

July 2016

About APTA

The Atlantic Provinces Trucking Association (APTA) is the trusted and effective voice of the road transport industry that supports its members. Founded in 1966, APTA is an Atlantic-wide non-profit industry association formed to advocate on advancing and improving the commercial trucking industry in Atlantic Canada.

APTA's membership is comprised of motor carriers hauling every conceivable type of freight, as well as industry suppliers and other stakeholders. APTA represents over 320 members across Atlantic Canada and some of our members are among Canada's largest trucking companies.

Carbon Pricing a Key to Fighting Climate Change?

Where does APTA stand on Carbon Pricing? The trucking industry's economic goal is very much aligned with society's desire to reduce emissions from carbon fuels (GHG) in order to combat climate change. Reducing carbon/GHG production equals being more fuel-efficient. Fuel prices have been lower for the past year; it still represents one of the largest costs for trucking companies. It is also an inescapable fact that trucking, which relies on diesel fuel to power its fleet, has been a growing contributor to GHG emissions as it continues to increase its share of the freight market.

Carbon pricing is being promoted as an essential measure in the fight against climate change. There are two main forms of carbon pricing: 1) carbon tax, or 2) a cap-and-trade system. The difference is that the amount of GHG reduction from a carbon tax is a function of the market based on the price of fuel. Where as a cap-and-trade system sets an actual cap on GHG emissions and a market of tradable credits is created where those who reduce their carbon footprint can sell the credits they receive to those who are not meeting their targets.

The outcome of both is – either directly (carbon tax) or indirectly (cap-and-trade) – an increase in fuel prices. It is argued that by placing a price on carbon, consumers of fossil fuels will economize (use less) of those fuels and seek alternatives, cleaner fuels. It all depends on the details. In Canada, BC has a carbon tax, as does Quebec and they also have a cap-and-trade system which Ontario is in the process of joining. Alberta has a hybrid system. All provinces are expected to introduce some form of carbon pricing. The federal government also supports carbon pricing and there has been talk of a national carbon tax.

In general, the APTA supports the assertion that putting a price on something or some activity by sending appropriate market signals is the best and most efficient way of encouraging change. Although we are not opposed in a conceptual sense to a carbon pricing – as business people it is hard to argue against market-based solutions. Given the choice between carbon tax and a cap-and-trade system, APTA would prefer a carbon tax. The mechanism for collecting fuel tax already exists.

Again, the APTA will support carbon tax if the pricing mechanism is properly structured, in other words, revenue neutral so as to isolate the carbon impacts. It must be easily understood, transparent and efficient to administer. Also, carbon pricing must be coordinated on a national and international (CDA-US) basis to avoid regional competitive disparities. Lastly it is essential that the revenues raised are plowed back into industry to accelerate the investment in solutions and industry adoption.

Climate Issues for Goods Movement: GHG & “SMOG” Emissions

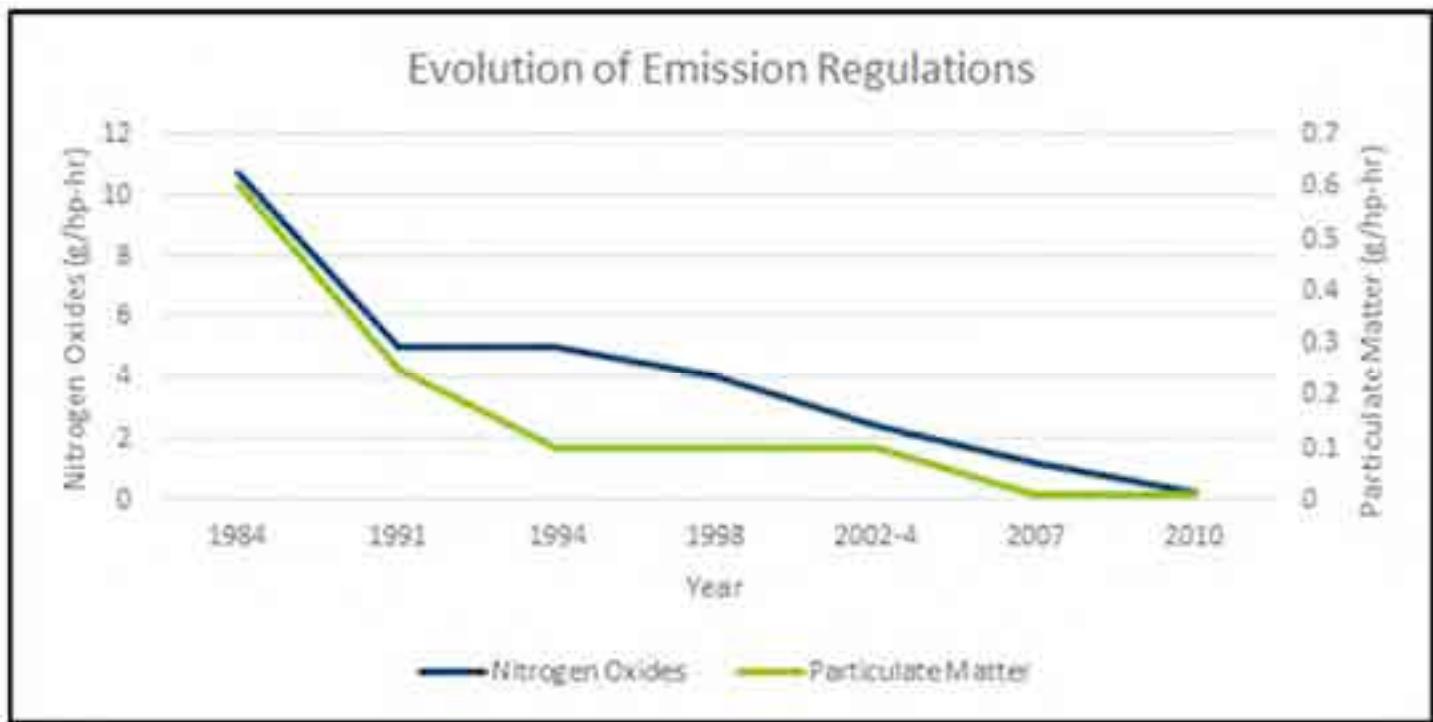
Goods movement is a significant contributor to the economy of Atlantic Canada. New climate policies encompassing “the way we travel” need to clearly differentiate between the movement of goods and the movement of people since the former is not discretionary and has no modal alternatives. This submission clarifies climate-related issues for the trucking industry and recommends industry specific priority climate actions.

Trucking Industry GHG & “SMOG” Emissions: the Irony of “Clean” Trucks

Heavy-duty diesel vehicles are responsible for some greenhouse gas (GHG) emissions from the road transportation sector but as an industry we have made some significant investments to reduce our carbon footprint. As such, while reducing GHG emissions from the trucking sector should continue to be an objective, the opportunity for greater reduction may be limited, and has to be weighed carefully against the potential for unintended, negative consequences.

In large measure, emissions from trucks are determined by engine and fuel standards set and enforced by the federal government. Canadian standards closely mirror American standards because the vast majority of trucks are produced in the US or for the US market. The higher volume of cross-border truck traffic also means that trucks registered in Canada, but operated across the border, must meet US standards.

Emissions of criteria air pollutants that contribute to “smog”, such as Nitrogen Oxides (NOx), particulate matter (PM) and hydrocarbons (HC) from heavy trucks have been subject to progressively more stringent regulation in both Canada and the US for decades. Particularly aggressive emission reduction targets were set for truck model years 2004, 2007 and 2010. As a result, modern heavy-duty trucks are equipped with sophisticated emission control systems that produce virtually “smog-free” exhaust. The chart below illustrates the change in NOx and PM emissions for heavy-duty diesel trucks from 1984 to 2010.



In terms of direct financial cost to industry, the technology developed to meet the 2007 and 2010 emission standards increased the average purchase price of a truck by about \$12,000. However, the increase in the purchase price and higher fuel consumption, which translate directly into higher operating costs, are just two of the unintended, negative consequences. The other negative impacts included engine reliability issues that, on average, resulted in seven additional days of downtime annually for unanticipated repairs relative to pre-2007 trucks and cost companies \$4,300 per truck per year. Higher regular maintenance costs added another \$1,900 per truck per year.

On top of that, the emission control devices increased the tare (i.e., empty) weight of a truck by roughly 400 kg (reducing payload capacity by an equivalent amount), and cost industry another \$2,650 per truck per year in foregone productivity. The total increase in operating costs of a 2010 or newer “smog-free” truck is approximately \$8,850 per truck per year, or \$71 million per year for the entire fleet of 2010 and newer trucks.

Regulating” Fuel Efficiency & GHG Emissions: GHG1 & GHG2

In 2010, the US Environmental Protection Agency (EPA) announced its intention to regulate fuel efficiency and GHG emissions from medium- and heavy-duty trucks starting with the 2014 model year (through 2018). Environment Canada followed suit, and by 2012, both countries introduced what became known as “GHG1”, referring to the first phase of GHG and fuel efficiency standards for medium- and heavy-duty trucks. GHG1 was in some ways an attempt to undo the “damage” done to heavy-truck fuel efficiency as a result of the emission standards to reduce smog emissions.

In July 2015, EPA issued a proposed rulemaking for “GHG2”, which would cover trucks manufactured from 2019 to 2027. Unlike GHG1, which primarily focused on the truck-tractor and its engine, the second phase is expected to encompass the entire vehicle combination (i.e., the truck-tractor and the trailer). Canada is expected to follow suit with similar regulations.

The combined fuel efficiency improvement and GHG emission reduction target for the first and second phase of the regulations is around 40% on average relative to the baseline average established for the 2010 model year. This means that the next generation of medium- and heavy trucks will not only be smog-free, but more fuel efficient with a substantially lower GHG intensity than their predecessors. These improvements will also leave limited additional opportunities for reducing emissions from heavy trucks beyond what has already been proposed for inclusion under GHG2.

Potential Climate Leadership Plan Actions to Help Trucking meet Emissions Reduction Targets:

Nevertheless, there are several regulatory and policy changes that provincial governments should consider to help industry, and in some cases, enable industry to meet GHG2 fuel efficiency and GHG reduction targets. These changes would give the provincial government an opportunity to take meaningful action for Climate Leadership Plan:

- Increasing the rate of turnover for heavy-duty trucks to accelerate the uptake of 2014 and newer models by offering financial or other incentives.
- Removing regulatory barriers that currently prevent or greatly curtail the use of technologies verified to improve fuel efficiency without unduly impacting overall vehicle performance and reliability. These include:
 - Allowing full-length “boat tails”, aerodynamic devices mounted on the rear of a trailer or straight truck
 - Allowing new generation wide-base single tires (NGWBSTs) at equivalent dual tire weights.
 - Allowing “smart” liftable axles

Additional Opportunities Include:

Alternative fuels for trucks is still an emerging field. Compressed natural gas (CNG) is a viable option for medium-duty trucks that return to base daily so that they can be refueled, since fueling infrastructure is limited and fueling time for CNG trucks is still several hours. The market penetration of liquid natural gas (LNG) for heavy duty trucks has been challenged recently due to the withdrawal of the 15-L engine. Until both a viable 15-L engine and fueling infrastructure is developed, it is unlikely that much of the long-distance trucking sector will be in a position to adopt natural gas as an alternative fuel.

The current mandated biodiesel blend requirement of 4% is sufficient since the trucking industry should not be exposed to engine operability problems, potential manufacturer warranty issues, and higher maintenance costs with higher biodiesel concentrations (i.e., over 5% for most engine manufacturers and engine model years and 20% for a small number of newer engines). The Commercial Transport Regulations (CTR 7.25, 7.26) currently penalize wide-base tires by limiting them to 7,700 kg per axle (i.e., 15,400 kg in a tandem axle group). More traditional dual tires are allowed to carry a maximum weight of 8,500 kg per axle in a tandem axle group (i.e., 17,000 kg total). While it is true that 7,700 kg per axle is the limit imposed by US regulation, this discrepancy in weight discourages the use of wide-base tires in NB. Currently, Manitoba, Ontario and Quebec allow wide-base single tires at “weight-parity” (i.e., equivalent dual-tire weights). In a standard five-axle tractor semi-trailer combination, use of NGWBSTs on the drive axle and trailer axle group improves fuel efficiency by 6% (or more).

The Commercial Transport Regulation (CTR 7.11) prevents use of lift axles on truck-tractors, and greatly limits their fuel saving potential on trailers by requiring a lift-able axle to be automatically deployed when a trailer is loaded regardless of whether the weight of the cargo necessitates the lift axle to be in down position to ensure that the axle group is not overloaded. For example, in a tridem axle group with a lift axle, the lift axle must be deployed even if the weight on the axle group is less than 17,000 kg, which is the maximum legal weight for a tandem axle group. The fuel-saving potential of a “smart” lift axle (which would only be automatically lowered when the loaded weight is sufficient to require its deployment), can improve fuel efficiency by 3%.

September 16, 2016

letter sent electronically – original to follow via regular mail

Honourable Perry Trimper
Minister Responsible for the
Office of Climate Change & Energy Efficiency
P.O. Box 8700
St. John's, NL
A1B 4J6

Dear Minister Trimper:

Re: Climate Change Consultations

Thank you for the opportunity to contribute the perspective of the Newfoundland and Labrador offshore oil and gas industry to the provincial consultations on climate change. The Canadian Association of Petroleum Producers (CAPP) is supportive of the government's consultation initiative and is pleased to provide some information on CAPP's perspective on climate change, and to provide context on gas emissions from the Newfoundland and Labrador offshore oil and gas industry. While the Provincial Government's Management of Green House Gas Act is not applicable to the offshore petroleum industry we understand you intend to enter into a dialogue with the Federal Government on policy options to regulate emissions from offshore oil and gas facilities and we look forward participating in that engagement process.

CAPP Perspective on Climate Change

On August 9, 2016, CAPP provided a submission to you on our perspectives on how to best advance the fight against climate change while maintaining or advancing competitiveness of the Canadian upstream oil and gas industry and promoting clean economic growth for all Canadians. That submission was also sent to the Honourable Catherine McKenna, Canada's Minister of Environment and Climate Change and all other Ministers for the Environment across Canada.

Since the content of that submission is relevant to the consultations being undertaken by the Government of Newfoundland and Labrador, I have attached a copy for your reference. The submission identifies four key areas where CAPP can lead and provide support in the fight against climate change:

1. Opportunities for emissions reduction
2. Innovation, technology and job creation generation by action on climate change
3. Our support for carbon emissions pricing and valuation

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4. Managing for adaptation and resiliency in a changing climate

Newfoundland and Labrador Offshore Oil and Gas

Our members strive in every part of their operations to conduct business in a manner that is safe for both personnel and the environment. Their operations are governed by very robust and stringent provincial and federal legislation. In addition, our members have developed and implemented internal management systems, to effectively protect the environments in which they operate.

Greenhouse gas (GHG) emissions from the Newfoundland & Labrador offshore oil and gas industry are generally comprised of carbon dioxide, methane and nitrous oxide. While there are various sources for these emissions, the flaring of hydrocarbons and generation of electric power are the largest contributors, as shown in Figure 1.

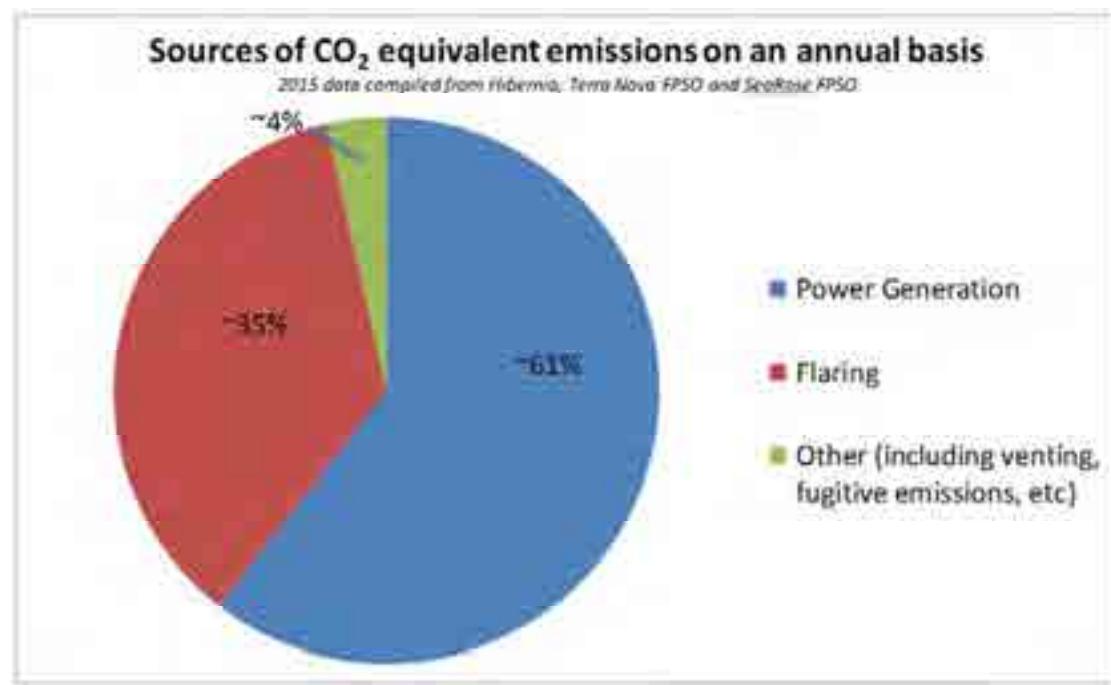


Figure 1

In the offshore, GHG emissions are tied to total energy use on an offshore facility. Energy is consumed during a number of processes, which include but are not limited to gas lift and injection, seawater lift and injection, produced water production and disposal and crude production. While crude production declines over time, the overall energy requirements for the management of fluids and gas do not, resulting in GHG emissions staying relatively constant throughout the life of field.

Power Generation

Offshore facilities are unlike any other industrial facilities in the province when it involves power generation. These installations are unable to access the electricity grid and have to meet their own energy demands. To do this requires hydrocarbon-based energy sources. Within the hydrocarbon-based power generation sector, offshore facilities are the most efficient and use the cleanest hydrocarbon fuels – natural gas.

In the offshore, emissions come from both power generation and operations/production. A significant percentage of offshore emissions come simply as a result of not being tied into an existing electrical grid – these emissions are not from producing oil but from keeping the lights on. This is an important consideration to keep in mind in order to fairly and more accurately compare the offshore oil and gas industry to other industries in the province.

Electric power is generated at the facility by burning diesel fuel stored on site or gas sourced from the producing reservoir. Gas produced from the reservoir can be compressed and returned to the reservoir for future use or consumed when produced to generate electricity through a process known as gas compression. Operators strive to maintain optimum availability of the gas compression facilities, thereby ensuring lower emissions from power generation, as emissions derived from burning gas are less than those associated with burning diesel. These existing stewardship and operational controls are two examples of operators working to ensure efficiency and to reduce emissions.

Flaring

The burning of hydrocarbons through a flare system is a contributor to the GHG emissions from an offshore facility. The quantity of hydrocarbon permitted to be flared is regulated by the Canada-Newfoundland and Labrador Petroleum Board (C-NLOPB) under the Newfoundland Offshore Petroleum Drilling and Production Regulations. With a mandate to conserve resources and protect the environment, the C-NLOPB sets daily and annual flaring allowances for offshore installations. Beginning in 2006 the C-NLOPB initiated phased reductions in these allowances with some operators recently reaching a point where further reductions are not feasible within the current operating constraints of their facility. As a result, emissions from flaring at installations in the Newfoundland and Labrador offshore area have already been reduced from 2006 levels.

The offshore industry continues to focus on process improvements to manage flaring from its installations. Flaring is and is expected to remain an integral part of offshore process operations as it provides protection to personnel and ensures the safety of the facility by combusting excess produced gas in the event of an emergency depressurization or when the volume of gas exceeds the capacity required for reservoir injection and power generation.

Uniqueness of Offshore Operations

In addition to providing context of the sources of GHG emission from offshore facilities, we offer the following context on the operations of our facilities. The current Canadian offshore oil and gas installations are located in the Atlantic Ocean, hundreds of kilometres from shore, in a harsh weather environment. There are three producing oil fields offshore Newfoundland & Labrador, with one more coming on stream in the next year. There are two gas producing fields offshore Nova Scotia. Offshore installations differ significantly from land-based oil and gas facilities in the following ways:

- Offshore installations have a constrained footprint. The footprint of the installations influences decisions regarding modifications and/or additions of equipment that may be needed to meet new regulatory requirements.
- Offshore installations are not connected to an electricity grid and to meet their energy demands, they must use hydrocarbon-based energy sources, which are either sourced from the site production or transferred from onshore facilities.
- Emissions from flaring are generally associated with the activation of safety systems on the facility. The emissions associated with these events cannot be forecast or predicted.
- Safety and emergency evacuation considerations limit the number of persons permitted on offshore facilities. As a result, the ability to complete repair work driven by an onshore-derived emissions standard could be limited.
- Depending on the nature and location of the repair, the facility may be required to complete a total shutdown of production operations. In most cases, significant monitoring and repair work needs to be planned approximately twelve months in advance to enable the procurement of specialized equipment for the installation and to fit into maintenance plans. There are significant implications to this: major refits and changes to the installations could result in considerable operational downtime and royalty implications for the province.
- There are additional challenges in getting personnel to the offshore sites. Only specialists can conduct repairs on these facilities. Transportation to and from the installations is via helicopter and vessel. All personnel, including employees, contractors and specialized vendors, require specialized safety training (Basic Survival Training – BST) to travel to offshore facilities.

As an example of the uniqueness of offshore oil and gas production, and the challenges it poses for blanket oil and gas regulations, you may be aware of the federal government's intent to regulate methane emissions, one of the GHGs. On a GHG equivalent basis, methane emissions from offshore NL operations typically represent about 5-8% of the total GHG emitted. It is anticipated that the regulation will require monitoring and establish thresholds that will trigger equipment repairs, retrofits or replacement within prescribed time periods. While such alternatives may be feasible at onshore oil and gas facilities, implementation at offshore facilities is expected to be particularly challenging considering the unique nature of offshore oil and gas production. The cost effectiveness of implementing programs to meet these proposed regulations is questionable given the small contribution of methane to total GHG emissions

from offshore operations and the measures already implemented through other regulatory and management system initiatives.

Mitigation Through Environmental Research and Innovation

Industry regularly seeks improvements to operations and environmental excellence is part of that continuous improvement process. Through a number of research and development initiatives, the oil and gas industry is investing not only in new technology to improve environmental performance, but also research that helps to evaluate the true impact of industry on the environment.

One such example of this is research conducted through the Environmental Studies Research Fund (ESRF), a program that sponsors research in environmental and social studies. Funding for ESRF is provided through levies on frontier lands, paid by oil and gas companies. In 2013, ESRF published the results of a two-year study that examined the potential effects of offshore oil and gas production installations on ambient air quality in Atlantic Canada offshore areas. The project focused on emissions of nitrogen oxides (NOx) [and later nitrogen dioxide (NO₂)] from two active offshore areas, the Grand Banks (offshore NL) and the Scotian Shelf (offshore Nova Scotia). The study found that emissions from production facilities resulted in NO₂ concentrations that generally met on shore air quality limits at the 500-metre safety zone surrounding each installation. The study also identified that emissions from the installations would disperse to virtually negligible levels within 35-40 kilometres of the installation and would therefore not reach the shore.

Other environmental research has been funded through Petroleum Research Newfoundland & Labrador (PRNL). PRNL is a not-for-profit organization that facilitates research and technology development. It identifies opportunities, develops proposals and funds and manages projects on behalf of the Newfoundland and Labrador oil and gas industry. The organization is currently managing a portfolio of 23 projects valued at \$32 million. More than half of the portfolio is focused on environmental risk assessment or mitigation. Topics including oil spill detection, the impact of marine dredge activity, the effect of seismic activity on shrimp behaviour, bio-dispersants, produced water monitoring, and utilizing bioindicators for effects assessment of marine life. PRNL is also helping coordinate the establishment of a centre of excellence for environmental genomics, an emerging technology that has the potential to dramatically enhance the environmental management of offshore (and onshore) projects.

In summary, CAPP and its members recognize the importance of reducing GHG emissions for all sectors in the province, including the offshore oil and gas industry. CAPP members are committed to implementing cost effective measures that will result in reduced emissions from operations. However, mitigation of GHG emissions at offshore facilities should consider the unique operational features and constraints of these operations. Changes to maintenance and operations offshore happen over a significant period of time, to allow for safe implementation. Additionally, operators currently proactively manage emissions as part of established legislation and oversight.

We all seek to continuously improve our environmental performance, either through research and development or innovative operations offshore. We welcome the opportunity to meet and discuss further discuss this with you and your staff.

Regards,



R. Paul Barnes
Manager, Atlantic Canada and Arctic

cc: Honourable Siobhan Coady, Minister, Department of Natural Resources

Attachment

August 10, 2016

Hon. Perry Trimper
Minister of Environment and Conservation
Government of Newfoundland & Labrador
4th Floor, West Block, Confederation Building
St. John's, NL A1B 4J6
(via email: perrytrimper@gov.nl.ca)

Dear Minister Trimper:

I am writing today on behalf of our members to provide our perspectives on how to best advance the fight against climate change, and promote clean economic growth for all Canadians.

We all feel the effects of climate change – around the world and here at home across Canada. We believe that solutions are found the same way – through both global and local action.

We are committed to action on climate change.

This means leading on efforts to reduce greenhouse gas emissions, creating more and new jobs, and developing Canada's natural resources through continual advances in technology and innovation.

The attached materials are intended to provide you with CAPP's perspective on the four key areas of the *pan-Canadian framework for clean growth and climate change* where we can lead and support in the fight against climate change:

1. Opportunities for emissions reduction;
2. Innovation, technology and job creation generated by action on climate change;
3. Our support for carbon emissions pricing and valuation;
4. Managing for adaptation and resiliency in a changing climate.

As the world continues progress toward a carbon emissions constrained future, we believe Canada's oil and natural gas sector will be a supplier of choice to many markets.

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Honourable Perry Trimper

Minister of Environment and Conservation

Government of Newfoundland and Labrador

Re: CAPP's perspective on the four key areas of the pan-Canadian framework for clean growth and climate change

We look forward to working with you in ensuring this becomes a reality.

Yours in partnership,

A handwritten signature in black ink, appearing to read "Alex Ferguson".

Alex Ferguson

Vice-President, Policy and Performance

Canadian Association of Petroleum Producers

/attachment

Cc: Hon. Siobhan Coady, Minister of Natural Resources



A Partner in Climate Leadership
August 2016

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2 Introduction - A partner in climate leadership

The Government of Canada – in close partnership with the provinces, territories and Indigenous Peoples – is taking leadership on climate action by putting a price on carbon and reducing greenhouse gas emissions.

The Government of Canada has committed to consult with Canadians through an open and online process to find ways to encourage clean economic growth, reduce greenhouse gas emissions and prepare for the impacts of climate change. The letstalkclimateaction.ca web portal is a new and innovative approach to climate consultations that supports the Government of Canada's commitment to transparency, openness and collaboration.

Canada's oil and natural gas industry is also committed to leadership on climate action. We believe that responsible energy development, driven by technology and innovation, plays a crucial role not only for our industry, but for the Canadian economy. To that end, we support effective government policies that recognize the key role of technology in reducing emissions while maintaining a strong economy.

The Canadian economy has recently experienced a period of hard choices, turbulent markets and stark reminders that climate change is a real and present threat. The message for all of us is clear: adapt or fail. Our sector has a long history of adapting through technology and innovation. We expect to leverage and repeat these successes into our future.

As part of this commitment to lead, CAPP offers this submission which provides Canada's oil and natural gas industry perspective and recommendations for the Government of Canada's *Let's Talk Climate* initiative. The submission will address the following priority areas:

- Opportunities for emissions reductions;
- Innovation, technology and job creation generated by action on climate change;
- Our support for carbon pricing and valuation;
- Managing for adaptation and resiliency in a changing climate.

We propose solutions that will reduce greenhouse gas emissions while developing a strong economy that benefits all Canadians.

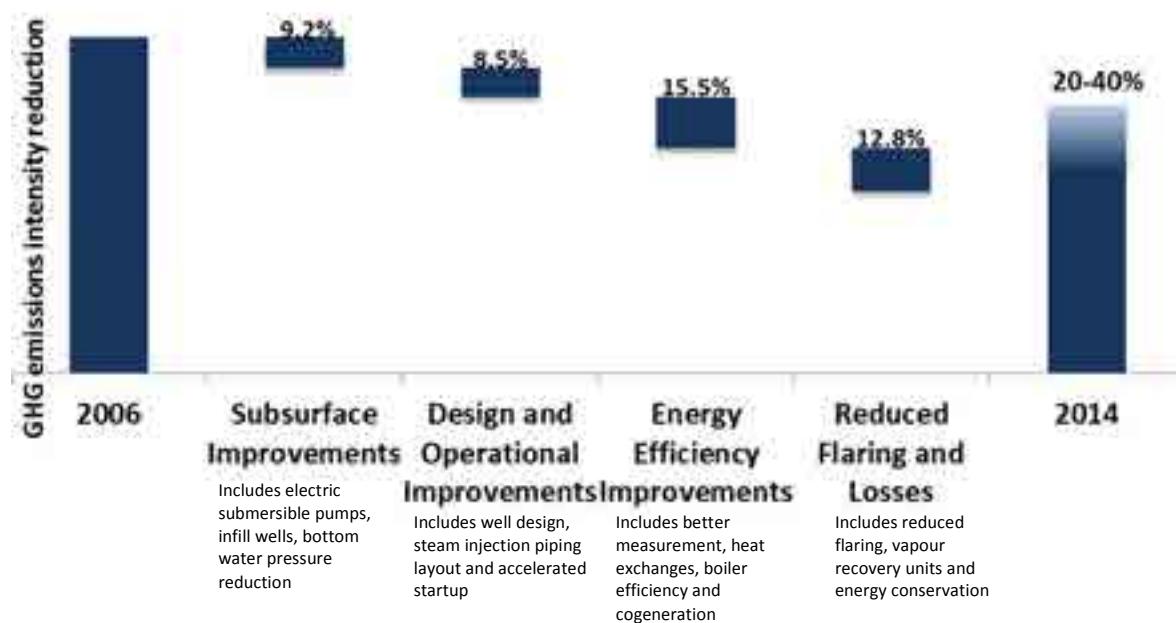
3 Opportunities for emissions reductions

In 2014, Canada's total GHG emissions were 732 megatonnes of carbon dioxide equivalent (CO₂e). Canada's oil and natural gas industry accounted for 26% of these emissions. While the oil and natural gas industry is the largest industrial contributor for emissions across the country, it is also a sector that has done a tremendous amount to reduce emissions.

According to Environment Canada data, the oil sands industry has a successful history of reducing GHG emissions. This achievement has resulted from innovation, technology deployment and policy signals provided by the climate policies and climate-related regulations that have been introduced in Western Canada. Figure 1 illustrates a number of typical examples of emissions intensity improvements made over the eight year period based at a single oil sands in situ facility.

Collectively, the reductions amount to 20-40 per cent of the emissions intensity of the in situ facility that was built in 2006. Though this set of emissions intensity reductions does not include all possible emission reduction opportunities, it is illustrative of the scope, breadth and priority given to emissions intensity reductions measures already and increasingly being deployed by oil and natural gas producers.

Figure 1: Example emissions intensity improvements between 2006 and 2014



Emissions intensity improvements between 2006 and 2014 collectively amount to 20-40%

The list is not exhaustive and not all technologies can be applied at each facility

Reductions are not necessarily additive

Graphic assumes consistent reservoir quality (SOR=3)

Our industry has demonstrated excellence in environmental performance, regulatory compliance and job creation. Canada and the oil and natural gas industry have a significant opportunity to demonstrate that Canada's oil and natural gas is and should be a preferred supplier of petroleum products across the globe.

According to the IEA's World Energy Outlook 2015¹, the demand for oil will remain strong, even under their scenario which charts out what the global community must do to meet the pledge to keep global warming to less than two degrees Celsius. According to the IEA, even in this scenario, there will still be a global demand of 67 million barrels per day in 2040. Canada has a choice to make: help fill this demand or step back and allow countries with lesser rankings on the Environmental Performance Index and Social Progress Index to develop resources and meet energy needs domestically and internationally.

Our industry will work with the Government of Canada, along with its provincial, territorial and Indigenous partners, to ensure that the Canada's oil and natural gas sector becomes the world-leading low-carbon emissions oil and natural gas producing jurisdiction. We offer the following opportunities for consideration to continue to reduce the GHG intensity of oil and natural gas production in Canada.

3.1 Provincial climate policies

British Columbia (B.C.) and Alberta have introduced climate policies that are some of the most rigorous in the world. These policies have already led to significant changes in industry practices. B.C. currently has a carbon tax of \$30 per tonne and Alberta was the first North American jurisdiction to introduce a GHG emission pricing policy targeted at large industrial emitters, including all oil sands facilities.

Although these aforementioned policies currently exist, both provinces are committed to further improving their climate policies to achieve further reductions from the industry and their citizens. Alberta's Climate Leadership Plan, announced in November 2015, will target the oil and natural gas industry through three distinct policies: Implementing an ambitious methane reduction target of 45 per cent reduction from 2015 levels by 2025; legislating a 100 megatonne (MT) limit on emissions from the oil sands sector; and through implementation of an output-based performance benchmarking system for large industrial facilities. These policies, combined with the broad-based carbon levy, will invariably lead to further reductions from industry beyond current levels.

The B.C. government has also indicated its intention to release a new Climate Leadership Plan to augment its existing climate change policy, which already includes an economy wide carbon tax. The new Climate Leadership Plan is expected to be released in summer 2016, and will result in further emissions reductions from the oil and natural gas sector.

¹ Retrieved from: <http://www.worldenergyoutlook.org/weo2015/>

In addition to carbon pricing schemes, all three western provinces have regulatory frameworks that target GHG emissions reductions from flares, vents and fugitive equipment leaks at applicable facilities. Alberta's *Directive 60: Upstream Petroleum Industry Flaring, Incinerating and Venting*, B.C.'s *Flaring and Venting Reduction Guideline*, and Saskatchewan's Directive S10: *Upstream Petroleum Industry Associated Gas Conservation Directive* and Directive S20: *Upstream Flaring and Incineration Requirements*, all have mechanisms that ensure facilities have technologies and business operating practices in place to minimize the amount of methane and CO₂ from these activities.

3.2 Enabling innovation and technology development

CAPP submits that the most efficient means to achieve emissions reductions from the oil and natural gas industry is to enable and invest in GHG reducing innovation and technology development. Supporting and enabling the development and adoption of cost-effective technologies to reduce emissions is the optimal path for the Government of Canada to continue to promote investment, jobs and growth in the oil and natural gas sector – all while continuing to lower GHG emissions.

Substantial emissions reductions have already been achieved as the result of technology investment and adoption across the oil and natural gas sector in Canada. Under the constraints of emission-limiting environmental policy, future growth of Canada's oil and natural gas sector will depend on investment to address the commercial, operational and financial barriers to technological innovation. As such, climate policy should be designed to support technology investment, research and development (R&D), and deployment in order to simultaneously grow the sector and achieve emissions reductions.

3.3 Enabling innovation and technology deployment

In addition to encouraging innovation and clean technology development, further opportunities exist for technology deployment to achieve substantial emissions reductions from the upstream oil and natural gas sector. Government support is vital to the broad adoption of these technologies while minimizing the impact on sector growth and carbon leakage. Support may be offered through direct investment in infrastructure and/or by enabling and promoting fiscal mechanisms through climate or other economic policies (e.g., offsets). Below are five emissions reductions opportunities currently available to Canada and the industry through the implementation of appropriate policy mechanisms (see Subsection 4.1 and Section 5) to enable deployment of currently available technology.

British Columbia upstream electrification

One of the most important mechanisms that industry has to achieve a substantial reduction in upstream greenhouse gas emissions, while allowing for economic growth, is to reinforce the electric transmission grid in northeastern British Columbia and address operational cost gaps between the use of natural gas and electricity. Preliminary estimates suggest that upstream electrification could reduce industry emissions by up to 25 per cent from the wellhead to the LNG tanker or 3 – 4 MT/year of CO₂ by electrifying 6 Bcf/d of new production.

CAPP supports the economically viable expansion and reinforcement of electricity transmission to support load growth for new facilities and positioning electrification on a competitive economic footing relative to gas drive technologies. However, the cost associated with electrifying the industry is significant. Building out access to transmission and promoting a novel pricing scheme for electricity in B.C., coupled with an ability to generate GHG offset credits for electrification will assist in bolstering competitiveness while reducing emissions at the same time.

Carbon capture and storage

Carbon capture and storage (CCS) is a promising option to substantially reduce GHG emissions in the near future, and to help Canada achieve its GHG reduction targets. There are already examples of CAPP member companies who capture CO₂ and store (sequester) it underground or transport it to conventional oil and natural gas wells to help recover more resources from those wells. While CCS has significant potential for emissions reductions, it requires a large amount of investment to build capture facilities and to develop infrastructure to move CO₂ from source to storage or use locations. CAPP supports the development of CCS but cautions that market mechanisms alone will likely not be sufficient to incent commercial viability.

Methane emissions

While significant attention has been directed to the role of CO₂ emissions in climate change, emphasis on methane emissions and other short-lived climate forcers is seen as a critical step as part of near-term and meaningful action on climate change. The global warming potential for methane is at least 25 times that of CO₂. Contributing 43 per cent of Canada's national methane emissions, those industries involved in the production, processing and storage of oil and natural gas resources in Canada are expected to make significant performance improvements.

The initiative to collaborate with both the United States and Mexico on a North American priority to reduce methane emissions is welcomed by our members. This effort, which began with the *U.S.-Canada Joint Statement on Energy, Climate and Arctic Leadership*, set the path forward by describing key requirements of an achievable approach to methane emissions reductions by the oil and natural gas sector, namely to:

- Regulate existing sources of methane emissions in the oil and gas sector.
- Work collaboratively on federal measures to reduce methane emissions.

- Improve data collection, transparency, and R&D and share knowledge of cost-effective methane reduction technologies and practices.
- Jointly endorse the World Bank's Zero Routine Flaring by 2030 Initiative.

Since this seminal announcement, we have observed divergence in the regulatory development approach in Canada versus the U.S. While Canada launched consultation on a draft regulatory framework for new and existing equipment in May 2016, the U.S. began its process for regulating existing equipment through an Information Collection Request to better characterize methane emission sources and Voluntary Information Request on emerging technologies to detect, measure and mitigate emissions which is anticipated to be completed by early 2017. Since July 2016, fourteen states have launched lawsuits over the new Environmental Protection Agency (EPA) rule² to limit methane emissions at oil and natural gas sites. This action is likely to impede regulatory action to reduce methane emissions in the U.S. while Environment and Climate Change Canada (ECCC) continues to proceed expeditiously to publish an initial phase of national regulations by early 2017.

Given this circumstance and the economic conditions that are tempering activity and moderating methane emissions, we now have time to design a system that allows us to meet the targets in a cost effective and appropriate way. We believe that Canada should use this opportunity to work with the provinces, industry and other engaged partners to develop a hybrid program built upon a performance management program for methane emissions reduction. This is the only practical way of addressing the Canada/U.S. agreement's objective of enhancing evidence-based and cost-effective actions to reduce methane emissions. Using smart regulatory tools to guide leak detection and repair, new performance standards, non-regulatory retrofit programs and practice improvements for existing equipment would yield the same environmental outcome at a significantly lower cost to industry. Regulatory development should be collaborative, while providing for periodic reviews of progress.

While we think that the target of 45% methane emissions reduction by 2025 from a known 2012 baseline is ambitious yet achievable, the current level of methane emissions from the oil and natural gas sector is uncertain in the absence of robust reporting. We recommend the government establish a process to standardize provincial reporting and improve aggregation in national reporting to confirm the scale of the reduction (in megatonnes) opportunity. This effort would enable better analytics on the apportionment of source emissions to prioritize cost-effective, methane emission reduction opportunities and to affirm the achievability of the national target. In absence of this analysis, the proposed regulatory framework under *Canadian Environmental Protection Act* is overly prescriptive and risks diverting limited resources from the most effective action for methane emissions reduction, dampening investment in innovation, and reducing Canada's competitive position as a producer of oil and natural gas.

² Retrieved from: <http://thehill.com/policy/energy-environment/290159-thirteen-states-sue-over-epa-methane-rule>

It is for this reason that CAPP continues to support a performance management approach to guide cost-effective action under a hybrid model. This model consists of:

1. Robust performance framework and data analytics.

We recognize the value of data-informed analytics. This approach to performance management could help to pinpoint improvements for non-regulatory and regulatory tools to be more effective and to identify new, low-cost opportunities necessary to meet the 45% methane emission reduction target. This analysis can be used to focus near-term action and long-term innovation on methane emissions sources with greatest opportunities for cost effective methane emissions reduction.

2. Early industry action to improve practices and retrofit existing equipment enabled by fiscal tools.

We support an outcomes-based approach that allows industry to identify the most cost-effective actions to achieve methane emissions reductions. Many oil and natural gas companies have corporate programs and rely on industry best practices to reduce methane emissions. More refined analytics would enable the verification of reductions already achieved, many of which we believe are not yet reflected in the National Inventory and should be acknowledged as progress towards the target. Analytics further guide the development of new programs: broad deployment of clean technology, industry mentorship to facilitate knowledge exchange for practice improvement.

Fiscal mechanisms including technology offset protocols and/or credits should be used to encourage and accelerate technology deployment. Where transition to regulation is contemplated, we encourage the consideration of the timelines for business decisions to support technology deployment at oil and natural gas operations given current cost constraints faced by these operations. Based on the oil and natural gas industry's collective experience, we know that retrofitting existing equipment takes time and money. Industry estimates there are 100,000+ pieces of equipment. In recognition of the magnitude of this undertaking, natural capital stock turnover and capital constraints, incentives for retrofits can enable this work to progress at a faster rate than proposed under regulation.

We believe that mandatory retrofitting of all equipment would not be cost effective in meeting emissions targets. Companies should be given discretion over determining which equipment to retrofit and when to meet targets. A more measured approach enables the regulations to consider natural capital stock turnover, which will contribute to reductions as older equipment is replaced, over the next decade.

We believe that progress for existing equipment is best achieved by a non-legislative industry/government/NGO partnership designed to consider methane emissions sources and reduction opportunities on a priority basis with the breadth of mandate to consider critical enablers to address marginal cost of abatement, safety obligations and technical constraints. Industry is committed to achieving methane reductions from

existing sources but need the enabling policy framework to allow this to occur at the lowest cost.

3. *Assess existing provincial and federal policy and regulatory frameworks to define performance standards for new equipment.*

The provinces and federal government already have policy and regulatory frameworks to address emissions. To this end, alignment on targets should be enough to satisfy equivalency and to allow provincial governments to build on their existing frameworks to avoid duplicative regulation. The effectiveness of existing programs should be assessed and refined prior to contemplating new policy or regulation. That said, where necessary, the design of the regulatory approach in Canada should take into account the variability of oil and natural gas resources throughout the country, as well as the tailored regulatory regimes designed to guide the responsible development of oil and natural gas resources (both from the vantage point of industry practices as well as environmental and safety performance). As a result, regulation for new facilities and equipment should focus on the most cost-effective methane emissions reduction opportunities suitable to the particular circumstances of each jurisdiction. As has occurred in the U.S. emission standards for new sources are significantly easier for industry to manage (than existing sources) as it can be built into new facilities at the design stage.

The different mix of oil and natural gas production across the provinces requires a different focus area for each province to meet the 45% reduction target. The current policy framework in Alberta and British Columbia reflects these differences. For this reason, a collaborative approach, building off the work of the provinces, would yield better results than having duplicative regulatory frameworks across Canada. In this way, a federal approach could leverage the strengths within the provinces, such as such as Alberta's achievement of a 95% solution gas conservation rate since the early 2000s. Competitiveness impacts arising from the implementation of methane regulations should be mitigated through alignment of international policy.

Cogeneration

Cogeneration, the combined generation of electricity and other (primarily heat) energy jointly, represents a significant opportunity for new power generation while reducing the GHG emission intensity of the electricity grid. The projected growth of oil sands facilities with both thermal and power requirements represents an opportunity for additional cogeneration in the country.

