

**MMF2034 CLIMATE RISK MANAGEMENT**

**Business Case Written-Up: Canada - Ontario Emissions Performance  
Standards Program from International Carbon Action Partnership**

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# 1 Introduction

## 1.1 Introduction to the International Carbon Action Partnership (ICAP)

The International Carbon Action Partnership (ICAP) is an international forum for government and public authorities that have implemented or are planning to implement emissions trading systems (ETS). ICAP facilitates cooperation between countries, sub-national jurisdictions and supranational institutions that have established or are actively pursuing carbon markets through mandatory cap and trade systems. Founded in 2007 in Lisbon, Portugal, by leaders of more than 15 governments, ICAP provides the opportunity for member jurisdictions to share best practices and discuss ETS design elements with a view to creating a well-functioning global carbon market through linking ETS.

The work of ICAP focuses on the three pillars:

- *Technical Dialog*: ICAP provides a platform for members and observers to exchange knowledge on and discuss emissions trading system and implementation.
- *Knowledge Sharing*: ICAP acts as a unique repository of information on emission trading, promoting it as an important policy instrument to address climate change.
- *Capacity Building*: ICAP offers training courses to policymakers and private sector representatives on all respects of emissions trading, thus building capacity on the design, implementation, and operation of ETSs around the world.

Through its work, ICAP has five objectives:

- Share best practices and lessons from ETS experiences around the world.
- Help policymakers recognize ETS design compatibility issues and opportunities for the establishment of an ETS at an early stage.
- Facilitate the future linking of carbon markets.
- Highlight the key role of emissions trading as an effect climate policy tool.
- Build and strengthen partnerships between governments.

In conclusion, by fostering international cooperation, ICAP helps harmonize carbon pricing systems globally in order to reduce greenhouse gas (GHG) emissions, ensuring transparency, efficiency, and environmental integrity.

## 1.2 Select the Carbon Project Business Case from ICAP

The [ICAP ETS Map](#) provides and visualizes up-to-date information on ETS worldwide, including systems that are in force, under development, or under consideration. To better understand the Canadian approach to carbon regulation, we identified the [Canada - Ontario Emissions Performance Standards \(EPS\) Program](#), which is currently in force. This program represents Ontario's tailored approach to carbon pricing, balancing emission reduction goals with economic competitiveness in key industrial sectors. With this insight, we selected the Ontario EPS Program as the subject of our business case study, allowing us to explore its historical context, key stakeholders, market conditions, and alignment with international best practices.

The Ontario EPS Program operates within the broader framework supported by ICAP's principals and expertise. Although the program was not directly created by ICAP, it benefits significantly from the knowledge-sharing, best practices, and technical guidance disseminated through ICAP's network.

ICAP Influences the Ontario EPS Program in the following four aspects:

- *Policy Design Principles:* The EPS program incorporates globally recognized ETS design principles promoted by ICAP, such as emission intensity benchmarks and output-based allocations.
- *Benchmarking Methodologies:* ICAP supports the development of sector-specific emission intensity benchmarks, which form the core of the EPS system.
- *Monitoring, Reporting, and Verification (MRV):* Ontario's EPS adheres to ICAP-endorsed best practices for MRV protocols to ensure transparency and accuracy.
- *Market Flexibility Mechanisms:* EPS includes credit trading and compliance mechanisms, inspired by lessons shared through ICAP's collaborative platforms.

While the Ontario Emissions Performance Standards (EPS) Program is a provincial initiative led by Ontario's Ministry of Environment, Conservation, and Parks (MECP), its design and operational principles reflect significant alignment with international best practices championed by ICAP. This relationship highlights how global knowledge-sharing platforms like ICAP play an essential role in shaping localized carbon pricing mechanisms to effectively combat climate change.

## **2 The Case: Canada - Ontario Emissions Performance Standards (EPS) Program**

### **2.1 Historical Context**

The Ontario EPS Program was established as a provincial response to the federal carbon pricing requirements under the [Greenhouse Gas Pollution Pricing Act \(GGPPA\)](#). Its history is deeply intertwined with Ontario's evolving carbon pricing landscape, marked by shifts in economic concerns, political priorities, legal battles.

#### **2.1.1 Early Carbon Pricing in Ontario: Ontario's Cap-and-Trade Program (2017 - 2018)**

Greenhouse gases (GHGs) cause global warming. In July 2016, global temperatures were the warmest on record. Ontario is responsible for less than 1% of global emissions but remains one of the largest per capita emitters in the world. Greenhouse gases are pollutants, like carbon dioxide, that come from burning fossil fuels. They originate from factories, cars, trucks, home furnaces, and other sources. Every year, millions of tonnes of greenhouse gases are pumped into the air with almost no cost to emitters.

Ontario launched the cap-and-trade program on January 1, 2017, to fight climate change. It is a market-based system that sets a hard cap on greenhouse gas emissions while giving flexibility to businesses and industries in terms of how they meet their caps. Putting a price on carbon encourages companies and consumers to make better choices for the environment. It gives polluters an incentive to cut emissions, "if you pollute less, you pay less."

The **cap** limits how many tonnes of greenhouse gas pollution businesses and institutions can emit. The cap drops each year to encourage lower emissions. Companies must have enough allowances to cover their emissions if they exceed the cap. To comply, companies can generally invest in clean technologies to become more efficient, switch to lower-carbon fuels, or purchase additional credits.

Companies can **trade** (buy or sell) allowances. For example, if a company emits more greenhouse gas emissions than permitted by the cap, it could buy credits in order to comply. Credits would be available for purchase from a company that reduces its greenhouse emissions and has surplus credits.

In 2017, cap-and-trade was estimated to cost the average Ontario household about \$13 more per month to fuel a car and heat a home.

In 2018, with the election of a new Progressive Conservative government led by Premier Doug Ford, Ontario withdrew from the cap-and-trade program, citing concerns over its economic burden on businesses and households.

The legacy of the cap-and-trade program lives on in the Ontario EPS Program, which continues to balance climate goals with economic competitiveness, albeit under a different regulatory structure.

