



**APPrO**  
ASSOCIATION OF  
POWER PRODUCERS  
OF ONTARIO

### **APPrO Comments<sup>1</sup> on the discussion paper “Exploring Border Carbon Adjustments for Canada”**

**The Association of Power Producers of Ontario (APPrO)** appreciates the opportunity to comment on this important issue. It should be noted that it is a complex matter involving federal and provincial responsibilities as well as electricity system operations, resource adequacy, reliability, and electricity markets. It would not be an exaggeration to say that there are many moving pieces. It should also be noted that there was limited time provided to prepare submissions as part of the Department of Finance (Canada) consultation. As a result this analysis is not exhaustive and has been limited in scope based on time resources available.

**About APPrO.** The Association of Power Producers of Ontario (**APPrO**) is a non-profit organization representing Ontario’s power producers and related businesses. Its 20 generator members produce the majority of Ontario's electricity from clean and renewable resources including nuclear, co-generation, hydro-electric, natural gas, wind, wood waste, and solar energy.

APPrO members build and operate power plants in Ontario, across Canada, and elsewhere in the world. APPrO’s membership also includes fuel suppliers and marketers, contractors, equipment suppliers, consultants, local distribution companies, legal services providers, and financial organizations. APPrO’s mission is to achieve an economically and environmentally sustainable electricity sector in Ontario that supports the business interests of electricity generators, ratepayers, and the provincial economy. APPrO is the preeminent voice for electrical generators in Ontario and a trusted, positive, non-partisan contributor to discussions about energy planning and delivery.

APPrO has been deeply involved in provincial discussions and consultations related to climate change mitigation efforts since 2008, particularly with the Western Climate Initiative.

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<sup>1</sup> Prepared with input from member companies and with the assistance of Resilient LLP

All of APPrO's policy contributions over the last decade have been governed by a principled and cooperative approach that recognizes the importance of a transition to a lower carbon economy, while facilitating the reliable, efficient, effective, fair, transparent, and sustainable operation of a viable electricity sector in Ontario.

## Executive Summary

Ontario's electricity system is among the cleanest in the world and represents the most important tool our province has to grow our clean economy and achieve our net-zero emissions goals.

Electricity is also the lifeblood of Ontario's economy, and an almost indispensable part of every day life in our province. As Ontarians continue to make more climate-conscious choices and industries invest in innovation to reduce emissions, access to one of the world's cleanest electricity systems ensures we have a flexible, reliable and clean energy source to achieve our collective efforts to combat climate change.

Ontario became the first jurisdiction in North America to stop burning coal to generate electricity when it shut down its last coal plant in 2014. This continues to be the largest single action to combat climate change in North America to date. As a result of this and other energy policy decisions in the province, Ontario's electricity sector is virtually decarbonized (approximately 96 percent carbon-free) with an effective estimated emissions rate of 30g CO<sub>2</sub>/KWh in 2019. Ontario's electricity system operator notes that "Ontario has one of the cleanest systems in the world when it comes to carbon emissions per kilowatt-hour – 93% and 92% lower than the U.S. and German grids respectively, and 81% lower than the rest of Canada<sup>2</sup>." By contrast, US electricity imports into Ontario, can be up to 300% higher in emissions than Ontario's clean natural gas electricity generators, and 3000% higher than the average emissions intensity of Ontario's electricity sector.

Over the past decade, Ontario has had to deal with growing electricity costs, impacting ratepayers, businesses, and hampering the competitiveness of the province's manufacturing sector. Affordability of electricity has become a major focus of Ontario public concern over the past few years. In addition, the federal and provincial governments have imposed a significant carbon price on the remaining fossil fuel fired electricity generation facilities through the federal Greenhouse Gas Pollution Pricing Act (GGPPA) backstop when it applied and Ontario's now implemented Emissions Performance Standard (EPS).

As we note, Ontario's electricity sector will play an integral role in decarbonizing the Canadian economy. In fact, the Ontario Environment Plan indicates that Ontario will rely on increased electrification of buildings, electric vehicle transportation, industry performance standards, clean fuels, natural gas conservation, and innovations to drive decarbonization and help Ontario achieve its climate targets of reducing emissions by 30 per cent below 2005 levels by 2030. More recently the Ontario Ministry of Energy asked the Independent Electricity System Operator (IESO) to evaluate a moratorium on procurements of new natural gas generating stations in Ontario and develop a pathway to zero emissions in the electricity sector.

The reliable production and dispatch of Ontario's supply of clean sources is supplemented and backed up primarily by highly efficient combined cycle natural gas-fired electricity facilities. Ontario's existing and future clean electricity assets will play a vital role in helping Ontario and Canada transition to a decarbonized economy. Ontario must be able to preserve the value of its investments made on behalf of ratepayers and be mindful of the impact of differential carbon pricing of electricity imports and exports on the competitiveness of its supply stack. This includes ensuring its strategic long-term

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<sup>2</sup>Independent Electricity System Operator (IESO), Report on Decarbonization and Ontario's Electricity System, 2021

investments in gas fired generation avoid being underutilized or stranded as a result of any BCAs applied to the electricity or other Emissions Intense, Trade Exposed (EITE) sectors reliant on Ontario's supply of energy.

Border Carbon Adjustments (BCA) are a mechanism designed to help mitigate inefficient outcomes associated with pricing the carbon emissions from carbon emitting electricity production. APPrO is supportive of a BCA structure that aims to level the playing field with respect to efficient and effective electricity trade with Ontario's neighbours. From a principles point of view, it does not make sense to increase the cost of emitting electricity production in Ontario but allow imported electricity to emit for free.

Emissions intensive electricity imports should be required to purchase emission allowances to cover the deemed emissions associated with the imported electricity. This will balance the playing field for all generators and ensure the success any BCA as well as ensure fairness to Ontario's electricity and other EITE sectors.

The Ontario electricity context is unique and must be both well understood and accommodated in the design and implementation of any applicable BCA. This involves both federal and provincial responsibilities as well as electricity system operations, resource adequacy, reliability, and electricity markets. An electricity BCA must be consistent with Ontario's constitutional jurisdiction over electricity and ensure that Ontario is not treated in a discriminatory manner as a result of inconsistencies in: (i) carbon pricing; (ii) implementation; and (iii) the benchmark carbon reference price.

