

Compliance year 2020 LFE/Opt-in Compliance Workshop

Technology Innovation and Emissions Reduction
Regulation (TIER)

Climate Implementation and Compliance
Alberta Environment and Parks
March 2021



Alberta

Introductions



Climate Implementation and Compliance Branch
Policy Division
Alberta Environment and Parks

Key Take Aways

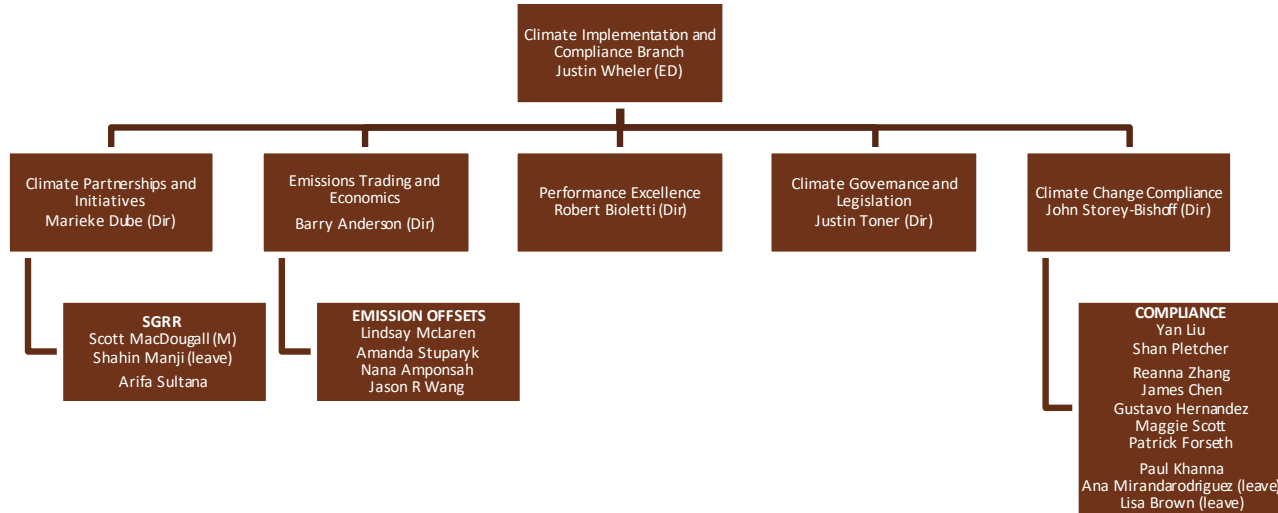
- Person responsible to submit verified compliance report by June 30, 2021 for the 2020 compliance year
- Required true-up (credits retired or fund payment made) should be complete before submitting your compliance report
- Verification firms will be busy this year, so start early and have the compliance report, QMD and any calculation sheets ready at the start of the verification. Contact AEP if unable to find a verifier

Agenda

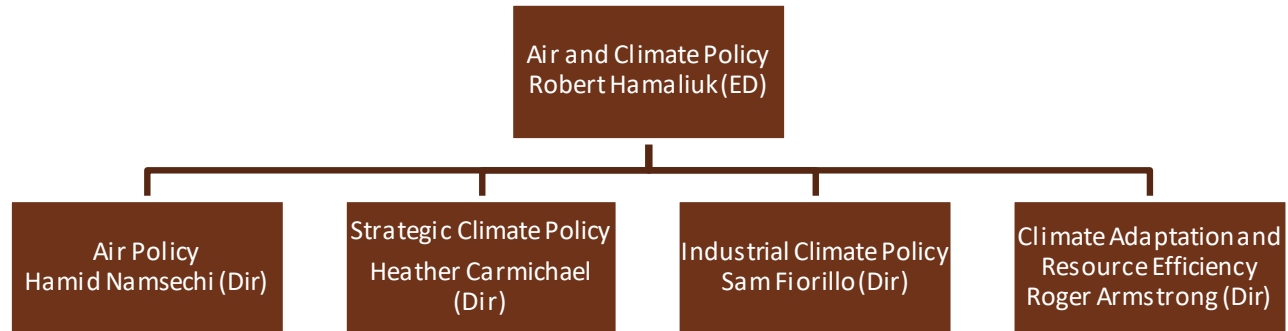
Agenda Item

- Introductions and Organization
- Background and Regulatory Overview
- Specified Gas Reporting Regulation
- Prior Period Results and Learnings
- Obtaining Verification
- Alberta Greenhouse Gas Quantification Methodologies
- Methods of True-up
- Compliance Form Overview

Organization



Organization



Background and Regulatory Overview



GHG Regulation

Regulatory Background

- Specified Gas Emitters Regulation (2007 – 2017)
 - Facility specific baselines based on historical performance
 - Based on direct emissions only
- Carbon Competitiveness Incentive Regulation (2018 – 2019)
 - Output based allocation system using assigned and established benchmarks
 - Based on direct and indirect emissions
 - Provincial carbon levy in place until June 2019
 - Opted-in facilities

Overview of TIER

- Technology Innovation and Emissions Reduction Regulation (TIER) (2020 – present)
 - TIER implemented on January 1, 2020
 - Regulated facilities:
 - Annual emissions above 100,000 tonnes of carbon dioxide equivalent in 2016 or subsequent; or
 - Voluntarily entered the regulation (including aggregate facilities and opted in facilities)
 - <https://www.alberta.ca/technology-innovation-and-emissions-reduction-regulation.aspx>
 - TIER is a recognized provincial program under the *Greenhouse Gas Pollution Pricing Act* for 2020 and 2021

Overview of TIER

- Facilities must comply with the least stringent of:
 - High Performance Benchmark (HPB)
 - In regulation and can be set or updated through Ministerial Order
 - No tightening rate
 - Facility-Specific Benchmark (FSB)
 - 90% of historical emissions intensity
 - Ramp in for new facilities
- Regulated Emissions
 - Large emitters and opted in facilities – regulated for all direct emissions with accounting for imported heat, hydrogen and electricity
 - Direct emissions – do not include biomass CO₂ nor federally levied fuels where exemption certificate in place

Overview of Standards

- Four standards under TIER:
 - Standard for Developing Benchmarks
 - Standard for Completing Greenhouse Gas Compliance and Forecasting Reports
 - Standard for Validation, Verification and Audit
 - Standard for Greenhouse Gas Emission Offset Project Developers
 - Part 1 of these standards are law and are binding. Part 2 are also requirements, but not binding.
- Alberta Quantification Methodologies (AQM)
 - Provides mandatory quantification methodologies for regulated facilities
 - Is made mandatory through standards

Overview of Standards

- Standard for Developing Benchmarks
 - Provides methodologies for developing facility-specific benchmarks and high performance benchmarks.
 - Provides treatment of indirects, cogeneration, and self generation of electricity in benchmark setting.
 - Deals with entry into the regulation through opt-in as well the cost containment program.
- Standard for Completing Greenhouse Gas Compliance and Forecasting Reports
 - Facility requirements for reporting and forecasting
 - Provides level requirements for selecting quantification methodologies

Overview of Standards

- Standard for Validation, Verification and Audit
 - Requirements for third party assurance providers (validators and verifiers) and auditors.
 - Focus of this training is verification of compliance reports, benchmark applications, data submissions, and emission offset project reports.
 - Validation and audit requirements for cost containment applications and details on cost containment designated facilities are provided in the standard, but not covered in depth in this presentation.
- Standard for Greenhouse Gas Emission Offset Project Developers
 - Requirements for developing emission offset projects

Types of Submissions – Annual Compliance Reports

- Verified annual reports must be submitted by June 30, 2021
- Requires positive verification opinion – any material errors must be resolved before submission
- Forecasting reports do not need to be verified
- Differences in compliance report content – large emitters/opted in facilities vs aggregate facilities

Types of Submissions - Forecasts

- Forecasting facilities have had emissions over 1Mt in 2016 or a subsequent year.
- Need to submit forecasts for the upcoming year by Nov 30th unless:
 - The current year is the first year over 1Mt
 - The previous year's emissions were less than 1Mt
 - The previous year's true-up obligation less than 50,000 tonnes
- Forecasting facilities also need to submit an update to their forecast by March 31st covering the prior year compliance period (i.e. for the 2020 compliance period)

Cost Containment

- The Compliance Cost Containment Program has been transitioned to the TIER system.
- Eligibility: LFE or Opt-in facility annual TIER compliance costs are greater than 3% of annual facility sales, 10% of facility profits.
- Support Mechanisms:
 - Removal of compliance credit limit (credits or offsets may be used for 100% of compliance)
 - Additional emissions benchmark allocation

Cost Containment

- Deadline to apply for 2020 compliance year is March 31, 2021. Applications may cover 2020 and future years (up to 5 consecutive years).
- Application requirements include third-party audited financial statements and third-party validated emissions reduction plan.
- See the TIER website for more information and the application form.