The oil and natural gas industry has a current and growing demand for heat (steam) and power. Under the right policy and economic conditions, industry could incorporate cogeneration for both on-site thermal and power demands, with the potential to increase sizing to fully match process steam loads and export surplus electricity to Canada's power market.

Cogeneration benefits both industry and the country with reliable, baseload electricity at industrial load sites. Exported power is typically bid at or near zero dollars per megawatt hour (MWh) into the power pool to ensure thermal demands are satisfied, reducing the average cost of power for all consumers. Cogeneration can also be designed to provide flexibility which can help balance the intermittency of renewables. Combined heat and power synergies at industrial facilities also produce considerably lower GHG emissions per MWh than other forms of fossil fuel electricity generation.

A recent *EDC Associates* report estimates that there is an opportunity for new cogeneration growth of between one and a half to two times EDC's current cogeneration growth forecast and that additional cogeneration would reduce the grid's overall GHG intensity. This reduction would be relative to coal generation and future combined-cycle additions, and could be built at a lower leveled cost than could additional natural gas combined-cycle capacity.³

Natural Gas

Natural gas is the cleanest burning fossil fuel. As an energy source, it provides a cost-effective pathway for countries to reduce the carbon intensity of their economies. CAPP recognizes the potential that natural gas has to not only reduce emissions from electricity infrastructure in the near-term, but also to provide further grid stability for the benefit of producers and consumers alike.

As a transition fuel, the development, use, and export of natural gas resources from Canada can support clean energy strategies around the world.

The Government of Canada recognizes the critical role that the provinces play in contributing to not only provincial and national, but global emissions reductions. With world demand for energy forecasted to grow by 32% by 2040, natural gas is a desirable choice to meet this growing demand while helping to curb GHG emissions growth and also achieving local air quality improvements in rapidly developing nations.

³ EDC Associates Ltd. February 2015. GHG Emissions Reduction Strategy in the Alberta Electricity Market with Increased Cogen Capacity.

4 Innovation, technology and job creation generated by action on climate change

Canada is an environmental leader. According to Yale University's Environmental Performance Index from 2016⁴, Canada ranks 25th out of 178 countries — ahead of countries like USA (26th), Japan (39th), Belgium (41st), and South Korea (80th). While Canadians can be proud of our globally competitive environmental performance, there is a strategic opportunity for government to leverage further environmental improvements, while also stimulating economic growth. By enabling this opportunity, governments can provide confidence to Canadians and the globe that government agencies and industries are working hard to protect Canada's environment.

In fall 2015, Canada joined 185 countries in committing to significantly reducing global GHG emissions. Since that time, our government has made significant and laudable commitments to support innovation and transformative clean technology throughout the economy to achieve these goals.

Canada must enable investments in innovation and technology to achieve deep GHG reductions while ensuring continued economic growth and stable, high quality jobs. To fully understand implications of policy and regulation in this area, our industry believes government policy needs to be crafted with an understanding of our emissions by sector within a globally-competitive commodity market. Building from a position of strength, our government can choose the most appropriate pathways and technology road maps.

Our sector provides a unique and innovation-ready opportunity for government focus, through the emerging "super innovation cluster" which has Canada's Oil Sands Innovation Alliance (COSIA) and the Petroleum Technology Alliance of Canada (PTAC) at its core, along with their various provincial, national and international partners.

Due to our industry's capacity for innovation, we believe the upstream oil and natural gas industry, along with the entire natural resource sector, will play a lead role in achieving Canada's desired low-carbon economy. Canada's natural resource sector offers the country a significant comparative advantage on the global market; by continuing to harness the wealth of these sectors, and using this wealth to make deliberate investments in transformative low-emissions extraction technologies and business processes, our country can become the world-leader in providing the global market with low-carbon natural resources.

Canada's oil and natural gas industry is accelerating innovation. With low commodity prices, a shift in export markets creating a need for pipelines to offshore markets, and a global move to a low-carbon economy, our industry is under significant pressure to find new ways to remain competitive while reducing the environmental impacts of development and production.

⁴ Retrieved from: <http://epi.yale.edu/reports/2016-report>

This challenge presents a great opportunity to innovate and deploy new technologies and processes to reduce our footprint, and become global leaders in low intensity oil and natural gas production. We also have an opportunity to move Canada's oil and natural gas to supply domestic and global markets for new and traditional non-combustion products and uses⁵.

Combining smart climate policy with enabling innovation policy – while leveraging existing and creating new collaborative partnerships with government and industry – is critical for ensuring that Canada becomes a global leader in innovation and clean technology development in the oil and natural gas sector. Successful innovation will create new global market opportunities for Canada's industry and for innovators across the country. We offer the following recommendations for the federal and all provincial governments to consider when developing options for the First Ministers on innovation, technology and job creation.

4.1 Enabling an economically-viable transition to a low-carbon economy

Canada and most provinces have committed to significantly reduce domestic GHG emissions to meet global goals for limiting climate change. There are many tools and programs available to the government to enable reductions by governments, industries, business enterprises and consumers. But not all tools and programs have equal effect. Climate policy can be a critical enabler for innovation and clean technology development, but it can also set up costly barriers and administrative hindrances. It is critical for governments to choose and implement the right mix of tools and programs to maximize innovation and technology adoption and deployment to forge a low-carbon economy in the most efficient and cost-effective manner.

CAPP offers the following recommendations to design carbon policies and enable opportunities for clean technology development and deployment.

Climate policy criteria

Smart climate policy should stimulate investment in the technologies necessary for significant reductions in GHG emissions in Canada and globally.

To ensure long-term investment in innovation and the industry, policies should be outcomes-based, flexible, predictable, fair and administratively simple. Policies that do not meet these criteria create barriers to industry investment and to investment in technology research, development, innovation and deployment. Additionally, governments should ensure that policies align across Canadian provinces to avoid duplication and minimize impacts to industry competitiveness, thereby increasing the likelihood of successful achievement of policy objectives.

⁵ Examples of traditional non-combustion uses for petroleum products available here:
<http://www.oilandgasinfo.ca/oil-gas-you/products/>

Revenue recycling

Carbon pricing mechanisms are becoming an increasingly popular policy tools used by governments to flexibly enable cost-effective GHG reductions across the economy. When a government moves forward with carbon pricing, there are many decisions to be made to ensure the policy is implemented to maximize GHG emissions reductions efficiently and without weakening the economy. One of the decisions governments need to make is what to do with the revenue generated from the carbon pricing mechanism. There are many options available for distribution of this generated revenue; CAPP recommends that to enable innovation, revenue generated by industrial emitters is best recycled back to the industry for technology and innovation.

Ensuring the revenue generated from carbon emissions is recycled back through a technology fund to R&D and technology deployment and adoption is critical to incenting domestic GHG emissions reductions using clean technology. It is also important that the revenue generated is recycled back to technology investments by those who pay into the fund, using transparent and consistent funding criteria. Recycling revenue in this manner creates the incentive to reduce emissions while enabling competitiveness for Canadian industry. The investment opportunities available to the government and industry through this technology fund are critical to de-risking technologies at all stages of development, and will enable long term technology advancements that will help to bend the curve and help Canada reach its climate goals.

Offsets

Offsets are another policy tool available to governments for achieving GHG reductions. Offsets can be enabled through many mechanisms, including direct purchase by government or consumer, or through a cap and trade system. Regardless of the enabling policy, offsets can play a critical part in enabling emissions reductions across the broader economy, while incenting industry and businesses to invest in technological advancements over the long-term, specifically:

- Offsets can help to overcome financial barriers. For example, generation of offsets by the oil and natural gas industry at smaller facilities would allow project proponents to partially or wholly overcome financial barriers to the deployment of emission-reducing environmental technologies.
- Offsets allow the regulated industry and the wider economy to choose the lowest cost options. They allow for the discovery and delivery of lowest cost GHG abatement options for emission reductions.
- Offsets enable credible emissions reductions. To encourage participation in offset projects and markets, government can take measures to ensure minimize risk for buyers of offsets using tools like certification, registration, and streamlined but appropriate verification. In doing so, the federal or provincial governments can maintain market credibility by continuing to ensure that offsets are real, additional, permanent, verifiable, quantifiable,

and enforceable, while bolstering market participation and subsequent emission reductions.

CAPP continues to recommend a robust and credible offset system for Canada to achieve low-cost GHG reducing activities and expand the opportunities for innovation and clean technology investment. CAPP also recommends the expansion of the offset across provinces as a means to expand offset opportunities and to promote an interprovincial climate strategy, energy strategy and harmonized carbon regimes.

4.2 Long-term low carbon technology implementation through improved innovation policy

Canada's oil and natural gas industry is an R&D leader. Canada's *Science, Technology and Innovation System's State of the Nation 2014*⁶ report recognized that R&D investment by the oil and natural gas extraction industry rose by 1400 percent between 1999 and 2015. While Canada's overall R&D investment fell by \$1 billion between 2007 and 2015 – with substantial declines in many key industries – investments by the mining, quarrying, and oil and natural gas extraction industries increased by 74 percent.

CAPP believes there are significant opportunities to enable and accelerate technology implementation within the oil and natural gas sector over the long-term.

There are a number of barriers within Canada's existing innovation policy that hinder the implementation of emissions intensity reduction measures in the oil and natural gas sector. Coordinated, efficient and deliberate innovation policy is critical to help Canadian governments and businesses to overcome these barriers.

A key barrier to the development of transformative technologies in the oil and natural gas sector is scale and lack of deliberate focus. There are many opportunities to offer direct investments into technologies, small and big, across the industry. However, transformative technologies need government and industry to focus and make long-term, deep and deliberate investments in these key innovative ideas that can leverage significant partnerships, knowledge centres and global comparative advantages. It is important for governments to pick specific ideas out of the thousands available to move our country forward to become a global leader in low-carbon natural resource development.

Following successful R&D, viable technologies must be de-risked to ensure ongoing reliability – a critically important step for both project economics as well as safe and efficient operations. The cost of such development programs should not be underestimated – pre-commercial

⁶ Retrieved from: [http://www.stic-csti.ca/eic/site/stic-csti.nsf/vwapj/STIC_1500 SON_Report_e_proof4.pdf/\\$file/STIC_1500 SON_Report_e_proof4.pdf](http://www.stic-csti.ca/eic/site/stic-csti.nsf/vwapj/STIC_1500 SON_Report_e_proof4.pdf/$file/STIC_1500 SON_Report_e_proof4.pdf)

demonstrations alone can cost tens of millions of dollars. Given these factors, even successful technologies take time to develop and deploy industry-wide.

Multiyear commitments must be made and reasonable timelines must be anticipated for a suite of potential technologies to yield successful projects that can be deployed at scale. Any improvements to ensure regulatory certainty around returns on investment will help producers to include more of these technologies in their business planning.

Barriers also come into play at the deployment stage – even when commercial technology exists, financial and operational barriers may remain. Many available emissions reduction technologies add engineering, construction and operational complexity to facilities. Any economic benefit realized can often be diminished through decreased reliability and additional maintenance requirements. This is especially relevant in cost-constrained environments.

4.3 Directed innovation to forge a deliberate future for Canada's natural resources

The majority of the publically funded innovation in the past, regardless of funding source or managing organization, has been administered by general calls for proposals, with financial support going to support good ideas, but good ideas that may not necessarily target key challenges for Canadian industry. As global innovation systems learn and mature, there is evidence that suggests a more directed approach to innovation can result in stronger outcomes than using just more traditional, general, passive calls for ideas.

Directed innovation starts with strategic leaders (e.g. business and government leaders) defining bold, ambitious and desired outcomes or “moon shots” with support and advice from innovation leaders. In this context, the moonshot can be thought of as a single, or a small number of key strategic GHG reduction technology development initiatives.

After definition, the bold outcomes are unpacked or further defined into a series of smaller steps or deliverables that in sum allow attainment of the bolder outcome. Critically, directed innovation defines technically-actionable innovation challenges that can be more easily understood and solved by innovation providers to achieve the targeted outcomes.

With a defined outcome, resolve in senior strategic leaders, and strong governance, the unique strengths of organizations (e.g. capacity, funding, and infrastructure) can be brought to play alone or in partnership to solve the challenges.

The concept of directed innovation can be adopted at different scales. One option is to adopt a series of smaller-scale challenges; another option is to adopt directed innovation at a large, bold scale. Directed innovation can also be used in conjunction with more passive paradigms like calls for proposals.

4.4 Leveraging existing and enabling new collaborative partnerships

Industry is continuing to work collaboratively, leveraging individual company efforts, to advance new technologies and best practices across the sector. Organizations including Canada's Oil Sands Innovation Alliance (COSIA), Alberta Innovates, the Petroleum Technology Alliance of Canada, and the Climate Change Emissions Management Corporation (CCEMC) are working to explore and address technological, operational and financial barriers to innovation. These organizations are able to identify, develop and apply solutions-oriented innovation to the most pressing oil and gas environmental challenges.

Together, these organizations should be considered as a Canadian “super innovation cluster” that leverages Canada’s strengths in our oil and natural gas resources.

The oil sands industry has already shared and developed 819 distinct technologies and innovations with a value of almost \$1.3 billion through COSIA. COSIA is a collaborative of 13 companies who came together in March 2012 to find innovative solutions in the oil sands to reduce GHGs, minimize impact on land, reduce water use and improve the management of tailings. This type of collaborative body facilitates the channeling of individual company expertise and contributes to solution sets for collective problems, benefitting the entire industry and supporting the government’s environmental policy objectives.

CAPP recommends that the federal and provincial governments band together to prioritize and coordinate investment in clean infrastructure, and develop stronger partnerships between the government and the oil and natural gas industry for clean technology research, with the objective of reducing and/or offsetting GHG emissions in the development of Canada’s oil and gas natural resources.

CAPP also recommends that governments take advantage of learnings available to the rest of Canada from the unique opportunities made by collaborative partnerships initiated by the oil and natural gas sector, and enable new collaborative partnerships between and within other sectors where Canada has a comparative advantage.

The collaborative partnerships formed by our sector, such as COSIA, have a head start in ambition, priority-setting and technology road mapping, as well as governance and administration. Governments can incent other sectors to replicate (or, where appropriate, coordinate with) these collaborative industry partnerships to focus R&D and innovation towards improved environmental performance. There is tremendous opportunity for government partners to leverage the learnings that are available through our industry sector to move forward strategic innovation across the economy.

Lastly, a complementary approach is to support a stronger partnership between Sustainable Development Technology Canada (SDTC) and COSIA to accelerate advancements in clean technology and GHG mitigation innovations. A stronger partnership between SDTC and

Canadian natural gas technology and innovation development for clean technologies would also be beneficial.

Ensuring that industry continues to work collaboratively on emission reductions is vital to encourage the industry and the country to maximize the emission reduction capability from the oil and natural gas sector. Outcomes of these efforts could result in the achievement of objectives relating to GHG reductions and sequestration, conversion to less carbon intensive machinery and equipment, stimulation of new, clean technology innovation, promotion of wider use of renewable energy technologies, and demonstration of leadership in environmental sustainability.

5 Our support for carbon pricing mechanisms and valuation

CAPP supports carbon emissions pricing mechanisms in Canada and internationally.

Given the important role the oil and natural gas industry will continue to play in our economy, it is critical that climate policy be addressed with balanced and realistic solutions that allow for growth in investment and jobs while continually reducing greenhouse gas (GHG) emissions.

Any pricing mechanism implemented should contribute to a vibrant and competitive oil and natural gas sector while efficiently and effectively facilitating reductions in GHG emissions. This means ensuring that Canada can compete with other jurisdictions for the necessary capital investment needed to support economic growth and the development of Canada's oil and natural gas resources, and ensures efficient access to international markets for our products.

Canada needs to be both a stronger world leader in the fight against climate change and a more competitive place to invest in low emissions oil and natural gas development.

Supporting and enabling the development and adoption of cost-effective technologies to reduce emissions is the optimal path for the Government of Canada to continue to promote investment, jobs, oil and natural gas sector growth while lowering GHG emissions.

5.1 Principles for design

CAPP submits that the following principles are critical considerations for any Canadian government, federal or provincial, when designing carbon pricing mechanisms that affects the oil and gas industry, which is an industry that competes for market share on a global scale and must ensure a globally-competitive production cost profile to remain competitive.

Price

The price paid for carbon by emitters goes beyond the marginal price of carbon set by governments through a taxation or cap and trade regime. When considering carbon pricing mechanisms – or comparing mechanisms across jurisdictions – it is important to consider all of the costs incurred by emitters to comply with relevant policy instruments, including mitigative regulatory requirements and/or renewable portfolio standards. The carbon pricing mechanisms considered by governments should be inclusive of all policy costs, and set at levels that continue to incent environmental change but without damaging the competitiveness of Canadian industries, and possibly leading to carbon and investment leakage abroad.

CAPP recommends that any policy initiatives undertaken by the government should seek to not only preserve, but enhance the economic competitiveness of the upstream oil and natural gas

sector, in consideration of carbon price mechanisms that are inclusive of all policy costs and cumulative burden across policies and regulations, corporate tax increases and royalty changes.

As indicated, we also recommend that price considerations include the suite of emissions mitigation mechanisms that are in place across Canada; for example, regulatory and other initiatives undertaken in many provinces that are leading to emissions mitigation.

Cross-jurisdiction Coordination

Many provinces have already taken action to create carbon pricing mechanisms. A national program consisting of a mosaic of provincial approaches will provide regulatory certainty for those already subject to carbon regulations, while also contributing to achievement of the country's overall GHG emissions reduction objectives.

Broad based

A broad based, flexible carbon pricing system, inclusive of all policy costs, is most efficient if it is applied to emitters across the global economy. Meaningful emission reductions can only be achieved if all industrial emitters are subject to some form of environmental pricing. CAPP recommends that government take a full sector view approach when designing a climate policy pricing mechanism.

There is also a strong case to be made that variations across sectors can enhance the effectiveness of a broad-based approach. Canada's economy does not follow a truly homogenous pattern of sectors with respect to their contribution to either emissions or wealth creation. We recommend a pricing policy approach that gives appropriate consideration to this diversity. Elements of diversity include investment patterns, international competitiveness factors (including for foreign investment as well as markets), wealth creation patterns, and technology readiness.

Carbon price certainty

One of the most important aspects of an effective and appropriate climate pricing mechanism is price certainty. Industry's financial decisions are made on long time frames, which require making complex investment decisions. Having a carbon price that is transparent and provides some certainty can help promote sound investment decisions through the long term. CAPP also recommends that any increase in a carbon price is phased in to ensure businesses have time to adjust to changes in cost levels. Any new carbon policy should have pricing review dates or other triggers in order to allow industry to make investment decisions.

Strong data

The development of technically sound emission reduction policies and regulations relies on good quality emissions data in order to identify potential opportunities for emissions

reductions and to determine industry performance and emissions reductions in future years. Any climate policy must have mechanisms for robust, transparent and scientifically valid data at its core.

Avoid duplicative measures

It is important when designing climate policies to ensure that there are limited duplicative measures and no double taxation or cost burden. Regulations or other government interventions on industry should not be used when a corresponding carbon pricing mechanism exists to deal with the emission reductions. Duplicative systems are often costly for both government and industry and do not result in additional incremental emission reductions.

Ensuring that industry is not double priced on the same carbon unit is essential in designing a fair climate policy. The oil and natural gas industry already has a large cost burden and any double taxation would severely impact the competitiveness of the industry. CAPP recommends that any federal government climate policy take into full account the provincial climate policies that already exist and ensure they receive equivalency for the emission reductions that industry is doing at the provincial level.

Revenue Recycling

A key consideration under any market-based carbon pricing system – such as carbon tax or a cap and trade regime – is how and where to recycle the revenue. An option available to governments is to recycle some or all of the revenue generated by industry back to achieve further emissions reductions from the emitting sectors. One of the key purposes for carbon pricing mechanisms is to reduce emissions while not weakening industry's competitiveness. By recycling revenue, through a technology fund or alternative, governments create the incentive for companies to reduce emissions while helping to protect their competitiveness. This opportunity allows companies to further reduce emissions and develop and deploy long term technology advancements that will help to bend the curve and help Canada reach its climate goals.

Preventing carbon leakage

Carbon leakage occurs if constraints on emissions are placed on activities in Canada but not elsewhere because there is a possibility that industry may choose to leave Canada (or new investment could be discouraged) and go to a jurisdiction where there is little or no carbon price, which will allow companies to produce and potentially release more emissions in a jurisdiction without a climate policy.

If carbon leakage occurs, Canada will lose the economic value from production and there will be no consequential global reduction in emissions. Many jurisdictions around the world such as California, the European Union (E.U.) and Ontario protect emission-intensive, trade-exposed (EITE) sectors to help prevent carbon leakage.

CAPP recommends that government take into account carbon leakage and includes provisions to protect EITE industries.

6 Managing for adaptation and resiliency in a changing climate

Adapting to climate change is an important consideration for the oil and natural gas industry. Our industry's operations and support infrastructure span the nation, from small one-well onshore facilities to large offshore production facilities in Atlantic Canada. This infrastructure includes small gathering pipelines crossing rural lands and large transmission pipelines covering a significant diversity of geographical landscapes.

The impact of a changing climate and risks presented by changing weather patterns presents new and evolving risks to the production, transportation and reliable supply of petroleum products to the end consumer.

Planning and preparation for the impacts of a changing climate on the operating environment is vital. Companies employ risk management and contingency planning approaches, which are common and well-developed practices in the energy sector. Climate change adaptation in the oil and natural gas sector is often discussed and addressed in these terms.

The oil and natural gas industry currently has robust and widely used risk management systems in place. Risk management analyses are employed at all stages of a production facilities lifecycle and beyond operations to infrastructure, through the value chain, and to each operating location (including corporate headquarters). Risks considered by industry that are impacted by climate change include wildfires, floods, droughts, compromised infrastructure, water supply concerns and ambient temperature extremes.

As adaptation becomes an increasingly important management consideration, industry will continue to exercise sound risk management practices and to plan construction, operation and decommissioning stages of projects to address the expected range of weather, water and ecological conditions over the life of each project and operation.

Industry offers the following recommendations to enable broader and higher quality application of risk management strategies by regions, provinces and the industry using consistent, current, relevant and timely information:

1. Undertake assessments of the cost and financial impacts of climate change to provide industry with a common and relevant understanding of the financial risks to industry and stakeholders.
2. Incorporate climate change adaptation and risk management into land-use planning frameworks to better understand planning and adaptive management scenarios on a regional basis. These scenarios would promote a more consistent approach to risk assessment and emergency response across industry.

3. Undertake risk management and contingency planning on a regional basis for common infrastructure, focusing on regional water infrastructure, key transportation hubs (rain, pipeline and road), and land-use planning.
4. Focus federal infrastructure funding on improving and redesigning the robustness of existing critical infrastructure, such as bridges, roads, pipeline culvert and regional networks such as rail and pipeline hubs and water networks.
5. Enable collaboration between government and industry to focus on understanding the risk to surface water access, availability and use in drought conditions. Understanding these risks will further improve contingency planning, risk mitigation strategies and enable further technological innovation into water intensity reductions.
6. Collaborate with industry and focus research and innovation towards reducing the risks to surface water access, availability and use in drought conditions.
7. Support and promote open, common and timely data sources for understanding the challenges that government, industry and stakeholders face due to climate change. Further to this, provide transparent, current and reliable forecasting data to stakeholders to improve long-term projections in risk management and business continuity planning. Continue to support ongoing surface water monitoring through hydrometric networks, and temperature and climate prediction through weather forecasting.
8. Ensure a rapid response to emergencies by municipalities, provincial and federal governments. Review of government responses to extreme weather events, and that emergency response protocols are in place to respond rapidly and efficiently.
9. Ensure government policies and legal frameworks are flexible and responsive to reflect and adapt to the impacts that climate change has on policy objectives and desired outcomes. Policy outcomes enabled through legislation and/or regulation should remain flexible and adaptable over time (e.g., impact of climate change on biodiversity conservation objectives).

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A1B 4J6

To whom it may concern:

The Canadian Federation of Independent Business (CFIB) is a non-partisan, not-for-profit organization representing independently-owned small and medium-sized businesses. We have over 2,000 members in Newfoundland and Labrador and 109,000 across the country.

We are writing to present member views as part of the government's consultations on climate change. CFIB members in Newfoundland and Labrador believe the government should take action to reduce carbon emissions, though climate change is not the most important environmental issue relative to others, like recycling of materials, energy conservation, and clean water and sewage. Further, they feel it is possible to grow the economy and protect the environment at the same time. As a result, most have been proactive in finding ways to make their businesses greener. Small businesses are motivated to participate in environmental programs primarily because of their own personal views and the potential for cost savings.

In light of the economic and fiscal in which Newfoundland and Labrador finds itself, the government must give very serious consideration to the impacts any price on carbon will have on small business. CFIB members feel a carbon pricing mechanism will reduce business profitability and increase operating costs. This year, business owners in the province have had to adjust to significant increases in municipal and provincial taxes, which means, amongst other measures, forgoing hiring and investment in their businesses. Therefore, we strongly urge the government to make any carbon pricing mechanism revenue neutral (ie. all revenues generated by carbon pricing are offset by tax reductions).

As the provincial government studies climate change action, it is important to consider the following principles prior to the implementation of any carbon pricing mechanism:

- consider the cost to small business, the regulatory burden on small business, the economic impact, taxpayers' ability to pay, and the time needed to adjust to increased costs;
- publicly disclose the details about the costs and potential benefits; and
- provide strong evidence that any environmental policy has environmental benefits.

We trust these views are helpful to you and look forward to presenting more detailed information at a future date. If you have any questions or would like to discuss further, you may reach me by phone at 753-7745 or by email at vaughn.hammond@cfib.ca.

Sincerely,

A handwritten signature in black ink, appearing to read "Vaughn Hammond".

Vaughn Hammond
Director of Provincial Affairs, Newfoundland and Labrador



Honourable Perry Trimper
Minister Responsible for the Office of Climate Change & Energy Efficiency
Government of Newfoundland and Labrador
P. O. Box 8700
St. John's, NL A1B 4J6

September 16, 2016

Re: Submission for the Provincial Strategy for Climate Change

Dear Minister Trimper:

On behalf of the Canadian Home Builders' Association – Newfoundland and Labrador (CHBA-NL), we thank you for the invitation to participate in this province wide consultation. Our Association values the partnership it has formed with the Office of Climate Change and Energy Efficiency and look forward to playing a stronger role in the provincial strategy on climate change. In the past, both organizations have partnered to produce very valuable tools for industry and consumers and we look forward to collaborating on future initiatives to help reduce greenhouse gas emissions (GHG) and to ensure homes in our province are prepared for the impacts of Climate Change.

Housing is Canada's leading sector in addressing climate change. Total GHG emissions from the housing sector have decreased 11% since 1990. Housing is responsible for only 6.3% of direct GHG emissions in Canada and today's typical house uses 37% less energy than a similar one built in 1990.

This year, the CHBA-NL is celebrating its 60th year of representing its membership and working with partners to reach the goal of providing affordable and quality housing options for the residents of Newfoundland and Labrador. The Association has developed a strategy to create a new provincial conversation about housing and how partnerships can influence the housing of our future. As we embark on a new economy there are key areas the Association would like to identify as top priorities: protecting housing affordability for first time home buyers and seniors housing, promoting energy efficiency and tackling the underground economy. To achieve these goals, the housing industry must partner with government to develop policy that enable residents to have affordable and energy efficient homes.

Until recently the prices of existing homes in the St. John's region had been among the fastest rising in Canada, and over the past 9 years, the price of housing has risen by 114% (CMHC 2006-2013). Average new single detached homes have risen from \$196,437 in 2005 to \$433,225 (CMHC August 2015). As the prices of homes remain high, it is becoming more important to build homes that reach the minimum standard of energy efficiency outlined in the 2015 National Building Code and to create opportunities for owners and purchasers of existing homes to become more energy efficient through renovation incentives. The CHBA-NL has worked with member municipalities to advance energy efficiency practices in new home construction. For example, the industry worked with the City of St. John's to initiate an energy efficiency strategy long before its practices became code requirements. It didn't take long before surrounding municipalities adopted similar practices with the assistance of industry. Unfortunately, there are gaps throughout the province in adoption and enforcement of the NBC, thus not all new

homes are equal in energy efficiency targets across the province. The CHBA-NL would like to work with municipalities and the provincial government to ensure all new homes reach minimum energy efficiency standards outlined in the 2015 National Building / Energy Code.

There is real opportunity to make significant GHG emission reductions in the energy retrofitting of existing homes. Every dollar invested by homeowners in energy retrofits of the average existing home yields 4 to 7 times more energy savings than a dollar spent upgrading a new home. With the investment value of the renovation sector throughout the province in 2015 totaling \$1.1 billion, there is an opportunity to improve our aging housing stock. The CHBA NL would like for homeowners to understand the advantages of making homes more energy efficient, as they may not appreciate the value of such investments.

The CHBA-NL submits the following recommendations to ensure quality, affordable and energy efficient homes are being built for the residents of NL:

Recommendation 1– Initiate a renovation tax credit for selected home renovations, which, for eligibility purposes, require that an energy audit be conducted by a professional

A renovation tax credit could assist first-time homebuyers in renovating fixer-uppers, help seniors stay in their home and age-in-place for a longer period of time, as the cost of their renovation would become more affordable and it would reduce their energy costs going forward and in improving the energy efficiency of the existing housing stock.

Implementing a renovation tax credit for selected home renovations could be widely effective. To be eligible for the tax credit, the homeowner would be required to have an energy audit carried out by a professional contractor, who would verify the efficacy of the renovation in improving energy efficiency.

Modest and targeted home renovation tax credits should be introduced to tackle the underground “cash” economy while encouraging residents to do business with legitimate companies when undertaking home repairs and renovations. Regulation could come from municipalities who are already organized to be responsible for overseeing the building permit process.

To qualify for a renovation tax credit incentive, a homeowner requires a receipt, which keeps both the contract value and the revenue in the legitimate economy rather than the underground – ensuring government received the revenues due.

Recommendation 2 – Create a meaningful and effective partnership with the CHBA-NL to market the benefits of making homes more energy efficient through renovations undertaken by professionals

A partnership of this nature would have multiple advantages. Working together will help bring those operating ‘under-the-table’ back into the legitimate economy. The government will recover tax revenue it is currently losing, while simultaneously protecting consumers from the perils of engaging in the underground economy.

It appears to be a logical next step in enhancing our Get It In Writing! program, which has proven to be successful in educating consumers about the risks involved in paying cash for home repair and renovation work (hiringacontractor.com).

By promoting the hiring of skilled, reputable and experienced contractors, everyone – government, consumers, legitimate business, subtrades and suppliers – benefits, and the work is done safely and to the high standard it should be, as a matter of course. It also means that if there is an issue with the work, warranties and contractual recourse are in place to mediate between the parties to make sure all interests are respected and safeguarded.

Recommendation 3 – Support the efforts of the CHBA-NL in working with municipalities and the province as collaborative leaders of housing and enforcing the 2015 National Building Code of Canada

Without ensuring provincial enforcement of the most recent National Building Code, there is no way to guarantee that homes will be built in the most energy efficient way. The Association advocates for the province to adopt the National Building Code 2015 to ensure quality and energy efficient homes are being built for residents of NL. Even though many builders adhere to the NBC, some municipalities do not have the inspection services to verify the work. Without these inspection services, there is little to protect homeowners from builders who fail to conform to minimum standards. As a result, it leaves a lack of consistency of building practices throughout NL. This could be prevented with the application of known and accepted residential construction standards.

Province wide enforcement of the NBC would ensure that all new homes reach the new energy requirements of the most recent NBC and that residents are provided with quality, energy efficient, safe and healthy homes.

The CHBA-NL requests the provincial government's assistance in helping the Association ensure municipalities are equipped with the tools, expertise and vision essential to making good decisions regarding housing. This assistance may, in fact, complement our efforts by way of incentives involving land, tax breaks or providing leadership.

It is our aim to act as facilitator and provide an objective opinion with regards to development and planning issues, fulfilling our role truly as the voice of the residential construction industry in Newfoundland and Labrador.

Thank you again for the opportunity to participate in the development of a provincial climate change strategy. We look forward to further conversation regarding our recommendations above. Attached you will also find a document produced by CHBA that includes federal government recommendations on Climate Change.

If you would like to continue the conversation with the CHBA-NL, please don't hesitate to contact us.

Regards,



Sheldon Colbourne
President, CHBA NL
Attachment/



How and Where to Reduce Emissions:

Help Canadian Housing and Homeowners Continue to Lead the Way

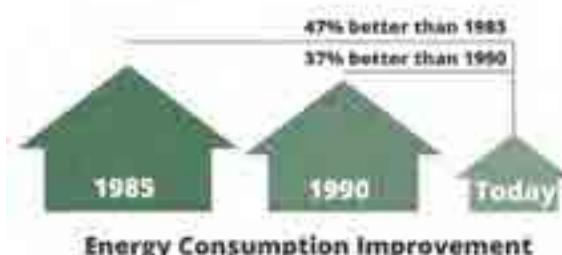
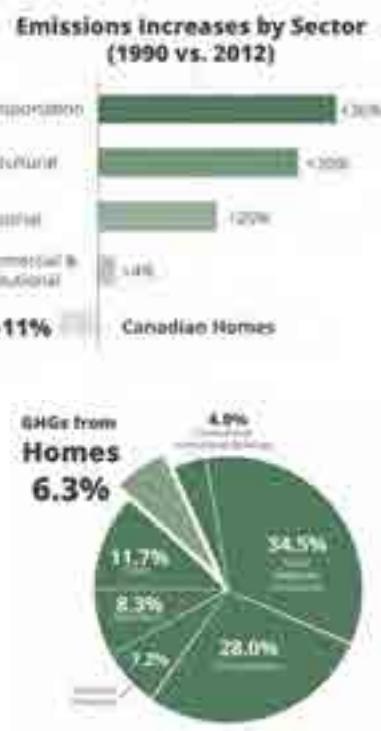
Housing is Canada's leading sector in addressing climate change. Total GHG emissions from the housing sector have decreased 11% since 1990, even though the housing stock is much bigger now, having grown 38% since that time. Housing is responsible for only 6.3% of direct GHG emissions in Canada. And today's typical house uses 37% less energy than a similar one built in 1990.

This significant progress has been accomplished through technology and systems innovation, voluntary adoption of higher standards of performance, and a uniquely Canadian research and development collaboration between the public and private sectors.

Those unfamiliar with the dynamics of the housing industry often, and erroneously, assume that continued improvement in housing energy performance requires more stringent building codes. This is neither how home energy performance has gotten to where it is today, as energy efficiency requirements have only been in the code since 2012, nor is it the key to dramatic GHG reductions in the future. Canada will continue to build more and more energy efficient homes, but savings there pale compared to the renovation market opportunity.

To continue achieving meaningful energy performance gains (and GHG emission reductions) in new housing requires ongoing innovation, voluntary programming and consumer energy literacy. Government and industry can continue to collaborate to continue this success story. To support innovation and protect affordability, increased code stringency is the last step, not the first.

Where the real opportunity lies for significant GHG emissions reductions is in the energy retrofitting of existing homes. It is policies that support energy efficient renovation of existing housing that offer the most significant opportunity to make big gains in housing energy performance while helping Canadians.



Every dollar invested by homeowners in energy retrofits of the average existing home yields 4 to 7 times more energy savings than a dollar spent upgrading a new home. And half of Canadian houses were built before 1985, and this older half uses twice as much energy as the houses built since. The opportunity is therefore very large.

So how do we maintain this strong energy performance trend and address climate change, while protecting affordability and helping young Canadian families find a home that meets their needs at a price they can afford?



The Canadian Home Builders' Association (CHBA) has the following recommendations to help Canadian housing and homeowners continue to lead the way in climate change action, to the benefit of homeowners, renters, and society as a whole. CHBA's recommendations address opportunities and policies for new housing construction, renovation, community development, and smart transit investments.

Opportunities

- **Energy retrofits** offer by far the greatest energy savings potential, represent the most cost effective option, and deliver the best incremental improvements in terms of homeowner equity.
- The **EnerGuide Rating System** provides home energy information through its labels and reports to increase energy literacy, and should be used by all regional programs and mandatory labelling regimes as Canada's single national home energy labelling system.
- **Voluntary programs in new housing (like ENERGY STAR and Net Zero)** enable homeowners to choose higher levels of performance. This approach supports innovation and provides market streamlining, ensuring that incremental costs are optimized and linked to homeowner benefits. Once firmly established, market-accepted, and cost optimized, higher levels of performance can be regulated, but not before. Given that new homes are already so efficient, and affordability is a challenge, additional incremental energy improvements need to be done without impacting affordability.
- **Ensuring that building codes and regulations do not undermine affordability** is critical to making sure that homeownership remains within reach of the next generation of Canadians in the middle-class and those aspiring to attain it. There are broad opportunities to develop technology that will improve energy performance without increasing housing costs, but this approach needs to be a public policy objective if it is to be achieved.
- **Infrastructure investment can reduce transportation GHG emissions related to development** if those investments are targeted to maximize ridership and yield the greatest environmental benefits of modal shifts in transportation.

Policy Measures

Based on the above, the following policy measures are recommended to seize the opportunity to help Canadian housing and homeowners continue to lead the way in climate change action:

1. Establish Renovation Tax Credits for Energy Retrofits.
2. Increase support to and promote the Government of Canada's EnerGuide Rating System as the single national home energy rating system.

3. Increase support to the Government of Canada's ENERGY STAR for New Homes program, and expand it to include high-rise, multi-family buildings.
4. Support work to address systemic barriers (e.g. community scale, market barriers, energy literacy) to Net Zero housing adoption.
5. Increase support to the Government of Canada's Local Energy Efficiency Partnerships (LEEP) program and expand it to include energy retrofit technologies.
6. Ensure any increased building code requirements do not adversely impact housing affordability; and focus federal research in housing, both for innovation and in support of codes and regulations, towards performance improvements that keep construction costs the same or less.
7. Support the energy retrofitting of social housing.
8. Get infrastructure investment 'right' to support ridership through smart density and zoning, which is a key to ensuring that these investments maximize ridership and yield the full environmental benefits of a transportation modal shift to transit.

Each policy recommendation above is expanded upon in subsequent sections of this document below.

1. Renovation Tax Credits for Energy Retrofits

Given the very significant opportunity to improve the energy performance of the existing housing stock, a permanent Renovation Tax Credit for Energy Retrofits, using the Government of Canada's EnerGuide Rating System, should be introduced. Such an initiative supports the improvement of the housing stock, homeowner equity, affordability through lower operating costs, homeowner energy literacy (through labelling and custom home reports) and fighting the underground economy by requiring receipts.

Although misperceived as "expensive", such a tax credit can actually be cost neutral, when the benefits of reduced revenue loss to the underground economy are included. Government receipt-based incentive programs have a proven record for suppressing underground economic activity. When the tax revenues gained from reduced underground cash activity are included in an assessment of such a program, and all of the socio-economic benefits are also tallied, a well-designed program can more than pay for itself.

2. Increase support to the Government of Canada's EnerGuide Rating System

For Canadians to make smart decisions about the energy performance of their homes, they need solid information. This allows them to compare one house to another when purchasing a home, and supports informed decisions concerning upgrade options when improving an existing home.

To achieve these outcomes, it is essential to increase support for the Government of Canada's EnerGuide Rating System for homes, and to ensure that it serves as the single national home energy rating and labelling system for all Canadian homes.

Supporting a system that provides this information to Canadians is an important federal role, facilitating interprovincial harmonization and accelerating consumer energy literacy. Ongoing federal investment is needed to ensure all provincial, utility and other home energy programs in Canada can continue to use

this single national system, and that it continues to be developed and improved to provide additional information to Canadians as their energy literacy increases. This includes continued software systems support, training, and industry and advisor capacity building. Mandating national nutrition labelling on all food products has been a huge success and delivered significant benefits to consumers—we need to see the same approach in relation to the energy performance of homes.

With its national scope and capacity, the EnerGuide Rating System is uniquely suited to achieving this. It provides both a label reporting on current energy performance, as well as customized homeowner reports to guide homeowners in their energy upgrade decisions. It needs to be well supported.

3. Increase support to the Government of Canada's ENERGY STAR for New Homes program, and expand it to include high-rise multi-family buildings

The Government of Canada's ENERGY STAR for New Homes program has been very successful in Ontario and Saskatchewan (where it began). This program has very high consumer recognition and, at its peak, over 20% of Ontarians who purchased a new homes chose ENERGY STAR. This type of voluntary market-driven program also stimulates innovation within the industry, ultimately reducing costs. And increasing consumer energy literacy puts a value on energy efficiency.

ENERGY STAR has changed the market and delivered real climate change action, all in a voluntary fashion without negatively impacting affordability. Indeed, its success made the introduction of energy requirements in the code in Ontario relatively seamless.

To continue the success of ENERGY STAR, the program needs additional resources to maximize its effectiveness and to properly, and successfully, continue its expansion into the other provinces.

Given the program's success in the low-rise market, it is also important that the ENERGY STAR program be expanded to high-rise, multi-family buildings. About half of today's residential construction in Canada consists of multi-family buildings, and making ENERGY STAR available in this form of housing will better address key market segments including first-time buyers and downsizers.

The Government of Canada currently has a call for proposals out for this initiative—it is important that this be followed through and that multi-family housing becomes an integral part of the program in the future.

4. Support work to address systemic barriers (e.g. community scale, market barriers, energy literacy) to Net Zero housing adoption

The members of the Canadian Home Builders' Association (CHBA) has always been at the forefront in pursuing increased energy efficiency in Canadian housing. This effort started with R-2000 homes over 30 years ago and continues today with CHBA's Net Zero Energy Housing Council, and the Net Zero labelling program the Council is currently developing and piloting. Providing leading edge voluntary programming is key to advancing energy efficiency and supporting innovation in housing, while protecting choice and affordability. CHBA's Net Zero initiative is leading Canadian energy efficiency not through code (which can degrade affordability), but through innovation and market transformation.

However, for Net Zero housing to gain a bigger share of the marketplace, there are many systemic barriers that need to be addressed, and the Government of Canada is ideally positioned to support work to address these. Collaborating with CHBA in this effort can accelerate the consumer literacy required to help new homebuyers make the smart choice and select the Net Zero option. Also required are efforts to bring Net Zero to the full community scale to address barriers like community planning for solar orientation, infrastructure changes, grid-interconnect challenges, achieving complete communities, addressing NYMBism, connecting to smart transportation systems, and more.

To take the next steps in energy efficiency in new homes requires successful market adoption of high performance homes without degrading affordability. In support of this goal, the Government of Canada should continue and expand its collaboration with industry to advance voluntary Net Zero technology, industry capacity, and consumer awareness.

5. Increase support to the Government of Canada's Local Energy Efficiency Partnerships program and expand it to include energy retrofit technologies

One of the toughest challenges in getting new technologies broadly adopted in the marketplace lies in moving the industry and the marketplace beyond that which is technically proven. It requires 'de-risking' of innovations (including "working out the real kinks" in broader on-site applications) so that broader diffusion into industry and with consumers can take place. Moving innovations from niche status to the mainstream is often referred to as "crossing the chasm". It is a ubiquitous challenge for which solutions are few and far between. However, in Canadian residential construction, there is a modest but very successful program by the Government of Canada which has achieved excellent results in overcoming this challenge—the Local Energy Efficiency Partnerships (LEEP) Program.

At present this program has very limited resources. To realize its full potential support needs to be increased and the Program expanded to include the greatest area of opportunity in the housing sector for GHG reductions—the renovation market.

LEEP is delivered on a regional basis and through engaging a critical mass of builders who are capable of identifying and incorporating product innovations that are best suited for their region. By working together through the LEEP initiative, supported by Government of Canada experts, builders use LEEP to reduce the time and risk involved in finding and applying innovations that result in better quality, high performance homes. In essence, LEEP makes the innovation cycle faster, less risky and more affordable. The information generated through LEEP projects is then shared with other builders in the region, accelerating market diffusion of the best proven technologies and innovations.

This approach to 'Crossing the Chasm' has been very successful and led to accelerated deployment of several important technologies from heating and cooling systems to insulation systems and more—now is the time to properly resource the program to achieve the climate change results the government seeks.