**Outline.** The following submissions are organized in a manner consistent with the [Exploring Border Carbon Adjustments for Canada](#) discussion paper (the **Discussion Paper**) and as informed by our assessment of relevant data and supporting literature. The submission is therefore organized to consider:

- (i) background;
- (ii) the unique Ontario electricity and GHG emissions context;
- (iii) the form and scope of the BCA;
- (iv) detailed design considerations (including data, reference prices, non-pricing measures, exemptions, and use of revenues); and
- (v) implementation, administration, and enforcement.

**(i) Background**

In the Fall Economic Statement of 2020, Canada signalled its intention to increase its climate ambition and implement a BCA in order to prevent carbon leakage and address the potential competitive disadvantages of Canadian entities that are subject to carbon pricing and competing with imports from jurisdictions without a price on carbon. The implementation of BCAs in Canada was subsequently reflected in funds allocated to strengthen Canada’s Climate Plan in Budget 2021 and the [Healthy Environment and Healthy Economy Plan \(Canadian Climate Plan\)](#) that was released prior to the federal 2021 election. In August 2021, the Ministers of Finance and Environment and Climate Change (Canada) released the Discussion Paper, and started consultations that were interrupted by the fall federal election in 2021. In 2018, Ontario noted in its [Made-in-Ontario Environment Plan \(Ontario Environment Plan\)](#) that its industrial sector standards would “consider factors such as trade-exposure, competitiveness and process-emissions, and allow the province to grant across-the-board exemptions for industries of particular concern”. The Department of Finance (Canada) is seeking submissions on the Discussion Paper and BCAs, with comments from interested stakeholders due January 31, 2022.

The United States (**US**) has also signalled its intent to consider BCAs in and around its participation in the UNFCCC COP 26 negotiations and to coordinate with Canada through the 2021 [Roadmap for a Renewed Canada – US Partnership](#) (the **Canada-US Roadmap**). Related [legislative amendments](#) to the US Internal Revenue Code have been recently proposed by Senator Coons (**US Proposal**).<sup>3</sup> The US Proposal does not directly apply to electricity but would apply to “covered fuel” which includes natural gas, petroleum, coal, or any other product derived from natural gas, petroleum, or coal that is used or may be used so as to emit GHG to the atmosphere. It is unclear how this may be applied to electricity generated from covered fuels. In addition, a BCA would apply to industrial facilities which produce steel, aluminum, cement, iron, or any product which is composed of 50 percent of the foregoing products. If enacted, US BCAs would be imposed starting on January 1, 2024. This may reasonably be

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<sup>3</sup> U.S. President Joe Biden’s climate plan includes support for the imposition of “carbon adjustment fees or quotas” on certain carbon-intensive products from jurisdictions inadequate climate and environmental plans commensurate with the goals of the Paris Agreement.

expected to impact electricity trade in and out of Ontario as well as provincial jurisdiction over electricity generation and the export of electricity.

Any BCA in Canada, and especially those applicable to the highly integrated Ontario-US electricity trade, will need to be designed and implemented in a manner that is consistent and compliant with Canada's obligations under various trade agreements and its constitutional authority in light of the division of powers pursuant Canada's Constitution. Section 92A(1)(c) of the Constitution provides Ontario the exclusive jurisdiction to make laws in relation to the development, conservation and management of sites and facilities in the province for the generation and production of electrical energy. In addition, proponents of the application of any BCA should be cognizant of the challenges and backlash experienced in Ontario regarding increased electricity prices when it closed coal-fired generation to reduce GHG emissions and provided customer funded price supports through a feed-in-tariff for renewable sources of electricity. This decision had both political and broader societal implications, including increased competitiveness and carbon-leakage risks, many of which continue to be widely experienced.

## **(ii) The Unique Ontario Electricity and GHG Context**

Electricity is essential to Ontario's social and economic well-being; it will also be a key enabler of economy-wide decarbonization in the drive to net zero.

Ontario became the first jurisdiction in North America to stop burning coal to generate electricity when it shut down its last coal plant in 2014. This continues to be the largest single action to combat climate change in North America to date. As a result of this and other energy policy decisions in the province, Ontario's electricity sector is virtually decarbonized (approximately 96 percent carbon-free) with an effective estimated emissions rate 30g CO<sub>2</sub>/KWh in 2019. It has among the very lowest electricity sector emissions rates in the world. By contrast, US electricity imports into Ontario, can be up to 300% higher in emissions than Ontario's clean natural gas electricity generators, and 3000% higher than the average emissions intensity of Ontario's electricity sector.<sup>4</sup> However, over the past decade, Ontario has had to deal with growing electricity costs, impacting ratepayers, businesses, and hampering the competitiveness of the province's manufacturing sector. Affordability of electricity has become a major focus of Ontario public concern over the past few years. In addition, the federal and provincial governments have imposed a significant carbon price on the limited and decreasing remaining fossil fuel fired electricity generation facilities through the federal *Greenhouse Gas Pollution Pricing Act (GGPPA)* backstop when it applied and Ontario's now implemented Emissions Performance Standard (*EPS*).

Canada's electricity sector is significant to the Canadian economy, contributing over \$2.3B of net value in 2020. Ontario's continued effort to decarbonize the electricity and the transportation and building

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<sup>4</sup> For more detailed information on default emissions factors used by the government of Ontario for electricity imports to Ontario see the 2017 and 2018 datasets available online at <<https://data.ontario.ca/dataset/default-emission-factors-for-electricity-imports-in-ontario>>.

sectors may be frustrated by the import of less expensive, higher carbon intensity electricity from the US. Recent electricity trade data for Ontario is summarized in Table 1. Ontario had 5.2 TWh of imports and 20.4 TWh of exports of electricity in 2020<sup>5</sup> and the value of its electricity exports in 2021 was \$0.5B. Ontario’s electricity sector is among the lowest emitting and least carbon-intensive in the world with an effective emissions rate of 30g CO<sub>2</sub>/KWh in 2019.<sup>6</sup> Ontario’s phasing out of coal-fired electricity generation has resulted in a 28MT decrease in emissions.