### 2.1.2 Federal Backstop: Output-Based Pricing System (OBPS) (2018 - 2019)

A federal carbon pollution pricing “backstop” system applies in jurisdictions that request it or that do not implement systems that meet the federal benchmark. Based on the federal GGPPA, adopted in 2018, the federal backstop system has been in place since 2019, and comprises two parts:

1. A regulatory charge on fossil fuels, such as gasoline and natural gas, known as the **fuel charge**.

Generally, the fuel charge applies early in the supply chain and is payable by a registered producer or distributor. The fuel charge started at CAD 20 per tonnes of CO<sub>2</sub>e (tCO<sub>2</sub>e) in 2019 and increased annually by CAD 10, until it reached CAD 50 per tCO<sub>2</sub>e in 2022. The updated fuel charge started at CAD 65 from April 2023, and increases by CAD 15 each year until it reaches CAD 170 in 2030.

2. A performance-based system for industries, known as the **federal Output-Based Pricing System (OBPS)**.

The federal OBPS is designed to maintain the carbon price signal for industrial emitters to reduce their GHG emissions while mitigating the risk of carbon leakage and competitiveness impacts. It applies to facilities in the emissions-intensive and trade-exposed (EITE) industrial and electricity sectors that emit equal to or more than 50,000 tCO<sub>2</sub>e. Smaller facilities with annual emissions equal to or more than 10,000 tCO<sub>2</sub>e from sector at risk of carbon leakage and adverse competitiveness impacts can apply to participate voluntarily.

The OBPS sets a performance (output-based) standard (i.e., GHG emissions per unit of output) based on the national production weighted average emissions intensity for a given activity in covered sectors. Facilities calculate a limit based on their level of production and the appropriate standards and are required to provide compensation for emissions that exceed this limit. Those performing better than the standard are issued surplus credits (compliance units) that they can sell or save to use later. Facilities can comply by:

- (1) remitting surplus credits purchased from other facilities or retained from previous periods;
- (2) paying the carbon price; or

(3) remitting eligible offset credits.

The OBPS strikes a delicate balance between reducing industrial emissions and protecting economic competitiveness in sectors sensitive to international market pressures. The system ensures that industries are not unfairly penalized while maintaining a clear incentive to reduce emissions through innovation and efficiency improvements.

The federal OBPS serves as both a safeguard mechanism and a policy blueprint for provinces and territories developing their carbon pricing systems. It remains a cornerstone of Canada's national strategy to meet its greenhouse gas reduction targets under the Paris Agreement, aiming for a 40% - 45% reduction below 2005 levels by 2030 and net-zero emissions by 2050.

### **2.1.3 Transition Period: from Federal OBPS to Ontario EPS Program (2019 - 2022)**

On June 21, 2018, the federal GGPPA came into force and set a minimum national standard on GHG pricing in an attempt to reduce emissions and fulfill Canada's commitments under the 2015 Paris Agreement. For provinces that did not already have a provincially regulated carbon pricing scheme that met federal requirements, the GGPPA established a regulatory charge on fossil fuels and a carbon pricing system: the OBPS. For provinces with carbon pricing schemes that met or exceeded federal standards, the regime established under the GGPPA did not apply.

In September 2018, Ontario challenged the constitutionality of the GGPPA, taking the position that such legislation was beyond the jurisdiction of the federal government because natural resource regulation under the Constitution falls under provincial jurisdiction. However, despite this ongoing challenge, the OBPS came into effect in Ontario on January 1, 2019, because Ontario did not enact replacement GHG legislation by the federal deadline.

While Ontario did enact the [Greenhouse Gas Emissions Performance Standards \(the EPS Regulation\)](#) in 2019 and the [Greenhouse Gas Emissions: Quantification, Reporting and Verification \(the Reporting Regulation\)](#) in 2018, respectively, together under the Ontario [Environmental Protection Act \(EPA\)](#), the EPS program was not accepted by the federal government as an alternative to the federal OBPS until September 21, 2020. Various amendments to the EPS Regulation and the Reporting Regulation were enacted during the intervening period in order to meet the federal benchmark requirements for a provincial GHG emissions program.

Despite the federal government's acceptance of the EPS program, Ontario continued to pursue its legal challenge of the federal government's authority to regulate GHG emissions in Ontario in the courts. This challenge, along with similar challenges by Alberta and Saskatchewan, was ultimately unsuccessful. The political and legal battles between the federal and provincial governments culminated in the Supreme Court of Canada's decision on March 25, 2021, that the GGPPA is constitutional.

Up to January 1, 2022, Ontario's industrial GHG emissions were regulated by both the EPS program and the OBPS while the federal and provincial governments worked together to facilitate the transition between programs for Ontario industry. The EPS program has required registration and reporting by regulated Ontario facilities since 2019. As a result, registered facilities have been required to register and report under both the OBPS and the EPS program during the transition period. However, excess emissions payments were only required under the OBPS for the 2021 compliance period (to be paid in 2022), and the first compliance period under the EPS program, where excess emissions fees would be required, was 2022 (to be paid in 2023).

The amendments to the two regulations were intended to ensure that there was no gap in pricing for emissions during the transition period while also ensuring that Ontario industrial facilities were not charged twice for the same emissions under the EPS program and the OBPS. With the transition period correctly carried out, while reporting periods for both programs may have overlapped, payment obligations under the OBPS were only with respect to emissions up to December 31, 2021, and payment obligations under the EPS program commenced on January 1, 2022. Once all requirements under the OBPS with respect to the 2021 compliance period have been completed, only the EPS program will apply to facilities in Ontario going forward.

