of Clean Energy Demonstration OCED and is designed to fund projects that reduce emissions in energy-intensive industries such as iron, steel, concrete, glass, pulp, paper, ceramics, and chemical production.[205] The program offers USD $5.8 billion through grants, rebates, direct loans, or cooperative agreements, and requires a 50% non-federal cost share. It prioritizes projects that yield the greatest GHG reductions and benefits to the most people at a facility location.

The IRA is also funding infrastructure improvements at the DOE National Laboratories, which host facilities and equipment that advances technological development. It appropriates funding as follows: [206]

- USD $133.2 million for laboratory infrastructure projects;
- USD $321.6 million for facilities;
- USD $800.7 million for construction and equipment; and
- USD $294.5 million for energy sciences projects.

[201] *Ibid* at page 11.
[202] *Ibid*.
[203] *Ibid*.
[204] Diedrich, *supra* note 180 at page 11.
[205] *Ibid* at page 12.
[206] *Ibid*.

Additionally, USD $150 million is allocated to each of the DOE's Offices of Fossil Energy and Carbon Management, Nuclear Energy, and Energy Efficiency and Renewable Energy for infrastructure and general plant projects. [207]

The IRA also allocated USD $700 million to the DOE's advanced nuclear fuel availability program through 2026 to increase the availability of high-assay low-enriched uranium ("**HALEAU**") fuel for civilian domestic research, development, demonstration, and commercial use. [208] HALEAU allows U.S. advanced reactors to achieve smaller designs that achieve more power per unit of volume. It also allowed developers to maximize their system's life cores, increase efficiency, and achieve better fuel utilization.[209]

(d) Offshore Wind and Oil and Gas Systems

The IRA allocated USD $100 million for the development of infrastructure to support energy generated from offshore wind, available for the planning, modeling, analysis, and development of interregional transmission and optimized integration of energy generated from offshore wind.[210]

For oil and gas, the IRA increases the minimum offshore royalty rates from 12.5% - 16.66% and the onshore leasing bid from USD $2 to USD $10 per acre, effective until 2022.[211] It also raises the annual rental rates for new onshore oil and gas leases.[212]

The methane emissions reduction program is set to receive USD $1.55 billion in funding from the IRA to support various activities aimed at reducing methane emissions, including monitoring, source plugging, and environmental restoration. [213] The IRA establishes a cap on annual methane waste emissions at 25,000 metric tons of CO2 equivalent per facility (vented, released or flares), with penalties starting at USD $900 per ton in 2024 and increasing to USD $1,500 per ton by 2026 for emissions that exceed that limit.

(e) Community Investment

The IRA earmarked substantial funds to ensure there is investment in clean energy that benefits the community.

The legislation sets aside USD $1 billion for clean heavy-duty vehicles, with USD $400 million for rural communities to purchase heavy duty vehicles like school buses and garbage trucks.[214] The funds will also cover the associated maintenance, workforce training, and planning in relation to these vehicles.

The IRA introduced a "Low Emissions Electricity Program," providing USD $68 million in total, including USD $17 million for education, USD $17 million for technical assistance, and USD $17 million for

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[207] *Ibid.*
[208] *Ibid* at page 13.
[209] U.S. Department of Energy: Office of Nuclear Energy, "What is High-Assay Low-Enriched Uranium (HALEU)" (7 April 2020), online: <energy.gov/ne/articles/what-high-assay-low-enriched-uranium-haleu/>.
[210] *Ibid* at page 13.
[211] *Ibid.*
[212] *Ibid.*
[213] *Ibid.*
[214] *Ibid*.

partnerships within low-income and disadvantaged communities related to GHG emissions reductions.[215] An additional USD $18 million was also allocated to carry out activities of the program and ensure GHG emissions reductions are achieved from domestic electricity generation and use.

The IRA also provided the U.S. Department of Agriculture with USD $9.7 billion of financial assistance (including loans) for rural electric cooperatives to enhance the resiliency, reliability, and affordability of rural electric systems through either the purchase and deployment of, or improvements to existing, renewable and zero-emission energy systems.[216] The maximum award per project is capped at USD $970 million, and the award can not exceed 25% of the total project cost.

Moreover, the Rural Energy for America Program was allocated USD $2 billion until 2031 by the IRA to provide competitive grants and loan guarantees to farmers, ranchers, and rural small businesses for renewable energy systems or energy efficiency improvements.[217] More than USD $300 million is set aside to provide grants in order to promote underutilized renewable energy technologies, with the federal cost share for grants increased from 25% to a maximum of 50%.

(f) Permitting Process

The IRA provided funds to enhance the efficiency and speed of environmental reviews and the permitting process:[218]

- The DOE will receive USD $760 million to facilitate and accelerate the siting and permitting of interstate electricity transmission projects.

- The Federal Permitting Improvement Steering Council will receive USD $350 million under the Environmental Review Improvement Fund of the Fixing America's Surface Transportation Act, which seeks to streamline and accelerate the environmental review process.

- The EPA will receive USD $140 million to invest in staffing and equipment, and to develop a process that provides for more accurate and timely review. The National Oceanic and Atmospheric Administration will also receive USD $20 million for staffing and equipment for the same purpose.

- The EPA will also receive another USD $2.25 billion in funding for the purchase and installation of zero emission equipment at ports.

[215] *Ibid* at page 15.
[216] *Ibid* at page 16.
[217] *Ibid*.
[218] *Ibid*.

iii. Clean Energy Financing

(a) DOE Loan Programs Office

The IRA expanded the Loan Programs Office's ("**LPO**") eligibility and lending capacity for financing clean energy and environmental justice projects.[219]

The IRA provided an additional USD $40 billion of loan authority for eligible loan guarantees under the Title 17 Clean Energy Financing Program (the "**Title 17 Program**") through September 30, 2026, and allocated USD $3.6 billion in credit subsidy to support the cost of those loans.[220] The Title 17 Program finances projects across the U.S. that support the deployment of clean energy and the reinvestment in energy infrastructure, aiming to reduce GHG emissions and air pollution.[221] The IRA expanded the scope of the Title 17 Program to include state-supported projects and the reinvestment in legacy energy infrastructure. The Title 17 Program now offers four categories of project financing, each with their own specific eligibility criteria, including: (i) Innovative Energy; (ii) Innovative Supply Chain; (iii) State Energy Financing Institution Supported; and (iv) Energy Infrastructure Reinvestment. Through the Title 17 Program, borrowers can access either (i) direct loans from U.S. Treasury's Federal Financing Bank backed by 100% "full faith and credit" DOE guarantees; or (ii) DOE partial guarantees of debt. With the expanded loan authority provided by the IRA, the LPO states that it has received applications for billions in financing for previously ineligible energy projects across the U.S.[222]

