

TIER Regulatory System Amendments

Overview of system amendments

Environment and Protected Areas

January 23, 2023



Agenda

- Overview & Context
- TIER Regulation amendments and updates to related Standards:

TIER Fund Price Schedule

Emissions Coverage Changes

TIER Benchmark stringency

CCUS Credit Classes

Cost Containment Program

Negative Allowed Emissions

Credit Use Limit

Credit Expiry

Opt-in Threshold

Biomass Emissions

Offsets System Changes

- Questions and Discussion

Overview and Context

TIER Context

- Technology Innovation and Emissions Reduction (TIER) Regulation changes take effect January 1, 2023.
- The review of the TIER regulatory system was based on engagement feedback solicited from stakeholders in summer 2022.
- Amendments are provided for the 2023 – 2030 period.
 - Interim review of the TIER regulation by December 31, 2026.
- Continuity of the TIER regulatory system provides consistency.

TIER Revisions Overview

- The TIER regulatory system has been updated in 4 main areas:
 1. TIER fund price
 2. Emissions coverage
 3. Benchmarks and tightening
 4. Compliance flexibility and carbon markets
- These changes, along with other streamlines and changes to the relative Standards were made In order to meet the federal benchmark criteria, and modernize the TIER regulation for the 2023 – 2030 period.

TIER Fund Schedule

- A Ministerial Order has been published for the 2023 – 2030 TIER fund price.
- Price certainty is maintained for the 2023 – 2030 period.

Year	2023	2024	2025	2026	2027	2028	2029	2030
Fund Price (\$/tonne)	65	80	95	110	125	140	155	170

Emissions Coverage - Flaring

- To December 31, 2022, only stationary fuel combustion was considered in benchmark calculations for aggregate facilities.
- For 2023 onwards, aggregate FSBs and compliance reports will include flaring emissions
 - Benchmarks for 2022 compliance reporting are still under development
 - New benchmarks that include flaring will be issued in 2024 for the 2023 compliance period.
- Flaring reduction target set at 10% in 2023, tightening at 2% annually.
- Venting and fugitive emissions are not considered for aggregate benchmark setting under TIER.
- Quantification methodologies for flaring will be published for stakeholder review and comments later this year.

$$FSB = \frac{\sum_{y=1}^z \sum_{c=1}^r [(E_{SFC_{c,y}} + E_{CO2_{c,y}}) \times (1 - RT_Y) + E_{FLR_{c,y}} \times (1 - RT_{Y,F})]}{\sum_{y=1}^z \sum_{c=1}^r P_{c,y}}$$

Opt-In Threshold

- Opt-in threshold lowered from 10,000 tonnes CO₂e in 2022 to 2,000 tonnes CO₂e in 2023
- This change is designed to allow more Alberta industries to benefit from the TIER system:
 - TIER Regulation provides exemption from the federal fuel charge
- Opt-in applies to facilities in Emissions-Intensive, Trade Exposed (EITE) sectors

Biomass Emissions

- Starting January 1, 2023, biomass CO₂ is excluded from the calculation of imported and exported CO₂.
 - This provides consistent treatment as biomass emissions were already excluded from calculation of direct emissions.
 - Similar to direct emissions, imported and exported biomass CO₂ will must still be reported.

Benchmark Calculations (LFE and Opt-In)

- Benchmark calculations are updated for the 2023 compliance year.
- Compliance reports for 2022 are due in June 2023 using existing FSBs.
- Any facility applying for a new FSB or for a review of an existing FSB must make an application no later than September 31, 2023

$$FSB_{j,Y} = FSB_{tightening,j} \times (1 - \mathbf{RT}_Y) + FSB_{non-tightening,j}$$

$$FSB_{tightening,j} = \frac{1}{\sum_{F=1}^g P_{j-F}} \times \sum_{F=1}^g TRE_{j-F} - IP_{Generated,j-F} - EE_{j-F} + E_{heat\ used,j-F} + E_{H2\ used,j-F}$$

$$FSB_{non-tightening,j} = \frac{1}{\sum_{F=1}^g P_{j-B}} \times \sum_{F=1}^g IP_{Generated,j-F} + E_{electricity\ used,j-F}$$

$$E_{heat\ used} = (H_{cogeneration} + H_{import} - H_{export}) \times \mathbf{0.06299}$$

$$E_{H2\ used} = (H2_{import} - H2_{export}) \times \mathbf{9.068}$$

$$E_{electricity\ used} = (Elec_{self-generated} + Elec_{import} - Elec_{export}) \times HPB_{electricity}$$

