Review of Alberta's Technology Innovation and Emissions Reduction (TIER) Regulation

Discussion document

Alberta

Technology Innovation and Emissions Reduction Review: Discussion Document | Alberta Environment and Parks

Contents

1. Overview and Context

The Technology Innovation and Emissions Reduction (TIER) Regulation is Alberta's third generation industrial carbon pricing and emissions trading system, building from regulations and systems that first came into effect in 2007.

Facilities that are regulated under TIER are required to reduce their emission intensity from their historical performance using facility-specific benchmarks (FSB), or from the performance of the top facility(s) in a sector using an approved high performance benchmark (HPB). Facilities that outperform the higher of their FSB or HPB can generate emission performance credits. Facilities that do not meet their emission intensity target can meet compliance obligations through:

- use of emissions performance credits that are generated by other regulated facilities;
- use Alberta-based emission offsets that are generated by projects that have voluntarily reduced their greenhouse gas emissions following an approved quantification protocol; and/or
- pay into the TIER fund, which is priced at $50 per tonne of carbon dioxide equivalent (CO2e) as of January 1, 2022. The TIER fund is invested in measures to support emission reductions or enhance resilience to a changing climate.

Section 39(a) of the TIER Regulation, requires that an interim review of the regulation must be completed by December 31, 2022. This requirement was mandated to ensure the value of continuous improvement, and to recognize that climate policy is dynamic and must be agile to changing priorities and contexts.

In 2021, Environment and Climate Change Canada released its updated benchmark criteria for the assessment of provincial and territorial carbon pricing systems for 2023 to 2030, where under the *Federal Greenhouse Gas Pollution Pricing Act*, provinces can establish systems that meet the federal criteria or have the federal system apply.

Alberta stakeholders have repeatedly confirmed their preference for the Government of Alberta to maintain jurisdiction on its industrial carbon pricing system and to not be subjected to the federal system. In addition, given the uniqueness of Alberta's economy and emission profile, the Government of Alberta is in a better position to design and implement a carbon pricing system and make investments to drive innovation in emission reduction technologies.

The review of the TIER Regulation provides an opportunity for the public and stakeholders to provide input on possible improvements to the TIER system, as well as the policy and regulatory changes to have TIER meet the updated federal benchmark criteria for 2023 to 2030 while achieving Alberta's goals for the climate and the economy.

2. Purpose of this Document

This document supports the review of the TIER Regulation and provides information to support public and stakeholder feedback on survey questions to inform the review. This document includes:

- Engagement principles, approach and timing;
- Scope of the review; and
- Details of TIER Regulation for review and consideration.

3. Purpose of the TIER Review

The TIER regulatory review and related engagement will be used to develop the recommended policy and system design and regulatory changes to renew and update the TIER Regulation. The TIER review is guided by the following objectives:

- Alberta intends to meet the federal benchmark requirements and maintain the TIER system in the province through 2030;
- Maximize private sector investment attraction and job growth in Alberta;
- Fairness across sectors, and considerations for competitiveness; and
- Improve regulatory efficiency and minimize administrative burden for regulated parties, where possible.
- Parallel to the TIER review, Alberta Environment and Parks will be engaging stakeholders regarding review of methane mitigation from oil and gas regulation and policy in 2022.

4. Engagement Approach

Engagement will occur through targeted stakeholder meetings and an ability to provide written feedback through a public survey located on the government website. This Discussion Document provides context and helps guide review and input from stakeholders.

Targeted stakeholder meetings will be grouped by regulated sector and focus area. Meetings will be held in June and July. Targeted stakeholders will include TIER regulated facilities, carbon market proponents, and other stakeholders.

The engagement will occur in June and July of 2022 in order to support decision making in fall 2022. Written feedback must be submitted by end of day August 7, 2022, using the Engagement HQ survey link on the government website.

