Canada - Alberta Technology Innovation and Emissions Reduction Regulation

General Information

ETS Description

The Alberta Technology Innovation and Emissions Reduction (TIER) Regulation is the province's industrial carbon pricing and emissions trading system. The "Technology Innovation and Emissions Reduction Implementation Act" paved the way for the system, which was implemented in January 2020, replacing former regulations for carbon pricing that had been in place since 2007. It aims to help industrial facilities identify innovative ways to reduce emissions and invest in clean technology, supporting competitiveness and resource efficiency.

The TIER Regulation applies to: (1) large emitters, defined as those that have emitted equal to or more than 100,000 tCO_2e in 2016, or any subsequent year, or those that have imported more than 10,000 tonnes of hydrogen in 2023 or any subsequent year; (2) opted-in facilities with emissions under 100,000 tCO_2e/year but more than 2,000 tCO_2e/year; and (3) opted-in aggregate facilities that include two or more small conventional oil and gas facilities.

Covered entities must reduce their emissions intensity (emissions per unit of production) by a set percentage each year. Under the facility-specific benchmark methodology, a facility is required to reduce emissions intensity relative to the facility's historical production-weighted average emissions intensity. High performance benchmarks are set based on the average emissions intensity of the most emissions-efficient facilities. In most cases, a covered facility is subject to the less stringent of the two benchmarks, and both benchmarks tighten at a rate of 2% per year.

Covered entities that outperform their targets generate emissions performance credits (EPCs), which can be sold or used in future years. Entities must fulfil a compliance obligation for emissions that exceed the annual emissions limit, and the annual emissions limit is based on an emissions intensity benchmark. Those that exceed their limits are required to provide compensation by either:

1. purchasing EPCs from other regulated facilities;
2. paying into the TIER fund to purchase a fund credit for each tonne of excess emissions produced at the prescribed TIER Fund Price (CAD 80 [USD 58.42] per tonne in 2024, rising by CAD 15 [USD 10.95] each year until it reaches CAD 170 [USD 124.15] per tonne in 2030);
3. purchasing emission offset credits generated within Alberta under an approved offset protocol; or
4. using capture recognition tonnes or sequestration credits.

In 2022, TIER covered about 160 $MtCO_2e$ of emissions which represents about 60% of Alberta's total emissions for the year. The total emissions limit under the Alberta TIER Regulation is the sum of the annual emissions limits based on emissions intensity benchmarks for all covered entities. The limit is therefore not set *ex-ante* and is only known after the compliance period ends.

The TIER Regulation meets the Canadian federal stringency requirements for carbon pollution pricing system while achieving emissions reductions using a cost-efficient approach that is tailored to Alberta's industries and priorities.

ETS Status

in force

Jurisdictions

Alberta

Year in Review

The TIER system amendments, effective January 2023, saw full implementation across regulated facilities for the year 2024. Some of these amendments included:

- increase of carbon price/TIER fund price from 2023 to 2030 following minimum federal requirements;
- lower opt-in threshold for facilities;
- inclusion of flaring emissions in the total regulated emissions calculation for aggregate facilities;
- increased benchmark tightening;
- CCUS treatment and related new credit classes;
- changes to credit use limit and credit expiry; and
- Cost Containment Program updates.

Sectoral coverage

Agriculture and/or forestry fuel use
Mining and extractives
Industry
Power

Revenue usage

General budget, including debt reduction
Climate mitigation
Low-carbon innovation

Emissions & Targets

Overall GHG Emissions excl. LULUCF (MtCO2e)

269.9 $MtCO_2e$ (2022)

GHG reduction targets

By 2050: Carbon neutrality ambition (Alberta Emissions Reduction and Energy Development Plan)

Current Allowance Price (per t/CO2e)

Set TIER Fund price: CAD 80 (USD 58.42)

Size & Phases

Covered emissions (2022)

59.00%

Verified ETS Emissions

160.00$MtCO_2e$

GHGs covered

CO_2, CH4, N2O, HFCs, PFCs, NF3, SF6

Cap or total emissions limit

The total emission limit under TIER is the sum of the bottom-up facility-level emissions limits for all individual covered entities. However, the bottom-up emissions limits do not represent an absolute cap.