**Table 1: Summary of Ontario Electricity Trade<sup>7</sup>**

Year	Total Imports (GWh)	Total Exports (GWh)	Manitoba		Michigan		Minnesota		New York		Quebec	
			Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
2020	5,178	20,377	687	654	26	9,835	153	448	31	7,504	4,281	1,938
2019	6,613	19,779	514	739	84	9,566	64	520	21	6,318	5,930	2,635
2018	8,438	18,591	551	776	85	8,374	106	229	83	7,156	7,614	2,055
2017	6,627	19,098	634	680	25	7,606	136	570	46	8,289	5,786	1,953
2016	7,992	21,856	674	1,116	68	10,651	118	361	290	7,942	6,842	1,786

Existing generators that generate the bulk of baseload power in Ontario are generally subject to regulated and/or contractual power prices and have either contingent or limited ability to pass the additional carbon-related costs on to customers, through commercial agreements that may be negotiated with the IESO. New zero emission generators may have higher costs and/or greater intermittency that affects and may limit their role to reliably serve all of the power needs of Ontario. The strength and importance of a diversity of lower emission electricity supply sources is currently evident in Eastern Europe, where the lack of a diverse electricity supply mix including nuclear and natural gas is compromising both the reliability of power supply and the GHG emission targets of countries including Germany. Failure to maintain a low and reliable electricity supply mix may also contribute to the trade exposure of the electricity sector in Ontario.

Unlike other sectors of the economy that may be subject to a BCA, the Ontario electricity sector includes significant, and significantly higher carbon intensity imports from only one other country: the US. This is clearly illustrated below in Figure 2. Currently, there are over 26 electric transmission interconnections between the Ontario and interconnected and US State power systems. In short, Ontario has a highly integrated electricity grid with its US neighbours. It is highly interconnected with Michigan, Minnesota, and New York. The result of the integrated Ontario-US electric grid is a flexible,

<sup>5</sup> IESO Supply Overview.

<sup>6</sup> See Appendix A

<sup>7</sup> Source: IESO.

reliable, and secure grid on both sides of the border. The majority of electricity exported to the US is derived from non-emitting sources including nuclear, wind, hydro, solar, and bioenergy. This integration is set to continue expanding, with multiple cross-border transmission projects currently in various stages of development, including the Lake Erie connector. Ontario therefore has the opportunity to assist Canada and the US in meeting their mutual electricity sector decarbonization goals as contemplated in the Canada-US Roadmap.

There are two significant implications of carbon pricing that results in increases to the cost of producing goods and products: (i) production and investment may move to the lower cost jurisdictions (in this case the US); and (ii) corresponding GHG emissions associated with electricity production will not be reduced but simply shift — or “leak” — to the US jurisdictions with lower or no carbon pricing, with negative implications for the global reduction of GHG emissions.<sup>8</sup> Carbon leakage can distort Ontario’s electricity market by curtailing generation within Ontario in exchange for imported power that appears less expensive because carbon costs have not been appropriately priced. Ontario is subject to carbon pricing under Part 1 of the GGPPA and recently transitioned from the federal OBPS to the EPS for large industrial emitters, including gas-fired electricity generators. Industrial electricity prices in Southern Ontario rank 33<sup>rd</sup> in North America and are higher than the Canadian average.<sup>9</sup> Diminished competitiveness from carbon leakage and increased costs associated with BCAs may be especially apparent in more price-sensitive Southern Ontario.

The reliable production and dispatch of Ontario’s supply of clean sources is supplemented and backed up primarily by highly efficient combined cycle natural gas-fired electricity facilities. Ontario’s existing and future clean electricity assets will play a vital role in helping Ontario and Canada transition to a decarbonized economy. Ontario must be able to preserve the value of its investments made on behalf of ratepayers and be mindful of the impact of differential carbon pricing of electricity imports and exports on the competitiveness of its supply stack. This includes ensuring its strategic long-term investments in gas fired generation avoid being underutilized or stranded as a result of any BCAs applied to the electricity or other Emissions Intense, Trade Exposed (**EITE**) sectors reliant on Ontario’s supply of energy.

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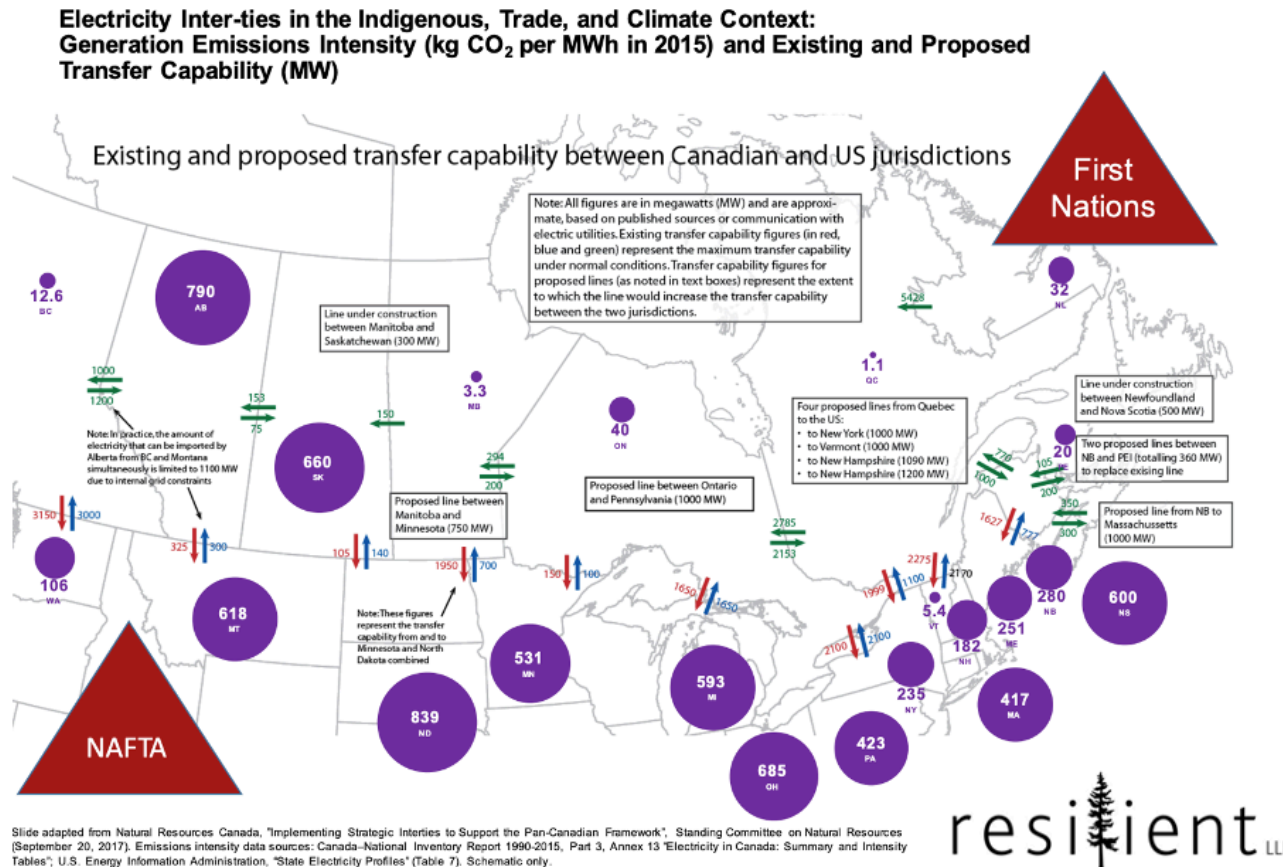
<sup>8</sup> ECCC “Pan-Canadian Approach to Pricing Carbon Pollution Interim Report 2020” (2020), Annex, p. 89 available online at: <[https://publications.gc.ca/collections/collection\\_2021/eccc/En4-423-1-2021-eng.pdf](https://publications.gc.ca/collections/collection_2021/eccc/En4-423-1-2021-eng.pdf)>.