Specified Gas Reporting Regulation

Specified Gas Reporting Regulation

- Alberta's mandatory GHG reporting program for facilities emitting over 10,000 tonnes of CO₂ equivalent per year
- Builds on voluntary reporting by most Alberta emitters since the mid-1990's
- This regulation and standard were passed in 2003
- One reporting window with Environment and Climate Change Canada (ECCC) GHG Reporting Program
- Emissions reporting data is used to inform policy development and analysis, and support federal national inventory reporting (NIR)
- Annual reporting deadline is June 1
- The Specified Gas Reporting Standard will be updated

Specified Gas Reporting Regulation – 2020 Updates

- Mandatory quantification methodologies:
 - Facilities regulated in TIER must use the Alberta Greenhouse Gas Quantification Methodologies (AQM)
 - Facilities not regulated in TIER must use either the AQM or the Quantification Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation
 - Tier 1 methodologies in those documents are the minimum requirement for SGRR reporting, and are aligned with ECCC minimum requirements.
 - Equation numbers must be reported in SWIM, and guidance will be provided for the small number of cases where AQM equation numbers do not align with the drop-down options in SWIM
- Production reporting requirements were eliminated for products that compete with products in TIER.

Prior Periods Results and Learnings



Prior Year Results

<https://open.alberta.ca/publications/specified-gas-emitters-regulation-and-carbon-competitiveness-incentive-regulation-results>

Compliance Year	Emission Offset Credits Submitted (Mt CO ₂ e)	EPCs Submitted (Mt CO ₂ e)	Fund Credits Submitted (Mt CO ₂ e)	Total Compliance (Mt CO ₂ e)	Fund Payment (\$Million)
2007 (half year)	0.9	0.2	3	4.1	45.2
2008	2.9	0.6	5.9	9.4	88.3
2009	3.8	1.5	4.4	9.7	66.3
2010	3.9	1.9	5.3	11.1	78.9
2011	5.4	0.8	4.2	10.4	62.9
2012	3	0.7	5.9	9.5	93.7
2013	2.2	1.3	6.3	9.8	94.4
2014	2.3	1.3	5.6	9.3	84.3
2015	0	0.3	9	9.3	135.7
2016	0.8*	1	10.3	12.2	206.5
2017	9.2*	6.2	3.1	18.5	94
2018	8.0*	3.9	17.8	29.7	533.5
2019	9.9*	5.3	15.9	31.1	476.1
Total	52.3	25.0	96.7	174.1	2059.8

Note: Mt = Million Tonnes

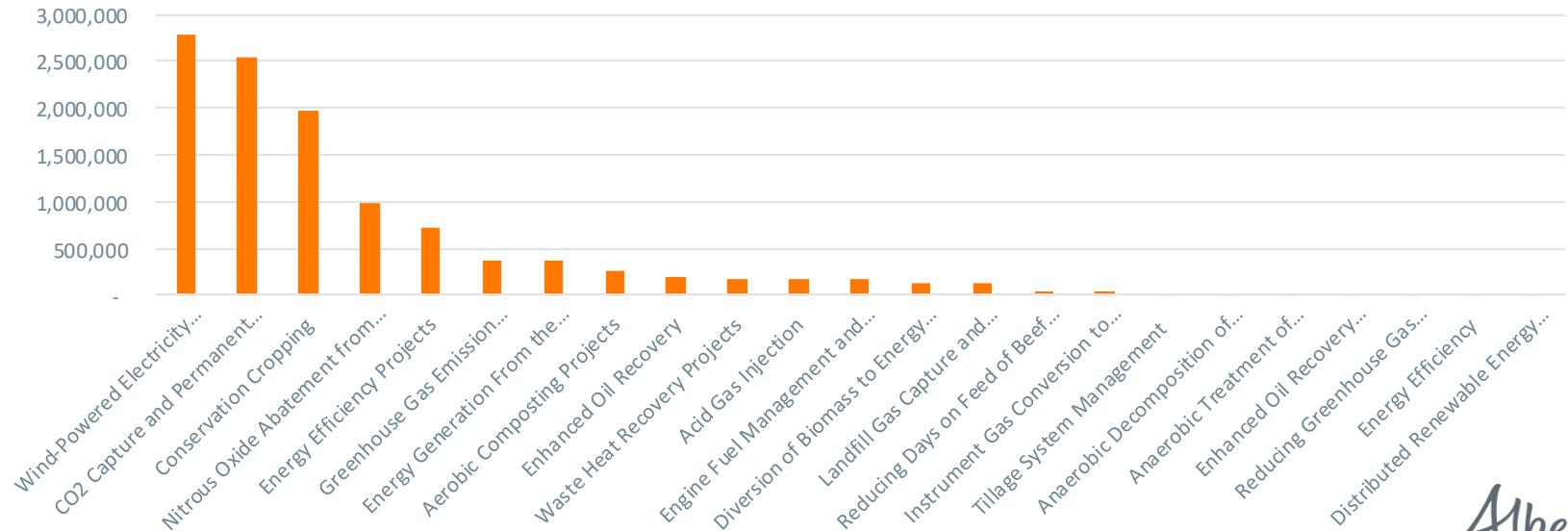
*Includes 2.6 Mt total from 2016-19 of additional credits issued under section 7(1.2) of the SGER and section 16(3) of the CCIR

Figures are subject to change as a result of auditing and are rounded for presentation purposes.

Updated November 4, 2020

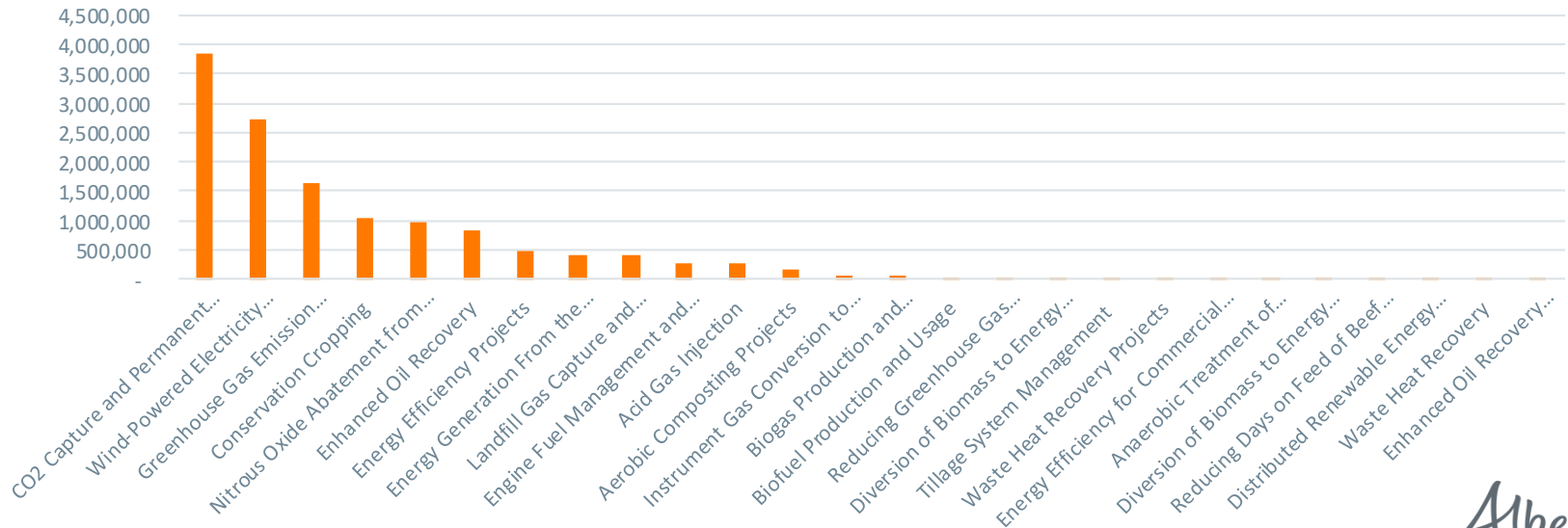
Offsets – Results (Compliance)

- 25% from wind, 23% from CCS (incl. additional), 18% from conservation cropping, 9% NERP, and 26% from others (rounded)
- No offsets were retired in 2019 by federal Output-Based Pricing System-regulated facilities



Offsets – Results

- 13.3 MtCO₂e active as of March 3, 2018
 - **29% CCS** (incl. additional), 20% wind, 12% pneumatics
- 21 new projects in 2020, 291 total



Offsets

Clarifications

- No offset generation if opted in (aggregates may still be eligible depending on activity)

Updates

- New Biogas protocol released (replaces two previous Anaerobic ones)
- Two protocols under revision: Enhanced Oil Recovery and Solution Gas Reduction
- Currently developing two protocols: Biocover for landfill and Improved Forest Management on Private Land

Learnings – Usage of Credit

- Reminders
 - Max credit usage for 2020, 60% of tonnes owed
 - 40% may be pre-2017 vintage
 - 2014 and older credits expire after the 2020 compliance year. (68kt offsets, 194kt EPC)
 - 2015 and 16 credits expiring 2022 (3.3 Mt offsets, 2.2 Mt EPC)
- To improve
 - Credits need to be held by person responsible.
 - When using EPCs, credits should be in the account of the facility using them, and in pending retired status
 - Separate tabs in compliance report for offsets and EPCs. Make sure they are not entered into wrong tab.
 - Serial ranges should be correct and match reported totals.