In the 2023 calendar year, TIER-covered entities emitted 164.7 $MtCO_2e$.

Sectors and thresholds

SECTORS: Mining and extractives, power, industry, forestry fuel use

INCLUSION THRESHOLDS: Coverage is mandatory for facilities with emissions equal to or exceeding 100,000 tCO_2e GHGs in 2016, or any subsequent year, or facilities that import more than 10,000 tonnes of hydrogen in 2023 or any subsequent year.

Facilities with annual emissions fewer than 100,000 tCO_2e may opt-in to the TIER system if they compete against a facility regulated under TIER, or have annual emissions greater than 2,000 tCO_2e and are in an emissions-intensive, trade-exposed (EITE) sector.

The owner or operator of multiple small conventional oil and gas facilities can also opt-in to the TIER system by applying to be covered as an aggregate facility.

Point of regulation

Point source

Type of entities

Facilities (stationary fuel combustion, industrial processes, venting, flaring, fugitive/other, on-site transportation, waste and wastewater, formation CO_2)

Number of entities

In the 2023 calendar year, TIER covered 537 facilities. The number of sites is orders of magnitude higher as the opted-in conventional oil and gas facilities aggregate numerous small operations.

Allowance Allocation & Revenue

Allowance allocation

Allocation is determined in relation to annual emissions limits based on emissions intensity benchmarks. Entities that emit less than their emissions limit receive a corresponding amount of EPCs for free from the Government of Alberta. This is similar to free allocation based on benchmarks. These compliance units can be banked or sold to entities that exceed their emissions limits.

Facilities with emissions above their limit must provide compensation by a prescribed deadline for each tCO_2e above the limit.

Emissions reduction requirements under the TIER Regulation are set using two benchmarking approaches:

1. High-performance benchmarks (HPBs) that recognize and reward the most efficient facilities in an industry, or
2. Facility-specific product benchmarks (FSBs) which set a reduction target relative to a facility's historic performance.

The reduction target is being tightened at a rate of 2% per year for FSBs and HPBs, including heat, hydrogen, and electricity, since 2023. For oil sands mining, in situ and upgrading, the annual tightening rate is 4% in 2029 and 2030.

Facilities comply with the least stringent of either the FSB or the HPB.

HPB approach: Benchmarks are set based on the average emissions-intensity of the most emissions-efficient facilities producing each benchmarked product over reference years. If fewer than ten facilities are producing a product, the benchmark is set based on the emissions intensity of the best-performing facility. Where a facility produces a product that has not received a HPB, the FSB applies.

FSB approach: Facilities are required to reduce emissions intensity relative to the facility's historical production-weighted average emissions intensity. FSBs are not applicable for industrial heat or hydrogen or for facilities in the electricity sector.

A facility that initiated the capture of CO_2 and holds the sequestration credit generated from the associated emission offset may apply to convert the sequestration credit into a capture recognition tonne. Capture recognition tonnes may only be used for the year in which the CO_2 was sequestered, and they cannot be traded. Capture recognition tonnes are deducted from the calculation of a facility's total regulated emissions and are therefore not subject to the credit use limit in TIER. Sequestration credits are similar to EPCs and can be traded, banked or used to meet a facility's compliance obligation. Sequestration credits expire six years from the year the sequestration occurred.

Total Revenue

CAD 4.5 billion (USD 3.5 billion) since the beginning of the program

CAD 564 million (USD 412 million) in 2024 for the 2023 compliance year
2024

Use of Revenues

Revenues (i. e., compensation payments of covered facilities that exceed their set emissions limit) are designated to the TIER Fund, which funds a variety of GHG reduction programs and low-carbon innovation projects and climate resilience (e.g., investment in carbon capture, utilization and storage [CCUS]).

