I. Introduction

The Canadian Electricity Association (“CEA”) appreciates the opportunity to provide comments on the proposed rule issued by the U.S. Environmental Protection Agency (“EPA” or “Agency”) entitled Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units.¹

More specifically, CEA’s input is focused on one of the issues for which the EPA solicited comment in its supplemental proposed rulemaking in this docket entitled Carbon Pollution Emission Guidelines for Existing Stationary Sources: EGUs in Indian Country and U.S. Territories; Multi-Jurisdictional Partnerships – namely, “the treatment of renewable energy, demand-side energy efficiency and other new low- or non-emitting electricity generation across international boundaries in a state plan.”² CEA appreciates EPA’s request for comment on this important issue.

EPA states that, under the proposed rule, carbon dioxide (“CO₂”) emissions from the U.S. electric power sector would be reduced approximately 30% below 2005 levels.³ The proposal – promulgated under section 111(d) of the U.S. Clean Air Act (“CAA”) – consists of two components: (i) state-specific rate-based goals for CO₂ emissions from the electric power sector; and (ii) guidelines for development, submission and implementation of state plans to meet these state-specific goals.

³ 79 Fed. Reg. at 34,832.
As per requirements under section 111(d), the state-specific rate-based goals reflect the degree of emission limitation achievable through the application of “best system of emission reduction” (“BSER”).

EPA’s determination of BSER under this proposed rule is based on a range of existing measures falling into four principal categories – what EPA has termed “building blocks”:

i. Improving average heat rates.
ii. Substituting generation from less carbon-intensive units.
iii. Substituting generation from expanded low- or zero-carbon generation.

In numerous instances throughout the proposed rule, the EPA stresses that each state will be granted significant flexibility in crafting its state plan. In addition to permitting each state to select the building block measure or combination of measures “most relevant to its specific circumstances and policy preferences,” EPA clearly and repeatedly affirms that “[s]tates may also identify technologies or strategies that are not explicitly mentioned in any of the four building blocks and may use those technologies or strategies as part of their overall plans.”

The emphasis on maximizing flexibility for states is a hallmark of EPA’s proposal. In step with this paramount focus on flexibility, and in support of the EPA’s goal to maximize reductions in harmful CO₂ pollution, CEA strongly believes that the final rule should specifically recognize and leverage the integrated nature of the North American electricity grid, and promote the continued two-way flow in cross-border electricity trade. In particular, the rule should clearly affirm that states will have the flexibility to allow affected entities to utilize the importation of low- and non-emitting electric generation from Canada as a CO₂ emission reduction measure (including in their respective state plans, where appropriate).

Such an approach can help to meet the criteria for the guidelines laid out in President Obama’s June 2013 memorandum. As echoed in the executive summary of the EPA’s proposal, the expressed intent of these criteria is to allow states “to pursue policies to reduce carbon pollution that: (1) continue to rely on a diverse set of energy resources, (2) ensure electric system reliability, (3) provide affordable electricity, (4) recognize investments that states and power companies are already making, and (5) can be tailored to meet the specific energy, environmental and economic needs and goals of each state.”

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4 Ibid, at 34,834.
5 Ibid, at 34,836.
6 Ibid, at 34,837.
9 79 Fed. Reg. at 34,833.
In addition, such an approach will build on the legacy of successful cooperation between the U.S. and Canada in combatting pollution together.

**II. Description of CEA**

CEA is the authoritative voice of the Canadian electricity industry, promoting electricity as a key social, economic and environmental enabler that is essential to North America’s prosperity. CEA members generate, transmit, distribute and market electric energy to industrial, commercial and residential customers across Canada and into the United States every day. Our membership includes provincially-owned and investor-owned utilities, many of which are vertically-integrated; independent power producers (several of which also own assets in the U.S.); independent system operators; wholesale power marketers; and municipally-owned local distribution companies.

CEA is committed to pursuing opportunities for cooperation with government, industry and public interest partners in Canada and the U.S. on tackling shared challenges – including the protection of our common air shed.

**III. Summary of Comments**

The bulk of the content in these comments is responsive to the EPA’s solicitation of comments in the supplemental proposal on the treatment of low- and non-emitting electric generation from Canada, and how imported resources can contribute to meeting state goals. Concurrently, these comments respond to many other items flagged by EPA in the proposed rule for public input. For example:

- Whether a state should be able to take credit for emission reductions out-of-state due to renewable energy measures, if the state can demonstrate that the reductions will not be double-counted when the relevant states report on their achieved plan performance;\(^\text{11}\)

- The appropriateness of including other CO\(_2\) reduction measures – beyond those determined by EPA to constitute BSER – in a state plan, and whether EPA should provide specific guidance on inclusion of these measures in a state plan;\(^\text{12}\) and

- Options and alternatives to account for interstate effects associated with measures in a state plan in a consistent manner.\(^\text{13}\)

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\(^{10}\) 79 Fed. Reg. at 65,496.

\(^{11}\) *Ibid*, at 34,922.

\(^{12}\) *Ibid*, at 34,923.

\(^{13}\) *Ibid*, at 34,921.
In response to these and other topics for which the EPA solicited public input, CEA wishes to offer the following principal arguments and recommendations for the Agency’s consideration:

A. The U.S. and Canadian segments of the larger North American grid are integrated and interdependent.

1. Existing physical linkages between the U.S. and Canadian electric power systems are numerous, and are set to continue expanding.

2. Physical linkages between the U.S. and Canadian grids have enabled steady growth in a robust continent-wide electricity marketplace.

3. The elements involved in maintaining the reliable operation of the interconnected North American grid and managing the exchange of electricity across the U.S.-Canada border are extremely complex, requiring the support and participation of numerous entities in both countries.

B. In its final rule, EPA should appropriately consider, reflect and leverage the benefits to U.S. consumers associated with existing and expanded integration of the North American grid.


   i. U.S. emission reductions achieved through the importation of low- and non-emitting generation from Canada are implicitly reflected in the EPA’s 2012 emissions data for U.S. states.


4. U.S.-Canada electric integration helps enable development of clean energy in the U.S.

5. Failure to appropriately consider, reflect and leverage the benefits of existing and expanded U.S.-Canada electric integration in the final rule would result in unintended consequences for U.S. entities and would deprive these entities of a valuable, proven option for meeting their carbon-reduction goals.

C. In its final rule, the EPA should specifically state that states will have the flexibility to allow affected entities to utilize the importation of low- and non-emitting electric generation from Canada as a CO₂ emission reduction measure (including in their respective state plans, where appropriate).
1. There is precedent under existing CAA programs for recognition of the emission-reduction benefits of low- and non-emitting electricity from Canada.

2. The importation of low- and non-emitting generation from Canada provides numerous benefits to U.S. states. Furthermore, these benefits are consistent with the criteria which President Obama stipulated must be reflected in the EPA’s GHG guidelines.

3. States and affected entities should have the opportunity to take advantage of U.S.-Canada integration and trade, in view of the EPA’s assurances that states will be granted maximum flexibility to meet their rate-based goals in a manner that reflects their specific circumstances and energy and environmental policy objectives.

4. The utilization of imported low- and non-emitting generation from Canada as a CO$_2$ emission reduction measure comports with EPA’s assurance that “[s]tates may also identify technologies or strategies that are not explicitly mentioned in any of the four building blocks and may use those technologies or strategies as part of their overall plans.”

5. It is already feasible to account for emission effects and to avoid double counting of emission reductions in the U.S.-Canada context. As such, there should be no impediment to applying any solutions to address interstate emission effects which are contemplated and adopted under the final rule to U.S.-Canada transactions as well.

6. Accommodating imports of low- and non-emitting electricity from Canada can be accomplished under a range of policy options and design scenarios.

7. The importation of low- and non-emitting electricity from Canada can be accommodated under a range of state plan approaches proposed by the EPA.

8. A final rule in this proceeding which recognizes and leverages the integrated nature of the North American electricity grid, and promotes the continued two-way flow in cross-border electricity trade, would be consistent with the North American Free Trade Agreement’s (“NAFTA”) prohibitions on restricting or limiting trade in energy based on the geographic origin of this energy.

