

Appendix C:

Subnational incentives for low-carbon technology deployment

Hydrogen

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	Federal hydrogen ITC	ITC	30% of capital costs, potentially 40% for green hydrogen	Yes
Canada, Federal	CCUS Tax Credit	ITC	50% for CCUS, which applies to blue hydrogen	Yes
Canada, Quebec	Quebec Green H2 and bioenergy strategy		Unclear	No
Canada, Quebec	WCI Cap and Trade	Carbon market credit	\$0 for green	No
Canada, Alberta	TIER	Carbon market credit	Model assumes 95% of headline carbon price	No

Hydrogen

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Alberta	Alberta Innovates & Emissions Reduction AB	Grants	\$92M for 35 hydrogen projects	No
US, Federal	45V	PTC	\$0.60 base credit, 5x multiplier if prevailing wage and apprenticeship requirements are met, multiplied by emissions intensity factor between 20% and 100%. Anything that produces <0.45kgCO ₂ e/kg H ₂ gets the full PTC.	Yes
US, New York	Bill S3281	Tax credit	Bill appears stalled in committee.	Unknown
US, New York	Plug Power Project	Grants and subsidies	NY state likely provided some form of financial support to Air Products and PlugPower to set up hydrogen facilities in-state. The total amount of financial support is unclear.	Unknown

Carbon capture, utilization and storage

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	Emissions Reduction Alberta's Carbon Capture Kickstart Program	Grants	Variable; ~\$200M spent on CCUS so far in partnership with Alberta Innovates	No
Canada, Federal	Alberta Innovates	Grants	Variable, not limited to CCUS; \$43M across multiple projects to date	No
Canada, Quebec	TIER Sequestration Credits	Carbon market credit	Current assumption is 95% of federal headline price	No
Canada, Quebec	Petrochemicals Incentive Program	Investment Tax Credit	12% ITC for eligible capital costs after facility commences operations; proponents must apply; minimum \$50M investment; must use natural gas, NGL or petrochemical intermediaries	No
Canada, Alberta	Alberta Indigenous Opportunities Corporation	Grants	Up to \$1B for Indigenous led clean energy projects	No
Canada, Alberta	Sector-specific Industrial Energy Efficiency (SIEE) Grant Program	Grants (no longer operational)	\$50 in total; funds now exhausted	No
Canada, Federal	CCUS ITC for capture equipment	Investment Tax Credit	50% until 2030, 25% until 2040	Yes
Canada, Federal	CCUS ITC for transportation, use, storage	Investment Tax Credit	37.5% until 2030, 18.75% until 2040	Yes

Carbon capture, utilization and storage

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	Energy Innovation Program	RD&D funding	Unclear; capture funding is closed but utilization, storage and transport are or will be open for applications	No
US, Federal	45Q	Tax credit	Non-taxable entities and organizations, as well as certain businesses can opt for direct payments instead of tax credits. CCUS credit is \$17/tonne, \$12/tonne for EOR or utilization. Credits are \$36 and \$26, respectively, for direct air capture facilities. 5x multiplier for prevailing wage and apprenticeship requirements (\$180 and \$130).	Yes
US, California	California Low Carbon Fuel Standard	Carbon market credit	Working assumption is \$88/tonne in 2025 rising with inflation	No

Carbon capture, utilization and storage

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
US, Texas	Texas Economic Development Act, Chapter 313	Tax credit	Delegates to school districts the ability to provide ad valorem tax relief for major capital projects. Occidental's DAC joint venture with 1PointFive will get \$50 million in tax relief under this provision, for example.	No

Direct air capture

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Alberta	Emissions Reduction Alberta's Carbon Capture Kickstart Program	Grants	Depends; ~\$200M spent on CCUS so far in partnership with Alberta Innovates	No
Canada, Alberta	Alberta Innovates	Grants	Depends; \$43M scattered across multiple projects	No
Canada, Alberta	TIER Sequestration Credits	Carbon market credit	Current assumption is 95% of federal headline price	No
Canada, Alberta	Sector-specific Industrial Energy Efficiency (SIEE) Grant Program	Grant (no longer operational)	\$50 in total; funds now exhausted	No
Canada, Alberta	Alberta Indigenous Opportunities Corporation	Grants	Up to \$1B for Indigenous led clean energy projects	No
Canada, Federal	DAC ITC	Investment Tax Credit	60% of eligible expenses til 2030, 30% til 2040	Yes
Canada, Federal	Clean Fuel Regulation	Carbon market credit	Depends on the sector, current assumption is \$0 for cement CCUS	No
Canada, Federal	Energy Innovation Program	RD&D funding	Unclear; capture funding is closed but utilization, storage and transport are or will be open for applications	No