<sup>9</sup> Ontario Ministry of Energy “2019 indicative industrial electricity prices”.



**Figure 1. Canadian Province – US State electricity GHG emissions intensity<sup>10</sup>**

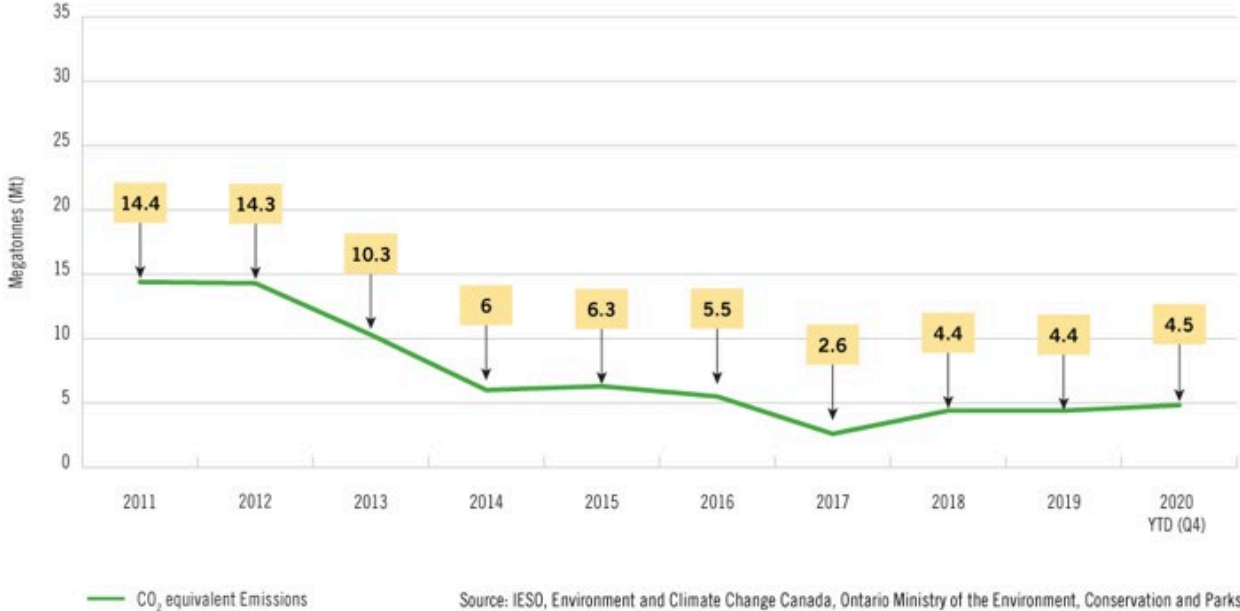
Figure 1 highlights the GHG emissions intensity of the electricity traded across the various provincial-state borders. Ontario exports considerably more, low or zero emission electricity to the US than it imports from the US. Nonetheless, electricity imported into Ontario from the US often originates from much higher GHG emission generation sources.



<sup>10</sup> Source: [Report of the Senate Nature Resources Committee on Strategic Electricity Interties.](#)

Ontario’s electricity sector has an integral role in decarbonizing the Canadian economy. Figure 2 below, illustrates that the electricity sector has decreased its annual emissions by 10Mt over the last decade. In fact, the Ontario Environment Plan indicates that Ontario will rely on increased electrification of buildings, electric vehicle transportation, industry performance standards, clean fuels, natural gas conservation, and innovations to drive decarbonization and help Ontario achieve its climate targets of reducing emissions by 30 per cent below 2005 levels to 2030.<sup>11</sup> The most recent Canadian electricity emissions data (2019) is set out in **Appendix A**.

**Figure 2. Ontario’s Electricity Sector Annual Emissions (2011-2020)<sup>12\*</sup>**



An electricity sector specific BCA may therefore be useful in ensuring that: (i) carbon leakage does not occur and (ii) Ontario electricity exports are not impeded as a result of the current and increasing carbon price. Early analysis undertaken for the Western Climate Initiative (**WCI**) examined the impact of the absence of carbon pricing in the US and showed that Ontario and Quebec electricity imports would be significantly constrained, and replaced by high-emitting sources of electricity in neighbouring jurisdictions, in the absence of some form of border measure or carbon pricing in neighbouring US

<sup>11</sup> See the Ontario Environment Plan.  
<sup>12</sup> Ontario’s Q4 2020 Energy Quarterly Snapshot. \*We note that Canada’s National Investor Report figures set out in Appendix A indicate that Ontario’s total emissions in 2019 are lower at 3.9 MT.

States.<sup>13</sup> This led to the “first jurisdictional deliverer” (FJD) BCA that is now included in the WCI and forms part of the Quebec Cap and Trade mechanism.<sup>14</sup> **Ontario no longer has any such mechanism to provide a level playing field for carbon pricing on electricity imports.** Emissions intensive electricity imports should be required to purchase emission allowances to cover the deemed emissions associated with the imported electricity. This will balance the playing field for all generators and ensure the success any BCA as well as ensure fairness to Ontario’s electricity and other EITE sectors.