D. EPA must ensure that the final rule will not negatively impact the electric reliability of the North American grid.
IV. Comments

A. THE U.S. AND CANADIAN SEGMENTS OF THE LARGER NORTH AMERICAN GRID ARE INTEGRATED AND INTERDEPENDENT.

1. Existing physical linkages between the U.S. and Canadian electric power systems are numerous, and are set to continue expanding.

Electricity plays an integral role in the vibrant bilateral energy relationship, which itself is a pillar of the broader flow of two-way trade that is without compare anywhere in the world.

There are currently more than 35 electric transmission interconnections between the Canadian and U.S. power systems, which stretch across the international border and together form a highly integrated North American grid (see Appendix 1). Each Canadian province along the U.S. border is electrically interconnected with a neighboring U.S. state or states, with many provinces boasting multiple (or in the case of Ontario, more than a dozen) international interties. U.S.-Canada integration is by no means a new phenomenon, with Ontario and New York having established their first connection more than 110 years ago.14

The most recent international power line (“IPL”) to go in-service was the Montana-Alberta Tie Ltd. (“MATL”) in September 2013.15 MATL is a 230 kV merchant line connecting the electric system in the province of Alberta with wind resources located in the NorthWestern Energy system in Montana. MATL’s operationalization was a significant milestone, insofar as the line represents the first electrical interconnection between Alberta and the United States.

Moreover, electric integration between Canada and the U.S. is set to continue expanding. Table 1 below provides a summary of the multitude of IPL projects currently under various stages of development.

Table 1 – Current U.S.-Canada International Power Line Projects

<table>
<thead>
<tr>
<th>Name</th>
<th>Sponsor</th>
<th>State-Province</th>
<th>Length (miles)</th>
<th>Voltage &amp; Capacity</th>
<th>Purpose</th>
<th>In-service Date</th>
<th>U.S. Presidential Permit Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Champlain Hudson Power Express</td>
<td>Transmission Developers Inc.</td>
<td>New York-Québec (QC)</td>
<td>333</td>
<td>1,000 MW, HVDC (underwater, underground, merchant)</td>
<td>Deliver hydro and wind energy from QC to New York City area</td>
<td>Fall 2017 (expected)</td>
<td>Issued October 2014</td>
</tr>
</tbody>
</table>

2. Physical linkages between the U.S. and Canadian grids have enabled steady growth in a robust continent-wide electricity marketplace.

Bilateral trade occurs routinely – and has occurred for decades – at a range of points across and beyond the border, with supply fulfilling demand in the most efficient, cost-effective manner possible (see Appendix 2). Such trade enables market participants to take advantage of supply diversity across the wider grid, reflected in the very different generation mixes in place in either country (see Appendix 3). System and market integration also underpin economic development on both sides of the border.

Historically, electricity exports to the U.S. have represented 5-10% of total electric generation in Canada. The majority of these exports involve the sale of surplus output from provinces with major hydropower resources, such as British Columbia, Manitoba and Québec. Export volumes from Ontario have also risen more recently, making the province the second largest exporter for several years. In 2013, nuclear and hydropower comprised over 80% of Ontario’s supply.\(^\text{16}\) And as noted below, New England has recently seen an uptick in imports of nuclear energy from New Brunswick following the return to service of the Point Lepreau Generating Station in late 2012.

In addition, it is worth emphasizing that the majority of Canada-U.S. electricity trade is transacted through spot markets administered by U.S. Independent System Operators (“ISOs”) and Regional Transmission Organizations (“RTOs”). In 2013, over 75% of trade was conducted

\(^{16}\) http://www.ieso.ca/Pages/Media/default.aspx.
through these markets, with long-term contracts only representing about 23% of trading activity.\textsuperscript{17}

In a very real sense, the North American electricity market is borderless. Supply meets demand north-to-south or south-to-north as conditions require, to the advantage of consumers everywhere. In fact, it seems fair to argue that if planners were to start from scratch tomorrow in designing the international electric grid, the power system would be oblivious to political borders and would instead follow the dictates of economic and environmental efficiency. Under these imperatives, system flexibility is maximized, with operators able to take advantage of a wide spectrum of resources over a large control area, thereby reducing aggregate variability in both generation and demand, and mitigating price volatility.\textsuperscript{18}

3. The elements involved in maintaining the reliable operation of the interconnected North American grid and managing the exchange of electricity across the U.S.-Canada border are extremely complex, requiring the support and participation of numerous entities in both countries.

EPA’s proposal is correct in observing that the electric power sector is unique, “in that, unlike other sectors where the sources operate independently and on a local scale, power sources operate in a complex, interconnected grid system.”\textsuperscript{19}

A fundamental aspect of this complexity is the fact that electricity must be produced at the instant in which it is consumed, meaning supply must be continuously balanced with demand. As the North American Electric Reliability Corporation (“NERC”) has noted, “[t]his means generation and transmission operations in North America must be monitored and controlled in real time, 24 hours a day, to ensure a reliable and continuous supply of electricity to homes and businesses.”\textsuperscript{20} Entities known as Balancing Authorities are responsible for this balancing of supply and demand in real-time. These authorities examine scheduled generation, forecasted load, system losses and scheduled interchanges, and seek to maintain system balance continuously on the basis of system frequency.

Maintaining the reliable operation of the electric grid and administering power markets across North America are made possible by adherence to a common set of operational and commercial rules, especially the following: (1) electric reliability standards developed by NERC, which are applicable in all Canadian provinces with a footprint in the larger North American bulk power

\textsuperscript{19} 79 Fed. Reg. at 34,844.
system ("BPS"); and (2) the standard market practices and protocols utilized by ISOs/RTOs and other U.S. market participants.

As noted above, in recent years the bulk of electricity exchanges across the U.S.-Canada border have been executed through wholesale markets, with long-term contracts representing less than one-quarter of total trading activity. These wholesale markets include the real-time and day-ahead markets of U.S. ISO/RTO organizations such as the California ISO, Midcontinent Independent System Operator ("MISO"), PJM Interconnection, New York ISO ("NYISO”) and ISO New England ("ISO-NE”).

In the wholesale market context, these deliveries typically occur under one of two market structures. First, in power pools administered by ISOs/RTOs, participants transact by submitting bids and offers into the pool. Software is utilized to calculate market clearing prices, including transmission congestion and losses. The other principal market model consists of bilateral trading, in which participants negotiate directly with counterparties or anonymously via brokers or over trading platforms (e.g. Intercontinental Exchange). Under these market structures, electricity is delivered under the following windows/intervals: (i) hourly, meaning delivery occurs at a constant rate over any given hour (usually the hour before delivery up until to the day before); (ii) daily, meaning delivery occurs at a constant rate over specific periods of a day (usually the day before delivery); and (iii) term, meaning delivery occurs over a multi-day period (often monthly, quarterly or yearly, with purchases having been made anywhere from the day before to years before).

Accordingly, at any given moment in the day, week, month or year, U.S. market participants in numerous states and ISO/RTO markets are importing energy from Canadian sources, and vice versa. Interconnections across the North American grid help to stabilize minute-to-minute fluctuations by providing a large pool of generation and load, which in turn assists in absorbing normal fluctuations and keeping the system running smoothly. This is all made possible by consistent compliance across North America with NERC standards and rules governing participation in ISO/RTO and bilateral markets.

**B. IN ITS FINAL RULE, EPA SHOULD APPROPRIATELY CONSIDER, REFLECT AND LEVERAGE THE BENEFITS TO U.S. CONSUMERS ASSOCIATED WITH EXISTING AND EXPANDED INTEGRATION OF THE NORTH AMERICAN GRID.**

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21 CEA’s description of different electricity market structures uses material included in a presentation delivered by Powerex Corporation to the Canada Border Services Agency during a non-public workshop in June 2013 in Ottawa, Canada. Powerex Corporation is the wholly-owned electricity marketing subsidiary of the British Columbia Hydro and Power Authority.


