

## Planning Document - For Discussion Purposes Only

### New England Governors and Eastern Canadian Premiers (NEG/ECP)

#### Regional Climate Change Action Plan Development

In response to NEG/ECP [Resolution 39-1](#) Concerning Climate Change

## End-Use and Distributed Energy Potential Options for Consideration

### Overview

This document contains a set of potential actions for the eleven jurisdictions of the NEG/ECP region to consider including in a proposed End-Use and Distributed Energy Section of the 2017 *Regional Climate Action Plan*.

The items included were identified during 2016 by staff from the NEG/ECP region<sup>1</sup> and are intended to be vetted through a more an inclusive, collaborative process in the first half of 2017. This process will take advantage of recent and concurrent climate and energy planning within Canada and the US as well as by individual states and provinces.

As part of this process subcommittees will review sections of this document identify those environmental, transportation and energy strategies, policies and measures<sup>2</sup> whose implementation at the regional level will make possible the economy-wide GHG reductions needed for the NEG/ECP region to achieve the 2030 GHG emissions reduction marker range of 35–45 percent below 1990 levels as well as the 2050 target.

The discussions among the sector specific subcommittees will be monitored in order to assure coordination among interrelated recommendations occurring cross-sector.

### *Background*

During 2016, the NEG/ECP committees formed a temporary “Staff Working Group” (SWG) to address the collaborative, cross-sector directives of *Resolution 39-1*. The SWG worked during the first half of 2016 to consider current commitments and initiatives within the region, existing external plans and agreements, as well as additional regional opportunities to accomplish this directive. The SWG, with the review and approval of the standing NEG/ECP committees, identified six broad categories to advance regional GHG emissions reduction actions.

- 1. Cross-Cutting:** Options that affect multiple sectors
- 2. Government Leadership by Example:** Options that reduce GHG emissions from government facilities, fleets and operations
- 3. Energy Supply and Transmission:** Options that deal with centralized electricity generation, the transmission of electricity and natural gas, and delivered heating fuels

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<sup>1</sup> Each item was included: within the 2016 Interim Work Plan or the 2016 Strategic Framework, which were both shared with the Governors and Premiers; or an “Expanded Framework,” which contained a laundry list of more specific items that were tabled until this phase.

<sup>2</sup> Such efforts would complement efforts at the state, provincial and federal levels.

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- 4. End-Use and Distributed Energy:** Options that focus on increasing energy efficiency and conservation, and distributed energy resources in buildings and industry (thermal and electric)
- 5. Transportation:** Options that address transportation choices and accessibility, vehicle technology and fuels
- 6. Natural Resources:** Options that enhance the amount of carbon being captured and stored in agricultural and forested lands and other natural systems, and that encourage sustainable materials management

Within each of these categories, the SWG identified a series of high-level options that describe opportunities for the states and provinces to consider implementing, as a region, in order to make progress towards achieving the regional GHG emissions reductions targets. The options were used to develop two documents that demonstrate progress towards meeting the directives contained in *Resolution 39-1*: 1) an *Interim Climate Change Work Plan* (Appendix 1), which describes projects and initiatives the NEG/ECP committees will pursue over the coming year; and 2) a *Strategic Framework* (Appendix 2), which will serve as the foundation for the development of a *Regional Climate Change Action Plan* to be submitted to the NEG/ECP at its 41<sup>st</sup> conference in 2017. The regional climate change plan will be developed following more robust qualitative and quantitative assessment of options by the SWG, working under the COE, in coordination with the NICE, TAQC and CCSC, and relying on available technical resources.

### *Next Steps*

During 2017, the majority of the planning work will fall to a temporary ad-hoc Staff Working Group (SWG) and five topic-based subcommittees (Topics 2-6 below). These ad-hoc teams will be tasked with developing a list of potential actions that will, when implemented at the regional level, make possible the GHG emissions reductions needed for the NEG/ECP region to achieve its near and long-term GHG emissions reductions goals (e.g., 35-45% reduction by 2030).

The SWG will monitor the subcommittee discussions and the stakeholder input and coordinate among interrelated discussions and recommendations as needed.