The IRA also allocated USD $3 billion for the Advanced Transportation Vehicle Manufacturing Loan Program (the "**ATVM Loan Program**") through September 30, 2028, to support credit subsidy of direct loans under the ATVM Loan Program, estimated to provide an additional ~USD $40 billion in loan authority, allowing the LPO to finance more eligible projects.[223] The ATVM Loan Program has provided USD $8 billion in loans to support the production of over 4 million advanced technology vehicles and qualifying components.[224] In August 2023, the LPO has stated that since the passage of the IRA, it has offered nearly USD $13.5 billion in conditional commitments to various companies covering various aspects of the electric vehicle and stationary storage supply chain.[225] These projects aim to onshore and re-shore manufacturing for zero emissions vehicles and related technologies, potentially creating tens of thousands of jobs and displacing approximately 1.09 billion gallons of gasoline annually once fully operational.

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[219] U.S. Department of Energy: Loan Programs Office, "Transforming Clean Energy Financing and Supply Chains in the United States: LPO One Year After the IRA" (16 August 2023), online: <energy.gov/lpo/articles/transforming-clean-energy-financing-and-supply-chains-united-states-lpo-one-year-after> [US DOE, 1 Year After IRA] at para 2.
[220] *Ibid*.at para 5.
[221] US DOE, 1 Year After IRA, *supra* note 219.
[222] *Ibid* at para 7.
[223] *Ibid*.at para 9.
[224] U.S. Department of Energy: Loan Programs Office, "Advanced Transportation Financing" (last visited 27 May 2024), online: <energy.gov/lpo/advanced-transportation-financing>.
[225] *Ibid* at para 10.

Finally, the IRA provided the LPO's Tribal Energy Finance Program with USD $20 billion in lending authority.[226] The LPO facilitates tribal investment in energy-related projects by offering direct loans or partial loan guarantees to federally recognized tribes, including Alaska Native village or regional or village corporations, or to a tribal energy development organization that is wholly or substantially owned by such entities.[227]

(b) Greenhouse Gas Reduction Fund

The IRA provided the EPA with funds for grants to state, local, regional, and tribal programs that provide financial support to low and zero carbon technologies and can act as seed capital for regional, local, state, or tribal green banks that provide financial support for low or zero emission projects.[228] As part of this investment, the EPA launched three different programs:[229]

- National Clean Investment Fund program;
- Clean Communities Investment Accelerator; and
- Solar for All program.

Under the National Clean Investment Fund USD $14 billion program, the EPA has selected three applicants to create national financing institutions. These will offer affordable financing for nationwide clean technology projects, partnering with private investors and community organizations to deploy projects that mobilize private capital, save energy costs, improve air quality, create jobs, and deliver other benefits to millions of Americans.

The Clean Communities Investment Accelerator is a USD $6 billion program through which the EPA has selected five applicants to establish hubs that support community lenders in low-income and disadvantaged areas. These hubs provide funding and technical assistance, facilitating immediate project deployment and enhancing the long-term financing capabilities of hundreds of community lenders.

In the Solar for All USD $7 billion program, the EPA has selected 60 recipients, including states, territories, tribal governments, and nonprofits, to enhance distributed solar investment in low-income and disadvantaged communities. These grantees will use the funds to broaden existing solar programs or launch new nationwide Solar for All initiatives, enabling millions of low-income households to access affordable and clean solar energy.

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[226] *Ibid*.at para 11.
[227] U.S. Department of Energy: Loan Programs Office, "Tribal Energy Financing" (last visited 27 May 2024), online: <energy.gov/LPO/Tribal>.
[228] Bipartisan Policy Center, IRA Summary, *supra* note 167 at para 18.
[229] United States Environmental Protection Agency, "About the Greenhouse Gas Reduction Fund" (last modified 22 April 2024), online: <epa.gov/greenhouse-gas-reduction-fund/about-greenhouse-gas-reduction-fund>.

B. Absence of Carbon Pricing

The IRA heavily relies on financial incentives to influence consumer behaviour and industry trends (using mechanisms such as tax credits and subsidies) to adopt technologies that reduce emissions, rather than introducing nationally implemented mechanisms like nationwide carbon pricing.[230] Notably, thirteen U.S. states have some form of carbon pricing, however, the absence of a national policy creates a fragmented landscape with substantial gaps and inconsistencies.[231]

Economic studies have consistently shown that carbon pricing, through its influence on price signals, offers a more cost-effective and transparent method for transitioning to a low-carbon economy. [232] However, carbon pricing can be politically contentious and often becomes a focal point for criticism. Therefore, the decision to exclude a national carbon pricing scheme from the IRA was likely made early in the legislative process in an effort to ensure the IRA's passage in Congress.[233] The CD Howe Institute notes that although the IRA's subsidy-driven approach may still meet its objective of reducing GHG emissions, the strategy used may be less transparent and more costly to the federal budget, and could ultimately lead to higher economic inefficiencies and missed opportunities for GDP growth due to reduced efficiency.[234]

Internationally, the relevance of carbon pricing becomes even more pronounced, as countries increasingly implement carbon tariffs to combat "carbon leakage" – where businesses relocate operations to avoid stringent domestic climate policies.[235] The EU has already introduced some of these mechanisms.[236] Polls suggest 73% of Americans are in support of a carbon border adjustment mechanism similar to the EU.[237] As such, Canada's carbon tax might not only prove to be efficient in ensuring Canada is able to reduce emissions, but it could also prove to ensure Canada remains competitive internationally in the long term, as countries adopt these carbon tariffs. If the U.S. were to adopt carbon tariffs and Canada did not have a carbon tax, Canadian exports could face hefty duties, as they could be perceived as originating from a country with less stringent environmental controls.