The significant extent of U.S.-Canada electric integration and interdependency is discussed above. This section highlights the benefits associated with the interconnection of the two countries’ electric power systems. These benefits are numerous, including such examples as maximized emissions reductions, increased efficiencies in system operation, enhanced reliability and affordability of supply, and expanded access to low-carbon resources.

For the reasons set forth below, CEA strongly believes that the EPA should appropriately consider, reflect and leverage these benefits in its final rule. Such an approach has the potential to continue facilitating substantial reductions in U.S. GHG emissions – to which numerous U.S. states and utilities can attest, having already reaped the benefits of a lower-emitting power supply through years of purchasing Canadian imports, or having already undertaken action to do so. Beyond reducing the emissions profile of the U.S. supply mix, this approach will also assist in fulfilling the other criteria for the EPA’s guidelines set forth in the President’s June 2013 memorandum – namely, reliability, affordability and diversity of supply.

1. **U.S.-Canada electric integration helps reduce U.S. GHG emissions.**

*Canada – A World Leader in Non- and Low-Emitting Generation*

With abundant hydropower resources, a sizeable nuclear fleet and expanding renewable production, Canada boasts one of the cleanest supply mixes in the world, with approximately 80% non-emitting generation.

Canada’s portfolio is set to shift even further towards a lower-carbon profile, as a result of new Canadian regulations prohibiting the construction of new coal-fired plants without carbon capture and storage (“CCS”) technology and requiring existing plants to shut down following a maximum of 50 years of operation (again, unless CCS technology is applied). It should be noted that the performance standard for the intensity of CO₂ emissions established in Canadian regulations – 420 tonnes per gigawatt-hour²⁴ – represents the most stringent regulation of GHGs from coal units anywhere in the world.

With Canada’s coal-fired regulations finalized in 2012 and scheduled to take effect in 2015, new regulations limiting CO₂ emissions from natural gas-fired generation are also pending and will likewise be based upon this rigorous standard of performance.

In addition to action at the federal level in Canada, there are numerous activities underway with respect to CO₂ reduction in each province across the country. For example:

- **British Columbia (“BC”), Alberta and Québec** have all applied a price on carbon: BC, through the establishment of a C$30 per tonne of CO₂ equivalent (“tCO₂e”) carbon tax; Alberta, through regulation of major GHG-emitting facilities (for which payment of a

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²⁴ This figure is equivalent to 926 lbs/megawatt-hour.
C$15/tCO₂e fee is one compliance option); and Québec, through implementation of a provincial carbon trading market, which is linked with California’s cap-and-trade program. (Held on November 25, 2014, the first joint auction of carbon allowances by California and Québec resulted in clearing prices of US$12.10 for 2014 vintage allowances and US$11.86 for 2017 vintage allowances).²⁵

- In Saskatchewan, the provincially-owned utility SaskPower recently placed in-service the world’s first commercial-scale, fully-integrated CCS system at Unit 3 of its Boundary Dam Power Station.²⁶ This CCS project represents a total combined investment of C$1.35 billion from SaskPower, and the federal and provincial governments.²⁷

- In Manitoba, the government’s climate strategy contemplates new electric generation and transmission projects which will bring online more than 2,300 megawatts (“MW”) of hydroelectric capacity. This complements other ongoing GHG-reduction efforts in the province, including an emissions tax on coal and a ban on petroleum coke and coal heating.²⁸ Manitoba’s last remaining coal-fired facility is regulated to operate only in support of emergency situations. By the time the new 695 MW Keeyask hydroelectric generating station is online (estimated in-service date of 2019), Manitoba Hydro – the provincially-owned vertically-integrated utility – will be required to stop using coal altogether.

- Whereas 7,500 MW of coal represented approximately 25% of provincial capacity in 2003, Ontario burned its last supply of coal in April 2014, making it the first jurisdiction in North America to eliminate the fuel as a power generation source. This generation has been replaced by a mix of non- and low-emitting resources such as efficient combined-cycle natural gas, hydropower, nuclear, wind and solar that also supply into U.S. markets.²⁹

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Central to the GHG-reduction and climate change plan for New Brunswick is the development of non-emitting energy – in particular, renewable and nuclear. The province has committed to a Renewable Portfolio Standard (“RPS”) of 40% by 2020, while the recent refurbishment of the reactor at Point Lepreau Generating Station means New Brunswick is set to have a 75% non-emitting generation mix by the same year.

Finally, the provinces of Nova Scotia and Newfoundland and Labrador are embarking on an ambitious project to lower their respective GHG emissions profile by linking their provincial transmission systems and leveraging investments in thousands of megawatts of new hydroelectric capacity. The Maritime Link – a 500 MW transmission link between the island of Newfoundland and Nova Scotia, along with a 900 MW transmission link between Labrador and Newfoundland – will facilitate diversification in Nova Scotia’s mix, as it transitions away from coal in order to comply with Canadian GHG regulations and to achieve the 40% by 2020 requirements for renewable energy in the province. Meanwhile, the 3,000 MW of new hydro capacity associated with development of the Lower Churchill Project in Labrador is estimated to have region-wide CO₂ reduction potential of 16 million metric tons per year. Phase 1 of this project involves development of the Muskrat Falls hydroelectric station, which will result in Newfoundland and Labrador’s generation system being 98% non-emitting. Phase 2, involving the 2,250 MW Gull Island generating station, will provide significant additional amounts of non-emitting energy for the region and potentially U.S. markets.

The combined effect of the federal and provincial action listed above will be to further reinforce the status of Canada’s electrical generation mix as one of the cleanest in the world.

The Emission-Reduction Benefits of a Robust Cross-Border Trading Regime

Over the years, the dynamic U.S.-Canada electricity trading regime has yielded tangible benefits in terms of assisting U.S. customers in transitioning to a lower-carbon economy. For example, from 2006-2012, exports of hydropower from Manitoba to utilities in the U.S. helped to achieve reductions in GHG emissions in the U.S. Midwest in the range of 44 million to 60 million metric tons. Likewise, in recent years, increased sales of hydropower from Québec to neighboring markets have resulted in the avoidance of 53 million metric tons of GHG emissions – roughly tantamount to removing 13 million vehicles from the road.

33 Based on revenue quality metered data and eGRID 9th edition Version 1.0 Year 2010 GHG Annual Output Emission Rates for MRO West.
And in many U.S. states and regions, the importation of low-carbon Canadian electricity remains an appealing option to diminish reliance on older or less efficient fossil-fuel based energy systems even further. In Massachusetts, for example, the state’s clean energy and climate plan calls for expanding clean energy imports from Canada, with expected economy-wide GHG reductions totalling 5.1 million metric tons (or 5.4% of overall state emissions) by 2020.\(^{35}\)

Similarly, there has been a recent trend of formal recognition of imported hydropower from Canada under state-level RPS standards and other renewable energy policies:

- June 2010 – Vermont revised its statutory definition of “renewable energy” to include hydroelectric generation of any capacity, including imported hydropower from Québec.\(^{36}\)

- March 2011 – The Minnesota Public Utilities Commission authorized a state utility to apply environmental attributes associated with a new purchase agreement for hydropower from Manitoba towards fulfillment of the utility’s state renewable energy requirements.\(^{37}\)

- July 2011 – Wisconsin modified its RPS to grant recognition to specific large hydroelectric facilities in Manitoba.\(^{38}\)

- June 2013 – Connecticut amended its RPS to include imported hydropower from Canada as a qualifying renewable energy resource under specified circumstances.\(^{39}\)

Moreover, Massachusetts has been leading a joint effort with its New England neighbors to explore ways to increase imports from large hydropower resources into the region.\(^{40}\) In step with this initiative, the New England States Committee on Electricity (“NESCOE”) released an analysis in November 2013 of the economic and environmental impacts associated with hypothetical incremental levels of hydroelectric imports from Québec and Newfoundland and Labrador.\(^{41}\) Under different scenarios of increased imports during a 2014-2029 study period, the analysis concluded that average annual electric sector GHG emission reductions in New England would range from 1.3 million to 8.0 million metric tons, with cumulative reductions ranging from approximately 58 million to 97 million metric tons.