Constants used in calculation of $E_{heat\ used}$ and $E_{H2\ used}$ because they are included in the tightening portion

Benchmarks - Reduction Target

- Reduction Target (RT) is being increased at a rate of 2% per year starting in 2023
- Oil Sands facilities will be subject to 4% annual tightening in 2029 - 2030
- Reduction target will apply to FSBs and HPBs, including heat, hydrogen, and electricity

Reduction Target	2023	2024	2025	2026	2027	2028	2029	2030
FSB - General	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.28
FSB – Bitumen - Oil Sands In Situ	0.14	0.16	0.18	0.20	0.22	0.24	0.28	0.32
FSB – Bitumen - Oil Sands Mining; Upgrading	0.20	0.22	0.24	0.26	0.28	0.30	0.34	0.38
HPB - General	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16
HPB – Bitumen - Oil Sands In Situ	0.02	0.04	0.06	0.08	0.10	0.12	0.16	0.20
HPB – Bitumen - Oil Sands Mining; Upgrading	0.08	0.10	0.12	0.14	0.16	0.18	0.22	0.26
FSB – Aggregate Stationary Fuel Combustion	0.12	0.14	0.16	0.18	0.20	0.22	0.24	0.26
FSB – Aggregate Flaring	0.10	0.12	0.14	0.16	0.18	0.20	0.22	0.24

Draft High Performance Benchmarks

Name	Non-Tightening Portion	Total HPB								
		2022	2023	2024	2025	2026	2027	2028	2029	2030
Ammonia	1.224	1.770	1.758	1.746	1.735	1.723	1.711	1.699	1.688	1.676
Ammonium Nitrates	0.07455	0.1468	0.1448	0.1428	0.1408	0.1388	0.1368	0.1348	0.1328	0.1308
Bitumen - Oil Sands In Situ	0.01692	0.2975	0.2916	0.2856	0.2797	0.2737	0.2678	0.2618	0.2502	0.2387
Bitumen - Oil Sands Mining	0.03099	0.1957	0.1918	0.1877	0.1835	0.1794	0.1753	0.1712	0.1635	0.1559
Canola Oil - Crude	0.03783	0.1140	0.1118	0.1095	0.1072	0.1049	0.1026	0.1003	0.09807	0.09579
Cement	0.5593	0.7758	0.7704	0.7649	0.7595	0.7541	0.7487	0.7432	0.7378	0.7324
Coal - Bituminous	0.006892	0.07228	0.07083	0.06938	0.06794	0.06649	0.06505	0.06360	0.06216	0.06071
Coal - Sub-bituminous	0.001870	0.01248	0.01223	0.01198	0.01173	0.01148	0.01123	0.01098	0.01073	0.01048
Electricity	0	0.3700	0.3626	0.3552	0.3478	0.3404	0.3330	0.3256	0.3182	0.3108
Ethyl Alcohol	0.0002104	0.001402	0.001374	0.001346	0.001318	0.001290	0.001262	0.001234	0.001206	0.001178
Ethylene Glycol	0.1439	0.5023	0.4929	0.4835	0.4741	0.4647	0.4553	0.4459	0.4365	0.4271
High-value Chemicals	0.04231	0.4819	0.4722	0.4626	0.4529	0.4433	0.4337	0.4240	0.4144	0.4048
Hydrogen	5.331	9.068	8.993	8.919	8.844	8.769	8.694	8.620	8.545	8.470
Industrial Heat	0	0.06299	0.06173	0.06047	0.05921	0.05795	0.05669	0.05543	0.05417	0.05291
Natural Gas Processing	0.03868	0.6650	0.6517	0.6384	0.6251	0.6118	0.5985	0.5852	0.5719	0.5586
Urea - Granular	0.032982	0.2492	0.2443	0.2393	0.2343	0.2293	0.2243	0.2193	0.2143	0.2094

CCUS Treatment

- Additional credit generation for CCUS projects initiated before 2015 has been eliminated for 2023 onwards.
- Two new credit classes: Sequestration Credits and Capture Recognition Tonnes.