Learnings – Quantification Methodology Document (QMD)

- Facility is responsible for preparing a Quantification Methodology Document
- QMD not updated or partially updated
 - Understand there were significant timing challenges for 2018 with introduction of new quantification
 - Should not have annual values
 - Must follow the format in the Compliance Standard
- QMD important reference for verification and for our internal reviews
- QMD should reflect quantification requirements except where a deviation has been granted

Learnings – Emissions Completeness

- “direct emissions” means all specified gases released from sources located at a facility, not including biomass CO₂ emissions or fuels where the federal fuel charge was paid at a time when an exemption certificate was in place...
- This means all emissions inside the facility boundary (boundary files have been reviewed and shared back to facilities).
- Drilling, service rigs, contractors etc. are in this scope.
- Estimates can be used where the source meets the criteria for negligible.

Learnings – Verification

- To improve
 - Review of production quantities (especially more involved throughput based products AB-CWB, AGPI)
 - Reporting consistency with quantification requirements
 - Confirmation of QMD completeness consistency with quantification requirements
 - Confirmation back to physical meter readings
 - Confirmation of correct application of benchmarks

Learnings – Deviation Requests

- Reminders
 - Where you are unable to fully implement the prescribed quantification requirement a deviation request can be made.
 - Deviations do not cover cases the prescription can be applied but is not preferred.
 - Where the prescribed quantification is not followed and no deviation is in place a verification finding should result.
 - Deviations are time limited and part of the request is to outline how the prescription can be met in subsequent reporting.
 - This is also a very useful feedback for us to understand areas where the quantification is not immediately implementable and may sometimes lead to updates to the quantification requirements.

Learnings – Confidentiality

- Reminders
 - Suggest: When requesting confidentiality in the form, include a request letter.
 - Letter should clearly justify how the data requested meets the criteria under the regulation.
 - We will reject unjustified requests. Please review our decision letter.

Learnings – Indirect Emissions Reporting Went Well

- Reporting of indirect quantities a fairly new requirement.
 - Hydrogen, Heat and Electricity imports
- In general this went well and we had good agreement between suppliers and consumers.
- We will again be confirming alignment in 2020 submissions.

Questions?



Obtaining Verification



Verification Requirements

Verification Requirements

- All facilities (including opted in facilities) regulated under TIER must hire a third party assurance provider to verify their compliance report
- Purpose of verification is to provide assurance to the department that there are no material errors in the facility's compliance report
- For the compliance submission on June 30, 2021, the facility is required to submit a verification report including:
 - Statement of Verification
 - Statement of Qualifications
 - Conflict of Interest Form
- Approx. 460 facilities require verifications for 2020 more than doubling from 2019
- Verifications may take up to 6 to 8 weeks or more to complete depending on site complexity. Start early.

Verification Requirements

- Standard for Validation, Verification, and Audit outlines the requirements for the verification process
- Highlights of a verification process:
 - Conflict of Interest (COI) assessment (COI form)
 - Execution of contract
 - Provision of complete materials included in the verification process (CR, QMD, calculations, etc.)
 - Verification plan (including risk assessment and sampling plan)
 - Data and information request
 - Site visit
 - Review and analysis of data and information gathered
 - Develop and communicate findings and issues
 - Resolve and finalize issues and findings
 - Verification report (report template)

Verification Requirements

- Verifiers are required to conduct a site visit unless otherwise authorized by the director
- Due to COVID-19, the director granted authorization to verifiers to conduct “virtual” site visits up to September 1, 2021:
 - 2020 Compliance reports
 - Benchmark applications
 - Emission offset project reports
- Requirements of a virtual site visit are provided in the verification standard

Verification Requirements

- Part 1 outlines the mandatory requirements for third party assurance providers and auditors
 - Facilities are responsible to ensure that the selected verifier meets regulatory requirements
 - Additionally, verifiers are required to complete verification training in order to conduct verifications of 2020 compliance reports
- Contraventions of the following are offences under the regulation:
 - 7(5), 15(6), 17(5) – third party assurance providers must follow the Standard for Validation, Verification, and Audit
 - 33(f), 33(g) – the facility and third party assurance provider responsible for ensuring the third party assurance provider meet qualification requirements

Verification Requirements

- Verifiers may only conduct verifications for:
 - A regulated facility for 5 consecutive years followed by a two year break
 - An emission offset project report for 5 consecutive reporting periods followed by a two reporting period break
- Regulation requires a positive opinion in the Statement of Verification
- Qualified opinions are reviewed on a case-by-case basis
- Verification report template used for verifications of compliance reports or emission offset project reports:
 - <https://www.alberta.ca/assets/documents/aep-tier-verification-report-template.docx>
 - <https://www.alberta.ca/assets/documents/ep-aeos-offset-verification-report-template.docx>

Verification Requirements – Risk Areas

- Production and Imports of Heat, Hydrogen and Electricity
- Source data
- Quantification methodologies
- Total error quantification and materiality assessment
- Working papers and documentation requirements

Government Re-Verifications

- Re-verifications are conducted by the department on a portion of submissions (compliance reports and emission offset project reports)
- Facilities and projects are selected based on a risk-based and random selection process
- The department establishes master agreements with verifiers and issues statements of work for annual re-verifications
- Generally, the process follows the verification standard with some specific focuses based on individual facilities and projects
- Anticipate initiating re-verifications of 2019 and 2020 compliance reports in Summer 2021

Questions?



Alberta Greenhouse Gas Quantification Methodologies (AQM)



AQM Objectives

- Provide consistent and standardized approach to quantifying emissions, production and other reported parameters
- Provide level playing field for facilities within the same sector and across all sectors
- Standardize benchmarking approaches for regulated facilities
- Align with federal greenhouse gas reporting where appropriate

Mandatory Quantification Methodologies

- Mandatory Quantification Methodologies for 2020
 - Chapter 1 – Stationary Fuel Combustion
 - Chapter 4 – Venting
 - Chapter 5 – On-Site Transportation
 - Chapter 8 – Industrial Processes
 - Chapter 12 – Imports
 - Chapter 13 – Production
 - Chapter 14 – Carbon Dioxide Emissions from Combustion of Biomass
 - Chapter 15 – Aggregate Facilities
 - Chapter 16 – Cogeneration Benchmark Calculation
 - Chapter 17 – Measurements, Sampling, Analysis and Data Management

Mandatory Quantification Methodologies

- Mandatory Quantification Methodologies for 2020
 - Appendix A – References
 - Appendix B – Fuel Properties
 - Appendix C – General Calculation Instructions
 - Appendix D – Conversion Factors
 - Appendix E – Additional Information for the Alberta Gas Processing Index
- Facilities may submit deviation requests to the department to propose alternative method
 - Department will provide a time limited approval letter to facility if deviation request is accepted.

AQM Updates

- Chapter 2 Flaring
 - Draft chapter will be posted soon, but will not be mandatory until 2022
- Chapter 3 Fugitives
 - Draft chapter anticipated for posting later 2021
- Chapter 10 Formation CO₂
 - Removed as individual source category for TIER
 - Report emissions under the respective categories

Stationary Fuel Combustion (SFC)