The federal carbon pricing structure determined that electricity was an EITE industry. The benchmark of 370 tCO<sub>2</sub>e/GWh was introduced federally and as of October 21, 2021 it also applies in Ontario as a function of EPS amendments through O. Reg 729/21. While this notionally reduces the average Ontario gas generator’s exposure to approximately 10 percent of the carbon price, this is not the case when compared to high emission electricity imports that emit in excess of 685 tCO<sub>2</sub>e/GWh that are not generally exposed to a carbon price.<sup>15</sup> This may be exacerbated through the transition to the Ontario EPS, which now has a lower benchmark emissions rate for electricity. Currently, with a carbon price of \$50/tCO<sub>2</sub>e, the average marginal cost adder is on the order of \$2/MWh. The carbon price is set to increase to \$170/tCO<sub>2</sub>e by 2030, and assuming the benchmark emissions rate remains the same, it is estimated that the marginal cost adder will be on the order of \$7-8/MWh. There is also currently no BCA for imports coming from neighbouring jurisdictions. Based on the Discussion Paper, the benchmark may be lowered and will thereby increase the exposure of peaking Ontario electricity generators to the carbon price. If the benchmark reaches zero by 2030, in accordance with Canada’s net zero by 2030 commitments for the electricity sector, the average marginal cost *adder* for the electricity peaking fleet in Ontario would be on the order of \$25/MWh.

**Recommendation for Ontario.** The Ontario electricity context is unique and must be both well understood and accommodated in the design and implementation of any applicable BCA. Any electricity BCA should be cognizant of electricity affordability and future electrification and be directly focussed on avoiding carbon leakage to Ontario’s higher-emitting neighbours. This will ensure the government’s desired lower GHG emission and environmental outcomes for the electricity sector. The Ontario EPS should result in a level playing field to allow for more efficient trade with Ontario’s more emission-intensive neighbours. Ontario’s Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions should be analyzed in light of the potential impacts of directly including electricity imports in the EPS regime and avoiding potential greenwashing through the double counting of lower emission

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<sup>13</sup> Navigant Consulting “Electricity Imports, Exports and Leakage in the Eastern WCI Partners: Quebec, Ontario and Manitoba” (May 2010)

<sup>14</sup> WCI “Design Recommendations for the WCI Regional Cap-and-Trade Program” 23 September 2008 (corrected 13 March 2009) available online at: <<https://wcitestbucket.s3.us-east-2.amazonaws.com/amazon-s3-bucket/documents/en/wci-program-design-archive/WCI-DesignRecommendations-20090313-EN.pdf>>.

<sup>15</sup>We note that ON.63 Calculation of Specified Imported Electricity of the *Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions* (February 2020 version) <https://www.ontariocanada.com/registry/showAttachment.do?postingId=30247&attachmentId=42676> includes electricity imports but does not appear to impose a direct price on them. They are instead included in another sectors potential emissions in a limited manner that may be conducive to greenwashing through specified imports that are below the applicable US State’s emission intensity and also counted towards it (effectively double counting).

specified imports in both import calculations and state emission intensity without a corresponding adjustment in a manner consistent with the Paris Agreement.

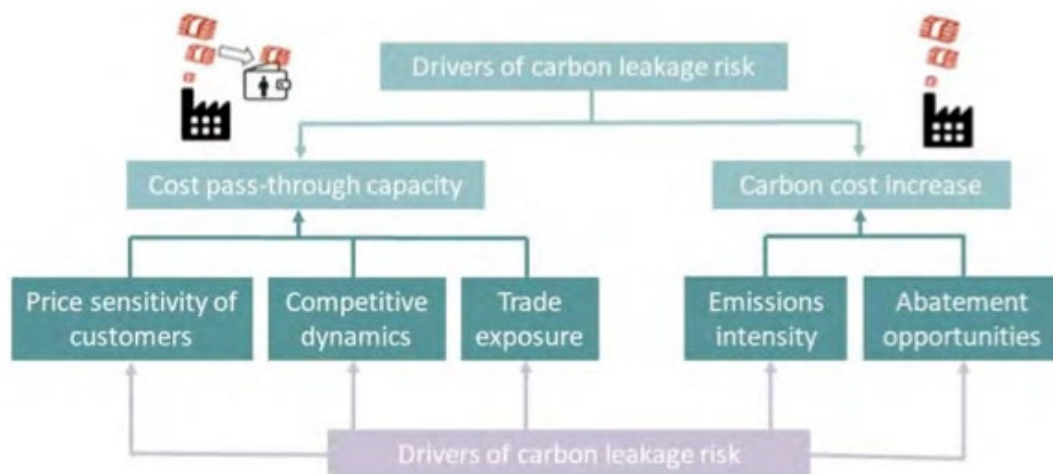
**Recommendation for Canada.** Any electricity BCA should be consistent with Ontario’s constitutional jurisdiction over electricity and ensure that Ontario is not treated in a discriminatory manner as a result of inconsistencies in: (i) carbon pricing; (ii) implementation; and (iii) the benchmark carbon reference price.

**(iii) Scope and Form**

**(a) Scope**

**Inclusion of Electricity Sector.** BCAs should generally reflect GHG mitigation objectives and respond to the drivers of leakage as demonstrated below in Figure 4.

**Figure 4. Drivers of carbon leakage risk<sup>16</sup>**



The Ontario electricity sector is subject to many of the above drivers of leakage and is characterized by: (a) price sensitive customers that increasingly need affordable and reliable electricity as an essential good; (b) competitive financial and physical trading and cross border dynamics; (c) trade exposure through fixed and often long term contracts with “reliability must run” requirements and regulated obligations to serve consumers; (d) varying emission intensities among generators using different fuels; and (e) emissions abatement opportunities that are largely set and fixed at the time that the generation facility is constructed, with little opportunity to change such abatement opportunities over the course of the useful life of the facility.

Ontario’s approach, under the EPS, may also result in electricity market distortions absent an effective BCA mechanism. Under the previous WCI/Ontario Cap and Trade system, border carbon adjustments

<sup>16</sup> Source: Vivid Economics, 2018.

were managed under the First Jurisdictional Deliverer mechanism (**FJD**), which Quebec still applies.<sup>17</sup> To be effective, electricity BCAs must be well-designed with the requisite modelling in order to avoid perverse and unintended consequences on the electricity sector, which is a linchpin of virtually all Canadian economy-wide decarbonization efforts. This includes extensive modelling of both the trade implications and any carbon leakage that may occur. Both Ontario and Canada will need to study and collect adequate data to understand the implications of instituting a BCA on various factors such as: (i) inter-provincial and international trade; (ii) trade agreement obligations including the WTO system; (iii) economic and competitiveness factors; (iv) just transition and economy-wide decarbonization, goals and commitments under the Paris Agreement; and (v) Ontario and Canada’s broader climate goals and targets. It is currently unclear as to whether this is best achieved by exempting Ontario generation from the EPS, providing free emissions compliance units to electricity generation, considering adjustments to the dispatch merit algorithm that include emissions intensity, or applying a carbon price on imports. Each option should be collaboratively studied with a view to ensuring that low emission intensity electricity in Ontario remains affordable and part of a viable decarbonization strategy.