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### Overarching Sector-Based Options

The six GHG emissions reduction categories were selected by the SWG not only to organize the overarching options and more specific potential actions that were discussed over the past several months, but also to ensure that the effort was taking a holistic view and considering the full range of opportunities available across the region. The categories, therefore, allowed the SWG to organize the potential options in order to accurately compare the options to one another and to identify additional emissions reduction strategies that were not yet represented. The following category descriptions are intended to provide clarity as to the nature of the issues they address.

#### **1. Cross-Cutting:** Options that affect multiple sectors

##### Existing Target:

Reduce overall energy use by at least 20 percent below “business as usual scenarios” by 2020 by targeting all sectors of the economy including the residential, commercial, institutional, industrial and transportation sectors.<sup>3</sup>

The resolution directed that the *Regional Climate Change Initiative* identify strategies, policies and measures across the energy, transportation and natural resource sectors. While each sector has many unique attributes, the sectors are interconnected to one another in a number of ways. There are options that have been identified for the work plan and for future evaluation that affect multiple sectors simultaneously and, therefore, were best placed in a broad category.

*Regional Option Example* – Showcase and enhance research and innovation in low- and zero-carbon technologies and processes and take advantage of economic opportunities offered by the emerging low-carbon economy.

#### **2. Government Leadership by Example:** Options that reduce GHG emissions from government facilities, fleets and operations

##### Existing Target:

Reduce end-use GHG emissions due to state and provincial government activities and operations by 25 percent below the 2001 level by 2012.<sup>4</sup>

The options within this category include not only the actions that the state and provincial government may take to manage their operations, but also the opportunity to tell the region’s story. The NEG/ECP jurisdictions, in collaboration, have an opportunity to demonstrate the benefits of climate action in general and coordinated action at all scales. Due to the size of its collective economy, as well as its diverse range of intranational and international cross-border relationships, the jurisdictions can set an example for their own residents, businesses and corporations, as well as for other states and provinces, and for other nations.

<sup>3</sup> NEG/ECP Resolution 34-3, 2010.

<sup>4</sup> NEG/ECP (2001). Climate Change Action Plan 2001, New England Governors/Eastern Canadian Premiers, <https://www.novascotia.ca/nse/climate.change/docs/NEG-ECP.pdf>.

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*Regional Option Example* – Coordinate efforts to reduce GHG emissions associated with government operations through fleet management, building energy use management and low-carbon energy supply.

### 3. **Energy Supply and Transmission:** Options that deal with centralized electricity generation, the transmission of electricity and natural gas, and delivered heating fuels

Existing Target:

Pursue an increase in the region’s renewable energy generation capacity by 10 percent over 2006 levels by 2020.<sup>5</sup>

This category looks broadly at the opportunities related to energy supply that may best be viewed at the regional level. This includes a focus on decarbonizing the electricity generation sector through the management of large, centralized electricity generation facilities as well as on efficiency improvements that may be possible with respect to transmission and distribution of electricity and energy in general. The category further reflects opportunities that may exist to expand the availability of low- and zero-carbon heating options across the region.

*Regional Option Example* – Enable the integration of an expanding range of energy sources and technologies (e.g., energy storage, renewable generation) in order to decarbonize the electricity sector.

### 4. **End-Use and Distributed Energy:** Options that focus on increasing energy efficiency and conservation, and distributed energy resources in buildings and industry (thermal and electric)

Existing Target:

Reduce overall energy use by 20 percent in homes, buildings and industry compared to “Business As Usual” by 2020.<sup>6</sup>

This category focuses on opportunities to reduce energy demand and consumption at the regional level through energy efficiency and conservation and through distributed generation at the site level. Included are opportunities to: reduce overall energy use in homes and businesses and by industry through improved building envelope, efficient appliances and building operations; and increase the amount of smaller-scale distributed energy resources, such as combined heat and power and renewable energy.

*Regional Option Example* – Coordinate adoption of standards and energy codes, to the extent feasible, to increase the efficiency of new construction (and major refurbishment) in residential and commercial buildings.

