



Holding Large Emitters Accountable:

NEW BRUNSWICK'S OUTPUT-BASED PRICING SYSTEM

JUNE 2019

CONTENTS

01 BACKGROUND

- A. Overview of New Brunswick's GHG Emissions and Progress to Date
- B. Principles of the New Brunswick Output-Based Pricing System

PAGE 1

PAGE 4

03 PERFORMANCE STANDARDS FOR GHG EMISSIONS

- A. General
- B. Performance Standards for Industrial Emitters
- C. Performance Standards for Fossil Fuel Based Electricity Generation

PAGE 6

PAGE 9

05 COMPETITIVENESS AND CARBON LEAKAGE ASSESSMENT

- A. Assessment Metrics
- B. New Brunswick's Proposed Competitiveness and Carbon Leakage Risks Assessment

PAGE 11

PAGE 14

02 SCOPE OF NEW BRUNSWICK OUTPUT-BASED PRICING SYSTEM

- A. Regulated Sectors
- B. GHG Emissions and Coverage
- C. GHG Emissions Threshold

04 COMPLIANCE FLEXIBILITY MECHANISMS

- A. Compliance Reports and Obligations
- B. Calculating a Facility's Compliance Obligation

06 NEXT STEPS

BACKGROUND

The Department of Environment and Local Government is seeking feedback on New Brunswick's proposed approach for the regulation of greenhouse gas (GHG) emissions from the industrial and electricity generation sectors in New Brunswick – a New Brunswick Output-Based Pricing System (OBPS).

On October 23, 2018, the federal government announced that New Brunswick would be subject to the federal backstop carbon pricing system (the "Federal Backstop"), which is contained within the federal Greenhouse Gas Pollution Pricing Act. The Federal Backstop applies to provinces and territories which do not have a carbon pricing system that meets the federal government's carbon pricing benchmark.

THE FEDERAL BACKSTOP CONTAINS TWO PARTS:

PART 1: A carbon tax applied to fuels (liquid, solid, and gas) starting April 1, 2019; and

PART 2: An output-based pricing system (the "federal OBPS") applied to GHG emissions from large industrial emitters and electricity generation starting January 1, 2019.

The Federal Backstop in New Brunswick will result in higher costs to all New Brunswickers for heating their homes and businesses, driving their cars or moving their products to market. This is why on December 5, 2018, New Brunswick announced that it would be challenging the federal government's authority to implement a carbon tax (Part 1) in New Brunswick through the court system. As well, New Brunswick committed to implementing its own "made-in-New Brunswick" system to regulate GHG emissions from large industrial facilities as an alternative to the federal OBPS (Part 2).

Consistent with what has been proposed and accepted by the federal government in other Canadian jurisdictions (Newfoundland and Labrador, Alberta and Saskatchewan), New Brunswick is proposing a provincially designed and administered OBPS.

The New Brunswick OBPS is a regulatory approach that establishes GHG emissions performance standards that New Brunswick's facilities will be required to achieve. Any facility that doesn't meet the standard will have a compliance obligation. When designed correctly, performance standards can deliver ongoing emissions reductions at the lowest possible cost to New Brunswick's largest emitters while maintaining the competitiveness of our businesses, ensuring low and stable electricity rates, and preventing carbon leakage. The outlined approach ensures that industry and electricity generators are contributing their share to reduce the province's overall GHG emissions, but doing so in a manner that is fair, cost-effective and flexible to the needs and circumstances of our province.

As part of this effort, we will use payments from regulated entities that do not meet their performance standards to contribute to New Brunswick's Climate Change Fund under the *Climate Change Act*.

A. OVERVIEW OF NEW BRUNSWICK'S GHG EMISSIONS AND PROGRESS TO DATE

New Brunswick has reduced GHG emissions by 28% since 2005 and is well on its way to reaching the federal target of 30% below 2005 levels by 2030. NB Power alone has made significant emission reductions since 2005. Currently, New Brunswick is a leader nationally in GHG emission reductions and we plan to go even further.

New Brunswick plans to implement the Province's *Climate Change Action Plan: Transitioning to a Low Carbon Economy*, which includes 118 action items and provides a clear path forward to reducing GHG emissions while promoting economic growth. The Action Plan includes an ambitious GHG emission reduction target of 10.7 Mt by 2030, which has also been enshrined in New Brunswick's *Climate Change Act*. Meeting this provincial target in 2030 would put New Brunswick's emissions 47% below 2005 levels, far surpassing the federal government's target of 30%.