**Ontario’s electrification and decarbonization plan.** A number of non-electricity goods that may be the subject of a BCA (cement, steel, aluminium) are produced in jurisdictions using electricity that is both carbon intense and not subject to a carbon price. Any BCA, or other mechanism, to address cross border carbon pricing that is applied to the electricity sector and non-electricity goods relevant to scope 2 electricity emissions should be informed by Ontario’s stated goals to increase electrification and how it will achieve its other climate goals provided in the Ontario Environment Plan. Ontario’s Ministry of Energy has recently announced its intention to develop a new voluntary clean energy credit registry (**CEC**) registry.<sup>18</sup> It is currently unclear how this mechanism may interact with: (i) BCAs; (ii) electricity markets; (iii) carbon markets; (iv) carbon pricing; and (v) other clean energy credits. APPRO strongly recommends further economic and financial modelling be undertaken on all of these integral, but often disparate, factors affecting the electricity sector in Ontario.

**Recommendation for Ontario.** The scope of any BCA or other measure should extend to the electricity sector in Ontario; however, it is unclear whether what form the measure should take: e.g., providing free emissions compliance units to electricity generation, considering adjustments to the dispatch merit algorithm that include emissions intensity, or applying a carbon price on imports through a traditional BCA. The scope of non-electricity sector BCAs should be broad enough to capture the scope 2 electricity emissions associated with production of goods in other EITE industries such as cement, steel, and

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<sup>17</sup> See Navigant Consulting “Electricity Imports, Exports and Leakage in the Eastern WCI Partners: Quebec, Ontario and Manitoba” (May 2010).

<sup>18</sup> Ontario News Release “[New Ontario Clean Energy Registry Will Make Province Even More Attractive for Investment](#)” (26 January 2022). The CEC Registry will assist businesses operating in Ontario to meet corporate environmental and sustainability goals. The voluntary CECs would represent 1 MWh of clean electricity generated from one or multiple non-emitting sources such as solar, wind, bioenergy, hydroelectric and nuclear. Purchasers of CECs will be allowed to purchase and retire the voluntary CECs to meet corporate goals and demonstrate that their electricity is generated from non-emitting sources. The proposed CEC registry is intended to assist businesses to reduce emissions and support the climate targets of the Ontario Environment Plan.

aluminum. However, the chosen measure(s) should not defeat broader net zero, climate, and clean energy goals by indirectly incentivising cheaper emission intense generation.

**Recommendation for Canada.** Further analysis is required on the specific scope and form of an electricity BCA or other measure to ensure equitable carbon pricing treatment for electricity imports. Given the provincial jurisdiction over electricity, APPRO strongly recommends that the Ontario Government and the relevant federal departments cooperate in such analysis and choice of appropriate measure that is most conducive to the shared electrification and decarbonization goals.

**Electrification.** In the electricity sector, the differences in GHG emissions may be significant and range from zero to over 1000 kg/MWh for certain generators of unabated coal-fired power. The differences in carbon pricing applicable to generators on either side of the border may also be significant with Ontario applying a current price of or deemed equivalent to \$50/Tonne CO<sub>2</sub>e (increasing to \$170/Tonne CO<sub>2</sub>e by 2030) and certain US border states applying no carbon price or limited prices of \$13 USD/Tonne CO<sub>2</sub>e in the Regional Greenhouse Gas Initiative (RGGI) States. The Ontario Environment Plan includes goals to increase electrification by supporting “energy storage and cost-effective fuel switching from high intensive fuels in buildings to electricity and lower carbon fuels.”<sup>19</sup>

**Recommendation for Canada and/or Ontario.** Canada may wish to avoid carbon leakage that defeats the objectives of decarbonizing Ontario’s electricity and the electrification of the transportation and building sectors by implementing an electricity BCA that, at a minimum, applies a carbon price to power imports from the US, ideally equalizing the carbon price paid by similar forms of emitting electricity generated in the US and imported into Ontario. This must be done in the context of further analysis on the role of distributed energy resources and enhanced electricity transmission in and around Ontario.

**Renewables and Non-pricing Measures.** The scope of carbon pricing in Ontario does not generally extend to zero emission or renewable power. Similarly, carbon pricing in Ontario is distinct from, and unaffected by, any renewable energy portfolio or procurement requirements, as is also the case for the WCI program. Current provisions in Ontario’s EPS and Ontario’s Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions may, however, provide for a price advantage for specified imports of renewable power from neighbouring states and thereby provide them with a market advantage to Ontario renewable resources. This is clearly anathema to the cost and effort that Ontario has invested in developing renewable generation resources in Ontario.

**Recommendation for Canada.** Any electricity sector BCA should have a similar scope and should not be characterized by special benefits or design elements for electricity imports from jurisdictions with a renewable portfolio standard or zero emission electricity procurement requirements. This may be achieved by applying a rebuttable state-wide electricity emission intensity to all imported electricity generated in that state unless defined and transparent criteria are met and a corresponding adjustment

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<sup>19</sup> Ontario Environment Plan, p. 24.

for the zero emission resource is made to the state wide emission rate.<sup>20</sup> Further consideration of this element of scope is consider under Detailed Design, data requirements.

## **(b) Form**

We understand that Canada is considering both (a) tax-based and (b) regulation-based BCAs for various sectors. The government is also considering whether BCA(s) should apply to (c) imports or (d) imports and exports through a rebate of the carbon price for Canadian goods exported to jurisdictions without, or with less, carbon pricing. APPrO suggests that the government may wish to consider the various other measures to address carbon pricing for electricity imports including, but not limited to, exempting Ontario fossil fuel generation from the EPS, providing free emissions compliance units to electricity generation, considering adjustments to the dispatch merit algorithm that include emissions intensity, or applying a carbon price on imports through a traditional BCA.

**Regulation-based BCAs.** The BCA would be extended to imports under the federal OBPS **and be consistent with and integrated into Ontario's EPS Regulation.** Importers of goods would be required to pay the equivalent GHG-related charge under the EPS at the border to cover emissions associated with the imported product or good. Regulation-based BCAs have the following differences vis-a-vis tax-based BCAs: lower leakage risks; EPS is an already existing program and would likely have limited short term economic effects; and it is more likely that applying it to Scope 2 and 3 emissions would be consistent with WTO and other trade agreement requirements, including emissions associated with Ontario's automotive, cement, and steel industries.