In addition, given that there are now more dollars spent each year on renovation than on new construction, and that the 50% of Canada's housing stock built before 1985 uses twice as much energy as the homes built since 1985, LEEP needs to be expanded to also address innovation in the renovation sector.

The energy savings potential in renovation is much greater than in new construction, but the smaller enterprise size typical of the renovation sector, and the much greater variety of re-construction issues and challenges to be faced, makes diffusion of new technology more difficult. LEEP offers an excellent and proven approach to addressing these barriers and accelerating market adoption of renovation innovations. It is a uniquely Canadian success story that should be supported and expanded as part of the federal government's climate change strategy.

6. Ensure any increased building code requirements do not adversely impact housing affordability; and focus federal research in housing, both for innovation and in support of codes and regulations, towards performance improvements that keep construction costs the same or less

Given that home energy efficiency is largely about systems integration and the combining of many products, systems, and approaches to achieve desired results (and avoid unintended consequences), there is a clear role for federal research in housing. Much of this is non-proprietary and hence ideal for public sector support. There has been a long-standing collaboration between the federal government and the private sector in advancing innovation in housing, and in developing strong, responsible building codes and regulations.

However, much of the research funding to key Federal housing research players (NRCan, NRC and CMHC) has been cut over the years, and capacity to undertake key research has suffered accordingly. At the same time, many other factors like land-prices, municipal taxes, and other "new fundamentals" in the housing market have increased house prices rise dramatically, undermining affordability.

While the energy performance of Canadian homes has increased very significantly over time, this has primarily occurred through voluntary innovation, without damaging affordability. With Canada's new housing performing extremely well, it is of paramount importance that further improvements be supported by federal housing research in support of innovation as well as codes and regulations, but that these efforts focus on ensuring future performance improvements result in homes that cost the same or less. Support for energy efficiency research, innovation and related government-industry collaboration must place protection of affordability at the centre of decision making. We have done it in the past, we can continue to do it in the future, but only if this is made a priority.

7. Support the energy retrofitting of social housing

As the Government of Canada reinvests in Canada's "social infrastructure", supporting the energy retrofitting of social housing offers benefits to housing providers, tenants, and society as a whole.

8. Getting infrastructure investment right to support ridership through smart density and zoning is key to ensure that the investments in infrastructure maximize ridership yield the full environmental benefits of transportation modal shift to transit

Over the coming two decades, an estimated \$75 billion will be invested in rapid transit systems in urban regions across Canada. The potential to increase ridership in transit systems offers many benefits,

including addressing climate change. But these will only be realized if these systems and the surrounding communities are planned and developed properly.

Most new and expanded networks are routed directly through communities which now rely, overwhelmingly, on private automobiles for journeys to work. If implemented properly, modal shift to transit will occur; if not, continued reliance on automobiles, and the resulting congestion, deteriorating housing affordability, and other challenges will remain.

To achieve the substantial and meaningful GHG and other pollution reductions that are possible, coordination and planning of multi-governmental and private sector investments in rapid transit systems, coupled with widespread acceptance of the principles of transit-oriented development by Provinces and municipalities (who must also often overcome NIMBYism from their constituents), is required.

So the challenge remains: achieving actual integration of appropriate residential development with rapid transit systems. This requires a mix of innovative land-use policies such as pre-zoning, facilitative and market-based building regulations, and appropriate financing instruments.

CHBA estimates that there is a capacity for as many as 1 million transit-oriented housing units to be developed over 20 years within a 5 to 10-minute walk of existing or planned rapid transit stations, including 106,000 subsidized rental units, 370,000 market rental housing units and over half a million privately-owned housing units. In brief, major social and environmental benefits can be obtained by leveraging the combined benefits of reduced automobile use for routine journeys and compact, transit-oriented residential development.

With its commitment to infrastructure investment, it is critical that the Government of Canada work with other levels of government to ensure that transit is well planned, and that this facilitates transit-oriented residential development that will result in complete communities that maximize ridership. Methodologies and metrics must be developed to assess the investments against these principles.



July 6th, 2016

The Honourable Perry Trimper
Minister of Environment and Conservation
4th Floor, West Block, Confederation Building
100 Prince Philip Dr.
St. John's, NL
A1B 4J6

RECEIVED
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Minister's Office
Dept. of Environment & Conservation

Dear Minister Trimper,

On behalf of the Board of Directors of the Canadian Independent Petroleum Marketers Association, I am writing you regarding your province's carbon reduction efforts.

For the last 18 months, CIPMA has been actively advocating to various provincial governments to strongly consider the benefits of a carbon tax while reviewing their carbon reduction strategies. We feel that such a regime is more transparent than cap and trade, and significantly less administratively burdensome.

For your review, I have included a booklet further outlining our association's position on the issue, which provides insight into our rationale.

We look forward to working with you and your government in the future.

Sincerely,

Tricia Anderson
President and Chief Executive Officer
Canadian Independent Petroleum Marketers Association
Office: 905-823-6996
Cell: 416-795-9593
www.cipma.org

CARBON TAX: A VIABLE SOLUTION FOR **NEWFOUNDLAND & LABRADOR** TO REDUCE GREENHOUSE GAS EMISSIONS



OVERVIEW

There has been much discussion about which system – a carbon tax or a cap and trade – is the best approach when putting a price on greenhouse gas emissions (GHG). This briefing note will include a brief background on these two systems, explore some of the important differences between the two, as well as provide a recommendation as to which system has the best approach when it comes to reducing GHG in Canada.

The Carbon Tax System

A carbon tax is a fee placed on GHG emissions which result from burning fossil fuels. The government sets a price per tonne on carbon, and then translates it into a tax on electricity, natural gas or oil. This makes using such fuels more expensive. According to scientist and environmental activist

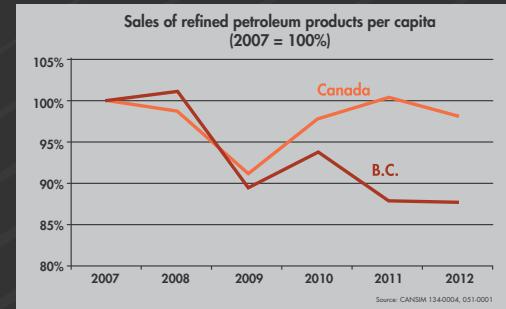
David Suzuki, it is one of the most powerful incentives that governments have to encourage companies and households to emit less by investing in cleaner technologies and adopting greener practices. British Columbia implemented this system in 2008, and Alberta is set to begin in January 2017.

Success in BC

According to Statistics Canada, since its implementation, the BC carbon tax system has had significant environmental and economic success. It is by law, “revenue neutral”, which means that the revenue gained from the tax is used to reduce income tax. This carbon tax system is clearly working. The province now has the most robust economy in the nation with the lowest income taxes. Despite the booming economy, greenhouse gas emissions are down, and BC residents have adapted to the tax through small

actions aimed at reducing the carbon tax they pay and their consumption of hydrocarbons.

In addition, the general corporate income tax rate in BC is among the lowest in North America and the G7 nations, and since 2001, BC’s small business income tax rate has been reduced by 44 percent. Additionally, BC’s GDP has slightly outperformed the rest of Canada’s since 2008, and fuel use has dropped by 16 percent.



The Cap and Trade System

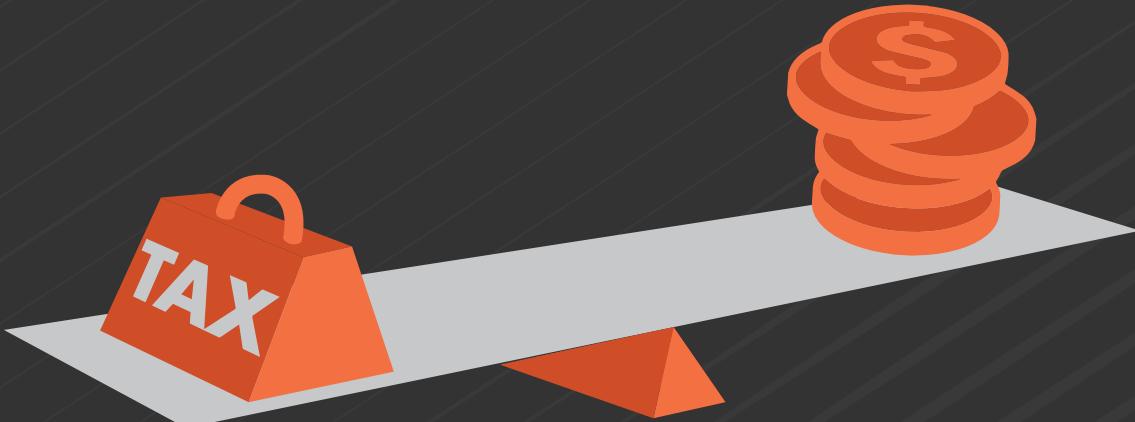
Alternately, in a cap and trade system, the government puts a limit on the level of allowable emissions from industry. It then issues permits to companies, specifying exactly how much carbon that company can burn. If a company wants to burn more than its share of carbon, it must buy – through an auction – extra permits from other companies that have burned less than their allocated amount. Quebec currently uses the cap and trade system, with Ontario set to start in 2017. Manitoba announced in December 2015 that it also plans to introduce a cap and trade program for 20 large emitters.

CARBON TAX VS. CAP AND TRADE



COST

For many in the industry, it can be costly to participate in a cap and trade system as it would require a significant up-front investment to partake in an auction and to set up the many required administrative processes. Alternately, a carbon tax is simply that – a tax – which is already included in costs, with no upfront capital required.



EASY TO IMPLEMENT

According to scientist and environmental activist David Suzuki, a carbon tax can be very simple to implement, as it can rely on existing administrative structures for taxing fuels. Cap and trade systems, on the other hand, tend to be much more complex, and much more time is required to develop the necessary regulations.



TRANSPARENCY

Another advantage of a carbon tax is that, in addition to it being easy to administer, it is also straightforward and simple to understand – making it fairer to taxpayers who can easily understand where their money is going. Under a carbon tax system, governments would be free from the burden of developing a bureaucracy to manage a cap and trade system, therefore freeing up time and resources to focus on other initiatives, and on programs to support low income Canadians who can be negatively impacted by carbon regimes. In addition, every dollar generated by the carbon tax is returned to British Columbians through income tax reductions, rebates for low-income earners, and up to \$200 for Northern and Rural Homeowners. (BC Ministry of Finance)



ENGAGEMENT WITH CANADIANS

A carbon tax system, as opposed to a cap and trade system, directly engages Canadians – the end consumers – to make a real change in their habits. A tax sends a clear message to consumers versus a cap and trade program where the additional costs are often buried.



RISK OF CORRUPTION

Unlike carbon tax systems which are a straightforward tax collection process, cap and trade systems have had many reported incidences of corruption. In 2014, *The Local* - the largest English-language news network in Europe, reported that prosecutors in Italy were investigating a \$1.4 billion carbon trading scam that funded terrorist groups. Environmentalist Annie Leonard, the Executive Director of Greenpeace, called cap and trade systems a "multi-trillion dollar carbon racket" that create "real incentives to cheat".



SUMMARY

The carbon tax system and the cap and trade system have similar objectives: both generate revenue, impose a compliance obligation, require monitoring, reporting and verification, and they both encourage a shift to a lower carbon economy and reduction of greenhouse gas emissions.

Though no one single measure will alone reach Canada's goal of reducing GHG emissions to 30 percent below 2005 levels by 2030, Mark Jaccard, professor of sustainable energy at BC's Simon Fraser University and one of Canada's most influential experts on energy economics and environmental policy, states that instituting a national carbon price is one of the best available options for reaching this goal.

If the goal is to reduce emissions in the most transparent, simple and cost-effective way, research shows that the carbon tax system is the system best able to reduce GHG emissions.



CIPMA

Climate Change Consultations for Newfoundland and Labrador

Submitted By
The Canadian Propane Association
September 2016



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Canadian Propane Association Submission: Climate Change Consultations for Newfoundland and Labrador

This submission discusses the Canadian Propane Association's (CPA) ideas and solutions for ways that propane and the propane industry can help Newfoundland and Labrador achieve their climate change goals. Our proposals are backed up with data and examples of real-life actions. They are more than just ideas, they are turn-key solutions that are available today, and will quickly cut emissions and support infrastructure and community resilience.

The CPA believes that propane can play a vital role by:

- Helping to lower emissions in our largest emitting sector – transportation – by utilizing low-emission vehicle technology that is available now;
- Strengthening infrastructure resiliency planning and risk management in relation to vulnerable public infrastructure;
- Acting as a reliable and portable back-up energy source to be used in conjunction with renewables; and
- Lowering emissions and improving health outcomes in rural and remote communities that use diesel or fuel oil.

For questions, clarifications and further input on this submission, please contact:

Jean-François Duguay
Regional Manager, Atlantic & Québec
Canadian Propane Association

E: jeanfrancoisduguay@propane.ca

P: 506-480-0275

M: 616-130 rue Albert Street, Ottawa, Ontario, K1P 5G4

Policy Solution – Auto Propane

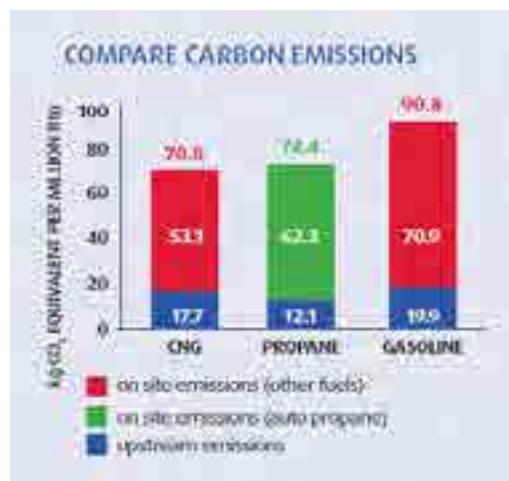
Low-emission auto propane vehicle technology, available here and now, can help Newfoundland and Labrador lower emissions in our largest emitting sector, transportation.

Propane is, by a significant margin, the most popular alternative automotive fuel in Canada, with an estimated fleet of up to 60,000 propane vehicles in use. It is a trusted automotive fuel worldwide, with over 25 million propane vehicles on the road globally. In countries like South Korea, Australia and Turkey, auto propane is a mainstream motor fuel.

Energy choice is a complex issue. Greenhouse gas emissions are just one of the many factors that decision-makers must consider when weighing their energy options; factors such as cost, performance, reliability, and safety also play a significant role. Auto propane has a favourable case to offer legislators and fleet operators in relation to all of these factors.

Quick Facts

- Auto propane vehicles have a lower carbon footprint than gasoline, with up to 26% less greenhouse gas (GHG) emissions, including approximately 13% less carbon dioxide (CO₂);
- Auto propane vehicles emit significantly fewer criteria air contaminants (air pollutants that cause smog, acid rain, and other health hazards) than gasoline and diesel;
- Auto propane vehicles emit negligible harmful toxic substances when compared to gasoline;
- Auto propane is non-toxic, lead-free and has extremely low levels of sulphur – a contributor to acid rain;
- If released into the atmosphere, propane will dissipate into the air and have no lasting impact on water, soil or the atmosphere. This is unlike natural gas, which acts as a particularly potent GHG if released into the atmosphere – it is accountable for significantly higher GHGs when upstream and fugitive emissions are taken into account.



Specific Usage Areas

The following vehicle types have been particularly successful in integrating propane as a fuel, although this list is not exhaustive:

- School, transit and shuttle buses
- Limousines and taxis
- Trucks – light to medium duty
- High-mileage vehicles operating as part of a return-to-base fleet (e.g., police, couriers and garbage collection)
- Lawn mowers and other landscaping vehicles

Auto Propane Technology

Advanced technology is available now to seamlessly integrate auto propane into existing and future fleets. It includes:

- Propane injection systems that are compatible with existing Original Equipment Manufacturer (OEM) vehicles and their onboard computers;
- Propane tanks that are strong, safe and significantly more puncture resistant than gasoline tanks. They occupy minimal space in vehicle trunks, truck beds or under chassis; and
- Options for dual fuel (gas/propane, diesel/propane) or propane-only systems, with similar power output, range and acceleration to traditional fuel vehicles.

Low-Cost Infrastructure and Vehicle Conversions

Extensive propane vehicle conversion and refuelling infrastructure already exists in Atlantic Canada. The cost of adding more filling stations is minimal, particularly when compared to fuelling infrastructure for other alternative fuels, such as compressed natural gas (CNG).

One CNG station can cost over \$1 million to build, while an auto propane station ranges between \$40,000 and \$80,000. The cost of converting an OEM vehicle to auto propane ranges between \$5,000 and \$8,000. The cost of converting the same vehicle to CNG is typically double that amount.

Compared to gasoline, both auto propane and CNG vehicles reduce harmful emissions by more than 20%. However, per dollar spent, more auto propane vehicles can be deployed, thereby offsetting more greenhouse gas emissions.

Government Opportunity

With a fleet of approximately 3,300 vehicles, the Newfoundland and Labrador provincial government has a unique opportunity to significantly reduce operating costs and decrease its environmental impact by using propane in its fleets:

- Propane is a cost-effective option for fleets; over the last 10 years it has averaged almost 40% cheaper than both gasoline and diesel. Further savings are available when fleets purchase fuel in high volumes.
- The cost of a propane vehicle conversion is less than half the cost of a CNG conversion. Significant savings can also be realized with propane fuelling infrastructure, which can be more than 20 times less the cost of CNG infrastructure.
- Propane burns cleaner, experiences significantly less carbon build-up, and has the potential for increased engine life when compared to gasoline.

Private Fleets

The advantages of propane for government fleets also apply to the private sector. Given the transportation sector is second largest emitter of GHGs in Newfoundland and Labrador, the government should also encourage private fleets to make the transition to a low carbon fuel, such as propane.

Overcoming Obstacles and Encouraging the Change

Government support is necessary to help lower barriers and increase the uptake of low-emission fuels, including propane. Key approaches the government should consider include:

- Reducing regulatory impediments to tested and safe new technologies;
- Allowing propane vehicle drivers to fill their own vehicles with safe dispensing technologies, as is common practice around the world;
- Treating all vehicles fairly in subsidy programs, rather than focusing on and promoting specific vehicle classes or fuel types;
- Providing in-depth information on all vehicle technologies and GHG emissions to fleet operators and letting the market decide (within a carbon-priced model that encourages use of low-emission technologies);
- Utilizing propane vehicles in government and other public service fleets; and
- Encouraging the use of propane in private fleets

Auto Propane Case Studies

- **Airways Transit**, the largest provider of on demand, shared ride airport ground transportation in Canada, operates on a fleet that is 100% fuelled by propane. Compared to the use of gasoline-fuelled fleet vehicles, the use of propane has resulted in a reduction of 588 tonnes of GHG emissions per year.
- **United Parcel Service (UPS)** is a private-sector company that has turned to propane for its large vehicle fleet. UPS currently has more than 600 propane-powered vehicles in Canada, greatly reducing emissions and costs. Each propane vehicle realizes a 35% improvement in emissions when compared to conventional gas engines.
- In the early 80's, **London (Ontario) Police** converted their fleet to propane, and still use it today. Over a 10-year period, they tracked results and found: over \$2 million in fuel cost savings, significantly reduced emissions – approximately 4 tonnes of CO₂ per vehicle per year, enhanced engine life, increased value on the resale market, and no incidents reported where propane created a health concern.
- **Southland Transportation** recently added another 101 Blue Bird Propane Vision buses to its school bus fleet, which services the Calgary and Medicine Hat school boards. The buses create 60% less carbon monoxide, 12% less CO₂, 20% less nitrogen oxide and up to 26% less GHGs than gasoline. In Ontario, propane school buses are being used in Hamilton and will soon be introduced in Parry Sound.

Southland's buses provide clean air, a quiet engine and easy fuelling. They immediately start in temperatures of minus 30 degrees Celsius and lower, without the use of oil pan heaters or block heaters.

- In the United States, the use of propane buses was initially stimulated by government programs, but the desire of school boards to "go green" and save money has created ongoing demand. These same opportunities exist in Canada.

School Bus (Type C) GHG Emissions

FUEL SOURCE	GHG Index	Energy Use (MMBTU per unit per year)	Annual Life Cycle GHG Emissions per unit (kg CO ₂ equivalent per unit per year)	
			upstream	total
Compressed natural gas Type C bus	0.93	464	1,100	37,100 total
Propane Type C bus	1.00	454	8,650	40,100 total
Diesel Type C bus	1.06	422	9,330	42,300 total
Gasoline Type C bus	1.22	505	10,330	49,000 total

Policy Solutions – Resiliency Planning, Supporting Renewables and Remote Community Solutions

Propane generation can assist in strengthening infrastructure resiliency planning and risk management for vulnerable public infrastructure.

A predicted increase in severe weather events, including storms and flooding, will make it crucial for vulnerable public infrastructure to have reliable and adequate back-up power generation. Propane generators already perform this role for many institutions, including in hospitals and emergency services facilities. There is significant scope to increase the use of propane in back-up generation, while maintaining a low-emission focus.

The propane industry services every corner of Newfoundland and Labrador, and propane as a fuel is easy and safe to store and transport. The back-up generation and propane technology exists to ensure adequate power supply for vulnerable infrastructure in every corner of the province and through any weather-related situation.

Propane can act as a reliable and portable back-up energy source to be used in conjunction with renewables.

Renewable generation technologies, particularly solar and wind, have limitations when tasked with providing 24/7 supply to households, communities and businesses. To provide consumer confidence in renewables, propane offers reliable and accessible standby generation, without high transport and infrastructure costs.

With assistance from the propane industry, aerospace and defence contractor Lockheed Martin Canada is currently developing and testing solar hybrid renewable energy systems, with propane used as a back-up energy source. These systems have already been implemented in some northern communities.

Conversion to propane heating and generation can lower emissions and improve health outcomes in rural and remote communities.

Many rural and remote 'off-grid' communities across Canada that currently use fuel oil or diesel for energy are looking for ways to decrease carbon emissions and health impacting pollutants at a reasonable cost – this presents an excellent opportunity for the government to support the use of propane as a clean and cost-effective solution.

Moving to propane will also reduce the possibility of environmental spills associated with the leaking of liquid fuels. If accidentally released, propane dissipates into the air and has no lasting impact on water, soil or the atmosphere. In Manitoba, the Canadian Propane Association is engaged in discussions on this topic with the Department of Innovation, Energy and Mines. The opportunity also exists in Newfoundland and Labrador.

Propane is used extensively in the mining, gas and oil, pulp and paper, hydro, construction, transportation and agriculture sectors, and can also be the solution for providing reliable energy to off-grid communities (potentially in conjunction with renewables – as discussed above).

Conclusion

The CPA believes that changes brought about by well-planned climate change policies provide the opportunity for Newfoundland and Labrador and the propane industry to collectively achieve positive outcomes, and to create sustainable value for society. Propane, as a low-emitting energy source, provides numerous significant and immediate opportunities to lower Newfoundland and Labrador GHG emissions, prepare for climatic changes and reduce costs.

To achieve these goals, the CPA recommends that the Newfoundland and Labrador government use existing propane technologies and expertise to:

- Lower emissions in the transportation sector through encouraging greater uptake of auto propane;
- Strengthen resiliency planning by using propane as a back-up fuel for public infrastructure;
- Encourage the use of propane generation as a companion energy to renewables such as wind, solar and biomass; and
- Improve emissions and health outcomes in rural and remote communities through the use of propane instead of diesel and fuel oil.

The propane industry supports the economy and government environmental initiatives in Newfoundland and Labrador. Every year the propane industry invests many millions of its own dollars into improved infrastructure and technology. The Canadian propane industry strives to continue to contribute to the economy and provide an affordable, safe and clean energy source to Newfoundlanders.

About the Canadian Propane Association

The Canadian Propane Association is the national voice of the Canadian propane industry, a multi-billion dollar industry that impacts the livelihood of tens of thousands of Canadians. The Association has over 400 members and represents the full range of participants in Canada's propane industry, including:

- producers
- wholesalers
- retailers
- transporters
- manufacturers of appliances, cylinders and equipment
- associated services

ST. JOHN'S AREA OFFICE

15 Memorial Plaza, Suite 102, St. John's, NL A1A 0J4 Tel: (709) 753-3732 Fax: (709) 753-2313 / cupe-nl / scfp.ca

MEMO

TO: Office of Climate Change and Energy Efficiency
FROM: Wayne Lucas, President CUPE NL
DATE: September 16, 2016
RE: Suggested Points for NL Climate Change Consultation

On behalf of CUPE Newfoundland and Labrador and its 6000 members we appreciate the opportunity to offer recommendations of the Newfoundland and Labrador Government as they consider options in their deliberations regarding climate change.

Wayne Lucas / W.L.
WAYNE LUCAS
President,
CUPE NL
W.L. *cupe491*

Attachments:

Suggested Points for the Newfoundland and Labrador Climate Change Consultation

What should the Government of Newfoundland and Labrador do to support clean economic growth?

- Support and provide incentives to industries that reduce greenhouse gas emissions and/or industries that are not as carbon intensive (e.g., in public sector renewable energy generation and transmission (i.e., wind, solar, hydro); green building programs and building retrofit programs; localized and sustainable agriculture and forestry; enhanced public transit; a return of passenger rail to the province and other industries). Additionally, the government of Newfoundland and Labrador can assist existing industries – especially in the short term – to determine how they can be made greener and cleaner to lower the environmental impact of these forms of work. This is a particularly crucial point for CUPE. Numerous CUPE jobs are already low-carbon, but we can also not change all jobs to clean tech overnight. Current, existing industries must therefore be made more sustainable via a host of environmental initiatives (workplace environmental auditing; conservation programs; workplace environmental stewards and committees and other steps).
- Implement Just Transition programs to support, retrain and help workers who will be affected by industrial transformation to cleaner and greener jobs. Just Transition programs can prepare and help workers find employment in the new economy.

What steps do you think need to be taken to better adapt to climate change?

- Investments must be made to upgrade municipal storm water systems to ensure they can accommodate projected increases in the intensity of rain events and the overall projected increases in precipitation expected for NF & L. Alternate methods of curtailing storm water (e.g., green roofs, water permeable paving and landscaping, urban forestry and other practices) should be considered.
- Likewise, roads and other infrastructure (e.g., wharfs) must be assessed and upgraded to ensure their resilience, especially in coastal areas that will be prone to increased storm surges and possible wash-outs from the increased severity of rain events and subsequent flooding. Plans must be put in place to reduce the risk of coastal flooding caused by climate change.
- Coastal erosion must be closely assessed and used as a guide to inform the building and maintenance of all forms of infrastructure.
- Measures must be taken to prevent salt water intrusion (an effect of rising seas) into fresh water supplies and onto agricultural lands where it can have a negative impact on water and soil.
- Closely monitor and assess climate change impacts on marine life and subsequent impacts on fisheries. Monitor and be prepared to react to the presence of invasive species that will proliferate more quickly because of climate change.

- Put in place strategies to prevent and react to the likelihood of increased incidence of forest fires, particularly in Labrador.
- Assess impacts on agriculture, especially how warmer temperatures might extend growing seasons and how changes to precipitation patterns might also affect growing seasons.
- Put in place plans and strategies to deal with invasive species that could, for example, have negative impacts on forestry.
- Assess how milder winters will affect sea and inland ice and what impacts this could have, such as affecting some remote communities that depend on ice to access traditional foods and for transportation.

How should the Provincial Government demonstrate leadership on climate change?

- Put a price on carbon that does not negatively affect low income earners in the province. Whatever form this price takes, polluters must pay and be encouraged to change their practices to make them less carbon-intensive. Likewise, revenue generated by pricing carbon in NF and L must be used to help develop a greener economy in the province.
- Put sustainability at the centre of government policy as an integral element of all government programs and policies.
- Promote public sector solutions to climate change.
- Implement operational changes within government (e.g., greening of all government practices, promoting energy conservation in government practices, curtailing government travel, supporting electric vehicles, and other steps).
- Engage with Aboriginal communities in the province to ensure these communities are consulted, listened to, and made part of the process to adapt to climate change and implement climate change solutions.
- Greatly expand municipal waste reduction and diversion programs, for example curb-side recycling and composting.
- Oppose subsidies to the oil and gas sectors, which exacerbate dependence on fossil fuel derived sources of energy.
- Oppose fracking and any other new forms of fossil fuel extraction.

Is there anything else you would like to add on the development of a climate change strategy for Newfoundland and Labrador?

- The points above cover all our suggestions.



Central Newfoundland Waste Management
P. O. Box 254, Norris Arm, NL, A0G 3M0
Phone: 709 653 2900
Fax: 709 653 2920
Web: www.cnwmc.com E-mail: Info@cnwmc.com

July 21, 2016

Office of Climate Change and energy Efficiency
5th Floor, West Block, Confederation Building
P.O. Box 8700
St. John's, NL
A1B 4J6

Attention: Minister Responsible for the Office of Climate Change and Energy Efficiency

Dear Minister Trinipper:

In follow up to the climate change consultation, I'd like to submit this on behalf of Central Regional Service Board.

In your presentation you identified that eight percent of Green House Gas Emission for 2014 came from waste management. Some statistics will show as much as twenty percent is from waste management, demonstrating that waste management is a major contributor of greenhouse gas because of methane gas coming from landfills. Methane gas or CH₄ has twenty-five times greater impact than CO₂.

Knowing this, one can see where the Province can make a significant contribution to climate change if they were to accelerate their waste management strategy.

To control methane gas, the Province has to close the existing dump sites and bring the waste to a central location with the proper landfill that allows the methane to be captured and disposed of, either during burning or other energy use. Without the waste being centralized it would not be cost effective to control the methane or dispose of it properly. Therefore, all regions of the Province should be disposing of their waste in a manner to control methane gas.

To further reduce methane gas, the Province should accelerate the construction of compost facilities that would remove the organic waste from landfills that cause the bulk of methane gas.

With all regions of the Province into a modern day waste management system, which includes compost facilities, the Province could significantly reduce Green House Gasses associated with waste management.

Regards,



Allan Scott
Chair
Central Regional Services Board

Cc: Minister Joyce, Minister of Municipal Affairs

City of St. John's

Bike St. John's Task Force

Comments on NL Climate Change Strategy

Specific Responses to Climate Change Consultations – Discussion Guide 2016:

Discussion Topic 1: Growing the Green Economy

Transportation: according to the Office of Climate Change Discussion Guide, 34% of carbon dioxide emissions in NL come from transportation. While the guide mentions some challenges due to the rural nature of the province it fails to acknowledge the opportunities provided by the urban density of St. John's and surrounding communities. Action on transportation issues can contribute to a climate change strategy in several ways:

- a) Support for walkability through infrastructure investment in quality trails and sidewalks and planning policy will lead to more vibrant and economically viable communities. Walking as a mode of transportation is resilient to climate change and reduces the demand for vehicle travel. A reduction in vehicle travel demand leads to fewer emissions, less highway infrastructure, and reduced need for parking or other impermeable surfaces.
- b) Support for bikeability through infrastructure investment and cycling promotion¹. Research shows that in cities with good cycling infrastructure, such as designated cycling corridors and lanes, the percentage of trips people take by bicycle is significantly higher than where there is limited infrastructure. By increasing the percentage of trips made by bike we gain the benefits of reduced vehicle demand outlined above. Cycling also improves health outcomes² of the population which leads to healthcare savings. It is also the beneficiary of a virtuous cycle where an increase in cycling leads to improved safety on the roads which in turns leads to increased cycling. Further, several studies³ have shown that cycling contributes to greater economic activity at the local level than travel by personal vehicle. Consideration of cycling should also allow for e-bike usage as a viable solution to our challenging topography.

The City of St. John's has demonstrated its commitment to address climate change through its Bike St. John's initiative. The City has developed and implemented Phase 1 of a Cycling Master Plan for the City to encourage both the reduction of GHGs and other pollutants and encourage healthy lifestyles. Cycling trails developed as part of the Cycling Master Plan are a valuable asset for the City. There is still much to be done in this regard and the City recently appointed the Bike St. John's Task Force to recommend next steps for cycling.

¹ For example: <https://www.cyclescheme.co.uk/>

² [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)61714-1/abstract?cc=y=](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61714-1/abstract?cc=y=)

³ <http://www.bikebiz.com/news/read/dft-discovers-cycling-s-benefit-to-cost-ratio-is-off-the-scale/017088>

- c) Support for public transit by expanding service levels, services areas, and promoting investment in more efficient vehicle types. With investment the Metrobus system may be able to support a regional service and could significantly reduce personal vehicle demand.
- d) Support for a more fuel efficient vehicle fleet through the use of alternative fuels (such as electric vehicles) and mandated emissions standards. Policies that encourage adoption of more efficient vehicles can drastically reduce overall GHG emissions.
- e) Support for new vehicle technologies such as autonomous vehicles, connected vehicles, and mobility as a service schemes through policies that encourage adoption. These promise increased efficiency of our transportation network and vehicle fleet.

Discussion Topic 2: Adapting to Climate Change

The transportation system in urban should be designed and built to accommodate a resilient multi modal system that encourages active transportation year round. Planning for the system should consider the implications of new transportation technologies such as autonomous vehicles and alternative fuel sources. These issues need to proactively account for the impacts that climate change will have on our province.

Discussion Topic 3: Government Leadership

The City of St. John's is prepared to lead by example within its own jurisdiction and within its legislated responsibilities. A willingness to undertake projects related to GHG reduction has been demonstrated previously.

Major federal/provincial funding mechanisms need to support the development of more sustainable communities. This should include support to for “walkable” and “bikeable” communities, urban forests (perhaps as a carbon storage mechanism) and transportation technologies.

October 5, 2016

Honourable Perry Trimper
Minister of Environment and Conservation
Confederation Building
PO Box 8700
St. John's, NL A1B 4J6

Dear Minister Trimper:

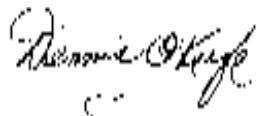
Re: Climate Change Consultations

Enclosed please find the City's comments on the Province's proposed Climate Change Strategy.

We would like to acknowledge the assistance of the City's Environmental Advisory Committee (EAC), and in particular, Committee Chair John Drover, P.Eng., in the preparation of the City's reply. The EAC is comprised of volunteer members who represent industry, professionals and members of the public who have an interest and expertise in environmental issues.

The City of St. John's recognizes that we all must participate if we are to address issues related to climate change in a coordinated and meaningful way. To that end, we are available to assist in the development and implementation of appropriate initiatives.

Sincerely yours,



Dennis O'Keefe
Mayor

cc: **Members of Council**
Kevin Breen, City Manager
Jason Sinyard, Deputy City Manager – Planning, Development & Engineering
Environmental Advisory Committee

ST. JOHN'S

Comments on NL Climate Change Strategy

Prepared with the assistance of John T. Drower, P.Eng., Chairperson, City of St. John's Environmental Advisory Committee

General Statement

Comments are based upon a review of the Province's Discussion Guide and on Environmental Advisory Committee participation in public consultations.

The City of St. John's supports the development of a Climate Change Strategy that both addresses climate change and encourages the development of clean and green economic opportunities.

The City of St. John's believes that there needs to be a coordinated approach as between all levels of government in the development of strategies to address climate change.

The City of St. John's has demonstrated its commitment to addressing climate change with its recycling plan, and with the support of the Green Fund, it has:

- Installed a methane capture and flaring system at the Robin Hood Bay Regional Waste Management Facility ("RHB"). This system will reduce greenhouse gases by the equivalent of approximately 50,000 tonnes of carbon dioxide per year and the methane captured has the potential to be used to generate electricity.
- developed and implemented the Cycling Master Plan;
- installed geothermal heating systems in the new St. John's Transportation Commission building and the new Paul Reynolds Centre building;
- installed LED lighting at all City facilities;
- installed energy efficient windows in the John J. Murphy building renovation; and
- through the St. John's Transportation Commission, operator of Metrobus, invested in hybrid technology and looked at ways to increase ridership.

The City of St. John's collects rainfall data so as to enable it to better identify areas susceptible to flooding, design flood control systems, and adapt to increased storm potential.

The City of St. John's, as operator of RHB, provides a modern cost-effective waste management and recycling facility that processes almost 50% of the Province's waste. The City is committed to maintaining the high standards at RHB and to finding ways to improve such operations.

The City of St. John's is an active participant in efforts to reduce greenhouse gases and looks forward to partnering with other municipalities, the Province and the Federal Government on future initiatives.

Responses to Climate Change Consultations

Topic 1 -- Growing the Green Economy

The City of St. John's recognizes the need to grow the economy, however, economic growth should not be the primary focus of a climate change strategy. The need to address climate change stands on its own merits.

The City is interested in the following initiatives:

- **Renewable Energy** – The City recognizes the potential for power generation from methane recovery at RHB. Consideration should be given to removing the barriers to such development. Additionally, alternatives to fossil fuels, such as solar energy and electric vehicles, may be encouraged through the use of incentive mechanisms.
- **Modern Waste Management** – As noted above, RHB processes almost 50% of the Province's waste, has a comprehensive recycling plan, and the City encourages residential composting.
- **Sustainable Forestry** – The City recognizes the importance of urban forests and the potential for carbon offset programs, particularly in relation to any greenhouse gas reduction program.
- **Transportation** – The City recognizes the importance of a responsive and fuel efficient public transit system and of other modes of transportation such as cycling and electric vehicles and the development of quality trails and walkways.

Topic 2 – Adapting to Climate Change

The City of St. John's acknowledges the need to prepare for and adapt to the impacts of climate change, particularly in relation to public infrastructure.

Flood forecasting must be a provincial responsibility with up-to-date information based on internationally accepted models being available to municipalities. The City will assist in this process as necessary.

Municipal legislation should enable municipalities to be responsive in responding to climate change, particularly in relation to development control.

Topic 3 Government Leadership

The City of St. John's continues to lead by example within its legislated mandate. The Province must continue to show leadership in its own operations and ensure municipalities have the tools and support to deliver appropriate programs.

The Federal/Provincial Green Fund should be renewed. Furthermore, the setting of reduction deadlines, particularly those with long time lines, are generally useless unless mechanisms are put in place to provide for the achievement of such goals.

Additional Comments

1. The City encourages the development of federal/provincial funding mechanisms which support the development of more sustainable communities. Consideration should be given to alternative transportation, including more "walkable" and "bikeable" community planning, urban forests, and alternative/adaptive transportation technologies.
2. Initiatives and policies "already on the books" which offer benefits should be implemented. There is no need to delay implementation of that which can do good while we seek perfection.
3. The provincial Climate Change Action Plans of 2005 and 2011 should be renewed.

Collins, Jerry

Subject: FW: Carbon pricing in Canada
Attachments: Carbon Pricing Submission.pdf; How to Adopt a Winning Carbon Price.pdf; Inside North America's Largest Carbon Market.pdf

From: Merran Smith <merran@cleanenergycanada.org>
Sent: Tuesday, July 5, 2016 3:35 AM
To: Trimper, Perry; Climate Change
Subject: Carbon pricing in Canada

Dear Minister,

We are pleased that you and your government are engaged in the discussion of Carbon Pricing Mechanisms as part of the development of a pan-Canadian climate plan. We hope that these documents will be helpful to you and your officials in this effort.

Attached you will find:

- a short carbon pricing briefing note that we submitted during the consultation process for the development of a pan-Canadian climate plan
- reports we released in 2015 drawing policy and political lessons from the development of successful carbon pricing systems in BC and Quebec

We wish you all the best as you consider next steps to address climate change and grow Newfoundland and Labrador's economy. Please contact us if we can be of further assistance.

We will mail printed copies of these documents to you this week.

Best regards,



Merran Smith
Executive Director & Fellow, Simon Fraser University
T 604 947 2200 | C 604 816 5636



Clare Demerse
Federal Policy Advisor
C 613 762 7449



For a weekly summary of news, analysis – check out our [Clean Energy Review](#)

SUBMISSION

FOCUS: Carbon Pricing in Canada

Suite 721
602 West Hastings Street
Vancouver, BC V6B 1P2

KEY POINTS

- A carbon price is a fair, efficient and effective approach to reducing emissions. A well-designed carbon price also spurs clean energy innovation and deployment. Thus, carbon pricing is an essential element of any effective pan-Canadian climate plan.
- Every jurisdiction in Canada should price greenhouse gas pollution. However, we support a flexible approach that allows provinces and territories to craft the approaches that work best for them. (Over time, it makes sense to develop linkages between systems or evolve into a national system, as broader systems usually reduce emissions at lower costs.)
- The federal government should ensure a minimum price on carbon in every Canadian jurisdiction via a regulatory or legislated requirement. Having a price on carbon in every jurisdiction in Canada would contribute to meeting or beating Canada's climate targets and make the carbon pricing system fairer and more effective.
- A national minimum price should:
 - cover the vast majority of emissions
 - quickly reach a level of \$30/tonne (aligned with B.C.'s current price and Alberta's scheduled 2018 price), and
 - increase over time thereafter according to a clear schedule.

LESSONS FROM SUCCESSFUL CANADIAN CARBON PRICING SYSTEMS

Clean Energy Canada has published assessments of the development of two of Canada's successful carbon pricing policies: B.C.'s carbon tax and Quebec's cap and trade system. In both cases, we drew lessons about how to adopt a successful carbon pricing system from candid, confidential interviews with the architects of the policies in question: politicians, officials, and expert stakeholders.

Some of the lessons learned from B.C. and Quebec's experience are very pertinent to the current federal / provincial / territorial policy development process. Those include:

- A carbon price and a thriving economy can co-exist.
- You need strong political leadership to get a carbon price in place.
- Keep it simple: design a policy that's easy to administer thanks to broad coverage and minimal exemptions.
- Start with a low price, but commit to a schedule of price increases right from the outset. Stick to that schedule.
- A carbon price can't do everything: it needs to be one component of a full suite of climate policies.
- Partner with other jurisdictions to create new opportunities and lower the "cost" of participation.

- Invest in education. Develop in-house expertise and learn from others.
- Commit to openness, fairness, and transparency.
- Address valid competitiveness concerns with a “home grown” (jurisdiction-specific) approach.
- Prepare for motivated, vocal, and not necessarily fact-based opposition. You’ll need active, engaged supporters and targeted communications strategies to counter the inevitable critics.
- Expect a cleaner environment, an enhanced reputation, and a thriving clean technology sector.

The full reports—[How to Adopt a Winning Carbon Price](#) and [Inside North America’s Largest Carbon Market](#)—are included with this submission for a more detailed review of their findings.

Thank you for the opportunity to provide these recommendations.

CONTACTS

Merran Smith
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HOW to ADOPT a WINNING CARBON PRICE

Top Ten Takeaways from Interviews with the
Architects of British Columbia's Carbon Tax

Sources

All of our interviews were conducted confidentially, and we assured interviewees that their specific comments would not be attributed to them by name. However, some participants opted to put some or all of their comments “on the record.” Twelve of our interviews were conducted by phone and one by email.

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Introduction

British Columbia's carbon tax was North America's first economy-wide carbon pricing policy when it was introduced in 2008. It remains the continent's strongest carbon-pricing initiative today, and has been recognized the world over for the effectiveness of its design. Six years after the policy took effect, the empirical evidence of its success is accumulating. (For more information about the policy's design and track record, please see "A Carbon Tax Primer," on page 4.)

Over the fall of 2014, Clean Energy Canada conducted a series of confidential, candid interviews with the policy's architects, and with expert observers who watched it play out. We spoke to senior officials and elected representatives working in British Columbia's government at the time, as well as to experts from the business, academic, municipal government, and environmental communities—a baker's dozen of people intimately involved in shaping, or responding to, this groundbreaking policy.

The interviews focused on a few key questions that dug into the politics of adopting carbon taxes:

- What conditions allowed for the introduction of a carbon tax in British Columbia?
- What kind of response might governments expect if they introduce this kind of policy, and how can governments ensure that response is as favourable as possible?
- What are the key policy-design decisions that governments would need to make? What are pros and cons of those choices?

We've distilled our findings from these interviews down to 10 key takeaways. Although they are, of course, focused on carbon taxes, many of them are also relevant to governments considering a cap and trade approach to carbon pricing.

The key findings from our interviews are summarized on the next page and described in more detail in the pages that follow. The questions posed to interviewees are included in Appendix A.