New Brunswick's Action Plan contains a commitment to regulate GHG emissions from our large industrial emitters, which includes New Brunswick's industrial and electricity generation sectors. The OBPS, which New Brunswick is proposing for electricity generation, recognizes the measures our electricity sector has taken to date to reduce its emissions. In this respect, New Brunswick has already implemented measures to improve the carbon intensity of its electricity generation including a regulated target of serving in-province electricity customers with 40% renewable electricity by 2020. Including our previous investments in nuclear generation, 75% of the electricity supplied in New Brunswick will be emissions-free in 2020. In addition, the Province of New Brunswick began investing in energy efficiency and demand side management initiatives annually in 2005. This has lead to substantial GHG emissions reductions by NB Power since 2005.

In addition to establishing electricity generation performance standards, New Brunswick is also committed to phasing out coal-fired electricity generation, either in 2030 or through an equivalency agreement, which represents the single largest opportunity for GHG emissions reductions in the province.

Figure 1. illustrates the distributions of GHG emissions among the various sectors in New Brunswick:

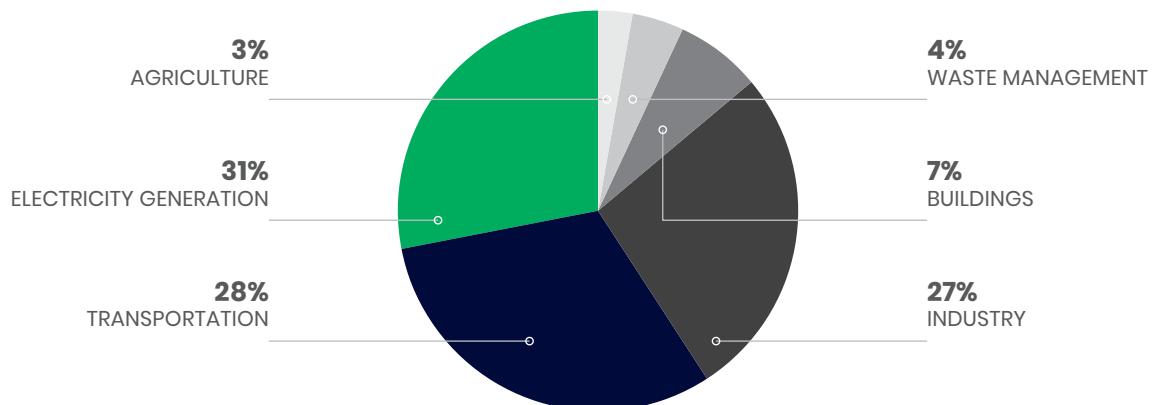


Figure 1. Distribution of GHG emissions in New Brunswick (source: 2018 National Inventory Report).

Over 50% of the GHG emissions in New Brunswick will be captured under the proposed New Brunswick OBPS. The GHG emissions from the remaining sectors have been identified and captured with specific strategies for each under the Climate Change Action Plan.

In combination with the actions outlined under New Brunswick's Climate Change Action Plan, New Brunswick's long-term vision under the proposed OBPS, which recognizes New Brunswick's unique economic circumstances, will allow for a smoother transition and greater market acceptance, while at the same time ensuring we can still experience the opportunity for economic growth similar to our neighbours.

B. PRINCIPLES OF THE NEW BRUNSWICK OUTPUT-BASED PRICING SYSTEM

The following principles will be used to support the development and eventual implementation of the New Brunswick OBPS.

1	Reductions in Greenhouse Gases: the New Brunswick OBPS will aim to deliver incremental GHG emissions reductions at the lowest cost to industry.	5	Predictability: the New Brunswick OBPS will aim for clarity from the outset to provide policy, regulatory, and financial certainty to industry.
2	Economic Growth: the New Brunswick OBPS will aim to support low carbon growth and investment in new and existing industries within the province.	6	Administrative Efficiency: the New Brunswick OBPS will aim to avoid and minimize unnecessary and/or duplicative administrative requirements that create burdensome red tape for industry.
3	Competitiveness: the New Brunswick OBPS will aim to minimize carbon leakage and competitiveness risk to industry.	7	Accountability and Transparency: the New Brunswick OBPS will aim to ensure accurate and timely industrial reporting of emissions data, effective compliance and enforcement; as well as, regular government reporting requirements on the outcomes of the OBPS.
4	Fairness: the New Brunswick OBPS will be designed in a way that ensures fairness and equity for all those under the system, including providing recognition for top performers.		