\(^{40}\) [http://www.mass.gov/eea/pr-2013/ne-hydro.html](http://www.mass.gov/eea/pr-2013/ne-hydro.html).

The above examples are merely a sampling of the many ways in which low- and non-emitting electricity resources in Canada have provided and will continue to provide opportunities for meaningful reductions in GHG emissions from the U.S. electric power sector.

i. **U.S. emission reductions achieved through the importation of low- and non-emitting generation from Canada are implicitly reflected in the EPA’s 2012 emissions data for U.S. states.**

In a direct – albeit implicit – manner, the emission reductions achieved in the United States through the importation of low- and non-emitting generation from Canada are reflected in the data accompanying the EPA’s proposal. For example, the Goal Computation Technical Support Document (“Goal Computation TSD”) and supporting data files include historic data on the performance of U.S. fossil EGUs.\(^\text{42}\) As illustrated in the above discussion, in the absence of imports from Canada, these baseline data would be much higher for many U.S. states, which would otherwise have had to rely on alternative sources of generation, including higher-emitting resources.

As the EPA proceeds with finalizing its proposal, the Agency should therefore recognize the emission reductions which have historically been realized in the U.S. as a result of the importation of low- and non-emitting generation from Canada. Likewise, the EPA should not discount or disregard the emission-reduction value of this generation by limiting the ability of U.S. states and affected entities to utilize such generation for purposes of fulfilling their specific rate-based goals under the 111(d) framework.

2. **U.S.-Canada electric integration enhances reliability of supply for U.S. consumers.**

As noted above, Canada typically exports between 5-10% of its total electric generation to the United States on an annual basis. While these exports represent a relatively small share of overall U.S. power consumption, these sales are nevertheless critical to the U.S. supply mix in many areas in close proximity to the border. For example, in 2010 exports from Canada represented the following percentages of total retail sales in these jurisdictions: Vermont, 38%; Maine, 18%; Minnesota and North Dakota (combined), 12%; New England (all states), 10%; New York, 6%; and Michigan, 6%.\(^\text{43}\)

Other reliability benefits associated with cross-border electricity trade include the complementarity in the operational characteristics of segments of the grid on either side of the border. Many regions in Canada have winter-peaking systems, thus enabling them to contribute available surplus to adjoining U.S. regions which experience peak demand season during the

\(^{42}\) Goal Computation TSD, p. 4.

summer. As noted by the U.S. National Renewable Energy Laboratory, “[t]he different peaking periods in Canada and the United States allow sharing of reserve services across the border and therefore reduce the need for new capacity in both countries.”

An excellent example in this regard is the participation of Manitoba Hydro as an External Asynchronous Resource (“EAR”) in MISO. As defined by MISO, an EAR is a market-designated resource separated from the main market by a direct current, unidirectional transmission line. Through its position as an EAR, Manitoba Hydro is able to support reliable operations of MISO by offering energy and ancillary services into the market. Diversity of load in Manitoba and the rest of MISO also means that capacity resources can be shared in order to optimize the fulfillment of overall peak loads, with cost savings achieved by reducing the total resources required to meet system demand.

Similarly, Canada-U.S. trade can serve to increase the diversity of supply options available in certain regions confronting unique challenges. For example, importation of electricity from Canada in New England has helped to mitigate this region’s growing reliance on constrained natural gas supply and delivery systems. Having flexible import resources to call upon from Canada is vital to the reliable operation of New England’s electric system, as the region remains dependent on natural gas for approximately 50% of its power generation needs. The External Market Monitor for ISO-NE previously observed an increase in net imports into the region from New Brunswick, following the return to service in late 2012 of the province’s only nuclear generating station, Point Lepreau. Moreover, the U.S. Energy Information Administration (“EIA”) reported in August 2014 that New England may continue to rely on an increasing amount of imported hydropower from Canada in order to manage the impending retirement of a significant amount of fossil and nuclear capacity.

Reliability-related advantages provided by U.S.-Canada integration also include the ability to manage conditions of oversupply and loss of supply. With respect to the former, an instructive

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example is the set of challenges encountered by the Bonneville Power Administration ("BPA") in recent years in seeking to manage periods of oversupply. These challenges have been especially acute during the spring, when river flows are high due to above normal runoff from snowpack and are accompanied by periods of high wind generation. Among the solutions incorporated in BPA’s updated process to manage these conditions (i.e. its Oversupply Management Protocol) is additional storage of water in Canadian dams, beyond amounts required under international treaty. This solution is only rendered possible by several interties linking BC and the U.S. Pacific Northwest.

With respect to loss of supply, the importation of electricity from neighboring Canadian jurisdictions was critical to the reliability of power supplies for several U.S. states and regions during the severe “polar vortex” events experienced in the winter of 2013-2014. During such events, when sudden disturbances or unanticipated loss of system elements occur, the interconnections between the U.S. and Canadian segments of the grid act like shock absorbers, with the impact of loss of supply and delivery spread across multiple points until replacement resources can restore the necessary supply-demand balance.

In a variety of ways, cross-border integration is therefore critical to the reliability of the North American transmission network and to the energy security of several U.S. regions.


For years, electricity imports from Canada have served as a cost-effective resource able to compete with a diverse set of supply options in both bilateral and wholesale power markets across the U.S.

This fact has been acknowledged in numerous ways by U.S. customers purchasing Canadian power and those entrusted with safeguarding their interests. Within the expansive community of U.S. voices attesting to the cost-effectiveness of transactions with Canadian market participants, CEA wishes to commend the following examples for EPA’s consideration:

- In its most recent assessment of the competitive performance of ISO-NE electricity markets, the External Market Monitor concluded that the importation of electricity from Québec and New Brunswick “reduces wholesale power costs for electricity consumers in New England.”

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53 Supra, Potomac Economics, p. 117.
• The aforementioned NESCOE study of incremental hydroelectric imports from Québec and Newfoundland and Labrador 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.54

• The Market Monitoring Unit (“MMU”) for NYISO has consistently observed a correlation between availability of electricity imports from adjacent Canadian jurisdictions and reduced market prices. For example, after a 20% increase in NYISO market prices from 2009-2010, the MMU identified a diminished level of imports from Québec as a key factor contributing to increased energy prices.55

• Since 2011, it is also estimated that NYISO has yielded upwards of US$20 million in annual savings through more frequent energy transaction scheduling between its control area and that of Hydro-Québec.56 As part of enhanced measures for interregional transaction coordination, NYISO has implemented changes to its scheduling and pricing of energy at the Québec border, with hourly times reduced to 15-minute intervals. NYISO has maintained that this has helped to shield its market participants’ exposure to potential price volatility. In the 2012 version of its annual report on the state of energy markets under its jurisdiction, the U.S. Federal Energy Regulatory Commission echoed this assertion, agreeing that reduced lag time between scheduling commitments and subsequent pricing determinations could lower the resulting price risk.57

• A 2012 independent analysis of the economic impacts of the proposed Champlain Hudson Power Express transmission line in New York – a 330-mile underwater and underground line that will deliver hydropower from Québec into New York City – projected annual savings to consumers of more than US$650 million in the form of reduced electricity costs.58

• In late 2013, MISO released a study examining whether the costs associated with enhanced transmission capacity between Manitoba and MISO would enable greater penetration of wind resources across the organized market. The study concluded that

54 Supra, Black & Veatch, p. 1-1.
significant benefits would be derived from adding new capacity, including weighted average load cost savings of US$430 million annually through 2027.\textsuperscript{59}

As noted above, in recent years the bulk of electricity exchanges across the U.S.-Canada border have been executed through wholesale markets, with long-term contracts representing less than one-quarter of overall trading activity. At the same time, however, it is also important to note that longer-term contracts for incremental hydropower imports can also provide price stability that is beneficial to U.S. customers, mitigating price volatility risk associated with other fuel generation supplies.

It is clear, then, that the marketing of electricity across the border has a proven track record of helping to maintain the affordability of power supplies in many U.S. regions.