C. IRA's Economic and Environmental Impacts in the U.S.

The IRA aims to build crucial domestic manufacturing and supply chains to compete globally in the clean energy sector, reduce air pollution in low-income areas, and cut household energy costs nationwide.[238] It

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[230] Hodgson, *supra* note 175 at page 4.
[231] Centre for Climate and Energy Solutions, "U.S. State Carbon Pricing Policies" (May 2024), online: <https://www.c2es.org/document/us-state-carbon-pricing-policies/>.
[232] Kevin M. Kennedy, "Putting A Price on Carbon: Evaluating a Carbon Price and Complementary Policies for a 1.5°C World," Issues Brief (2019) World Resources Inst.
[233] Hodgson, *supra* note 175 at page 4.
[234] *Ibid*. at page 4.
[235] Eric Van Rythoven, "A Conservative government may axe the carbon tax but then may have to bring it back" (23 May 2024), online (article): <policyoptions.irpp.org/magazines/may-2024/conservative-carbon-tax/> at para 6.
[236] *Ibid* at para 7.
[237] Mary Sagatelova, et al., "Americans Support a Carbon Border Adjustment" (20 June 2023), online (memo): <thirdway.org/memo/americans-support-a-carbon-border-adjustment> at para 4.
[238] NBER Economic Implications of IRA, *supra* note 166 at page 10.

has already created hundreds of thousands of jobs, launched numerous clean energy and transportation projects, and started reclaiming supply chains that had been previously running overseas.[239]

Notably, however, the IRA could cost the federal government much more than the estimated USD $370 billion, with some analysts asserting the real cost could range between USD $800 billion and USD $1.3 trillion.[240] This is because the IRA includes many uncapped tax credits that could extend over a decade or more, making the total expenditures potentially limitless.[241]

i. Economic Impact

(a) Investment and jobs in the energy sector

Between the IRA's enactment in August 2022 and April 2024, there have been 305 new projects announced, representing over USD $123 billion in private investments and creating over 105,454 jobs in the energy sector.[242] The projects announced broken down by sector include the following:[243]

- 68 new projects in battery/storage, representing USD $41 billion in investments and 23,946 jobs.
- 142 new projects in electric vehicles, representing USD $81 billion in investments and 61,123 new jobs.
- 16 new grid, transmission, and electrification related projects, representing USD $1.8 billion in investments and 2,348 new jobs.
- 17 new hydrogen related projects, representing USD $5.5 billion in investments and 3,488 new jobs.
- 69 new solar related projects, representing USD $13.8 billion in investments and 25,157 new jobs.
- 20 new wind related projects, representing nearly USD $3.0 billion in investments and 2,674 new jobs.
- 5 new projects in biofuel, energy efficiency, geothermal, and semiconductor related products, representing $11.4 billion in investments and 2,210 new jobs.

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[239] *Ibid* at page 37.
[240] Hodgson, *supra* note 175 at page 5.
[241] *Ibid* at page 5.
[242] E2, "Major Clean Energy Projects Announced Since the Passage of IRA" (26 April, 2024), online: <https://e2.org/announcements/>.
[243] *Ibid.*

ii. Environmental Impact

The U.S. has set a climate target of reducing GHG emissions by 50 - 52% from 2005 levels by 2030.[244] However, an independent analysis by the Rhodium Group indicates that, taking all provisions of the IRA into account, U.S. net GHG emissions are projected to decrease only by 32 - 42% within the same timeframe. [245] This projection is comparable to Canada's current policies which, as stated, are projected to reduce GHG emissions by 36% by 2030. Consequently, like Canada, the U.S. will need to implement additional measures to achieve its ambitious 2030 climate goals.

D. IRA's Economic Impacts on Canada

Canada is currently spending more than the U.S. on a proportional basis relative to GDP, indicating the federal government's current efforts to remain competitive with the U.S. However, from a policy perspective, Canada's approach lacks a streamlined regulatory framework for energy projects, is more segmented, and includes a variety of financial and regulatory tools.[246]

i. Economic Analysis of the Approaches

To contextualize Canada's economic response to the IRA, TD Economics published a comparative financial analysis in April 2023 (the "**TD Report**").[247] The TD Report estimates that Canada has committed a total of CDN $139 billion in spending since the 2021 budget, which accounts for 5% of its nominal GDP, significantly higher than the IRA's commitment of 1.5% of nominal GDP. This higher proportional spend is likely necessary for Canada, which needs to "punch above its weight" in order to remain competitive on the global stage, especially against industrial powerhouses such as the U.S., Germany, and China, which historically attract more capital and form "centers of innovation."[248]

The TD Report suggests that Canada has announced subsidies that were comparable or better than those offered in the U.S. on a sector-by-sector basis. Both the U.S. and Canada offer significant tax credits to encourage the adoption of renewable energy technologies, with the IRA allocating over USD $161 billion to this effort, representing over 40% of its total spend. In contrast, Canada's Budget 2023 committed CDN $26 billion to similar initiatives, which is a higher proportion of its GDP compared to the U.S. Additionally, both countries also provide substantial support for clean technology manufacturing, with the U.S. offering up to USD $41 billion in credits and incentives, and Canada committing approximately CDN $21 billion through various programs including ITCs and reduced corporate income rates.

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[244] Ben King, et al., "A Congressional Climate Breakthrough" (28 July 2022), online: <rhg.com/research/inflation-reduction-act/> at para 2.
[245] John Larsen, et al., "A Turning Point for US Climate Progress: Assessing the Climate and Clean Energy Provisions in the Inflation Reduction Act" (12 August 2022), online: <rhg.com/research/climate-clean-energy-inflation-reduction-act/> at para 2.
[246] Haley, *supra* note 5.
[247] Francis Fong, "A Sober Second Look : Taking Stock of the Competitiveness of Canada's Climate Policy Framework Relative to the U.S." (24 April 2023), online (pdf): <economics.td.com/domains/economics.td.com/documents/reports/ff/A_Sober_Second_Look.pdf> [TD Report].
[248] *Ibid.*

	CANADA	U.S.
Total Spend	5% of GDP	1.5% of GDP
Renewable Energy Technologies Spending	C$26 billion	$161 billion
Clean Technology Manufacturing Support	C$21 billion	$41 billion

There are, however, notable differences when comparing Canada's approach to the IRA. Canada employs a broad array of funding and regulatory tools, making its framework more complex than that of the U.S., which primarily relies on subsidies and direct funding.[249] Canada's policy framework incorporates carbon pricing and clean fuel regulations that pass costs to consumers to encourage environmentally friendly consumer behavior. This is complemented by subsidies and direct funding aimed at incentivizing investment in clean energy technology.

ii. IRA's positive impacts

Anecdotally, the IRA has facilitated some investment into Canada, especially investment relating to electric vehicle batteries. For example, one month after the law's enactment, South Korean battery manufacturer LG Energy Solution Ltd. secured agreements with three Canadian junior mining companies to obtain the necessary materials for electrical vehicle batteries.[250] A spokesperson for the company stated that the IRA helped to close this deal.[251]