**Exemption-based approach.** Given the diversity of electricity sector carbon pricing regimes applicable throughout Canada it is likely to be very difficult for an electricity sector BCA to take the form of a pure, tax-based BCA, this is likely to be the case under the EPS. Similarly, given the fungibility of electricity and physical and financial trading of same, it will be very difficult and impractical to implement a carbon price rebate on electricity imports. Instead, adopting an exemption-based approach, whereby electricity is exempted and/or free allowances are provided to importers and combined with a dispatch adder.

**Recommendation for Canada.** The form of an electricity BCA is in our view more conducive to a regulation-based approach. Further, it should reflect the backstop nature of the GGPPA OBPS pricing regime and allow both Ontario and Canada the flexibility to determine the most effective mechanisms to achieve their shared objectives. This may include simply extending the respective carbon pricing regime to electricity imports, applying the federal backstop price to the emissions from electricity imports that are above the EPS, exempting Ontario generation from the EPS, providing free emissions

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<sup>20</sup> Under the Paris Agreement Article 6, corresponding adjustments are required when emission reducing exports are made. In the case of State exported power to Ontario from specified renewable resources, such resources should not be able to be both exempt from carbon pricing in Ontario AND counted toward the (lower) emission intensity of the state. They should be reported in the state at the state-wide emission intensity absent that zero-emission facility. See above discussion on the imposition of state border adjustments in California.

compliance units to electricity generation, considering adjustments to the dispatch merit algorithm that include emissions intensity, or applying a carbon price on imports through a traditional BCA.

(iv) **Detailed Design Considerations**

There are a number of detailed design issues that are unique to the consideration of any electricity sector BCA. This was apparent in the experiences of Quebec<sup>21</sup> and California<sup>22</sup> when they implemented their own cross border carbon pricing adjustments as part of their respective cap-and-trade systems under the FJD obligations of the WCI.<sup>23</sup>

**Recommendation for Ontario.** We recommend that Ontario follow the approach taken by Quebec and California in ensuring that emissions from imported electricity is included in the provincial emission thresholds and priced commensurately with the EPS by assigning an appropriate but rebuttable carbon intensity to imports, ensuring that Ontario prevents carbon shuffling of its electricity generation to higher emitting neighbouring jurisdictions.

**Recommendation for Canada.** We generally recommend that should Canada proceed with an electricity BCA, it should follow a similar approach to the FJD using default emissions rates from the jurisdiction of export and applicable Ontario carbon reference prices where the electricity is imported based on the applicable EPS price. We note, however, that the final approach to any electricity BCA must be supportable by and consistent with the requirements of the IESO, OEB, and applicable regulation in Ontario. It is noteworthy that the US Proposal currently does not cover electricity but makes provision for adding other sectors. There may be measures that are administratively simpler and more effective to achieve the stated objectives of the BCA, which should be cooperatively explored by Canada and Ontario.

There are a number of data and emissions estimates that are relevant to the consideration and implementation of any form of electricity BCA. BCAs must be fully supported by thorough and ongoing data on: (i) electricity imports and exports; (ii) quantified and/or estimated carbon leakage risks; (iii) the

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<sup>21</sup> The emissions from electricity imports consumed in Quebec are included the provincial emissions cap. Electricity imports are assigned a default emissions rate based on the state of export and are effectively required to pay the carbon price differential between the exporting US jurisdiction and the Quebec carbon price. The carbon reference price in Quebec changes periodically with the quarterly WCI allowance auctions

<sup>22</sup> California imports approximately 30 percent of its electricity and under its cap-and-trade program, electricity generators and importers must obtain allowances or offsets to cover each ton of GHG emissions associated with electricity production. California uses a default carbon intensity of 0.428 tCO<sub>2</sub>e/MWh that can either be accepted by importers and used to determine the number of allowances or offsets required; otherwise, they can elect to demonstrate that the source is “cleaner” and claim a lower or zero carbon intensity thereby reducing the allowances or offsets required.

<sup>23</sup> *Electricity Imports, Exports and Leakage in the Eastern WCI Partner jurisdictions: Quebec, Ontario and Manitoba* (July 2010). Considerations on the boundary issue are described in *Discussion Paper on FJD Boundary Options for Regulating Electricity Imports* (January 2009), and the decision laid out in *Announcement Regarding the FJD Approach* (July 2009). *Covering Emissions From Imported Electricity: An Administrative Approach*. May 2010.



impacts on electricity transmission; (iv) distribution and load consumption; (v) reliability; and (vi) realized or potential impacts on consumer prices.

**(a) Data Considerations.** Electricity imports may be specified (NERC tagged and linked to a known electricity generation source with a known and reported GHG emission rate) or unspecified (generated in or wheeled through a state with a mix of electricity generation resources contributing to an average statewide GHG emission rate that may vary depending on which generation resources are on margin at what time). The WCI developed a default emission rate calculation tool in order to assign default emission rates to exporting states and provinces that were not covered by the WCI. Any Canadian electricity BCA will similarly need the data and a related methodology to accurately develop and assign a default GHG emission rate to any and all unspecified power imported into Ontario. Similarly, the NERC tagging of specified imported power must include sufficient, accurate, and readily available emissions data to support a BCA, with corresponding adjustments, in order to avoid double counting. This will require action on emissions reporting in the affected US state, which should be addressed as part of the Canada-US Roadmap. It is unclear whether sufficient emissions data currently exists and whether NERC or other sources such as NARUC may be used to compile, aggregate, and provide access to the data to support electricity BCA processes and calculations. It is possible that the implementation of an electricity BCA may impact known, reliable, and efficient electricity transmission pathways in Ontario. It will be important to collect and monitor electricity transmission and potentially distribution and load consumption data following the implementation of any electricity BCA.

**Recommendation for Ontario.** The source and timeliness of data for default emission rates underpinning an electricity BCA will be highly relevant to its calculation, implementation, monitoring and trade consistency. Detailed consultations with relevant regional transmission Organizations and the IESO and/or OEB should be undertaken in order to ensure that the data underpinning any electricity BCA is representative, accurate, transparent, and timely. Ontario and neighbouring US states should work to develop updated and ongoing default emission rates, corresponding adjustments, and monitor transmission and other data to support the Canada-US Roadmap. Affected US and Ontario importers should be afforded a mechanism, whether new or existing, to challenge and/or appeal the applicable default emission rates and or the accuracy of the data underpinning them in order to assist in ensuring the veracity and trade defensibility of the BCA.