#### **2.1.4 Ontario Emissions Performance Standards (EPS) Program (2022 - Present)**

Ontario's EPS Program came into effect in January 2022, replacing the federal OBPS that was operational in Ontario from 2019 to 2021. It is an intensity-based ETS for large industrial emitters, where each covered entity must surrender compliance units for emissions that exceed the facility's annual emissions limit. The annual emissions limit is based on facility-specific, sectoral, or historical emissions benchmarks, depending on the facility. The system applies to the same sectors and gases as the federal OBPS. The federal fuel charge took effect in Ontario in 2019 and remains in effect, with the price rising CAD 15 each year until 2030, resulting in a price of CAD 170 per tCO<sub>2</sub>e in 2030.

Ontario made regulatory amendments to the EPS program to meet the federal benchmark and continue the program from 2023 to 2030. Aligning with the federal benchmark requirement pricing trajectory, the EPS program price rose to CAD 65 per tCO<sub>2</sub>e in 2023 and increased to CAD 80 per tCO<sub>2</sub>e in 2023. Ontario strengthened the performance standard for generating electricity using fossil fuels and adjusted the factors applied to reduce the annual emissions limits of a facility. Since 2023, the Ontario EPS has begun recognizing CO<sub>2</sub> emissions that are captured and stored permanently in certain carbon capture and storage (CCS) projects as emissions reductions at EPS covered facilities. Carbon capture and utilization (CCU) is not currently recognized as an emissions reduction method in the EPS.

Covered entities can achieve compliance through either:

(A) Reducing GHG emissions; or

(B) Obtaining compliance units, which include:

1. **Excess Emissions Units (EEUs):** generally non-tradable units purchased from the Government of Ontario that must be used in the year in which they are purchased; and
2. **Emissions Performance Units (EPUs):** tradable units that are distributed to facilities whose emissions are below their limit. These are bankable for up to five years.

Covered entities must surrender the number of compliance units equal to their compliance obligation (i.e., the amount of GHG emissions that exceed the facility's annual emissions limit). Since 2023, the Ontario EPS has begun recognizing CO<sub>2</sub> emissions that are captured and stored permanently in certain CCS projects as emissions reductions. Covered entities must have enough compliance units in their account to be surrendered by December 15 of the year following the compliance period, of which the length is 1 year.

## **2.2 Details of Players**

### **2.2.1 Government of Ontario**

The Government of Ontario serves as the primary regulatory authority and administrator of the Ontario EPS Program. The Ministry of the Environment, Conservation and Parks (MECP) is the principal agency responsible for overseeing the program's design, implementation, and compliance enforcement. Tasked with balancing environmental sustainability and economic competitiveness, the provincial government plays a pivotal role in aligning the EPS program with both federal carbon pricing benchmarks and Ontario's industrial realities.

The EPS program's regulations are crafted and periodically amended by the government to ensure they remain aligned with federal requirements under the GGPPA while being responsive to provincial economic needs. This involves setting emission intensity benchmarks across key industrial sectors, managing the issuance and surrender of compliance units, and enforcing compliance among regulated facilities. The government also establishes mechanisms for excess emissions payments, the trading of compliance units, and annual reporting requirements to maintain accountability and transparency. Furthermore, Ontario periodically updates EPS regulations to incorporate advancements in clean technology adoption and address emerging concerns in industrial carbon management. These updates ensure that the EPS remains a robust policy instrument capable of achieving meaningful reductions in GHG emissions while fostering innovation and competitiveness across regulated industries.

### **2.2.2 Federal Government of Canada**

The Federal Government of Canada, through Environment and Climate Change Canada (ECCC), plays a policy oversight role in relation to the Ontario EPS Program. The federal government sets the minimum national standard for carbon pricing through the GGPPA, ensuring a consistent approach across provinces and territories. For provinces with their own carbon pricing systems, such as Ontario's EPS Program, the federal government evaluates these systems to confirm that they meet or exceed the federal benchmark requirements.

The federal government's responsibilities include approving regulatory amendments, monitoring Ontario's compliance with national emission reduction targets, and ensuring that provincial programs contribute to Canada's commitments under the 2015 Paris Agreement. The federal benchmark also establishes the trajectory for carbon pricing, with annual price increases to drive continual progress in emission reductions. Additionally, the federal government provides technical guidance and oversight to ensure that Ontario's EPS operates transparently, with credible mechanisms for measurement, reporting, and verification (MRV) of GHG emissions. In cases where provincial systems fail to meet federal benchmarks, the federal OBPS serves as a backstop measure to ensure continued compliance with national climate goals. The federal government's involvement ensures policy cohesion across Canada, prevents carbon leakage between provinces, and contributes to a unifies national strategy for combating climate change.

### **2.2.3 Regulated Industrial Emitters**

Regulated industrial emitters are the primary participants and compliance obligors under the Ontario EPS Program. These facilities, often classified as EITE sectors, play a central role in determining the



success of Ontario's GHG reduction goals. Industrial emitters subject to the EPS program include sectors such as manufacturing, oil and gas extraction, mining, cement production, iron and steel production, and fossil fuel-based electricity generation. These sectors are characterized by high energy consumption and significant carbon emissions, making their compliance with performance benchmarks essential for the program's effectiveness.

Under the EPS program, regulated facilities are required to measure, quantify, and report their annual GHG emissions based on established emission intensity benchmarks. Facilities must ensure that their emissions remain below their annual limits, which are determined based on facility-specific, sectoral, or historical benchmarks. Facilities exceeding their emission caps must surrender compliance units equivalent to their excess emissions. Compliance can be achieved through measures such as investing in cleaner technologies, switching to lower-carbon fuels, or purchasing compliance units from other facilities. Facilities emitting below their benchmarks can generate EPU, which can be banked for future compliance periods or traded with other facilities in the carbon market.

Industrial emitters are also required to undergo third-party verification to ensure the accuracy and transparency of their reported data. The ability of industrial emitters to innovate and adopt cleaner technologies directly impacts Ontario's ability to meet its long-term climate targets. Their participation ensures the economic feasibility of the EPS program while driving technological advancements in emissions management.

