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CANADIAN ELECTRICITY ASSOCIATION

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# INPUT TO THE U.S. INTERNATIONAL TRADE COMMISSION

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RENEWABLE ELECTRICITY: POTENTIAL ECONOMIC EFFECTS  
OF INCREASED COMMITMENTS IN MASSACHUSETTS

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Canadian  
Electricity  
Association

Association  
canadienne  
de l'électricité



## Comments: Request for Input to the U.S. International Trade Commission on the *Renewable Electricity: Potential Economic Effects of Increased Commitments in Massachusetts* study

### INTRODUCTION

The Canadian Electricity Association (“CEA”) appreciates this opportunity to submit comments in response to the invitation of the U.S. International Trade Commission (“USITC”) for stakeholders to provide input on key considerations related to the economic and climate change impacts of renewable electricity sourcing in the New England region. CEA offers these comments in response to this invitation for input.

### DESCRIPTION OF CEA

Founded in 1891, CEA is the national forum and voice of the evolving electricity business in Canada. CEA members generate, transmit, distribute and market electric energy to industrial, commercial and residential customers across Canada and the U.S. every day. Our membership includes provincially owned and investor owned utilities, many of which are vertically integrated; independent power producers; independent system operators; wholesale power marketers; and municipally owned local distribution companies.<sup>1</sup>

Several CEA members own and invest in assets in the U.S. and are engaged in the buying and selling of electricity, ancillary services, and other energy and environmental products in markets across North America, including in Federal Energy Regulatory Commission-approved regional transmission organization/independent system operator (“RTO/ISO”) markets as registered participants. This bilateral trade relationship is not only mutually beneficial economically, but also plays a key role in ensuring the reliability and resilience of the integrated North American power grid. Clean, dispatchable and reliable Canadian electricity can also help U.S. states and regions achieve their environmental policy goals.

### BACKGROUND

Canadians and Americans share a highly integrated electricity grid, connected by more than 35 high voltage cross-border transmission lines. Every Canadian province along the U.S. border is electrically interconnected with at least one neighbouring U.S. state. The result of the integrated Canada-U.S. electric grid is a flexible, reliable, and secure grid on both sides of the border. This positive partnership has served American and Canadian businesses and communities for over 100 years.

CEA members engage in bi-directional trade with the U.S., and work with their American counterparts to keep the grid reliable and secure. Trade and integration form the backbone of a highly positive and mutually beneficial cross-border electricity relationship that provides economic, environmental, resilience and security benefits, and which contributes to affordable and increasingly clean energy for customers in both the U.S. and Canada.

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<sup>1</sup> The comments represent the position of CEA as an organization, but not necessarily the views of any particular CEA member with respect to any issue.





The overall value of the cross-border energy and electricity relationship is understood at the highest levels of government in the U.S. and in Canada. The recent U.S.-Mexico-Canada Agreement (“USMCA”) includes a U.S.-Canada side letter on energy that “recognizes the importance of enhancing the integration of North American energy markets based on market principles, including open trade and investment among the Parties, to support North American energy competitiveness, security, and independence.”<sup>2</sup>

Canadian electricity can help the U.S. meet resilience and clean energy goals affordably and reliably. Given the close integration of the North American electricity grid, CEA offers the following comments in the spirit of continued bilateral collaboration:

### Trade and Economy

Over 70 TWh of electricity flowed across the U.S.-Canada border in 2019, representing an electricity trade relationship of over \$2 billion USD<sup>3</sup>. Approximately thirty states engage in electricity trade with Canada each year. This two-way exchange enables electric supply to meet demand in the most efficient manner, increases resilience, supports affordability for customers, and helps regions meet policy and business goals on both sides of the border. Many Canadian and U.S. electricity companies own assets in both countries, and increased cross-border transmission infrastructure could potentially enable further two-way trade and allow future balancing potential.<sup>4</sup>

Although Canadian electricity sales to the U.S. accounted for 2 percent of total U.S. retail sales in 2017, the Canada-U.S. transmission interconnections are integral enablers to northern border states’ electricity markets.<sup>5</sup> In New York and New England, for example, electricity from Canada accounts for approximately 12 to 16 percent of retail electricity sales.<sup>6</sup> In Vermont, the largest share of electricity consumed comes from hydroelectric generators in Canada.<sup>7</sup>