Sequestration Credit

- Created by converting an associated carbon sequestration Emission Offset
 - This conversion cannot be undone
- Same expiry length as the associated emission offset
- May be banked, traded, or used to meet compliance obligations, similar to EPCs or offsets
 - Sequestration credits are subject to the TIER credit use limit
- First vintage 2022

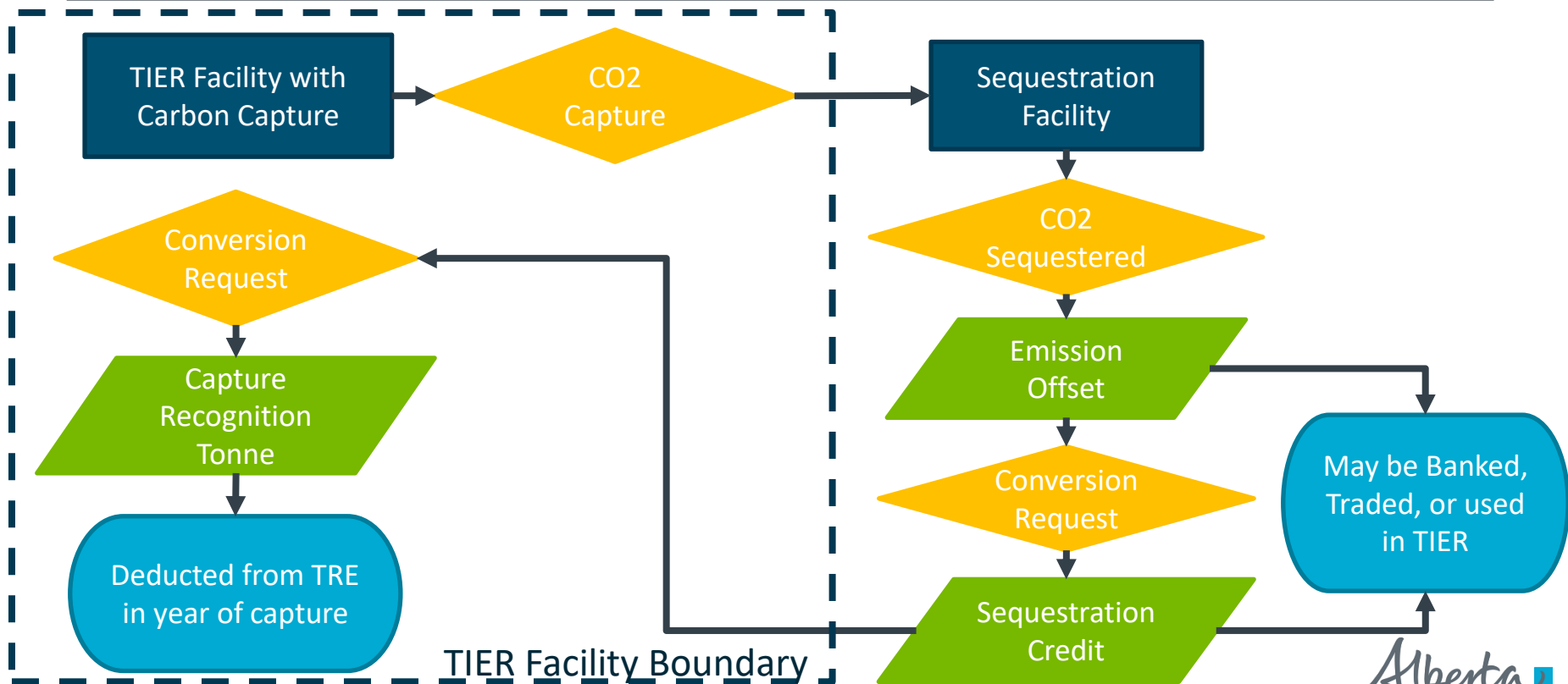
Capture Recognition Tonne

- Created by converting a Sequestration Credit
 - This conversion cannot be undone
 - Can only be made by the facility that originated the capture
- Must be used in the year that the capture occurred
- Capture Recognition Tonnes are subtracted directly from Total Regulated Emissions
 - They are not subject to the credit usage limit
- First vintage 2023

Comparison of CCUS Credits

	Emission Offset for Sequestration	Sequestration Credit	Capture Recognition Tonne
Stackable with CFR	✗	✓	✓
Can be banked for future use	✓	✓	✗
Can be sold to other entity?	✓	✓	✗
Can be deducted from TRE	✗	✗	✓
Can be used to meet compliance obligation	✓	✓	✗

CCUS Credit Flowchart Example



Cost Containment Program

- Cost Containment Program provides relief for facilities experiencing economic hardship:
 - Compliance Flexibility – No credit use limit
 - Cost Containment Benchmark (BCCA) – Additional emissions allocations
- Cost containment available only for facilities with a first year of commercial operation before January 1, 2023
- Application deadline is March 31 of the following year
 - Applications are currently being accepted for 2022, under previous TIER regulation
- Cost containment designation will apply for a fixed 5-year period.
- Any additional emissions allocations provided are ramped down over the 5-year period.
- Facilities with cost containment designation can now earn EPCs

Year	BCCA Fraction
0	1.00
1	1.00
2	0.75
3	0.50
4	0.25

Negative Allowable Emissions

- Revised TIER enables facilities to receive negative allowable emissions.
- This may be necessary for facilities that import heat or hydrogen to generate electricity, or for LFE/opt-in facilities that import CO₂ for on-site sequestration.
- Negative allowable emissions are necessary in these scenarios in order to ensure that accurate emissions allocations are provided across all TIER facilities.
- Without negative allowable emissions, some business models (e.g. imported vs on-site H₂ generation for electricity production), will receive advantageous outcomes in TIER, which violates the principle of consistent treatment.