Top 10 Takeaways

Considering a carbon price? Here's what you really need to know

1. A carbon tax and a thriving economy can co-exist.

2. You need strong political leadership to get a carbon tax in place. (Public concern about climate disruption helps, too.)

3. Keep it simple: design a policy that's easy to administer thanks to broad coverage and minimal exemptions.

4. Start with a low price.

5. Commit from day one to a schedule of price increases, and stick with it.



6. Revenue neutrality helps address private-sector concerns and makes the policy more durable.

7. On the other hand, revenue neutrality doesn't get you very far with voters.

8. A carbon tax can't do everything; it needs to be just one component of a full suite of climate policies.

9. Prepare for motivated, vocal – and not necessarily fact-based – opposition. You'll need active, engaged supporters and targeted communications strategies to counter the critics.

10. Expect a cleaner environment, an enhanced reputation, and a thriving clean technology sector.

A Carbon Tax Primer

The mechanics and impacts of British Columbia's carbon tax

In 2008, the government of British Columbia announced a bold new climate policy: North America's first revenue-neutral tax on carbon pollution.

How does British Columbia look today, nearly seven years after that announcement? The provincial economy enjoys stronger economic performance than the Canadian average.¹ Carbon pollution is down,² and so is per capita fuel consumption.³ The carbon tax now funds more than a billion dollars a year in other tax cuts,⁴ resulting in one of Canada's lowest corporate tax rates.⁵ Meanwhile, the party that introduced the tax won both of the two elections held since the policy took effect.

How does it work?

- The tax started at \$10⁶ per metric tonne of carbon dioxide-equivalent in 2008 and ramped up by \$5 each year to reach \$30 a tonne by 2012. In 2008, that meant a \$0.02 / litre (\$0.09 / gallon) increase in the price of gasoline.⁷ By 2012, the tax increased gas prices by \$0.07 per litre (\$0.25 / gallon).
- The tax covers nearly all emissions from burning fossil fuels in B.C. — more than 70 percent of the province's carbon pollution.⁸
- The tax does not raise new revenues for the province. Instead, the government mandated that every dollar of carbon tax revenue collected must be returned to British Columbia's taxpayers and businesses through tax cuts. (In practice, British Columbia's tax cuts have actually more than cancelled out the revenues collected from the carbon tax, making it slightly "revenue negative" for the government.)
- British Columbia's government built a targeted tax credit for low-income citizens into the policy design, in order to shield them from potential adverse impacts of the carbon tax.

While the province has made some adjustments to its carbon tax over the years, each of the core policy elements outlined here remains in place today.

Who pays, and how?

British Columbia decided to piggyback the administration of the carbon tax on top of an existing fuel tax paid by fuel wholesalers (fuel importers or domestic producers). Wholesalers pass the tax on to retailers, who pass it on to consumers.⁹ This approach means that the province only collects the tax directly from a limited number of companies. Regular taxpayers and most businesses don't have any new forms to fill out.

What does it cover?

The government levies the tax based on the carbon content of fossil fuels (coal, oil and natural gas) burned in British Columbia. The policy covers nearly three-quarters of the province's total carbon pollution.

Some emission sources are not covered by the tax. These include:

- Emissions that will occur outside British Columbia: for example, emissions from inter-jurisdictional aviation and shipping or from fuels exported from the province.
- Emissions that were deemed too difficult to measure accurately, such as methane emissions from landfills.
- Non-combustion emissions, like those that result from chemical reactions in certain industrial processes.

How does revenue neutrality work?

- In 2012, after five years of scheduled increases, the tax reached a rate of \$30 a tonne.
- At that tax rate, British Columbia's government collects more than a billion dollars a year in carbon taxes.
- Every year, the government estimates its expected carbon tax revenues for the next three years, and enacts an equal or greater package of tax cuts.
- In fact, by law, the finance minister is required to take a 15 percent pay cut if the tax is not revenue-neutral for the government.¹⁰

Some tax cuts have been very broad — reductions in the large and small business tax rates, reductions in income tax rates — while others are more targeted or directly linked to climate policy. Some examples of the latter tax cuts include:

- A climate action tax credit for low-income British Columbians.
- An annual \$200 benefit for northern and rural homeowners.
- Training tax credits for individuals and businesses.
- Tax credits for the digital media sector and the province's film sector.
- Tax credits for children's fitness and arts programs.¹¹

What was the public response?

- Polling shows that a majority of British Columbians (54 percent) supported the tax when it was introduced, and a majority (58 percent) continue to support it today.
- In 2012, public support for the tax reached a high of 64 percent popular support just as the tax reached its maximum level.¹²



¹ <http://www.sustainableprosperity.ca/dl1026>

² <http://www2.gov.bc.ca/gov/DownloadAsset?assetId=A3C8EBF5DBAC4EA88CE5CA2A238F83C7&filename=2014-progress-to-targets.pdf>

³ <http://www.sustainableprosperity.ca/dl1026&display>

⁴ http://bcbudget.gov.bc.ca/2014/bfp/2014_Budget_Fiscal_Plan.pdf

⁵ <http://www.cra-arc.gc.ca/tx/bsnss/tpcs/cprtns/rts-eng.html>

⁶ All currency figures are in Canadian dollars.

⁷ http://www.bcbudget.gov.bc.ca/2008/bfp/2008_Budget_Fiscal_Plan.pdf

⁸ <http://www.fin.gov.bc.ca/tbs/tp/climate/A4.htm> and <http://www.fin.gov.bc.ca/tbs/tp/climate/A6.htm>

⁹ http://www.bcbudget.gov.bc.ca/2008/bfp/2008_Budget_Fiscal_Plan.pdf

¹⁰ http://www.bclaws.ca/Recon/document/ID/freeside/00_08040_01#section5

¹¹ http://www.bcbudget.gov.bc.ca/2012/bfp/2012_Budget_Fiscal_Plan.pdf, http://www.bcbudget.gov.bc.ca/2013/bfp/2013_Budget_Fiscal_Plan.pdf and http://bcbudget.gov.bc.ca/2014/bfp/2014_Budget_Fiscal_Plan.pdf.

¹² <http://www.environicsinstitute.org/uploads/news/focus%20canada%2014%20-%20public%20opinion%20on%20climate%20change%20-%20final%20report%20-%20english%20-%20november%2025-2014.pdf>

1. A carbon tax and a thriving economy can co-exist.

The empirical evidence,¹³ ably tracked by researchers at the University of Ottawa's Sustainable Prosperity think tank, is that British Columbia's economy has slightly outperformed the rest of Canada's since the carbon tax came into effect in 2008.

Our interviewees had exactly the same perspective: to a person, they were confident that the carbon tax has not harmed the province's economy as a whole. Several pointed out that the carbon tax's impact was bound to be modest; on its own, it's just a small part of the broader economic landscape within which the province's businesses operate. Other factors — including currency exchange rates, other tax rates, interest rates, the province's low electricity prices, and the economic performance of the United States — matter far more to a small open economy like British Columbia's than a \$30 per tonne carbon tax.

Some interviewees noted that British Columbia's cuts to corporate income taxes — many of which are paid for with carbon tax revenues — have helped attract businesses to the province.

While our interviewees were confident that the carbon tax has a neutral to modestly positive impact on British Columbia's economy as a whole, many pointed out that the impacts vary from sector to sector. For clean technology or the service sector, the carbon tax shift is often a net positive. For energy-intensive industries, the cost of the carbon tax — reflected in higher prices for fossil fuel inputs — can be higher than the savings they see from British Columbia's corporate tax cuts.



Most participants also agreed on another economic conclusion: only one sub-sector of British Columbia's economy lost market share as a result of the carbon tax. The province's cement sector, which consists of two companies,¹⁴ uses a huge amount of fossil fuel energy to produce its products. The sector also competes with U.S. businesses, just over the border, that don't yet pay a price for carbon pollution. The cement sector has proposed policy solutions to mitigate the impact of the tax¹⁵; to date, the province has yet to modify its tax policy as the cement sector has recommended.

Even in this specific case, however, two interviewees noted that the tax is just one of many factors influencing the cement sector's performance.

¹³ <http://www.sustainableprosperity.ca/dl1026&display>

¹⁴ <http://www.cement.ca/en/News-Releases/Cement-Industry-Extremely-Disappointed-by-B-C-Government-s-Lack-of-Action-to-Address-Carbon-Tax-Issues-Putting-Cement-Jobs-at-Risk.html>

¹⁵ <http://www.cement.ca/en/Newsroom/CAC-President-and-CEO-addresses-BC-Select-Standing-Committee-on-Finance-and-Government.html>

In their own words

“The overall impact of this, given where we’re at today, has been modest. I would not want to imply that the carbon tax has had a major impact on the business environment in B.C. one way or the other. Relative to interest rates, exchange rates, the U.S. economy — these are far more significant. We’re a small open economy, so most of what impacts B.C. as a small open economy is external.” – Interviewee

“It’s been a positive overall for the economy, because we have such good corporate tax rates here — that’s a positive for business. In the ’90s, we had the highest taxes in the country and businesses left. Now we have the lowest tax rates and that’s good for B.C.’s economy.” – Carole Taylor

“The numbers speak for themselves. In the last five or six years, B.C. has outgrown most of the rest of Canada, and has had significantly less emissions than the rest of Canada. The tax has not impeded B.C.’s ability to grow relative to the rest of Canada.” – Ross Beaty

“A revenue neutral carbon tax is a triple win. The first win is the economy, because it actually rationalizes the tax system for the economy. Second, it creates a whole set of economic opportunities for small and large businesses. And third, it is a political win. I didn’t think we would have won in 2009 if we didn’t have it in place.” – Interviewee

2. You need strong political leadership to get a carbon tax in place. (Public concern about climate disruption helps, too.)



We started each of our interviews with the same question: "What motivated the government to introduce the carbon tax?" We got the same answer again and again: this policy came straight from the top. It was personal leadership from British Columbia's then-premier that brought the tax into being.

In 2007, Gordon Campbell, the province's premier and the leader of British Columbia's centre-right Liberal party, announced that tackling climate change would be a top priority for his government. That year, the province adopted a Climate Action Plan consisting of a series of emission-reduction targets and a suite of policy measures. Along with finance minister Carole Taylor, Campbell went on to make climate change the theme of British Columbia's 2008 budget — with the carbon tax as its centrepiece. (The pages outlining the carbon tax proposal were even printed on green paper.)

Moreover, numerous interviewees told us that the key design elements of the carbon tax came from the premier himself, including the decision to make it revenue-neutral for the government. Officials developing the policy surveyed carbon pricing around the globe, and were well aware that their proposal was world-leading.

Political interviewees confirmed that the Liberal party caucus was not pushing for a carbon tax policy. Nor was the business community, although business leaders provided suggestions about the kind of carbon tax they could live with in the event that the province did adopt one.

Relative to the rest of Canada, the public in British Columbia placed a high priority on environmental stewardship, and parties across the political spectrum supported action to reduce carbon pollution. In the run-up to the 2008 budget, independent policy experts in the province were actively supporting carbon pricing via op-eds and other public forums. Premier Campbell was in close touch with Governor Schwarzenegger of California to coordinate climate action, and several of British Columbia's peer jurisdictions looked poised to take climate change more seriously within their own borders. British Columbia's economy was strong in early 2008, and the governing party held a majority of seats in the legislature.

All those conditions helped give the province licence to act. But the story is really very simple: British Columbia adopted a cutting-edge climate policy because of one politician's personal convictions.

“We all knew it was a good idea — but the commitment came from the premier.” – Interviewee

“It was very much a personal decision, personal commitment by the then-premier. He drove the whole thing.” – Interviewee

“The premier launched a very significant, quite a personal initiative to take action on climate.” – Interviewee

“I wouldn’t pretend that everybody in the party thought it was a good idea. But there was strong leadership from the premier and myself — so they didn’t love it, but they accepted it.” – Carole Taylor

“The government wanted a serious climate change plan. And in considering all parts of that, they came to the realization that putting a price on carbon was going to be necessary if they were going to be serious about achieving their emission reduction targets.” – Interviewee

3. Keep it simple: design a policy that's easy to administer thanks to broad coverage and minimal exemptions.

British Columbia officials wanted to move quickly on the carbon tax proposal, and they did. The finance minister announced the carbon tax in February 2008 and the government started collecting it in July of that year, fewer than six months later.

A simple design helps account for that speedy implementation.

Administratively, the tax was designed to piggyback on an existing tax levied on British Columbia's fuel wholesalers, a relatively small number of companies — so only a small percentage of businesses (and no citizens) had any new paperwork to complete.

The tax applies to all emissions from burning fossil fuels in British Columbia that could be readily measured. As a result, nearly three-quarters of the province's emissions are covered — including both business and household emissions. (Emissions generated by non-combustion industrial processes are not covered, which allowed some critics of the tax to say that it exempted big business.)

The simplicity of British Columbia's design was widely praised by our interviewees, who used terms like "very clean," "straightforward," and "streamlined" to describe it. Several noted that the comprehensive design also met one of the business community's key "asks," which was for an approach that covered household emissions along with those from business operations. Another said that businesses viewed a carbon tax as being less cumbersome than regulations, which helped temper the private sector's response to the tax when it was announced.

Former finance minister Carole Taylor told us that it took a lot of political energy to say "no" to suggestions of exemptions, loopholes, and special treatment. Instead, in areas where the government was concerned about the potential for a negative impact from the tax, policymakers designing the initial policy chose to use carbon pricing revenues to compensate for those impacts — leaving the tax structure, and the incentive it creates to reduce emissions, unchanged. For example, the government included a tax credit for low-income citizens — funded from carbon tax revenues — right from the first year of the policy, and has maintained that credit in each subsequent year.

After the tax took effect, the government introduced further targeted tax benefits in response to critiques of the policy. For example, the province's northern and rural homeowners receive a tax benefit of up to \$200 each year, in response to the widespread perception that the tax was more expensive for car-dependent rural residents than it was for urbanites with access to public transit. The government also offered concessions to the agriculture sector as of 2012.

While some of our interviewees felt that these later changes were unavoidable in the face of strong opposition to the tax from those quarters, others described them as unfortunate deviations from the strong structure the government established in 2008. Some interviewees also noted a lack of evidence that these targeted groups were actually experiencing hardship as a result of the carbon tax. (Recent academic research lends weight to that perspective; for example, a 2014 paper found little evidence that the agriculture sector experiences hardship as a result of British Columbia's carbon tax.)¹⁶



¹⁶ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2310566

“I was personally excited about it, because I’m kind of a purist. It was nice to do something that was quite straightforward and very clean.”

– Interviewee

“The coverage of the tax is pretty good, given B.C.’s emissions profile — over 70 percent of the province’s emissions come from burning fossil fuels, so a carbon tax on combustion had really great coverage. It was really important to cover individuals and businesses in one go, and to make it equitable in price across all those groups. Piggybacking on the fuel tax also streamlined implementation.” – Interviewee

“I did feel very strongly that we couldn’t make exceptions. If we made one, we’d make all kinds of them — and at that point your model falls apart. So what took a lot of political energy within government was to keep saying ‘no exceptions.’ ” – Carole Taylor

“Economically the case for those exemptions [to greenhouse growers, in 2012] was very weak. The government’s own working group found that the case was weak and that the sector had opportunities to reduce, so it was poor public policy.” – Matt Horne

4. Start with a low price.

British Columbia's carbon tax started at a rate of \$10 per tonne, which increased the price of gasoline by \$0.02 / litre (or \$0.09 / gallon). With hindsight, our interviewees felt strongly that starting with a relatively low price was a crucial decision that helped make the tax publicly acceptable.

A couple of interviewees noted that \$10 per tonne was chosen because it was low enough to be non-threatening: carbon pricing systems elsewhere in the world were already charging similar prices, and drivers are used to far larger variations in the price at the pump.

The low introductory price also served to blunt some attacks by critics. The policy's more vocal opponents could claim the tax would be catastrophic for British Columbia, but voters looking around in 2008 saw little evidence of catastrophe. As former finance minister Carole Taylor put it, the low initial rate allowed the province to "get the principle accepted" without raising prices to the point that could nurture widespread public opposition.

"Ten dollars was a number that was not scary at the time. The European Union had a price higher than \$10 in its cap and trade system. We were having conversations with other jurisdictions about prices, and \$10 to \$15 was reasonable."

– Interviewee

"Part of the discussion of \$10 was wanting to see just 2 to 3 cents increase on a litre of gas – that drove the \$10." **– Interviewee**

"In the first year, not much had happened. People had seen a small increase in gas prices, which gets lost in the price fluctuation, and the government was still committed." **– Interviewee**

5. Commit from day one to a schedule of price increases, and stick with it.

British Columbia paired its low starting tax level with a schedule of annual increases to the tax rate. The government committed to \$5 per tonne hikes in the rate each year until 2012, gradually moving it up from \$10 per tonne in 2008 to \$30 per tonne in 2012.

As discussed above, our interviewees believe that starting at \$10 per tonne helped the public accept the tax. In the business community, however, several interviewees told us it was the signal of a rising tax rate that mattered more, because businesses must frequently make decisions about investments that look a decade or more into the future.

Most interviewees praised the government's decision to set a schedule of predictable rate increases right from the get-go. This early and clear signal made the annual jump less controversial, because it was expected. For several years after 2008, the government had no carbon tax decisions to make — other than the enjoyable task of deciding where to direct its growing tax revenues. As one interviewee noted, this meant that the tax kept growing even in years when the government was focused on priorities other than climate action.

The gradual increase in the carbon price allowed British Columbia to move from a "non-threatening" carbon tax to a more stringent one with less pushback than it would have faced had it proposed a sudden, and unexpected, jump in tax rates. The ramp-up was also important on policy grounds, as it gave citizens and businesses the time to make investments that would cut their carbon pollution (and thus save on future carbon tax costs).

One interviewee noted that businesses were far more likely to make low-carbon investments because it was clear to them that tax rates were only headed in one direction: up. And a few interviewees recalled that when the tax came into effect, there was no expectation that it would plateau in 2012; instead, many expected it to keep growing — which made it an even more potent tool for curbing carbon pollution.

Several of our interviewees said that because it was so effective, they wished the ramp-up had been longer — perhaps via a ten-year schedule of increases, out to 2018, rather than a schedule that ended in 2012.

"The most important design element was the ramp in rates. It started at a low rate and ended at a relatively low rate (which is plateaued for now). But just the fact that there was a schedule of increases opened up the possibility of more significant influence: we saw reactions that went beyond what you would do at \$30 per tonne because people were thinking 10, 15 years ahead."

– Matt Horne

"After it made it through the first year and first election, people just didn't talk about it anymore. Because the increase was written in legislation, it wasn't a constant public debate." – Carole Taylor

"We should have said 10 years. People could plan for 10 and build for 10 but they are marginal when it goes up only as far as it did... We need to continue to give people reduced income tax and increase choice." – Interviewee

6. Revenue neutrality helps address private-sector concerns and makes the policy more durable.

Whenever governments propose carbon-pricing policies, the question of what to do with the revenues quickly becomes very heated. British Columbia is no exception: the government's approach to using its carbon pricing revenues was hotly debated in 2008, and continues to be a divisive question today.

By law, British Columbia's carbon tax must be revenue-neutral for the government — that is, every dollar the government takes in from charging a carbon tax must be offset by a dollar of rebates or reductions in other taxes. Each year, the province's annual budget lays out the expected carbon tax revenues in one column and an equal or greater package of parallel tax reductions alongside it.

Though most of our interviewees supported the revenue-neutral approach, this was not a unanimous perspective. We'll discuss some of the downsides of revenue neutrality in the next section. But British Columbia's experience shows that revenue neutrality has two very important upsides: it helps bring the business community onside (or at least, it keeps that community from going too far offside), and it makes the tax difficult to remove once it's in effect.

At the time that the government was designing its policy, the business community told officials that, in the event the province did adopt a carbon tax, they wanted it to be revenue neutral. British Columbia's private sector gave a range of reasons for taking that position: Some businesses saw the prospect of direct benefit for their own balance sheets, while others didn't want to see an increase in the size of government. By meeting the business community's design parameters, the government reduced potential private sector opposition significantly. As one interviewee put it, revenue neutrality provided a "shield" against carbon tax opponents, and gave businesses "some peace of mind" about their overall tax obligation.

In the end, while relatively few British Columbia businesses loved the carbon tax, many decided not to oppose it actively, and that helped pave the way for its survival.

The other main benefit of revenue neutrality became more evident over time: once implemented, a carbon tax is difficult to remove. (As one interviewee said, it's tough to "unmake the omelette.") At \$30 per tonne, British Columbia's government takes in more than a billion



dollars in carbon taxes every year — a significant portion of the government's revenues, which totalled just under \$44 billion in 2014. Thanks to the commitment to revenue neutrality, British Columbia's carbon tax revenues support more than a billion dollars a year in tax cuts, ranging from reductions to the general corporate and personal tax rates to niche tax credits for children's arts and fitness programs. Any premier who wants to get rid of the carbon tax has three choices, none of them appealing:

- Reverse those tax cuts (or, as the premier's political opponents would surely put it, "raise taxes")
- Keep the tax cuts, but find a billion dollars of savings somewhere else in the budget, or
- Run a deficit.

As one interviewee explained, revenue neutrality changed the political debate: anyone who wanted to campaign against the carbon tax had to explain "how they would make it up to businesses, so it upped the ante" — and thus effectively "put a lock" on the carbon tax. Political scientist Kathryn Harrison put it this way: "We underestimate the political importance of revenue neutrality at our peril."

Earlier, we said that British Columbia's carbon tax is largely the result of one politician's leadership. Revenue neutrality — paired with the power of the executive in Canada's parliamentary system of government — means that it *only* takes one visionary leader to establish an enduring carbon price.

“The tax makes up \$1.2 billion of a \$40 billion budget, so getting rid of it is a significant decision. If you were just spending the revenues, you could choose to spend less. But revenue neutrality forces you to not take it out unless you want to cut other taxes.” – Interviewee

“The revenue neutrality structure was obviously a critical feature that helped to temper some of the opposition that otherwise would have been forthcoming from the business community. In the business context, the revenue neutrality was one of the most important features – if not the most important feature.” – Interviewee

“Because it was so tightly tied to tax relief, it would have been quite astonishing for a new premier to come in and take that away.” – Carole Taylor

“Revenue neutrality was a big selling point inside government. The government didn’t want to add new taxes, and the ability to cut taxes was a huge deal, because it allowed for announcements of tax cuts every time the tax went up. We dropped corporate taxes below the international standard. That was a huge deal, that we took corporate taxes that low.”
– Interviewee

“Revenue neutrality is an important promise that was made to B.C. tax-payers with the introduction of this tax. Reducing taxes on things like income, and placing them on pollution instead, is good policy that makes good sense.” – Christy Clark

7. On the other hand, revenue neutrality doesn't get you very far with voters.

Instead of growing the government's revenues, the goal of British Columbia's carbon tax is to change consumer and business decisions in a direction that reduces carbon pollution: the tax makes polluting choices more expensive and clean choices more affordable. This makes British Columbia's carbon tax a very different kind of policy tool.

Unsurprisingly, though, many voters thought about this tax as being like the other taxes they pay every day. Because most taxes are primarily intended to raise revenues, a tax explicitly designed *not* to raise revenues was often mystifying for voters. Many simply didn't believe the government would keep its word.

The government anticipated that critique, and took steps to pre-empt it. These included making revenue neutrality a legal requirement. (The law even specifies that the finance minister cannot receive her or his full salary if the tax is not revenue neutral in a given year.) The government also publishes an annual accounting of carbon tax revenues and offsetting tax cuts, and provided a disproportionately large share of the initial set of tax cuts to households rather than businesses.¹⁷ But by and large, these measures appear to have failed to convince skeptical members of the public that "revenue neutral" is real.

As used by elected officials, the term "revenue neutral" meant "revenue neutral to the government." But many voters interpreted it to mean "revenue neutral for me, personally." That was never the intention: instead, the tax is designed to increase costs on families with higher carbon footprints (for example, households with several large vehicles) and reduce costs for families with lower household emissions. Similarly, some businesses were upset that the tax would not be revenue neutral for their own operations. One interviewee noted that even elected members of the government did not always appear to be certain about what "revenue neutral" meant.

The Pembina Institute's Matt Horne noted that citizens asked questions like "Why charge a tax in the first place

if you're just going to give it back to me?" or "What's the point of paying a pollution tax if it's not invested in cutting pollution?"

Environment Minister Mary Polak — a politician who has campaigned on the carbon tax — said that in contrast to a rebate cheque, a tax saving often isn't memorable enough to convince voters that they will benefit: "If you tell someone he's going to save \$100 on his income taxes, he probably doesn't remember how much he paid last year anyway."

And because the tax doesn't actually generate new revenues for the province, it did not give the government new opportunities for visible new spending programs. As Member of the Legislative Assembly Spencer Chandra Hebert noted, voters would say things like "I paid all this tax, but where's the benefit?"

Despite these challenges, the majority of our interviewees considered the government's commitment to revenue neutrality to be an indispensable element of getting the tax off the ground in the first place. However, a few interviewees noted that the politics of maintaining and growing a carbon tax are very different from the politics of establishing one from scratch.

With the tax now entrenched as "part of the economic fabric of the province," as one interviewee put it, several interviewees suggested that the province could now consider other uses for the carbon tax revenues. Among our interviewees, investments in public transit were the most popular alternative to tax cuts as a potential use of future carbon pricing dollars.

Jurisdictions considering a carbon tax designed like British Columbia's might also want to take this advice from Professor Kathryn Harrison to heart: "You need to find a better way to say revenue neutral."

¹⁷ "Disproportionate" in that the province directed a greater share of the rebates to consumers than their share of the incidence of the tax (in other words, businesses paid a higher share of the tax than they received of the rebates). However, as some interviewees noted, some businesses had the ability to pass the tax on to consumers, so the initial allocation of rebates may actually align more closely to the true incidence of the tax than it appears at first blush.

¹⁸ The carbon tax is levied on the greenhouse gas emissions from burning fossil fuels in British Columbia, which account for nearly three-quarters of the province's emissions. It does not cover emissions generated from chemical processes in the industrial sector that do not involve combustion, which has generated critiques that heavy industry is being let off the hook.



“The tax is revenue neutral at a aggregate, economy-wide level. For any individual household or business, they either benefit or lose. Some of our members would be pounding the table saying ‘it’s not revenue neutral to us!’ And we would have to explain that it’s economy-wide.” – **Interviewee**

“The specific tax cuts probably mattered to the business community. For individuals, it was a total bust – people didn’t believe they were getting money back.” – **Kathryn Harrison**

“I think revenue neutral was appropriate at first, to get confidence amongst the detractors. That’s step one. Step two is that we have to keep going down that path, towards real sustainability.”

– **Pamela Goldsmith-Jones**

“Now that it’s established and has been around for a time, it’s absolutely legitimate to talk about whether more of it should be used for transit, or for other things. That wouldn’t have worked at first.” – **Carole Taylor**

“The government could have really neutralized any of the arguments against the carbon tax if they had also included big polluting companies,¹⁸ and announced a fund of some kind to help communities where getting out of your car isn’t as easy. Some saw it as just as a ‘stick’ because they had to drive and didn’t have an option... People felt they were being penalized for where they lived.” – **Spencer Chandra Hebert**

Tax Politics

How climate leadership may have paid off at the ballot box

Although this is not a universally held view, some interviewees said that — despite the very vocal opposition described here — the carbon tax ended up helping the governing party politically during the next election after adopting the tax.

Some interviewees felt that the tax increased support for the governing Liberal party among the relatively small group of voters who vote on environmental issues. Far more interviewees pointed to a surprise decision by the main opposition party — the New Democratic Party, which falls to the left of the Liberal party on the political spectrum — to oppose the carbon tax. This made the New Democrats appear less “green” than the government; it also created strife inside that party and consumed a significant amount of media attention during the first part of the 2009 election campaign.

After the Liberal party won that election, the New Democrats dropped their opposition to the tax. Since that time, the province has a political consensus in favour of maintaining the tax.

“Every time you make a change someone will tell you it is wrong — there is no unanimity in a democracy. At the end of the day the only test you have is that you get elected on that policy, and that’s what we did.... I don’t want to belittle the role of the tax in getting us re-elected. It reached across political boundaries.” — Interviewee

“The carbon tax had become such a symbol, so it was difficult to explain that we were for climate action but against that particular form of carbon pricing.” — Spencer Chandra Hebert

“There was no [political] advantage until the NDP came out against it — and then some people who cared about the environment and would have voted NDP came over to us.”

— Carole Taylor

“It is striking that here we are, five, six years later, and there’s effectively a political consensus among parties in the Legislature that we’ll stick with it. Nobody is talking about getting rid of it.” — Interviewee

Practical Tips

The worst time of year to roll out a carbon tax, and more

Here are some lessons British Columbia officials learned the hard way about how to introduce and communicate a carbon tax.

Figure out which month typically sees the highest gasoline prices of the year. Don't start collecting your carbon tax that month. In British Columbia, July historically sees the highest gasoline prices of the year. It's also a busy month for road trips. Officials at the Department of Finance did not take those trends into account when they introduced a carbon tax that took effect on July 1.

Establish a clear, transparent approach to test which sectors are truly both emissions-intensive and trade-exposed. It's likely that numerous sectors will try to make the case that the tax will harm their competitiveness. Prepare for this by developing an empirical and transparent "hardship test" to assess each sector's claims for special treatment.

Index the tax rate to inflation. British Columbia's carbon tax increased by \$5 a year from 2008 to 2012, but the current \$30 rate is not indexed to inflation. Under that setup, the price signal will diminish over time unless the government announces a new schedule of increases. (Indexing prices to inflation is included in the Western Climate Initiative cap and trade system now in effect in California and Québec.)

Create personal tax calculators so that voters can determine the specific impact the policy will have on their families. When it introduced the policy in the 2008 budget, British Columbia's government published hypothetical examples of the tax's impact on household budgets. But few families correspond perfectly to those stock examples. Convincing individual families that they could come out ahead would be easier with personal carbon tax calculators, similar to the ones banks offer for calculating potential mortgage payments. A family would likely feel more confident about the policy's impact on its own budget if it were able to calculate a result based on commuting distance, make of car, household square footage and so on. (These kinds of calculators could also show families the tax savings from investing in, for example, a more fuel-efficient car.)

Be clear about your principles in designing the policy, and spend time communicating those principles. A revenue-neutral carbon tax is likely to be unfamiliar to most voters. It's worth investing a lot of time explaining how it works, and why it is different.

Don't think too small: there's little upside to facing down the critics of carbon pricing unless the policy is meaningful enough to deliver benefits. Or to put it another way: voters are likely to notice that there's a new tax on the books. If you start too small, they might not ever notice the benefits. In British Columbia's case, the carbon tax was big enough to drop corporate tax rates below those in comparable North American jurisdictions — a feat that the government has actively promoted.

8. A carbon tax can't do everything; it needs to be just one component of a full suite of climate policies.



As noted earlier, British Columbia designed its carbon tax to start small and ramp up, so that it would shift investment decisions over time. But some of those decisions — such as building a new industrial facility for a business, or buying a new car for a household — don't take place until years after the policy first comes into effect.

The tax's designers never expected it to be the sole climate-change solution for the province. Instead, they typically describe it as one part of a full suite of policies intended to cut emissions in line with its climate targets. British Columbia's government adopted the carbon tax in 2008, during a second phase of climate action, after enacting a series of other policies the previous year. Some of

those earlier policies — such as the province's consumer energy-efficiency rebates — were likely to be more popular with voters; others would also prove more effective at cutting near-term emissions.¹⁹

Our interviewees emphasized that the tax was just one piece of the puzzle — and that presenting it that way, rather than overselling its likely impact, made it easier to defend. (Interestingly, former mayor Pamela Goldsmith-Jones also noted the converse: that the carbon tax "was such a shock to the system" that it sparked a bigger conversation about climate change and sustainability among her constituents.)

¹⁹ See, for example, Ekaterina Rhodes and Mark Jaccard, "A Tale of Two Climate Policies: Political Economy of British Columbia's Carbon Tax and Clean Electricity Standard," (*Canadian Public Policy*, Volume 39, August 2013).

“There are things you can do with incentives, regulation, education, and so on. Then fiscal incentives were part of a second phase. The carbon tax was implemented as a final piece to complete a suite of policy measures.”

– Interviewee

“We took a billion dollars out of the surplus and spent that on green spending to try to nudge the economy in a different direction.”

– Carole Taylor

“I don’t know that the tax has affected clean energy as much as the clean energy policy did, meaning our broader climate policy and B.C. Hydro’s clean power requirement.” – Interviewee

“We see greenhouse gas emissions dropping, and the places we see them dropping are homes, vehicles, and somewhat in buildings. That’s because of strong tax and strong incentive programs, combined.”

– Interviewee

9. Prepare for motivated, vocal – and not necessarily fact-based – opposition. You’ll need active, engaged supporters and targeted communications strategies to counter the critics.

Several interviewees told us that the government was quite pleased with the initial response to the carbon tax. Immediately following its announcement, environmentalists and policy experts came out strongly in support, and the business community signalled that it was prepared to live with the tax (while giving the province credit for a reasonable design).

But in the days and weeks that followed, media reports zeroed in on the concerns of specific individuals who saw themselves as being harmed by the policy. Our interviewees noted that the tax got a lot of attention from talk radio hosts and — predictably — from the Canadian Taxpayers' Federation, an advocacy group dedicated to lower taxes.

A lot of the public concern came from rural residents, some of whom felt that the province was asking them to take the impossible step of giving up their cars. One interviewee told us that the government was unprepared for the rural backlash because its internal analysis in designing the tax showed that rural residents were not, in fact, particularly disadvantaged by the tax. Nonetheless, in 2009, the government introduced a tax rebate for rural and northern residents, funded from carbon tax revenues, in response to their sustained critique of the policy.

Any change to tax policy is likely to stir up at least some opposition. Some of our interviewees saw the public response as being predictable, while others said it had some unique characteristics. For example:

- Mary Polak said that the attention the tax garnered gave a fresh platform to people who were sceptical of the science of climate change.
- Kathryn Harrison noted that it was particularly easy to portray this tax as unfair, because most members of the public often don't see themselves as polluters. (In contrast, even smokers often support tobacco taxes.)

Many of our interviewees had suggestions of ways the government could have better communicated the policy. These include:

- Invest more time in engaging potential allies — such as clean technology companies, economists, or organizations dedicated to helping low-income citizens — so they are well-prepared to actively counter the tax's opponents.
- Commit for the long term. Defending a policy like this takes years, not weeks.
- Provide tailored information for different demographics or segments of the population to explain what the policy means to them. This would require working with a wide range of public interest and advocacy groups.
- Ensure that the government's lead spokesperson is a skilled communicator, and invest time in finding as many opportunities as possible for that person to speak about the tax. (British Columbia's finance minister at the time, Carole Taylor, won praise from several interviewees for her communication skills.)



“It was overwhelmingly popular. We were doing something that made sense. Even in 2008, there was not much negative feedback. It started to come in the spring of 2008, when international gas prices were going up.”

– Interviewee

“All the expert commentary was generally positive, but the public commentary was captured by personal circumstances of ‘losers.’ The government ended up being quite happy with a lot of the technical commentary, but they were not prepared to deal with the public commentary.”

– Interviewee

“In rural communities, there was a complaint that they spent more on fossil fuels. We looked into that and it wasn’t true, but they got a subsidy anyway.” – Interviewee

“What I decided to do was talk about straight economics. So I said ‘I don’t care whether you’re pro- or anti- on climate change. If you’re a conservative, you should be in favour of consumption taxes over income taxes.’”

– Mary Polak

10. Prepare for a cleaner environment, an enhanced reputation, and a thriving clean technology sector.



Our interviewees were unanimous in saying that the tax has helped reduce British Columbia's carbon pollution. There were caveats: several noted that the impact of the tax has been modest. Others pointed out that it was just one part of a bigger climate policy effort and that other policies also deserve significant credit. Some also said that British Columbia needs to do more to get on track for its 2020 emissions-reduction target.

As the government highlighted in its 2014 progress report however, the province has attained its first climate target, which was to reduce emissions to six percent below their 2007 level by 2012.²⁰

British Columbia is also home to a growing clean technology sector, with more than 150 firms in operation in 2012 — accounting for 22 percent of Canada's clean technology presence in a province with 13 percent of the nation's population.²¹ Several interviewees said that the carbon tax had contributed to growth in that sector of the province's economy.

Many of our interviewees were delighted with tax's impact on their province's reputation. One said that the province "is known all over the planet now. We get inquiries about the tax from all over the planet too" — and after the tax was introduced, the premier and the finance minister "became superstars." Mary Polak noted that the tax has enhanced British Columbia's reputation not just environmentally, but economically as well. The Pembina Institute's Matt Horne suggested that even people who don't follow climate change policy closely know that "British Columbia has done something that seems to be working." Several noted — with some chagrin — that British Columbia's policy wins more praise outside the province than inside it.

Finally, a number of our interviewees who helped design the tax look back on it as a highlight of their careers. One described it "a great piece of public policy." Carole Taylor called it the kind of "political challenge, intellectual challenge, communications challenge" that doesn't come along very often. The interviewees who helped develop the policy all reported feeling proud to have been part of it.

²⁰ <http://www.env.gov.bc.ca/cas/pdfs/2014-Progress-to-Targets.pdf>

²¹ Proprietary clean technology data from Analytica Advisors, 2014.

“This is a great example to other jurisdictions about how it can be done successfully, and it also improves B.C.’s reputation as a world leader in something that is recognized as a global priority.” – **Ross Beaty**

“I pay it happily. I’m still proud of what we’ve done. It’s always fun to work with a government that cares about policy issues.” – **Interviewee**

“We’ve gained that reputation as a place that’s very competitive for business and investment, while holding industry to a high environmental standard. I think that’s the kind of province that most British Columbians want us to be.” – **Christy Clark**

“I feel great about it. If I was asked for three things that I feel most proud of, I would pick this as one of them.” – **Interviewee**

Parting Thoughts

We ended our interviews by asking, "What would be your advice to other jurisdictions considering a carbon tax policy?" Here are some of the responses.

"Do it! It's the right thing to do.
It should be the future of taxation."
– Interviewee

"It is a winner. Get smart, make it a
winner." – Interviewee

"No one likes a tax, and if I
were doing it again I would
call it a carbon levy. Tax is
an easy thing to attack."
– Interviewee

"Do it early. If a carbon tax
is adopted in the first year
of a mandate, it allows time
for the public to come to
understand how the tax
works and to realize that
the sky won't fall, time for
public support to rebound."
– Kathryn Harrison

"Change it from the notion of a tax to
an investment in our clean energy
future...Give people a positive message
and they'll scramble to be part of it,
but guilt doesn't work."
– Pamela Goldsmith-Jones

"Too many people think a carbon tax is
politically costly. It is not. It is a benefit;
it is sensible and strong public policy."
– Interviewee

"Get going. The planet needs it, and so
does your economy. Surely we can all
agree that more efficient use of energy
is good for everybody."
– Spencer Chandra Hebert

"Be resolute in selling the long-term,
global benefits for citizens, and the ben-
efits to your economy as well through
energy cost savings." – Ross Beaty

"Partner with cities and local govern-
ments. You have there a handful of peo-
ple representing millions of people."
– Pamela Goldsmith-Jones

“Too many people think a carbon tax is politically costly. It is not. It is a benefit; it is sensible and strong public policy.” – Interviewee

“If you actually are committed to doing something on emissions, you need to put a price on emissions somehow. A tax is the cleanest way to go.”
– Interviewee

“Get the business community on board via revenue neutrality, especially the small business community.”
– Kathryn Harrison

“Make sure it’s fair across the spectrum. Make sure those who are lower income are not disproportionately hurt.”
– Carole Taylor

“We are getting to a time when people are willing to deal with [climate change] directly and aggressively. The carbon tax was about as small a step as you could take and still say you could do something.” – Interviewee

“Consider impacts on trade-exposed sectors and take steps to mitigate those impacts.” – Interviewee

“Try to create a bipartisan coalition, or at least get trusted voices from the other party onside.” – Kathryn Harrison

“British Columbia has been a leader with our carbon tax, and it’s always been my hope that other jurisdictions will step up and follow our example—or even beat it.” – Christy Clark

Appendix A

List of Questions for Interviewees

Our team interviewed 13 British Columbia carbon tax experts during the fall of 2014 in semi-structured conversations based on the questions listed below. Not all interviewees were asked all of the questions.

Developing and introducing the tax

1. In your opinion, what motivated the government to consider and introduce a carbon tax?
2. Which aspects of the policy design were most contested internally during the development of the policy? Why?
3. The tax has several notable policy design features (e.g. revenue neutrality, five-year scheduled increases, broad application to B.C.'s emissions). Which design choices are, in your view, most important to the policy's effectiveness?
4. What was the response like when the tax was first introduced?
5. Were the government's communications efforts effective in managing that response? Why or why not?
6. Presumably, the government spent some time in advance of announcing the policy thinking about who would likely support and oppose it.
- Were you surprised by the response from any groups when the policy was introduced?
- If so, which ones?
7. Do you think the tax level (initial \$10 per tonne price with scheduled annual increases to \$30 per tonne in 2012) was the right one? Why or why not?

Tax Politics

8. What were the political advantages, if any, of the introduction of the carbon tax?
9. What were the disadvantages, if any?
10. From a political point of view, how could the government's roll-out of the carbon tax have been improved?

Effect of the policy

11. The B.C. government made several changes to the tax after it came into effect, mainly in response to public critiques (e.g. rural rebate, agricultural rebate, etc.) Do you think those were good changes to the policy? Why or why not?
12. Do you believe that the carbon tax harmed trade-exposed sectors? Why or why not?
13. Do you think the mix of tax cuts the B.C. government has chosen to achieve revenue neutrality is appropriate? Why or why not?
- Would other uses of the revenue have been more effective?
14. Now that we have over five years of experience with the tax, how would you characterize its impact on B.C.'s
 - Economy?
 - GHG emissions?
 - Reputation?
15. Durability matters with a policy like this one. What allowed the carbon tax to survive its first year?
 - A change of premier?
 - The ongoing absence of comparable carbon pricing policies in North America?
16. How likely do you think it is that the carbon tax will remain in effect over the long term? How likely do you think it is that it will be increased or broadened?

Reflective

17. What would be your advice to other jurisdictions considering a carbon tax policy?
18. If it were 2008 all over again, what would you / what should the B.C. government do differently?
19. Looking back on it now, how do you feel about your participation in the development of the policy?

*How to Adopt a Winning Carbon Price:
Top Ten Takeaways from Interviews with the
Architects of British Columbia's Carbon Tax*

Clare Demerse

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INSIDE NORTH AMERICA'S LARGEST CARBON MARKET

Ten Lessons from the Front Lines of
Quebec's Fight Against Carbon Pollution

Sources

We conducted all of our interviews confidentially, and we assured interviewees that their specific comments would not be attributed to them by name. However, some participants opted to put some or all of their comments “on the record.” All ten interviews were conducted by telephone.

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Introduction

In 2012, Quebec became the first Canadian province – and only the second jurisdiction in North America – to enact a cap and trade system for greenhouse gas (GHG) emissions under the Western Climate Initiative. When the province formally linked with California's system on January 1, 2014, the partnership became the most comprehensive carbon trading system in North America.¹ While the market has only just completed its second joint auction, we wanted to explore the lessons the province learned in developing and implementing what is now the continent's largest carbon market.

During the fall of 2014 and earlier this year, Clean Energy Canada conducted a series of confidential, candid interviews with the policy's architects and with expert observers who have watched its development and implementation. We spoke with elected representatives and officials working in Quebec's government at the time, and experts from the business, academic, and environmental communities within the province. We also sought commentary from California – Quebec's carbon market partner – to provide an inclusive look at the players intimately involved in shaping and responding to this ground-breaking policy.

These interviews focused on a few key questions that dug into the politics and process of adopting a cap and trade system:

- What motivated the development and introduction of a cap and trade system in Quebec?
- What are the key policy-design decisions that governments considering such an initiative would need to make? What are the pros and cons of these choices?
- What kind of response might governments expect if they introduce this kind of policy, and how can governments ensure that the response is as favourable as possible?