Further, in November 2023, General Motors Co. ("**GM**") signed an agreement with Brazil-based Vale SA to purchase 25,000 tons of battery-grade nickel annually from Vale's planned facility in Bécancour, Quebec.[252] This nickel will supply the cathodes for batteries in approximately 350,000 electric vehicles ("**EV**") each year. Last year, GM representative cited the IRA as one of the reasons for entering into the agreement.[253]

The IRA helps to incentivize these investments through the tax credit of USD $3,750 that it offers for vehicles with batteries that use critical minerals either extracted or processed in countries that have a free-trade agreement with the U.S., or minerals that were recycled in North American facilities. Additionally, there is another USD $3,750 tax credit available for vehicles with battery components that were manufactured or assembled in North America.

iii. Challenges introduced by the IRA

However, again anecdotally, the IRA has caused some businesses to relocate to the U.S. or scrap projects in Canada.[254] For instance, in March, Parkland Corp., a fuel distributor based in Calgary, announced its

[249] *Ibid.*
[250] *Karim,* supra note 6 at para 5.
[251] *Ibid* at para 6.
[252] *Ibid* at para 10.
[253] *Ibid*.
[254] *Ibid* at para 19.

decision not to construct a separate renewable diesel facility at its Burnaby Refinery.[255] The company cited increasing costs and the IRA, which it claimed favoured U.S. producers, as reasons for this decision.[256]

Concerns that the IRA will have net adverse effects on the Canadian energy sector are widespread amongst many stakeholders in Canada. For example, the Explorers and Producers Association of Canada highlighted Canada's role as a leader in decarbonization efforts, however, it warned that Canada might lose its leadership to the U.S. due to the IRA's USD $850 million in incentives for methane monitoring and mitigation in the U.S. oil and gas sector.[257] Currently, Canada lags behind in the value offered by its methane-reduction related credits.[258] However, by 2030, the expected value of Canada's incentives will meet or exceed that expected in Texas.[259]

Further, Canada's Building Trades Unions noted that the legislation positions the U.S. as a dominant force in clean energy investment and production, with the IRA's incentives making the U.S. a highly appealing market for investment.[260]

The Canadian Chamber of Commerce expressed concerns that the IRA's increasing labour demand would challenge Canada's ability to attract and retain the skilled workers needed to further its goal of a clean economy.[261] This concern was shared by the Canadian Association of Energy Contractors and the Smart Prosperity Institute, which highlight the need to prevent Canadian energy firms and employees from relocating to the U.S. due to the new economic and employment opportunities promised by the IRA.[262]

The Canadian Chamber of Commerce also stated that the IRA's incentives aimed at boosting U.S. development and production of clean fuels and technologies might erode the competitiveness of Canadian businesses.[263] It pointed out specific supports in the IRA, such as tax credits for the production of hydrogen, biofuels, and other clean fuels, as well as technologies like CCUS. Moreover, it noted that the IRA includes "credit multipliers" for clean energy and technologies that satisfy certain domestic content and labour conditions.

Despite the criticisms, a closer examination reveals that Canada's financial commitment compared to the IRA is robust, suggesting that concerns may be somewhat misplaced. The TD Report suggests that Canada's competitive future on the global stage may hinge less on the size of production subsidies per unit and more on broader issues.[264] These broader issues include the complexity of accessing the programs Canada

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[255] *Ibid* at para 19.
[256] *Ibid*.
[257] House of Commons, *The United States' Inflation Reduction Act of 2022: Trade Impacts on Certain Canadian Sectors*, (May 2023) [House of Commons Trade Report] at page 14.
[258] Janetta Mckenzie and Scott MacDougall, *Comparing Canadian and American Financial Incentives for CCUS in the Oil Sector,* (March 2023) <https://climateinstitute.ca/wp-content/uploads/2023/03/comparing-canadian-and-american-incentives-ccus-oil-sector.pdf> at page 11.
[259] *Ibid* at page 11.
[260] House of Commons, *The United States' Inflation Reduction Act of 2022: Trade Impacts on Certain Canadian Sectors*, (May 2023) [House of Commons Trade Report] at page 14.
[261] *Ibid* at page 15.
[262] *Ibid*.
[263] *Ibid*.
[264] TD Report, *supra* note 247 at page 2.

currently has in place, regulatory obstacles, and a potential underemphasis on industries where Canada has a competitive edge. This nuanced view suggests that enhancing subsidy frameworks and regulatory processes could be key in leveraging Canada's strengths and ensuring it remains competitive in attracting investors, as compared to our southern neighbour.

IV. POLICY CONSIDERATIONS FOR BOOSTING CANADA'S COMPETITIVENESS IN LIGHT OF NET-ZERO EMISSIONS GOAL

A. Challenges in Current Policy Landscape

Canada's existing policies are insufficient to ensure that Canada meets its 2030 Paris Agreement commitments to reduce emissions by 40% - 45% below 2005 levels. This challenge is compounded by a national productivity crisis, highlighting the need for comprehensive strategies that not only ensure reductions in emissions, but also promote economic growth. Additionally, as briefly mentioned, there are broader systemic challenges that should also be considered as Canada evaluates potential changes to its policy.

i. Higher interest rates

A recent report by Wood Mackenzie highlights the challenges Canada's clean energy sector faces due to rising interest rates.[265] The report notes that clean and low-carbon energy projects, being capital-intensive and often subsidy-dependent, are more vulnerable to high borrowing costs compared to the more financially robust oil and gas sector. The substantial upfront costs for clean energy projects such as solar farms and wind turbines result in heavy reliance on financing for their development. These elevated costs could slow down the growth of the sector.

ii. Uncertainty in Regulatory Conditions

Similarly, a report by the Fraser Institute suggests that 100% of respondents from Newfoundland and Labrador, 93% from British Columbia, and 50% from Alberta agreed that uncertainty concerning environmental regulations acted as a deterrent for investment.[266] In comparison, in Oklahoma and Texas, only 6% and 11% of respondents, respectively, thought that regulations acted as a deterrent for investment.