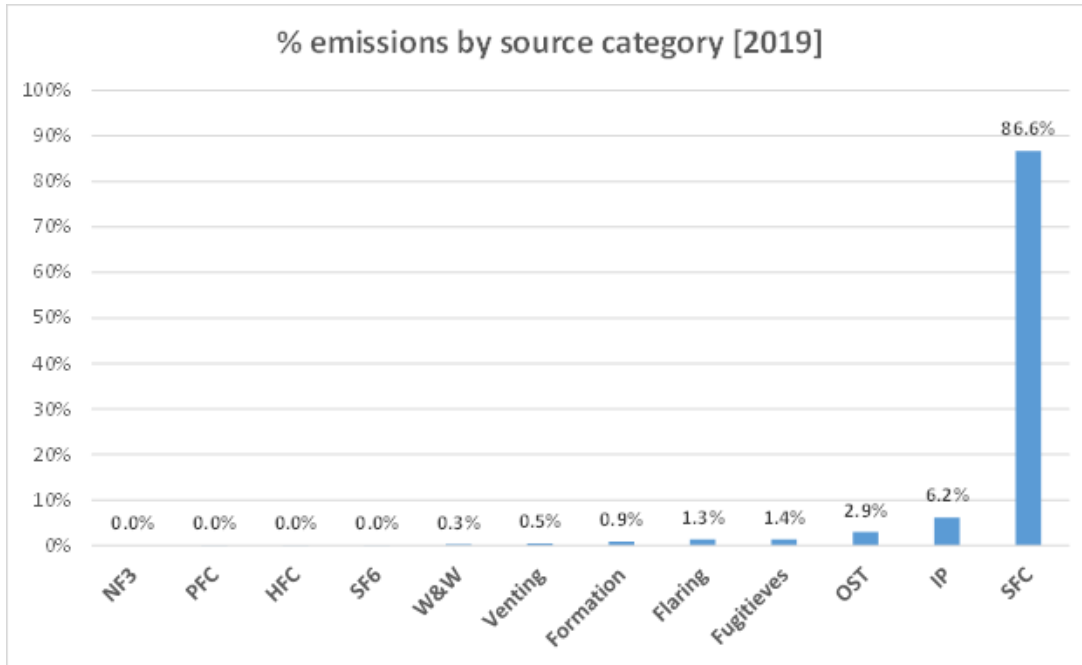


Chapter 1

Chapter 17

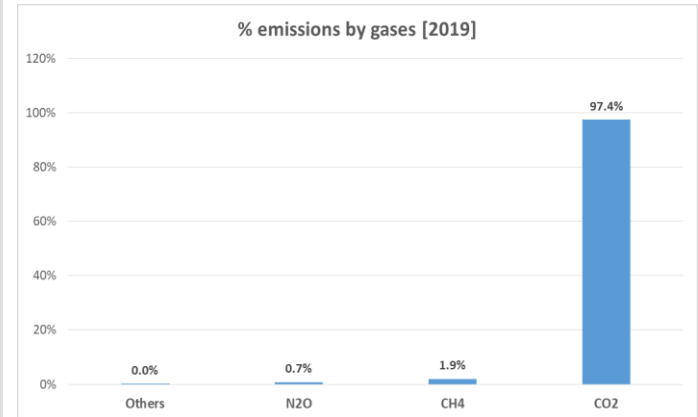
Appendices A, B, and C

Emissions by Source Category and Emission Type

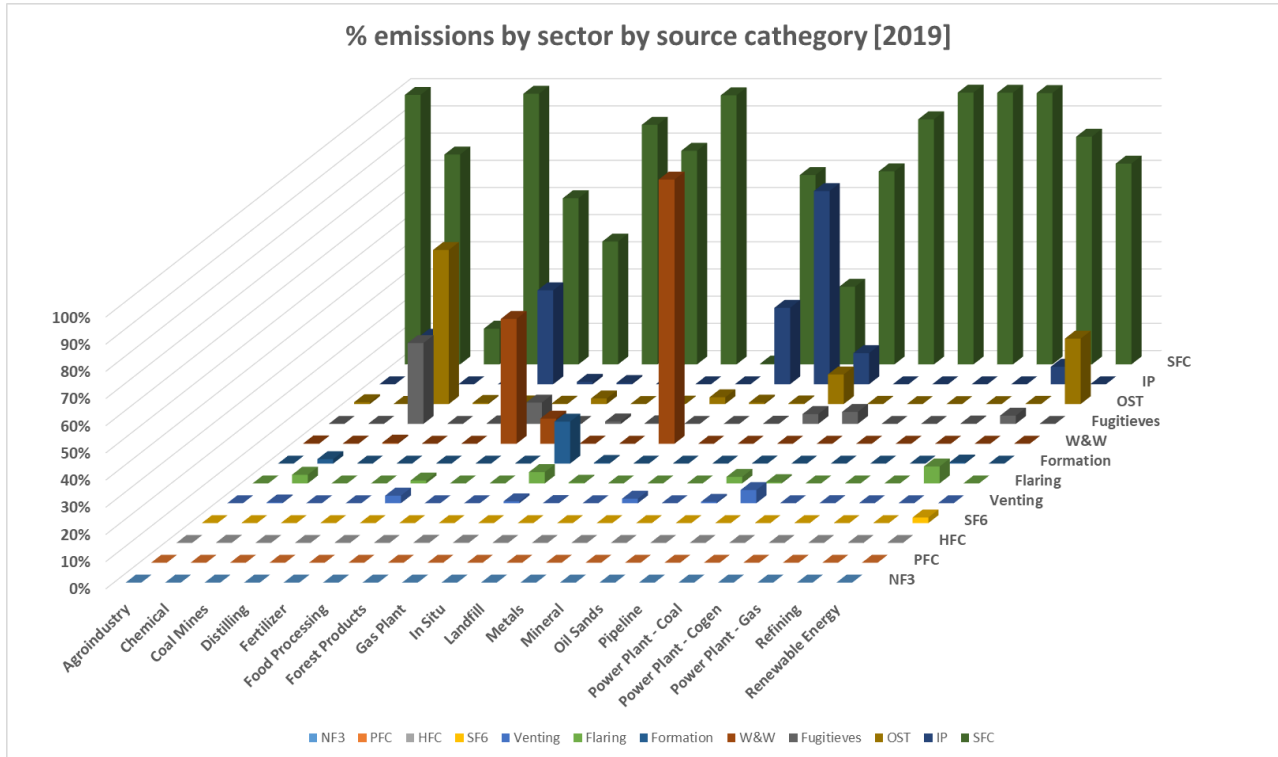


Key Point

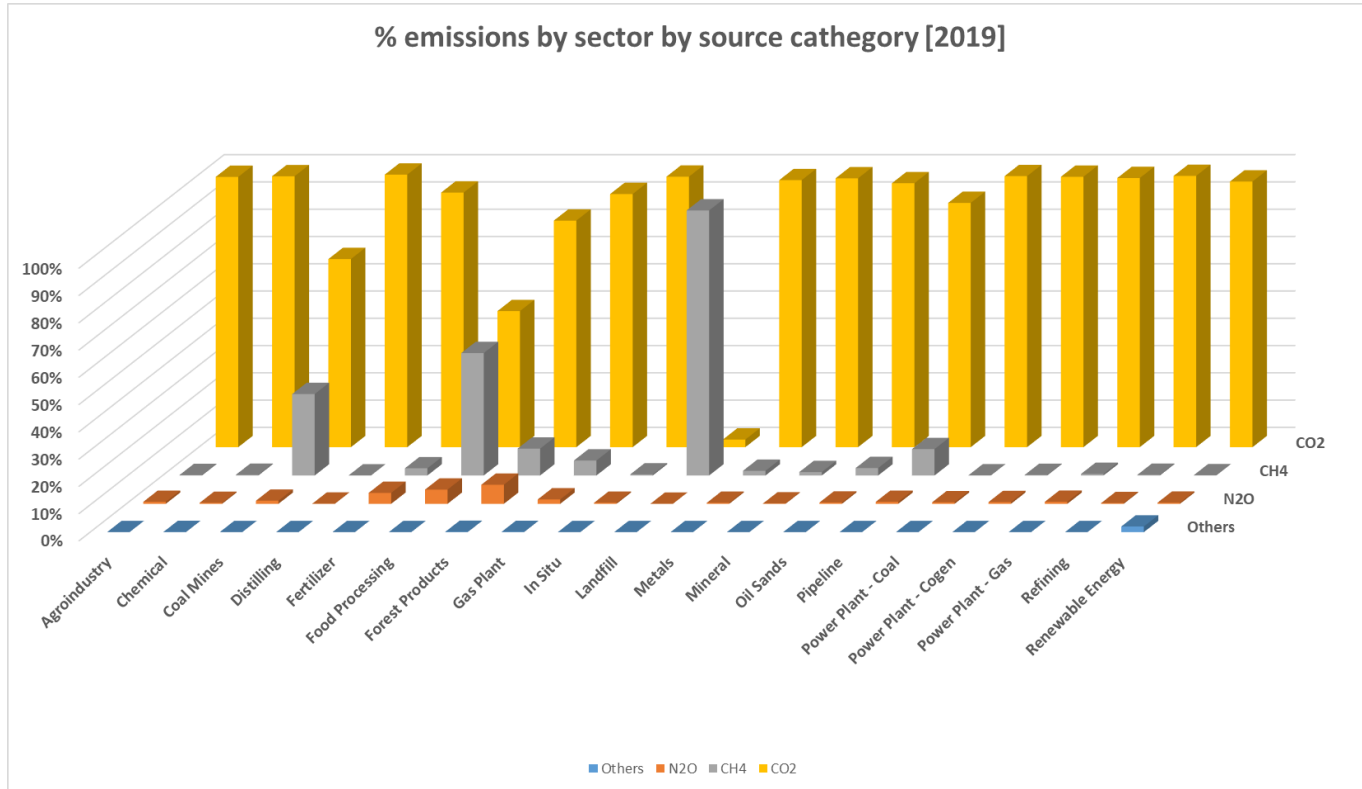
SFC emissions represent the majority of emissions emitted by regulated facilities.



Emissions by Sector and Source Category



Emissions by Sector and Emission Type



Level Classifications

- Levels for TIER regulated facilities are provided in the *Standard for Completing Greenhouse Gas Compliance and Forecasting Reports*

Table 4: Minimum level assignment for large emitters and opted-in facilities

	Carbon Dioxide	Methane	Nitrous Oxide
Stationary Fuel Combustion	3	2	2
Flaring	3	2	2

- Levels for SGRR regulated facilities are provided in the *Specified Gas Reporting Standard*

Level Classifications for Carbon Dioxide

- Alberta Greenhouse Gas Quantification Methodologies (AQM) (2020 & beyond)

		Level Classification			
		Level 1	Level 2	Level 3	Level 3A ¹
Fuel Types	Non-Variable	Method 1-1		Method 1-5	
	Natural Gas	Method 1-2	Method 1-3 or Method 1-4	Method 1-5	
	Variable	Method 1-3 or Method 1-4		Method 1-5	

- Quantification Methodologies for the CCIR and SGRR (2018 & 2019)

Figure 1-1 Tier classification and methodology mapping

		Tier Classification			
		1	2	3	4
Fuel Types	Non-Variable	Method 1			
	Natural Gas	Method 2			Method 4
	Variable	Method 3			

CO₂ - Method 1-1 Non-Variable Fuels

- Applicable for:

- Non-variable fuels
- Levels 1 to 3

$$CO_{2,p} = v_{fuel,p} \times HHV \times EF_{ene}$$

Equation 1-1

$$CO_{2,p} = v_{fuel,p} \times EF_{vol} \text{ or } ENE_{fuel,p} \times EF_{ene}$$