Direct air capture

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
US, Federal	45Q	Tax credit	Non-taxable entities and orgs and certain businesses can opt for direct payments instead of tax credits. CCUS credit is \$17/tonne, \$12/tonne for EOR or utilization. DAC credits are \$36 and \$26, respectively, for direct air capture facilities. 5x multiplier for prevailing wage and apprenticeship requirements (\$180 and \$130).	Yes
US, California	California Low Carbon Fuel Standard	Carbon market credit	Working assumption is \$88/tonne in 2025 rising with inflation	No
US, Texas	Texas Economic Development Act, Chapter 313	Tax credit	Delegates to school districts the ability to provide ad valorem tax relief for major capital projects. Occidental's DAC JV with 1pointfive will get \$50 million in tax relief under this provision	No

Solar and wind

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	Federal generation and storage ITC	ITC	15%, available as of the day of Budget 2024 for projects that did not begin construction before the day of Budget 2023, provided wages are paid at the prevailing level and that apprenticeship training opportunities are being created. ITC reduced to 5% if requirements are not met. Expires in 2035.	Yes
Canada, Federal	Canada Infrastructure Bank	Grants/Loans	The federal government has directed CIB to invest at least \$10 billion through its Clean Power priority area, and \$10 billion through its Green Infrastructure area. As described in Budget 2023 this positions CIB as "the primary financing tool" for supporting clean electricity generation, storage and transmission projects.	No

Solar and wind

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	Reduced corporate tax rates for clean energy	Tax reduction	For qualifying zero-emission technology manufacturers: tax cut from 15% to 7.5% (general corporate rate) or from 9% to 4.5% (small business rate)	Yes
Canada, Federal	Accelerated Investment Incentive (aka Accelerated Capital Cost Allowance)	Tax deduction	100% capital cost deduction in 2023 (75% in 2024-25, 55% in 2026-27; 15% thereafter on declining-balance basis). CCA deduction cannot exceed the income earned from specified energy property in a given year.	Yes
Canada, Federal	Canada Renewable Conservation Expense	Tax deduction	Category of deductible expenditures (feasibility studies, engineering, etc.) relating to development of eligible clean energy generation. Deductions can be made in full in the year incurred, carried forward indefinitely for use in future tax years or renounced under a flow-through share agreement	Yes
Canada, Alberta	TIER	Credit (ERC)	~\$150 by 2030, assuming credits rise in step (95% value) of Cprice	No

Solar and Wind

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Alberta	Emissions Reduction Alberta	Grant	\$55 million in financing for large and small businesses (95% subscribed)	No
Canada, Alberta	Clean Energy Improvement Program (CEIP)	Loan	Financing option for homeowners and businesses (repayment up to 25 years through property tax bill)	No
US, Federal	45/45Y	PTC	\$0.003/kWh w/5x multiplier for prevailing wage and apprenticeship requirements	Yes
US, Federal	48E	ITC	Base credit of 6% of capital expenses, 5x multiplier for prevailing wage and apprenticeship requirements	Yes
US, Federal	REAP (Rural Energy for America)	Grant - Up to \$2.025 billion for the RBCS Rural Energy for America Program (REAP), with \$303 million set aside for underutilized technologies and technical assistance. Funds will support renewable energy and energy-efficiency projects for more than 41,500 farms and small businesses.	Loan guarantees of up to 75% of project costs; grants up to 45% of project costs	No

Solar and wind

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
US, Federal	Renewable Portfolio Standard	Credit (TREC)	\$15-\$30/ MWh	Yes
US, California	State sales tax exemption	Tax exemption (solar only)	Commercial solar that also qualifies as "farm equipment" may be eligible for a 5.25% reduction	No

Sustainable aviation fuel

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, BC	Industrial OBPS	Carbon market credit	Unknown, consultation ongoing; model assumes ~95% of headline price	No
Canada, BC	BC LCFS	Carbon market credit	Benchmarked to California LCFS	No
Canada, Federal	Federal CFS	Carbon market credit	Industry assumption \$300/tonne	No
Canada, Federal	SD Tech Fund	Grants	\$550M fund, has awarded \$10M to 2 SAF projects	No
Canada, Federal	NextGen Biofuels Fund	Grants	\$500M, of which a portion could be made available to support SAF	No
Canada, Federal	Canadian Council for Sustainable Aviation Fuels	N/A	N/A	No
US, California	California Low Carbon Fuel Standard	Carbon market credit	Working assumption is \$88/tonne in 2025 rising with inflation	No
US, California	RINS (Renewable Fuel Standard)	Carbon market credit	Working assumption is \$168/tonne in 2023 rising with inflation	No
US, California	Clean Transportation Program	Grants	~\$100M/yr, mostly for EVs and hydrogen and biofuels; adding SAF is a possibility	No