Overall, Canada's regulations are complex, overlapping, and at times uncoordinated, which leads to higher costs and difficulties for businesses and investors in the energy sector.[267]

iii. Carbon leakage

Carbon leakage occurs where a business decides to move their projects or production from one jurisdiction with stringent policies, to another jurisdiction that has more lenient policies, mitigating the effects of stricter

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[265] High interest rates threaten rollout of green economy: Wood Mackenzie report - BNN Bloomberg.
[266] Julio Mejia and Elmira Aliakbari, "Red tape and uncertainty hurting oil and gas investment in Canada" (last modified 6 March 2024), online: <www.fraserinstitute.org/article/red-tape-and-uncertainty-hurting-oil-and-gas-investment-in-canada> at para 7.
[267] https://chamber.ca/policy-matters-regulatory-reform/

climate policies.[268] The Canadian federal government is currently using carbon pricing as its primary mechanism to curb emissions, while the U.S. does not have a national carbon pricing scheme. This may detract both Canadian and foreign businesses from investing in Canadian projects. The increase operating costs for businesses due to carbon pricing may result in lower profit margins and higher price goods for consumers.[269] Ultimately, the continually increasing carbon price may hurt the competitiveness of Canadian products in both domestic and foreign markets.[270]

Through an environmental lens, the Canadian carbon pricing system, especially in light of the lack of clarity and certainty in pricing, may push Canadian and foreign businesses to expand or relocate to other countries with less stringent policies.[271] Consequently, Canadian businesses could potentially fail to reduce their emissions to avoid Canadian policy. In making policy decisions, the federal government will need to consider the impact too strict of policy will have on deterring businesses and the potential shifting of negative environmental impacts to other jurisdictions.

iv. Electric Vehicle Sector Logistical and Resource Challenges

Despite the significant amount that the federal government has committed to the electric vehicle sector, layoffs in the industry suggest that there are broader challenges at play.[272] First, there are reports that by 2035, electric vehicle could raise electricity demand by 15.3% in Canada, which would require the construction of either 10 mega hydroelectric dams or 13 new 500-megawatt gas plants.[273] The timelines and costs associated with such projects are extensive. [274] For example, the construction of the British Columbia Site C dam took more than a decade to plan and comply with environmental regulations, and approximately another decade to construct. To date, the project is expected to cost upwards of $16 billion.[275]

Secondly, meeting the mineral needs for electric vehicle batteries poses a considerable challenge. Projections suggest that to fulfill global electric vehicle adoption mandates by 2030, including those in Canada and the U.S., the world would need 388 new mines.[276]

B. Policy Considerations

This paper has highlighted the myriad of policy measures and financial commitments that the federal government has announced since first signing the Paris Agreement in 2016. Those announcements make

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[268] CLEAR Center, "What is Carbon Leakage?" (24 April 2020), online: <clear.ucdavis.edu/news/what-carbon-leakage>.
[269] Chartered Professional Accountants Canada, "What the border carbon adjustment will mean for business – a primer" (last visited 27 May 2024), online: <cpacanada.ca/public-interest/public-policy-government-relations/policy-advocacy/climate-change-sustainability/border-carbon-adjustment-primer> at para 12.
[270] *Ibid* at paras 11-12.
[271] *Ibid* at paras 11, 20.
[272] EnergyNow Media, "EV Transition Stalls Despite Government Mandates and Billion-Dollar Handouts" (last visited 27 May 2024), online: <https://energynow.ca/2024/05/ev-transition-stalls-despite-government-mandates-and-billion-dollar-handouts/>.
[273] *Ibid.*
[274] *Ibid.*
[275] *Ibid.*
[276] *Ibid.*

great headlines and suggest that considerable work has been done to champion clean energy, stimulate economic growth, and respond to the IRA in a meaningful way. However, if those measures are going to prove effective (i.e., achieve their stated objectives in a real and meaningful way) then it may be prudent for Canadian policymakers to consider how they can better align, integrate, and action those policies objectives to better address the challenges that Canada's energy sector faces. This would include: (i) unifying and simplifying Canada's current regulations; (ii) simplifying Canada's green tax credits; (iii) developing a stronger national industrial strategy; and (iv) focusing on Canada's competitive advantages.

i. Unify and Simplify Policy Incentives and Regulations

The incentives and regulations stemming from Canada's current energy policy, especially in comparison to the IRA, are scattershot and complicated. Energy transition incentives and regulatory measures are widespread across different sectors of the economy including transportation, heavy industry, electricity generation, agriculture, construction, and others. Within each of these sectors, separate government agencies, community groups, environmental organizations, businesses, and other stakeholders are involved in developing and implementing policy and incentive programs, which has led to fragmentation in some areas and the duplication of effort in others.

Generally, little analysis has been done on the interaction between different policy measures. For example, where carbon pricing and tax credits are combined, carbon pricing reduces the size of the tax credit incentive required to incentivize decarbonization.[277] Carbon pricing on its own incentivizes a shift toward clean energy projects, therefore in combining carbon pricing with investment tax credits doubles down on incentivizing the same action. If a smaller tax credit is required, when combined with carbon pricing, to incentivize a shift toward clean energy, government funds allocated to the tax credit incentives may be better utilized in other areas. Equally, emissions reductions from projects that were incentivized through investment tax credits may result in an overflow of carbon pricing credits available under the federal OBPS.[278] Where an abundance of carbon pricing credits are available, heavy emitters are not incentivized to reduce emissions because they can make use of tradable credits instead, thus undermining the effectiveness of the carbon pricing system. This example, along with others, illustrate inefficiencies in Canadian energy policy where multiple incentives are either providing the same effects or counteracting each other. Such overlap and inefficiencies also exist due to a lack of policy uniformity among provinces and territories.

Further, the incentive programs and regulations under Canada's energy policy are accompanied by complex eligibility criteria, reporting requirements, compliance mechanisms, and differing applicability timelines. Understanding and navigating through these complex incentive programs increases cost and creates challenges for Canadian businesses, especially small-medium sized enterprises ("**SMEs**") that may lack the

[277] Marisa Beck, et al., "Seven recommendations to leverage public investment to help Canada compete in the global energy transition" (March 2023), online (pdf): <climateinstitute.ca/wp-content/uploads/2023/03/seven-recommendations-leverage-public-investment-canada-compete-global-energy-transition.pdf> at page 24.
[278] *Ibid* at para 8.

required resources and expertise.[279] Reducing the red tape around incentive programs and regulations should allow for greater uptake and adherence among Canadian businesses and would also have a positive impact on overall productivity in Canada.[280]

To even be considered for support from the CIB, a project must be new or have primarily new components, fall within one of the five designated categories (green infrastructure, clean power, public transit, trade and transportation, or broadband), be in the public interest, have a reasonable potential to generate revenue, utilize a proven technology at a technology readiness of level 8 or above, be able to attract private investment and commercial viability, and be fully or partially located in Canada.[281] Beyond these eligibility criteria, the project must also satisfy commercial due diligence requirements and will be analyzed against other projects based on market testing results, attractiveness to institutional and private investors, and deliverability including the proposed procurement strategy.[282] Such extensive criteria make it burdensome for SMEs to approach investment opportunities because they lack the resources to navigate the application, due diligence, and reporting requirements. Further, requirements of "commercial viability" and "being able to attract private investment" limit the reach of the CIB to projects that are already well positioned to access external financing and prevent less developed and earlier-stage projects from receiving the funding they need.