SCOPE OF THE NEW BRUNSWICK OUTPUT-BASED PRICING SYSTEM

The scope of the OBPS identifies who is required to participate and the types of GHG emissions included in the program. This section outlines the point of regulation, GHG emissions coverage, mandatory and voluntary participation.

A. REGULATED SECTORS

To ensure clarity for New Brunswick's businesses that are currently subject to the federal OBPS and facilitate reporting, New Brunswick is proposing to cover the same sectors as proposed under the federal OBPS. Currently, the federal OBPS covers GHG emissions from the following sectors in New Brunswick:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Electricity generation; | <input checked="" type="checkbox"/> Petroleum refining; |
| <input checked="" type="checkbox"/> Food sectors; | <input checked="" type="checkbox"/> Pulp and paper; and, |
| <input checked="" type="checkbox"/> Lime; | <input checked="" type="checkbox"/> Wood product manufacturing. |
| <input checked="" type="checkbox"/> Non-ferrous metal smelting, refining (e.g., nickel, copper); | |

New Brunswick may consider including additional sectors in its program in the future.

B. GHG EMISSIONS AND COVERAGE

It is proposed that the New Brunswick OBPS will apply to the following GHG emissions:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Carbon dioxide (CO ₂); | <input checked="" type="checkbox"/> Perfluorocarbons (PFCs); |
| <input checked="" type="checkbox"/> Methane (CH ₄); | <input checked="" type="checkbox"/> Sulphur hexafluoride (SF ₆); and, |
| <input checked="" type="checkbox"/> Nitrous oxide (N ₂ O); | <input checked="" type="checkbox"/> Nitrogen trifluoride (NF ₃). |
| <input checked="" type="checkbox"/> Hydrofluorocarbons (HFCs); | |

There are different types of GHG emissions that can occur from industrial processes. These include fixed process emissions and non-fixed process emissions.

Fixed process emissions are generally the result of chemical or physical reactions (that are not related to combustion). For these types of emissions, there are limited economically viable technologies to avoid their creation and release. Non-fixed process emissions include combustion, fugitive and on-site mobile sources. Combustion emissions include GHGs from the burning of fuel. Fugitive emissions result from equipment leaks and unintentional losses. New Brunswick is proposing to cover both fixed process and non-fixed process emissions of facilities in the program.

C. GHG EMISSIONS THRESHOLD

The GHG emissions threshold, expressed in tonnes of CO₂e per year, identifies which entities are required to participate in the OBPS (mandatory participants).

New Brunswick is proposing to establish a GHG emissions threshold for mandatory participation at 50,000 tonnes of CO₂e per year. As well, it is proposed that facilities with GHG emissions between 10,000 tonnes of CO₂e per year and the mandatory participation threshold will be permitted to voluntarily opt-in to the program.

▼ PERFORMANCE STANDARDS

03

A. GENERAL

Performance standards establish limits on the amount of GHG emissions that can be released from a source of pollution over a defined period and are typically based on the level of output or production from a regulated facility. Production units may be final manufactured goods, intermediate products/material for use in other parts of the regulated facility, material input, energy input or energy outputs.

Performance standards can also include the application of a stringency factor(s) to encourage emissions reductions by incenting industry to switch to cleaner fuels and be energy efficient. The stringency factor generally considers competitiveness risks for industry in order to minimize carbon leakage. The stringency factor can also consider non-fixed process emissions and fixed process emissions in recognition that fixed process emissions cannot be readily reduced without an innovative process change. In addition, adjustment factors can also consider other performance factors such as the use of bioenergy relative to fossil fuel energy use.

B. PERFORMANCE STANDARDS FOR INDUSTRIAL EMITTERS

New Brunswick is proposing to set facility-specific performance standards to regulate GHG emissions from its industries.

Facility-specific performance standards are necessary because, unlike other jurisdictions, the province generally does not have multiple facilities belonging to the same industrial sector. Where we do have such a scenario, i.e. New Brunswick's pulp and paper sector, the facilities' industrial processes and products produced are so distinct and unique between them that adopting a sectoral approach is not suitable.