<sup>5</sup> NEG/ECP (2006). *Resolution 30-2: Resolution Concerning Energy*, 30<sup>th</sup> Annual Conference of the New England Governors and Eastern Canadian Premiers, Newport, RI, May 11-12, 2006, <http://www.cap-cpma.ca/images/CAP/30-2%20Energy%20E.pdf>.

<sup>6</sup> NEG/ECP (2006). *Resolution 34-3: Resolution Concerning Energy Efficiency*, 34<sup>th</sup> Annual Conference of the New England Governors and Eastern Canadian Premiers, Lenox, MA, July 11-13, 2010, <http://www.cap-cpma.ca/images/CAP/Resolution%2034-3%20Energy%20Efficiency.pdf>.

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- 5. Transportation:** Options that address transportation choices and accessibility, vehicle technology and fuels

Existing Target:

Work toward achieving throughout the region a five percent regional fleet-market-share penetration of alternative fuel vehicles by 2020 and facilitate the availability of refueling stations to support those vehicles.<sup>7</sup>

The transportation category includes all aspects of the transportation sector, including on-road and non-road vehicles, freight and passenger rail, and marine and aviation equipment. Strategies include both a transition to new technologies and improvements to the efficiency of existing transportation systems. Due to the increased interest in vehicle electrification and in the reduction in the carbon intensity of transportation fuels, there is a growing connection between this category and the Energy Supply and Transmission category above.

*Regional Option Example* – Promote the transition to low-carbon fuels, zero emissions and low-carbon emission vehicles and charging corridors and networks.

- 6. Natural Resources:** Options that enhance the amount of carbon being captured and stored in agricultural and forested lands and other natural systems, and that encourage sustainable materials management

The category reflects the growing understanding that the region's natural ecosystems, such as forests, wetlands salt marshes, and sea grass beds, contain vast reservoirs of carbon and may have the potential to store even more. Human managed landscapes such as working agricultural and forest lands also serve as carbon reservoirs, and often have additional storage potential. These same wilderness and managed lands make communities more resilient to expected climate impacts such as sea level rise and inland flooding, and support local economies centered on agricultural and forest products, tourism and recreation. By protecting and appropriately managing these areas, the region may be able to maintain and enhance the carbon they store, complementing other efforts to reduce GHG emissions from fossil fuel combustion and industry. In addition, this category also reflects opportunities to reduce the life-cycle GHG emissions associated with the manufacture, use and disposal of products and food by residents, businesses and industry.

*Regional Option Example* – Encourage adoption of forestry practices that maintain and increase forest carbon storage as part of the development and promotion of sustainable forest programs.

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<sup>7</sup> NEG/ECP (2013). *Resolution 37-3: Resolution Concerning Transportation*, 37<sup>th</sup> Annual Conference of the New England Governors and Eastern Canadian Premiers, La Malbaie, Quebec, September 8-9, 2013, <http://www.cap-cpma.ca/images/ECP%20Documents/NEG-ECP%20Resolution%2037-3%20Transportation%20EN.PDF>.

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**End-Use and Distributed Energy Options:** Begins number at 4 to be consistent with the numbering used across all project documents.

- 4. End-Use and Distributed Energy:** Options that focus on increasing energy efficiency and conservation, and distributed energy resources in buildings and industry (thermal and electric)

Existing Target:

Reduce overall energy use by 20 percent in homes, buildings and industry compared to “Business As Usual” by 2020.<sup>8</sup>