The structure and mandate of the Canada Growth Fund attempts to fill some of the gaps missed by other investment programs by focusing directly on projects that feature less mature technologies such as CCUS, hydrogen, and biofuels and SMEs that are scaling less mature clean technologies.[283] For a project to be considered for investment under the Canada Growth Fund, the project's potential impact must align with the Canada Growth Fund's mandate, the project should be likely to draw additional private and institutional investment that may not have been secured without the Canada Growth Fund's involvement, and the project must have a reasonable expectation of capital returns.[284] Though the Canada Growth Fund is a step in the right direction for developing technologies and SMEs that are typically disadvantaged in Canadian incentive programs, there is a risk that the Canada Growth Fund will conflate its mandate with the goal of increasing private and institutional investment.[285]

Finally, Canada's energy policy, especially in relation to carbon pricing, also lacks general clarity and fails to provide certainty for investors. Carbon pricing across the country does not uniformly apply to emitters due to differing application thresholds and exemptions. There is a lack of transparency as to the purpose of the differences between carbon pricing systems and why certain design choices for these systems were

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[279] Simon Gaudreault, "Canada's productivity: How to free up WAY more time and resources in our economy" (4 April 2024), online: <cfib-fcei.ca/en/research-economic-analysis/canadas-productivity-how-to-free-up-way-more-time-and-resources-in-our-economy> at paras 8-10.
[280] *Ibid* at para 13.
[281] Canada Infrastructure Bank, "About the CIB" (2024), online: < https://cib-bic.ca/en/about-us/faq/>.
[282] *Ibid*.
[283] *Ibid.*
[284] Canada Growth Fund, *2023 Annual Report* (31 December, 2023), online: < https://www.cgf-fcc.ca/content/documents/cgf-2023-annual-report.pdf>.
[285] Marisa Beck, et al., "Seven recommendations to leverage public investment to help Canada compete in the global energy transition" (March 2023), online (pdf): <climateinstitute.ca/wp-content/uploads/2023/03/seven-recommendations-leverage-public-investment-canada-compete-global-energy-transition.pdf>.

made. Such lack of clarity and transparency creates risk for investors interested in any carbon-related industry due to their inability to forecast future pricing and may lead to carbon leakage.

It may be beneficial for Canada to select or create a national advisory board, or expand the mandate of the Net-Zero Advisory Body, to specifically review, monitor, and compare the effectiveness of the federal, provincial, and territorial energy policies when considered in combination. In order to address the various downfalls of Canada's complex energy policy initiatives, there is a need for greater communication, coordination, and information sharing between government agencies and levels of government. Such coordination would decrease redundancies in energy transition incentives, help identify gaps in the existing policy regime, and increase the overall uniformity in Canadian energy policy. Further, greater transparency in policy design choices and decision making will also reduce risk and create price certainty for both Canadian and international investors.

ii. Tax Credit Clarity

Providing tax credit clarity for both domestic and international investors will help to incentivize investment in Canada's clean energy sector. The tax credits in the IRA are much simpler, and provide investors with long-term clarity and predictability, leading to billions of dollars of private sector investment since the IRA's enactment. The tax credits under the IRA are widely available, have long and defined timelines, and only allow tax credits to decline after emissions reduction targets are planned to be achieved.[286]

Conversely, the proposed Canadian ITCs present differing timelines and narrow and confusing eligibility criteria, hefty continuous disclosure requirements, and clawback provisions.[287] Potential investors may be unable to understand and therefore be discouraged from using these credits, in order to avoid the complicated requirements and overall uncertainty of their application. For example, under the Clean Electricity ITC, a competent jurisdictional authority is required to commit to achieving the federal government's net-zero electricity goal. Such requirement may be seen as a political overreach and may result in delays in uptake for this tax credit.[288] Further, many Canadian ITCs require project owners to pay third parties to measure their impact in order to prevent the credits from being clawed back, which is burdensome and increases overall costs for project owners. The tax credits in the IRA do not have such cumbersome continuous reporting obligations or clawback provisions.[289] Most of the credits offered by the IRA require either a thorough application where the taxpayer details the qualifying investment, while others simply require filing a tax form.

Ultimately, Canada should consider simplifying eligibility requirements and increasing the duration of tax credits in order to give investors certainty about their applicability in the long term.[290]

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[286] Business Council of Canada, *Measures to grow Canada's clean economy* (September 2023), online: <https://thebusinesscouncil.ca/publication/measures-to-grow-canadas-clean-economy/> [BCIC Paper].
[287] *Ibid.*
[288] *Ibid.*
[289] Bloomberg Tax, "What Qualifies for Business Energy Tax Credits?" (26 January 2024), online: <pro.bloombergtax.com/brief/business-energy-tax-credits/>.
[290] Francis Bradley, "Clean Electricity Investment Tax Credit Consultation" (6 September 2023), online (pdf): <electricity.ca/files/reports/english/Submission-Clean-Electricity-ITC.pdf> at 3-4.

i. Develop a Stronger Industrial Strategy

As previously set out, Canada's ability to incentivize and regulate within the energy sector is divided between the federal and provincial and territorial governments. This division of powers creates a unique challenge for Canada's competitiveness in the energy sector and has the potential to result in converse or counteracting policy initiatives. In order to ensure greater alignment between the federal, provincial, and territorial governments, the federal government must increase its consultation efforts and ensure there is intensive dialogue regarding potential policy measures.[291] Stronger communication between all levels of government will allow for more efficient implementation and greater effectiveness of energy incentives and policies.