#### **2.2.4 Carbon Market Credit Traders**

Carbon market credit traders serve as facilitators and intermediaries within the Ontario EPS Program. These market participants play a crucial role in maintaining the liquidity and efficiency of the compliance credit market, ensuring that regulated entities can meet their emission obligations in a cost-effective manner. Credit trading allows facilities that have emitted below their performance benchmarks to monetize surplus credits in the form of EPU by selling them to facilities that exceeded their emission limits.

Credit traders contribute to the smooth operation of the market by creating a platform where credits can be traded transparently, ensuring that both buyers and sellers benefit from market efficiencies. This trading mechanism provides facilities with a financial incentive to reduce emissions below their limits, as surplus credits can generate additional revenue. Furthermore, traders help mitigate market volatility by acting as intermediaries during periods of high credit demand or limited supply.

The carbon credit market under the EPS program also supports the banking of credits for future compliance periods, allowing regulated facilities to strategically manage their compliance obligations. By facilitating transactions between regulated entities, carbon market credit traders ensure that the EPS program remains economically viable and flexible, reducing the financial burden on industrial participants while still achieving emission reduction targets.

#### **2.2.5 Third-Party Verifiers**

Third-party verifiers serve as independent auditors within the Ontario EPS Program, playing a key role in ensuring the integrity, transparency, and accuracy of reported GHG emissions data. Verification is a mandatory component of the EPS compliance process, and regulated facilities must have their annual emissions reports independently audited before submission to regulatory authorities.

Verifiers are responsible for reviewing and validating emissions reports, ensuring they are consistent with regulatory requirements and adhere to established quantification and reporting methodologies. They assess data accuracy, identify potential discrepancies or misreporting, and certify the facility's compliance with EPS standards. Third-party verifiers also ensure that surplus credits, such as EPU, are properly accounted for and eligible for banking or trading.

The independence of third-party verifiers is critical to maintaining stakeholder confidence in the EPS program. Their role safeguards against fraudulent reporting and enhances the credibility of emission reduction claims made by regulated facilities. In doing so, verifiers contribute to the long-term effectiveness and transparency of Ontario's carbon pricing system.

## 2.3 Details of Market Conditions

### 2.3.1 Market Design

The Ontario EPS Program adopts a market-based approach to carbon pricing, enabling covered entities to buy, sell, and trade compliance units to meet their emissions obligations. The market is divided into primary and secondary markets, each serving a distinct function:

- **Primary Market:** Compliance units, especially EEU, are not auctioned in the EPS program. Facilities exceeding their annual emissions limits can purchase EEU directly from the Government of Ontario at a fixed price set by regulation. The fixed price for EEU is aligned with the federal minimum carbon price trajectory established under GGPPA.
- **Secondary Market:** Covered entities can trade EPU with one another. EPU are generated by facilities that emit below their sector-specific performance benchmarks, effectively creating surplus credits. These EPU are tradable and bankable for up to five years, providing flexibility for entities to optimize their compliance strategies across multiple reporting periods.

Both primary and secondary market transactions are recorded in a centralized registry managed by the Director appointed by the Ontario MECP. This registry ensures transparency, accountability, and accurate record-keeping of compliance unit ownership and transfers.

### 2.3.2 Market Participants

Market participation under the EPS program includes two categories of entities:

- **Mandatory Participants:** Facilities that emit greater than or equal to 50,000 tCO<sub>2</sub>e annually are required to participate in the program and comply with annual emission benchmarks.
- **Voluntary Participants:** Facilities emitting between 10,000 and 50,000 tCO<sub>2</sub>e annually may opt into the EPS program voluntarily. This voluntary participation often allows these facilities to benefit from fuel charge exemptions under the federal GGPPA.

Participation in the EPS market is mandatory for large industrial emitters, while smaller facilities can make strategic decisions about opting in based on their emissions profiles and operational efficiencies.

### 2.3.3 Market Stability Provisions

The Ontario EPS Program incorporates market stability provisions to prevent excessive price volatility and ensure predictable compliance costs for covered entities. The key instrument used for market stability is *price ceiling*, whose trigger mechanism include:

- Facilities exceeding their emission caps can purchase EEU's at a fixed cost set out in the regulation.
- The fixed price of EEU's is aligned with the federal minimum carbon price trajectory.
- In 2023, the regulated price for EEU's was set at CAD 65 per tCO<sub>2</sub>e.
- This price is set to increase by CAD 15 annually until it reaches CAD 170 tCO<sub>2</sub>e by 2030.

The price ceiling ensures that the cost of compliance remains predictable for covered entities while maintaining a strong incentive for emission reductions. Additionally, the fixed EEU price indirectly acts as an upper price limit for EPU's in the secondary market, as trading prices for EPU's typically align with or remain below the cost of purchasing EEU's from the government.

### 2.3.4 Registry and Transaction Oversight

All transactions within the Ontario EPS Program, including the purchase of EEU's from the government and the trading of EPU's between covered facilities, are logged in a central registry system. This registry is managed by a Director appointed by the Ontario MECP, ensuring oversight and transparency.

The registry serves several critical functions:

- Tracks the issuance, surrender, and banking of compliance units.
- Monitors unit ownership transfers between entities.
- Prevents double-counting or misreporting of emission reductions.
- Ensures compliance with reporting and auditing standards.

The registry acts as the single source of truth for compliance transactions under the EPS program, offering transparency to stakeholders and simplifying regulatory oversight.

### 2.3.5 Conclusion

The market conditions under the Ontario EPS Program are characterized by a clear dual-market structure, robust stability mechanisms, and strong regulatory oversight. The primary market ensures that facilities can purchase compliance units at a predictable price, while the secondary market offers flexibility for trading surplus credits. The inclusion of both mandatory and voluntary participants ensures broad market coverage, while the price ceiling mechanism stabilizes costs and prevents market distortion. Together, these features make the EPS program a transparent, flexible, and economically efficient tool for driving industrial emission reductions in Ontario.

## 2.4 Parameters, Variables, and Algorithms

The regulation requires the owner or operator of a covered facility to determine the appropriate method for calculating Annual Activity Emissions Limits (AAELs) based on the specific industrial activities conducted at the facility. The regulation outlines Methods A to G, each designed for different scenarios or activity types. Facility operators must identify which method(s) apply to their operations and use them accordingly to ensure compliance with the requirements.