**(b) Reference Prices.** There are a number of different carbon prices that apply to electricity across Canadian provinces and consequently there are a number of potentially different carbon reference prices that may apply to electricity imports. The choice of the applicable carbon reference price(s) to support an electricity BCA should be respectful of Ontario's electricity jurisdiction and attempt to simplify and harmonize the approach to an electricity BCA in order to avoid perverse and unintended consequences for electricity trade and consumers across the sector.

**Recommendation for Canada.** Canada should defer to, or at a minimum work cooperatively with, Ontario in using a simplified and uniform approach to the development of carbon reference prices for

the calculation of any electricity BCA, which may include a reference price specific to Ontario and the EPS. In order to be trade defensible, the choice of reference price(s) should ensure that no windfall or excess levy is imposed by the importing jurisdiction when compared to actual electricity carbon prices applicable in that jurisdiction. If there is a material discrepancy between the reference carbon price(s) and the actual carbon price applicable to electricity in the jurisdiction of import, affected electricity market participants should be afforded a mechanism to challenge and/or appeal the applicable reference carbon price(s) in order to assist in ensuring the veracity and trade defensibility of the BCA.

**(c) Other considerations.**

There are a number of other measures that affect the carbon related price of electricity, including: renewable portfolio standards; natural gas phase out targets; net-zero commitments; social cost of carbon value that must be applied in electricity infrastructure licensing and permitting; renewable energy procurement and feed-in tariff initiatives; and dispatch price adders that affect the dispatch order of fossil fuel generated electricity. Further study is required to determine how and if other non-pricing measures may be reflected in an electricity BCA.

In light of the unique nature and context of the electricity sectors in Ontario and Canada, it may be appropriate to limit the scope and applicability of an electricity BCA to Canada and the US as opposed to broad based developing or other country exemptions. It may, however, be prudent to consider Canada's trade obligations and the strategic exempting of certain trading partners and G-77 and least developed country parties to the Paris Agreement.

Further discussions and analysis should be undertaken on the use of revenues collected by any electricity BCA, through mechanisms such as the Canada-US Roadmap processes and dialogues, while ensure respect for provincial jurisdiction over electricity and electricity pricing.

**(v) Implementation, Administration, and Enforcement.**

Implementation and administration of any electricity sector BCA will be complex and require a high degree of integration and cooperation between Ontario's energy regulator and system operator (OEB and IESO) and federal energy regulators, regional transmission authorities, and corresponding state governments and the US federal government. Similar cross border initiatives that effected an emission related price on electricity traded in and around the Northeast region of North America were implemented through the Ozone Annex to the Canada-US Clean Air Agreement. This may provide valuable insights for the implementation and administration of any electricity BCA in Canada. In addition, overlapping federal and provincial constitutional authority will require careful consideration of the imposition and administration of any BCA in the electricity sector to ensure that the implementation, administration, and enforcement of any BCA regime is intra vires federal constitutional jurisdiction pursuant to Section 92A of the Constitution.

**Point of Application.** We expect that the actual point of obligation to be placed on electricity when imported by authorized electricity importers in Ontario, will be subject to the jurisdiction and requirements of the IESO and OEB. This may be effected as a condition of license, permit or market rules

of the IESO and OEB. It may also be administered through a law or regulation of general application applicable to such importers. We note that the administrative burden and complexity of a BCA may impede its effectiveness and other measures outlined above may effect a similar outcome with less complexity.

**Recommendation for Ontario.** The point of application of any electricity sector BCA should be clear and consistent with existing electricity trade and market requirements pursuant to the IESO and OEB. Ontario should work cooperatively with the federal government to ensure fair treatment of carbon pricing for domestic and imported electricity through measures that are the simplest and least administratively burdensome in light of the key role that the electricity sector plays in the decarbonization of Canada.

**Recommendation for Canada.** Border rules, such as those established in Quebec and California, can prevent carbon leakage. GHG intensive electricity imports should at the very least be required to purchase emission allowances to cover the deemed emissions associated with the imported electricity. This will balance the playing field for all generators and ensure the success of the program.

**Agent of Administration.** The administration and collection of any BCA taking the form of a regulated carbon price or carbon price differential applicable to the electricity sector will necessitate the involvement of regional transmission organizations and Ontario's grid operator. The detailed payment and settlement mechanisms may be required to align with existing, or follow new, electricity market rules that reflect any BCA.

**Recommendation for Ontario.** The agent of administration of any electricity sector BCA, likely either the IESO or OEB, should be simple, clear and conducive to be administered in a manner that is consistent with existing electricity trade and market requirements and does not add material additional administrative burden to electricity regulation.

**Dispute Resolution.** The veracity and trade defensibility of any electricity sector BCA will be determined in part on the basis of whether there is reasonable access to a dispute resolution mechanism for effected importers and exporters.

**Recommendation for Ontario.** The information in and around any electricity-based BCA should be sufficiently accessible and transparent to allow affected stakeholders to audit and challenge specific calculations and ensure consistent application of the BCA. This may include specific monitoring, verification, and reporting requirements as well as audit rights for the BCA administrator (IESO/OEB) and the government of Ontario.

**Recommendation for Canada.** The detailed design of a Canadian BCA mechanism should include a dispute resolution mechanism for stakeholders in all affected sectors to raise and resolve disputes. Given the detailed and complex nature of electricity trade, the electricity sector may benefit from an electricity specific BCA dispute resolution mechanism or use of similar mechanisms already in place through trade agreements such as CUSMA or CETA.

## Appendix A

### Electricity Generation and GHG Emission Details (2019)

Jurisdiction	Total GHG emissions from Electricity (MtCO <sub>2</sub> e)	Electricity Generation (GWh)	Generation intensity (g GHG / kWh electricity generated)	Consumption intensity (g GHG / kWh electricity generated)
Canada	68.6	575,000	120	120
Newfoundland and Labrador	1.1	42,300	27	28
Nova Scotia	6.7	9,400	710	760
P.E.I.	0.0	647	2	-
New Brunswick	3.3	12,800	260	270
Quebec	2.3	191,000	1.2	1.5
Ontario	3.9	149,000	30	30
Manitoba	0.0	33,900	1.2	1.3
Saskatchewan	15.8	23,800	660	710
Alberta	36.3	58,300	620	670
British Columbia	1.0	52,100	18.6	19.7
Yukon	0.0	467	101	113
Northwest Territories	0.0	365	200	200
Nunavut	0.2	191	850	890

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