Canada has an abundant clean electricity supply that can meet both domestic and cross-border clean energy demand, with additional clean energy development opportunities. Canada’s strength in its electricity resources permits generation capacity in excess of domestic demand, thus creating an opportunity for Canada’s plentiful electricity supply to meet both Canadian and American needs. With the majority of electricity trade between the two countries coming from hydropower generation in Canada, U.S. states – particularly in the Northeast – have taken steps to access and take advantage of this abundant and affordable source of energy supply. Massachusetts, for example, has authorized long-term contracts

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<sup>2</sup> [Canada-United States-Mexico Agreement \(CUSMA\) Side Letter from the U.S./Letter from Canada \(Energy\), Nov. 30, 2018.](#)

<sup>3</sup> Canada Energy Regulator. *Electricity Annual Trade Summary – 2019.* <https://www.cer-rec.gc.ca/nrg/sttstc/lctrct/stt/lctrctysmmr/lctrctysmmr-eng.html>. July 13, 2020.

<sup>4</sup> [Dimanchev, Hodge & Parsons. Research Brief: Two-Way Trade in Green Electrons: Deep Decarbonization of the Northeastern U.S. and the Role of Canadian Hydropower. MIT CEEPR Working Paper 2020-003. 2020.](#)

<sup>5</sup> Stanley, Andrew. *CSIS Briefs: Mapping the U.S.-Canada Energy Relationship.* Center for Strategic & International Studies. <https://www.csis.org/analysis/mapping-us-canada-energy-relationship>. May 7, 2018.

<sup>6</sup> Stanley, Andrew. *CSIS Briefs: Mapping the U.S.-Canada Energy Relationship.* Center for Strategic & International Studies. <https://www.csis.org/analysis/mapping-us-canada-energy-relationship>. May 7, 2018.

<sup>7</sup> U.S. Energy Information Administration. *Vermont State Profile and Energy Estimates.* <https://www.eia.gov/state/analysis.php?sid=VT>. July 18, 2019.





of 15-20 years to procure hydropower electricity, and to leverage its environmental and reliability benefits. This mutually beneficial, symbiotic relationship also exists in the Pacific Northwest, with excess hydropower and wind generation in Washington State finding markets across the border in British Columbia. In New York, the Champlain Hudson Transmission line will provide clean power from Canada to the metropolitan area of New York, helping that region meet its clean energy goals.

The second installment of the Department of Energy's Quadrennial Energy Review stressed that "additional cross-border transmission infrastructure with Canada has been projected to lead to lower overall system costs in U.S. border regions, and it could enhance reliability, backstop variable renewable energy development, and enable lower overall emissions of U.S. power consumption." A study by the Center for Climate and Energy Solutions found that on a levelized basis hydropower is competitive with other forms of electricity. <sup>8</sup>

As further evidence of the benefits of Canadian electricity, the New England States Committee on Electricity ("NESCOE") released an analysis in 2013 of the economic and environmental impacts associated with hypothetical incremental levels of hydroelectric imports from Québec and Newfoundland and Labrador. Under different scenarios of increased imports during a 2014-2029 study period, the analysis found average annual economic benefits associated with reduced electricity prices in New England ranging from US\$103 million to US\$471 million, with cumulative reductions in customer costs during the study period ranging from US\$3.325 billion to US\$5.652 billion<sup>9</sup>. Significantly, it also estimated average annual reductions in electricity sector GHG emissions reductions in New England ranging from 1.3 million to 8.0 million tons, with cumulative reductions totalling between 58 million and 97 million tons.

Evidence of economic and environmental benefits of trade are further described in a study by the Midcontinent Independent System Operator ("MISO"), which found significant benefits of expanding the interface between Manitoba Hydro and MISO, including production cost savings and modified production cost savings, load cost savings, reserve cost savings, and U.S. wind curtailment reduction.<sup>10</sup>

Reduced electricity rates offer direct economic benefits to consumers, and they also offer enabling benefits in the form of fuel switching, and of lower operating costs for manufacturing, retail, and other industries. Further, electricity options that are both clean and competitive will be increasingly attractive to the growing number of companies that are committing to clean energy targets.