Payments into a central fund for compliance purposes from 2007 to 2022 totaled approximately CAD 4 billion (USD 2.9 billion).

Fund investments in technology and innovation have been approximately CAD 2.8 billion (USD 2 billion) since 2009.

In total, Alberta has invested or committed approximately CAD 1.9 billion (USD 1.4 billion) to CCUS projects and programs since 2009.

Flexibility & Linking

Offset credits

The use of Alberta-based emissions offset credits is allowed. The eligibility criteria for these credits are set in the TIER Regulation, the "Standard for GHG Emission Offset Project Developers", and the "Carbon Offset Emission Factors Handbook".

The government approves eligible project types through the development of methodologies (quantification protocols) for the generation of Alberta emission offset credits. A quantification protocol outlines the eligible activity or activities and provides monitoring, measuring, and quantification procedures for the emission or net sequestration reductions resulting from the implementation of an eligible activity.

Emission offsets created using the carbon capture and storage (CCS) or enhanced oil recovery quantification protocols may be converted at the request of the emission offset project developer to sequestration credits. This conversion cannot be undone. Sequestration credits can be traded, banked or used to meet a facility's compliance obligation. These credits expire six years from the year the sequestration occurred. Sequestration credits are eligible for stacking with the federal Clean Fuels Regulation, meaning that the same activity can generate credits both in TIER and the CFR.

QUALITATIVE LIMIT: High-level criteria for emissions offset projects include, but are not limited to, that the emission reduction or net sequestration activity:

- must occur in Alberta;
- must meet additionality requirements (including legal additionality);
- must result from an action taken that is not required by law;
- must result from action taken and occurring after January 2002;
- must be real and demonstrable;
- must be quantifiable and measurable using replicable techniques; and
- must not have reduced the total covered emissions of a TIER facility.

QUANTITATIVE LIMIT: The use of emission offset credits and EPCs to meet a facility's total compliance obligation was limited to 60% in 2023 and increases by 10 percentage points annually until it reaches 90% in 2026. The expiry length for offsets is set at six years including the reduction year.

Transactions between buyer and seller are managed outside the Alberta Emissions Offset Registry; the registry is a tracking and listing service.

7.2 million credits were surrendered for compliance in 2023. As of the end of 2024, over 67 million offset credits had been retired for carbon pricing compliance obligations in Alberta since 2007, with a further 24 million credits available in the market. Credits stem mainly from activities such as agricultural management, renewable energy generation, CCUS, and methane reductions from pneumatic devices, among other eligible activities. Over 400 carbon offset projects have been registered since 2007, and 18 different carbon offset protocols are available.

Banking and borrowing

EPCs can be banked, transferred, or retired by facilities subject to the TIER Regulation to meet their reduction requirements. The expiry length for EPCs varies based on reduction year and ranges from five to eight years. Borrowing is not allowed.

Links with other Systems

The TIER system is not linked with any other system.

A subset of TIER offset types are recognized as compliance units under the Canadian (federal) output-based pricing system.

Some sequestration credits generated in the TIER system allow projects to also be recognized under the Canadian (federal) Clean Fuel Regulations.

Covered facilities can become eligible for certain exemptions from the Canada federal fuel charge.

Other carbon pricing instruments in the jurisdiction

Domestic offsetting mechanism: Alberta Emission Offset System

Carbon tax: Canada Federal Fuel Charge

Compliance

Compliance mechanism

Covered entities must surrender one compliance unit per tCO_2e that exceeds the facility's annual emissions limit.