We've distilled our findings from these interviews down to ten key takeaways focusing on the development of Quebec's cap and trade system under the Western Climate Initiative. Together with our assessment² of British Columbia's Carbon Tax, we have provided a comprehensive look at how existing carbon pricing systems operate and how they can serve as useful lessons for jurisdictions considering adopting such a system.

The key findings from our interviews are summarized on the next page and described in more detail in the pages that follow. Questions posed to interviewees are included in Appendix A.

¹ Klinsky, Sonja (2013). Bottom-up policy lessons emerging from the Western Climate Initiative's Development Challenges. *Climate Policy*, Vol 13, No 2, 143-169.

² *How To Adopt a Winning Carbon Price: Top 10 Takeaways From the Architects of British Columbia's Carbon Tax*, Clare Demerse, Clean Energy Canada, February 2015. Available at cleanenergycanada.org.

Top 10 Takeaways

Considering a cap and trade system? Here's what you really need to know.

1. You'll need strong political leadership and a citizenry primed for climate action.

2. Partner with other jurisdictions to create new opportunities and lower the “cost” of participation.

3. Invest in education. Develop in-house expertise, and learn from others.

4. Take the mistakes of others, fix them, and turn them into benefits.

5. Invest auction revenues in tangible climate solutions.



6. Commit to openness, fairness, and transparency.

7. Address competitiveness concerns with a home-grown approach.

8. Design your system to support economic success.

9. Don't expect your cap and trade system to do everything; consider it one component of a full suite of climate policies.

10. Get ready for the global spotlight.

A Cap and Trade Primer

The mechanics and impacts of Quebec's cap and trade system

On January 1, 2013, Quebec took a bold step toward fighting climate change by launching a cap and trade system under the Western Climate Initiative's (WCI) carbon market. A year later, when Quebec linked its system with California's, it created North America's largest carbon market.

While it is too early to draw conclusions on Quebec's long term economic performance under the cap and trade system, a great deal remains to be learned from how the system came together. Quebec is the first subnational jurisdiction in Canada to develop a cap and trade system, and the first in Canada to do so under the Western Climate Initiative. Thus far, the system has also survived two changes in government.³

What is cap and trade?

Cap and trade is a form of market regulation applied to greenhouse gas (GHG) emissions.

The "cap" puts a limit on the maximum amount of GHGs that can be emitted, which is then translated into a number of allowances. Allowances can be distributed free to some or all covered entities or auctioned to highest bidders within a competitive bidding process; each emission unit usually represents one tonne of GHG.⁴ Companies must match their emissions to their allowances. Over time, the overall cap is lowered, leading to reductions in GHGs.

The "trade" creates a market for emission or carbon allowances. A company that is part of a capped sector must report its total emissions. If its emissions are equal to its allowances, then the emitter is compliant. At the end of the compliance period (in Quebec, three years), the emitter must return its allowances to the regulator.

If total emissions come in below the allocated allowances, the company has unused allowances — a surplus — which it can then choose to bank, surrender (for compliance during the current compliance period) or trade with other

companies/entities that are part of the market. If the emissions are greater than the allowances allocated, then the company must purchase allowances from those who have them for sale, at auction, or acquire offsets (see below). If the company does not have enough allowances or offsets to cover their emissions, the regulator will impose penalties.

Surplus allowances are traded and priced according to supply and demand. As the regulator gradually lowers the cap on emissions, fewer allowances are available. This creates a demand for allowances, which increases their value or price. Over time, industries that use carbon-intensive technology will find it more economical to upgrade to lower-carbon technology to reduce their need for allowances.

What is an offset?

Offsets are initiatives undertaken by non-regulated industries that reduce or remove greenhouse gas emissions, and which can be sold to emitters to help meet their compliance obligations. To be eligible as an offset, the regulatory authority must validate projects. In Quebec and California, offsets are limited to eight percent of the compliance obligation.

How does it work?

- In Quebec's system, sectors perceived as trade-vulnerable receive emission allowances free of charge. These sectors include: aluminum, lime, cement, chemical and petrochemical industry, metallurgy, mining and pelletizing, pulp and paper, and petroleum refining, among others.⁵
- Emission units not allocated free of charge are auctioned off, at most up to four times a year. Since January 2014, Quebec and California have held these auctions jointly.⁶
- The floor price for the joint auction is set by selecting the higher of Quebec or California's minimum price at the predominant exchange rate.⁷

- The final sale price of each emission unit auctioned is the lowest price bid for which the last emissions unit is awarded.⁸
- In Quebec's cap and trade system, trading period is referred to as the "compliance period". Allowances are allocated and auctioned within this period.⁹
- The price per unit from the last joint auction held in February 2015 was \$12.21/tonne.
- Compliance periods last three calendar years each as of January 2015 (2015-2017, 2018-2020, and so on). Rules pertaining to the free allocation of allowances are only set by regulation until 2020. All allowances have to be surrendered by the first of November following the end of the compliance period.¹⁰
- Beginning in 2015, in order to encourage GHG reductions, the number of free units decreases at a rate of one to two percent per year.
- Electricity and fossil fuel distributors don't receive free allocations.

All proceeds of the auction of units go into Quebec's "Green Fund" to finance various initiatives outlined in the province's 2013 - 2020 *Climate Change Action Plan*. These include public transit, research and innovation, green energy, and dealing with residual municipal solid waste.¹⁴

What does the system cover?

- Persons or municipalities operating a facility with annual GHG emissions greater than or equal to 25,000 tonnes of equivalent carbon dioxide a year.¹¹
- The system covers close to 85 percent of Quebec's GHG emissions. At its outset in 2013, this included the industrial, manufacturing, and electricity-generating sectors. In 2015, coverage expanded to include GHG emissions related to the use and combustion of fossil fuels that are sold or distributed.¹²
- In addition, the cap and trade system is open to individuals or entities that would like to participate in the carbon market, even when there is no regulatory obligation for them to do so.¹³

Distribution of Emission Units

- For 2013/2014, industrial emitters exposed to foreign competition received most of the emission units they needed free of charge so as to prevent "carbon leakage" — that is, the movement of companies to jurisdictions without a cap and trade system.

³ The Liberal Party formed government from 2009 - 2012, the Parti Québécois from 2012 - 2014, and the Liberal Party from 2014 - present

⁴ http://www.ietc.org/index.php?3option%3Dcom_content%26view%3Darticle%26catid%3D54:3-minute-briefing%6id%3D205:cap-%26-trade-basics

⁵ <http://www.mddelcc.gouv.qc.ca/changements/carbone/documents-sp%C3%A9de/technical-overview.pdf>

⁶ <http://www.mddelcc.gouv.qc.ca/changements/carbone/documents-sp%C3%A9de/in-brief.pdf>

⁷ Ibid.

⁸ Ibid.

⁹ https://icapcarbonaction.com/index.php?option=com_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=73

¹⁰ Ibid.

¹¹ Excluding CO2 related to the combustion of biomass.

¹² <http://www.mddelcc.gouv.qc.ca/changements/carbone/documents-sp%C3%A9de/in-brief.pdf>

¹³ Ibid.

¹⁴ <http://www.mddelcc.gouv.qc.ca/changementsclimatiques/programs.htm>

1. You'll need strong political leadership and a citizenry primed for climate action.

It takes a strong leader to make change happen, and so when we asked each of our interviewees, “what motivated the government to introduce a cap and trade system?” the answer was often the same: Quebec deeply believed in climate change, and it was firmly within then-premier Jean Charest’s priorities.

Quebec had an advantage with respect to total energy use, as it sources its electricity almost entirely from water resources (hydroelectric).¹⁵ Even so, in 2006, then-premier Jean Charest, leader of Quebec’s centre-right Liberal party, felt more could be done. With the introduction of its *Climate Change Action Plan*, Quebec brought in a carbon levy on the carbon content of fossil fuels, making the province the first jurisdiction in Canada to send a carbon price signal to its economy. Seven years later, Charest would announce that Quebec’s carbon market under a cap and trade system was in full operation, reflecting his commitment to using economic instruments to further a social good.

Cross-government collaboration proved one of the more challenging elements of the cap and trade system’s introduction. Political and government interviewees all cited Charest’s leadership as essential.

It took more than a strong commitment to the environment to introduce a price on carbon; it also required commitment from the Finance Ministry to deal with pricing and exchange, and from the Industry Ministry to consider stakeholder support and trade — though neither department held any part of the climate change file. It took a policy champion — in this case the former federal Environment Minister and now Premier — to make it happen.

Charest had no shortage of leadership in his cabinet. Behind the cabinet’s collective support for climate action, throughout the process he relied heavily on three environment ministers:

- Claude Béchard, who formulated the government’s overall climate policy in 2006;
- Line Beauchamp, whom interviewees say did much of the heavy lifting on the actual policy design and delivery; and
- Pierre Arcand, who handled some of the more complicated issues of the implementation, especially with the business community.

Interviewees reminded us that in Quebec, a general consensus exists on the need for climate action. This consensus created the necessary environment to enable action. Quebecers know and understand that human activity causes global warming; therefore, caring about climate disruption is a political winner in the province.

Charest saw cap and trade as a real opportunity to showcase all of the province’s investments in hydro, hydro exports, manufacturing, and aluminum — all of which had been working effectively to reduce emissions since the 1990s. For Charest and his majority Liberal government, a cap and trade system would position Quebec as a clear winner in a global economy already heading in the direction of decarbonization. Interviewees also credited public support for climate action as the reason why carbon-pricing policies have survived changes in government: the public saw it as Quebec’s opportunity to lead.¹⁶

These factors, in combination, helped Quebec develop and implement a leading climate change policy — and be the first of Canada’s jurisdictions to do so under the Western Climate Initiative. But the driving force was the carefully calculated direction of one politician’s personal convictions and his deep desire to build a strong economy for his province.

In their own words

“There was strong political leadership from Charest. He was convinced that this was the right thing to do, and he did it right at the peak of climate concerns in Quebec.” — **Karel Mayrand, David Suzuki Foundation**

“We had a Premier who was profoundly convinced and engaged in tackling climate change. Yes, you need strong Ministers — but honestly, I don’t think we would have got there without a Premier who believed very strongly in this initiative.” — **Interviewee**

“This choice of policy reflects an ethic of enlightened self-interest in Quebec. They saw where the world was going in terms of carbon markets, knew they could reduce GHGs by becoming more efficient, and they wanted to get credit for it. Charest also perceived himself as a leader on the environment; he was a policy entrepreneur. Looking at Governor Schwarzenegger, Premier Campbell — you need that kind of leadership at the very top, because there will be some bumps in the road.”

— **Erick Lachapelle, Université de Montréal**

“If you have a leader that’s going to go to the wall on doing something on climate change, you can get things done. It became a legacy issue for him.”

— **Katie Sullivan, IETA**

¹⁵ <http://www.hydroquebec.com/about-hydro-quebec/who-are-we/hydro-quebec-glance/html>

¹⁶ A Parti Québécois government held power in the province from 2012-2014

2. Partner with other jurisdictions to create new opportunities and lower the “cost” of participation.

Though Quebec's cap and trade system, like California's, is very much the result of provincial and state legislation, both operate under the guidelines of the Western Climate Initiative. The Initiative is a voluntary subnational intergovernmental organization initiated in 2007.¹⁷

When Quebec linked its cap and trade system with that of California in January 2014, it established North America's largest carbon market. Our Quebec-based interviewees cited two tangible benefits of the relationship: The spill over effect of California's positive reputation in terms of policy leadership, and the creation of a market large enough to generate sufficient credit to ensure robust trading.

Having more players creates a more fluid and dynamic market. This fact was undisputed among our interviewees, who also saw the need for a large market to support the function and credibility of a cap and trade system.

Politically, California was described as a “leading state,” where fuel efficiency standards “set the pace for both the US and Canadian national governments.” Interviewees felt strongly that the California link gave Quebec a degree of political cachet that another jurisdiction would not. This cachet afforded the partnership a sense of confidence. The personal relationship between then-Premier Jean Charest and then-Governor Arnold Schwarzenegger helped, too.

When asked to cite downsides of interlinked systems, our interview subjects flagged the cost of emission units, and the debatable benefits of having them available at a lower cost. In the linked system, California has a surplus of units, thereby reducing the price of units at auction. Many of our interviewees pointed to the fact that this results in Quebec companies purchasing units at a cheaper rate in California to meet their emissions targets, leading to a “flight of capital” from Quebec to California.

Others said the California linkage is easier on Quebec businesses, citing the attractiveness of lower private-sector compliance costs. They argued that the flight of capital would “net out” over the longer term as other jurisdictions join and Quebec establishes emissions reductions targets beyond 2020.¹⁸

Finally, several of our interviewees cited a non-market-based benefit: the opportunity to demonstrate how a program of this magnitude can have broad appeal even in a jurisdiction that differs in language and currency. Interviewees from both the state and the province cited the collaboration as intensely positive in terms of both learning and outcomes. They believe this sends a message to other WCI partners (which have yet to introduce carbon regulations) that collaboration is possible and beneficial.

“We gave a lot of thought to how to make the trading program work well, to ensure that there were separate and different benefits for each jurisdiction. The fact is both Quebec and California have similar ambitions that are compatible over the long term – and this is what made it net out in a fair and balanced partnership.” – **Mary Nichols, California Air Resources Board**

“Quebec joining with California gave credibility. Quebec was the only Canadian province to do it, so it put some of its industries at a competitive disadvantage (or so they argued) – especially when compared with Ontario. So acting with other jurisdictions makes it more credible, especially with California. It gives value to the system.” – **Karel Mayrand, David Suzuki Foundation**

“Partnership is why the linkage matters so much. That's why California did it too – it doesn't look good on anyone to be alone. Would Quebec be their ideal partner? Probably not, but they were the only ones left standing.” – **Interviewee**

“Honestly, if we didn't have California, I'm not sure we would have been able to move alone. There was a strong consensus, but would we have been able to keep that consensus without California? We needed to show we weren't alone in North America.” – **Interviewee**

¹⁷ Purdon, M., Houle, D. & Lachapelle, E. (2014). *The Political Economy of California and Quebec's Cap-and-Trade Systems*. Sustainable Prosperity Research Report, page 5

¹⁸ California has committed to 80% below 1990 levels by 2050

3. Invest in education. Develop in-house expertise, and learn from others.



Courtesy of the Centre for Sustainable Development

As mentioned earlier, it was important to Quebec — and personally to Charest — to use market-based tools to price carbon emissions, but all of our interviewees noted that creating a credible cap and trade system is an extremely complex process. On this front, Quebec had the opportunity to look to other jurisdictions for lessons learned.

In addition to negotiating with California, the province witnessed the development of the Western Climate Initiative as a corporation providing administrative and technical services to support the implementation of greenhouse gas emissions trading programs.¹⁹ They also looked to the European Union and the Regional Greenhouse Gas Initiative (RGGI) experiences. From this they learned two major lessons. First, as one interviewee put it, “we really, really needed a price floor.” Second, there was a need to cover more sectors than the RGGI. It also helped to govern Quebec’s treatment of offsets in their system.²⁰

Several interviewees who worked in government at the time of the project’s development wanted to acknowledge a “small but effective” group of dedicated staff, 10 to 15 individuals who “ate, slept, and breathed” the cap and trade policies and knew them so intimately that everyone was able to stay on the same page and on message in a variety of negotiations and meetings.

Hugo Séguin directly credited Environment Minister Line Beauchamp with becoming an expert on cap and trade policies. “Like Hermione in *Harry Potter*,” Beauchamp learned the ins and outs of the carbon market so intimately that she was credited as “knowing more than some of the companies did.”

“One of the things they did learn from the EU program was having that price floor, which is very important. The safety valve at the top end also gave comfort to industry that prices wouldn’t go skyrocketing in the near-term.” — Katie Sullivan, IETA

“The Quebec government benefitted from the evolution in thinking from the European Union, from academics and from the experience with RGGI. They also benefited from having the WCI as a central coordinating agency to ensure their system would eventually comply.”

— Erick Lachapelle, Université de Montréal

“Quebec developed very significant expertise in carbon markets, so that they did not have to be a rule-taker in negotiations. They carefully studied the EU experience.” — Hugo Séguin, Université de Montréal

“We really studied the existing systems carefully. We looked at RGGI, and really learned a lot there, and we looked at the European Union’s (EU) Emissions Trading System (ETS). We saw that you really needed a minimum price to avoid the problems the EU had with the ETS.”

— Interviewee

¹⁹ <http://www.wci-inc.org/index.php>

²⁰ For treatment of offsets, please see number 4

4. Take the mistakes of others, fix them, and turn them into benefits.

When we asked interviewees what made the biggest change in policy effectiveness for Quebec's cap and trade system, the answer was consistent: cost containment. The policy's floor price and the Minister's allowance reserve, which acts as a price ceiling, were widely cited as critical to its long-term success.

Quebec developed its cap and trade system with great care. Its architects made deliberate decisions rooted in lessons learned from other jurisdictions. Interviewees pointed to the process surrounding free allocations to qualifying entities as a unique feature of the Quebec system. Officials added this, they said, to address a perceived shortfall in the European Union's system.

As one interviewee explained, "when emitters qualify for free allocation, we give two-thirds of the allowances at the start, and one-third afterwards, or the following year. So if a company has increased its production, we give more, and if less, we cut their allocations." The approach prevents the inadvertent "over-awarding" of free allowances, a pitfall of the European system which doles them out in one fell swoop.

Our sources also cited offsets as a distinctive feature of Quebec and California's system — in particular the fact that compliance obligations are limited to eight percent. Offsets are highly controversial in the cap and trade world, and Quebec's use of the instruments is no exception. While some of our interviewees believe that the cap on offsets can undermine both environmental integrity and the integrity of the cap itself, others vehemently disagreed. They believe that offsets support cost containment,²¹ and allow legitimate emissions reductions to occur in the non-covered sectors outside of the cap, driving cooperation and creating a true market "link."

When asked about improvements that could be made, several sources agreed that the province should establish more long-term emissions targets, because businesses require longer planning cycles. This would afford businesses greater assurance, more incentive to act, and strengthened stability over a longer time period.

"The allocation approach with industry was good. [Government] worked quite closely with affected industries well in advance so that they understood they needed a step-by-step approach with gratis allocation at the front end." — Katie Sullivan, IETA

"The system was designed not to hurt those sectors, thanks to free allocation of allowances. The free allowances are almost a form of support to those sectors, but the system is set up to ensure it won't have a damaging impact on trade-exposed sectors."

— Interviewee

"We didn't try to crunch all of the issues at once. We thought it was legitimate to make decisions gradually. We wanted to establish the principle, get the system going, get the quotas decided, and that's what we did."

— Jean Charest, Former Premier of Quebec

"Design is tricky. Quebec had observed what had happened in Europe, where faulty design had led to the collapse of the price in the system." — Interviewee

5. Invest auction revenues in climate solutions.

Any government considering a carbon-pricing system must confront the most hotly debated question: Where do the revenues go? Various Canadian jurisdictions have taken different approaches to the conundrum. In fact, even Quebec and California chose different paths; California returns some revenues to citizens in the form of energy credits.²²

For its part, Quebec places all cap and trade revenue into the Green Fund, which some interviewees expect will grow to between \$2.7 and \$3.3 billion²³ in the next eight years. This decision helps ensure the system's credibility, they said, and helps make it politically palatable to climate-savvy voters. Take transit, for example. The Green Fund dedicates two-thirds of its funding to transit — a policy not supported by all interviewees. The impact on ridership, however, is undeniable: "In 2010 or 2011 we broke a record for transit use that dated from 1947 — transit use had been declining ever since [that post-war period]," one of our sources said.

In 2014, Quebec's Sustainable Development Commissioner tabled a report specifically addressing the Green Fund. The assessment criticised the fund, and said it was lacking in terms of project criteria, calls for proposals, clearly defined objectives, and program information.²⁴ One interviewee agreed, suggesting "highly political objectives" undermined the Fund, and said that its development favoured projects in certain sectors, "like public transit, because they're popular."

So while interviewees unanimously believed strongly that auction revenues should be reinvested in climate solutions, many attached caveats. As one source suggested, "if we did other kinds of projects, we could be more oriented to results. We could set up formal requests for proposals (RFPs) to see what industry could come up with to help address climate change." If given the opportunity to plan the system all over again, one participant said he would bring industry into the loop on Green Fund allocations.

"Quebec was increasing fees on all sorts of government services just to generate revenues, but the Green Fund was additional investment in things to combat the sources of climate change that Quebec would not be doing otherwise." — Karel Mayrand, David Suzuki Foundation

"It's a question of credibility. If we tell people that this matters, and there's a system in place that will give a price signal to reduce emissions, it's essential the money actually *goes to reducing emissions*. It will fail without that — the system would lose credibility." — Vincent Pouliot, Gaz Métro

"For the public, it makes sense to spend revenues generated from cap and trade on the deployment of alternative sources of energy. In Quebec, the second most popular use of revenues is to decrease the province's dependence on oil. While consistent, we don't hear nearly as much this outside of Quebec." — Erick Lachapelle, Université de Montréal

"If we take auction revenues and use them to reduce dependence on imported fossil fuels, we'll be building Quebec's economy." — Hugo Séguin, Université de Montréal

²¹ This is because offsets offer lower cost reductions than allowances

²² Purdon, M., Houle, D., & Lachapelle, E. (2014). *The Political Economy of California and Quebec's Cap-and-Trade Systems*. Sustainable Prosperity Research Report, page 22

²³ http://www.mddelcc.gouv.qc.ca/changements/plan_action/pacc2020-en.pdf

²⁴ http://www.vgq.qc.ca/en/publications/en_rapport-annuel/en_fichiers/en_rapport2014-2015-cdd.pdf

6. Commit to openness, fairness, and transparency.

Cap and trade advocates take a lot of flack for the inherent complexity of their chosen approach. That's why many of our interviewees stressed the importance of fairness, openness, and transparency in system design.

Accountability boils down to three characteristics, our interviewees said: Public education and awareness, a transparent system design — especially with respect to industry negotiations — and an independent body to keep an eye on things. Without these elements in place, a cap and trade system's long-term credibility is at risk. With them, it is far more likely to stand the test of time.

Unhappy about their January 2015 inclusion in the program, late last year oil companies leveraged low public awareness of cap and trade to launch a negative public-relations campaign. The companies floated the spectre of high gasoline prices in an effort to build public opposition to carbon pricing. Some of our interviewees felt this could have been avoided with a more informed public, but as one interviewee stated, "it wasn't such a big deal once gas prices started falling. Nobody noticed anymore, and the opposition was silenced. [The government] got lucky."

When designing and implementing its cap and trade system, Quebec's government engaged with industry early and often. Many of our contacts characterized this decision as one of the more politically contentious aspects of the process. On the one hand, the move allowed the government to earn the private sector's support prior to the system's launch. On the other, interviewees felt that truly broad industry support didn't in the end materialize, and that closed-door meetings with individual sectors created both real and perceived inequity in the system.

The best example of this, according to our non-government sources, is the way the province handled free allocations. While several industries, including aluminum, pulp and paper, cement, and others, receive free allocations in Quebec's cap and trade system, it is not clear how they are distributed. While the total number of allowances — and a list of the entities that receive them — is published in the *Gazette officielle du Québec*,²⁵ only the government knows the exact number received by each.



Quebec's provincial government manages all aspects of its cap and trade system, including the offsets protocol development, registry, and issuance. Its American counterpart is the California Air Resources Board (CARB), an independent government agency charged with managing the system's rules, regulations, and participation.²⁶

In comparing the two bodies, interviewees noted that CARB leans heavily on third parties for support in areas such as offset protocol development and registries. By design, these stakeholders can bring protocols to CARB for review, which the board can in turn review and adopt as official protocols.

In Quebec, there is no equivalent process for advancing protocols, and no third-party review. One interviewee described the setup as one "done in isolation with no transparency." Another characterized the province's approach as "slow" and "not one that is business-oriented — the whole focus is on environmental integrity." This suggests that the system could be strengthened if officials ensured processes were transparent and easier to understand.



"It's not so much that people didn't care about the system going into effect. I would argue that many small- and medium-sized enterprises didn't know what was going on, and it showed." — Erick Lachapelle, Université de Montréal

"This was the aspect that created the most concern from industry: the idea that political distribution of allowances would give political favours to a given sector or competitor." — Interviewee

"We were surprised by the lack of awareness among the public and even within some of the regulated sectors. This is particular to Quebec — the story in other WCI jurisdictions was different." — Erick Lachapelle, Université de Montréal

²⁵ <http://www.mddelcc.gouv.qc.ca/changements/carbone/documents-sp%C3%A8de/technical-overview.pdf>

²⁶ <http://www.arb.ca.gov/html/mission.htm>

7. Address competitiveness concerns with a home grown approach.



Courtesy of the Centre for Sustainable Development

When Quebec set about engaging with business and industry on its system design, it kept two anticipated concerns front and centre: Maintaining competitiveness, and overcoming expected opposition.

The Quebec government invested a great deal of time sitting down and listening to businesses, interviewees told us. Several cited “if not weekly, then at least monthly” meetings to keep an open channel with affected parties, and quickly respond to concerns. These meetings “helped to get businesses to support the market before it came into force.”

Interviewees felt these meetings were essential in negotiating design elements — namely, the free allocation of emissions units — that were felt to be critical to secure industry support. They also helped ensure that trade-reliant sectors would not view themselves as unfairly targeted. Sectors receiving free allocation of allowances include aluminum, lime, cement, chemical and petrochemical, metallurgy, mining and pelletizing, pulp and paper, and petroleum refining, among others.²⁷ Under the system’s design, fuel distributors are not eligible to receive free allowances.²⁸ As a whole, this approach helped Quebec secure a supportive business community for its cap and trade program and subsequent California linkage.

²⁷ Manufacturers of glass containers, electrodes, gypsum products, and some agri-food establishments

²⁸ Some thermal power producers are eligible to receive free allowances. The allowance distribution process is described in sections 39 to 44 of the *Regulation pertaining to the cap and trade system for greenhouse gas emission allowances*

“There are appeasement measures that government can negotiate—but [we] need to ensure the balance between appeasement and system integrity.” — Karel Mayrand, David Suzuki Foundation

“The allocation approach with industry was good. The government worked quite closely with affected industries well in advance so they understood they needed a step-by-step approach with gratis allocation at the front end.” — Katie Sullivan, IETA

“Need support from progressive businesses. Business has a lot of sway in government, and if business is seen as isolated, it becomes ‘environment versus economy. If progressive businesses are on board, then government can act with broad-based support.’”

— Karel Mayrand, David Suzuki Foundation

“The system was designed not to hurt those sectors thanks to free allocation of allowances. The free allowances are almost a form of support to those sectors, but the system is set up to assure it won’t have a damaging impact on trade-exposed sectors.” — Interviewee

Tax Politics

How the Government of Quebec prevented its cap and trade system from becoming a wedge issue at the ballot box

Political considerations lie at the heart of any major policy introduction — and Quebec's cap and trade system is no exception. That said, our Quebec-based expert commentators were unanimous: Climate action and the cap and trade system were never an election issue.

Under the governing Quebec Liberal Party, the province demonstrated its commitment to action by setting a target to reduce emissions 20 percent below 1990 levels by the year 2020. In 2012, the National Assembly passed a resolution "deplored" Canada's withdrawal from the Kyoto protocol. "Quebec for its part, intends to respect and make known its commitment to meet the greenhouse gas emissions reduction target," the resolution stated. It was only one of two such decrees that passed in the session with unanimous consent from all parties.

When the Parti Québécois (PQ) rose to power later in 2012, one interviewee recalled a personal thought about what might happen, "for partisan reasons the PQ had critiqued the market before the election, if it came from [former Quebec Liberal Party premier] Charest it was highly suspicious."

Instead, the PQ made an extended commitment to the cap and trade system, and an even stronger commitment to reducing emissions; a 25 percent reduction below 1990 levels by 2020.

Because of the strength of public support on climate action, *inaction* on climate became a political third rail. Dismantling the cap and trade system was never an option for government. This is one of the few jurisdictions in North America where this is the case.

"It was never an election issue, never a wedge politics issue, never was this policy questioned" – Erick Lachapelle, Université de Montréal

"In Quebec in general, climate change policy becomes a race to the top between the parties. No debate at all on the big question of whether we should take action to tackle climate change"

– Hugo Séguin, Université de Montréal



8. Design your system to support economic success.



Courtesy of the Centre for Sustainable Development

Quebec's cap and trade system is too new to yield meaningful empirical data with respect to economic effects. Regardless, our interviewees were pointed in their comments about its role in the province's economy. Generally, they agreed that:

- 1) The cap and trade system has had a neutral effect on Quebec's economy to date;
- 2) The system will help Quebec stay on the leading edge of a new, greener economy; and
- 3) Chances for success improve if new partners join Quebec and California under the Western Climate Initiative.

Overwhelmingly, the majority of participants stressed the second point — preparing Quebec to enter into a new, green economy — as the system's primary economic benefit. One interviewee described entering into a cap and trade system as "an economic instrument, so that Quebec would be the economic winners."

Because Quebec generates relatively low emissions from its hydroelectric production, one source said that participation in a low-carbon economy will ensure that "Quebec will be a winner, because our products already have a lower carbon footprint, thanks to our electricity." Others praised the Green Fund's clean transportation investment requirement, and the jobs that it creates.

Those who felt that the cap and trade system has had a neutral impact on the economy generally believed that it was benefitting from the decline in oil prices — creating less of a price increase than otherwise might have occurred. Any negative performance in Quebec's economy can be attributed to larger macroeconomic issues, which have overshadowed the results of the cap and trade system, itself operating at capacity only since 2014.

"We know there is huge potential in the green economy. For example, in Quebec there's a huge emphasis on the electrification of transportation. We have lots of companies that benefit from the turn towards a green economy." — Interviewee

"I think the effect on the economy is neutral. Even with the slowdown in Quebec's economy now, nobody is linking that (or even part of that) to the carbon market, and I have never heard of an industry refusing to come to Quebec because of the carbon market." — Interviewee

"There was a strong belief that the world was heading to decarbonization, and that a price on carbon was an essential part of that. Those who were most prepared would be the biggest winners economically." — Interviewee

"It's neutral on the economy for now, but it's not a bad thing to be a pioneer. It may help better position Quebec for the future." — Interviewee

9. Don't expect your cap and trade system to do everything; consider it one component of a full suite of climate policies.



In both Quebec and California, the cap and trade system is just one component of a suite of policies designed to fight climate disruption. As ably described by the University of Ottawa's Sustainable Prosperity think tank, both systems serve as a backstop measure, making other climate policies more robust.

California officials expect that complementary policies — such as the state's renewable energy portfolio and low-carbon fuel standards — will realize 85 percent of 2020 emission reductions.²⁹ Similarly, Quebec details 30 priority projects expected to result in 6.1 of the estimated 11.7 megaton reduction required for Quebec to meet its greenhouse gas emissions targets.³⁰

Quebec officials never envisioned their cap and trade system operating in isolation. Our sources pointed to the province's previous climate change policies, specifically its fossil fuels levy,³¹ as the first phase in a more comprehensive strategy. The cap and trade system became one component of that larger strategy, not insignificantly, the one that generates the revenue required to fund it.

²⁹ Purdon, M., Houle, D. & Lachapelle, E. (2014). *The Political Economy of California and Quebec's Cap-and-Trade Systems*. Sustainable Prosperity Research Report, page 5

³⁰ http://www.mddelcc.gouv.qc.ca/changements/plan_action/pacc2020-en.pdf

³¹ Ended December 31, 2014

Two-thirds of Quebec's cap and trade revenue will fund transportation-sector improvements. Coincidentally transportation fuels produce 43.5 percent of the province's carbon pollution.³² Meanwhile, voters typically support public transit and other clean transportation initiatives. One interviewee noted that, because of decreased revenue in other areas, "a dedicated funding stream allows the government to put investments where it otherwise would not have been able to."

Interviewees emphasized that the cap and trade system was just one piece of the puzzle in a broader government plan to help tackle climate disruption. In the case of Quebec, this helped to capitalize on the public's acceptance of climate change as a threat and the government's commitment to taking a leadership role in addressing it.

"The Quebec government, from the mid-2000s, wanted to be a leader in the fight against climate change. They did many things in that fight; cap and trade was not the first. Since 2006, we had the Green Fund, which generated \$200 million a year dedicated to tackling climate change."

— Interviewee

"In 2009, Quebec announced GHG emissions reduction targets for 2020 and integrated these targets in its climate change action plan — but the action plan wasn't enough on its own. Quebec wanted a steady money stream to ensure that programs could then help reach the targets."

— Hugo Séguin, Université de Montréal

"California had decades of investments in energy to transform its electricity sector, so the proportion generating from clean sources was increased." — Mary Nichols, California Air Resources Board

10. Get ready for the global spotlight.



While it is still too early to assess the economic performance of Quebec's cap and trade system, when it came to assessing the success of the policies, our interviewees were unanimous on one point: Carbon pricing has significantly enhanced Quebec's reputation on the world stage.

When asked about environmental benefits from the cap and trade system, generally, interviewees viewed the environmental successes as "longer-term." It is a benefit that the cap and trade system has helped raise awareness among businesses about the need for greenhouse gas emission management. However, one interviewee

expressed some hesitation with respect to Quebec's efforts to reduce carbon pollution 20 percent by 2020. That source cited the lack of alignment with California's targets, and the province's "freezing or re-evaluation of other climate programs."

Finally, the system's designers look back on it as a highlight of their careers. One called it "the most fun subject I've ever worked on." Former Premier Jean Charest described it as "very comforting to know that this approach could make a difference." All of the interviewees who helped develop the policy reported feeling a sense of pride in what has been accomplished.

"It's excellent for Quebec's reputation. Quebec has positioned itself as a leader and that looks good on the province. Quebec will make use of this at the Paris climate talks as a significant accomplishment."

— Vincent Pouliot, Gaz Métro

"Really, this has put Quebec back on the map. There's a new interest in Quebec that didn't exist at this level before." — Interviewee

"We can say we're unique, we're in the avant garde, we're advising the World Bank on carbon pricing, and so on." — Hugo Séguin, Université de Montréal

"That is the game changer I have seen. Quebec being pointed to internationally as a sub-national that is a total climate leader." — Katie Sullivan, IETA

Parting Thoughts

We ended our interviews by asking, "What would be your advice to other jurisdictions considering a cap and trade policy?" Here are some of the responses.

"Be among the first – coming in last is just a losing proposition." – Interviewee

"Take it easy on the offsets at the beginning, because it's hard to put the toothpaste back into the tube."

– Erick Lachapelle, Université de Montréal

"Try to forge coalitions, not just with industry but with other political parties, given the urgency of the problem, and given that this is good policy according to all the experts and economists who can back you up."

– Erick Lachapelle, Université de Montréal

"Once you've taken the decision, it's taken. There is no turning back. You'll have critics, you'll have opponents, but once you decide, you get it done."

– Hugo Séguin, Université de Montréal

"Consult frequently and thoughtfully with industry and people who understand markets. It's a market-based mechanism and designing a market is not on the CVs of a lot of environmental regulators. Don't just think about compliance, think about secondary markets, driving liquidity, broad participation and price discovery, etc."

– Katie Sullivan, IETA

"Raise awareness, talk about it in positive terms. Create a broad coalition in favour of action. You also need supportive businesses."

– Karel Mayrand, David Suzuki Foundation

"Be very clear and determined when you decide to put it forward. Think it through in advance, say you're doing it, and ask everyone to work with you on getting the design right."

– Jean Charest, Former Premier of Quebec

"Arrange that you have civil society support all the way." – Hugo Séguin, Université de Montréal

"Join existing systems like the WCI rather than re-inventing the wheel. The WCI isn't perfect, but it's rigorous, and it's much easier than inventing a new system from scratch." – Vincent Pouliot, Gaz Métro

"Think about what elements are necessary to add for linking, and what can be tailored to suit an individual jurisdiction. As long as the basics are the same, there's a lot of room for individuality."

– Mary Nichols, Chair, California Air Resources Board

"Increase levels of transparency, and find a place for the creativity of economic actors." – Interviewee

"Don't sell it as a system to punish the bad guys. Environmental groups need to hear that. It's a carbon market, and we don't want it to be seen as punishment. The goal is to put in place a new economic tool, and you have to present it that way." – Interviewee

Appendix A

List of Questions for Interviewees

Our team interviewed 10 experts during the fall of 2014 and the first months of this year in semi-structured conversations based on the questions below. Not all interviewees were asked all of the questions.

Developing and introducing the cap and trade system

1. In your opinion, what motivated the Government of Quebec to consider and introduce a cap and trade system?

2. Designing any cap and trade system involves making decisions about things like the use of revenues, the allocation of allowances, and the use of offsets. Which of Quebec's design choices do you think will make the biggest difference to the policy's effectiveness?

3. During the development of the cap and trade system, which aspects of its design proved the most contentious?

4. Think back to when the policy was first announced. How was it received?

5. Were you surprised by any of the responses from particular groups or individuals?

6. Were the government's communications efforts effective in responding to critiques or concerns about the system? Why or why not?

7. What approaches / strategies / tactics did Quebec use during negotiations with California—a far larger jurisdiction—to reach an agreement that worked for Quebec?

Effect of the Policy

8. Do you believe that the cap and trade system has harmed trade-exposed sectors? Why or why not?

9. Is Quebec's approach to auctioning / free allocation appropriate?

10. Do you think Quebec uses its auction revenues effectively? Could other uses of the revenue be more effective?

11. Do you think the price level and stringency of the system is about right? Why or why not?

12. In your view, how important is the linkage to California's system?
13. What are the benefits of that linkage to Quebec, if any?
14. What are the drawbacks, if any?
15. Now that we have a couple of years of experience with the cap and trade system, how would you characterize its impact on Quebec's:
 - Economy?
 - Greenhouse gas emissions?
 - Reputation?
16. What allowed Quebec's cap-and-trade system to survive an election / change in government?
17. How likely do you think it is that the cap and trade system will remain in effect over the long term? Do you anticipate significant changes to the system design in the coming years?

Cap and Trade Politics

18. What were the political advantages, if any, of the introduction of the cap and trade system? What were the disadvantages, if any?
19. From a political point of view, how could the government's rollout of the cap and trade system have been improved?

Reflective Questions

20. What would be your advice to other jurisdictions considering a cap and trade policy?
21. If it were starting all over again, what should Quebec's government do differently?
22. Looking back on it now, how do you feel about your participation in the development of the policy?

Inside North America's Largest Carbon Market: Ten Lessons from the Front Lines of Quebec's Fight Against Carbon Pollution

Sarah Petrevan

April 2015

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June 28, 2016

Dear Premier Ball,

Enclosed you will find a copy of the Columbia Institute's newest report, *Top Asks for Climate Action*. This report highlights how Canada can ramp up climate action by empowering low carbon communities, and the crucial role local governments can play in combating climate change.

Specifically, *Top Asks* pinpoints what local governments need from provincial or territorial and federal governments to realize climate action. The actions set out in this report — 24 for the provinces and territories and 18 for the federal government — are based on an extensive literature review and substantial input from local elected leaders.

Local government decisions directly or indirectly impact sixty percent of Canada's energy consumption and more than fifty percent of greenhouse gas emissions. We can't be climate leaders without local government action.

These actions are of course not the only actions that could make a difference, but they are actions that could have a great impact. We hope *Top Asks for Climate Action* will be a helpful resource as Newfoundland and Labrador moves forward on climate action.

Thank you for your leadership.

Sincerely,

A handwritten signature in blue ink, appearing to read "Charley Beresford".

Charley Beresford
Executive Director, Columbia Institute
charley@columbiainstitute.ca | T: 604-695-2031

A RESOURCE GUIDE



TOP ASKS FOR CLIMATE ACTION

RAMPING UP LOW CARBON COMMUNITIES

by Karen Farbridge,
Charley Beresford
and Atiya Jaffar



CENTRE FOR CIVIC GOVERNANCE

Columbia
INSTITUTE

TOP ASKS FOR CLIMATE ACTION:
RAMPING UP LOW CARBON COMMUNITIES

A Resource Guide

2016

by Karen Farbridge,
Charley Beresford and Atiya Jaffar

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SUMMARY

LOCAL GOVERNMENTS HAVE A CRUCIAL ROLE to play in combating climate change. Their decisions impact, directly or indirectly, over half of Canada's greenhouse gas (GHG) emissions.¹ This offers huge scope for meeting Canada's national climate responsibilities, with the right kind of support from federal and provincial governments.

The report is directed to ramping up climate action through local government decision making and it was prepared with the needs of elected leaders in mind. The Top Asks identified in the report are those that federal, provincial, and territorial elected governments could put in place so that local decision makers have the tools they need to maximize climate action. And the potential is substantial.

If you are an elected leader, you are likely being called upon more often to address the consequences of a changing climate — from forest fires in the west, floods in the prairies, sea level rise in the north, to ice storms in the east. Canada needs a bold plan to reduce GHG emissions. We have an enormous task ahead of us.

There are four emerging trends pushing local governments to centre stage: the localization of energy, the mainstreaming of climate change in land use planning, rapid urbanization, and the importance of place in a global economy.

Canada can and must ramp up climate action by empowering low carbon communities.

What do local governments need to unleash their climate potential? Which top asks have the most leverage for impact?

The actions set out in this report — 18 for the federal government, and 24 for the provinces and territories — are based on an extensive literature review with input from local elected leaders. They are not the only actions that could make a difference, but they are actions that could have a great impact.

These actions focus on five priority areas:

- **CAPACITY BUILDING;**
- **SMART GROWTH;**
- **HARNESSING LOCAL ENERGY;**
- Reducing carbon pollution from the **BUILDING SECTOR**; and
- Reducing carbon pollution from the **TRANSPORTATION SECTOR**.



Canada needs a bold plan to reduce GHG emissions. We have an enormous task ahead of us. Local governments have a crucial role to play.

¹ Natural Resources Canada, "Integrated Community Energy Solutions: A Roadmap for Action," (2009).



Local governments have a crucial role to play in combating climate change. Their decisions impact, directly or indirectly, over half of Canada's GHG emissions.

TORONTO PHOTO COURTESY MICHAEL MURAZ/Flickr

Over 100 local elected officials responded to the Top Asks survey. As one respondent said: "Just about all of the offered actions need to be done, should have been done 25 or 30 years ago when some of us said they were necessary. We are so late in the game that dramatic response is required (well beyond Paris), meaning action on all fronts is needed."

Top Asks identifies key federal, provincial, and territorial actions needed to unleash local government climate potential. They are early wins in the transition to net zero emissions in 2050.

Top Asks

Canada can and must ramp up climate action by empowering low carbon communities. Our country can't be a climate leader without local government action.

Where to start:

FEDERAL TOP ASKS	
Capacity building	Adopt science-based greenhouse gas targets. Put a price on carbon for net-zero emissions by 2050. Address capacity shortfalls that stand in the way of local government climate action.
Funding	Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industry.
Natural capital	Fund local government baseline assessments of natural capital. Include the carbon storage value of natural capital in national GHG accounting.
Harnessing local energy	Fund community- and Indigenous-owned renewable energy capacity.
Building sector	Incentivize energy efficiency retrofits in homes and commercial buildings.
Transportation sector	Prioritize transit and active transportation infrastructure projects over auto-only infrastructure.



PROVINCIAL & TERRITORIAL TOP ASKS

Capacity building	Adopt science-based greenhouse gas targets. Put a price on carbon for net-zero emissions by 2050. Address capacity shortfalls that stand in the way of local government climate action.
Funding	Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industry.
Smart growth	Change legislation so that energy and climate change policies are part of land use planning.
Harnessing local energy	Change the building code to make renewable-energy-powered homes and buildings.
Building sector	Fund ambitious retrofit programs. Enable property-assessed financing and on-bill financing. Support low income households to address energy poverty.
Transportation sector	Support local governments to improve public transit and active transportation in urban and rural communities.

“Just about all of the offered actions need to be done, should have been done 25 or 30 years ago when some of us said they were necessary. We are so late in the game that dramatic response is required (well beyond Paris), meaning action on all fronts is needed.”

— Top Asks Survey respondent

VANCOUVER PHOTO COURTESY PAUL KRUEGER/Flickr

Are there other actions that our federal and provincial governments must take to reduce climate change? Absolutely. This report speaks to the potential of local governments.