Further details regarding the methodology are available in [GHG Emissions Performance Standards and Methodology for the Determination of the Total Annual Emissions Limit - March 2024](#)).

### 2.4.1 Parameters

$n$ : the number of activity components that apply to the covered facility.

$i$ : an activity component in respect of the industrial activity engaged in at the facility.

$y$ : year of the compliance period.

$FPE$ : fixed process emissions, meaning any of the following:

- (1) Stoichiometric CO<sub>2</sub> emissions from the use of reductants and, flux reagents in steel, base metal and other metal processing;
- (2) Stoichiometric CO<sub>2</sub> emissions from the steam methane reforming process to produce hydrogen;
- (3) Stoichiometric CO<sub>2</sub> emissions from the production of ammonia;
- (4) Process CO<sub>2</sub> emissions, calculated in accordance with the Guideline, under any of the following Standard Quantification Methods:
  - (i) adipic acid production;
  - (ii) base metal production using an electric arc furnace;
  - (iii) carbonate use;
  - (iv) cement production from the calcination of limestone;
  - (v) glass production;
  - (vi) iron, steel and ferro-alloy production using an electric arc furnace or base oxygen furnace;
  - (vii) lime production from the calcination of limestone;
  - (viii) nitric acid production;
  - (ix) soda ash production.

$nonFPE$ : non-fixed process emissions, meaning all GHG emissions that are not fixed process emissions.

## 2.4.2 Algorithms and Variables

### Method A: Sector Performance Standard

$$AAEL_{A,y} = \sum_{i=1}^n [(PS_{A,i,y,FPE} + PS_{A,i,y,nonFPE}) \times Production_{A,i,y}]$$
$$PS_{A,i,y,FPE} = BEI_{A,i,FPE} \times SF_{y,FPE}$$
$$PS_{A,i,y,nonFPE} = BEI_{A,i,nonFPE} \times SF_{y,nonFPE}$$

where

- $PS_{A,i,y,FPE}$ : Fixed Process Emissions Sector Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $PS_{A,i,y,nonFPE}$ : Non-Fixed Process Emissions Sector Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $Production_{A,i,y}$ : Annual amount of the EPS parameter for the activity component  $i$  in year  $y$ .
- $BEI_{A,i,FPE}$ : Fixed Process Baseline Emissions Intensity for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $SF_{y,FPE}$ : Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .
- $BEI_{A,i,nonFPE}$ : Non-Fixed Process Baseline Emissions Intensity for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .

### Method B: Electricity Generation Sector Performance Standard

$$AAEL_{B,y} = PS_{B,y} \times \sum_{i=1}^n Production_{B,i,y} \times NBF_{i,y}$$
$$PS_{B,y} = BEI_B \times SF_{y,nonFPE}$$

where

- $PS_{B,y}$ : Electricity generation sector Performance Standard expressed in tCO<sub>2</sub>e per gigawatt hour of electricity generated in year  $y$ .
- $Production_{B,i,y}$ : Annual electricity generated from the combustion device  $i$  for the production of electricity in year  $y$  expressed in gigawatt hours.
- $NBF_{i,y}$ : The non-biomass, non-coke oven gas and non-blast furnace gas, fraction of the total energy input (in gigajoule) into the combustion device  $i$  divided by the total energy input (in gigajoule) of all fuels into the combustion device that generates the electricity.
- $BEI_B$ : 310 tCO<sub>2</sub>e per gigawatt hour.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .

## Method C: Cogeneration Thermal Energy Sector Performance Standard

$$AAEL_{C,y} = PS_{C,y} \times \sum_{i=1}^n Production_{C,i,y} \times NBF_{i,y}$$
$$PS_{C,y} = BEI_C \times SF_{y,nonFPE}$$

where

- $PS_{C,y}$ : Thermal energy sector Performance Standard expressed in tCO<sub>2</sub>e per gigajoule of useful thermal energy transferred in year  $y$ .
- $Production_{C,i,y}$ : Annual useful thermal energy that is generated from the cogeneration system, or generated from a combustion device  $i$  and is transferred to another EPS facility in year  $y$ , expressed in gigajoules.
- $NBF_{i,y}$ : The non-biomass, non-coke oven gas and non-blast furnace gas, fraction of the total energy input expressed in gigajoules into the combustion device  $i$  divided by the total energy input expressed in gigajoules of all fuels into the combustion device that generates the electricity.
- $BEI_C$ : 0.063 tCO<sub>2</sub>e per gigajoule.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .

## Method D: Facility Specific Performance Standard (Facilities Not Subject to Method E)

**Method D1: with Specified Baseline Emissions Intensity** Applicable when a Baseline Emissions Intensity for an activity component is explicitly specified in a notice.

$$AAEL_{D1,y} = \sum_{i=1}^n (PS_{D1,i,y,nonFPE} \times Production_{D1,i,y}) - TET_y \times 0.063 \times SF_{y,nonFPE}$$
$$PS_{D1,i,y,nonFPE} = BEI_{D1,i,nonFPE} \times SF_{y,nonFPE}$$

where

- $PS_{D1,i,y,nonFPE}$ : Non-Fixed Process Emissions Facility Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $Production_{D1,i,y}$ : Annual amount of the EPS parameter in respect of the activity component  $i$  in year  $y$ .
- $TET_y$ : The amount of thermal energy transferred in year  $y$  from any other EPS facility to the covered facility; or from a cogeneration system to the production processes for all activity components  $i$  within the same facility. If there is thermal energy transferred from a cogeneration system to the production processes in the year, an amount of zero may be entered for that thermal energy transferred if Method C is not used for any useful thermal energy.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .
- $BEI_{D1,i,nonFPE}$ : Non-Fixed Process Baseline Emissions Intensity for the facility, or a site that forms part of the facility, for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.