- 4.1. Track and enhance the region’s energy efficiency and conservation targets to support the reduction in energy consumption among buildings and industry.
  - 4.1.1. Establish regional energy efficiency standards for heating systems, appliances and electronic devices.<sup>9</sup>
  - 4.1.2. Tracking energy use to understand impact of EE
  - 4.1.3. Report progress to reduce end-use energy consumption regionally
  - 4.1.4. Complete an avoided energy supply cost study.<sup>10</sup>
  - 4.1.5. Harmonize calculations of energy efficiency.
- 4.2. Track and support regional efforts to reduce end-use energy consumption through energy efficiency and conservation.
  - 4.2.1. Evaluate and report on the progress towards the 2020 energy-use reduction goal by 20 percent below BAU levels in preparation for proposing a 2030 goal/target in the future.
  - 4.2.2. Develop an inventory of NEG/ECP jurisdictions’ existing energy efficiency programs and goals.
- 4.3. Coordinate, where practical, adoption of advanced standards and energy codes to increase the efficiency of new construction (and major refurbishment) in residential and commercial buildings.
  - 4.3.1. Coordinate with early adopter states and provinces to share best practices and smooth the introduction of new codes and standards.
  - 4.3.2. Adoption of a “race to the top” to catch the best amongst the NEG-ECP is warranted.<sup>11</sup>

<sup>8</sup> NEG/ECP (2006). *Resolution 34-3: Resolution Concerning Energy Efficiency*, 34<sup>th</sup> Annual Conference of the New England Governors and Eastern Canadian Premiers, Lenox, MA, July 11-13, 2010, <http://www.cap-cpma.ca/images/CAP/Resolution%2034-3%20Energy%20Efficiency.pdf>.

<sup>9</sup> NEG/ECP (2006). *Resolution 34-3: Resolution Concerning Energy Efficiency*, 34<sup>th</sup> Annual Conference of the New England Governors and Eastern Canadian Premiers, Lenox, MA, July 11-13, 2010, <http://www.cap-cpma.ca/images/CAP/Resolution%2034-3%20Energy%20Efficiency.pdf>.

<sup>10</sup> Sources: <https://georgetown.app.box.com/s/n0giaueq51xgd7yykpde0nvy669cyb2>;  
<https://georgetown.app.box.com/s/pfqhdc20mm3c2e63ouz74196q856dltu>;  
<https://georgetown.app.box.com/s/9o5114nh3mbwg8v4cg8hx0s0tchcb1ba>.

<sup>11</sup> Could propose to highlight the yearly best achievements at the annual meetings at the state dinner to keep it more friendly – even though competitive.

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- 4.4. Coordinate, where practical, energy efficiency and conservation programs for existing buildings and new construction to increase the participation of firms and households in conservation programs for all fuels.
  - 4.4.1. Develop an inventory of NEG/ECP jurisdictions' existing energy efficiency programs and goals.
  - 4.4.2. Align energy efficiency (potential savings) targets across the region and track progress at achieving targets.
  - 4.4.3. Coordinate and harmonize energy efficiency programs; estimate regional GHG reductions.
  - 4.4.4. Share best practices for the determination of energy costs avoided by energy efficiency and conservation.
  - 4.4.5. Coordinate and align demand-side management programs to promote energy savings in homes and businesses.
  - 4.4.6. Evaluate GHG reporting thresholds and align improvements in GHG management (energy efficiency and fuel switching) by the industrial sector, where feasible.
  - 4.4.7. Coordination and alignment of programs seems unlikely because of the different approaches taken by each government. However, an iterative biyearly or on a three year revision cycle, where the CCSC could identify best standards on the Canadian and on the US sides, and every government stating that they intend to catch up in the best available time, would be warranted.
- 4.5. Coordinate efforts, where practical, to expand the regional supply of distributed power sources (*e.g.*, combined heat and power, customer sited renewable generation).
  - 4.5.1. Track and support regional efforts to expand the use of lower-carbon fuels.
  - 4.5.2. Begin to identify the metrics, methodologies and benchmark years for evaluation and host entity to collect the data.
  - 4.5.3. Track and Report progress to utilize lower-carbon heating fuels.
  - 4.5.4. Evaluate impacts of increasing distributed energy resources on regional GHG emissions, including impacts from line loss reductions and changing load shapes.<sup>12</sup>
  - 4.5.5. Harmonize calculations of impacts of fuel switching.

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<sup>12</sup> Considerations to pursue: removal of entities from grid could cause surge in transmission line; micro-grid/"islands" increase resilience to climate hazards; and ex. of success, solar installed on municipal building for use as back-up supply in storm. Create an agreement with utilities for use in emergency.