5. Principles of Engagement

Transparent

There is clear understanding of the purpose and scope of engagement, the use of input for informing the TIER Renewal, and any next steps that may be required. Engagement will be a clear and open process, not biased with disproportionate influence from a given stakeholder or sector.

Consistent

Engagement is targeted with the same opportunity for input across all stakeholder groups to ensure fairness. Engagement materials will be posted publicly on the Government of Alberta website to ensure a shared base level of information.

Solutions-focused

Stakeholders are empowered to bring forward solutions and recommendations that advance the discussion around the TIER regulatory review with guiding principles in mind.

Efficient

Stakeholder input will be collected using methods that facilitate efficient information provision to government.

Meaningful

Participants' perspectives are respected, valued and considered.

6. Scope

The scope of the TIER regulatory review will focus on key policy items to ensure Alberta maintains jurisdiction on industrial carbon pricing with the TIER regulatory system meeting the updated federal government benchmark criteria for 2023 through 2030. As outlined in this Discussion Document, the review will focus on:

- regulatory stringency;
- compliance flexibility and carbon markets; and
- other system design features.

The review will consider how the policy design elements within the TIER Regulation interact as a whole system and its interaction with other related policies.

7. Regulatory Stringency

Regulatory stringency is a key factor in achieving the desired outcome of emissions reductions while maintaining competitiveness. Included in regulatory stringency is facility coverage, emissions coverage, and the way we set and adjust regulated facility benchmarks over time.

7.1 Regulated Facilities and Opt-In

- Current TIER treatment: TIER applies to facilities that emit equal to or greater than 100,000 tonnes of CO_2e per year. A facility that emits below this threshold may opt-in to TIER if it competes directly against a facility that is covered by the regulation, or if the facility has greater than 10,000 tonnes CO_2e of annual emissions and belongs to an emissions-intensive, trade-exposed (EITE) sector as defined in the TIER Regulation reflecting the TIER fund price.
- Seeking feedback on: The TIER regulatory threshold of 100,000 CO_2e per year remains the same. A facility may opt-in to the regulation if it competes directly with a facility covered by the regulation or has greater than 2,000 tonnes CO_2e per year and belongs to an emissions-intensive, trade-exposed (EITE) sector as defined in the TIER Regulation reflecting the annual carbon price as outlined in the federal *Greenhouse Gas Pollution Pricing Act.*

7.2 Emissions Coverage

The regulation currently covers approximately 60% of provincial emissions (not including emissions including the carbon offsets element of the TIER system). Key industrial emission sources that are covered include stationary fuel combustion, industrial process emissions, on-site transportation, waste and waste water, flaring, venting and fugitives.

7.2.1 Venting, Flaring, and Fugitive Emissions

- Current TIER treatment: For the conventional oil and gas (COG) sector, emissions from venting, flaring, and fugitives are not included in the total regulated emissions.
- Seeking feedback on: Expanding TIER emission coverage in the COG sector to include emissions from venting, flaring, and fugitives in the total regulated emissions and the potential for free allocations provided to aggregate facilities for venting, flaring, and fugitive emissions.

7.3 TIER Benchmarks

7.3.1 Stringency and Tightening Rate

Alberta will likely need to increase benchmark stringency across the TIER system to be able to maintain strong net demand for emission performance and emission offset credits. As there are many system design options available to increase benchmark stringency, the Government of Alberta is seeking feedback on the possible approach(es).

- Current TIER treatment: Under the current TIER system, facility-specific benchmarks (FSBs) are reduced using a linear rate of 1% per year, with the exception of industrial process emissions and emission associated to electricity used. A tightening rate is not applied to sector-specific, high performance benchmarks (HPBs).
- Seeking feedback on: Starting in 2023, reduce FSBs and HPBs at a rate of 2% per year. For both FSB and HPBs, tightening rates would not apply to the non-tightening portion of the calculations, which includes industrial process emissions. Consideration on the Government of Alberta implementing a mechanism that would reduce and/or provide an endpoint to tightening on HPBs.