The facility-specific performance standards will be based on the recent historical GHG emission intensity of each individual facility (e.g., 2015 to 2017), which is determined from each facility's historical GHG emissions and production information:

$$PS = [(EI_T - EI_{FP}) \times SF + EI_{FP}] \times BF \times RF$$

Where,

PS = Performance Standard(s) for the facility;

EI_T = Average Emission Intensity(s) of the facility's total fixed and non-fixed process emissions in tonnes of CO₂e per unit of production;

EI_{FP} = Average Emission Intensity(s) of the facility's fixed process emissions in tonnes of CO₂e per unit of production;

SF = Stringency Factor expressed as a fraction, e.g. 0.99;

BF = Biomass Adjustment Factor for facilities using historically more than 91% of their total energy input, excluding electricity consumption, from biomass;

RF = Risk Adjustment Factor based on industrial sectors receiving a highest risk ranking result from the evaluation of Emission-Intensity and Trade-Exposure (EITE) Analysis performed by the New Brunswick Climate Change Secretariat (see section 5 for further details).

New Brunswick is proposing to set annual declining Stringency Factors, such that all covered facilities in the program will reduce their GHG emission intensity by 10% by 2030.

Recent historical GHG emissions and production information that is determined to be representative of each facility's current typical operations will be used in establishing their baseline emission intensities. In most cases, three-year averages from 2015 to 2017 will be used; however, these baseline years may vary to capture unique circumstances.

New Brunswick is proposing that the performance standards cover both industrial non-fixed (combustion, venting, flaring, on-site transportation) and fixed process GHG emissions. However, because of the limited availability in economical technologies to reduce industrial fixed process emissions, these will be provided 100% allocation for the purpose of determining a regulated facility's performance standard. New Brunswick is proposing to exclude other industrial GHG emission sources such as wastewater and waste emissions in the performance standards. GHG emissions associated with the generation of electricity from industrial fossil fuel-based cogeneration will also be covered by the performance standards. Similar to other carbon pricing programs, a facility may have more than one performance standard.

In addition, for the petroleum refining sector, where there exists an international accepted performance metric, the Solomon's Complexity-Weighted Barrels (CWB™) by Solomon Associates, New Brunswick is proposing to use this standard in determining the emission intensity for petroleum refining.

C. PERFORMANCE STANDARDS FOR FOSSIL FUEL BASED ELECTRICITY GENERATION

The electricity generation performance standard is intended to mitigate costs of carbon pricing while continuing to achieve GHG emission reductions through the establishment of fuel-specific performance standards for gaseous, liquid and solid fuel fired electricity generation.

The three-fuel standard approach is similar to the approach taken by the federal government, but designed in a way that reduces cost impacts to New Brunswick's rate payers and recognizes the measures taken by New Brunswick's electricity sector to reduce provincial GHG emissions, both in the past and planned for the future. In this respect, the proposed performance standards for fossil fuel-based electricity generation are based on what is achievable for each fuel type, given our objectives at the current time.

The proposed performance standards for existing fossil fuel-based electricity generation are based on tonnes of CO₂e per gigawatt hour (GWh) of gross electricity produced by a covered facility, as outlined in Table 1.

YEAR	SOLID (t CO ₂ e/GWh)	LIQUID (t CO ₂ e/GWh)	GAS (t CO ₂ e/GWh)
2019	820	800	420
2020	811	795	420
2021	802	790	420
2022	793	785	420

Table 1. Proposed performance standards for fossil fuel-based electricity generation

Future standards for electricity generation will continue to be evaluated and any future proposal for the period beyond 2022 will be designed in a way that ensures ongoing GHG emissions reductions from electricity generation while at the same time minimizing the impact on New Brunswick's rate payers.

COMPLIANCE FLEXIBILITY MECHANISMS

If a regulated facility's annual GHG emissions exceed its annual GHG emissions limit, that facility will have a compliance obligation. Flexibility in meeting a compliance obligation is an important feature of the OBPS design, as it reduces the overall costs of compliance for industrial facilities covered by the OBPS program while maintaining the incentive to reduce GHG emissions.

In addition to driving lower compliance costs, compliance flexibility can also incentivize broad investment in GHG emissions reductions from sectors both inside and outside of the OBPS program.

For example, enabling the use of carbon offsets will send a signal to all sectors of the economy that are not subject to the OBPS, and allowing the use of performance credits will encourage regulated facilities to reduce their emissions as much as possible, regardless of the standards that apply to them.

