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CIBC CAPITAL MARKETS

EQUITY RESEARCH

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Budget 2023 – Aiming High, Hitting Low

Canada's Clean Energy Response Largely Disappoints

Sectors:
ESG, Portfolio Strategy, Energy

Our Conclusion

Budget 2023 unveiled little on the clean energy side, and missed on the most crucial part of Canada's decarbonization need – supporting the reduction of Oil and Gas emissions. No incremental fiscal incentives were provided for carbon capture. The much anticipated "carbon contract for difference" mechanism was unveiled in name only, with essentially no details included.

The most notable items were additional support for clean electricity, the creation of a clean energy manufacturing investment tax credit and carbon intensity thresholds set for a clean hydrogen investment tax credit.

Key Points

Budget 2023 was always going to be tricky for Finance Minister Freeland. Concerns around housing affordability, investing in public health care and responding to the U.S. IRA were all key items in the run-up to Tuesday, March 28. In the end, Canada unveiled somewhat lacklustre additional clean energy measures budgeted at $20 billion, relative to U.S. IRA credits conservatively budgeted at US$369 billion.

Trying to compete with the U.S., in aggregate, is futile. Canada is better served taking a targeted approach. However, the majority of Budget 2023 green funding went to clean electricity and supporting clean energy supply chains (batteries, critical minerals, etc.), totaling $6 billion and $5 billion respectively. Another $5 billion went to clean hydrogen.

While greening our grid and investing in emerging technologies (hydrogen) is part of our general strategy, Canada's electricity emissions only represent 8% of our total emissions. Canada's Oil and Gas emissions continue to be the largest source of emissions (28%), and relatively speaking, it is also the hardest to decarbonize.

Yet, major question marks on how Ottawa plans to address this reality still remain after yet another Budget release. Little was stated on how a carbon contract for difference mechanism would work, even though the Federal Government has been advertising it for nine months. What the oil and gas emissions cap will look like is also a major unknown. There was essentially nothing in Budget 2023 answering these important questions.

Ottawa could be awaiting the results of Alberta's General Provincial election on May 29 before it makes its next move. Until then, we are forced to wait as Canada's undeniable opportunity to be a global leader in carbon capture technology continues to pass us by.

All figures in Canadian dollars unless otherwise stated.

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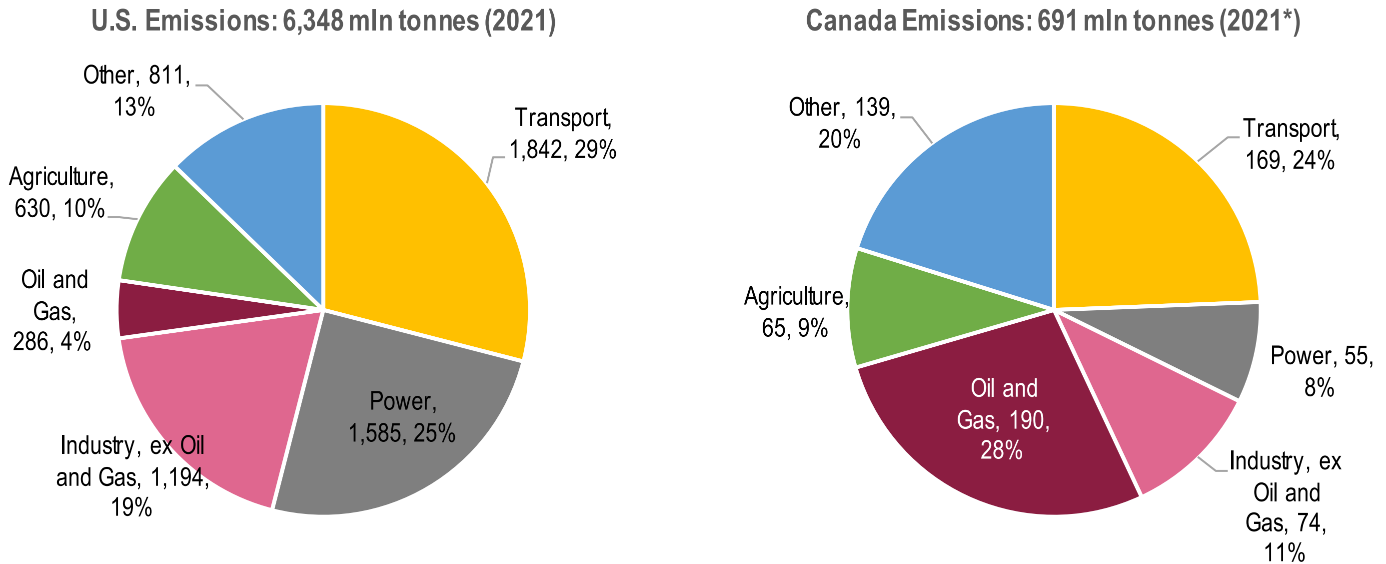
Building A Decarbonization Strategy That Works (For You)