Where to Raise Top Asks for Empowering Low Carbon Communities

You can discuss these asks with your:

- Council;
- Constituents, community groups, and staff;
- Federal, provincial, and territorial elected representatives;
- Provincial, territorial, and national local government associations; and
- Government-led climate change consultations.

Introduction

Local governments have a crucial role to play in combatting climate change alongside federal, provincial, and territorial governments.

“Mitigation is a human intervention to reduce the sources or enhance the sinks of greenhouse gases.” — Intergovernmental Panel on Climate Change (2014)¹

CANADA NEEDS A BOLD PLAN to reduce greenhouse gas emissions that aligns with the science of climate change.

In December 2015, 195 countries reached an historic agreement to hold “the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change.”²

The agreement was signed by world leaders, including Prime Minister Justin Trudeau, in New York at the United Nations on Earth Day. Ratification in the parliaments of each country is the next step.

A two degree rise in global temperatures is considered the threshold for dangerous warming by the international scientific community. During the Paris talks, many low-lying and island nations successfully advocated for a lower threshold to be included. For these countries, the risk of rising sea levels on their homelands is an immediate threat.

What will it take? Simply put, we will need to achieve net zero emissions by 2050. The Paris Agreement resolves to “reach peak global greenhouse gas emissions as soon as possible to achieve a balance between anthropogenic emissions by sources and removals by sinks in the second half of this century.”

Canada must act quickly if we are to meet this international commitment. Starting in 2023, we will be reporting every five years on how we have reduced emissions. There is a substantial gap between Canada’s current targets—approximately a 14 per cent GHG reduction by 2030, based on 1990 levels—and the targets needed to put us on a path to achieve net zero emissions by 2050.³

¹ IPCC, “Fifth Assessment Report Summary for Policymakers” (2014).

² UNFCCC, “The Paris Agreement” (2015).

³ Canadian Centre for Policy Alternatives, “CCPA Monitor: November/December” (2015)



Canada ranked 58th out of 61 countries (ahead only of Kazakhstan, Australia, and Saudi Arabia) for climate protection performance in 2015.⁴

With an economy heavily dependent on fossil fuel extraction, Canada has struggled to find a credible path forward on climate change. Our country is among the top 10 emitters in the world and of those top 10 emitters, Canada has the highest emissions per capita.⁵ We have an enormous task ahead of us to drive down GHG emissions.

Today, 25 per cent of Canada's emissions arise from fossil fuel production.⁶ Our GHG emissions are 18 per cent higher today than in 1990.⁷ Meanwhile, the National Energy Board projects Canada's use of fossil fuels will increase 22 per cent over the next 25 years at current rates of consumption.⁸

Local governments have a crucial role to play in combatting climate change alongside federal, provincial, and territorial governments. But this will only happen if elected leaders make climate change a priority, and if federal, provincial, and territorial governments take measures to power up low carbon cities and communities.

In Paris, in December 2015, 195 countries reached an historic agreement to hold the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels.

4 Climate Change Action Network Europe, "The Climate Change Performance Index: Results 2015" (2014).

5 World Resources Institute, "6 Graphs Explain the World's Top Emitters" (2014).

6 Canadian Centre for Policy Alternatives, "CCPA Monitor: November/December" (2015).

7 Ibid.

8 National Energy Board, "Canada's Energy Future" (2016).

Making the Case for Local Action

Climate change is a complex issue. It crosses all sectors of society. It will need the co-operation of all orders of government to tackle it.

LOCAL ELECTED LEADERS AROUND THE WORLD are demonstrating their effectiveness in reducing GHG emissions.

Almost 1,000 local leaders gathered in Paris alongside the United Nations meeting and signed the Paris City Hall Declaration.⁹ In the same spirit as the world's national leaders, these local leaders made a commitment to take aggressive steps to reduce GHG emissions. Many Canadian mayors were among them.

In Canada, local governments work within a framework of federal, provincial, and territorial leadership. There is no question that framework matters: like using science based targets for GHG reduction, putting a price on carbon, eliminating fossil fuel subsidies, regulatory support for climate friendly industries, and phasing out coal-fired power. However, these measures alone won't be enough to meet the goals of the Paris Agreement.

Climate change is a complex issue. It crosses all sectors of society. It will need the co-operation of all orders of government to tackle it.

While federal, provincial, and territorial governments might have a lot of data on communities, they lack context. Local governments know their community's story best. They know how to mobilize rich and diverse networks of people, businesses, and organizations to encourage innovation and action. They are the most directly-accountable order of government and the closest to the electorate, and their decisions impact, directly or indirectly, more than 50 per cent of greenhouse gas emissions.

Local decisions are regionally relevant, taking advantage of regional strengths and assets. Innovation is often geographically-specific because of the interactive learning processes involved. Rather than viewing our country's regional energy differences as a liability, communities offer an opportunity to turn our regional energy diversity into a strength.¹⁰ We will need multiple pathways to a low-carbon economy.

⁹ Climate Summit for Local Leaders, "Paris City Hall Declaration" (2015).

¹⁰ Broadbent Institute, "A Green Entrepreneurial State as Solution to Climate Federalism" (2016).



FIGURE 1: URBAN DRIVERS OF GHG EMISSIONS VERSUS POLICY LEVERS



Almost 1,000 local leaders gathered in Paris alongside the United Nation's meeting and signed the Paris City Hall Declaration.

PARIS CLIMATE SUMMIT FOR LOCAL LEADERS PHOTO COURTESY BLOOMBERG.ORG

"Stylized hierarchy of drivers of urban GHG emissions and policy leverages by urban scale decision making. Cities have little control over some of the most important drivers of GHG emissions and have large control over comparatively smaller drivers of emissions."

Source: International Panel on Climate Change "Human Settlements, Infrastructure and Spatial Planning" (2014)

There are four emerging trends pushing local governments to centre stage:

- Localization of energy;
- Mainstreaming of climate change in land use planning;
- Rapid urbanization; and
- Importance of place in a global economy.

Localization of Energy

Local elected leaders can anticipate a growing role in energy decision making.

Canada's energy system is undergoing a fundamental transformation as cost-competitive distributed energy resources, like solar and wind energy, are disrupting a sector that has been historically centrally planned and managed. Local and community-based solutions for meeting our energy needs, including energy efficiency utilities and thermal grids, are one of the reasons local governments are becoming more involved in energy decision making — because they intersect with traditional land use and infrastructure planning responsibilities.¹¹

At the same time, energy projects are increasingly being met with local resistance. Communities across the country are expressing their opposition to pipelines, power lines, fossil-fired power plants, wind and solar farms, hydro projects, and oil and gas resource projects.¹² Local governments across Canada are increasingly being drawn into these discussions.

We need better ways to engage Canadians in energy decision making and local governments are an important part of the solution.

Mainstreaming Climate Change

Provincial and territorial legislation is changing so that energy and climate change policies are part of land use planning. These changes are giving local governments more authority to act.

In addition to more than 50 per cent of GHG emissions, local governments influence, directly or indirectly, almost 60 per cent of Canada's energy consumption.¹³ The mainstreaming of climate change into land use planning practices reflects the strong relationship between urban form and the energy efficiency of the built environment. Local governments are the decision-making authority on land use planning. Local governments are also responsible for almost 60 per cent of the nation's infrastructure.¹⁴ Infrastructure is a key factor in determining a community's emissions profile and consumption patterns.¹⁵

¹¹ QUEST, "Canada's Energy Transformation: The Role for Smart Energy Communities" (2015).

¹² Ibid.

¹³ Natural Resources Canada, "Integrated Community Energy Solutions: A Roadmap for Action" (2009).

¹⁴ FCM, "Cities and Communities: Partners in Canada's Future" (2015).

¹⁵ IPCC, "Human Settlements, Infrastructure and Spatial Planning" (2014).



More than half of the world's population lives in cities, and by 2050, this will increase to two thirds. Seventy per cent of global GHG emissions arise from cities.

Rapid Urbanization

Global urbanization is proceeding at an unprecedented rate. More than half of the world's population lives in cities.¹⁶ By 2050, this will increase to two thirds.¹⁷ Seventy per cent of global GHG emissions currently arise from cities.¹⁸ By 2050, more urban areas and infrastructure will be built than currently exists.

More than 8 out of 10 Canadians currently live in cities (both urban and suburban in form). This is expected to increase to 85 per cent by 2020 while our population continues to grow.¹⁹ Changes to the way we build cities will be crucial to reducing national GHG emissions, particularly in the building and transportations sectors. Policies that promote a more compact urban form support the uptake of low-carbon technologies for electricity and heating and cooling of buildings like district energy and combined heat and power. They also promote less carbon-intensive forms of transportation and protect natural assets that serve as carbon sinks.

CITY OF VICTORIA, DISTRICT OF SAANICH, TOWNSHIP OF ESQUIMALT, BC, PHOTO COURTESY EWAN MCINTOSH/FLICKREWAN MCINTOSH/FLICKR

¹⁶ United Nations Department of Economics and Social Affairs, "World Urbanization Prospects" (2014).

¹⁷ Ibid.

¹⁸ IPCC, "Human Settlements, Infrastructure and Spatial Planning" (2014).

¹⁹ Natural Resources Canada, "Integrated Community Energy Solutions: A Roadmap for Action" (2009).

Importance of Place in a Global Economy

Place matters in a global economy. Canadian cities, large and small, compete globally for talent and investment. Transportation and the Internet have removed geographic barriers and people are freer to choose where they live. Communities that lead the transition to a low-carbon economy will have a considerable global advantage in attracting talent and investment. Leading cities, in particular, will develop much needed expertise that can be exported to meet the demands of growing urban centres around the world. Getting cities and communities right will not only decide the fate of the planet, but will also determine the quality of urban life for billions of people.



BEST PRACTICES: INCREASING ENERGY SECURITY

When the ice storm hit eastern Ontario in 1998, the City of Markham sent crews to help restore power to thousands of people. Seeing the impact on their neighbours, they considered how they could improve their community's resilience to extreme weather events. Today, Markham District Energy, in addition to providing clean, reliable, and affordable thermal energy to numerous buildings, can maintain heat and power to several critical buildings and community centres in the event of a major grid failure.

Benefits of the Low-Carbon Economy

The transition to low-carbon and climate-resilient communities has many co-benefits that contribute directly to our quality of life and well-being—a priority of all elected leaders.²⁰

Top of mind when we think about reducing GHG emissions is the benefit to the environment and protecting ecosystems, biodiversity, and food systems.

Reducing fossil fuel consumption also improves air quality. Promoting active transportation gets us moving. Protecting our urban forest supports our mental health. Access to local food promotes healthier lifestyles. And a healthier population overall means lower health care costs.

The productive time lost to traffic congestion in our cities is wasteful—both for the economy and our well-being. It takes us away from family and friends and leisure and cultural activities—all of which are crucial to our sense of well-being. Providing more transportation options also means greater mobility and connection to community life for people of all ages.

When we harness local renewable or low-carbon energy solutions, our communities are made more energy secure and resilient to climate change impacts like severe weather events.

As energy literacy increases in a community, energy consumers gain more control over how much energy they use and what energy source they choose. In Germany, almost half of the renewable energy produced is owned by individuals, communities, and co-operatives. Germany's energy transition has nurtured the growth of the “prosumer”—someone who consumes and produces energy. The barriers to a smooth energy transition are less technology-based, and more associated with the policy and political changes required to shift to more decentralized sources of energy.

The Vancouver Cohousing Community Solar Project, the first of its kind in BC, incorporates a number of solar photovoltaic and electric vehicle features that are co-operatively-owned.²¹

Our communities spend a lot of money on energy—on average \$3,000 to \$4,000 per capita each year. Most of these dollars leave our communities. More could stay in residents pockets and circulate in the local economy by improving the efficiency of buildings and transport, as well as harnessing local energy.

Through the development of its Community Energy Action Plan, the City of London, Ontario, has estimated it spends over \$1.6 billion each year on all forms of energy. Only 12 per cent of those energy dollars stay within the community and only 59 per cent stay within the province. Reducing London's energy use by 1 per cent annually has the potential to keep \$14 million within the local economy, improving both the affordability and competitiveness of the community. Similarly, in Duncan, a town of

BEST PRACTICES: COMMUNITY- OWNED POWER

Nelson, BC is the first Canadian city to build a community solar garden, providing residents with clean energy and credits toward their power bill. An initiative of the city-owned utility, Nelson Hydro, the project allows people to purchase power from the solar panel farm. (See nelson.ca Community Solar Garden)

²⁰ QUEST, “Community Energy Planning: The Value Proposition” (2016).

²¹ Vancouver Cohousing, “BC's First Community Owned Solar Energy Project” (2016).

5,000 on Vancouver Island, most energy dollars (approximately \$15 million) leave the community.²²

Communities are also understanding how they can leverage their climate and energy strategies to promote economic development. Energy efficiency retrofit programs have been demonstrated to create local jobs by facilitating

markets for energy products and services. Working to retain existing jobs, by helping a business lower their energy costs, is often an important local priority.

Countries like Germany have found that an informed and engaged population is a valuable partner in the transition to a low-carbon economy. It also represents our best chance of ensuring a democratic and just energy transition.



BEST PRACTICES: PROTECTING LOCAL JOBS

In Guelph, Ontario, energy prices were putting pressure on Polycon Industries, a car parts plant, to relocate. With the support of the local government, the city-owned utility, and the provincial government, the company now produces its own heat and power, saving \$2 million annually on its energy bill and improving their competitiveness in the North American market. The project protects over 400 local advanced manufacturing jobs that were at risk of going south.

POLYCON PHOTO ELLISDON.COM

Mitigating climate change involves the implementation of policies and governance tools that facilitate the transition away from fossil fuel dependence toward a renewable energy economy. However, the introduction of new technologies must not occur at the expense of workers, Indigenous peoples, marginalized communities, or people. There are opportunities to take climate action while addressing social inequities. To do this, climate change policies implemented at a federal, provincial, territorial or local level must foster a “just transition.”

The International Labour Organization has defined a “just transition” as “the notion that the transition process to a greener economy has to be inclusive of all stakeholders, and that the unavoidable employment and social costs of the transition have to be shared by all.”²³ Increasingly, labour movement representatives in Canada have advocated for a just transition as a cushion from the boom–bust cycle of an oil-dependent economy.²⁴ Workers’ unions in Canada have also been vocal about fostering a transition that increases safe and secure employment opportunities, offers re-training opportunities for workers employed in high-carbon industries, and prioritizes First Nation and community ownership in new low-carbon industries.²⁵

²² QUEST, “Community Energy Planning: The Value Proposition” (2016).

²³ International Labour Organization, “Climate Change and Labour: The Need for A Just Transition” (2010).

²⁴ Canadian Labour Congress, “Canada Needs a Just Transition” (2016).

²⁵ Canadian Centre for Policy Alternatives, “Creating a green social contract for BC’s Resource Workers” (2015).

Indigenous peoples in Canada and around the world are calling for a just transition. Climate policy offers an opportunity to address Indigenous rights. Priorities in each community will be influenced by the community's own local story and regional strengths.

We Must Adapt

As global temperatures rise, scientists agree we can expect even more severe weather-related impacts on our daily lives, local infrastructure, safety, and financial resources.

The fire this year, 2016, in the tinder-dry boreal forest surrounding Fort McMurray, Alberta, and in Fort McMurray itself, will by far overshadow previous records of loss from natural catastrophe.

The 2013 floods in Alberta racked up losses reaching \$1.74 billion. The ice storm that hit southern Ontario and eastern Canada in 2013 caused \$200 million in insured losses and was the second most costly weather event. More recent flash flooding in Toronto resulted in \$940 million in damages, becoming Ontario's most-costly weather event.²⁶

The Insurance Bureau of Canada recently estimated the increasing impact of Canadian climate trends on two cities: Halifax Regional Municipality and the City of Mississauga. IBC's findings were sobering. For example, the cumulative cost of the impact of extreme wind events in the Halifax region could reach over \$140 million of gross domestic product (GDP) by 2040. In Mississauga, the cumulative impact of freezing rain events could reach over \$30 million of GDP by 2040.²⁷ (Both figures in \$2013.)

The IBC report notes that while the poor state of local infrastructure across the country increases the risk of damage from climate-related severe weather events, it also represents an opportunity to adapt infrastructure to a changing climate.

While climate change mitigation is the focus of *Top Asks*, there is an urgent need for increased financial support for local governments to help them respond and adapt to a changing climate, including understanding the health risks of climate change for our communities. In some cases, mitigation strategies also offer adaptation benefits.

ICLEI – Local Governments for Sustainability provides a comprehensive set of resources on climate change adaptation for local governments.²⁸

²⁶ CBC News, "Extreme Weather Cost Canada \$3.2 billion" (2014).

²⁷ IBC, "The Economic Impacts of the Weather Effects of Climate Change on Communities" (2015).

²⁸ ICLEI – Local Governments for Sustainability, "Adaptation Library," (n.d.).

Enabling Local Government Action on Climate Change

A new era of national, provincial, territorial, and local government collaboration will be needed to deliver on Canada's international climate change commitments.

IF THERE IS ONE THING that all orders of governments should be able to agree on is a shared desire to see all Canadians living in resilient, sustainable, and prosperous communities. Federal, provincial, and territorial government can act without delay to support local governments and take action on climate change.

There are many exceptional examples of Canadian local governments demonstrating leadership on climate change. However, not everyone has the same access to the resources and tools necessary to act.²⁹ A new era of national, provincial, territorial, and local government collaboration will be needed to deliver on Canada's international climate change commitments.

This section focuses on five areas where local governments can have the biggest impact on emissions:

1. **CAPACITY BUILDING** to enable local action;
2. Building low carbon communities by adopting **SMART GROWTH** policies;
3. Transitioning to a cleaner and more efficient energy system by **HARNESSING LOCAL ENERGY** resources;
4. Reducing GHG emissions from the **BUILDING SECTOR**; and
5. Reducing GHG emissions from the **TRANSPORTATION SECTOR**.

The report identifies specific policies for federal, provincial, and territorial governments that would enable local governments to take action on climate change. International and/or Canadian best practices accompany each action, along with an explanation.

These potential actions have been vetted by local elected leaders from across the country through an online survey. Survey comments helped inform the content of the report. They also identified the “top asks” of federal, provincial, and territorial governments (see Section 6).

²⁹ Changing the Conversation, “The Solutions Agenda: A Call to Action for and by Canadians” (2015).

3.1 CAPACITY BUILDING

Local Government Capacity

Federal actions in this section are shown with “F.” Provincial/territorial actions are shown with “P.” Where the action applies to both, an “F / P” is used. They are numbered for easier reference.

ACTION: LOCAL GOVERNMENT CAPACITY

F1 / P1: *Ramp up climate action by empowering low carbon communities.*

Improving the capacity of local governments to take action on climate change, through measures such as setting GHG targets, energy and emissions inventories and mapping, carbon pricing, and local action plans, are considered in this section.

While more than 50 per cent of Canada’s GHG emissions are directly or indirectly influenced by local government decisions, these decisions need a strong federal and provincial foundation. Local governments work with limited regulatory and financial resources, receiving only 8 cents on the tax dollar.³⁰ As all local elected leaders quickly learn, local governments are also the recipients of a growing list of unfunded downloaded responsibilities. In this environment, building local capacity to address climate change is crucial. Local governments need the right resources and tools to act effectively.

Building local capacity to address climate change is crucial. Local governments need the right resources and tools to act effectively.

Targets

Targets for reducing GHG emissions should be based on two things: a robust inventory and a commitment to international climate change science. The federal government will need to set ambitious GHG targets for 2025 to put the country on course to net zero emissions by 2050. So will provinces and territories. Setting local targets is a key responsibility for local government.

ACTION: TARGETS IN FEDERAL AND PROVINCIAL LEGISLATION

F2 / P2: *Adopt climate change legislation that includes targets for reducing GHG emissions to levels consistent with limiting the rise in average global temperatures to below 2 degrees Celsius and as close to 1.5 degrees Celsius as possible, with net zero emissions by 2050.*

³⁰ Environment and Climate Change Canada, “National Inventory Report 1990-2014” (2016).

RATIONALE: Canada currently lacks comprehensive climate change legislation.³¹ Some provinces and territories have taken action to reduce GHG emissions, but their records vary significantly. National legislation would affirm Canada's commitment to act, provide a framework for ongoing policy development, and lay a common foundation for action. Provincial and territorial legislation would do the same. Despite the science, there are still people in every community who deny the need to take action. A clear commitment, with legislated targets, would help all local governments move beyond these debates.

INTERNATIONAL BEST PRACTICE: Finland, Denmark, the United Kingdom, and Mexico are among a small but growing group of countries that have adopted science-led and legally-binding emissions reduction targets to 2050.³² Several countries have pledged to become carbon neutral, including Iceland, Finland, Sweden, and New Zealand.

CANADIAN BEST PRACTICE: In 2007, the BC government passed the *Greenhouse Gas Reduction Targets Act*, which legislated provincial targets to reduce GHG emissions from a 2007 baseline.³³ Alberta has also legislated emission targets.³⁴ The *Ontario Climate Change Mitigation and Low-Carbon Economy Act* enshrines Ontario's emission reduction targets in legislation; they cannot be relaxed without amending the legislation, although they can be increased.³⁵

ACTION: TARGETS IN LOCAL COMMUNITY PLANS

P3: *Require local governments to incorporate GHG reduction targets, policies, and actions in official community plans.*

RATIONALE: While it might seem strange to suggest that a local elected leader would want to be mandated to include targets, policies, and actions in official community plans, legislation would do several things. First, it acknowledges that meeting Canada's commitment to reducing GHG emissions will require the participation of every local government. Second, it will help local elected leaders focus their efforts on local action plans rather than debating whether or not there is a role for a local government in combatting climate change. And finally, it would ensure a level playing field among local governments when they apply for infrastructure funding tied to achieving climate goals.

The inclusion of energy and climate change policies in official community plans will "mainstream climate change" in land use planning and local government decision-making. The faster this occurs, the more quickly local governments will be able to develop and share best practices.

³¹ At time of writing, this situation is expected to change given the federal government's public commitment to combat climate change.

³² Global Legislators, "The Global Climate Change Legislation Study" (2015).

³³ Government of British Columbia, "Climate Action Legislation" (2014).

³⁴ Government of Alberta, "Climate Change and Emissions Management Act" (2003).

³⁵ Government of Ontario, "Climate Change Mitigation and Low-Carbon Economy Act (Bill 172)" (2016).

CANADIAN BEST PRACTICE: BC's Local Government (Green Communities) Statutes Amendment Act requires all municipalities to set GHG emission targets, policies, and actions in their official community plans (OCPS) and regional growth strategies (RGS), building on the work of many national, provincial, and local organizations.³⁶ As of 2015, at least 114 of BC's 162 local governments have a community energy and emissions plan (CEEP), representing three quarters of the province's population and the highest percentage in Canada.³⁷ While these plans vary significantly in quality, they are important steps forward.

Data, Inventories, and Mapping

The development of energy and emissions inventories has been identified as the most important tool to promote local action on climate change by local government officials.³⁸ A clear understanding of how and where energy is used in a community, and where carbon is released and stored, is necessary to develop local targets and action plans, and promote implementation.

Despite the importance of a good inventory, there are not many policies that support the development and monitoring of inventories in Canada.³⁹ By helping to address this policy gap, federal, provincial, and territorial governments would help to accelerate local action on climate change.

Energy mapping is an important tool to identify opportunities to optimize the energy efficiency in a community. However, few local governments have access to the data and/or resources necessary to use this tool effectively to guide local decision making.

Developing energy and emissions inventories takes time and money. Many local governments are unable to access the data they need or on a consistent basis.

ACTION: ENERGY AND EMISSIONS DATA

P3: Empower Environment Canada to provide every Canadian local government with community energy and emissions data.

P4: Work with the federal government to provide every local government with community energy and emissions data.

RATIONALE: Developing inventories takes time and money. Many local governments are unable to access the data they need or on a consistent basis. Smaller communities lack resources to develop an inventory. Federal, provincial, and territorial governments could save communities considerable time and money if they collected and provided energy and emissions inventory data to all local governments. This would improve the quality

³⁶ Government of British Columbia, "Frequently Asked Questions about Bill 27 Local Government (Green Communities) Statutes Amendments Act" (2008).

³⁷ Sustainable Prosperity, "Provincial Climate Action Plans and Local Governments: Lessons from BC" (2016); Getting to Implementation, "Project Update" (2014).

³⁸ Getting to Implementation, "National Report on Community Energy Plan Implementation" (2015).

³⁹ Getting to Implementation, "National Report on Policies Supporting Community Energy Plan Implementation" (2015).

The methodology used to develop inventories varies significantly across the country. A standardized approach, based on the GPC global protocol would improve consistency and comparability of inventory reporting.

of inventories and reporting across the country and allow local governments to direct limited resources toward implementation.

Federal, provincial, and territorial governments also collect a lot of climate and energy-related data. For instance, provincial governments collect vehicle kilometres travelled (VKT) data when a vehicle license is renewed. Access to provincial VKT data would strengthen local inventories.

Federal, provincial, and territorial governments are often much better positioned to secure the release of agency data. Governments across Canada are embracing the principle of open data as a way to promote innovation; the release of climate and energy-related data should be made a priority.

Providing community climate and energy data would level the playing field for local governments across Canada. Today there are wide differences in access to information among communities. With the expectation that infrastructure funding will be tied to achieving climate goals, it is critical that all local governments have the information they need to effectively compete for those dollars—not just those who can afford to develop inventories or have better access to data.

Finally, the methodology used to develop inventories varies significantly across the country. A standardized approach, based on the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), would improve consistency and comparability of inventory reporting and allow Canadian cities to better profile and share their work internationally. The Federation of Canadian Municipalities (FCM) and the Partners for Climate Protection (PCP) program of ICLEI – Local Governments for Sustainability are aligning with the GPC, recognizing the need to balance precision with simplicity for small-urban, rural, and remote communities.

INTERNATIONAL BEST PRACTICE: The World Resources Institute, C40 Cities Climate Leadership Group, and ICLEI partnered to create a protocol standard for measuring GHGs in cities called the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC).⁴⁰ The GPC has been adopted by many initiatives and programs, including the Compact of Mayors⁴¹ and over 100 cities.⁴²

Amsterdam created an energy atlas to allow the development of “what if” scenarios to optimize plans for energy efficiency. The city provides its energy information as “open data” to promote engagement and innovation. Amsterdam produced the energy atlas in collaboration with local stakeholders, building a bottom-up process that grows support for change.⁴³

CANADIAN BEST PRACTICE: Where the development of inventories has been supported in a number of areas in Canada, such as Ontario, British Columbia, and

⁴⁰ Greenhouse Gas Protocol, “Global Protocol for Community-Scale Greenhouse Gas Emission Inventories” (2012).

⁴¹ Compact of Mayors, “Cities Committed to the Compact of Mayors,” (n.d.).

⁴² Greenhouse Gas Protocol, (2012).

⁴³ United Nations Environment Program, “District Energy in Cities: Unlocking the Potential of Energy Efficiency and Renewable Energy” (2015).

the Northwest Territories, more advanced energy planning and implementation is found. Canada has an opportunity to build upon BC's commendable tool called the Community Energy and Emissions Inventory (CEEI).⁴⁴ The CEEI provides energy and emissions data to all local governments in BC.

It has been estimated that the CEEI has avoided over \$1.5 million in community costs and, in turn, has accelerated the planning process for local governments in the province.⁴⁵

This program along with a suite of enabling, regulatory, and funding tools has reduced barriers for BC communities to take action on climate change.⁴⁶ However, it is important to note that additional data would be needed to align the CEEI with the GPC.

Ontario's Municipal Energy Plan Program and Quebec's Climat Municipalités provide funding to local governments to develop inventories as does the FCM Green Municipal Fund.

Carbon Pricing

The cost of releasing carbon into the atmosphere is escalating, which could be attributed to the loss of crops from a “false spring,” responding to the spread of an infectious disease, or property damage caused by an extreme weather event. Putting a price on carbon, either through a carbon tax or cap and trade system, begins to tie these costs to the activities that emit GHGs. Simply put, a price on carbon provides a financial incentive to reduce emissions. On its own, carbon pricing is unlikely to achieve net zero emissions by 2050. Additional policies that promote innovation will also be necessary. However, carbon pricing is recognized as an essential market-based tool for combatting climate change.⁴⁷

As explained below, local governments have a strong interest in seeing this market tool implemented. Local governments under a cap and trade system will want to consider how they can participate in the market as well as benefit from the revenue that is raised. Likewise, local governments under a carbon tax regime will want to consider how they might benefit. For instance, the carbon tax paid by local governments in BC is reimbursed when they make a commitment to reducing GHG emissions in their communities.

ACTION: CARBON PRICING

F4: *Put a price on carbon to serve as a baseline for all provinces and territories. Increase annually to support achieving zero emissions by 2050.*

P5: *Establish a price on carbon.*

⁴⁴ BC Ministry of the Environment, “Community Energy and Emissions Inventories (CEEI) Technical Methods and Guidance Document 2007—2010” (2014).

⁴⁵ Getting to Implementation, “National Report on Policies Supporting Community Energy Plan Implementation” (2015).

⁴⁶ Sustainable Prosperity, “Provincial Climate Action Plans and Local Governments – Lessons from BC” (2016).

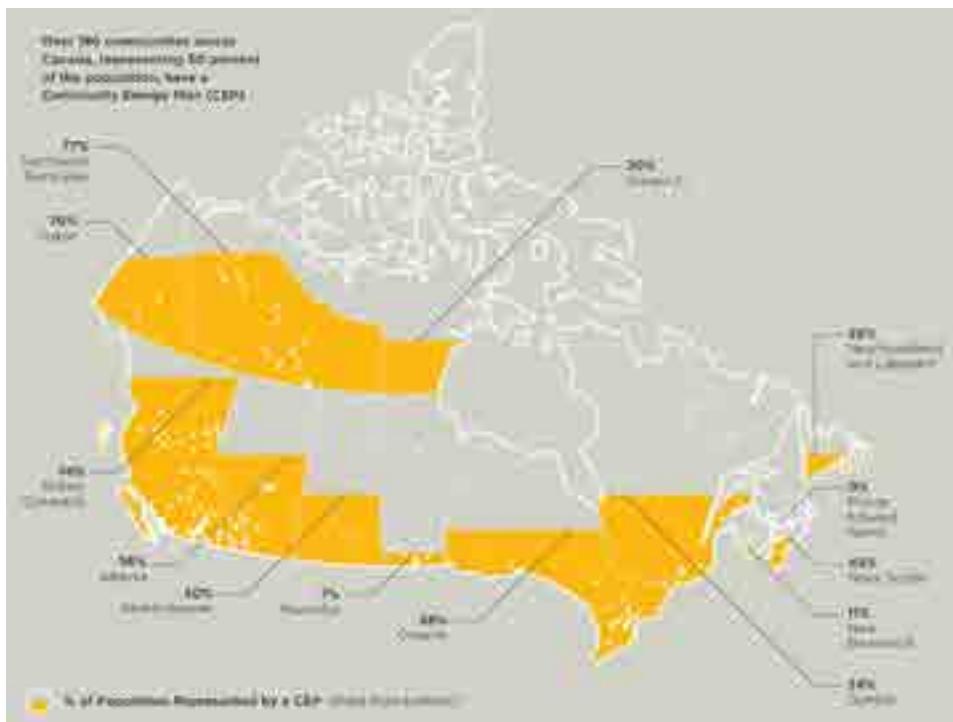
⁴⁷ Broadbent Institute, “A Green Entrepreneurial State as Solution to Climate Federalism” (2016).

RATIONALE: A price on carbon would create a more positive environment for all local governments to take action on climate change. A national baseline would level the playing field across the country, supporting action by all Canadian communities while respecting regional differences in the chosen approach to carbon pricing. The price set for carbon must be increased regularly to achieve zero emissions by 2050.

CANADIAN BEST PRACTICE: There remains considerable debate in Canada about what constitutes best practice in carbon pricing. BC's carbon tax has been in place since 2008 and Quebec's cap and trade system was launched in 2013. At the time of writing, Alberta is proceeding to establish a carbon tax while Ontario is designing a cap and trade system similar to that of Quebec and California as a member of the Western Climate Initiative.⁴⁸

Today, more than 180 communities, representing more than half of Canada's population, have a community energy plan.

INFOGRAPHIC:
GETTINGTOIMPLEMENTATION.CA



(QUEST) has promoted community energy planning across Canada.⁴⁹

Today, more than 180 communities, representing more than half of Canada's population, have a community energy plan.⁵⁰

Despite significant progress over the last decade or more, we are far from achieving the outcomes we need to achieve net zero emissions by 2050. Many local governments still face substantial challenges to developing plans.

48 WCI, "Western Climate Initiative," (n.d.).

49 QUEST, "Quality Urban Energy Systems of Tomorrow," (n.d.).

50 GTI, "Getting to Implementation," (n.d.).

Implementation can be hindered by the lack of funds or appropriately-trained staff. Some communities have yet to address emissions issues as these capacity concerns often become prohibitive barriers to action.

Funding

Infrastructure is a significant driver of GHG emissions.⁵¹ The continued expansion of fossil fuel based infrastructure will only serve to lock in emission profiles and consumption patterns for decades.⁵² Federal, provincial, and territorial governments have a significant opportunity to influence the transition to climate-resilient and low-carbon infrastructure by tying infrastructure funding to low-carbon solutions.

The federal Gas Tax Fund (GTF) is a well-developed model for a federal financial support program for local governments. It has successfully supported and enabled the development of sustainable infrastructure in Canadian communities. However, in some cases, like in New Brunswick and Manitoba, the majority of GTF resources have been used to upgrade roads and bridges, with a disproportionately lower percentage of funds being used to improve active transportation or public transit infrastructure.⁵³ This program, as well as similar ones, could be strengthened if funds were allocated with stricter requirements for local governments to ensure that funding supports sustainable infrastructure development and contributes to reducing reliance on fossil fuels.

The federal government currently spends about \$2.2 billion in subsidies for the fossil fuel sector.⁵⁴ These subsidies and other forms of financial support for fossil fuel industries should be redirected toward low-carbon solutions, especially at the local level.

The federal government currently spends about \$2.2 billion in subsidies for the fossil fuel sector. These funds should be redirected toward low-carbon solutions, especially at the local level.

ACTION: INFRASTRUCTURE SPENDING

F5 / P6 *Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industries.*

RATIONALE: Local governments primarily rely on property taxes and user fees to fund their operations. Competing demands for limited funds can make it difficult for local governments to fund the implementation of climate change action plan initiatives despite their efficacy.

Canadian local governments are also responsible for over 60 per cent of the country's infrastructure.⁵⁵ Much of this infrastructure is aging and needs to be replaced. At the same time, new infrastructure is built every day to meet the demands of a growing population. This represents an opportunity to transition to low-carbon solutions,

⁵¹ IPCC, "Human Settlement, Infrastructure and Spatial Planning" (2014).

⁵² Ibid.

⁵³ Manitoba Municipal Governments, "Federal Gas Tax Fund" (2014); and Local Governments New Brunswick, "Gas Tax Fund" (2016).

⁵⁴ Carol Linnitt, "Canada subsidizes the fossil fuel industry by \$2.7 billion every year" (2015).

⁵⁵ Federation of Canadian Municipalities, "The Road to Jobs and Growth: Solving Canada's Municipal Infrastructure Challenge" (2012).

but only if local governments can make long term plans predicated on sustainable infrastructure funding from federal, provincial, and territorial governments.

CANADIAN BEST PRACTICE: The federal government endowed the FCM with \$550 million to establish the Green Municipal Fund (GMF). The purpose of the GMF is to improve air, water, and soil, and to mitigate the impacts of climate change.⁵⁶ The federal government announced an additional \$31.5 million for the GMF in 2016.

The federal Gas Tax Fund (GTF) provides funding for local infrastructure projects. To date, through the GTF, the federal government has invested over \$13 billion in Canadian municipalities and the government aims to invest another \$22 billion through the GTF over the next 10 years.⁵⁷

In some provinces and territories, such as Yukon, Nunavut, and Newfoundland and Labrador, the GTF is directed toward supporting Integrated Community Sustainability Plans (ICSP) developed by municipalities.⁵⁸ In Prince Edward Island, municipalities are only eligible for funding from a \$37.5 million GTF pool if they complete ICSPs that “contribute to at least one of the federally desired outcomes of cleaner air, cleaner water, or reduced GHGs.”⁵⁹

In the Northwest Territories, in order to access the GTF, communities are required to complete a community energy plan as part of an ICSP.⁶⁰ In Nova Scotia, municipalities must complete a municipal climate action plan and make an amendment to their integrated sustainability plans. Nova Scotia is also the only province that requires local governments to incorporate climate adaptation into ICSPs.⁶¹

This approach encourages a comprehensive process of creating community energy profiles, evaluating potential energy opportunities, and implementing, monitoring, and revising the plan as necessary.⁶²

BC's Climate Action Revenue Incentive Program provides funding to municipalities, equivalent to the carbon taxes they have paid, when they become signatories to the Climate Action Charter.⁶³ By signing the charter, municipalities agree to become carbon neutral in their corporate operations, measure and report on their community emissions profiles, and create complete, compact, energy-efficient rural and urban communities. The funding has supported local government to achieve these goals. In 2014, almost 25 per cent of BC municipalities reported achieving carbon neutrality in their operations.⁶⁴

56 Federation of Canadian Municipalities, “Green Municipal Fund” (2016).

57 Infrastructure Canada, “Federal Gas Tax Fund” (2014).

58 Municipalities Newfoundland, “ICSP Assistance” (2010); Infrastructure Canada, “Administrative Agreement on Gas Tax Fund (Nunavut)” (2014); Yukon Department of Community Services, “Gas Tax Fund” (2013).

59 Government of PEI, “Canada & PEI agreement on the transfer of Federal Gas Tax Revenues” (2005).

60 Arctic Energy Alliance, “Communities,” (n.d.).

61 Atlantic Climate Adaptation Solutions, (n.d.).

62 Arctic Energy Alliance, “Communities,” (n.d.).

63 Government of British Columbia, “Climate Action Charter” (2007).

64 Government of British Columbia, “CARIP Program” (2014).

Multilevel Governance

Climate change is a complex issue with implications for all sectors of society. It will require the cooperation of all orders of government to tackle it and local elected leaders need a seat at the table. As a consequence of our constitutional history, Canada does not have the same structures in place as other countries that promote all levels of government working together to solve complex issues.⁶⁵ This is a disadvantage we must overcome. A new era of national, provincial, territorial, and local government collaboration will be necessary to ensure Canada meets its climate change commitments.

ACTION: PARTNERS FOR CLIMATE PROTECTION

F6 / P7: *Support the Partners for Climate Protection program to close the gap between national/provincial/territorial policy and local action on climate change.*

RATIONALE: The Partners for Climate Protection (PCP) program is currently being remodelled to reflect the goals of the Paris Agreement and to embrace new partners and members. The PCP offers a unique platform in Canada to close the gap between national, provincial, and territorial policy and local action on climate change.

CANADIAN BEST PRACTICE: FCM and ICLEI – Local Governments for Sustainability have built a successful platform to promote local action on climate change through the Partners for Climate Protection program. The PCP has a robust membership and knowledge base. FCM has brought a federal voice and access to communities to the partnership while ICLEI has brought considerable expertise in mitigation and adaption, as well as access to international programs, tools, and networks.

Local Planning

Over 180 Canadian communities have developed some form of energy and/or emissions plan, although the quality of community energy planning varies significantly.⁶⁶ Some CEPs are being developed at a regional scale or in clusters. There are more than 640 provincial and territorial policies that in some way support the development or implementation of CEPs. However, more work is needed to increase the number and quality of CEPs as well as support successful implementation.⁶⁷

The ICLEI Building Adaptive and Resilient Communities (BARC) program provides municipalities with a tool to support them in climate change mitigation and adaptation planning. The program complements the PCP. Assessing the vulnerabilities of local

⁶⁵ Robert Young, “Multilevel governance and public policy in Canadian municipalities: Reflections on research results” (2013) Canadian Political Science Association Conference.

⁶⁶ Getting to Implementation, “National Report on Community Energy Plan Implementation September 2015” (2015).

⁶⁷ Getting to Implementation, “National Report on Policies Supporting CEP Implementation” (2015).

A suite of complementary policies has resulted in BC having the highest percentage of local governments in Canada with a community energy plan.

SURREY PHOTO
COURTESY SURREY.CA



energy systems to extreme weather and increasing local resilience is an important outcome of a CEP. Participation in the program is cost-prohibitive to many local governments, yet it would serve to identify and strengthen the connections between mitigation and adaptation.

ACTION: COMMUNITY ENERGY PLANS

P8: *Provide funding, data, and capacity support to encourage the development of high-quality community energy plans.*

RATIONALE: A community energy plan (CEP) is an important tool to improve end-user energy efficiency in a community, reshape urban forms to support low-carbon energy supply and distribution, and coordinate urban infrastructure systems to reduce GHG emissions.⁶⁸ Not all local governments have the capacity to develop a CEP.

CANADIAN BEST PRACTICE: The Ontario government offers a voluntary program that provides successful local government applicants with funding for 50 per cent of eligible costs, up to a maximum of \$90,000, to develop a CEP.⁶⁹ This program is successfully increasing the number of Ontario communities doing community energy planning.⁷⁰

A suite of complementary policies and programs in BC has resulted in that province having the highest percentage of local governments in Canada with a CEP. The Community Energy and Emissions Inventory (CEEI) was fundamental to the implementation of community-based energy conservation, efficiency, and integrated-planning initiatives.⁷¹

In British Columbia, Alberta, and Quebec carbon pricing policies have played a role in driving the implementation of CEPs.⁷²

⁶⁸ IPCC, “Human Settlements, Infrastructure and Spatial Planning” (2014).

⁶⁹ Ontario Ministry of Energy, “Municipal Energy Program” (2013).

⁷⁰ Getting to Implementation, “National Report on Policies Supporting CEP Implementation” (2015).

⁷¹ Ibid.

⁷² Ibid.

3.2 SMART GROWTH

A core responsibility for local elected leaders is making decisions on land use. Land use planning decisions influence energy consumption and emissions for decades. These decisions can help reduce emissions or make climate change worse.

Smart growth principles support low-carbon and climate-resilient communities by promoting a more compact urban form. Policies that promote smart growth principles also contribute to the well-being of people living in urban environments (see Section 2.3: Benefits of the Low-Carbon Economy).

Actions focused on helping local governments reduce emissions by protecting natural capital and promoting a more compact urban form are considered in this section.

Natural Capital

Natural capital—forests, wetlands, and floodplains—play an essential role in storing carbon as well as providing a variety of other services like filtering drinking water, protecting pollinator habitat, and managing stormwater.

A more compact urban form protects natural capital by curbing urban sprawl. Policies that protect and enhance natural capital within an urban environment combat climate change, improve air quality, and promote well-being.

ACTION: NATURAL CAPITAL

F7: *Fund local government baseline assessments of natural capital. Include the carbon storage value of natural capital (e.g., forests, wetlands, and floodplains) in national GHG accounting.*

Local governments face strong resistance to protecting natural capital from the development industry. Most lack the tools needed to build a compelling case for protecting natural capital.

RATIONALE: The protection of natural capital should be part of a national climate change strategy. Local governments face strong resistance to protecting natural capital from the development industry. Most lack the tools needed to build a compelling case for protecting natural capital.

The report *Planning for Health and Prosperity and Growth in the Greater Golden Horseshoe: 2015–2041* recommends promoting the protection and enhancement of natural systems as one way to “mainstream climate change” into land use planning practices.⁷³

⁷³ Ontario Municipal Affairs and Housing, “Planning for Health and Prosperity and Growth in the Greater Golden Horseshoe: 2015-2041” (2015).

BEST PRACTICES: VALUING NATURAL CAPITAL

The Town of Gibsons, BC is the first community in North America to deem nature as its most valuable asset.

GIBSONS, BC PHOTO COURTESY NADENE REHNBY



CANADIAN BEST PRACTICE: The Town of Gibsons, BC is the first community in North America to deem nature as its most valuable asset. Gibsons is integrating natural assets into its municipal asset management practices.⁷⁴

Compact Urban Form

A more compact urban form supports the adoption of low-carbon technologies for electricity as well as the heating and cooling of buildings, like district energy and combined heat and power (see Section 3.4 Harnessing Local Energy).