4. U.S.-Canada electric integration helps enable development of clean energy in the U.S.

In this regard, a compelling example is the marriage of wind and water which occurs in many cross-border contexts across North America. Often the storage capability of hydropower capacity in Canadian provinces can be used to firm-up the development of wind and other intermittent renewables in adjacent U.S. states.

The recent establishment of a long-term power purchase agreement (\textquotedblleft PPA\textquotedblright) between Manitoba Hydro and Minnesota Power for this exact purpose is an excellent illustration of this common synergy between the Canadian and U.S. grids. This agreement includes a \textquotedblleft wind storage\textquotedblright provision, entitling Minnesota Power to deliver generation from its North Dakota wind farms into Manitoba, where the energy can be absorbed into the province\textquoteright s hydroelectric system.\textsuperscript{60} In multiple public forums, Minnesota Power has repeatedly underscored how this agreement is vital to its plans to maximize the operational efficiency of its existing wind resources and to further expand its wind development in the Midwest.\textsuperscript{61}

Elsewhere, this wind-water synergy is yielding or is set to yield similar sets of benefits in ways which are specific to the needs and interests of the local jurisdictions involved. In New York, for example, a long-standing plank of the current state administration\textquotesingle s energy platform has been the addition of new transmission capacity to enable the purchase of competitively-priced, renewable hydro from Canada to complement the sale of surplus energy from upstate wind resources.\textsuperscript{62} Similarly, the aforementioned enhanced scheduling and pricing measures implemented by

\textsuperscript{59} Supra, MISO, p. 49.
\textsuperscript{61} For example, see Minnesota Power\textquotesingle s May 2012 comments to the U.S. Senate Energy and Natural Resources Committee on the \textit{Clean Energy Standard Act of 2012}: http://www.gpo.gov/fdsys/pkg/CHRG-112shrg74903/pdf/CHRG-112shrg74903.pdf.
NYISO in concert with Hydro-Québec have served as valuable tools in facilitating the integration of variable energy resources within the state.

Finally, it is important not to overlook the critical role that new U.S.-Canada transmission projects can play in supporting the development of new non-emitting resources, including those seeking to harness variable forms of energy. All of the IPL proposals listed in Table 1 above will help facilitate growth in non-emitting energy sources, including projects located in the U.S. Completion of these IPL projects will constitute a key effort in the ongoing transition towards a lower-carbon future and will help ensure that North America’s clean energy potential is maximized, rather than left stranded. What’s more, it will mark yet another important phase in the legacy of Canada and the U.S. playing to our integrated strengths to optimize the environmental performance of the international grid.

In view of the material advantages cross-border integration can offer to the development of non- and low-emitting power generation projects in the U.S., CEA believes that such opportunities should be fully promoted and enabled under the final rule in this proceeding.

5. Failure to appropriately consider, reflect and leverage the benefits of existing and expanded U.S.-Canada electric integration in the final rule would result in unintended consequences for U.S. entities and would deprive these entities of a valuable, proven option for meeting their carbon-reduction goals.

In the above discussion, CEA has sought to extensively (but not exhaustively) catalogue the wide range of benefits which are attributable to the electric integration and interdependency between the United States and Canada. CEA wishes to again emphasize that such benefits have already accrued and are continuing to accrue to U.S. customers. And these benefits will persist, based on historical trends, the existing posture of the Canadian generation mix as 80% non-emitting, expansion of cross-border interties, and the further decarbonisation of the Canadian electric power sector (through such measures as development of new hydropower and non-hydro renewables, planned nuclear refurbishment, compliance with the world’s strictest GHG performance standards for coal-fired generation, and incremental growth in natural gas capacity).

It is imperative that the EPA’s final rule neither deliberately nor inadvertently deprive U.S. states and affected entities of the carbon-reduction advantages presented by integration and trade with Canada. This applies both in the context of the existing relationship, as well as in the context of transactions and contracts which will be executed, and generation and transmission projects which will be developed, subsequent to finalization and implementation of the Agency’s proposal. Any undue, unnecessary and/or arbitrary foreclosure of the option for affected entities to incorporate low- and non-emitting generation from Canada into their 111(d) strategies will have the opposite effect of the types of benefits catalogued above. Namely, any constraints would diminish emission-reduction potential, impair reliability, reduce affordability, and limit development prospects for new non-emitting resources in impacted U.S. states. Such outcomes would be contrary to the stated objectives of the EPA and the President.
CEA respectfully and strongly requests that the EPA avoid any such scenario by ensuring that the benefits associated with existing and expanded U.S.-Canada electric integration are appropriately considered, reflected and leveraged in the final rule.

C. IN ITS FINAL RULE, THE EPA SHOULD SPECIFICALLY STATE THAT U.S. STATES WILL HAVE THE FLEXIBILITY TO ALLOW AFFECTED ENTITIES TO UTILIZE THE IMPORTATION OF LOW- AND NON-EMITTING ELECTRIC GENERATION FROM CANADA AS A CO₂ EMISSION REDUCTION MEASURE (INCLUDING IN THEIR RESPECTIVE STATE PLANS, WHERE APPROPRIATE).

1. There is precedent under existing CAA programs for recognition of the emission-reduction benefits of low- and non-emitting electricity from Canada.

CEA recognizes that all components of state 111(d) plans – including their CO₂ emission reduction measures – must be consistent with requirements set forth in the CAA and implementing regulations. In turn, CEA acknowledges that EPA requires assurances that the utilization of low- and non-emitting electric generation from Canada as a CO₂ emission reduction measure must not conflict with relevant authorities and procedures under the statute.

While some of the potential approaches under the proposed rule that might facilitate the importation of low- and non-emitting Canadian electricity for emission reductions are new, there is one such approach that has been used for decades to lower emissions in the U.S. The Acid Rain Program under Title IV of the CAA, along with NOₓ budget programs under Title I, impose a mass-based emissions compliance obligation on EGUs that is measured with continuous emissions monitors. Under both of these programs, when imported Canadian generation reduces the utilization of higher-emitting generation from coal-fired EGUs in the United States, it is an automatic compliance measure, with no restrictions or additional tracking or verification requirements.

Without endorsing the legality or desirability of alternative approaches, CEA believes that the approaches in the Acid Rain (Title IV) and NOₓ programs provide a strong precedent if states decide to use an EGU, mass-emissions-based approach with a compliance obligation for EGUs. In such cases, the treatment of imported electric generation from Canada under a state plan should be guided by the precedent of these CAA programs.

2. The importation of low- and non-emitting generation from Canada provides numerous benefits to U.S. states. Furthermore, these benefits are consistent with the criteria which President Obama stipulated must be reflected in the EPA’s GHG guidelines.


The above discussion showcases the benefits associated with the integration of the U.S. and Canadian electric power systems, and the bi-directional flow of electricity which is enabled by this integration.

The benefits of this bilateral electricity relationship accrue to customers on both sides of the international border. As detailed above, the benefits enjoyed by U.S. customers are numerous. In particular, the robust level of electric integration with Canada offers greater reliability, affordability and diversity of supply for U.S. customers. This diversity of supply options presented by cross-border integration and trade is overwhelmingly non-emitting in nature, which in turn reduces the GHG emissions profile of the larger North American electricity sector.

What’s more, for purposes of this proceeding, it is imperative to acknowledge that these benefits have the added advantage of supporting the criteria established for the EPA’s guidelines set forth in President Obama’s June 2013 memorandum. Accordingly, CEA strongly believes that it is in the interest of the EPA to ensure U.S. states are able to avail themselves of the benefits of cross-border integration and trade under the framework established in the final rule.

3. States and affected entities should have the opportunity to take advantage of U.S.-Canada integration and trade, in view of the EPA’s assurances that states will be granted maximum flexibility to meet their rate-based goals in a manner that reflects their specific circumstances and energy and environmental policy objectives.

To its credit, the EPA expressly recognizes that “states differ in important ways, including in their mix of existing EGUs and in their policy priorities.”63 As such, a recurring theme in the proposed rule is that the EPA is committed to granting ample flexibility to states for purposes of crafting their respective state plans.