Both the U.S. and Canada have ambitious 2030 emissions targets, but the nature of our challenge is different. Relatively speaking, the U.S. has the “easier” challenge in that its core decarbonization strategy is electrification. As can be seen in the pie chart on the left in Exhibit 1, the two largest emitting sectors in the U.S. are Transportation and Power, representing 55% of total U.S. emissions. Within Power, about 57% of emissions are generated from coal.

Exhibit 1: National Greenhouse Gas Emissions – U.S. And Canada By Economic Sector, 2021



Note: 2021 emissions data for Canada as modelled by Canadian Climate Institute. Source: U.S. EIA, Canadian Climate Institute and CIBC World Markets Inc.

For Canada, our situation is comparatively more challenging. Like the U.S., Transportation is a large emitting sector accounting for almost a quarter of total emissions. Unlike the U.S., however, Power emissions are much smaller. Almost 85% of Canada’s grid is already non-emitting (Hydro 60%, Nuclear 15%, Wind/Solar 8%). Rather, Oil and Gas is our largest source of emissions, and reducing Oil and Gas emissions is almost entirely dependent on implementing carbon capture.

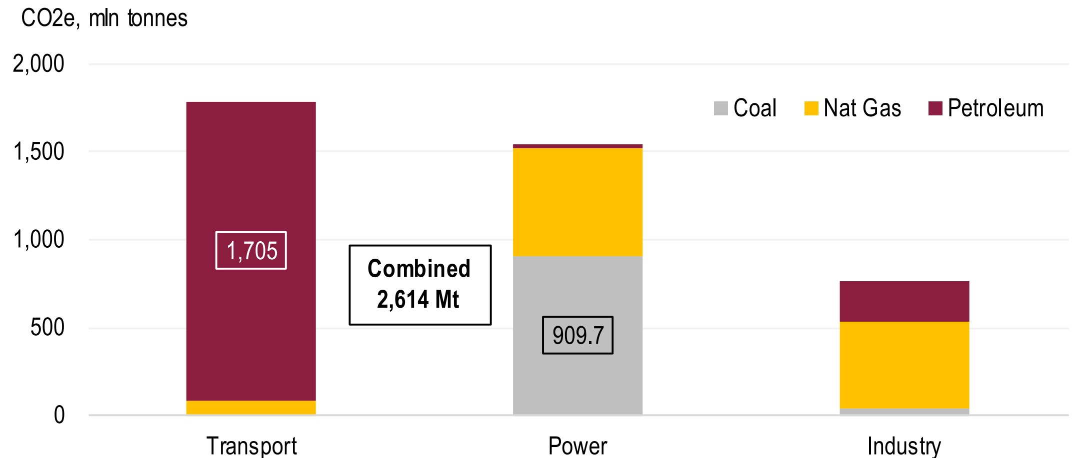
As we compare the countries’ decarbonization strategies, the U.S. pathway is relatively simple to understand. The recently passed U.S. Inflation Reduction Act (IRA) leans on two main levers to drive the country towards its 2030 Paris Target, namely

1. Drive EV adoption
2. Drive renewable production

To demonstrate why this is, we provide additional data in Exhibit 2 which shows total emissions from the combustion of fossil fuels (energy-related emissions) across America’s three largest emitting sectors – Transport, Power and Industry. As can be seen in the bar charts, 1.7 billion tonnes of carbon is emitted through the combustion of petroleum products and another 900 million tonnes of carbon is emitted from coal-generated power.