7.3.2 Electricity High Performance Benchmark

- Current TIER treatment: Under the current regulation, electricity generators are subject to a “good-as-best-gas” benchmark (electricity HPB), set at 0.37 tonnes CO_2e per MWh, which is equal to the performance of the best combined-cycle natural gas powered electricity generator in Alberta. Within facility-specific benchmark calculations, the electricity HPB is further used to appropriately account for the net import or export of indirect emissions associated with regulated facility electricity generation and use.
- Seeking feedback on: Reducing the electricity HPB. If applicable, on the new percentage of free allocations, interactions with the offset system, and recommendations on how TIER can be used to ensure affordable and reliable electricity given the federal net zero electricity commitment.

7.3.3 Industrial Heat High Performance Benchmark

- Current TIER treatment: Under the current regulation, the HPB value for industrial heat at 0.06299 tonnes CO_2e per gigajoule, which is based on an 80% efficient natural gas boiler. The calculation of facility specific benchmarks is dependent on indirect HPBs including industrial heat, and for calculating compliance obligations as an allocation rate for electricity, industrial heat and hydrogen exported as a product.
- Seeking feedback on: If the industrial heat HPB needs to track any potential adjustments to the electricity HPB and/or if it should be updated based on a higher efficient natural gas boiler. Also seeking feedback on the impact of reductions to the heat HPB value on fairness and competitiveness issues, particularly in regards to cogeneration unit operators.

7.3.4 Hydrogen High Performance Benchmark

- Current TIER treatment: Under the current regulation, the HPB value for hydrogen is 9.068 tonnes CO_2e per tonne of hydrogen. The calculation of facility specific benchmarks is dependent on indirect HPBs including hydrogen, and for calculating compliance obligations as an allocation rate for electricity, industrial heat and hydrogen exported as a product or generated and used on-site at refineries and upgraders.
- Seeking feedback on: Reducing the current hydrogen HPB to a value that could lend support to the provincial hydrogen roadmap initiatives, while maintaining the marginal price signal, and addressing supply and demand considerations in the compliance market.

7.4 Negative Emissions Allocations

- Current TIER treatment: Allowable emissions are calculated as the production multiplied by the benchmarks adjusted for imported heat, hydrogen, or electricity. Under the current regulation, allowable emissions cannot be less than zero.
- Seeking feedback on: Removing the restriction on allowable emissions and allow for negative emissions allocations to be provided to regulated facilities. This is likely to be required in a variety of future circumstances to ensure that the appropriate carbon accounting occurs. This includes electricity generation using a substantial fraction of imported hydrogen fuel, operation of a sequestration facility as a large emitter where total regulated emissions are negative due to carbon dioxide import or for a facility that wishes to opt-in as a waste heat to electricity site with another regulated facility supplying and receiving credit for the waste heat.

7.5 Global Best in Class Benchmarks for New Facilities

- Current TIER treatment: A new facility, as defined under the regulation, is provided a facility-specific benchmark for its third year of commercial operation using a 5% reduction target, with the reduction target increasing by 5% per year until the regulated reduction target for the calendar year is reached (e.g. 14% reduction target in 2023, 16% reduction target in 2024, etc.).
- Seeking feedback on: Maintaining existing definition and treatment for new facilities, but allow for new facilities demonstrating best-in-class emissions intensity performance to apply for a high performance benchmark (HPB) under the following criteria with mitigations for unverified emissions data or data inconsistent with Alberta quantification protocols applied:
  - no equivalent product currently exists under TIER;
  - the proposed facility is likely to trigger the TIER threshold and/or have emission intensive trade exposed products; and
  - more than one similar facility exists internationally and there are quantified emissions and production available.

8. Compliance Flexibility and Carbon Markets

An important component of the TIER Regulation is the provision for compliance flexibility and the associated emission offset and emission performance credit market. Compliance flexibility is provided recognizing that regulated facilities are not always able to reduce emissions on-site in the near term. These options establish compliance certainty for regulated facilities while ensuring emission reductions are achieved.