Under this approach, wherein flexibility is an animating principle and promise, it must be acknowledged that the circumstances of many states are shaped in significant measure by their direct interconnection with Canada or close proximity to the U.S.-Canada border. As highlighted in detail above and in the Appendices below, the electric transmission networks in numerous states are physically integrated with those in neighboring Canadian provinces. Likewise, many U.S. states import large volumes of electricity from Canadian suppliers, with the major importing states relying on generation from north of the border for anywhere from 5-10% of their overall mix. (This figure even reaches as high as 20% and 40% for a small subset of states).64

These circumstances are reflected in many of the existing energy and environmental policies being implemented by these states. For example, as discussed above, several states have formally recognized imported hydropower from Canada under their RPS standards or renewable energy targets. Similarly, Massachusetts serves as an excellent example of a state whose plans to

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63 79 Fed. Reg. at 34,836.
64 Supra, National Energy Board and EIA.
tackle climate change include expanding the volume of clean energy imported from nearby Canadian provinces.

It is wholly reasonable and appropriate to expect these states to reflect their integration with Canada and to incorporate recognition of Canadian resources under their own programs in the 111(d) plans submitted to the EPA. CEA strongly believes that those states which wish to pursue this course of action should not be precluded from doing so. Under a host of different public policy and market structure scenarios, the importation of non-emitting generation from Canada can serve as a solution that is tailored to fulfill the unique environmental and economic needs of a state. Any restrictions on a state’s ability in this regard would run counter to the EPA’s professed intention to allow “each state to maximize the advantages it considers optimal.”65 What’s more, such restrictions would also undermine the “state flexibility principle that is central to the EPA’s development of this program.”66

CEA applauds the EPA for its commitment to maximizing flexibility for states under its planned approach. Consistent with this signal from the EPA, the Agency should facilitate the submittal of state plans which may allow affected entities to benefit from the importation of low- and non-emitting electric generation from Canada as one of several strategies within a portfolio of GHG-reduction measures.

CEA respectfully requests that the EPA incorporate language in the preamble to the final rule, to this effect.

4. The utilization of imported low- and non-emitting generation from Canada as a CO₂ emission reduction measure comports with EPA’s assurance that “[s]tates may also identify technologies or strategies that are not explicitly mentioned in any of the four building blocks and may use those technologies or strategies as part of their overall plans.”67

In step with the above discussion, CEA notes with encouragement that EPA’s commitment to flexibility also encompasses a pledge not to confine states to the four building blocks determined to constitute BSER. EPA makes a definitive declaration along these lines during its discussion of how BSER was determined: “[E]ach state has the discretion to adopt emission reduction measures other than the measures found by the EPA to comprise the BSER.”68

Indeed, the ubiquitous references to flexibility as a pillar of the proposal are perhaps matched only by the numerous instances in which EPA seeks to dispel concerns that states will simply be handcuffed to the building blocks when complying with the final rule.

65 Ibid, at 34,894.
66 Ibid.
67 Ibid, at 34,837.
68 Ibid, at 34,879.
Here again CEA sees strong grounds upon which a state can argue for the ability to leverage integration with Canada as part of its strategy for maximizing CO₂ emission reductions under the 111(d) framework. If states are able to clearly demonstrate how the importation of low- and non-emitting generation from Canada can translate into measureable, meaningful decarbonisation of their electric generation fleets, then CEA believes that: (i) it is incumbent upon the EPA to offer certainty to interested states that they will have this option at their disposal; and (ii) any signal to the contrary represents an undue limitation on states’ ability to look beyond the four BSER building blocks for permissible actions to achieve their rate-based goals.

5. It is already feasible to account for emission effects and to avoid double counting of emission reductions in the U.S.-Canada context. As such, there should be no impediment to applying any solutions to address interstate emission effects which are contemplated and adopted under the final rule to U.S.-Canada transactions as well.

In the proposed rule, EPA discusses at length the importance of ensuring two states are not receiving credit for the same reduction of CO₂ emissions. CEA is entirely sensitive to the EPA’s concerns around the complexity in accounting for interstate effects associated with measures in a state plan in a consistent manner and in minimizing the likelihood of double counting. While the preamble to the proposed rule and Section VII in the State Plan Considerations Technical Support Document (“State Plan Considerations TSD”) only address these complexities in the context of transmission of electricity across U.S. state lines, CEA acknowledges how some concerns may apply in the international, U.S.-Canada context as well.

CEA is confident that such concerns will not prove to be an obstacle to allowing U.S. states to leverage the benefits of U.S.-Canada electric integration and trade under the 111(d) framework. In fact, CEA acknowledges that these concerns are not novel. The importance of verifying and accounting for emission reductions associated with Canadian imports, and of representing these reductions with confidence for U.S. purchasers, has been underscored in other forums. For example, the NESCOE study cited above shone a spotlight on the need for measurement and verification systems to validate the emission attributes of increased imports from Canada into New England to assist states in this region with meeting their GHG emission reduction goals.

Fortunately, there are existing systems and processes in place across North America which have already demonstrated their effectiveness and value for these purposes. Such verification systems include the Midwest Renewable Energy Tracking System (or “M-RETS”), which tracks renewable energy in numerous U.S. Midwestern states and the province of Manitoba; the Western Renewable Energy Generation Information System (or “WREGIS”), which serves as the renewable energy registry and tracking system for the Western Interconnection, including the provinces of Alberta and BC; and the New England Power Pool Generation Information System.

69 Ibid, at 34,921.
(“NEPOOL GIS”), which issues and tracks renewable energy credits (“RECs”) for both renewable generation sourced within the ISO-NE control area and for generation imported from adjacent control areas, including provinces in eastern Canada.\(^70\)

The following are specific examples of how these systems track and account for the emission-reduction benefits associated with energy generated in a Canadian province and exported to a U.S. state or region:

- In 2011, the San Francisco-based utility Pacific Gas & Electric (“PG&E”) entered into PPAs with three wind projects located in Alberta, with a total capacity of 450 MW. The PPAs involve the purchase of RECs by PG&E for purposes of compliance with California’s RPS standard. Each of the three wind facilities is registered on WREGIS.\(^71\)

- All of the generation produced by the large hydropower and wind resources owned by Manitoba Hydro is registered on M-RETS.\(^72\) The RECs associated with this energy can assist load-serving entities in demonstrating compliance with RPS programs in various U.S. Midwestern states.

- Numerous renewable generators located in eastern Canadian provinces are registered on the NEPOOL GIS.\(^73\) With fuel types ranging from hydroelectric to wind to landfill gas, the generation from these units is tracked and verified as renewable, thereby helping to broaden the regional REC market and expand available options for compliance with state-level renewable energy requirements.

Where appropriate, CEA supports the development of new tracking systems or the expansion of existing systems. Given the successful experience cultivated to date, CEA does not see any reason why a state (or group of states) would be unable to utilize these systems to account for emission reductions in a manner that would satisfy the robust criteria for verification which will be established in the final rule.

More broadly, while the proposed rule and accompanying Technical Support Documents clearly acknowledge the interstate nature of the U.S. electric power system and U.S. wholesale electricity markets, they are virtually silent when it comes to recognizing the larger North

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American footprint of the grid.\textsuperscript{74} However, in many respects, any challenges identified by the EPA in terms of considering effective options and alternatives for treatment of interstate CO\textsubscript{2} emission effects apply equally to the treatment of such effects in a U.S.-Canada context.

In order to appropriately reflect the integrated nature of the electric grid, the sections of the proposed rule and Technical Support Documents which discuss interstate emission effects should use language that is more North American in scope. For example, in lieu of saying that electricity flows across state lines and that load centers in one state are supplied in part by generating units in another state,\textsuperscript{75} the EPA should observe that electricity flows across state and international boundaries, and that load centers in U.S. states are often supplied in part by resources in neighboring Canadian provinces, and vice versa.