New Brunswick is exploring the following compliance flexibility mechanisms:

CLIMATE CHANGE FUND CREDITS

Purchasing Climate Change Fund credits from New Brunswick's Climate Change Fund. These credits would be priced at the federal level of \$20 per tonne in 2019 increasing by \$10 annually to a maximum of \$50 per tonne in 2022.

PERFORMANCE CREDITS

Performance credits are awarded to a facility which exceeds its performance standard. New Brunswick is still exploring the various options under which performance credits could be awarded. It is anticipated that these credits would be bankable by a facility and tradeable across facilities. Similar to other trading systems, the value of the performance credit would be determined by the New Brunswick market.

OFFSET CREDITS

Offset credits are verified projects administered by people, businesses or organizations not directly subject to the OBPS program. These projects reduce or remove GHG emissions from the atmosphere; building on the premise that GHG emissions should be reduced wherever that can be achieved at the lowest cost. Similar to the performance credit, the value of the offset credit would be determined by the market.

A. COMPLIANCE REPORTS AND OBLIGATIONS

In line with the federal OBPS, starting in June 2020, regulated facilities will be required to submit to the province annual compliance reports with respect to GHG emissions for the previous calendar year (January 1 to December 31).

This will allow the facility to compare its reported emissions to its annual GHG emissions limit. It is anticipated that the report will include the GHG emissions, production data, annual emission limits, and compliance obligations for the facility for the previous year. These reports will need to be third-party verified to a reasonable level of assurance by verification bodies.

Regulated facilities will have annual compliance obligations, starting with their 2019 emissions, if their total annual verified emissions exceed their corresponding annual emissions limit. For those facilities that outperform their respective emissions limits, performance credits could be awarded.

B. CALCULATING A FACILITY'S ANNUAL COMPLIANCE OBLIGATION

Under the New Brunswick OBPS, an annual emissions limit will be determined for each regulated industrial facility and fossil fuel-based electricity generating facility. This is the allowable emissions (tonnes of CO₂e) a regulated facility can emit and still be in compliance.

— A facility's annual GHG emissions limit is determined by multiplying the facility's annual performance standard by the facility's total annual production:

$$\text{Annual Facility GHG Emissions Limit} = \text{PS} \times \text{Production}$$

For fossil fuel-based electricity generation, similar to how this sector is treated in the federal OBPS, the electricity production will be defined as gross electricity generation of the facility, which includes the amount of electricity used by the facility.

— In the scenario where a facility has more than one performance standard, the annual facility emissions limit will be based on the sum of the limits for each product:

$$\text{Annual Facility GHG Emissions Limit} = \sum (\text{PS}_i \times \text{Production}_i)$$

where i = 1 to n.

— Finally, the annual compliance obligation of a facility will be calculated as follows:

$$\text{Annual Compliance Obligation} = \text{Total Annual Facility Emissions} - \text{Annual Facility Emissions Limit}$$

COMPETITIVENESS AND CARBON LEAKAGE ASSESSMENT

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It is well documented that without the proper protections, environmental regulations like the OBPS can lead to carbon leakage and business competitiveness concerns. Inconsistency between the stringency of policies can have both economic and environmental implications as companies compete across jurisdictions in national and international markets.

Carbon leakage occurs when production moves from a jurisdiction with stringent climate policies to a jurisdiction with no or lower cost climate policies. In this situation, the economy of the jurisdiction with stringent climate policies could suffer while overall emissions either stay the same or increase.

In general, carbon leakage and business competitiveness risks can occur under the following conditions:

- The sector or facility is emission intensive and faces high compliance costs due to absence of low cost abatement opportunities, including low carbon fuels;
- Inability or constrained ability to pass on the compliance costs due to high trade exposure; and/or
- Competitors in other jurisdictions do not face the same level of climate change policy costs.

A. ASSESSMENT METRICS

To assess the carbon leakage and competitiveness risks of large industrial emitters, the Emission-Intensity and Trade-Exposure (EITE) indicators have been widely adopted across Europe, California, and jurisdictions in Canada.

The Emission Intensity (EI) is defined as the level of GHG emissions per unit of economic activity, while the Trade Exposure (TE) can refer to industries that are constrained in their ability to pass through compliance costs due to actual or potential competition outside of the province.

To determine the potential risks of carbon leakage and competitiveness, large industrial emitters are evaluated and classified into different risk categories based on their EITE assessments.