Equation 1-1a

- Requirements:

- Emission factors
- Fuel property or third party data (e.g. HHV) is available
- Missing data procedures
- Invoices
- Data consistency
- Reconciliations with source data
- Volumes at standard conditions

Level of deficiencies identified in verifications:
RED → HIGH ORANGE → MEDIUM BLACK → LOW

CO₂ - Method 1-2 High Heating Value Correlation

- Applicable for:

- Natural gas
- Levels 1 and 2
- Regulated facilities under SGRR (not TIER)

$$CO_{2,p} = v_{fuel,p} \times (60.554 \times HHV_p - 404.15) \times 10^{-6}$$

Equation 1-2

- Requirements:

- Emission factors
- Fuel properties or third party data (e.g. HHV)
- Missing data procedures
- Invoices
- Data consistency
- Reconciliations with source data
- Volumes at standard conditions

Level of deficiencies identified in verifications:

RED → HIGH ORANGE → MEDIUM BLACK → LOW

CO₂ - Method 1-3 Variable Fuels

- Applicable for:
 - Level 3
 - Variable fuels (including natural gas)
 - Regulated facilities under TIER

$$CO_{2,p} = v_{fuel(gas),p} \times CC_{gas,p} \times 3.664 \times 0.001 \quad \text{Equation 1-3a}$$

$$CO_{2,p} = \frac{ENE_{fuel(gas),p} \times CC_{gas,p} \times 3.664 \times 0.001}{HHV} \quad \text{Equation 1-3b}$$

$$CO_{2,p} = v_{fuel(liq),p} \times CC_{liq,p} \times 3.664 \quad \text{Equation 1-3c}$$

$$CO_{2,p} = m_{fuel(sol),p} \times CC_{sol,p} \times 3.664 \quad \text{Equation 1-3d}$$

- Requirements:
 - Carbon content (cc) and HHV calculations
 - Factors, parameters, and constants
 - Invoices
 - Missing data procedures
 - Weighted averages
 - Data consistency
 - Reconciliations with source data
 - Volumes at standard conditions

Level of deficiencies identified in verifications:
RED → HIGH ORANGE → MEDIUM BLACK → LOW

CO₂ - Method 1-4 Mass Balance

- Applicable for:

- Level 3
- Variable fuels
- One source with unknown quantity of fuel/emissions

$$CM_{source,i,p} = CM_{facility,p} - \sum_n^N CM_{known\ source,n,p} \quad \text{Equation 1-4a}$$

$$CM_{facility,p} = v_{fuel,facility,p} \times CC_{gas,facility,p} \times 0.001 \quad \text{or} \quad \text{Equation 1-4b}$$

$$CM_{known\ source,n,p} = v_{fuel,known\ source,n,p} \times CC_{gas,known\ source,n,p} \times 0.001$$

$$CO_{2,p} = CM_{source,i,p} \times 3.664 \quad \text{Equation 1-4c}$$

- Requirements:

- Known sources using Methods 1-1 and 1-3
- Total mass of carbon

Level of deficiencies identified in verifications:
RED → HIGH ORANGE → MEDIUM BLACK → LOW

CO₂ - Method 1-5 Continuous Emissions Monitoring System (CEMS)

- Applicable to:
 - Level 3A
 - Only available when facility is unable to apply a level 3 method
- Requirements:
 - Operating CEMS for another regulatory requirement (i.e. EPEA approval)
 - O₂ monitor could be used for specific fuels, and installed before January 1, 2012
 - AB CEMS code is being updated

Level Classifications for Methane and Nitrous Oxide

- Alberta Greenhouse Gas Quantification Methodologies (2020 & beyond)
 - Methods applicable for any level
- Quantification Methodologies for the CCIR and SGRR (2018 & 2019)

		Tier Classification		
		1	2	3
Sectors	Oil and gas ¹	Method 1 Sector or technology based emission factors	Method 1 Technology based emission factors only (Table 1-3)	Method 2
	All other sectors			

CH₄ and N₂O – Method 1-6 Default Emission Factors

- Applicable for:

- Fuels listed in Tables 1-2 to 1-7

$$CH_{4,p} \text{ or } N_{2}O_p = Fuel_p \times HHV \times EF_{ene}$$

Equation 1-4

$$CH_{4,p} \text{ or } N_{2}O_p = Fuel_p \times EF_{vol} \text{ or } EF_{ene}$$

Equation 1-4a

- Requirements:

- Emission factors
- Fuel property or third party data (e.g. HHV)
- Missing data procedures
- Invoices
- Data consistency
- Reconciliations with source data
- Volumes at standard conditions
- Steam, boiler efficiency

$$CH_{4,p} \text{ or } N_{2}O_p = Steam \times B \times EF$$

Equation 1-5

CH₄ and N₂O – Method 1-6 Default Emission Factors

- Table 1-2: Sector based default CH₄ and N₂O emission factors for natural gas
- Table 1-3: Technology based default CH₄ and N₂O emission factors for natural gas
- Table 1-4: Default CH₄ and N₂O for liquid fuels
- Table 1-5: Default CH₄ and N₂O emission factors for solid fuels
- Table 1-6: Default CH₄ and N₂O emission factors for biomass fuels
- Table 1-7: Default CH₄ and N₂O emission factors for gaseous fuels

CH₄ and N₂O - Method 1-7 CEMS

- Applicable for:
 - Level 3
- Requirements:
 - Operating CEMS for another regulatory requirement (i.e. EPEA approval)
 - AB CEMS code is being updated

Venting



Chapter 4

Venting Emissions

- Venting emissions represent smaller % of regulated emissions
Emissions are predominantly in the upstream oil and gas sector (UOG) and pipeline transmission sector.
- Venting emissions consist mainly of CH₄ and CO₂ emissions
 - Level classification for CH₄ is 2
 - Level classification for CO₂ is 3
- Venting methods for CH₄ and CO₂ are typically the same so acceptable for use under levels 2 and 3
- CO₂ entrained in fuel was previously classified as formation CO₂. These emissions should now be reported under venting.

Venting Quantification Methodologies

Process Operations with Venting Emissions	
Produced Gas and UOG Facilities	Acid Gas Removal and Sulphur Recover Units
Solid Desiccant Dehydrators	Hydrocarbon Liquid Loading/Unloading
Pigging and Purges	Oil Water Separators
Atmospheric Liquid Storage Tanks	Produced Water Venting
Pneumatic Controls	Well Tests, Completion, and Workovers
Pneumatic Pumps	Process System Blowdowns
Compressor Seals	Gas well Liquids Unloading
Glycol Dehydrator	Engine and Turbine Startups
Glycol Refrigeration	

Venting

- Requirements:
 - Gas compositions must be measured using:
 - A method prescribed by AER Directives for UOG facilities;
 - An analytical method prescribed in Section 17.3 of Chapter 17.
 - Quarterly sampling frequency (if not prescribed for a method)
 - Facilities may use fuel gas composition if representative of the vented gas.
 - Facilities should follow meter installation, calibrations, vent rate measurement and vapor composition sampling frequencies required by AER Directives. Non-UOG facilities may follow industry best practices.
 - Volume measurements must be adjusted to standard conditions as defined in Appendix C.

On-Site Transportation



Chapter 5

Onsite Transportation (OST) Emissions

- Generally, same methods and equations applied as for stationary fuel combustion
 - CO₂ emissions based on gas composition or for non-variable fuels such as gasoline or diesel, default emission factors may be used
 - CH₄ and N₂O emission factors are based on 2018 National Inventory Report (NIR)
- TIER does not intend to double price fuels. If fuels have already been subject to levy, these emissions do not need to be reported or included in TRE.
- Facility may apply an alternative and conservative methodology to estimate emissions if considered to be negligible.

Industrial Process Emissions



Chapter 8

Chapter 17

Appendices A, B, and C

Industrial Process Emissions by Sector

Sector	Industrial Process Emissions (2019 Reporting Year)	
	Tonnes CO ₂ e	% of Tonnes
Agroindustry	-	0%
Chemical	1,578,263	17%
Coal Mines	-	0%
Distilling	-	0%
Fertilizer	1,344,185	23%
Food Processing	2,496	0.9%
Forest Products	3,208	0.5%
Gas Plant	-	0%
In Situ	-	0%
Landfill	-	0.0%
Metals	89,930	27%
Mineral	1,437,573	71%
Oil Sands	3,812,614	11%
Pipeline	-	0%
Power Generation	-	0%

Industrial Process CO₂ Methods

Hydrogen Production Methods

- Direct feed oxidation

$$CO_{2,p} = \sum_{i=1}^N (v_{Feed,i} \times EF_{CO2,i}) \times 0.001 \quad \text{Equation 8-1}$$

$$EF_{CO2,i} = \sum_{k=1}^K (MF_{k,i} \times NC_k) \times \rho_{CO2} \quad \text{Equation 8-1a}$$

- CO₂ mass balance

$$CO_2 = CO_2 \text{ in Raw Unpurified } H_2 \text{ stream} - CO_2 \text{ in feed}$$

$$CO_{2,p} = \left[\sum_{i=1}^N (v_{RawU H2,i} \times MF_{CO2 RawU H2,i} - v_{Feed,i} \times MF_{CO2,Feed,i}) \times \rho_{CO2} \right] \times 0.001 \quad \text{Equation 8-2}$$