Sustainable aviation fuel

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
US, Federal	40B	Production Tax Credit	We assumed \$0.60/litre; credit is \$1.25/gal for 50% blend, \$1.75/gal for net-zero fuel, sliding scale in between. Runs through 2024	Yes
US, Federal	45Z	Production Tax Credit	\$1.75/gal for SA, multiplied by emissions factor; runs through 2027	Yes
US, Federal	Alternative Fuel and Low-Emission Aviation Technology Program	Grant	\$297M	No

Batteries and components (Canada only)

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	Strategic Innovation Fund (SIF) & SIF Net Zero Accelerator Initiative	Grant & Loan		No
Canada, Federal	Tax Reduction for Zero-Emission Technology Manufacturing	Tax Reduction	50% reduction of corporate income tax for companies that derive >10% of their gross revenue in Canada (15% to 7.5% for large; 9% to 4.5% for small businesses). Phased out for taxation years beginning in 2029 and fully phased out for taxation years beginning after 2031.	Yes
Canada, Federal	Investment Tax Credit for Clean Technology Manufacturing	Tax Credit	30 per cent of the cost of investments in new machinery and equipment used to manufacture or process key clean technologies	Yes

Batteries and components (Canada only)

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	SDTC's Start-up and Scale-up funding	Grant	\$2-10m over 5 years, SDTC funds on average 33% (up to 40%) of eligible project costs. At least 25% of the eligible costs must be funded through private sector contributions (including in-kind). At least 50% of eligible project costs must be incurred in Canada, allowing for out-of-country demonstration to test market potential	No
Canada, Supercluster (NGO/Federal)	NGen - AI For Manufacturing Challenge	Grant	Total project costs should be between \$2M and \$8M. Eligible projects will be reimbursed at a funding rate of 35% of total eligible project costs. \$50 M program, part of the Pan-Canadian AI Strategy	No
Canada, Supercluster (NGO/Federal)	NGen - Automotive Zero-Emissions Manufacturing Challenge	Grant	Total amount of the project should be between \$500K and \$8 million. Eligible expenses will be reimbursed at a funding rate of 50%. \$20 M program. (intake now closed)	No

Batteries and components (Canada only)

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Quebec	Investissement Québec - Natural Resources and Energy Capital Fund	Equity	Variable	No
Canada, Quebec	Investissement Québec - Economic Development Fund		Variable	No
Quebec	Electrification and Climate Change Fund	Grants		No
Ontario	Ontario Made Manufacturing Investment Tax Credit	Tax Credit	10 per cent refundable Corporate Income Tax credit on qualifying investments in buildings, machinery and equipment for use in manufacturing or processing in the province. A corporation could receive a tax credit of up to \$2 million a year.	Yes
Ontario	Preferential small business Corporate Income Tax (CIT) rate of 3.2 per cent, extended eligibility in Budget 2023 to firms with up to \$50m in capital	Tax Reduction	The phase-out range would be extended from between \$10 million and \$15 million of taxable capital to between \$10 million and \$50 million of taxable capital.	Yes

Batteries and components (Canada only)

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Ontario	Ontario Vehicle Innovation Network (OVIN)	Grants		No
Ontario	Ontario Automotive Modernization Program	Grant	Up to 50% funding to a maximum of \$150,000 grant per project.	No
Ontario	Regional Development Program: Advanced Manufacturing and Innovation Competitiveness Stream	Grant & Loan	Up to 15% of funding to a maximum of \$5 million, interest free during the project period (up to four years). If you achieve your investment and job or upskilling targets, up to 30% of the loan (to a maximum of \$500,000) may be forgiven.	No

Mining (Canada only)

Jurisdiction, Level of Government	Program	Benefit type	Amount	Bankable?
Canada, Federal	Flow-through shares	Tax credit	Flow-through shares are common shares that allow prospecting and exploration companies to claim a tax deduction equal to the amount invested	Yes
Canada, Federal	Mineral Exploration Tax Credit	Non-refundable tax credit	15% of eligible expenses. Credit runs through 2024.	Yes
Canada, Ontario	Ontario Focused Flow-Through Share tax credit (OFFTS)	Tax credit	Provides eligible individual shareholders with a refundable tax credit of 5% of eligible Ontario exploration expenses.	Yes
Canada, various provinces	Mineral Exploration Tax Credit (METC)	Non-refundable tax credit	Several provinces offer exploration tax credits akin to the federal program. None are refundable.	No