Using Bloomberg New Energy Finance’s EV Outlook, we estimate U.S. EV fleet adoption of about 28% in 2030 (post IRA). Assuming an incremental 15% improvement in fuel efficiency (clean fuel standards + improvement in automobile fuel consumption) by the end of the decade, it is not unreasonable to assume 40% to 45% less road emissions by 2030. Coupling this with a phase-out of coal-generated power implies a total emissions reduction of 1.6 billion tonnes by 2030. This represents a 27% decline on current emissions, *from these two alone.*

Exhibit 2: U.S. Energy-related Emissions – By Sector And Fuel Type, 2021



Note: Energy-related emissions refers to emissions from combustion of fossil fuels. Source: U.S. EIA and CIBC World Markets Inc.

In Canada, even if you assume a 40% reduction in Transport emissions, this reduces total emissions by about 68 million tonnes (10% of total). Canada's emissions pathway to 2030 is much more opaque, and unfortunately, not much clearer after Budget 2023. Within the biggest piece of our emissions pie (Oil and Gas), key questions still remain.

We are not trying to discount the number of green initiatives on which Ottawa is currently engaging. However, U.S. policy seems better positioned to focus on the key drivers behind their decarbonization needs. In Canada, the situation is less clear, which is telling, given the current U.S. administration had four years of President Trump to overcome on climate.

Finally, we note the uncapped nature of IRA tax credits means the "quoted" cost to taxpayers of US$369 billion is likely too low. Another U.S. forecast has estimated the true cost to taxpayers to be as high as US$1.2 trillion, in turn unleashing a further US$3 trillion in private capital for a total of over US$4 trillion of new investment.

Trying to compete with the U.S. is a futile strategy. A more targeted approach is required, but without a definitive strategy for Canada's biggest source of emissions (Oil and Gas), it is difficult to see how Canada can achieve its carbon goals.

In the rest of this report, we go over key decarbonization areas of focus for Canada, highlighting key items from Budget 2023, and also provide a comparison of Canada vs. U.S. IRA incentives already in place. All mentions of ITC refer to Investment Tax Credit, and all mentions of PTC refer to Production Tax Credit.

Renewables (Solar, Wind)

Budget 2023 includes a 15% Clean Electricity ITC for solar, wind, large-scale hydro, nuclear (large-scale and small modular reactors), electricity storage, and transmission lines across provinces. This "complements" the wider 30% Clean Technology Investment Tax credit unveiled in the Fall 2022 Fiscal update (which did not include large-scale hydro and large-scale nuclear), although it remains unclear what exactly "complementary" entails.

- Budget 2023 impact is $6.3 billion from 2024-2028, and an additional $19.4 billion from 2029-2035.
- Budget 2023 also mandates a further $20 billion from the Canada Infrastructure Bank to develop clean electricity and green infrastructure.

For comparison, a summary of the U.S. IRA tax credits for renewable electricity production is shown below in Exhibit 3.

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Exhibit 3: Comparable U.S. Inflation Reduction Act Tax Credits – Solar And Wind Power

Tax Credit Under U.S. IRA	Estimated Cost (US$ bln)	Description
45 Energy PTC	USD 51.0	**The renewable electricity production tax credit.** Provides a tax credit of 2.6 cents/kWh for electricity generated from wind, solar, closed-loop biomass and geothermal resources for projects placed in service prior to 2022. For projects after 2021, PTC rate is 2.75 cents/kWh at 5x rate*.
48 Energy ITC	USD 14.0	**The renewable electricity investment tax credit.** Provides project owners up to 30% in investment tax credits for qualifying energy property (solar equipment, qualified fuel cell, qualified microturbine, small wind, etc.)
45Y Clean Power PTC	USD 11.2	**Technology-neutral Clean Power production tax credit.** Credit is equal to 0.3 cents per kWh of electricity produced. Similar to the 45 Energy PTC, but 45Y credits are not specific to any one technology. Eligible facilities cannot emit GHGs and placed in service after December 31, 2024.
48E Clean Power ITC	USD 50.9	**Technology-neutral Clean Power investment tax credit.** Credit equal to 6% in any qualified facility or energy storage technology (5x under certain wage and apprenticeship requirements). Credit may be increased by 10% if located in an energy community and by a further 10% if domestic content standard is met. Facilities cannot emit GHGs and placed in service after Dec. 31, 2024.

Note: Estimated cost is per Congressional Budget Office. *Bonus rates of 5x if certain labour requirements are met.

Source: Bloomberg New Energy Finance and CIBC World Markets Inc.