8.1 Compliance Options

- Current TIER treatment: Regulated facilities can comply with the TIER reduction requirements by:
  - reducing emissions on-site;
  - submitting emission offsets;
  - submitting emission performance credits; and/or
  - paying into the TIER fund at $50 per tonne.
- Seeking feedback on: The compliance options remain the same. Starting January 1, 2023, the TIER fund price would follow the annual carbon price as outlined in *Canada's Greenhouse Gas Pollution Pricing Act.*

8.2 Crediting Period

- Current TIER treatment: Under the current TIER system, offset projects, with the exception of carbon capture, utilization and storage (CCUS) projects and some vent gas reduction projects, are able to generate emission offset credits using an approved quantification protocol, for eight consecutive years following the start date of the offset project, unless otherwise specified in the applicable quantification protocol. Offset project developers can make a request to the director for five year extension(s) or an initial 10 year crediting period with no possibility of extensions.
- Seeking feedback on: Starting in 2023, removing the ability for offset project developers to make a request to the director for five year extension(s) or an initial 10 year crediting period for projects. The established crediting period for offset projects generating emission offset credits prior to January 1, 2023 would remain unchanged.

8.3 Credit Expiry

- Current TIER treatment: Emission offsets (EOs) may only be used to meet compliance obligations within the nine-year period beginning with the year in which the offset was generated; unused emission offsets expire after this period and cannot be used to meet compliance obligations outside of the nine-year period post generation. Emission Performance Credits (EPCs) may only be used to meet compliance obligations within an eight-year period after the year in which the credit is issued; unused emission performance credits expire after this period and cannot be used to meet compliance obligations outside of the eight-year period post generation.
- Seeking feedback on: Reducing the credit expiry period for both EPCs and emission offsets, starting with credits generated after December 31, 2022. The expiry period for EPCs and emission offsets generated prior to January 1, 2023 would remain unchanged.

8.4 Credit Usage Limit

- Current TIER treatment: Under the current regulation, facilities may use offsets and emissions performance credits to meet up to 60% of their compliance obligations (the credit-use limit). The remaining compliance obligation must be met through the purchase of TIER fund credits.
- Seeking feedback on: If the credit-use limit should be increased from 60% to enable regulated facilities to meet a greater proportion of their compliance obligations through the use of emission offsets and emission performance credits. If applicable, seeking feedback on how going forward the mechanism used to set the annual credit usage limit can be flexible to adjust to market dynamics.

9. Other System Design Features

Other important TIER design elements and considerations are presented for feedback. Alberta has implemented the emissions offset system for over 15 years. Design and implementation details of the emission offset system will be considered to ensure the policy framework continues to provide the signals and support needed to achieve emission reductions outside of regulated facilities.

Further, it is important to maintain the competitiveness of Alberta industry while achieving significant greenhouse gas emissions reductions under TIER. The cost containment program has been established to ensure impacts to competitiveness are identified and mitigated.

9.1 Electricity Grid Displacement Factor

- Current TIER treatment: The Electricity Grid Displacement Factor (grid factor) reflects the greenhouse gas emission intensity of the marginal megawatt-hour (MWh) in Alberta's electricity generation, and is used in the calculation for generating emission offsets under the TIER system. The current grid factor is 0.53 tCO_2e per MWh.
- Seeking feedback on: The grid displacement factor transition to align with the high performance benchmark (HPB) for electricity including any future adjustments to the HPB as they occur. Seeking feedback on the alignment of the grid factor and electricity HPB and if alignment should begin in 2024 or utilize a phased approach.