B. NEW BRUNSWICK'S PROPOSED COMPETITIVENESS AND CARBON LEAKAGE RISKS ASSESSMENT

To evaluate the risks of carbon leakage and competitiveness of New Brunswick's large industrial emitters, the EITE indicators are proposed to be used in the New Brunswick OBPS. Table 2 presents the proposed EITE formulas for emission intensity and trade exposure.

EMISSION INTENSITY	TRADE EXPOSURE
(GHG emission * Price of emission * 10%)	(Value of exports + imports)
(Gross value added)	(Value of domestic output + imports)

Table 2. Proposed New Brunswick EITE indicators.

To help identify the industries with a high carbon leakage and competitiveness risk, New Brunswick's large industrial emitters are classified into different emission intensity and trade exposure classes based on their EITE assessment results.

New Brunswick proposes a five-level emission intensity and 4-level trade exposure classification to assess the carbon leakage and competitiveness risk to New Brunswick's large industrial emitters (Figure 2).

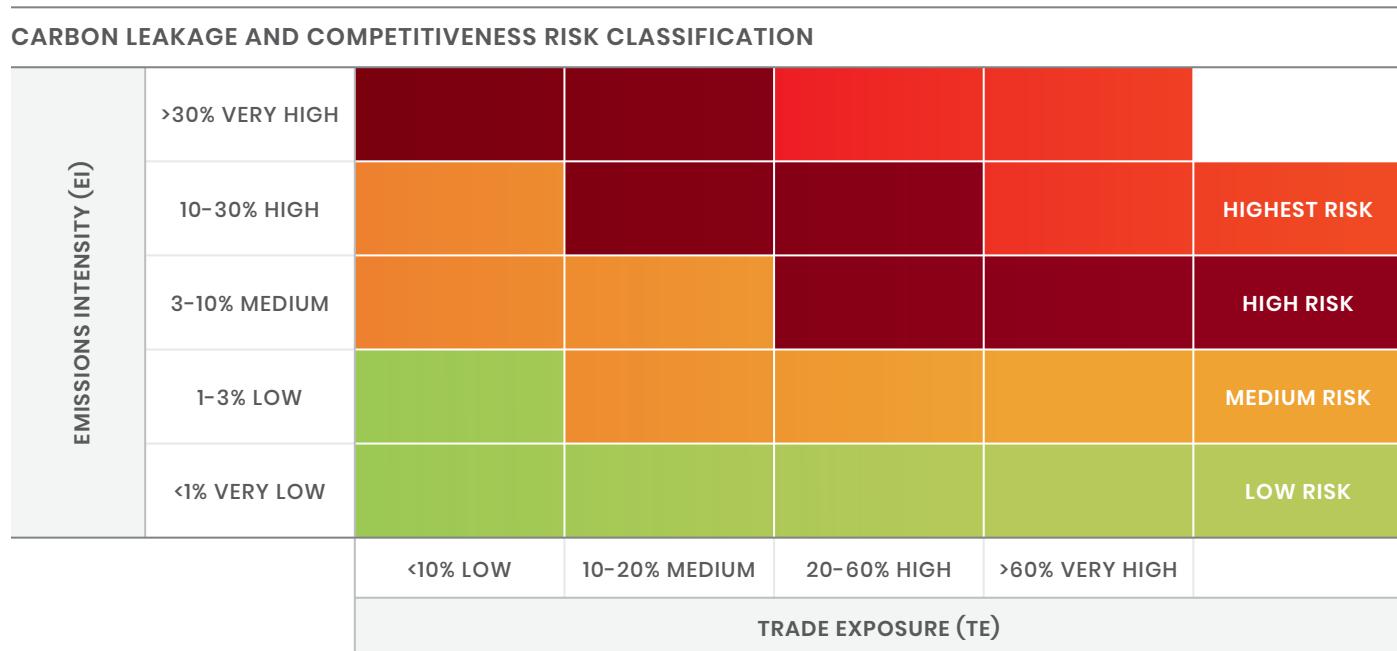


Figure 2. Proposed New Brunswick carbon leakage and competitiveness risk classification.

To further address competitiveness concerns, we are proposing to utilize a two-step process to identify the large industrial emitters at a high overall risk (Figure 3).

The first step aims to assess the carbon leakage and competitiveness risk by using the combination of emission intensity and trade exposure indicators, while the second step is designed to recognize the general inability of New Brunswick's large industry to pass compliance costs to their consumer due to their extremely high trade exposure. Specifically, the trade exposure indicator is considered as a standalone metric in the second step to evaluate the competitiveness concerns (i.e., investment risk) of New Brunswick large industrial emitters.