**Method D2: Eligible Modifications without Specified Baseline Emissions Intensity** Applicable when an eligible modification has been made to the facility, but no Baseline Emissions Intensity for the relevant activity component is provided in a notice.

$$\begin{aligned}
 AAEL_{D2,y} &= PS_{D2,i,y,nonFPE} \times Production_{D2,i,y} \\
 PS_{D2,i,y,nonFPE} &= BEI_{D2,i,nonFPE} \times SF_{y,nonFPE} \\
 BEI_{D2,i,nonFPE} &= \sum_y^{y+2} Emissions_{i,y} \div \sum_y^{y+2} Production_{i,y}
 \end{aligned}$$

where

- $PS_{D2,i,y,nonFPE}$ : Non-Fixed Process Emissions Facility Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $Production_{D2,i,y}$ : Annual amount of the EPS parameter in respect of the activity component  $i$  in year  $y$ .
- $BEI_{D2,i,nonFPE}$ : Non-Fixed Process Baseline Emissions Intensity for the facility for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .
- $Emissions_{i,y}$ : Annual emissions that are attributable to the activity component  $i$  in year  $y$  and that meet the criteria.
- $Production_{i,y}$ : Annual amount of the EPS parameter in respect of the activity component  $i$  in year  $y$ .

**Method D3: Changes in Facility Composition of Sites without Specified Baseline Emissions Intensity** Applicable when there has been a change in the composition of sites constituting the facility, and no Baseline Emissions Intensity for the relevant activity component is provided in a notice.

$$\begin{aligned}
 AAEL_{D3,y} &= PS_{D3,i,y,nonFPE} \times Production_{D3,i,y} \\
 PS_{D3,i,y,nonFPE} &= BEI_{D3,i,nonFPE} \\
 BEI_{D3,i,nonFPE} &= Emissions_y \div Production_{i,y}
 \end{aligned}$$

where

- $PS_{D3,i,y,nonFPE}$ : Non-Fixed Process Emissions Facility Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $Production_{D3,i,y}$ : Annual amount of the EPS parameter in respect of the activity component  $i$  in year  $y$ .
- $BEI_{D3,i,nonFPE}$ : Non-Fixed Process Baseline Emissions Intensity for the site mentioned in Method D3, for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $Emissions_y$ : Portion of the covered facility's verification amount that is attributable to the site mentioned in Method D3 in year  $y$ .
- $Production_{i,y}$ : Annual amount of the EPS parameter in respect of the activity component  $i$  in year  $y$  at the site mentioned in Method D3.

## Method E: Facility Specific Performance Standard

$$AAEL_{E,y} = \sum_{i=1}^n [(PS_{E,i,y,FPE} + PS_{E,i,y,nonFPE}) \times Production_{E,i,y}] \\ - (TET_y \times 0.063 \times SF_{y,nonFPE}) - (BPF_y \times SF_{y,nonFPE}) \\ PS_{E,i,y,FPE} = BEI_{E,i,FPE} \times SF_{y,FPE} \\ PS_{E,i,y,nonFPE} = BEI_{E,i,nonFPE} \times SF_{y,nonFPE}$$

where

- $PS_{E,i,y,FPE}$ : Fixed Process Emissions Facility Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $PS_{E,i,y,nonFPE}$ : Non-Fixed Process Emissions Facility Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .
- $Production_{E,i,y}$ : Annual amount of the EPS parameter for activity component  $i$  in year  $y$ .
- $TET_y$ : The amount of thermal energy transferred in year  $y$  from any other EPS facility to the covered facility; or from a cogeneration system to the production processes for all activity components  $i$  within the same facility. If there is thermal energy transferred from a cogeneration system to the production process in the year, an amount of zero may be entered for that thermal energy transferred if Method C is not used for any useful thermal energy.
- $BPF_y$ : The annual emissions in year  $y$  from the use of by-product fuels used in the production of hot rolled steel at a facility that engaged in the industrial activity “producing iron or steel from smelted iron ore or producing metallurgical coke”.
- $BEI_{E,i,FPE}$ : Fixed Process Baseline Emissions Intensity for the facility, or a site that forms part of the facility, for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $SF_{y,FPE}$ : Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .
- $BEI_{E,i,nonFPE}$ : Non-Fixed Process Baseline Emissions Intensity for the facility, or a site that forms part of the facility, for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .

## Method F: Historical Facility Emissions Limit Standard

$$AAEL_{F,y} = (BL_{F,FPE} \times SF_{y,FPE}) + (BL_{F,nonFPE} \times SF_{y,nonFPE})$$

where

- $BL_{F,FPE}$ : Baseline Fixed Process Emissions for the facility, or a site that forms part of the facility.
- $SF_{y,FPE}$ : Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .
- $BL_{F,nonFPE}$ : Baseline Non-Fixed Process Emissions for the facility, or a site that forms part of the facility.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .



## Method G: Steel Sector Facility Specific Performance Standard

$$AAEL_{G,y} = \sum_{i=1}^n (PS_{G,i,y,nonFPE} \times Production_{G,i,y})$$
$$PS_{G,i,y,nonFPE} = BEI_{G,i,nonFPE} \times SF_{y,nonFPE}$$

where

- $PS_{G,i,y,nonFPE}$ : Non-Fixed Process Emissions Facility Performance Standard for the activity component  $i$  in year  $y$  expressed in tCO<sub>2</sub>e per unit of EPS parameter.
- $Production_{G,i,y}$ : Annual amount of the EPS parameter for the activity component  $i$  in year  $y$ .
- $BEI_{G,i,nonFPE}$ : Non-Fixed Process Baseline Emissions Intensity for the facility for the activity component  $i$  expressed in tCO<sub>2</sub>e per unit of the EPS parameter.
- $SF_{y,nonFPE}$ : Non-Fixed Process Emissions Stringency Factor for the industrial activity in year  $y$ .