Hydrogen Import Threshold

- Large emitter definition is revised to include facilities that import 10,000 tonnes of hydrogen or more.
- This change is necessary as interest in electricity production from hydrogen grows.
- Requiring mandatory regulation of hydrogen importing facilities ensures that they receive accurate emissions allocations for imports and exports.
- Mandatory regulation also ensures that on-site hydrogen generation will not be dis-incentivized.
 - A key principle of the TIER system is to ensure that all facilities receive fair and equal treatment.

Global Warming Potentials (GWPs)

- In October 2022, the federal government published updated GWPs 32 of species of greenhouse gases regulated under the GGPPA (and TIER).
- The updated GWP values take effect January 1, 2023
 - For facilities that also report under SGRR or GHGRP, note the updated GWPs apply for 2022 One Window Reporting
- For TIER regulated facilities, a re-calculation of benchmarks will be undertaken based on the updated GWP values.
- HPB values have been recalculated with new GWPs
- Updated FSBs will be issued when available.

Species	Previous GWP	Revised GWP
CO ₂	1	1
CH ₄	25	28
N ₂ O	295	265

Annual Compliance and Reporting Due Dates

Item	Previous Due Date	New Due Date
Annual Forecasting Report	March 31	March 15
Request for new Aggregate designation	December 1 of the preceding year	November 15 of the effective year
Amendment(s) to existing Aggregate	December 1 of the effective year	November 15 of the effective year
Conversion of Sequestration Credits to Capture Recognition Tonnes	N/A	Between January 1 and May 31 of the year following the capture

Credit Use Limit

- Credit use limit to increase 10% per year, starting in 2024.
- Designed to increase credit demand in TIER, and to allow increased compliance flexibility for TIER regulated facilities.

Year	Credit Use Limit
2023	60%
2024	70%
2025	80%
2026	90%
2027	90%
2028	90%
2029	90%
2030	90%

Credit Expiry

- Expiry lengths for EPCs and offsets reduced:
 - EPCs: 5 years after the reduction year.
 - Offsets: 6 years including the reduction year.
- Sequestration Credits will maintain the same expiry date as the associated Emission Offset from which they are generated.

Offset Project Crediting Period

- Previously crediting period was 8 years with a potential 5 year extension, or 10 years with director approval and no potential for extension.
- For projects initiated on or after January 1, 2023 the crediting period is 10 consecutive years with a potential for a 5 year extension if the project is able to demonstrate financial need.
- Some project types may have other crediting periods as set out in a specific protocol (e.g. carbon capture and storage).

Electricity Grid Displacement Factor

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electricity Benchmark (tCO ₂ e/MWh)	0.3700	0.3626	0.3552	0.3478	0.3404	0.3330	0.3256	0.3182	0.3108
EGDF (tCO ₂ e/MWh)	0.53	0.52	0.4901	0.4602	0.4303	0.4005	0.3706	0.3407	Matches HPB onward

- Projects initiated in 2022 and 2023 have same grid factor for entire crediting period (unless new subprojects are added).
- Projects initiated in 2024 forward will use the grid factor published for each year.
- Grid factor will mirror the benchmark after 2030.

Offset Project Reporting Period

- 2 year reporting period for 2023+ vintage, required to submit report within 6 months.
- Reduction that occurred prior to 2023 no maximum reporting period, but following deadlines for submitting report:

Vintage Year	Pre-2022	2022	2023+
Reporting Period	No max length	No max length	2 years maximum
Report Due	December 1, 2023	December 1, 2024	6 months after end of reporting period

Where to Learn More

- Website will link to all relevant materials
 - Regulation
 - Standards
 - Application Forms
 - Fact Sheets
 - <https://www.alberta.ca/technology-innovation-and-emissions-reduction-regulation.aspx>
- TIER website includes sign-up for TIER mailing list to stay up to date.
- Questions or concerns can be addressed to aep.ghg@gov.ab.ca

Questions and Discussion

Thank You