Using findings from these communications, the federal government can put itself in a better position to develop and adopt a comprehensive national strategic industrial policy that caters to the needs, and addresses the concerns, of *all* Canadians. In this regard, "Industrial policy" refers to "government efforts to shape the economy by targeting specific industries, firms, or economic activities."[292] This can be achieved through subsidies, tax incentives, infrastructure development, and regulations.[293] In the first half of the 20th century, Canada's industrial policy advanced the development of railways, roads, airlines, and other essential urban infrastructure necessary for economic growth, and the U.S. has done the same.[294] Though the use of industrial policy declined into the 1980s and 1990s, Canada did use an industrial policy in its public, coordinated support, to develop Alberta's oilsands.[295]

Modern strategic industrial policy has evolved from its nationalist and protectionist roots and is often employed by countries to adopt innovation-focused strategies that seek to position their economies in global value-chains in an ongoing process of action, learning, and adaptation.[296] This approach is characterized by its flexibility and responsiveness, aiming to continually refine strategies through error detection and correction, rather than selecting and supporting specific "winners."[297] The principles of modern industrial policy are especially relevant in the context of a net-zero strategy, where policies and investments are tailored to meet the unique challenges of decarbonizing the economy using new technologies, which

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[291] International Energy Agency, "IEA Commends Canada's Competitive Energy Markets and Calls on the Federal Government to Strengthen its Efforts in Shaping Consensus on Important Energy Policy Issues" (31 January 2005), online: < iea.org> [IEA Commends Canada].
[292] Ruchi Agarwal, "Industrial Policy and the Growth Strategy Trilemma" (September 2023), online: <https://www.imf.org/en/Publications/fandd/issues/Series/Analytical-Series/industrial-policy-and-the-growth-strategy-trilemma-ruchir-agarwal>
[293] *Ibid.*
[294] Bentley Allan, "Taking a Strategic Approach to Industrial Transition: A Vision for Canadian Net-Zero Industrial Strategy" (2022), online: <https://transitionaccelerator.ca/wp-content/uploads/2023/05/White-Paper_Net-Zero-Industrial-Summit-Transition-Accelerator.pdf>
[295] Sara Hastings-Simon, *Industrial Policy in Alberta: Lesson from AOSTRA and the Oil Sands* (Calgary: University of Calgary School of Public Policy Publications, 2019), online: <https://www.policyschool.ca/wp-content/uploads/2019/11/Industrial-Policy.Hastings.-Nov-1-FINAL-USE-NOVEMBER-CORRECTED.pdf>
[296] Bentley Allan, "Taking a Strategic Approach to Industrial Transition: A Vision for Canadian Net-Zero Industrial Strategy" (2022), online: <https://transitionaccelerator.ca/wp-content/uploads/2023/05/White-Paper_Net-Zero-Industrial-Summit-Transition-Accelerator.pdf>
[297] *Ibid.*

inherently require adaptable and robust strategies to manage long-term political and economic uncertainties.[298]

Several Canadian organizations, including the Business Council of Canada, Canadian Manufacturers & Exporters, the Canadian Steel Producers Association, Global Automakers of Canada, and the Canadian Global Affairs Institute's Colin Robertson, have proposed the development and implementation of a national strategic industrial policy.[299] Canadian Manufacturers & Exporters expressed strong support for a comprehensive industrial strategy and recommended using the blueprint from the Industry Strategy Council's 2020 report to transition from a reactive to a proactive approach.[300] Canada has seen previous success with national strategies such as the Hydrogen Strategy for Canada, developed in 2020, which spurred investments into hydrogen production and use, and cemented Canada's competitive advantage in the hydrogen sector.[301]

Although Canada has committed a larger proportional amount per-capita on incentives for clean energy than the U.S. has offered under the IRA, the IRA remains a force to be reckoned with from an investment and capital allocation perspective. Further, Canada is still not on track to meet its emissions reduction target under the Paris Agreement.

These factors suggest that something further needs to be done to ensure Canada's federal policy initiatives are *effective*. [302] While Canada is making positive strides in shaping a competitive investment atmosphere as compared to the U.S., Canada's piecemeal approach does not indicate a clear industrial strategy, and may provide a contradicting message.[303] For example, Canada's recent hikes in the capital gain tax further the perception of Canada's "tax and spend" approach, whereby they offer tax credits on the one hand but tax industries on the other hand in order to fund those credits.[304] There does not appear to be a clear indication to market participants that Canada offers a friendly and easily navigable investment environment, unlike the IRA's clear, united goal.

Additionally, between 1981 and 2022 most countries in the Organization for Economic Cooperation and Development ("**OECD**") have outpaced Canada in regard to annual productivity growth. As of 2023, Canada ranked 18th compared to other OECD countries where productivity was measured as GDP per hour worked. In 2024, Carolyn Rogers, a senior deputy governor of the Bank of Canada, stated that the need to improve productivity in Canada has reached emergency levels. Canada is facing a productivity crisis that cannot be addressed without a clear, comprehensive, and unified strategy.

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[298] *Ibid.*
[299] House of Commons, *The United States' Inflation Reduction Act of 2022: Trade Impacts on Certain Canadian Sectors*, (May 2023) (Chair: Judy A Sgro) at page 23.
[300] *Ibid* at page 23.
[301] IEA Commends Canada, *supra* note 291.
[302] Steve Lafleur, "Industrial policy may have part of the answer to Canada's productivity problem," (24 April 2024) <https://policyoptions.irpp.org/magazines/april-2024/industrial-policy-productivity/>
[303] Robert Asselin, "Canada needs a bold industrial strategy," (8 December 2023), online: <https://thebusinesscouncil.ca/publication/canada-needs-a-bold-industrial-strategy/>.
[304] BNN Bloomberg, "2024 federal budget will inhibit growth and hold back Canada's potential," (17 April 2024), online: <https://www.youtube.com/watch?v=GZixw4xajU4&t=60s>

Canada should consider creating "net-zero competitiveness" quantitative targets which measure improvement, production, and development of technologies.[305] These targets should be tied to the national strategic industrial policy and serve as a way to guide the policy design at a sectorial level.[306] Targets should also "be supported by a clear supply chain strategy that seeks to build economic value in Canada, while identifying export opportunities."