### Environmental Benefits

Canada has the advantage of a remarkably low-carbon electricity grid, and an abundance of clean, reliable, and affordable dispatchable baseload electricity, with further clean resource development opportunities. The Canadian electricity sector is among the most sustainable in the world, with more than 80% of electricity produced in Canada already non-emitting and predominantly dispatchable reliable hydropower. Hydroelectricity generation produces no air pollutants, and has extremely low levels of

<sup>8</sup> [Aarons, K. & Vine, D. \*Canadian Hydropower and the Clean Power Plan\*. Center for Climate and Energy Solutions. April 2015.](#)

<sup>9</sup> [Black & Veatch. \*Hydro Imports Analysis prepared for New England States Committee on Electricity\*. 1-1. November 1, 2013.](#)

<sup>10</sup> [Bakke, J., Zhou, Z. & Sumeet M., \*Manitoba Hydro Wind Synergy Study \(Final Report\)\*. MISO 2013.](#)





greenhouse gas emissions. From a full life cycle assessment basis, Canadian hydropower is amongst the lowest emitting resources available.<sup>11</sup> Hydropower projects are also subject to environmental assessments as part of the Canadian approval process.

Since 2005, the Canadian electricity sector has reduced GHG emissions by more than 40% and will further decrease emissions by at least that much between now and 2030. All CEA members operate within various provincial and federal climate-change regulatory frameworks and carbon pricing regimes in place across Canada. Federal regulations were also announced in 2018 to phase out traditional coal-fired electricity by 2030.

Canada's electricity system represents one of the world's lowest-carbon electricity systems, with its predominantly clean, abundant, reliable and dispatchable electricity supply. Accordingly, Canadian electricity can offer additional tools to meet U.S. clean energy and climate change goals. There is precedence for recognition of this. For example, the Clean Power Plan recognized Canadian non-emitting electricity imports as an eligible way for states to meet clean energy targets.

Canada's abundant clean electricity supply can be used by U.S. jurisdictions to meet U.S. clean energy and climate targets. In 2017 alone, exported electricity from Quebec resulted in over 8.3 million metric tons of avoided CO<sub>2</sub> emissions.<sup>12</sup> Additionally, there is seasonal complementarity between Canada and the U.S. for peaks in electricity demand, with each country experiencing demand peaks at different times of the year. This allows for an exchange of reserve services through cross-border interconnections which reduces the need for new generation capacity that may otherwise sit idle (except during peak times on both sides of the border), thus increasing efficiency.<sup>13</sup>

Many states are pursuing clean energy goals. In New England, for example, states have renewable energy standards. Recently, several of these states have taken further steps, directing the establishment of long-term contracts for carbon-free electricity. One such state law from Massachusetts required the state to solicit long-term contracts for the procurement of 1.6GW of offshore wind power and 1.2GW of hydropower or other renewable resources.

Canadian hydropower imports could have a significant impact on the emission rates of importing states. For example, a hypothetical addition of 250 MW of imported hydropower electricity could help Massachusetts reduce its power sector emission rate by about 10 percent, moving it 32 percent of the way toward its proposed 2030 target. In Minnesota, imports from a new 250 MW project could help reduce power sector emissions by 5 percent, which would move the state 19 percent of the way toward its proposed 2030 target.<sup>14</sup>

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<sup>11</sup> Waterpower Canada. *Learn*. <https://waterpowercanada.ca/learn/>

<sup>12</sup> Hydro-Quebec. *International FAQs: Why is importing electricity from Hydro-Québec beneficial for customers in New England or New York?* <http://www.hydroquebec.com/international/en/faq.html>.

<sup>13</sup> National Renewable Energy Laboratory. *Integrated Canada-U.S. Power Sector Modeling with the Regional Energy Deployment System (ReEDS)*. February 2013. <https://www.nrel.gov/docs/fy13osti/56724.pdf>

<sup>14</sup> [Aarons, K. & Vine, D. Canadian Hydropower and the Clean Power Plan. Center for Climate and Energy Solutions. April 2015.](#)





### *Resilience and Renewable Development Opportunities*

Hydropower is well positioned to provide overall grid resilience benefits, while also serving as a clean energy supply. For example, the 2017 U.S. Department of Energy Staff Report on Electricity and Reliability notes that resources such as hydropower offer essential reliability services and fuel assistance critical to electric system reliability.<sup>15</sup> It notes that hydropower plants can also support the dynamic behavior of grid operations by offering a full range of ancillary services.