The five compliance options under the TIER system are:

- On-site emission reductions;
- Use of EPCs (produced and traded by facilities that exceed their emission reduction obligations);
- Use of Alberta-based emissions offset credits • Use of Alberta-based sequestration credits; and
- Purchase fund credits by paying into the TIER fund at the prescribed price, which is equivalent to the Canadian federal minimum carbon price of CAD 95 (USD 69.38) per tCO_2e for the 2025 compliance year and rising annually by CAD 15 (USD 10.95) to reach CAD 170 (USD 124.15) per tCO_2e in 2030.

Maximum proportion of compliance that can be met with credits: 70% of a facility's total compliance obligation in 2024, increasing by ten percentage points per year until it reaches 90% in 2026.

Compliance Period

One year.

Monitoring, Reporting, Verification (MRV)

REPORTING: All facilities are required to submit verified annual compliance reports yearly by the end of June of the following year. Facilities with emissions in excess of 1 million tCO_2e per year are also obliged to submit an annual compliance forecasting report.

VERIFICATION: Reports must be verified by a qualified third-party assurance provider.

FRAMEWORK: The rules for reporting GHG emissions are outlined in the TIER Regulation and "Alberta Greenhouse Gas Quantification Methodologies".

Penalties and enforcement

If a covered entity does not meet its compliance obligation, the maximum amount of the fine can be up to CAD 400 (USD 292.10) for every tCO_2e by which it exceeds the allowable emissions for the entity. Fines are limited to CAD 50,000 (USD 36,513) for individuals and CAD 500,000 (USD 365,134) for corporations.

Market Regulation

Market Stability Provisions

TIER FUND

Instrument type: Set price or set price trajectory

Functioning: To compensate for emissions exceeding the facility's annual emissions limit, covered entities can purchase and surrender fund credits by paying into the TIER Fund at the prescribed TIER Fund price. The TIER Fund price, which functions as a price ceiling, is CAD 95 (USD 69.38) per tCO_2e for the 2025 compliance year; it will increase by CAD 15 (USD 10.95) per year, reaching CAD 170 (USD 124.15) per

tCO_2e in 2030.

Market Design

MARKET PARTICIPATION: Compliance entities including mandatorily and voluntarily covered entities (for inclusion thresholds see 'Sectors and Thresholds' section.)

MARKET TYPES:

Primary: Compliance units are currently not auctioned.

Secondary: Covered entities may purchase EPCs from other regulated entities that have outperformed their compliance obligation. Transactions of EPCs are conducted via the Alberta Emission Performance Credit Registry (EPCR), which also handles the allocation, transfer, and retirement of EPCs. Transactions of offset credits and sequestration credits are conducted via the Alberta Emissions Offsets Registry.

LEGAL STATUS OF ALLOWANCES: EPCs are considered revocable licenses.

Other Information

Institutions involved

Government of Alberta, Alberta Environment and Protected Areas: Responsible for establishing the regulatory framework of the TIER system, enforcement of the regulation, and allocation of EPCs.

Alberta Carbon Registries: Comprises the Alberta Emission Performance Credit Registry, which handles the allocation, transfer, or retirement of EPCs, and the Alberta Emissions Offset Registry, which handles the registration and transactions of emission offset credits.

Both registries are operated by CSA Group in coordination with the Government of Alberta. The CSA Group provides the infrastructure and public transparency for both registries.

Regulatory Framework

Emissions Management and Climate Resilience Act (EMCRA)

Technology Innovation and Emissions Reduction Regulation (TIER Regulation)

TIER information page

Order in Council 403/2022 – TIER Regulation Amendments

Alberta Emissions Reduction and Energy Development Plan

Standard for developing TIER benchmarks

Alberta's greenhouse gas emissions reduction performance

Alberta industrial GHG compliance information

Alberta Greenhouse Gas Quantification Methodologies

Evaluation / ETS review

The Government of Alberta completed its latest review of the TIER Regulation in December 2022. The TIER Amendment Regulation came into force at the beginning of 2023 and will stay in place until 2030. An interim review of the TIER regulation must be completed by the end of 2026.

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