9.2 Emission Offset Protocol Development and Revision

- Current TIER treatment: Under the current TIER protocol development and revision process, protocol developers are welcome to submit a proposals to develop or revise a protocol by the end of each calendar year.
- Seeking feedback on: Starting in 2023, implementing a ‘call for proposal’ process where the department puts out a call for protocol proposals, moving away from an annual intake. The frequency on the call for proposals would be dependent on a number of factors including but not limited to government priorities, available resources, and ongoing protocol work.

9.3 Emission Offset Project Reporting Period

- Current TIER treatment: Under the current TIER system, offset project developers are able to choose reporting frequency and length of reporting period.
- Seeking feedback on: Starting in 2023, requiring offset project developers to submit a project report to the Alberta Emission Offset Registry at least every 3 years.

9.4 Emission Offset Generation for Geological Carbon Sequestration

- Current TIER treatment: Under the current regulation, carbon capture and storage operations are able to generate one emission offset for capturing carbon and one emission offset for sequestering the same tonne of CO_2e. When the price of the TIER fund is between $40 and $80 per tonne of CO_2e the additional credit is scaled from one at $40 to zero at $80.
- Seeking feedback on: Starting in the year 2023, and onwards, it is proposed to only allow only one emission offset to be generated for each sequestered tonne of CO_2e emissions, regardless of the TIER fund price.

9.5 Creation of Unique Carbon Capture, Utilization and Storage (CCUS) Credits

- Current TIER treatment: Under the current TIER system, CCUS projects that follows an approved quantification protocol are able to generate emission offsets at the point where the CO_2 is geologically sequestered or utilized for enhanced oil recovery. The benefits to the regulated facility, where the CO_2 is captured, may be realized through an agreement between the regulated facility and the offset project proponents.
- Seeking feedback on: Creating a new class of credits specific to CCUS activities to better enable the flowing of credits and value back to the sites of carbon capture. Once created CCUS emission offsets (saline aquifer sequestration and enhanced oil recovery) could be converted to the new class in the year of creation and would be directly deducted from total regulated emissions of the capturing facility. The credit usage limit would not apply and any excess reductions would be issued as emission performance credits of the same vintage.

9.6 Bioenergy with Carbon Capture and Storage (BECCS)

- Current TIER treatment: Under the current regulation, CO_2 emissions including biomass CO_2 that are captured and sent off-site to be geologically sequestered are included in a facility's exported CO_2, which increase the total regulated emissions. This approach does not result in a net benefit to a facility for capturing and sequestering biomass CO_2 emissions (BECCS) because CO_2 emissions generated from the combustion, decomposition, or fermentation of biomass from plant materials and animal waste that are sent off-site to be geologically sequestered are currently excluded from the direct emissions and benchmarking calculation.
- Seeking feedback on: To recognize the emission reductions from BECCS, it is proposed that CO_2 emissions generated from the combustion, decomposition, or fermentation of biomass from plant materials and animal waste, which are sent off-site to be geologically sequestered, are reported, but not included in the exported CO_2.

9.7 Compliance Cost Containment Program

- Current TIER treatment: Under the current TIER system, the Compliance Cost Containment Program is intended to provide relief to facilities experiencing economic hardship as a result of compliance costs. If the TIER Regulation compliance costs of an individual facility exceed 3% of sales or 10% of profit, that facility may be eligible to receive relief under the Compliance Cost Containment Program. Relief provided can include:
  - removing the credit use limit, which is currently set at 60% of a facility true-up obligation; or
  - assigning additional emission allocations using a compliance cost containment allocation benchmark (BCCA). Note that BCCA allocation cannot cause the facility's compliance to gross sales or profit ratios to go below 3% or 10%, respectively.
- Seeking feedback on: Updates to the cost containment program design and relief mechanisms, keeping with the TIER principles of increased competitiveness, encouraging innovation, and continuous improvement, as well as the need to maintain the marginal carbon price signal for Alberta. Possible updates to the cost containment program could include:
  - eligible facility is assigned a BCCA for a 3 to 5 year period based on economic hardship at the time of application in addition to credit use limit being removed;
  - BCCAs are tapered over the 3 to 5 year period, incrementally returning to emission allocations that would have been assigned to the facility in absence of the cost containment program. Removal of the credit use limit would still apply; and
  - facilities that enter the regulation after January 1, 2023 are ineligible for the cost containment program.