It also reduces trip distance, promotes more active forms of transportation like walking and cycling, and is more supportive of transit. Density, land-use mix, connectivity, and accessibility all work together to reduce transportation emissions in the urban environment.

A compact urban form also protects natural capital, agricultural lands, and local food production.

ACTION: URBAN SPRAWL

P9: *Introduce policies that promote more compact cities and curb urban sprawl.*

⁷⁴ Town of Gibsons, “Toward an Eco-Asset Strategy in the Town of Gibsons” (2015).

RATIONALE: Provincial and territorial governments have a central role to play in providing local governments with planning tools to curb urban sprawl.

CANADIAN BEST PRACTICE: BC's *Growth Strategies Statutes Amendment Act* (1995) directed 68 per cent of all population growth to urban centres and frequent transit development areas between 2011 and 2013.⁷⁵

Ontario's *Growth Plan for the Greater Golden Horseshoe* has reduced land consumption rates in one of the fastest growing regions in North America. Between 1991 and 2001, the population of the Greater Toronto and Hamilton Area (GTHA) grew by 19 per cent while the urban area expanded by 26 per cent.⁷⁶ In contrast, between 2001 and 2011, the population of the GTHA grew by 18 per cent and the urban area expanded by only 10 per cent.⁷⁷ The advisory panel that recently reviewed the growth plan has recommended even more aggressive intensification and density targets to achieve compact, low carbon communities.⁷⁸

ACTION: LAND USE PLANNING

P10: *Change legislation so that energy and climate change policies are part of land use planning.*

RATIONALE: Local elected leaders may struggle to have climate change considered by their colleagues. There may be a perception that climate change is not within the core mandate of a local government. It may also not be the priority of the local administration, especially when it considers the lack of jurisdictional authority to easily implement policies that support emission reductions. Changing legislation so that energy and climate policies are integrated into land use planning would make a difference.

CANADIAN BEST PRACTICE: The BC *Local Government Statutes Amendment Act* (Bill 27) empowers local government to take action by mandating GHG reduction targets in all Official Community Plans (OCP) and Regional Growth Strategies (RGS).⁷⁹ Quebec's *Sustainable Regional and Local Land Use Planning Act* (Bill 47) also mandates goals for energy efficiency and reducing emission in local land use plans and regional growth strategies.⁸⁰ Additionally, Ontario's Provincial Policy Statements, which guide local government planning policy, were recently amended to include references to climate change and energy.⁸¹

⁷⁵ Getting to Implementation. "National Report on Policies Supporting Community Energy Plan Implementation" (2015).

⁷⁶ Ontario Municipal Affairs and Housing, "Planning for Health and Prosperity and Growth in the Greater Golden Horseshoe: 2015-2041" (2015).

⁷⁷ Ibid.

⁷⁸ Ibid.

⁷⁹ Government of British Columbia, "Local Government Statutes Amendment Act," (n.d.)

⁸⁰ Bill 47, Government of Quebec, "Sustainable Regional and Local Land Use Planning Act" (2012).

⁸¹ Ontario Municipal Affairs and Housing, "Provincial Policy Statement" (2014).

3.3 HARNESSING LOCAL ENERGY

Canada's energy system is undergoing a fundamental transformation as cost-competitive distributed energy resources, like solar and wind energy, are disrupting a sector that has been historically centrally planned and managed.

A decentralized model for electricity ownership democratizes energy production by creating new opportunities for public engagement, and it strengthens energy security in communities that no longer have to depend on complex transmission networks to source electricity from distant centralized utilities.

The growth of distributed energy solutions within communities is increasing system efficiency, reducing system costs, lowering energy bills, promoting clean vehicles, increasing energy efficiency and competitiveness, reducing emissions, improving system reliability and resilience, and enhancing energy security — all good news for communities.

Actions focused on helping local governments harness renewable energy and thermal energy are considered in this section.

Renewable Energy

The International Energy Association projects significant growth in renewable energy over the next five years and recommends that governments work to eliminate policy barriers that prevent its deployment.⁸²

ACTION: RENEWABLE ENERGY

- F8 / P11:** *Develop a renewable energy strategy that promotes local ownership models. Enable publicly-owned utilities to develop renewable energy strategies.*
- F9:** *Fund community- and Indigenous-owned renewable-energy capacity.*
- P12:** *Implement a “feed-in-tariff” program that promotes individual, community, and Indigenous-owned projects.*

RATIONALE: Programs that promote local ownership models increase the societal acceptance of renewable energy projects. Community-shared ownership, cooperative, and local government business models engage communities in the energy transition and build consumer understanding.

⁸² International Energy Association, “Medium-term Renewable Energy Market Report” (2015).

Over the last decade, Indigenous ownership and co-ownership of renewable energy projects has been a significant source of economic development in Indigenous communities.⁸³ These projects have also enabled remote Indigenous communities to phase-out dependence on diesel generators which have had severe, deleterious impacts on community health and local environments.⁸⁴ However, communities and First Nations across Canada that hope to pursue renewable energy development face a number of prohibitive barriers including financial restrictions and limited capacity.⁸⁵ Federal, provincial, and territorial programs have played a big role in lifting these barriers and providing communities with the resources to engage in renewable energy development.⁸⁶

INTERNATIONAL BEST PRACTICE: The European Union's *Renewable Energy Directive* requires the EU to source at least 20 per cent of its energy needs from renewable sources by 2020. This would be achieved by individual countries meeting their national targets.⁸⁷ All EU countries are also required to source 10 per cent of their transportation fuels from renewable sources by 2020.⁸⁸ Each country is required to specify its plans for meeting the 2020 targets in its national action plan, which details individual renewable energy targets for electricity, heating and transportation sectors; the planned mix of renewable energy technologies; and policy measures to meet these targets.⁸⁹

Germany is democratizing its energy sector through the transition to renewable energy by promoting community ownership of renewable energy projects. By doing so, the country is encouraging the rise of the “prosumer” while increasing public acceptance of renewable energy projects. In 2012, 47 per cent of Germany's renewable energy production was owned by individuals, communities and co-operatives. The number of German energy co-operatives grew from 66 to 888 between 2001 and 2013.⁹⁰

Many other countries in the European Union have promoted the development of community-owned energy projects. The United Kingdom, for instance, has developed a community energy strategy that places communities at the centre of national renewable energy planning. This UK strategy aims to ensure that by 2015 “it should be the norm for communities to be offered the opportunity of some level of ownership by commercial developers.”⁹¹ The *Danish Promotion of Renewable Energy Act* requires wind turbine projects to offer for sale at least 20 per cent of ownership shares to local citizens.⁹²



Germany is democratizing its energy sector through the transition to renewable energy by promoting community ownership of renewable energy projects.

⁸³ Chris Henderson, *Aboriginal Power: Clean Energy and the Future of Canada's First Peoples* (2013).

⁸⁴ Ibid.

⁸⁵ Ibid.

⁸⁶ Ibid.

⁸⁷ European Commission on Energy, “Renewable Energy Directive” (2016).

⁸⁸ Ibid.

⁸⁹ European Commission on Energy, “National Energy Plans” (2016).

⁹⁰ Germany, “Energy Transition: The German Energie Wende” (2016).

⁹¹ UK Department of Energy and Climate Change, “Community Energy Strategy” (2014).

⁹² Danish Government, “Promotion of Renewable Energy Act” (2008).

CANADIAN BEST PRACTICE: Prince Edward Island (PEI) produces 10 per cent of its energy from wind power, more than any other province. Its success is directly attributed to public ownership which has resulted in greater public acceptance of wind power.⁹³

In 2011, Nova Scotia initiated the world's first Feed in Tariff (FIT) program for locally-based renewable energy projects—the Community Feed in Tariff (COMFIT).⁹⁴ Through this program, small-scale renewable energy producers were guaranteed a fixed rate for electricity that they fed into the grid.⁹⁵ The COMFIT program has added more than 100 MW of community-based renewable energy projects to the grid. The Nova Scotia government suspended the program in 2015, saying it had “achieved its objectives.”⁹⁶ In response to this cancellation, Nova Scotia residents, climate action organizations, and renewable energy industry representatives expressed their disappointment.⁹⁷

By 2012, the Ontario Feed-in-Tariff (FIT) program had attracted \$27 billion in private sector investment, introduced over 30 new clean energy companies to the province, and created more than 20,000 jobs while producing enough renewable energy to power 1.2 million homes.⁹⁸ The Ontario *Green Energy and Economy Act, 2009* amended the *Co-operative Corporations Act* by providing support for renewable energy co-operatives through the FIT program.

Similar to Nova Scotia's COMFIT program, the FIT program offers a fixed rate of return to renewable energy producers for electricity that they 'feed' into the provincial grid.⁹⁹ The FIT program favours projects with Aboriginal, community, or municipal participation.¹⁰⁰ Ontario's microFIT program provides homeowners and other eligible participants with the opportunity to develop a small or “micro” renewable electricity generation project on their property, such as solar rooftop projects.¹⁰¹ However, critiques of Ontario's FIT program included recommendations to set more rigorous goals and targets for improving community involvement in renewable energy development.¹⁰² Many large solar and wind projects have met significant opposition because the energy developers did not fully engage the local communities in decision making.

Established in 2011, the ecoENERGY for Aboriginal and Northern Communities Program was established to provide funding to Indigenous and northern communities for renewable energy projects.¹⁰³ The program offered funds to successful applicants

93 DESMOG Canada, “The Maritimes: Canada's Secret Trailblazer in Wind Energy” (2016).

94 Energy Nova Scotia, “Community Feed-in Tariff Program Facts” (2011).

95 Ibid.

96 Ibid.

97 Carol Linnitt, “Nova Scotia Pulls Plug on World's First Community Renewable Energy FIT” (2015) *Desmog Blog*; Diane Bailey, “Analysis: Nova Scotia Pulls Plug on Community Feed in Tariff,” *Windpower Monthly* (2015).

98 Getting to Implementation. “National Report on Policies Supporting Community Energy Plan Implementation” (2015).

99 Ontario Power Authority, “FIT Program” (2016).

100 Ibid.

101 Ontario Power Authority, “Microfit Program” (2016).

102 Environmental Defence, “Ontario Feed in Tariff Review” (2011).

103 Indigenous and Northern Affairs Canada, “ecoENERGY for Aboriginal and Northern Communities Program” (2015).

to support the evaluation of renewable energy development opportunities, purchase of equipment, or every-day operational expenses.¹⁰⁴

ACTION: WASTEWATER BIO-GAS

P13: *Promote carbon-neutral wastewater treatment by harnessing bio-gas production.*

RATIONALE: Considerable energy is used to pump and treat water and wastewater. These systems are estimated to use up to 50 per cent of a local government's total energy consumption.¹⁰⁵ Wastewater treatment facilities are also a source of GHG emissions (e.g., methane). Biogas (methane and carbon dioxide) is an underutilized, local, and renewable energy source. Biogas-fueled combined heat and power (along with nutrient recycling through the land application of biosolids and water reuse) utilizes this local energy source while reducing emissions. Provincial and territorial governments have a role to play in supporting local innovation in wastewater treatment practices.

Thermal Energy

District energy systems offer a highly-efficient source of heating and cooling for buildings. Community energy plans continue to identify district energy as an important strategy to conserve energy and reduce emissions while providing a more secure local energy supply.¹⁰⁶ District energy systems, when combined with combined heat and power, can achieve double the efficiency of a traditional fossil fuel power.¹⁰⁷ At least 128 operating district energy systems have been identified in Canada, with the majority in Ontario, and their numbers have been growing in recent years.¹⁰⁸

WHAT IS A DISTRICT ENERGY SYSTEM? District energy systems supply thermal energy (heating and/or cooling) to multiple buildings, as either water or steam, through highly-insulated underground pipes.

WHAT IS COMBINED HEAT AND POWER? Combined heat and power produces electricity and thermal energy from a single fuel source like natural gas or biomass. Unlike traditional power generation, waste heat is captured and distributed to end users, thereby significantly improving energy efficiency.

Communities need significant resources to adopt thermal energy.

¹⁰⁴ Ibid.

¹⁰⁵ Ontario Municipal Affairs and Housing, “Planning for Health and Prosperity and Growth in the Greater Golden Horseshoe: 2015-2041” (2015).

¹⁰⁶ Government of British Columbia, “Exploring Transformational Change: Local Government Climate Change Pathways to 2050” (2014).

¹⁰⁷ Ontario Sustainable Energy Association, “The New District Energy: Building Blocks for Sustainable Community Development” (2008).

¹⁰⁸ Canadian Industrial Energy End-use Data and Analysis Centre, “District Energy Inventory for Canada” (2015).

Biomass heating plant with district heating at Université St. Anne in Church Point, Nova Scotia.

PHOTO COURTESY DAVID DODGE/FLICKR



ACTION: THERMAL ENERGY

F10 / P14: *Develop a thermal energy strategy, including funding and capacity support, to promote the uptake of district energy, combined heat and power, and other thermal energy systems in communities.*

RATIONALE: Federal, provincial, and territorial governments have a significant opportunity to influence the uptake of thermal energy systems in Canada. Annual thermal energy produced in Canada accounts for less than 2 per cent of total building energy consumption for space heating, space cooling, and water heating.¹⁰⁹ This represents a significant opportunity for improving the energy efficiency of the building sector. A thermal energy strategy would provide policy direction, financing, and planning tools to support local governments deploy district energy, combined heat and power, and other thermal energy systems in their communities.

A recent review of leading British Columbia communities confirmed the importance of district energy in the transition to a low-carbon economy.¹¹⁰

INTERNATIONAL BEST PRACTICE: District energy systems, with heat provided by combined heat and power systems, are a key part of low carbon communities in European Union.¹¹¹

In Copenhagen, a district energy system supplies 97 per cent of the city with its heating needs.

¹⁰⁹ Ibid.

¹¹⁰ Government of British Columbia, “Exploring Transformational Change: Local Government Climate Change Pathways to 2050” (2014).

¹¹¹ Ibid.



Thermal energy in Canada accounts for less than 2 per cent of total building energy consumption for space heating, space cooling, and water heating. This represents a significant opportunity for improving the energy efficiency of Canada's building sector.

NESJAVELLIR GEOTHERMAL POWER PLANT IN PINGVELLIR ICELAND. PHOTO COURTESY GRETAR ÍVARSSON/Flickr

Due to the importance of district energy to combatting climate change, the United Nation Environment Program (UNEP) has launched a campaign to promote the uptake of district energy in cities. They identify several best practices that support the uptake of district energy by local governments including: incentives for combined heat and power (CHP), national regulation on tariffs, incorporation of district energy into building efficiency standards and labels, supportive tax regimes, clear planning guidance and regulations that provide local governments with a mandate to act, polluter taxes, grants and subsidies, and cities engaged in the design and development of vertically-integrated provincial and national polices.¹¹²

CANADIAN BEST PRACTICE: The BC Energy Plan and Ontario Long-term Energy Plan both promote the expansion of distributed energy resources like renewable energy, district energy and storage. The Geothermal Manitoba Funding Program has assisted over 1,000 Manitobans to install geothermal heat pump technology in their homes and buildings. It has also supported five district geothermal systems.¹¹³ The federal government and FCM recently supported the development of a district energy feasibility study in the City of Burlington.¹¹⁴ Markham District Energy provides efficient heating and cooling to over 9 million square feet of building. The Alexandria district energy utility in Richmond, BC, provides renewable geo-exchange heating to over 600 residents and commercial units. It provides a dividend to the local government and created jobs for construction and ongoing operations.¹¹⁵

¹¹² UNEP, "District Energy in Cities" (2015).

¹¹³ Getting to Implementation. "National Report on Policies Supporting Community Energy Plan Implementation" (2015).

¹¹⁴ Federation of Canadian Municipalities, "Green Municipal Fund" (2015).

¹¹⁵ City of Richmond, "Alexandria District Energy Utility," (n.d.).

3.4 BUILDING SECTOR

The building sector represents 12 per cent of Canada's total GHG emissions.¹¹⁶ When electricity is included, the number grows to 20 to 30 per cent. Our homes account for about half of these emissions.

Emissions from the building sector have increased since 1990.¹¹⁷ Cities are expected to use 75 per cent more energy compared to 2006 levels in 2050.¹¹⁸ Without intervention, this sector will continue to add to Canada's GHG emissions.

Energy efficiency is the quickest and least expensive means to reduce emissions from the building sector.¹¹⁹ Since the majority of buildings are found in cities, local government energy policies and programs can have a big impact on the emissions from this sector.

Improving the capacity of local governments to reduce emissions from the building sector through building code amendments, energy retrofits and mandatory disclosure of the energy performance of homes and buildings are considered in this section.

Building Code

While the energy standards found in Canada's building codes are improving, there is more energy efficiency to be achieved in the building sector.¹²⁰ Retrofitting homes that have poor energy performance is more challenging than ensuring they are built to a higher energy standard.

Changes to the building codes are also being explored to make homes more resilient to climate change impacts like flooding and wind.¹²¹

ACTION: NET-ZERO ENERGY BUILDINGS

F11 / P15: *Lead the transition toward net zero energy buildings by amending building codes.*

RATIONALE: Local governments implement building codes. With the exception of the City of Vancouver and Halifax Regional Municipality, they do not have the authority to amend them. While local governments can encourage higher energy standards for new

¹¹⁶ Environment Canada, "Canada's Emission Trends 2014" (2014).

¹¹⁷ Environment Canada, "Canada's Greenhouse Gas Emission" (2016)

¹¹⁸ Natural Resources Canada, "Integrated Community Energy Solutions: A Roadmap for Action" (2009).

¹¹⁹ International Energy Association, "25 Energy Efficiency Policy Recommendations" (2015).

¹²⁰ Pembina Institute, "The Path to 'Net Zero Energy' Buildings in BC" (2015).

¹²¹ Institute for Catastrophic Loss Reduction, "Built to a New Code" (2010).

construction, they cannot enforce it. Federal, provincial, and territorial governments must lead the way.

INTERNATIONAL BEST PRACTICE: The building code in the State of California will require all new residential construction to be Net Zero Energy (annual energy consumption is equal to its annual production of renewable energy) by 2020. All new commercial buildings should aim to achieve this goal by 2013.¹²² The European Union and the State of Washington are also leading jurisdictions.¹²³

CANADIAN BEST PRACTICE: The BC government has made a commitment to lead the way to Net Zero Energy buildings, but the province has yet to establish targets or a plan to achieve them.¹²⁴ The Ministry of Natural Resources Canada (NRCan) recently partnered with Owens Corning to support the construction of several Net Zero Energy homes in four provinces: Nova Scotia, Quebec, Alberta, and Ontario.¹²⁵

F12 / P16: *Change the building code to make renewable-energy-powered new homes and buildings.*

RATIONALE: Retrofitting homes to install renewable energy technologies can be cost-prohibitive. Building code regulations can ensure all new homes and buildings are renewable energy-ready. This would be a useful tool for local governments to encourage the uptake of renewable energy.

CANADIAN BEST PRACTICE: The BC Solar Hot Water Readiness Program is a provincial regulation, which local governments can voluntarily adopt, requiring all new single family homes to be built to accommodate a solar hot water system.¹²⁶ Forty-eight local governments have signed on to the regulation.¹²⁷

Energy Retrofits

Not surprisingly, most of the emissions from the building sector are associated with older buildings constructed when there were no, or lower, energy standards.¹²⁸

ACTION: RETROFIT PROGRAMS

F13: *Incentivize energy efficiency retrofits in homes and commercial buildings.*

P17: *Fund ambitious retrofit programs. Include a program to address energy poverty.*

¹²² Pembina Institute, “The Path to ‘Net Zero Energy’ Buildings in BC” (2015).

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Natural Resources Canada, “Integrating Renewables and Conservation Measures in a Net-Zero Energy Low-Rise Residential Subdivision” (2015).

¹²⁶ Government of British Columbia, “Solar Hot Water Ready Regulation” (2013).

¹²⁷ Ibid.

¹²⁸ Environment Canada, “Canada’s Emission Trends 2014” (2014).

RATIONALE: Local governments lack the regulatory and financial tools to influence emissions from existing homes and buildings. Financial incentives go a long way in encouraging energy retrofits. Local governments are well positioned to help deliver federal, provincial, and territorial energy retrofit programs in partnership with local utilities and community groups.

Many energy retrofits programs end up being marketed to more affluent homeowners despite the fact that low income homeowners or tenants stand to benefit the most from energy efficiency.¹²⁹ Care should be taken to design and deliver programs that ensure all homeowners as well as tenants will benefit from improved energy efficiency.

CANADIAN BEST PRACTICE: The former ecoENERGY Retrofit—Homes program provided grants of up to \$5,000 to help homeowners make their homes more energy-efficient and reduce the burden of high energy costs.¹³⁰ Much was learned about how program design affects participation and outcomes.¹³¹

Yukon's Good Energy Program promotes energy efficiency and the use of renewable energy sources in Yukon homes and businesses.¹³² The program offers one of the highest per capita subsidies in Canada and has displaced 29,000 tonnes of carbon dioxide while saving \$15.3 million in energy costs.¹³³

The City of Toronto established the Toronto Atmospheric Fund (TAF) in 1991 with a \$23 million endowment from the sale of a city-owned property to finance local initiatives to combat global warming and improve air quality in Toronto.¹³⁴ The Province of Ontario has recently contributed \$17 million to TAF.¹³⁵

New Brunswick's Low Income Energy Savings program offers energy retrofits for insulation, air sealing and heat pumps to homeowners that are already battling poverty.¹³⁶ Prince Edward Island has a similar initiative, the Home Energy Low Income Program (HELP), which offers free home air sealing to low income households.¹³⁷

ACTION: ENERGY EFFICIENCY UTILITIES

P18: *Enable the establishment of publicly-owned energy efficiency utilities to promote energy efficiency and conservation activities.*

RATIONALE: The regulatory environment for utilities supports the sale of a commodity—either electricity or natural gas—not the most efficient service for providing light and heat. Ironically, utilities are often called upon to deliver conservation

¹²⁹ CCPA-BC, "Fighting Energy Poverty in the Transition to Zero Emission Housing" (2011).

¹³⁰ Natural Resources Canada, ecoENERGY Retrofit Home Program, (2014).

¹³¹ Christina Hoicka et al., "Residential energy efficiency retrofits: How program design affects participation and outcomes" (2014), *Energy Policy*, 65, 594-607.

¹³² Yukon Energy, Mines, and Solutions, "Good Energy Yukon" (2016).

¹³³ Getting to Implementation, (2015).

¹³⁴ Toronto Atmospheric Fund, "Toronto Atmospheric Fund" (2016).

¹³⁵ Toronto Atmospheric Fund, "News Release" (2016).

¹³⁶ New Brunswick Power, "Low Income Energy Savings Program" (2015).

¹³⁷ Office of Energy Efficiency PEI, "Household Energy Low-Income Program (HELP)" (2008).

and demand management (CDM) programs to their customers. On the one hand, their business model is based on the sale of electricity or gas, while on the other they are regulated to reduce those sales through CDM.

One solution would be establishing publicly-owned energy efficiency utilities whose primary business mandate is to deliver energy efficiency and conservation activities to the communities they serve as a competitive supply to the electricity and gas systems.

CANADIAN BEST PRACTICE: In 2014, the Nova Scotia government passed legislation enabling the creation of Canada's first electricity efficiency utility (Efficiency Nova Scotia). This established efficiency and conservation activities as a competitive supply to the electricity system. Both Alberta and Ontario have indicated plans to develop energy efficiency utilities.

ACTION: RETROFIT SUPPORTS

P19: *Support local government-led programs that deliver high volumes of home and building energy retrofits, including regulatory change to allow a property-assessed financing tool.*

RATIONALE: While federal, provincial, and territorial financial incentives encourage property owners to upgrade the energy performance of their buildings, there are many other barriers that can get in the way. Local governments are well positioned to help by:

- Providing one-stop shopping so homeowners avoid being bounced between different departments, agencies and levels of government;
- Ensuring good community engagement by mobilizing local networks including neighbourhood groups and business associations; and
- Providing property-assessed financing for energy retrofits to address barriers associated with high upfront costs, the cost of consumer credit and payback periods that are longer than a homeowner may plan to own the property.

Local governments could serve as a platform, either directly or through provincial and territorial partnerships, to consolidate the delivery of energy retrofits, to make programs as user-friendly as possible for the consumer, and drive deeper market penetration of energy retrofit programs.

CANADIAN BEST PRACTICE: The Columbia Institute publication "*This Green House II: Building Momentum on Green Jobs and Climate Action Through Energy Retrofits Across Canada*" provides an overview of the local improvement charges (LIC) financing model and on-bill financing and how they are being used in Canada.¹³⁸

While federal, provincial, and territorial financial incentives encourage property owners to upgrade the energy performance of their buildings, there are many other barriers that can get in the way.

¹³⁸ Columbia Institute, "This Green House II" (2016)



BEST PRACTICES: ENERGY EFFICIENCY TOOLS

The Town of Okotoks has launched an online Energy Efficiency Engagement Platform that will be integrated with an energy rebate program. Using aerial thermal imaging, homeowners can see the heat being wasted from their homes, and can compare their home's energy performance with other homes. (See [okotos.ca MyHEAT](http://okotos.ca/MyHEAT) Okotoks)

Property-Assessed Financing

Property-assessed financing, also known as local improvement charges (LIC), offers a low-risk tool to encourage investment in energy retrofits with long term paybacks by giving building owners access to capital to complete improvements. These investments lead to utility bill savings while the building owner pays back the investment through their property taxes. Property tax payments are matched to actual energy savings ensuring the building owner is kept whole each month. Since the LIC is a special charge on the tax role, LIC assessments stay with the property when it is sold. This is important because payback periods are often longer than a building owner might intend to own the property.

In 2012, Ontario amended its LIC rules to allow local governments to enter into voluntary LIC financing agreements with individual property owners to finance energy retrofits.¹³⁹ The Toronto Atmospheric Fund (TAF) launched the Collaboration on Home Energy Efficiency Retrofits in Ontario (CHEERIO) to advance the use of the LIC financing tool by Ontario local governments to promote energy retrofits.¹⁴⁰ In 2015, Toronto launched the Home Energy Loan Program (HELP) offering low interest loans using LIC financing.¹⁴¹ Other Ontario local governments are contemplating how to use LICs to promote energy retrofits.

¹³⁹ Clean Air Partnership, “Local Improvement Charge Financing Pilot Program Design for Residential Buildings in Ontario” (2013).

¹⁴⁰ Toronto Atmospheric Fund, “Collaboration on Home Energy Retrofits in Ontario” (2016).

¹⁴¹ City of Toronto, “Home Energy Loan Program” (2016).

Halifax Regional Municipality (HRM) has successfully used property-assessed financing to promote the uptake of solar technologies.¹⁴² The legislation that enabled HRM was extended to the entire province in 2014.¹⁴³ Several local governments in Nova Scotia have passed supporting by-laws and are in the process of launching retrofit programs that include LIC financing options.

On-bill Financing

Manitoba Hydro's Power Smart Residential Loan offers on-bill financing for energy retrofits. The loan becomes due and payable when the house is sold. However, Manitoba has more recently launched a transferable program. Their Power Smart PAYS Financing program is transferable between homeowners when the property is sold. It is also transferable from a landlord to a tenant where the tenant is responsible for the paying the energy bill. Manitoba Hydro is also using on-bill financing to support the adoption of geothermal heat pump technology though its Residential Earth Power Loan program.¹⁴⁴

Mandatory Disclosure

Shining a light on the energy performance of a building changes behaviour and expectations.

ACTION: HOME ENERGY LABELLING

P20: *Implement a mandatory program for home energy labelling.*

BACKGROUND/RATIONALE: The International Energy Agency (IEA) recommends mandatory energy labelling of buildings to promote efficiency in this sector.¹⁴⁵ A home energy labelling program requires the seller to obtain an energy rating for the home.¹⁴⁶ The energy rating of the home is included in the home's listing to disclose the operating energy costs of the home to potential purchasers. Disclosure of a home's energy performance allows home buyers to make a better informed decision. Disclosure transforms the market for home efficiency.

According to the Pembina Institute, the uptake of voluntary home labelling programs in Canada has been hampered by a lack of familiarity with the rating system and a shortage of comparator homes in the market. Both barriers would be addressed through a mandatory program.¹⁴⁷

¹⁴² Halifax, "Solar City" (2015).

¹⁴³ Columbia Institute, "This Green House II" (2016).

¹⁴⁴ Ibid.

¹⁴⁵ International Energy Agency, "25 Energy Efficiency Policy Recommendations" (2011).

¹⁴⁶ Natural Resources Canada, "EnerGuide Home Evaluation" (2015).

¹⁴⁷ Pembina Institute, "Home Energy Labelling Requirement at Point of Sale: Pilot Program Design" (2012).

INTERNATIONAL BEST PRACTICE: More than 30 countries have implemented mandatory home energy labelling programs, including Germany, Denmark and the United Kingdom.¹⁴⁸

CANADIAN BEST PRACTICE: The federal government has a *voluntary* home energy labelling program.¹⁴⁹ The federal government has limited jurisdiction with respect to energy and no jurisdiction over energy use in buildings so it is up to the provinces to implement mandatory home energy labelling.¹⁵⁰

The Council of Energy Ministers have included home energy labelling in their mandate.¹⁵¹ Ontario committed to mandatory home efficiency disclosure in the 2009 *Green Energy and Economy Act* but has yet to act on the legislation. At the local level, Edmonton is reportedly in the process of developing a *voluntary* home energy labelling program.¹⁵²

ACTION: LOCAL DISCLOSURE

P21: *Require mandatory disclosure of local governments' own energy consumption, GHG emissions, and carbon-neutral transition plans.*

RATIONALE: Mandatory disclosure levels the playing field, encourage the sharing of best practice and ensures government are accountable for reducing GHG emissions. Local elected leaders need to know how much money is being spent on energy. Energy costs comprise a significant part of a local government's annual operating budget. The risk of rising energy costs, and the pressure it places on taxes and the delivery of services, is a concern for local budgets. Yet, energy efficiency initiatives often don't make it to budget deliberations or funding goes elsewhere.

CANADIAN BEST PRACTICE: Ontario requires all local governments (along with universities, colleges, schools and hospitals) to report annually on their energy consumption and GHG emissions. These annual reports must be made available to the public. The Ontario government consolidates the information and provides it as open data. A plan to reduce energy use and GHG emissions must be adopted by the municipality and updated every 5 years.¹⁵³ This regulatory requirement places energy efficiency on municipal agendas.

British Columbia is the first province in North America to achieve carbon neutrality across all of its Public Sector Organizations (PSO), achieving its fifth consecutive year of carbon neutral government operations in 2015.¹⁵⁴

¹⁴⁸ Green Communities Canada, "Mandatory Home Energy Labelling" (2010).

¹⁴⁹ Natural Resources Canada, "EnerGuide Evaluation Report, Rating and Label" (2016).

¹⁵⁰ Natural Resources Canada, "Energy Rating and Labelling Systems in Canada" (2008).

¹⁵¹ Council of Energy Ministers, "Buildings and Houses" (2013).

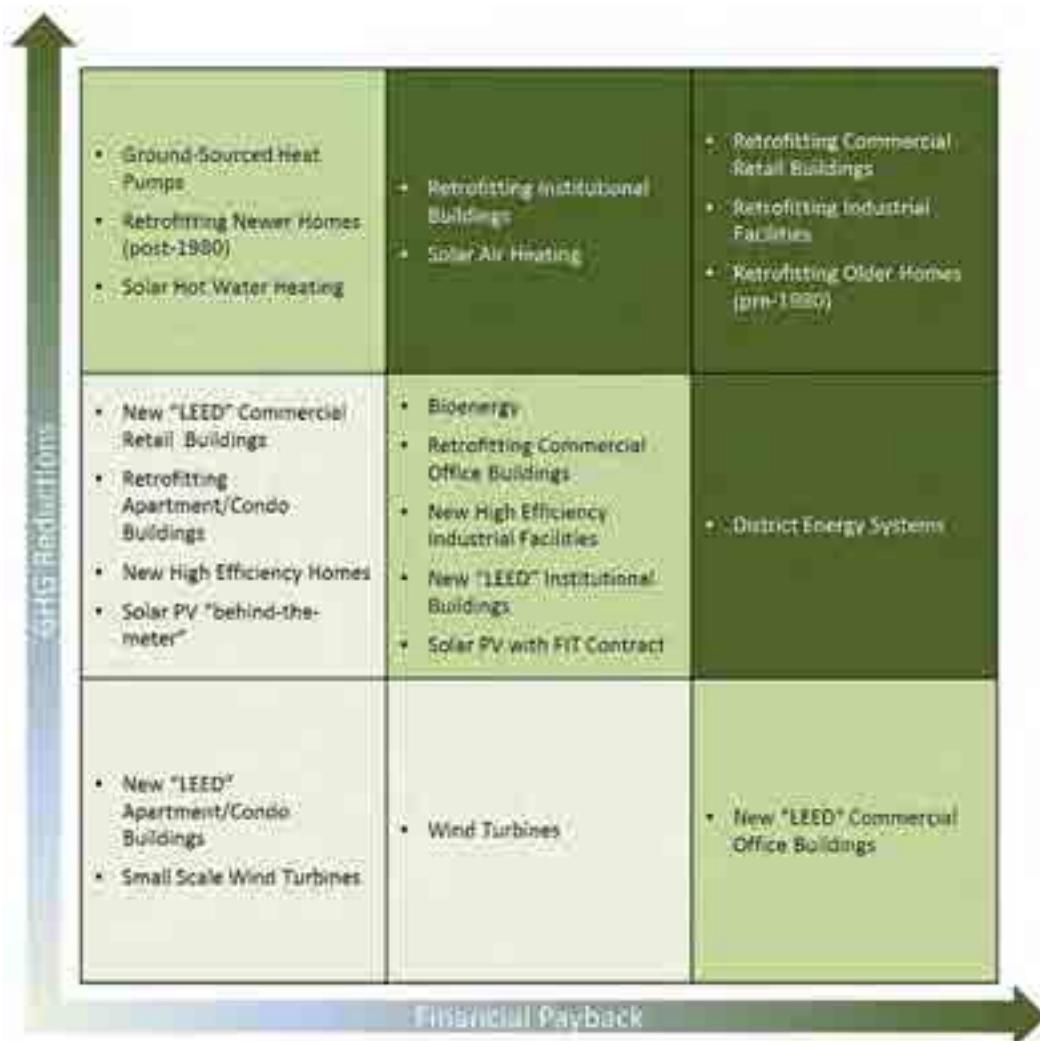
¹⁵² City of Edmonton, "Home Energy Labelling" (2012).

¹⁵³ Ontario Ministry of Energy, "Conservation for Public Agencies" (2015).

¹⁵⁴ Government of British Columbia, "Carbon Neutral Government" (2010).



FIGURE 2: IMPACT OF BUILDING AND RENEWABLE ENERGY TECHNOLOGY STRATEGIES ON LONDON'S GHG EMISSIONS



The City of London, Ontario's Community Energy Action Plan illustrates the benefits of strategies like retrofits in reducing GHGs.

LONDON, ONTARIO HOMES PHOTO COURTESY PETER DANIEL/Flickr

Source: City of London, "Community Energy Action Plan" (2014)

3.5 TRANSPORTATION SECTOR

Federal and provincial governments can support local government efforts to reduce transportation-related GHG emissions by allocating infrastructure funding to projects that promote public transit and active transportation.

The transportation sector represents almost 25 per cent of Canada's total GHG emissions.¹⁵⁵ Almost half of these emissions arise from the use of personal automobiles.

This sector is perhaps one of the most challenging for local governments to address.

Actions focused on helping local governments reduce emissions from the transportation sector, through such measures as public transit, active transportation and green vehicles, are considered in this section.

Transit and Active Transportation

Local governments are responsible for a significant amount of Canada's transportation infrastructure. As our communities grow, the demand for safe, reliable, and efficient modes of transportation will only increase.

Transportation infrastructure for parking, roads, transit, walking, and cycling is a major driver of local emissions.¹⁵⁶ The expansion of fossil-fuel based infrastructure locks in emission profiles and consumption patterns for decades.¹⁵⁷ Investments in low-carbon solutions, promoting walking, cycling, and public transit, reduce emissions.

While increasingly tasked with reducing traffic on their roads, local governments often lack the resources to establish high quality and efficient public transit networks. There are a number of measures that provinces can undertake to actively facilitate this process—for example, passing legislation to promote the use of transit, financing the improvement of transit infrastructure, and developing plans to better integrate and connect regions of the province via public transit systems.

Federal, provincial, and territorial governments can support local government efforts to reduce transportation-related GHG emissions by allocating infrastructure funding to projects that promote public transit and active transportation.

ACTION: NATIONAL TRANSPORTATION STRATEGY

F14: *Develop a national transportation strategy in collaboration with provincial, territorial, and local governments, as well as Indigenous peoples.*

¹⁵⁵ Environment Canada, Canada's Emission Trends, (2014).

¹⁵⁶ IPCC, "Human Settlement, Infrastructure and Spatial Planning" (2014).

¹⁵⁷ Ibid.

RATIONALE: A comprehensive national transportation strategy would provide a framework for ongoing policy development and lay a foundation to support all local governments in Canada.

INTERNATIONAL BEST PRACTICE: Canada is the only G8 country without a national transportation strategy.

F15: *Match provincial and territorial government transit funding to local governments.*

F16: *Prioritize transit and active transportation infrastructure projects over auto-only infrastructure.*

P22: *Support local governments to improve public transit and active transportation in urban and rural communities.*

RATIONALE: FCM concludes that “transit riders [in Canada] pay a higher percentage of the total costs required to build, maintain and operate transit than do riders in almost all other Western countries.”¹⁵⁸ The Canadian Urban Transit Association (CUTA) further estimates that transit infrastructure across the country needs a minimum of \$4.2 billion annually to maintain services and expand to meet demand-side pressures.¹⁵⁹

In a 2007 report produced by FCM, a series of key elements were proposed for a national transit strategy.¹⁶⁰ First and foremost, the report recommended a baseline of \$2 billion for maintaining existing transit systems and supporting the expansion of systems which must grow to meet burgeoning demands. The report also asserted that funding for transit should be restricted to local governments with transportation plans that prioritize public transportation as the primary means for addressing future transportation needs. Another core recommendation was the introduction of federal tax incentives for transit users. Finally, the report recommended provisions to encourage on-going transit innovation and policy research, as well as mechanisms to ensure accountability.

CUTA recommends the adoption of federal, provincial, and territorial programs that support local governments with covering capital operational costs, deploying rapid transit technologies (particularly in city centres), and growing service in smaller cities.¹⁶¹

CANADIAN BEST PRACTICE: Many of the FCM and CUTA recommendations were integrated in Bill C-305, a *National Public Transit Strategy*, which was introduced in parliament in 2011 and voted down a year later.¹⁶² The bill aimed to improve the accessibility and affordability of public transit; increase federal investment; establish

¹⁵⁸ Federation of Canadian Municipalities, “National Transit Strategy” (2007).

¹⁵⁹ Ibid.

¹⁶⁰ Ibid.

¹⁶¹ Canadian Urban Transit Association, “Transit Vision 2040” (2009).

¹⁶² Open Parliament, “National Public Transit Strategy Act” (2012).

A comprehensive national transportation strategy would provide a framework for ongoing policy development and lay a foundation to support all local governments in Canada. Canada is the only G8 country without a national transportation strategy.

SEPARATED BIKE LANE, VANCOUVER PHOTO PAUL KRUEGER/Flickr



funding mechanisms for improving and maintaining infrastructure; work with provinces; and support transit research.

Quebec public transit policy recognizes that while municipalities hold the primary responsibility for public transit, the province must serve as a coordinator and assume the bulk of the cost of upgrading and improving transit infrastructure.¹⁶³ Through this policy, the government is dedicated to allocating \$130 million to a Green Fund to improve public transit services. Municipalities must match provincial funds.¹⁶⁴ This program also offers tax incentives to consumers to encourage public transit use and offers financial assistance programs to encourage the implementation of accessibility retrofits such as wheelchair ramps.¹⁶⁵

The Ontario government has also taken measures to promote the use of public transit, establishing protocols to facilitate the use of provincially-owned lands for transportation facilities.¹⁶⁶

Alberta's Green Transit Incentive Program (GreenTRIP) has expanded light rail transit in Calgary and Edmonton and funded new buses and transit facilities throughout the province. Two billion dollars in community funding has been provided over the life of the program.

Through the 1999 Velonce I program, Quebec invested \$146 million into the creation of the Route Verte a 5,000 km bicycle network that connects the different regions of the province.¹⁶⁷ The province's investments were directed towards improving cyclist safety within cities and communities by widening the shoulder on existing lanes and integrating bikeways on to roads, bridges and structures. Initially

¹⁶³ Ministère des Transports du Québec, "Public Transit Policy" (2006).

¹⁶⁴ Ibid.

¹⁶⁵ Ibid.

¹⁶⁶ Metrolinx, "The Big Move: Transforming Transportation in the GTA" (2008).

¹⁶⁷ Ministère des Transports du Québec, "An active transportation strategy in Quebec" (2014).

this program was more effective at promoting recreational cycling than the everyday use of cycling for commuting.¹⁶⁸ In response, in 2008, the province initiated the Velonice II program which supported municipalities in preserving active transport pathways. The additional \$35 million that was invested for the follow up program, along with capacity building efforts, resulted in an increased use of cycling for utilitarian purposes by 35 per cent.¹⁶⁹

Other provincial governments have also undertaken policies that promote active transport. Since 2006, BC has invested substantially in the development of cycling infrastructure—with municipalities eligible for up to \$250,000 in funds.¹⁷⁰ Ontario also has a cycling strategy.

Provincial and territorial governments can play a role in supporting the creation of new cycling infrastructure and promoting active transportation by providing funds and filling capacity gaps. It is crucial for provinces and territories to alleviate some of the most fundamental barriers to active transportation. In the context of cycling, inadequate infrastructure, particularly in urban environments, leaves potential cyclists feeling unsafe and vulnerable to vehicle traffic. It is recommended that provinces and territories work with municipalities to establish an active transportation strategy that promotes safe cycling as an alternative to reliance on GHG-intensive vehicles.

Green Vehicles

Local governments maintain large fleets to deliver numerous services to their community. They can demonstrate leadership by supporting the purchase of more fuel-efficient vehicles, low-carbon vehicle fuels and low- or zero-emission vehicles (where low-carbon power is available) for your local fleet.

ACTION: LOCAL FLEETS

F17 / P23: *Incent the purchase of low- and zero-emission vehicles for local government fleets.*

RATIONALE: Fiscal constraints often prevent local governments from purchasing low- and zero-emission vehicles.

CANADIAN BEST PRACTICE: Ontario, British Columbia, and Quebec provincial governments provide financial incentives to local governments to help with the purchase of low- or zero-emission vehicles and electric vehicle charging stations.¹⁷¹

¹⁶⁸ Ibid.

¹⁶⁹ Ibid.

¹⁷⁰ British Columbia Ministry of Environment, “BC Climate Action Plan, “(2015).

¹⁷¹ Ministry of Ontario, “Modernized Electric Vehicle Incentive Program” (2016); Government of British Columbia, “New Initiative to Make Electric Vehicles More Affordable” (2015); Government of Quebec, “Drive Electric Program” (2016).



EV-ready building codes ensure that the conduit and capacity to accommodate an electric vehicle is included in new construction.

SOLAR POWERED EV CHARGING STATION IN TORONTO PHOTO COURTESY SASS PERESS RENEWZ SUSTAINABLE SOLUTIONS INC.

ACTION: EV-READY CONSTRUCTION

F18 / P24: *Change building codes to make electric-vehicle-ready homes and buildings.*

RATIONALE: The costs of retrofitting a home or building to accommodate electric vehicle charging stations, along with the lack of public and private electric vehicle charging stations, can discourage the uptake of low- or zero-emissions vehicles in a community. An electric-vehicle-ready building code ensures that the conduit and capacity to accommodate an electric vehicle is included in new construction. An amendment to the building codes to ensure new homes and buildings are electric-vehicle-ready would provide an effective tool for local governments to encourage the uptake of electric vehicles in their community where low-carbon power is available.