## 2.5 People's Opinions, Controversies, and Status Quo

### 2.5.1 Public and Industry Perspectives

The Ontario EPS Program has received mixed reviews from industry stakeholders, environmental groups, and the general public. Large industrial emitters often view the EPS program favorably compared to the federal OBPS because it offers greater flexibility and alignment with Ontario's industrial and economic realities. Many facilities appreciate the sector-specific benchmarks and the ability to trade surplus credits, as these features provide cost-effective pathways for compliance.

However, environmental advocacy groups argue that the EPS program lacks the stringency and ambition required to meet Ontario's long-term GHG reduction targets. Critics claim that emission reduction targets under the EPS are not aggressive enough, and concerns persist about loopholes in the carbon trading system that could undermine the program's environmental integrity.

Meanwhile, public perception is shaped by the economic implications of carbon pricing policies. While some Ontarians recognize the importance of emissions reduction policies, others, particularly in heavily industrialized regions, express concern over the potential impact on jobs and regional economic competitiveness.

### 2.5.2 Regulatory and Policy Uncertainty

The transition period from the federal OBPS to the Ontario EPS created regulatory uncertainty for industries. Facilities had to comply with both federal and provincial regulations during the overlap period, leading to administrative complexity and increased compliance costs. Moreover, frequent amendments to the EPS regulations during this transition period further contributed to confusion among stakeholders.

Additionally, ongoing political tension between the federal and provincial governments regarding carbon pricing policies has added to the uncertainty. Although the Supreme Court of Canada upheld the constitutionality of the GGPPA in 2021, skepticism about the long-term stability of Ontario's EPS Program remains among some industry players.

### **2.5.3 Economic Competitiveness vs. Environmental Goals**

A major point of controversy centers around the balance between environmental responsibility and economic competitiveness. Ontario's government emphasizes the EPS program's role in protecting EITE industries from carbon leakage and economic disadvantages in global markets. While industry stakeholders generally support this approach, environmental groups argue that overemphasis on economic competitiveness could weaken the environmental integrity of the EPS program.

There is also an ongoing debate about the use of compliance credits, specifically the extent to which reliance on credit trading could incentive actual emission reductions versus allowing facilities to simply "pay to pollute". Furthermore, the lack of recognition for CCU projects as legitimate emissions reduction activities has been flagged as a missed opportunity for incentivizing emerging clean technologies.

### **2.5.4 Status Quo and Future Outlook**

Currently, the Ontario EPS Program remains a cornerstone of the province's industrial carbon pricing strategy. Regulatory updates in 2023 aligned the EPS carbon price trajectory with federal benchmarks, ensuring consistency with the national carbon pricing plan. Facilities are becoming increasingly familiar with the regulatory requirements, and trading activity in the secondary carbon market has started to gain traction.

However, the status quo remains fragile due to continued concerns about regulatory stability, environmental ambition, and alignment with Canada's 2030 and 2050 climate goals. Stakeholders are closely watching the program's review cycles to assess whether Ontario will strengthen performance benchmarks, increase transparency in credit trading, and address gaps in sectors that may not be adequately regulated.

The Ontario EPS Program is at a crossroads: it must strike a delicate balance between environmental effectiveness, economic sustainability, and stakeholder confidence to ensure long-term success. Whether it evolves to address its current limitations or remains a transitional policy tool will depend on political will, industrial cooperation, and public support in the coming years.

## **3 Personal Point of View**

### **3.1 What Was Done Right?**

The Ontario EPS Program successfully addresses several limitations observed in the federal OBPS. One of the key achievements lies in the program's alignment with Ontario industrial realities. While the federal OBPS was designed as a one-size-fits-all approach applicable across Canada, Ontario's EPS Program tailors carbon pricing mechanisms to the unique economic and industrial characteristics of the province. The methodology section of the EPS program, which includes Method A through G, provides a technically sound framework for determining AAELs across different industrial scenarios. This customization allows for a more region-specific strategy, taking into account Ontario's energy mix, industrial activity, and sector-specific carbon reduction capabilities.

Another notable strength of the EPS program is its ability to reduce the economic burden on Ontario industries compared to the federal OBPS. By adopting an output-based approach, the program sets

emission limits based on sector-specific benchmarks, which allows EITE industries to remain competitive in global markets. Unlike grid mandates, the EPS program offers flexibility to regulated facilities by allowing them to reduce emissions, trade compliance units, or purchase EEUUs. This flexibility not only fosters innovation but also encourages cost-effective carbon reduction strategies. Furthermore, the carbon trading system provides an economic incentive for industries to outperform their emission benchmarks, as surplus credits (EPUUs) can be traded or banked for future compliance periods, offering financial rewards for efficient emissions management. In doing so, the EPS program balances not only focuses on environmental responsibility but also puts an emphasis on economic competitiveness in the province, ensuring that industries can meet their emission reduction targets without compromising their operational viability.

### **3.2 What Was Done Wrong?**

Despite its strengths, the EPS program is not without flaws. A significant shortcoming lies in loopholes within the carbon trading system that could undermine the program's environmental integrity. For example, facilities may find it more economically viable to simply purchase EEUUs instead of making tangible efforts to reduce their GHG emissions. This creates a "pay-to-pollute" dynamic, where financial means become a substitute for actual environmental action. Without proper oversight and stricter regulations, these loopholes could erode the program's overall effectiveness in driving meaningful emission reductions.

Another critical issue is the frequent regulatory amendments made to the EPS framework. While adjustments are sometimes necessary to align with federal benchmarks or improve policy efficacy, the frequency of these changes has introduced regulatory uncertainty for industrial participants. Facilities are often left confused about which version of the regulation to follow, leading to compliance challenges and operational disruptions. This unpredictability discourages long-term investments in cleaner technologies and carbon reduction initiatives, as industries are hesitant to commit resources without stable regulatory guidance.