10. Next Steps

Collecting many perspectives to inform the Government of Alberta's policy changes to update the TIER Regulation will ensure Alberta maintains jurisdiction over industrial carbon pricing and the updated TIER system meets the needs of Alberta's environment and economy.

Participants who wish to provide written feedback related to the TIER regulatory review, must submit feedback by **August 7, 2022,** using the Engagement HQ survey link on the TIER engagement page.

The Government of Alberta will consider all feedback received as it completes the TIER review by December 31, 2022.

Information on TIER regulatory changes will continue to be communicated to impacted stakeholders.

Glossary

Aggregate facility: a group of two or more conventional oil and gas facilities designated as an aggregate facility by the director under section 5 of the Technology Innovation and Emissions Reduction Regulation.

Alberta Complexity Weighted Barrel (AB-CWB): a standardized volumetric production unit of a refining facility (refining AB-CWB) or upgrading facility (upgrading AB-CWB) in Alberta, which is used to represent its specified gas emissions potential based on its configuration and processing complexity.

Alberta Gas Processing Index: a standardized emission potential of a natural gas processing facility, based on its configuration and processing complexity.

Allowable emissions: the allowable emissions for a large emitter or opted-in facility, as determined in accordance with section 9 of the Technology Innovation and Emissions Reduction Regulation, or the allowable emissions for an aggregate facility, as determined in accordance with section 10 of the Technology Innovation and Emissions Reduction Regulation.

Benchmark: the emissions intensity assigned for a product for allocation purposes.

Biomass: the organic materials made from living organisms, such as crops, crop residue, trees, wood and animal residue that have stored sunlight in the form of chemical energy. Biomass can be used directly to produce biofuels or other products or it can be burned to create heat or electricity.

Biomass CO_2 emissions: all emissions of carbon dioxide released from sources located at a facility as a result of the decomposition, fermentation or combustion of biomass.

Carbon pricing: price on carbon emissions that provides a financial incentive for emitters to reduce their emissions. This provides emitters with flexibility to reduce emissions in a way that best suits their individual processes, abilities and circumstances.

Carbon dioxide equivalent (CO_2e): measure used to compare the emissions from various greenhouse gases based upon their global warming potential (a measure of how much energy a greenhouse gas will absorb relative to carbon dioxide).

Cogeneration: the process of jointly producing electricity and heat. Cogeneration typically means the process that employs a combustion engine to power a generator, the exhaust from which is used to produce useful heat for an industrial purpose

Combustion emissions: direct emissions resulting from the combustion of fuel for the purpose of energy production.

Compliance Cost Containment Program: a program that provides support to regulated facilities in emissions-intensive, trade-exposed sectors experiencing economic hardship as a result of compliance costs under the TIER system.

Direct emissions: the quantity of all specified gases released from sources located at a facility, expressed in tonnes of CO_2e, not including biomass CO_2 emissions, or emissions from fuel used at a covered facility as defined in the *Greenhouse Gas Pollution Pricing Act* (Canada) and for which a fuel charge has been paid under the Act in respect of a time at which an exemption certificate applied in accordance with section 36 of that Act in relation to that covered facility.

Emission offsets: generated by projects that voluntarily reduce greenhouse gas emissions. Emissions offsets must be quantified using Alberta-approved methodologies called quantification protocols. One tonne of CO_2e reduced is equal to one emission offset.

Emissions intensity: the quantity of specified gases released in the production of a product per benchmark unit of a product, for example, tonnes of CO_2e per tonne of product.