Further, a comprehensive and clear modern industrial strategy should involve a "dynamic process of collaboration with the sector that integrates the tools into a clear strategy."[307] Global best practice in developing industrial policy highlights the importance of strong public-private partnerships in key sectors, facilitated by discussion forums and neutral intermediaries which establish collaborative clusters within specific industries to align strategy, policy, and funding.[308] The tax credits in the IRA are accompanied by a clear target to organize supply chains and *work directly with industries* to identify and solve challenges.[309] Canada should ensure its approach involves other stakeholders including industry, subject matter experts, the provinces, territories, and Indigenous communities.[310]

In our view, Canada has an immediate opportunity to integrate, refine, and adjust its policy framework to better balance environmental outcomes with economic growth and stability. This exercise should seek to set clear targets (not just those based on emissions reductions) and increase communication and collaboration among stakeholders. Target-setting can serve as a mechanism for Canada to measure policy effectiveness, and when they are falling short, for stakeholders to quickly collaborate, thereby allowing the federal government to course correct, reallocate resources, and support meaningful change.

ii. Focus on Canada's Competitive Advantages

Canada's Building Trade Unions and Clean Energy Canada recommended that the federal government should better leverage Canada's competitive strengths in its response to the IRA.[311] Canada should consider using a national industrial policy to do this.[312] The competitive advantages that Canada should focus on are detailed further below.[313]

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[305] Bentley Allan, "Taking a Strategic Approach to Industrial Transition: A Vision for Canadian Net-Zero Industrial Strategy" (2022), online: <https://transitionaccelerator.ca/wp-content/uploads/2023/05/White-Paper_Net-Zero-Industrial-Summit-Transition-Accelerator.pdf>
[306] *Ibid.*
[307] *Ibid.*
[308] *Ibid.*
[309] *Ibid.*
[310] *Ibid.*
[311] House of Commons, *The United States' Inflation Reduction Act of 2022: Trade Impacts on Certain Canadian Sectors*, (May 2023) (Chair: Judy A Sgro) at page 21.
[312] Cynthia Leach and Colin Guildmann, "Policy Insight: How Canada can win in the post-IRA economy," (21 March 2023), online: <https://thoughtleadership.rbc.com/policy-insight-how-canada-can-win-in-the-post-ira-economy/>.
[313] *Ibid* at para 9.

(a) Battery Supply Chain

The TD Report states that Canada is beginning to establish itself as a player in the global battery supply chain.[314] It estimates there have been CDN $17.4 billion in electric vehicle and battery plant investment announcements since March 2022, including CDN $2.7 billion to build active cathode material production, CDN $7.7 billion for battery production, and CDN $7 billion for electric vehicle production.[315] The TD Report notes that this compares well, on a proportional basis, to similar announcements in the U.S. (where, since the passing of the IRA, USD $52 billion in electric vehicle and battery manufacturing investments have been announced).

A key advantage for Canada as it relates to battery manufacturing is its proximity to critical minerals, making it an attractive location for investment. Bloomberg NEF ranks Canada second, only behind China – the global leader – and ahead of the U.S., in its annual battery supply chain ranking.[316] The research specifically noted Canada's access to raw materials, commitment to ESG, and Canada's "industry, innovation, and infrastructure" as key factors behind the high placement.[317]

(b) Carbon Capture

Canada can also leverage its existing competitive advantages through developing CCUS facilities. Canadian startups are well-established leaders in carbon management, and Canada's geological features are ideal for CCUS.[318] There is approximately 389 gigatons of prospective onshore storage capacity, located mostly in Saskatchewan, Alberta, and Manitoba, representing nearly 600 times the mass of Canada's total 2021 emissions.[319]

The oil sands and electricity/cogeneration sectors have immediate opportunities to utilize CCUS facilities due to their proximity to the geological storage points, and there being existing infrastructure that has already been developed. [320] However, these sectors also exhibit lower CO2 concentrations in emissions, which increases the associated costs. Therefore, developing open hub models which can connect several emitters to a centralized injection sites is necessary to enable economies of scale for CCUS development, and therefore lower associated costs.[321]

Additionally, carbon capture technologies have the potential to assist the decarbonization of other carbon-emitting sectors like oil and gas extraction (outside oil sands), manufacturing, and mining, helping these

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[314] TD Report, *supra* note 247 at page 6.
[315] *Ibid.*
[316] *Ibid* at page 7.
[317] *Ibid*.
[318] Cynthia Leach and Colin Guildmann, "Policy Insight: How Canada can win in the post-IRA economy," (21 March 2023), online: <https://thoughtleadership.rbc.com/policy-insight-how-canada-can-win-in-the-post-ira-economy/> [Leach] at para 15.
[319] Melissa Felder, Anastasia Hervas & Chris Noyahr, *Evaluation of carbon capture and storage potential in Canada* (April 2024) online: < https://cleanprosperity.ca/wp-content/uploads/2024/04/Evaluation_of_carbon_capture_and_storage_potential_in_Canada.pdf>
[320] *Ibid.*
[321] *Ibid.*

industries transition towards lower carbon outputs and contributing to overall emissions reductions.[322] Developing CCUS in these sectors may be worthwhile in some regions but would require additional infrastructure due to their distance from existing facilities. [323]

Investing in CCUS technology not only positions Canada to lower the emissions of the energy sector in Canada, but could also position Canada as a global leader in CCUS technology, allowing it the opportunity to export CCUS technology and expertise worldwide.[324]

(c) New Sectors

Canada must also expand beyond its existing sectors by targeting new ones, which would help mitigate some of the negative fallout we have already seen, such as certain businesses moving investments to the U.S., as Canada's existing energy sector transitions.[325] One area that Canada could focus on is developing the world's cleanest, most reliable, and efficient electricity grid, using its expertise in providing electricity in harsh climates.[326] Additionally, Canada should focus on building out its power grid infrastructure to ensure it can support the increased demand that electric vehicles are expected to generate.[327]

V. CONCLUSION

The IRA represents a transformative moment in the U.S.'s commitment to clean energy and environmental sustainability, with implications for Canada given its close economic and trade relationships with the U.S. Canada already spends more than what the IRA offers, on a proportional GDP basis, to incentivize investment in clean energy. Despite this, reports suggest that Canada's current policies are insufficient to hit its emissions reduction target, and the country is experiencing a productivity crisis. To address this, Canadian policymakers should consider further changes to the existing policies.

Canadian policymakers should consider improving the regulatory framework, clarifying Canada's tax credits, and implementing a more cohesive national strategy that leverages its geographic and technological advantages. Canada should streamline its regulations and simplify its complex incentives and regulatory requirements in order to make Canada more appealing to both domestic and international investors.

Additionally, deploying a unified national strategy, similar to that introduced by the IRA, would further attract investors. Such a strategy should focus on Canada's competitive advantages, offering Canada the potential to become a leader in areas such as CCUS, battery manufacturing, and clean electricity. This could help position Canada in the global value-chain as it relates to clean energy. Such policy adjustments could help ensure Canada reaches its emissions targets while also driving economic growth and innovation within the clean energy sector.

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[322] *Ibid.*
[323] *Ibid.*
[324] Leach, *supra* note 318.
[325] *Ibid* at para 20.
[326] Electrifying Canada, "Electrifying Canada" (last visited 27 May 2024), online: <https://transitionaccelerator.ca/initiatives/electrifying-canada/>.
[327] *Ibid* at para 23.