The methodology section of the Ontario EPS Program presents several concerns that could undermine its clarity, consistency, and effectiveness. With seven distinct methodologies, each accompanied by intricate details and specific application contexts, smaller facilities may face significant financial burdens in hiring expertise to ensure accurate quantification of emission limits. Despite the regulation providing guidance on when each method should be applied, ambiguities persist, particularly in situations where multiple methods might appear applicable or where the context is inadequately explained. These ambiguities can result in facilities interpreting and applying methodologies differently, leading to inconsistent emission limit calculations across companies. Furthermore, reliance on historical or sectoral Baseline Emissions Intensity in certain methods introduces the risk of benchmarks becoming outdated and failing to reflect recent technological advancements or improvements in sectoral efficiency. This could allow facilities to meet their AAELs without achieving meaningful environmental progress. Additionally, transitional methodologies, such as Methods D1, D2, and D3, while designed to address specific scenarios like eligible modifications or changes in facility composition, often create overlaps and inconsistencies during periods of transition between federal and provincial regulatory systems.

### 3.3 What Could Have Been Done Differently?

To address regulatory uncertainty and minimize conflicts between federal and provincial carbon pricing systems, the Ontario government should aim to align its regulations more closely with federal standards from the outset. This proactive alignment would enhance the likelihood of federal approval, preventing unnecessary delays, overlap, and confusion during transitional periods. From 2023 to 2030, the provincial government should focus on monitoring the effectiveness of each year's regulatory framework, actively gathering feedback from stakeholders, including industries, third-party verifiers, and environmental experts. Rather than introducing frequent amendments throughout the year, the government could implement a structured annual amendment cycle—ideally set on a fixed date, such as December 31—ensuring clarity and consistency for the upcoming compliance year. This approach would reduce regulatory ambiguity, prevent overlaps, and limit opportunities for facilities to exploit loopholes arising from inconsistent regulatory updates.

Regarding the balance between economic competitiveness and environmental integrity, the Ontario government should carefully monitor the province's total emissions annually. If emissions increase year-over-year or surpass federal benchmarks, this may indicate that facilities are relying on carbon trading mechanisms to offset emissions rather than making tangible environmental improvements. In such cases, regulatory amendments should prioritize stricter environmental controls and improved monitoring mechanisms. Conversely, if emissions show a consistent downward trend, the government could consider maintaining the existing regulatory structure or placing greater emphasis on supporting economic competitiveness in future amendments. Additionally, enhanced oversight of the carbon trading market is essential. A dedicated regulatory body or supervisory committee should monitor market behavior, enforce ethical trading practices, and ensure compliance with established codes of conduct to maintain market integrity.

For the methodology section, simplification is key. The current design, particularly Methods D1, D2, and D3, introduces overlapping scenarios and ambiguity in application contexts. The provincial government should streamline these methodologies, ensuring that each method has a clearly defined scope and non-overlapping application criteria. Introducing a structured decision tree or a standardized guide could assist quantitative analysts and third-party verifiers in selecting the correct methodology without confusion. Furthermore, Ontario could establish a dynamic Baseline Emissions Intensity system, accessible in real-time via an online platform managed by the provincial government. This dynamic Baseline Emissions Intensity would ensure that emission benchmarks remain up-to-date, reflecting technological advancements, sectoral efficiencies, and real-world emission patterns. This approach would prevent outdated benchmarks from distorting compliance outcomes and ensure that emission limits remain aligned with the province's environmental and economic objectives.

In summary, proactive regulatory alignment, structured amendment timelines, improved oversight, methodological clarity, and real-time benchmark updates are key areas where the EPS program could have been executed more effectively. These measures would address existing uncertainties, reduce operational burdens on industries, and ensure the program meets both environmental and economic goals more efficiently.

### 3.4 Other Considerations

Beyond the regulatory, methodological, and economic aspects discussed earlier, several additional considerations warrant attention to ensure the long-term success and robustness of Ontario's EPS Program.

- 1. Integration with Broader Climate Policies:** The EPS program should not operate in isolation but instead align seamlessly with other federal and provincial climate policies, including renewable energy incentives, clean technology adoption strategies, and energy efficiency programs. A holistic approach would ensure that carbon pricing complements other climate initiatives, avoiding policy silos and maximizing synergies.
- 2. Stakeholder Engagement and Transparency:** Ongoing engagement with stakeholders—including industrial emitters, environmental groups, third-party verifiers, and local communities—is essential for maintaining trust and ensuring the program addresses diverse concerns. Transparent communication about policy changes, emission benchmarks, and compliance obligations can reduce resistance and improve adherence to program requirements.
- 3. Innovation and Technology Adoption:** The EPS program should create financial incentives and regulatory frameworks that encourage investments in clean technologies, carbon capture and storage (CCS), and sustainable production processes. Additionally, partnerships with research institutions and technology developers could accelerate innovation in emission reduction technologies.
- 4. Equitable Transition for Small Facilities and Vulnerable Sectors:** Smaller facilities and sectors with limited resources may face significant compliance costs and technical challenges. Targeted financial assistance, technical support programs, and simplified reporting requirements could alleviate their burdens while ensuring fair participation in the EPS framework.
- 5. Long-Term Policy Certainty:** Industries require regulatory stability and predictability to plan long-term investments in emission reduction technologies. Ontario must provide a clear, long-term road-map for carbon pricing policies, including expected price trajectories, benchmark updates, and market mechanisms, to reduce uncertainty and encourage proactive compliance efforts.
- 6. International Alignment:** Ontario's EPS Program should consider international carbon pricing trends and evolving global standards. Aligning benchmarks and methodologies with international best practices would ensure that Ontario industries remain competitive in global markets while meeting international climate commitments.
- 7. Periodic Review and Program Evaluation:** Regular reviews and performance evaluations are essential to assess the effectiveness of the EPS program. Key performance indicators, such as total emissions reductions, industrial compliance rates, and economic impacts, should guide periodic revisions to ensure the program remains responsive to emerging challenges and opportunities.

In conclusion, addressing these broader considerations would strengthen the EPS program's capacity to deliver meaningful emission reductions while supporting economic resilience, social equity, and long-term sustainability. These aspects go beyond technical compliance and emphasize the importance of integrated, transparent, and future-oriented carbon policy design.