Industrial Process CO₂ Methods

Hydrogen Production Methods

- Hydrogen feed calculation

$$CO_{2,p} = \sum_{i=1}^N \left(\frac{v_{H2,i}}{\sum_{k=1}^K (SR_{H2/CO2,k} \times MF_{k,i})} \right) \times \rho_{CO2} \times 0.001 \quad \text{Equation 8-3}$$

- CO₂ emissions from mass balance

$$CO_{2,p} = (v_{total,p} - v_{SFC,p}) \times CC_{gas,p} \times 3.664 \times 0.001 \quad \text{Equation 8-4a}$$

$$CO_{2,p} = \frac{ENE_{total,p} - ENE_{SFC,p}}{HHV} \times CC_{gas,p} \times 3.664 \times 0.001 \quad \text{Equation 8-4b}$$

Table 8-1: Stoichiometric Molar Ratios of Hydrogen to CO₂

Feed Component	Overall Reaction Equation	SR: H ₂ /CO ₂ Molar Ratio (mol _{H₂} / mol _{CO₂})
Methane	CH ₄ + 2H ₂ O → CO ₂ + 4H ₂	4/1 = 4.000
Ethylene	C ₂ H ₄ + 4H ₂ O → 2CO ₂ + 6H ₂	6/2 = 3.000
Ethane	C ₂ H ₆ + 4H ₂ O → 2CO ₂ + 7H ₂	7/2 = 3.500
Propylene	C ₃ H ₆ + 6H ₂ O → 3CO ₂ + 9H ₂	9/3 = 3.000
Propane	C ₃ H ₈ + 6H ₂ O → 3CO ₂ + 10H ₂	10/3 = 3.333
Butylenes	C ₄ H ₈ + 8H ₂ O → 4CO ₂ + 12H ₂	12/4 = 3.000
Butanes	C ₄ H ₁₀ + 8H ₂ O → 4CO ₂ + 13H ₂	13/4 = 3.250
Pentenes	C ₅ H ₁₀ + 10H ₂ O → 5CO ₂ + 15H ₂	15/5 = 3.000
Pentanes	C ₅ H ₁₂ + 10H ₂ O → 5CO ₂ + 16H ₂	16/5 = 3.200
Hexanes	C ₆ H ₁₄ + 12H ₂ O → 6CO ₂ + 19H ₂	19/6 = 3.167
Heptanes	C ₇ H ₁₆ + 14H ₂ O → 7CO ₂ + 22H ₂	22/7 = 3.143
Carbon Monoxide	CO + H ₂ O → CO ₂ + H ₂	1/1 = 1.000

Industrial Process CO₂ Methods

CO₂ Consumption in Urea Production

- CO₂ generated from ammonia production (i.e. SMR) is then consumed in urea production
- CO₂ consumption in urea production:

$$CO_{2,Urea,p} = m_{Urea} \times \frac{MW_{CO_2}}{MW_{Urea}} \times 0.001 \quad \text{Equation 8-5}$$

- Needed for consistency with methodology in benchmark setting for ammonia and other fertilizer products.

Industrial Process CO₂ Methods

CO₂ from Calcining Carbonates

- CO₂ from calcining calcium and magnesium carbonates

$$CO_{2-IP,p} = \sum_{i=1}^I (m_{P,i} \times EF_{P,i}) + \sum_{j=1}^N (m_{W,j} \times EF_{W,j}) \quad \text{Equation 8-8}$$

$$EF_{P,i} = (CaO_{P,i} - CaO_{FP,i}) \times 0.785 + (MgO_{P,i} - MgO_{FP,i}) \times 1.092 \quad \text{Equation 8-8a}$$

$$EF_{W,j} = (CaO_{W,j} - CaO_{FW,j}) \times 0.785 + (MgO_{W,j} - MgO_{FW,j}) \times 1.09 \quad \text{Equation 8-8b}$$

$$CO_{2,p} = m \times TOC \times 3.664 \quad \text{Equation 8-9}$$

- CO₂ from calcining carbonates in pulp mills

$$CO_{2,p} = \sum_{i=1}^N (m_i \times EF_i \times F_i) \quad \text{Equation 8-10}$$

Industrial Process CO₂ Methods

CO₂ from Use of Carbonates

- Level 1 – Carbonate Consumption method
 - As per CO₂ from calcining carbonates in pulp mills.
- Level 3 – Carbonate mass balance method

$$CO_{2,p} = \sum_{i=1}^N (m_{in} - m_{out}) \times EF_i$$

Equation 8-11

Table 8-2: Default carbonate CO₂ emission factors

Mineral Name	Formula	CO ₂ Emission Factor (tonnes CO ₂ /tonnes Carbonate)
Limestone	CaCO ₃	0.43971
Magnesite	MgCO ₃	0.52197
Dolomite	CaMg(CO ₃) ₂	0.47732
Siderite	FeCO ₃	0.37987
Ankerite	Ca(Fe,Mg,Mn)(CO ₃) ₂	0.47572
Rhodochrosite	MnCO ₃	0.38286
Sodium Carbonate/Soda	Na ₂ CO ₃	0.41492
Ash		
Others		

Facility specific emission factor to be determined through analysis or supplier information.

Industrial Process CO₂ Methods

CO₂ from Use of Carbonates

- Level 4 – Measured CO₂ emission factor method

$$CO_{2,p} = \sum_{i=1}^N (m_i \times EF_i) \quad \text{Equation 8-12}$$

$$EF_i = \frac{ME_{CO_2}}{AL} \quad \text{Equation 8-13}$$

Industrial Process CO₂ Methods

- CO₂ from ethylene oxide production

$$CO_{2,p} = \left(\sum_{i=1}^N \left[m_{C_2H_4,feed,i} - m_{C_2H_4,loss,i} - \left(m_{EO,i} \times \frac{28.05}{44.05} \right) \right] / 28.05 \right) \times 2 \times 44.01 \quad \text{Equation 8-14}$$

$$m_{C_2H_4,loss} = Q_{vent} \times C_{C_2H_4} / 1000 \quad \text{Equation 8-14a}$$

$$m_{EO,p,i} = m_{MEG} \times 0.710 + m_{DEG} \times 0.830 + m_{TEG} \times 0.880 + m_{HG} \times a + m_{GW} \times b \quad \text{Equation 8-14b}$$

- CO₂ from use of carbon as reductant

$$CO_{2,p} = m_c \times 3.664 \quad \text{Equation 8-15}$$

Industrial Process N₂O Methods

Nitric Acid Production

- Level 1 – Method 8-1: N₂O emission factor method for systems with abatement downtime

$$N_2O_p = m_{PNA} \times EF_{N_2O,NAO} \times (1 - (DF_{N_2O} \times AF_{N_2O})) \times 0.001 \quad \text{Equation 8-16}$$

$$DF_{N_2O} = \frac{(C_{N_2O,NAO} \times Q_{N_2O,NAO} - C_{N_2O,NAS} \times Q_{N_2O,NAS})}{C_{N_2O,NAO} \times Q_{N_2O,NAO}} \times 100\% \quad \text{Equation 8-16a}$$

$$EF_{N_2O,NAO} = \frac{\sum_{i=1}^N \frac{Q_{NAO,i} \times C_{N_2O,NAO,i}}{PR_{NA,i}} \times 1.861 \times 10^{-6}}{N} \quad \text{Equation 8-16b}$$

$$AF_{N_2O} = \frac{PR_{NA,Abate}}{PR_{NA,Total}} \quad \text{Equation 8-16c}$$

Industrial Process N₂O Methods

Nitric Acid Production

- Level 2 – Method 8-2: N₂O emission factor method for direct stack test

$$N_2O_p = m_{PNA} \times EF_{N2O,NAS} \times 0.001 \quad \text{Equation 8-17}$$

$$EF_{N2O,NAS} = \frac{\sum_{i=1}^N \frac{Q_{NAS,i} \times C_{N2O,NAS,i}}{PR_{NA,i}} \times 1.861 \times 10^{-6}}{N} \quad \text{Equation 8-17a}$$

- Level 3 - CEMS

$$N_2O_p = \sum_{t=1}^T \left[Vel_{s,t} \times Area_s \times C_{N2O,t} \times \left(\frac{P_{act,t} \times 288.15}{101.325 \times T_{act,t}} \right) \right] \times \frac{MW_{N2O}}{23.645} \times 0.001 \quad \text{Equation 8-18}$$

Industrial Process Methods

- Requirements:
 - Fuel property calculations (e.g. cc, HHV, SR)
 - Factors, parameters, constants
 - Invoices
 - **Missing data procedures**
 - Weighted averages
 - Data consistency
 - Reconciliations with source data
 - **Volumes at standard conditions**

Break 10 minutes



Production



Chapter 13

Production

- Products under TIER have a facility-specific benchmark (FSBs) and/or high performance benchmark (HPBs)
 - TIER requires facilities to use the higher benchmark
 - TIER provides HPBs for products (Schedule 2)
 - AQM provides further description some of these products
 - Products with only FSBs are not provided in TIER or AQM
 - Not all FSBs are based on products sold (i.e. intermediate products)
- Products regulated by another organization
 - Electricity – Alberta Electric System Operator (AESO)
 - Mining bitumen – Alberta Energy Regulator (AER) (ST39 and Petrinex)
 - In Situ bitumen - AER (ST53 and Petrinex)
 - ABGPI – AER (fuels consumed and produced is reported in Petrinex)