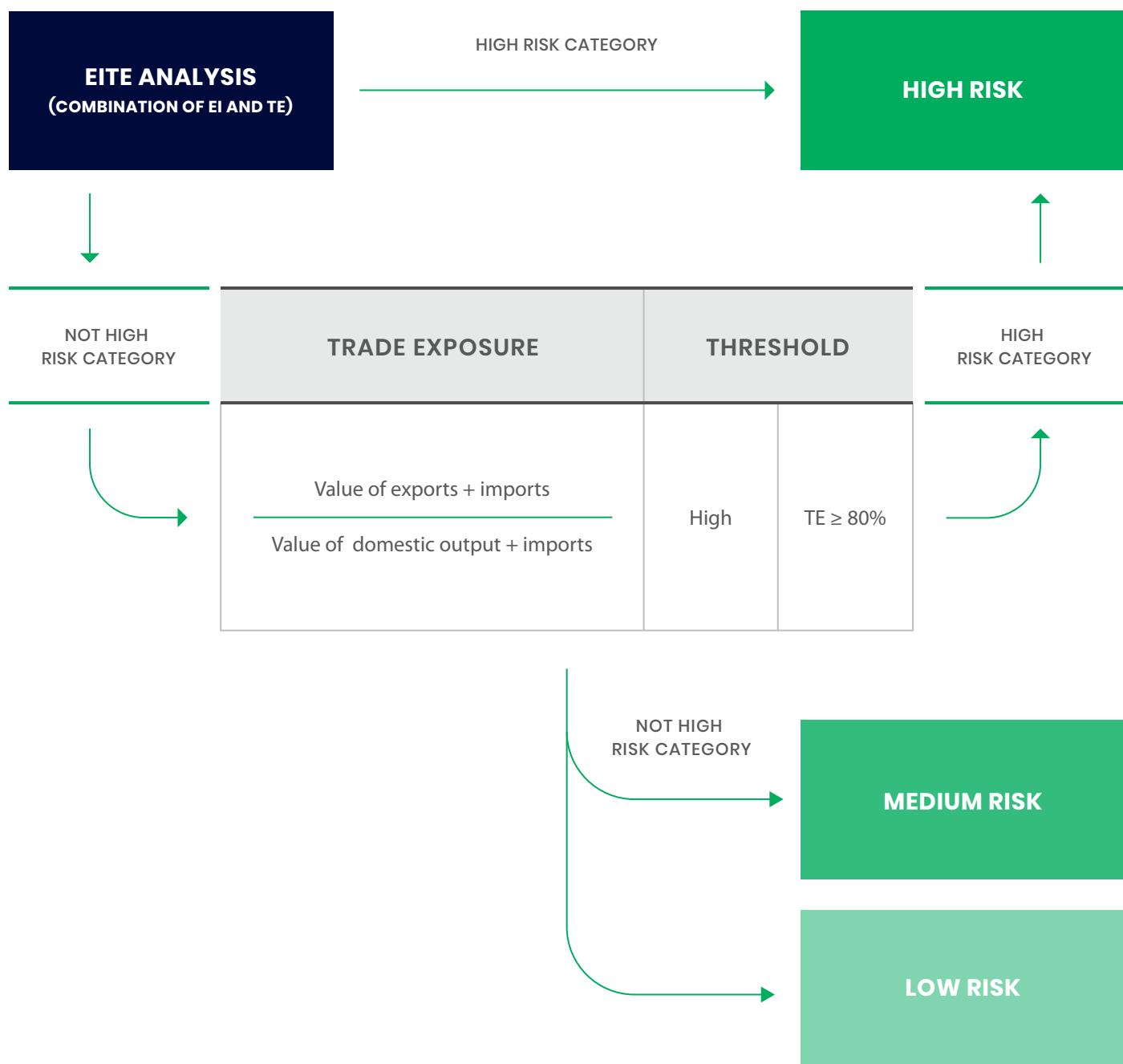


Figure 3. Proposed New Brunswick two-step carbon leakage and competitiveness risk assessment approach.

NEXT STEPS

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New Brunswick will continue to engage with the federal government to ensure that our made-in-New Brunswick approach will be accepted and in place for 2019. This will ensure regulatory certainty for our industry and electricity rate payers, well in advance of any compliance obligations due under the federal OBPS in December 2020.