Canada's clean, predominantly hydropower supply can support the further development of U.S. renewable generation, while providing reliability and resilience benefits. Canada's predominantly clean, dispatchable baseload generation fleet can serve as backstop energy to variable U.S. variable renewables, such as solar and wind. Canadian hydroelectric power can play an especially unique role, allowing U.S. variable renewables to sell excess electricity to Canada which allows hydro reservoirs to reserve water, and can be used to generate power to be sold to the U.S. when needed in the future.

This mutually beneficial arrangement facilitates two-way trade and cross-border projects like the Great Northern Transmission Line, which has recently been energized. Analysis in the 2013 Manitoba Hydro Wind Synergy Study demonstrates that projects similar to this one, pairing new U.S. wind generation with Canadian hydro and transmission, can offer significant U.S. load cost savings.<sup>16</sup> This builds on previous benefits that saw imports of Manitoba hydropower to U.S. utilities reduce GHG emissions in the Upper Midwest by an estimated 44-60 million tons between 2006 and 2012.<sup>17</sup>

### *Resilience*

The North American electricity grid is undergoing tremendous evolution to meet the challenges of an evolving resource mix and extreme weather incidents. The interconnected nature of the North American grid offers numerous reliability- and resilience-related advantages to both countries, and electricity trade with Canada can help U.S. states and regions meet environmental and clean energy goals in a reliable manner. Advantages include: (1) a higher level of reliable service for customers through enhanced system stability; (2) efficiencies in system operation and fuel management; (3) opportunities to use power from nearby markets to address local contingencies; (4) opportunities presented by seasonal/time zone variations associated with diversified load; and (5) expanded access to low-carbon and competitively-priced resources.

Similarly, Canada-U.S. trade can serve to increase the diversity of supply options available in certain regions confronting unique challenges. For example, New England's electricity supply has become constrained by the closure of coal, oil and nuclear-fired power plants in the region, and Canadian electricity imports to New England can provide a reliable, clean and affordable supply option to help mitigate this region's growing reliance on constrained natural gas supply and delivery systems.

Canadian and American Bulk Power System owners and operators understand that due to the interconnected nature of the North American electricity grid, its reliable and safe operation is a shared responsibility. The physical and market linkages between the U.S. and Canada are made possible by

<sup>15</sup> [U.S. Department of Energy. Staff Report to the Secretary on Electricity Markets and Reliability. August 2017.](#)

<sup>16</sup> [Bakke, J., Zhou, Z. & Sumeet M., Manitoba Hydro Wind Synergy Study \(Final Report\). MISO 2013.](#)

<sup>17</sup> Manitoba Hydro. *Reducing Emissions*. <https://www.manitobahydropower.com/reducing-emissions/>





adherence to a common set of operational and commercial rules, especially the following: (1) electric reliability standards developed by the North American Electric Reliability Corporation (“NERC”), which are mandatory and enforceable in all provinces with a footprint in the larger North American bulk power system; and (2) the standard market practices and protocols utilized by RTOs, ISOs and other U.S. market participants. Compliance with these terms ensures greater liquidity in markets, and a greater diversity of supply options for customers throughout North America.

In addition to this coordinated regulatory adherence, Canadian and American security experts continue to work together in other forums to develop the tools, standards and best practices that protect the integrity of our shared grid. The Electricity Subsector Coordinating Council (ESCC) is an effective forum and a good example of effective U.S.-Canada security cooperation, which enjoys the participation of senior government officials and electricity industry CEOs from both countries. Canadian electricity companies also assist their neighbours in times of need. Over the last four years, over 400 personnel were deployed from Canada to facilitate power restoration efforts following nor'easters, California wildfires, Hurricane Florence, and other severe weather events in the U.S.

## CONCLUSION

Canada remains a reliable and trusted electricity partner to the U.S. This positive partnership has served American and Canadian businesses and communities for over 100 years. CEA appreciates the opportunity to provide these comments to the USITC, recognizing the key role that electricity serves in society, and the resulting benefits for decarbonization and climate change. Given the closely integrated nature of the North American electricity system, CEA respectfully requests consideration of the comments raised herein, and looks forward to working with the USITC to advance continued bilateral collaboration.

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