Production

Products with Facility-Specific Benchmarks and/or High Performance Benchmarks (2019)

*ABGPI (natural gas processing)	*Hydrogen	Polyethylene
Ammonia	Hydrogen Peroxide	Propane\Butane Mix
Ammonium Nitrate	*Industrial Heat	Quicklime
Ammonium Sulphate	Isooctane	Refine Bleach Deodorize
Biodiesel	Pipeline Transmission	Refined Vegetable Oil
Bituminous Coal	Linear Alpha Olefins	*Refining AB-CWB
Carbon Black	Live Weight of Cattle	*Softwood Kraft pulp
Cement	Magnesia	Styrene
Crude Vegetable	Methane	Sub-Bituminous Coal
Crude Super Degum	Mono Ammonium Phosphate	Sugar
*Electricity	Natural Gas Liquids	Super Degummed Oil
Ethanol	Nickel + Cobalt	Sulphuric Acid
Ethylene Glycol	*In-Situ Bitumen	Unrefined Oil
Fertilizer Products	*Mining Bitumen	*Upgrading AB-CWB
Hardwood Kraft Pulp	Partially Calcined By-Product	Urea
High Value Chemicals	Phosphoric acid	

*Products that are regulated by another organization (i.e. AESO, AER).

High Performance Benchmarks

Products with High Performance Benchmarks	Unit	Descriptions
Ammonia	Tonnes	Specified at least 99% of ammonia by mass
Ammonium Nitrate	Tonnes	Specified at least 99% of ammonium nitrate by mass
Bituminous Coal	Tonnes	Clean Coal as per facility sales specification
Cement	Tonnes	Cement and additives without specification
Electricity	Megawatt hours (MWh)	AESO requirements for electricity export to grid or to another facility
Ethylene Glycol	Tonnes	Per regulation
Hardwood Kraft Pulp	Air Dried Metric tonnes (ADMt)	Air Dry Metric Tonnes – 10% moisture by mass of hardwood pulp
High Value Chemicals (HVC)	Tonnes	Per regulation
Hydrogen	Tonnes	Mass of hydrogen excluding impurities.
Industrial Heat	Gigajoules (GJ)	Heat exported to a third party per regulation.
Oil Sands In Situ Oil Bitumen	Cubic meter of bitumen	As per AER ST39
Oil Sands Mining Bitumen	Cubic meter of bitumen	As per AER ST39
Refining and Upgrading	Alberta Complexity-Weighted Barrel	Adapted from CAN-CWB
Softwood Kraft Pulp	Air Dried Metric tonnes (ADMt)	Air Dry Metric Tonnes – 10% moisture by mass of softwood pulp
Natural Gas	Alberta Gas Processing Index	Benchmarking based on a modular approach for different processes.

Production Quantification Methodologies

- General approach for quantification of production (unless otherwise specified)
 - Production data
 - Direct measurements
 - Accounting and/or third party sales records (excluding refining, in-situ, oil sands, ABGPI)
 - Accounting / sales data with an inventory adjustment

Verification of Production

- Evaluation of evidence of production is critical
 - What is the source of the evidence or documentation?
 - Is the documentation based on the facility data management system?
 - If so, what is the source of the data?
 - Have facility controls been tested adequately?
 - Are there accounting records or third party documentation to confirm quantities sold?
 - Be careful of “Black Box” production accounting

Alberta Complexity Weighted Barrel (AB-CWB)

- AB-CWB has three components:

$$AB-CWB = \frac{(CWB_{pro} + CWB_{off} + CWB_{non}) \times Days}{1000} \quad \text{Equation 13.14-18}$$

1. CWBpro

$$CWB_{pro} = \sum_{u=1}^U \text{Daily Throughput Barrel}_u \times CWB \text{ Factor}_u \quad \text{Equation 13.14-17}$$

2. CWBoff

Total Input Barrels are defined as all raw material inputs to the refinery less transfers of raw materials from the refinery.

$$CWBoff \text{ [bbl/cd]} = 0.327 \times \text{Total Input Barrels} + 0.0085 \times CWBpro$$

3. CWBnon

Non-crude input barrels includes the total input raw material processed by the refinery other than crude or other materials entering the atmospheric distillation unit.

$$CWBnon \text{ [bbl/cd]} = 0.44 \times \text{Non-Crude Input Barrels}$$

Alberta Complexity Weighted Barrel (AB-CWB) – CWBpro

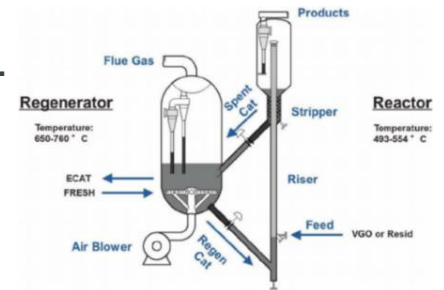
- CWBpro:** $CWB_{pro} = \sum_{u=1}^U \text{Daily Throughput Barrel}_u \times CWB \text{ Factor}_u$ Equation 13.14-17

Processing Facilities	Process Type	Process ID	Process Type ID	Feed	Products	Typical Equipment	Capacity Basis	Unit of Measure	CWB Factor
Xylene Isomerization	Xylene Isomerization	XYISOM		Mixed Xylenes low in p-xylene content. Hydrogen	Mixed Xylenes in Equilibrium	Heater, Reactor, Stabilizer, Deisopranizer	Feed	b/sd	1.90
Paraxylene Production	Paraxylene Adsorption	PXYL	ADS	Mixed Xylenes	p-Xylene, Mixed Xylenes low in p-Xylene Content	Adsorption Chamber, Rotary Valve, Extract & Raffinate Columns, Finishing Column	Paraxylene Product	b/sd	6.50
	Paraxylene Crystallization	PXYL	CRY	Mixed Xylenes	p-Xylene, Mixed Xylenes low in p-Xylene Content	Crystallizers, Centrifuge	Paraxylene Product	b/sd	
	Xylene Splitter	XYLS		Mixed C ₇ -Aromatics	Mixed p-m-Xylenes, Mixed o-Xylene & C ₇ -Aromatics	Fractionating Column	Feed	b/sd	
	Orthoxylene Rarun Column	OXYLRC		Mixed o-Xylene & C ₇ -Aromatics	o-Xylene, C ₇ -Aromatics	Fractionating Column	Feed	b/sd	
Ethylbenzene	Ethylbenzene Manufacture	EBZ		Benzene, Ethylene or Refinery Off-Gas Containing Ethylene	Ethylbenzene	Reactors, Heater, Benzene Recycle Column, Fractionator, Racycle Compressor, Makeup Compressor	Ethylbenzene Product	b/sd	1.60
	Ethylbenzene Distillation	EBZD		Mixed C ₈ Stream	Ethylbenzene, Mixed C ₈ Stream	Fractionator, Heat Exchange	Feed	b/sd	
Cumene	Cumene	CUM		Propylene, Benzene	Propane, Cumene, Heavy Aromatics	Reactor, Hot Oil or Steam Heater, Flash Towers, Benzene Recovery Column, Clay Treater, Fractionator	Cumene Product	b/sd	5.00
Asphalt Production	Asphalt Production	ASP		Short Resid	Fuel Gas, Asphalt	Steam Generation, Oxidizer, Air Blower, Incinerator	Total Asphalt Production	b/sd	2.70
Catalytic Cracking	Fluid Catalytic Cracking (Feed Con:Carbon <1.25 wt %)	FCC	FCC	Vacuum Gas Oil, Atmospheric Resid	Fuel Gas, C ₅ , C ₆ , Gasoline, Cycle Oils, Decant Oil	Feed Preheater, Reactor, Fractionator, Regenerator, CO Boiler, Waste Heat Steam Generator, Tertiary Flue Gas Separator, Electrostatic Precipitators, Catalyst Hoppers	Feed	b/sd	1.150 + 1.041 × (FCC Coke on Catalyst vol %)
	Mild Residual Catalytic Cracking (Feed Con:Carbon 1.25-3.5 wt %)	FCC	MRCC				Feed	b/sd	0.6593 + 1.1075 × (FCC Coke on Catalyst vol %)
	Residual Catalytic Cracking (Includes two-stage regeneration, Feed Con:Carbon ≥3.5 wt %)	FCC	RCC				Feed	b/sd	1.1765 × (FCC Coke on Catalyst vol %)
	Houdry Catalytic Cracking	FCC	HCC				Feed	b/sd	4.65
	Thermofor Catalytic Cracking	FCC	TCC						

- Largest contributor, when present, to the CWBpro is the FCCU, where the %vol factor based on the Grace-Davison method.

%Volume of Coke on Catalyst

- Simple math (Section 13.14.3), but with +20 important variables that require measurements and calculations.
- Calculation principles
 - Gas analysis from the flue gas (CO_2 , CO , O_2 , NO , NO_2 , O_2)
 - Air feed and properties to calculate dry air
 - Flue gas flow is calculated from flue gas and mass balance pivoted on N_2 , Ar and a few negligible components.
 - Coke is calculated, then coke yield having fresh feed volume.
- In addition, the method allows you to calculate CO_2 emissions from the FCCU



Alberta Gas Processing Index (ABGPI)

- Method 13-1:
 - Based on calculated material balance instead of direct measured flows due to the lack of instrumentation.
- Method 13-2:
 - Based on actual metering.