This is all to say that the treatment of emission effects is by no means a challenge unique to U.S. power systems and markets – it is fully relevant from the broader perspective of North American integration as well. Common challenges require common solutions. The establishment of effective renewable energy tracking systems which are capable of verifying the emission attributes of generation in both Canada and the United States demonstrates that such solutions are feasible – and indeed, have already been in place for some time.

CEA therefore urges the EPA to accept that a strong basis exists for migrating into the U.S.-Canada space any solutions for addressing inter-jurisdictional emission effects which are pursued under the final rule. CEA believes that the EPA can have confidence that double counting of emission reductions is a manageable, resolvable issue, and that tracking systems and other solutions applied in the U.S. interstate context are likewise applicable in the U.S.-Canada context.

\textbf{6. Accommodating imports of low- and non-emitting electricity from Canada can be accomplished under a range of policy options and design scenarios.}

Building on the above discussion regarding inter-jurisdictional emission effects, CEA wishes to emphasize that there are several pathways towards accommodating energy from Canada as one of many strategies within a state’s portfolio of CO\textsubscript{2} reduction measures. The following list (not exhaustive) illustrates a range of options and scenarios that could be contemplated and implemented under state plans:

i. **Renewable energy accounting:** As noted above, there are numerous examples across North America demonstrating the viability of accounting for the transfer to U.S. entities of the environmental attributes associated with renewable energy generated in Canada. For example, the registration of renewable generating units located in

\textsuperscript{74} It is CEA’s understanding that the lone reference to electric integration with Canada in the EPA’s proposal is footnote 91 to the State Plan Considerations TSD, p. 64.

\textsuperscript{75} State Plan Considerations TSD, p. 85.
Canada on verification systems such as WREGIS, M-RETS and NEPOOL GIS ensures that the associated RECs are appropriately tracked and accounted for.

And of course, PPAs remain an active, functioning option for U.S. load-serving entities which are interested in procuring either the delivery of energy or environmental attributes from a Canadian counterparty, or purchasing both components in a bundled product.

While long-term PPAs currently represent a modest share of the physical flows in electricity across the U.S.-Canada border (under 25% in 2013), establishment of and proposals for new agreements in recent years attest to the enduring appeal of this option as a vehicle for achieving emission reductions and securing reliable energy at stable and competitive prices. For example, in the past three years alone, Manitoba Hydro has established, renewed or extended multiple PPAs with utilities in the U.S. Midwest, with individual contract volumes ranging from over 100 MW to 500 MW. In 2012, 20 utilities in Vermont commenced a 26-year agreement with Hydro-Québec to purchase 225 MW of renewable energy.

Accounting for renewable energy and environmental attributes sourced from Canada through tracking systems and PPAs is therefore a familiar, long-standing practice in many U.S. states and regions.

ii. State renewable energy and climate policies: The EPA’s proposed rule acknowledges the significant interest expressed by various stakeholders in enabling state renewable energy and climate policies to be incorporated into state 111(d) plans, as part of a broader portfolio approach to achieving CO2 emission reductions. EPA’s proposal appears to accept as a basic premise that policies such as RPS standards are generally quite successful in offsetting fossil fuel-fired generation with renewable and other energy sources. In step with its articulated commitment to granting maximum flexibility to states, the EPA looks set to leave the door wide open to states to utilize their existing RPS and climate change programs as central elements in their plans under 111(d).

The inclusion of RPS standards and climate programs into state plans represents another option for enabling low- and non-emitting electricity resources from Canada to assist states in meeting their CO2 reduction goals – particularly where hydropower is specifically recognized as a renewable resource in the state program. Whether the example considered is Massachusetts’ climate action objective of expanded clean energy imports from eastern Canadian provinces or the multiple states (e.g.

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76 For more information, see: https://www.hydro.mb.ca/corporate/electricity_exports.shtml?WT.mc_id=2107.
78 79 Fed. Reg. at 34,849.
Minnesota, Wisconsin and Connecticut) which have formally recognized imported hydropower under their RPS policies, there is clearly a long-standing appetite in many U.S. jurisdictions for electric generation from Canada to be included within available menus of CO\textsubscript{2} reduction solutions.

Accordingly, the EPA should be prepared for the prospect of multiple states seeking to absorb their recognition of Canadian energy imports under existing energy and environmental policies into their 111(d) plans.

iii. Mass-based emission targets: CEA believes that, in states which opt to translate their rate-based goals under the proposed rule into mass-based equivalents, there is no unique requirement needed to incorporate low- and non-emitting electric generation from Canada into a state plan. Under mass-based emission standards, verification and tracking requirements assume diminished importance, given that emissions are simply measured at the affected source.

Using the Regional Greenhouse Gas Initiative ("RGGI") program as an example, the importation of generation from Canada can have the effect of reducing the utilization of fossil fuel-fired units in the RGGI region and thereby decreasing the CO\textsubscript{2} emissions at covered EGUs.

The above discussion offers tangible insights into how Canadian electricity imports can be accommodated under a suite of policy options and design scenarios that will likely be commonplace in the compliance framework established in the final rule. CEA trusts that the above examples provide a robust level of certainty that, whatever the specific mechanics engineered by states to include low- and non-emitting generation from Canada into their plans, feasibility and verifiability can be assured.

7. The importation of low- and non-emitting electricity from Canada can be accommodated under a range of state plan approaches proposed by the EPA.

Just as there are a range of policy options and design approaches that would facilitate imports of low- and non-emitting Canadian electricity, there are also a range of approaches under which such imports could be incorporated into state and utility compliance planning. EPA proposes to give states a choice between (1) making achievement of the required emission limits the sole responsibility of affected EGUs or (2) allowing states to achieve compliance by relying, in part, on measures implemented by entities other than the affected units.\textsuperscript{79} In EPA’s State Plan Considerations TSD, the Agency highlights several possible entities that could be charged with compliance obligations, including utility distribution companies with responsibility for RPS and Energy Efficiency Resource Standard compliance, and state agencies or authorities that are charged with implementing such programs.

\textsuperscript{79} 79 Fed. Reg. at 34,901.
CEA takes no position on how EPA should regulate U.S. entities under the proposed rule. Nevertheless, we would note that under each of the scenarios mentioned above, it should be possible for imports of low- and non-emitting Canadian electricity to contribute to compliance. For example:

i. **EGUs:** In the case of EGUs implementing a mass-based emissions target, any reductions in emissions that result from imports of Canadian electricity should be included in the compliance accounting. This would be analogous to EPA’s treatment of energy efficiency and renewable energy measures under a mass-based approach. The Agency notes in the State Plan Considerations TSD that, under this scenario, energy efficiency or renewable energy measures would be complementary and not federally enforceable or enforced under a state plan. If a state chooses a rate-based approach for EGUs, the state could do an administrative adjustment or allow tradable carbon credits to reflect the importation of low- or non-emitting generation from Canada.

ii. **Electric Distribution Utilities:** EPA notes in the State Plan Considerations TSD that, under one state plan scenario, states could include an enforceable obligation for electric distribution utilities, which are typically regulated by a state public utility commission. The Agency notes that “an example of an enforceable state plan measure that might apply to an electric distribution utility is a compliance obligation under a state end-use efficiency resource standard (EERS) or renewable portfolio standard (RPS).” As discussed elsewhere, several states include Canadian RECs in their RPS programs. These RECs should be allowed and included in any enforceable RPS program in a state plan. We also note that in vertically-integrated states, utilities could work across the different segments of the company (generation and distribution) to develop compliance approaches.

iii. **State Agencies, Authorities, and Entities:** EPA describes a “state portfolio” option in which a state entity itself could have a federally enforceable obligation for measures included in a state plan, including measures such as an RPS or climate change plan. The Agency also describes a “state commitment approach,” in which measures such as an RPS would not be in the state plan itself and would not be federally enforceable. In this case, the state plan “would include an enforceable commitment by the state itself to implement state-enforceable (but not federally enforceable) measures that would achieve a specified portion of the required emissions performance level on behalf of affected EGUs.” Once again, these approaches should allow state RPS programs and climate change plans, particularly those that specifically allow for Canadian resources, to contribute to compliance with the emissions standards.