Carbon Capture

Budget 2023 provided no additional fiscal support to development of Canadian carbon capture and sequestration. As it stands, we estimate the value of the current 50% ITC on Canadian capture and storage equates to about C$35/tonne, far less than what the U.S. IRA 45Q carbon credits propose (see Exhibit 4 for more detail).

With Budget 2023, Ottawa finally unveiled the use of a carbon contract for difference (CCfD) but only in name. No mentions were made as to the mechanism or reference price. In addition, Budget 2023 references a broad-based approach to CCfDs, which would complement CCfDs offered by the Canada Growth Fund. It is unclear as to how either of these mechanisms work, either independently or with one another.

Exhibit 4: Comparable U.S. Inflation Reduction Act Tax Credits – Carbon Capture

Tax Credit Under U.S. IRA	Estimated Cost (US$ bln)	Description
45Q Carbon Capture	USD 3.2	**The carbon capture production tax credit.** Provides a base rate of US$85/ton for permanent sequestration projects, and US$60/ton for capture injection (EOR) projects. Credits increase to US$180 per ton and US$130 per ton for Direct Air Capture (DAC) technologies for permanent storage and use as an injectant, respectively.

Note: Estimated cost is per Congressional Budget Office. Source: Bloomberg New Energy Finance and CIBC World Markets Inc.

Clean Energy Manufacturing / Supply Chain

Budget 2023 unveils a 30% ITC for investments in new machinery and equipment used to manufacture or process clean technologies, including critical minerals, renewable or nuclear equipment, energy storage and zero-emission vehicles. The proposal is likely in direct response to the U.S. IRA's 45X Advanced Energy Manufacturing production tax credit and 45C Energy Project investment tax credit, as shown below in Exhibit 5.

- Budget 2023 impact is $4.5 billion from 2023-2028 and $6.6 billion from 2029-2035

Exhibit 5: Comparable U.S. Inflation Reduction Act Tax Credits – Clean Energy Supply Chain

Tax Credit Under U.S. IRA	Estimated Cost (US$ bln)	Description
45X Advanced Energy Manufacturing	USD 30.6	**The clean energy manufacturing production tax credit.** Range of credits for manufacturers of eligible components within wind, solar, and battery storage, amongst others. Critical minerals, including certain rare earth metals are also eligible components. Section 45X credit not applicable to facilities applying Section 48C credits. Section 45X provides tax credits for domestically produced components.
48C Energy Project	USD 6.3	**The clean energy manufacturing investment tax credit.** Provides a tax credit up to 30% on eligible facilities that manufacture or recycle equipment related to renewable energy generation, energy storage, grid modernization, carbon capture and sequestration, low-emitting vehicles, renewable fuels, and others. Section 48C provides investment tax credits for purchasing and commissioning property to build manufacturing capacity.

Note: Estimated cost is per Congressional Budget Office. Source: Bloomberg New Energy Finance and CIBC World Markets Inc.

Hydrogen

Budget 2023 announces a Clean Hydrogen Investment Tax credit between 15% and 40% of eligible project costs. Canada already had plans for a 40% clean hydrogen tax credit, but details around carbon intensity thresholds have now been given. In addition, the Clean Hydrogen Investment Tax credit also extends a 15% tax credit to equipment needed to convert hydrogen into ammonia.

- Clean Hydrogen ITC is expected to cost $5.6 billion from 2023-2028, and an additional $12.1 billion from 2029-2035

On the ITC side, Canada's hydrogen incentive structure is more generous on both carbon intensity thresholds and the level of ITC relative to the U.S. However, the U.S. also provides production tax credits for the production of hydrogen. A comparison is shown in Exhibit 6.

Exhibit 6: Comparable U.S. Inflation Reduction Act Tax Credits – Hydrogen

United States			Canada	
Emissions intensity (gCO2/gH2)	Production Tax Credit (kgH2)*	Investment Tax Credit*	Emissions intensity (gCO2/gH2)	Investment Tax Credit*
< 0.45	$3.00	30%	< 0.75	40%
0.45 to < 1.5	$1.00	10%	0.75 to < 2.0	25%
1.5 to < 2.5	$0.75	7.5%	2.0 to < 4.0	15%
< 4.0	$0.60	6%	< 4.0	6%

Note: ITC and PTC rates shown above are maximums, subject to respective labour requirements in both countries.

Source: Bloomberg New Energy Finance, Budget 2023 and CIBC World Markets Inc.

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