Alberta Gas Processing Index (ABGPI)

Module		Stream		Weighting Factor	
		Type	Unit	Value	Unit
1	Inlet Compression	Throughput	e3m3	0.03304	tCO ₂ e/unit
2	Dehydration	Throughput	e3m3	0.00247	tCO ₂ e/unit
3	Gas Sweetening	Throughput	e3m3	0.03040	tCO ₂ e/unit
4	Total Refrigeration	Throughput	e3m3	0.01835	tCO ₂ e/unit
5	Fractionation	Production	m3OE	0.04141	tCO ₂ e/unit
6	Stabilization	Production	m3OE	0.05537	tCO ₂ e/unit
7	Sales Compression	Throughput	e3m3	0.02135	tCO ₂ e/unit
8	Sulphur Plant	Production	Tonnes Sulphur	0.4249	tCO ₂ e/unit
9	Acid Gas Injection	Throughput	e3m3 Acid Gas	0.3960	tCO ₂ e/unit
10	Ethane Extraction	Production	m3OE	0.1251	tCO ₂ e/unit
12	CO ₂ Plant	Throughput	e3m3 CO ₂	0.1881	tCO ₂ e/unit
13	Flaring, Venting, Fugitives	Production	m3OE	0.004452	tCO ₂ e/unit

$$ABGPI = \sum_{u=1}^U Throughput \times Factor_u$$

Note: Throughputs are based on Petrinex data.

Production

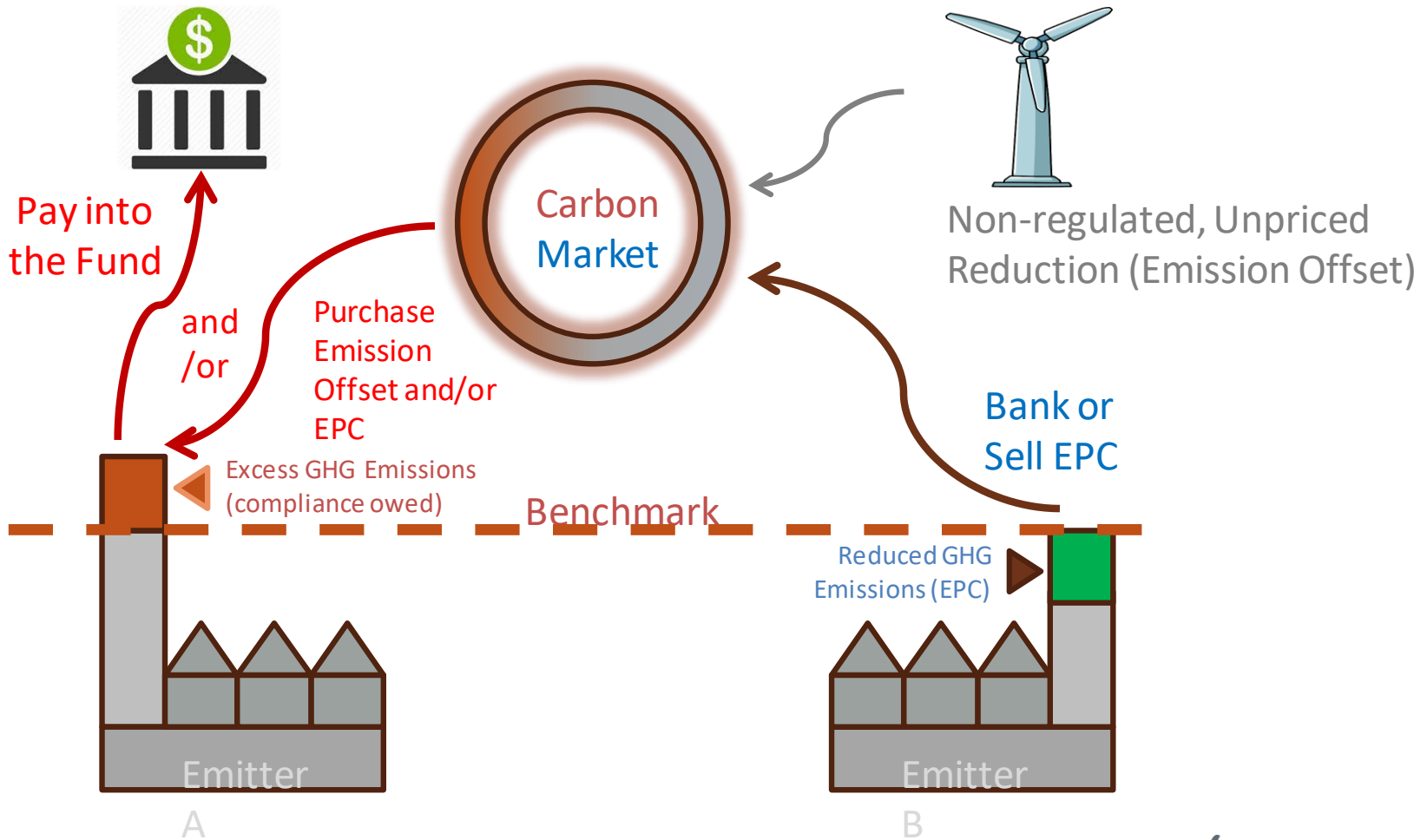
- Requirement:
 - Third party data
 - Throughput and product property calculations, additives, moisture
 - Factors, parameters, constants
 - Invoices
 - **Missing data procedures**
 - Weighted averages
 - Data consistency
 - Reconciliations
 - **Volumes at standard conditions**

Questions?



Methods of True-up





TEIR Compliance Requirements

Total Regulated Emissions

Total Regulated Emissions

$$TRE = DE - ICO_2 + ECO_2 + UCO_2$$

- ECO₂ excludes any carbon dioxide removed from raw gas and disposed of, as an acid gas stream, to an underground formation through a Class III well

TEIR Compliance Requirements

Allowable Emissions

Allowable Emissions

$AE = \text{Product Allocations} - \text{Scope Adjustment}$

$$AE = \sum_i (\max(\text{FSB}_{i-y}, \text{HPB}_i) \times P_i) - [(\text{HPB}_{E-y} \times I_E) + (\text{HPB}_{H-y} \times I_H) + (\text{HPB}_{HE-y} \times I_{HE})]$$

- AEs cannot be below 0.
- Scope Adjustment for the refining and upgrading sectors does not include hydrogen imports.
- Any exported Electricity, Heat, or Hydrogen would be accounted for as a product in the Production term
- Cost containment allocation benchmarks would be added to the HPB and FSB benchmarks when reporting .

Net Emissions and True-up Obligation

Net Emissions

- The person responsible for a facility must ensure the net emissions (NE) do not exceed the Allowable Emissions for the facility by trueing up

$$NE = TRE - (EO + EPC + FC)$$

$$TRE - (EO + EPC + FC) = AE$$

- EO is the quantity of emission offsets in tonnes on a CO₂e basis,
- EPC is the quantity of emission performance credits in tonnes on a CO₂e basis,
- FC is the quantity of fund credits in tonnes on a CO₂e basis, represented by the fund credits

True-up Obligation

$$\text{True up Obligation} = TRE - AE$$

Contents of Compliance Submission Package

- Completed Compliance Form (Excel workbook)
- Signed Statement of Certification (SoC)
- Verification Report, including
 - Signed Statement of Verification (SoV)
 - Signed Statement of Qualifications (SoQ)
 - Signed Conflict Of Interest Checklist (COI)
- Updated Quantification Methodology Document
- Area Fugitives Report (as required)
- Emissions reduction plan report for facilities with cost containment designation
- Confidentiality request for specified parts of the submission (optional)

Compliance Submission

- Send to AEP.GHG@gov.ab.ca by June 30, 2021
- Payment by cheque
 - Submit a cheque payable to “Government of Alberta” along with the fund credit purchase form:

Government of Alberta
Finance and Administration Branch
Alberta Environment and Parks
6th floor, South Petroleum Plaza
9915 108 Street NW
Edmonton, Alberta
T5K 2G8

Compliance Submission

- Electronic payment
 - Submit payment by electronic fund transfer and provide the fund credit purchase form at least three business days in advance of the electronic funds transfer

Account Name	PA Technology Innovation & Emission
Bank Name	CIBC
Bank Address	10102 Jasper Avenue Edmonton
Institution Number	0010
Transit Number	00059
Account Number	92-74219
Ministry/Department	Alberta Environment and Parks, Finance and Administration Branch
E-mail	AEP.revenue@gov.ab.ca

- Receipt will be given

Using Credits for Compliance

EPCs/Emission Offsets

- Credits must be in a pending retirement state on the registry prior to submission
- Action on the registry should be submitted 10 business days in advance
- EPCs must be retired to the facility that are using them to true-up
 - If you are new to TIER and want to use EPCs for compliance create account and facility on registry

Forms Walkthrough



Final Question Period

Contact: AEP.GHG@gov.ab.ca