Emissions-intensive and trade-exposed (EITE): industrial emitters with a substantial exposure to emissions costs and that compete at a provincial, national and/or global level and are therefore exposed and vulnerable to competitive market conditions.

Emissions intensiveness: in respect of a sector means the full carbon pricing costs of the sector divided by the gross value added for the sector.

Emissions performance credits: credits issued for reductions in greenhouse gas emissions beyond the regulatory requirement. One tonne of CO_2e reduced beyond the requirement is equal to one emission performance credit.

Federal Fuel Charge: a federal charge applied under the *Greenhouse Gas Pollution Pricing Act* (Canada) to heating and transportation fuels such as diesel, gasoline, natural gas, and propane.

Fugitive emissions: direct emissions resulting from unintentional releases and leaks of greenhouse gases to the atmosphere from the extraction, production, processing, transmission, storage, and use of hydrocarbons.

Good-as-best-gas benchmark: a level of greenhouse gas emissions per unit of production, equal to the emissions intensity of the cleanest natural gas-fired electricity generation system.

Greenhouse gas (GHG): an atmospheric gas that absorbs and emits heat into the atmosphere. The primary greenhouse gases in the atmosphere are carbon dioxide, methane, nitrous oxide, ozone and water vapour.

Indirect emissions: emissions associated with the use of electricity, heat, or hydrogen at a facility.

Industrial process emissions: direct emissions from an industrial process involving chemical or physical reactions other than combustion, and where the primary purpose of the industrial process is not energy production. Also included are the direct emissions from the unavoidable combustion of ethylene in the production of ethylene oxide. Industrial process emissions do not include emissions of specified gases from landfills, tailings ponds or mine faces.

Methane: the main component of natural gas, with the chemical formula of CH_4. Methane is an abundant fuel that can be found below ground. While methane is a useful fuel source, when released directly into the atmosphere it becomes a greenhouse gas.

Multi-product facilities: facilities that produce two or more products, not including electricity, heat, or hydrogen.

Natural gas: mixture of hydrocarbons, while mainly methane, other hydrocarbons include ethane, propane and butane. Water, oil, sulphur, carbon dioxide, nitrogen and other impurities may be contained in the gas when it is produced.

Product: an end or intermediate product produced by a regulated facility, or an input, output, process or other thing specified under subsection 4 of the Technology Innovation and Emissions Reduction Regulation as a product produced by a regulated facility.

Production: the quantity, expressed in the applicable benchmark unit, of a product produced by a regulated facility.

Refining: process of converting conventional and synthetic crude oil into oil-based products and petrochemical feedstock.

Renewable electricity: electricity that comes from energy resources that occur naturally and that can be replenished or renewed within a human lifespan, such as sunlight, wind, moving water, sustainable biomass, and geothermal heat.

Specified gas: a gas listed in the Specified Gas column of Schedule 1 of the Technology Innovation and Emissions Reduction Regulation.

Tightening rate: rate by which the reduction requirement tightens or becomes more stringent by some unit of time basis.

Total regulated emissions: the total regulated emissions for a regulated facility determined in accordance with section 13(3) or (4) of the Technology Innovation and Emissions Reduction Regulation.

Trade exposure: the ratio of A to B, where:

- "A" is the is the total value in dollars of all end products produced by the sector in Alberta that are exported from Alberta plus the total value in dollars of all end products produced by the sector that are imported into Alberta; and
- "B" is the total value in dollars of all end products produced by the sector in Alberta plus the total value in dollars of all end products produced by the sector that are imported into Alberta.

True-up obligation: the quantity by which a regulated facility's total regulated emissions in a year exceeds the regulated facility's allowable emissions for the year.

Upgrading: process of converting heavy oil or bitumen into synthetic crude oil so it can be handled by conventional light oil refineries. Upgrading often includes reducing viscosity so that it can be pumped through pipelines, separating out the heaviest hydrocarbons (asphaltenes) and reducing sulfur, nitrogen and metals as well as sediments and water.