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80 State Plan Considerations TSD, pp. 7-8.
82 79 Fed. Reg. at 34,902.
8. A final rule in this proceeding which recognizes and leverages the integrated nature of the North American electricity grid, and promotes the continued two-way flow in cross-border electricity trade, would be consistent with NAFTA prohibitions on restricting or limiting trade in energy based on the geographic origin of this energy.

Among the various drivers underlying the expansion of U.S.-Canada electric integration over the years, NAFTA has featured prominently. As the common framework governing trade and investment across the continent, and with a specific segment devoted to environmental cooperation, NAFTA has been universally recognized as a great success in increasing cross-border energy trade, including in electricity. The shared benefits which have accrued to both U.S. and Canadian energy customers as a result of NAFTA have been significant. CEA therefore requests that the EPA finalize and implement its 111(d) guidelines in a manner that respects the spirit and purpose of NAFTA.

In particular, CEA urges EPA to send a clear signal in its final rule that the Agency is not seeking to unduly restrict the importation of low- and non-emitting generation from Canada as an acceptable CO₂ emission reduction measure in state plans – and thus not unduly discriminate against certain electric generation resources simply on the basis of their geographic origin. Such a signal would go a long way towards alleviating potential concerns that the final rule may run afoul of protections afforded under NAFTA.

D. EPA MUST ENSURE THAT THE FINAL RULE WILL NOT NEGATIVELY IMPACT THE ELECTRIC RELIABILITY OF THE NORTH AMERICAN GRID.

As noted above, the Canadian and U.S. segments of the North American electric grid are integrated and interdependent. In many respects, the North American grid is one large, interconnected machine. With over three dozen physical linkages between the power systems on either side of the border, and with the stark lessons of such events as the August 2003 blackout, it is clear that Canada and the United States cannot seek to achieve a high level of reliability in isolation from one another. It therefore remains imperative for Canadian and U.S. policymakers alike to bear in mind that the grid’s principal actors are interdependent across borders – not just utility service area, state, or ISO/RTO borders, but across the international border as well.

CEA is aware that many stakeholders are expressing concerns over the potential electric reliability impacts of the proposed rule. For example, CEA has reviewed the initial reliability study prepared by NERC. CEA observes that NERC has found a need for “detailed and thorough analysis…to demonstrate that the proposed rule and assumptions are feasible and can be resolved consistent with the requirements of BPS reliability” and has concluded that “more time would be needed in certain areas to ensure resource adequacy, reliability requirements, and infrastructure needs are maintained.”

Given the interests and equities of CEA members and the customers we serve, CEA would have significant concerns about any aspect of the proposed rule which may compromise the reliability of the interconnected electric power system (including, but not limited to, any constraints which may be imposed upon U.S. entities seeking to import energy from Canada). Moreover, beyond issues around cross-border trade, CEA members are concerned about any EPA rule that could undermine reliability in the U.S. As the August 2003 blackout demonstrated, reliability problems in the U.S. can have a direct, cascading impact on reliable operations in Canada. Finalization and implementation of the proposed rule must therefore be consistent with the imperatives governing reliable operation of the North American grid, and preserving reliability must be a fundamental precondition for any action contemplated under this rulemaking.

In addition, CEA believes that U.S.-Canada electric integration can help support the reliability imperatives which need to be met alongside implementation of the EPA’s proposed rule. In recent policy input to the NERC Board of Trustees, CEA has recommended that the scope of NERC’s next round of reliability assessments on the EPA’s proposal address this issue directly.84

Finally, as the EPA assesses appropriate options to ensure negative reliability impacts are avoided, the Agency may find lessons from the province of Ontario’s experience in phasing-out coal from its supply mix to be instructive – especially as it relates to the adoption of feasible timelines for implementation. Whereas 7,500 MW of coal represented approximately 25% of provincial capacity in 2003, Ontario shut down its last coal-fired generating station in April 2014 and passed legislation to prevent restarting. This generation has been replaced by a mix of non- and low-emitting resources such as natural gas, hydropower, nuclear, wind and solar.

In order to protect reliability, though, Ontario was compelled to adjust its coal phase-out schedule on several occasions. A shutdown originally scheduled to occur in four years ultimately took more than 10 years. The province achieved a significant accomplishment in becoming the first jurisdiction in North America to eliminate coal as a power generation source. Nevertheless, preserving electric reliability was a paramount imperative and extended timelines became necessary as a result.

V. Conclusion
The United States and Canada enjoy a legacy of exemplary cooperation in environmental protection. From combatting acid rain to maintaining the health of the Great Lakes region, a long history exists of confronting challenges to shared air and water resources in a creative, effective fashion. Environmental collaboration is also a mainstay of the broader backdrop for shared economic prosperity which NAFTA has helped to propel forward.

CEA strongly believes that there is an excellent opportunity to build upon this foundation of success as the EPA prepares its final rule. In this spirit, and with the aim of seeking to support the EPA’s efforts to establish flexible, cost-effective guidelines which will achieve meaningful CO₂ emission reductions and which will fulfill the core criteria laid out in President Obama’s June 2013 memorandum, CEA has offered the recommendations set forth in these comments.

As described above, CEA requests EPA to ensure that those states which wish to allow affected entities to utilize the importation of low- and non-emitting electric generation from Canada as a CO₂ emission reduction measure are granted the flexibility to do so. Brief, but clear language to this effect in the preamble to the final rule is vigorously encouraged.

CEA sincerely appreciates the EPA’s consideration of arguments raised in these comments. We look forward to remaining engaged with the Agency on this important initiative – both in the later stages of this proceeding as well as in the transition towards ultimate implementation at the state level.

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APPENDIX 1

The Integrated North American Transmission Grid

Map copyright Canadian Electricity Association. Lines shown are 345 kilovolts (“kV”) and above. There are numerous interconnections between Canada and the U.S. under 345 kV that do not appear on this map.
Major Transmission Interconnections Between Canada and the United States

Map copyright Canadian Electricity Association.
Independent System Operators & Regional Transmission Organizations in North America

- Includes nine members
- Serves two-thirds of electricity consumers in the U.S. and more than half in Canada
- Created April 24, 2003

APPENDIX 2

Electricity Exports and Imports Between Canada and the U.S. (2013)


Graph copyright Canadian Electricity Association.
APPENDIX 3

Canadian Electricity Exports as a Percentage of Total Retail Sales in U.S. States/Regions (2010)

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vermont</td>
<td>38%</td>
</tr>
<tr>
<td>2</td>
<td>Maine</td>
<td>18%</td>
</tr>
<tr>
<td>3</td>
<td>Minnesota &amp; North Dakota</td>
<td>12%</td>
</tr>
<tr>
<td>4</td>
<td>New England</td>
<td>10%</td>
</tr>
<tr>
<td>5</td>
<td>New York</td>
<td>6%</td>
</tr>
<tr>
<td>6</td>
<td>Michigan</td>
<td>6%</td>
</tr>
<tr>
<td>7</td>
<td>Montana</td>
<td>2%</td>
</tr>
<tr>
<td>8</td>
<td>Washington</td>
<td>2%</td>
</tr>
</tbody>
</table>

While Canadian power exports may constitute only a small percentage of electricity consumption in the United States nation-wide, they are critical to the energy security of numerous states and regions. The adjoining table shows the share of total retail electricity sales in various U.S. jurisdictions represented by exports of Canadian electricity into those areas in 2010.


Electricity Generation in the U.S. and Canada by Fuel Type (2013)

**United States**

- Total Electricity Generation in 2013 = 4058 TWh
- Coal 39%
- Natural Gas 27.4%
- Nuclear 19.4%
- Hydroelectric 6.6%
- Other Renewables 6.2%
- Petroleum 0.7%
- Other 0.3%
- Other gas 0.3%

**Canada**

- Total Electricity Generation in 2013 = 611 TWh
- Hydro 63%
- Fossil 19%
  (coal, natural gas, petroleum)
- Nuclear 16%
- Wind 1%
- Other 0%

Numbers may not sum to 100 percent due to rounding.

Chart copyright Canadian Electricity Association.