INTERNATIONAL BEST PRACTICE: The State of California has passed legislation that requires new homes be electric-vehicle-ready. Builders must include the conduit and capacity to accommodate an electric vehicle charging station.¹⁷² New multi-residential units (17 units or more) and parking lots (with more than 100 spaces) must make at least 3 per cent of their parking spaces electric-vehicle-ready. California has also passed legislation to reduce barriers for tenants to install electric vehicle charging stations.¹⁷³

CANADIAN BEST PRACTICE: Vancouver was the first North American city to require electric vehicle charging stations for all new homes and for 20 per cent of units in new multi-residential developments. Vancouver created a collaborative working group to develop electric-vehicle-readiness strategies.¹⁷⁴

¹⁷² The News Wheel, “California Building Code to Require Electric Car Charging Stations” (2014).

¹⁷³ Bill AB 2565, Government of California, “Rental Property: Electric Vehicle Charging Stations” (2014).

¹⁷⁴ Government of British Columbia, “Building Act” (2015).

Sustainable Water and Waste Management

TOP ASKS highlights capacity building, energy, transportation, and land use. Water conservation and efficiency and solid waste management are also important.

WATER CONSERVATION AND EFFICIENCY: The pumping and treating of water is estimated to use up to 50 per cent of a corporate local government's total energy consumption.¹⁷⁵ Heating of water for a variety of uses in a community also consumes energy. As a result, water conservation and efficiency programs can play an important role in reducing energy use and GHG emissions.

WASTE MANAGEMENT: According to the National Inventory Report 1990–2014 from Environment and Climate Change Canada, emissions from waste make up 4 per cent of Canada's total GHGs and the number of landfill sites capturing GHGs is “rapidly rising.”¹⁷⁶ Local governments are playing an important role.

- Programs that divert organic waste from landfills reduce emissions from this sector. The Nova Scotia Solid Waste-Resource Management Strategy, which bans the landfilling or incineration of organic waste, has reduced emissions from this sector by 50 per cent.¹⁷⁷
- Programs that support the capture and use of landfill gas to produce electricity also reduce emissions from this sector. British Columbia's *Landfill Gas Management Regulation* establishes province-wide criteria for landfill gas capture from municipal solid waste landfills to reduce GHG emissions.¹⁷⁸

Emissions from waste make up 4 per cent of Canada's total GHGs and the number of landfill sites capturing GHGs is “rapidly rising.”

OTTAWA WASTE DISPOSAL
PHOTO COURTESY IAN A. MCCORD



¹⁷⁵ Ontario Municipal Affairs and Housing, “Planning for Health and Prosperity and Growth in the Greater Golden Horseshoe: 2015-2041” (2015).

¹⁷⁶ Environment and Climate Change Canada, “National Inventory Report 1990-2014” (2016).

¹⁷⁷ Getting to Implementation. “National Report on Policies Supporting Community Energy Plan Implementation” (2015).

¹⁷⁸ BC Ministry of the Environment, “Landfill Gas Management Regulation” (2009).

Summary of Federal Government Actions

This section summarizes actions the federal government can take to enable local governments to take action on climate change.

Capacity Building

Local Government Capacity

F1: *Ramp up climate action by empowering low carbon communities.*

Targets

F2: *Adopt climate change legislation that includes targets for reducing GHG emissions to levels consistent with limiting the rise in average global temperatures to below 2 degrees Celsius and as close to 1.5 degrees Celsius as possible, with net zero emissions by 2050.*

Data, Inventories and Mapping

F3: *Empower Environment Canada to provide every Canadian local government with community energy and emissions data.*

Carbon Pricing

F4: *Put a price on carbon to serve as a baseline for all provinces and territories. Increase annually to support achieving zero emissions by 2050.*

Local Action Plans

F5: *Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industries.*

F6: *Support the Partners for Climate Protection program to close the gap between national/provincial/territorial policy and local action on climate change.*

Natural Capital

F7: Fund local government baseline assessments of natural capital. Include the carbon storage value of natural capital (e.g., forest, wetlands, and floodplains) in national GHG accounting.

Harnessing Local Energy

Renewable Energy

F8: Develop a renewable energy strategy that promotes local ownership models. Enable publicly-owned utilities to develop renewable energy strategies.

F9: Fund community- and Indigenous-owned renewable energy capacity.

Thermal Energy

F10: Develop a thermal energy strategy, including funding and capacity support, to promote the uptake of district energy, combined heat and power, and other thermal energy systems in communities.

Building Sector

Building Code

F11: Lead the transition toward net zero energy buildings by amending building codes.

F12: Change the building code to make renewable-energy-powered new homes and buildings.

Energy Retrofits

F13: Incentivize energy efficiency retrofits in homes and commercial buildings.

Transportation Sector

Transit and Active Transportation

F14: Develop a national transportation strategy in collaboration with provincial, territorial, and local governments, as well as Indigenous peoples.

F15: Match provincial and territorial government transit funding to local governments.

F16: Prioritize transit and active transportation infrastructure projects over auto-only infrastructure.

Green Vehicles

F17: Incent the purchase of low- and zero-emission vehicles for local government fleets.

F18: Change building codes to make electric-vehicle-ready homes and buildings.

Summary of Provincial and Territorial Government Actions

This section summarizes the actions that provincial and territorial governments can take to enable local governments to take action on climate change.

Note: There is some repetition in this section as many federal policy levers for climate action also apply provincially. However, given that local governments are granted their legal standing through provincial and territorial legislation there are also actions specific to this order of government.

Capacity Building

Local Government Capacity

P1: *Ramp up climate action by empowering low-carbon communities.*

Targets

P2: *Adopt climate change legislation that includes targets for reducing GHG emissions to levels consistent with limiting the rise in average global temperatures to below 2 degrees Celsius and as close to 1.5 degrees Celsius as possible, with net zero emissions by 2050.*

P3: *Require local governments to incorporate GHG reduction targets, policies, and actions in official community plans.*

Data, Inventories and Mapping

P4: *Work with the federal government to provide every local government with community energy and emissions data.*

Carbon Pricing

P5: *Establish a price on carbon.*

Local Action Plans

- P6:** *Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industries.*
- P7:** *Support the Partners for Climate Protection program to close the gap between national/provincial/territorial policy and local action on climate change.*
- P8:** *Provide funding, data, and capacity support to encourage the development of high-quality community energy plans.*

Smart Growth

Compact Urban Form

- P9:** *Introduce policies that promote more compact cities and curb urban sprawl.*
- P10:** *Change legislation so that energy and climate change policies are part of land use planning.*

Harnessing Local Energy

Renewable Energy

- P11:** *Develop a renewable energy strategy that promotes local ownership models. Enable publicly-owned utilities to develop renewable energy strategies.*
- P12:** *Implement a “feed-in-tariff” program that promotes individual, community, and Indigenous-owned projects.*
- P13:** *Promote carbon-neutral wastewater treatment by harnessing bio-gas production.*

Thermal Energy

- P14:** *Develop a thermal energy strategy, including funding and capacity support, to promote the uptake of district energy, combined heat and power, and other thermal energy systems in communities.*

Building Sector

Building Code

- P15:** *Lead the transition to net zero energy buildings by amending building codes.*
- P16:** *Change the building code to make renewable-energy-powered new homes and buildings.*

Energy Retrofits

- P17:** *Fund ambitious retrofit programs. Include a program to address energy poverty.*
- P18:** *Enable the establishment of publicly-owned energy efficiency utilities to promote energy efficiency and conservation activities.*
- P19:** *Support local government-led programs that deliver high volumes of home and building energy retrofits, including regulatory change to allow a property-assessed financing tool.*

Mandatory Disclosure

- P20:** *Implement a mandatory program for home energy labelling.*
- P21:** *Require mandatory disclosure of local governments' own energy consumption, GHG emissions, and carbon-neutral transition plans.*

Transportation Sector

Transit and Active Transportation

- P22:** *Support local governments to improve public transit and active transportation in urban and rural communities.*

Green Vehicles

- P23:** *Incent the purchase of low- and zero-emission vehicles for local government fleets.*
- P24:** *Change building codes to make electric vehicle-ready homes and buildings.*

Top Asks

In addition to adopting scientific GHG reduction targets and putting a price on carbon, Top Asks identifies five immediate actions that federal, provincial, and territorial governments can take to enable local governments to act on climate change.

Through an online survey, approximately 100 elected officials from across Canada ranked several potential federal, provincial, and territorial actions. These actions are focused in five priority areas:

1. **CAPACITY BUILDING** to enable local action;
2. Building low carbon communities by adopting **SMART GROWTH** policies;
3. Transitioning to a cleaner and more efficient energy system by **HARNESSING LOCAL ENERGY** resources;
4. Reducing GHG emissions from the **BUILDING SECTOR**; and
5. Reducing GHG emissions from the **TRANSPORTATION SECTOR**.

The Columbia Institute agrees with the comments of several survey participants that all of the actions are important. Our goal is to identify some early wins for local government as we transition to net zero emissions by 2050.

Comments provided by survey participants helped inform the development of the report that supports the Top Asks.

The Columbia Institute agrees with the comments of several survey participants that all of the actions are important. Our goal is to identify some early wins for local government as we transition to net zero emissions by 2050.

Summary of Survey Results

Actions tied to funding were a high priority among survey participants. This is not surprising given that local governments work with limited financial resources, receiving only 8 cents on the tax dollar. There was strong support among the survey participants to line up spending with local climate action.

There was healthy support for actions promoting local ownership models for renewable energy along with a desire to see new homes powered by renewable energy.

This reflects the growing role of local government in energy decision making as local solutions for meeting energy needs continue to emerge.

There was consistent support for funding energy retrofits as an immediate priority. This reflects the challenge of retrofitting older buildings and that the majority of emissions from the building sector are associated with older buildings. There was also strong support for local governments leading retrofit program delivery and taking advantage of emerging property-assessed financing tools.

Funding for transit and active transportation was an immediate priority for survey participants. There was also strong support for a national transportation strategy which reflected comments concerned about meeting the regional transportation needs of rural and remote communities.

There was strong support for helping local governments assess the carbon storage value of natural capital. This action would strengthen the role for rural and remote communities in a national climate change strategy. Survey participants were also looking for the right tools from their provincial and territorial governments to make energy and climate policies part of land use planning.

Top Asks for Federal and Provincial/Territorial Governments

Canada can and must ramp up climate action by empowering low carbon communities. Our country can't be a climate leader without local government action.

Where to start:

FEDERAL TOP ASKS	
Capacity building	Adopt science-based greenhouse gas targets. Put a price on carbon for net-zero emissions by 2050. Address capacity shortfalls that stand in the way of local government climate action.
Funding	Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industry.
Natural capital	Fund local government baseline assessments of natural capital. Include the carbon storage value of natural capital in national GHG accounting.
Harnessing local energy	Fund community- and Indigenous-owned renewable energy capacity.
Building sector	Incentivize energy efficiency retrofits in homes and commercial buildings.
Transportation sector	Prioritize transit and active transportation infrastructure projects over auto-only infrastructure.

PROVINCIAL & TERRITORIAL TOP ASKS

Capacity building	Adopt science-based greenhouse gas targets. Put a price on carbon for net-zero emissions by 2050. Address capacity shortfalls that stand in the way of local government climate action.
Funding	Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industry.
Smart growth	Change legislation so that energy and climate change policies are part of land use planning.
Harnessing local energy	Change the building code to make renewable-energy-powered homes and buildings.
Building sector	Fund ambitious retrofit programs. Enable property-assessed financing and on-bill financing. Support low income households to address energy poverty.
Transportation sector	Support local governments to improve public transit and active transportation in urban and rural communities.

Where to Raise Top Asks for Empowering Low Carbon Communities

You can discuss these asks with your:

- Council;
- Constituents, community groups, and staff;
- Federal, provincial, and territorial elected representatives;
- Provincial, territorial, and national local government associations; and
- Government-led climate change consultations.

Appendix: Survey

Survey Methodology

The Columbia Institute developed an online survey based on the findings of our literature review regarding top federal, provincial, and territorial actions for climate action. The survey included 21 questions organized into five categories: capacity building, smart growth, harnessing local energy, building sector, and transportation sector. Each category was further divided into two sub-categories, demarcating federal actions and provincial or territorial actions.

In each question, survey participants were given a list of actions and were asked to rate them in order from “most impactful” to “least impactful.” The survey also contained open text questions after each rating question for open text comments and feedback.

A total of 104 people completed the survey over approximately four weeks.

Survey Questions

Report for Top Asks for Climate Action

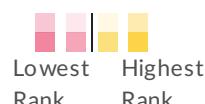
1. Capacity Building: One - Federal Government Actions Please rate the following in order of preference - that is, what you think will be the most impactful actions the federal government can take to enable local governments for Capacity Building.

Overall Rank	Item	Rank Distribution	Score	Total Respondents
1	Speed the transition to a low-carbon economy by aligning federal spending with local action on climate change (including infrastructure funding, economic stimulus programs, the Federal Gas Tax Fund and the reallocation of subsidies away from GHG-intensive industries).	 	439	94
2	Introduce a national price on carbon to serve as a baseline for all provinces and territories. Increase annually to support achieving zero emissions by 2050.	 	341	91
3	Adopt climate change legislation that includes targets for reducing GHG emissions to levels consistent with limiting the rise in average global temperatures to below 2oC and as close to 1.5oC as possible, with netzero emissions by 2050.	 	329	87
4	Promote low-carbon cities and communities as a solution.	 	288	90
5	Empower Environment Canada to provide local governments with community and energy emissions data.	 	272	92
6	Support the Partners for Climate Protection (PCP) program to close the gap between national policy and local action on climate change.	 	266	90

 | 
Lowest Rank Highest Rank

2. Capacity Building: Two - Provincial and Territorial Government Actions Please rate the following in order of preference - that is, what you think will be the most impactful actions provincial or territorial governments can take to enable local governments for Capacity Building.

Overall Rank	Item	Rank Distribution	Total Score	Total Respondents
1	Speed the transition to a low-carbon economy by aligning provincial/territorial spending to local action on climate change (including infrastructure funding, economic stimulus programs, the gas tax funding and the reallocation of subsidies for GHG-intensive communities).		531	90
2	Provide funding, data and capacity support to encourage the development of community energy plans.		455	90
3	Adopt climate change legislation that includes targets for reducing GHG emissions to levels consistent with limiting the rise in average global temperatures to below 2oC and as close to 1.5oC as possible, with netzero emissions by 2050.		433	87
4	Establish a price on carbon.		409	85
5	Promote low-carbon cities and communities as a solution.		378	88
6	Require local governments to incorporate GHG reduction targets, policies and actions in official community plans.		373	87
7	Support the Partners for Climate Protection (PCP) program to close the gap between provincial/territorial and national policy and local action on climate change.		347	88
8	Work with the federal government to provide all Canadian local governments with energy and emissions data.		331	89



3. Building Sector: One - Federal Government Actions

Please rate the following in order of preference - that is, what you think will be the most impactful actions the federal government can take to enable local governments for the Building Sector.

Overall Rank	Item	Rank Distribution	Score	Total Respondents
1	Re-establish the eco-Energy Retrofit – Homes Program to provide an incentive for energy efficiency retrofits.		167	96
2	Lead the transition towards Net Zero Energy (NZE) buildings through building code amendments by establishing targets for NZE buildings and a plan to achieve them.		117	91


Lowest Rank Highest Rank

4. Building Sector: Two - Provincial and Territorial Government Actions

Please rate the following in order of preference - that is, what you think will be the most impactful actions provincial or territorial governments can take to enable local governments for the Building Sector.

Overall Rank	Item	Rank Distribution	Score	Total Respondents
1	Implement a financial incentives program for home and building energy retrofits including support for low income households to address energy poverty.		693	93
2	Support local government-led retrofit programs that deliver high volumes of home and building efficiency retrofits, including a property-assessed financing tool.		612	92
3	Lead the transition towards Net Zero Energy (NZE) buildings through building code amendments by establishing targets for NZE buildings and a plan to achieve them.		471	84

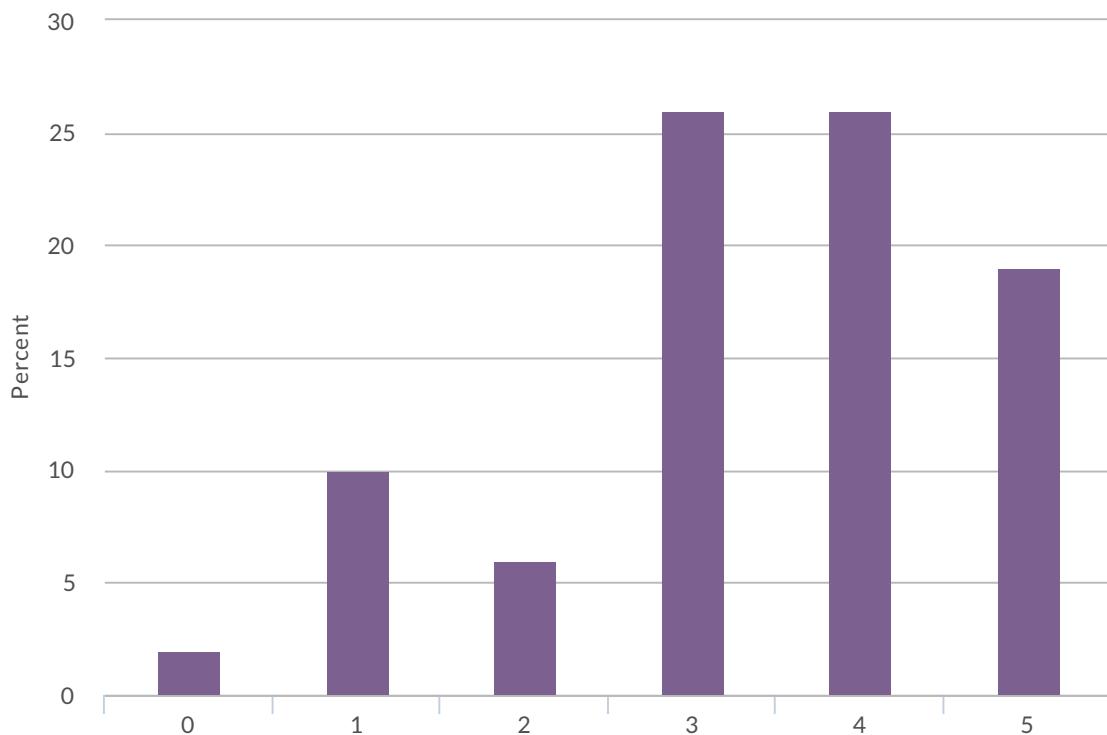


Overall Rank	Item	Rank Distribution	Score	Total Respondents
4	Enable the establishment of publicly-owned energy efficiency utilities to promote energy efficiency and conservation activities.		463	90
5	Amend provincial and territorial legislation to promote the integration of energy and climate change policies into land use planning.		433	86
6	Develop a provincial/territorial thermal energy strategy to promote the uptake of district energy, combined heat and power and other thermal energy systems in communities.		397	88
7	Introduce policies to promote more compact cities and curb urban sprawl.		390	87
8	Require mandatory disclosure of local energy consumption, GHG emissions and carbon-neutral transition plans.		318	86
9	Implement a mandatory program for home energy labelling.		299	87



5. Smart Growth: One - Federal Government Actions

Please give the following action a ranking from not impactful (0) to very impactful (5). Do you think the following action will enable local governments on Smart Growth? Establish a fund for local governments to support baseline assessments of natural capital and include the carbon storage value of natural capital (i.e. forests, wetlands and floodplains) in national GHG accounting.



6. Smart Growth: Two - Provincial and Territorial Government Actions Please rate the following in order of preference - that is, what you think will be the most impactful actions provincial or territorial governments can take to enable local governments for Smart Growth.

Overall Rank	Item	Rank Distribution	Score	Total Respondents
1	Amend provincial and territorial legislation to integrate energy and climate change policies into land use planning.		155	95
2	Introduce policies for more compact cities and curbing urban sprawl.		130	94

Lowest Rank | Highest Rank

7. Harnessing Local Energy: One - Federal Government Actions

Please rate the following in order of preference - that is, what you think will be the most impactful actions the federal government can take to enable local governments for Harnessing Local Energy.

Overall Rank	Item	Rank Distribution	Score	Total Respondents
1	Provide funding and capacity support for community and Indigenous-owned renewable-energy production.		249	92
2	Develop a renewable energy strategy that promotes local ownership models.		242	94
3	Provide funding and capacity support for combined heat and power and other thermal energy systems in communities.		239	93
4	Develop a national thermal energy strategy for district energy, combined heat and power and other thermal energy systems in communities.		215	93


Lowest Rank Highest Rank

8. Harnessing Local Energy: Two - Provincial and Territorial Government Actions

Please rate the following in order of preference - that is, what you think will be the most impactful actions the provincial and territorial governments can take to enable local governments for Harnessing Local Energy.

Overall Rank	Item	Rank Distribution	Score	Total Respondents
1	Amend the building code to make new homes and buildings renewable energy-ready.		328	92
2	Develop a renewable energy strategy that promotes local ownership models.		311	93



Overall Rank	Item	Rank Distribution	Score	Total Respondents
3	Develop a provincial/territorial thermal energy strategy for district energy, combined heat and power and other thermal energy systems in communities.		281	90
4	Implement a provincial “feed in tariff” program that promotes individual community and Indigenous owned projects.		266	90
5	Develop a program to promote carbon-neutral wastewater treatment by harnessing biogas production.		205	91

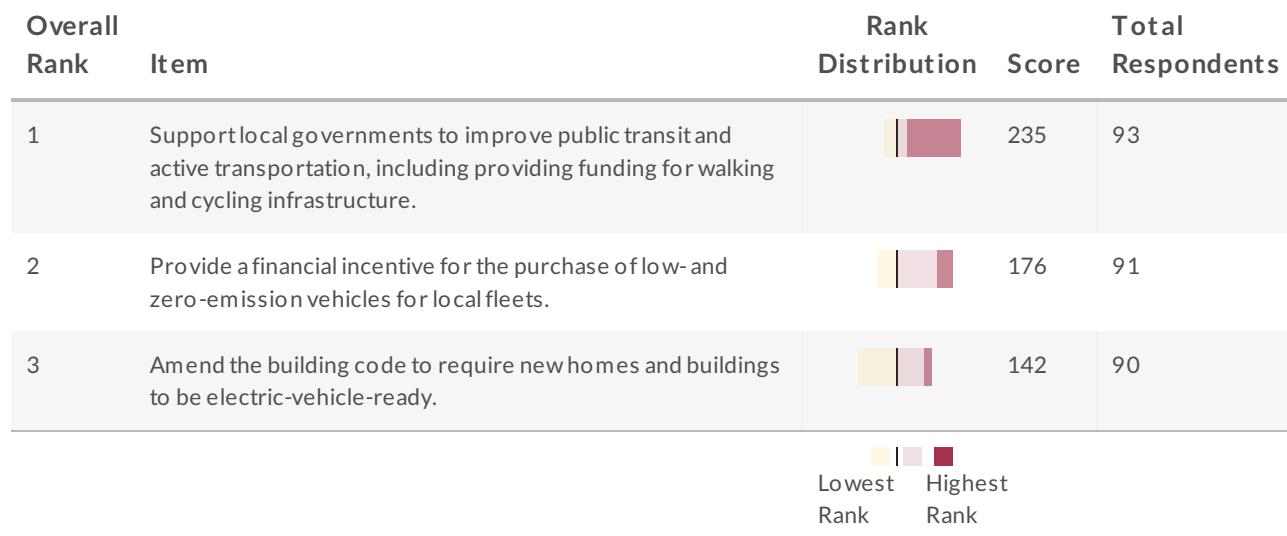

Lowest Rank Highest Rank

9. Transportation Sector: One - Federal Government Actions Please rate the following in order of preference - that is, what you think will be the most impactful actions the federal government can take to enable local governments for the Transportation Sector.

Overall Rank	Item	Rank Distribution	Score	Total Respondents
1	Give priority to infrastructure projects that promote transit and active transportation.		349	92
2	Develop national transportation strategy in collaboration with provincial, territorial, and local governments, as well as Indigenous peoples.		317	92
3	Match provincial and territorial government transit funding.		283	93
4	Provide a financial incentive for the purchase of low- and zero-emission vehicles for local fleets.		253	92
5	Amend building codes to require new homes and buildings to be electric vehicle-ready.		192	89


Lowest Rank Highest Rank

10. Transportation Sector: Two - Provincial and Territorial Government Actions Please rate the following in order of preference - that is, what you think will be the most impactful actions the provincial and territorial governments can take to enable local governments for the Transportation Sector.



Selected Survey Comments

Incentives are preferred to penalties

Fund local governments to do the work. They can't do more without proper funding.

Time federal funding for municipalities with new climate change/GHG legislation, targets, carbon tax etc, so that funds to help local governments make those transitions are available right away. Many of us are ready with shovel ready projects.

For small communities such as ours 325 funding is always a detriment to getting anything done, without funding we do not have the tax base to take on large initiatives, we can do our best with what we have.

We need a national housing strategy that is federally funded and rental incentives to allow people to live close to work their work environments.

Carbon pricing should be increased regularly until zero emissions are reached.

Massive provincial and local retrofit initiative. We're a cold country! Insulation everywhere!

Focus on sun power, if Germany can do it so can we.

Fund the eco-Energy Retrofit initiative very generously. Provide adequate funding to make a war time style effort to retrofit it all

... you seem to think we have lots of time, there is considerable science indicating that we are already in the danger zone, 1.5 degrees warming is likely now unavoidable, 2 degrees may be as well,

LIC program like in Nova Scotia, with as broad applications as there.

MUCH OF THIS IS DIFFICULT IN RURAL AREAS.

Train building inspectors to be able to go beyond code for energy efficiency.

Introduce policies to limit sprawl...

Big financial incentives for green energy. It shouldn't take 40 years to pay back a solar system installation.

Encourage businesses who do not need to be in large centers move to smaller rural centers. Taking x number of vehicles off the road to a walk to work scenario. There should be an incentive for small rural communities within 2 hours of large centers to attract these businesses to their communities.

Carbon cap & trade whereby smart municipalities can benefit.

Incentivize LG conversion to rechargeable vehicles in their fleets. Building code revisions to insist on building being oriented to the sun for max potential for photo voltaic and water heating installations. Again every building we allow to be built should supply a portion of its energy needs.

We are already able to integrate energy and climate policies into land use planning. Legislation should make it a requirement.

Amend the building code to make new homes and buildings install renewable energy systems that reduce power draw from the grid now.

The focus on transit funding needs to be on regional connections as well, not just within cities. We need to get between communities easily for work, travel and play.

The federal government needs to provide more than matching funding for public transit projects. Local government does not have the financial capacity to be a third partner.

Previous national transportation strategies have turned into big subsidies for auto infrastructure. Federal government should explicitly reject cost-shared funding for projects that increase carbon significantly such as the Massey Bridge.

Ensure a national commitment to Climate Action that can be adapted at the local level.

The timing of any actions taken by the federal or provincial/territorial governments is critical. Some actions need to be taken as soon as possible, especially in terms of funding and capacity-building, due to the sensitive and aggressive timeline for curbing emissions.

One of the most significant obstacles to implementing significant improvements in energy efficiency and local generation is the availability of capital...

Plant lots of trees. Establish a climate resilient fund that communities can draw on if they present a well thought out business plan. get rid of land fill sites. take a look at energy for waste.

There is a lot more to say. But, I find this questionnaire very frustrating for the reasons identified earlier. Just about all of the offered actions need to be done, should have been done 25 or 30 years ago when some of us said they were necessary. We are so late in the game that dramatic response is required (well beyond Paris), meaning action on all fronts is needed.

...We're facing a need to change our values in a quantum way. Away from the values that got us into the spot we're in to values that are Earth and human centred.



Columbia

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The Columbia Institute fosters
individual and organizational leadership
for inclusive, sustainable communities.

www.columbiainstitute.ca

CITY OF VICTORIA, DISTRICT OF SAANICH,
TOWNSHIP OF ESQUIMALT, BC, PHOTO
COURTESY EWAN MCINTOSH/FLICKR

SUMMARY

LOCAL GOVERNMENTS HAVE A CRUCIAL ROLE to play in combating climate change. Their decisions impact, directly or indirectly, over half of Canada's greenhouse gas (GHG) emissions.¹ This offers huge scope for meeting Canada's national climate responsibilities, with the right kind of support from federal and provincial governments.

The report is directed to ramping up climate action through local government decision making and it was prepared with the needs of elected leaders in mind. The Top Asks identified in the report are those that federal, provincial, and territorial elected governments could put in place so that local decision makers have the tools they need to maximize climate action. And the potential is substantial.

If you are an elected leader, you are likely being called upon more often to address the consequences of a changing climate — from forest fires in the west, floods in the prairies, sea level rise in the north, to ice storms in the east. Canada needs a bold plan to reduce GHG emissions. We have an enormous task ahead of us.

There are four emerging trends pushing local governments to centre stage: the localization of energy, the mainstreaming of climate change in land use planning, rapid urbanization, and the importance of place in a global economy.

Canada can and must ramp up climate action by empowering low carbon communities.

What do local governments need to unleash their climate potential? Which top asks have the most leverage for impact?

The actions set out in this report — 18 for the federal government, and 24 for the provinces and territories — are based on an extensive literature review with input from local elected leaders. They are not the only actions that could make a difference, but they are actions that could have a great impact.

These actions focus on five priority areas:

- **CAPACITY BUILDING;**
- **SMART GROWTH;**
- **HARNESSING LOCAL ENERGY;**
- Reducing carbon pollution from the **BUILDING SECTOR;** and
- Reducing carbon pollution from the **TRANSPORTATION SECTOR.**



Canada needs a bold plan to reduce GHG emissions. We have an enormous task ahead of us. Local governments have a crucial role to play.

¹ Natural Resources Canada, "Integrated Community Energy Solutions: A Roadmap for Action," (2009).



Local governments have a crucial role to play in combating climate change. Their decisions impact, directly or indirectly, over half of Canada's GHG emissions.

TORONTO PHOTO COURTESY MICHAEL MURAZ/Flickr

Over 100 local elected officials responded to the Top Asks survey. As one respondent said: "Just about all of the offered actions need to be done, should have been done 25 or 30 years ago when some of us said they were necessary. We are so late in the game that dramatic response is required (well beyond Paris), meaning action on all fronts is needed."

Top Asks identifies key federal, provincial, and territorial actions needed to unleash local government climate potential. They are early wins in the transition to net zero emissions in 2050.

Top Asks

Canada can and must ramp up climate action by empowering low carbon communities. Our country can't be a climate leader without local government action.

Where to start:

FEDERAL TOP ASKS	
Capacity building	Adopt science-based greenhouse gas targets. Put a price on carbon for net-zero emissions by 2050. Address capacity shortfalls that stand in the way of local government climate action.
Funding	Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industry.
Natural capital	Fund local government baseline assessments of natural capital. Include the carbon storage value of natural capital in national GHG accounting.
Harnessing local energy	Fund community- and Indigenous-owned renewable energy capacity.
Building sector	Incentivize energy efficiency retrofits in homes and commercial buildings.
Transportation sector	Prioritize transit and active transportation infrastructure projects over auto-only infrastructure.



PROVINCIAL & TERRITORIAL TOP ASKS

Capacity building	Adopt science-based greenhouse gas targets. Put a price on carbon for net-zero emissions by 2050. Address capacity shortfalls that stand in the way of local government climate action.
Funding	Line up sustainable infrastructure spending programs with local climate action. Allocate subsidies to GHG-friendly industry.
Smart growth	Change legislation so that energy and climate change policies are part of land use planning.
Harnessing local energy	Change the building code to make renewable-energy-powered homes and buildings.
Building sector	Fund ambitious retrofit programs. Enable property-assessed financing and on-bill financing. Support low income households to address energy poverty.
Transportation sector	Support local governments to improve public transit and active transportation in urban and rural communities.

“Just about all of the offered actions need to be done, should have been done 25 or 30 years ago when some of us said they were necessary. We are so late in the game that dramatic response is required (well beyond Paris), meaning action on all fronts is needed.”

— Top Asks Survey respondent

VANCOUVER PHOTO COURTESY PAUL KRUEGER/Flickr

Are there other actions that our federal and provincial governments must take to reduce climate change? Absolutely. This report speaks to the potential of local governments.

Where to Raise Top Asks for Empowering Low Carbon Communities

You can discuss these asks with your:

- Council;
- Constituents, community groups, and staff;
- Federal, provincial, and territorial elected representatives;
- Provincial, territorial, and national local government associations; and
- Government-led climate change consultations.



Conservation Corps
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To Whom It May Concern,

Conservation Corps Newfoundland and Labrador (CCNL) is a not-profit-organization dedicated to providing youth with training and experience in the fields of environmental and cultural heritage conservation. As the host organization for the Climate Change Education Centre (CCEC), it is with great interest that the staff of CCNL propose ideas and solutions for the Provincial Government's climate change strategy. The suggestions are as follows:

- Expand CCNL's Youth Corps with a focus on employment opportunities in the Green Economy. These work placements would serve a unique purpose by exposing youth to skills, trades, and careers in the green economy. This provides the necessary workforce for groups and businesses in the environmental sector, allowing growth in the industry.
- Increased government funding to facilitate access to funds for clean technology projects.
- More public-private partnerships to drive research and development.
- Increase the building code requirements for new and retrofit buildings to increase energy efficiency.
- Regulations that place a price on carbon. Providing incentives for research and development to increase the adoption of clean technology.
- Change regulations on net metering and provide incentives for "Net Zero" homes and buildings.
- Bring back the *Energuide for Houses Program* and provide incentives to homeowners to make real changes towards more energy efficient homes.
- Government should invest in a clean energy fleet and replace all publicly owned diesel trucks, buses, trains and cars with fully electric or cleaner renewable fuel vehicles. Investment should be made in charging stations throughout the province. Electric vehicles need to be just as convenient, efficient, and affordable as gasoline powered vehicles.

The staff of Conservation Corps Newfoundland and Labrador would like to emphasize the need for public engagement and education on climate change. It is believed that the people of our province are not connecting to climate change due to a lack of understanding of the issue. Climate change education will enlighten Newfoundlanders and Labradorians, while inspiring them to take action in their own communities. Continued investment in the outreach efforts of the Climate Change Education Centre will support the climate change education of the province's youth. With further investment, the CCEC could expand the scope of its outreach, creating climate change education opportunities for all members of the public. As the people of this province gain an understanding and awareness of the matter, the Government of Newfoundland and Labrador can anticipate their support in change and investment in a Green Economy.

The CCEC conducted a Climate Change Consultation session at this year's Green Team Training Camp. The Camp, an orientation and safety training forum for youth employed by CCNL'S summer Green Team program, was held at Memorial University's Grenfell Campus in Corner Brook, June 27-30th, 2016.

A group of 32 youth, ages 16-30, gathered for the Climate Change Consultation where CCNL's Education and Outreach Coordinator, Jessica Madden, lead the discussion. Using the conversation guide and resources provided by the Department of Environment and Climate Change, Madden prompted the audience with questions that generated much discussion. A summary of the results follows.

The conversation began with a question to the group:

What is your experience with climate change?

- Conversation surrounded the extreme weather patterns we are seeing in our province and throughout the world.
- Participants shared stories of the comparison of snow & ice from the time of our parents and grandparents to now (how there was much more in the past than present day)
- Aboriginal participants spoke to how mild winters are creating dangerous conditions for snowmobiles traveling across areas of ice in northern regions, which is problematic with respect to transportation and hunting.

What should the Government of Newfoundland and Labrador do to support clean economic growth?

- It was agreed that education is an integral component of the growth of a clean economy. Our provincial government should prioritize public education on the meaning, the need, and the benefits of a green economy.
- Businesses & corporations need to be forced to think about the environmental impacts of their work (their carbon footprint). It was suggested that The Government of Newfoundland and Labrador impose carbon taxing in our province.
- Many felt that more money should be invested into companies that employ renewable energy and positive environmental developments.

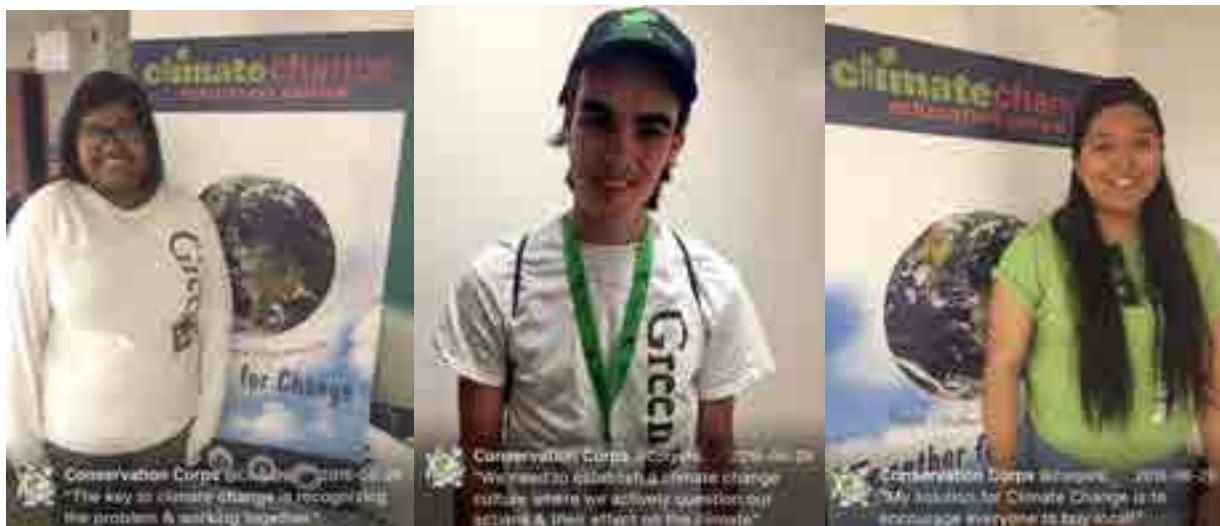
What steps do you think need to be taken to better adapt to climate change?

- A resounding thought that adapting to climate change begins with educating Newfoundlanders and Labradorians on the impacts of climate change in our province. It was proposed that many cannot connect to climate change due to a lack of understanding and awareness.
- Participants felt it would be beneficial to promote local and sustainable food production. Incentives should be provided for purchasing locally sourced food.
- Solutions will need to be made surrounding the difference between rural and urban food availability. It is felt that the high costs of produce in rural communities discourages people from making healthy food choices.

- Wild game is more accessible in rural areas. It is believed that Government departments should recognize and support the sustainable choices of rural areas (with regard to licenses/restrictions).
- It was strongly agreed that the Government of Newfoundland and Labrador should value public transportation, and invest into developing an efficient public transportation system that people would opt to use.

How should the Provincial Government demonstrate leadership on climate change?

- It was recommended to have all government departments/ bodies educated about climate change. Government branches demonstrating leadership on climate change would encourage community members to take action.
- It would be valuable to frequently host public engagement sessions, inviting all members of society to join in on the climate change conservation (not solely the experts in the field/ scientists/ environmentalists).
- The Government of Newfoundland and Labrador should impose strict rules on plastic bag distribution. Many of the consultation participants felt that plastic bags should be eliminated from stores entirely, and at the very least, should be provided for a cost.
- Provincial Government Officials could actively encourage and partake in carpooling, walking to work, and regular use of public transportation.
- It was suggested that more value be placed in maintaining green spaces within neighborhoods/ cities/communities across our province.
- It was suggested that the Provincial Government employ electric vehicles for departmental use.



**Divest MUN: Submission Regarding the Development of a Climate Change Strategy
To the Government of Newfoundland and Labrador**

Sept. 13th, 2016

Divest MUN is a local initiative of students and faculty at Memorial University and is part of a world wide movement urging institutions to divest from the fossil fuel industry. We recognize that the continued expansion of the fossil fuel industry is playing an unacceptable and detrimental role in our world, by accelerating climate change, and via a wide range of other impacts from social impacts to those generated by extraction technologies. Divestment is the process by which individuals and institutions remove investments from particular sources (in this case the fossil fuel industry) for ethical and/or financial reasons, and re-invest these funds into more environmentally and economically sustainable industries. Our initiative also actively researches other efforts to mitigate the impacts of climate change and to aid in attainment of GHG reduction targets and decarbonization.

In response to the Provincial Government's request for input on the development of a climate change strategy for NL, Divest MUN here contributes an outline of its recommendations. These findings are a result of two years of extensive research on policy foci, which could aid in the mitigation of/adaptation to climate change, as well as the expansion of the green economy. We submit the following two documents, which contain detailed evidence and an in-depth discussion of our findings:

- Divest Request to the Board of Regents of Memorial University:
https://issuu.com/divestmun/docs/divestmun_submission_to_board_of_re
- Decarbonization and the Newfoundland and Labrador Economy:
https://issuu.com/divestmun/docs/decarbonization_and_the_newfoundlan

We also outline our findings below, and provide additional guidelines.

We stress that any policy development in this area, from its onset, must involve the input and representation of Indigenous groups and organizations.

In response to discussion question 1, "What should the Government of Newfoundland and Labrador do to support clean economic growth?" we provide the following points as foci for policy development. We suggest that the provincial government:

1. Focus on creation of jobs and economic prosperity through the encouragement of renewable energy and a green economy, with a particular focus on localized growth (emphasizing comprehensive monitoring and mitigation of cumulative impacts) as opposed to singular fix-all solutions and megaprojects. This focus could encompass the development of wind-power, micro-hydro, geothermal, biofuel, solar, and other green energy projects and development, working directly with communities to come to economic

solutions that can benefit them on a case by case basis. Again the focus here is on creating jobs and economic growth while also democratizing our energy system, giving our communities greater control of their economic and energy futures.

2. End subsidies to the fossil fuel industry: this is an important early step towards decarbonisation.
3. While Divest MUN is in favour of putting a price on carbon, the revenue generated must be used to help those facing the greatest burdens, in terms of both climate change mitigation and adaptation, make the transition to a post-carbon future. A particular focus on programs and supports for rural communities and low-income households, such as supportive policies for green infrastructure, energy efficiency, and public/mass and electric transport alternatives, is essential. We see significant potential in renewable alternatives and the green economy to provide long term benefits provincially (particularly as prices come down). But we must ensure that we make this transition as smooth as possible for those already facing the greatest obstacles.
4. Develop supports for efforts aimed at worker training and skill development for workers transitioning to employment in green industries and renewable energy. This could be in the form of scholarships, grants or subsidized training programs for those entering green industries.
5. Invest in infrastructure to support green technologies, for instance electric vehicle charging stations, public/mass transport, and bike paths.
6. Reduce energy demand. Here we outline three potential routes to reducing energy demand, though many more exist in addition to those listed here:
 - a. Net metering. This has been an ongoing promise provincially but we would like to see meaningful work done in this respect so that small scale renewable energy, generated by individual households for instance, can be effectively utilized.
 - b. Policies which encourage use of locally sourced products and food, with minimized transportation, thereby lowering carbon emissions as a result of extensive transportation while benefitting local economies.
 - c. Improvement of public transit, thereby lowering carbon emissions as a result of travel. This also could have beneficial run on effects, not only for quality of life in the Province, but also in terms of sustainable industries such as tourism.
7. Focus on policy generation which encourages industries which can be managed sustainably, such as fisheries, agriculture, and tourism: for instance, eco-tourism for which our Province has significant ongoing potential. This also includes policies which can help

protect industries which can be managed sustainably, such as fisheries, from externalities caused by unsustainable industries like the fossil fuel industry.

8. Divestment of our institutions, such as Memorial University among others, from the fossil fuel industry. Divestment is defined as the opposite of investment; it is the removal of investments from a particular industry or set of industries for ethical or financial reasons. We recommend the divestment of provincial institutions, over a 5 year period, from the fossil fuel industry for a number of reasons. Here we outline three key reasons (there are many others). Through divestment, we:
 - a. Help protect our economy from the volatility of fossil fuels. Given the current over-dependency of our economy upon the fossil fuel industry, it makes no practical sense for our institutions to additionally invest in the industry; provincial funding is already at risk of fluctuations in prices and other global economic factors. The Bank of England, among other leading authorities, has also warned of the risks of fossil fuel investments as a result of stranded assets resulting from fossil fuel reserves remaining unburned as governments take action on climate change.
 - b. Stop profiting from climate destruction. Divestment sends a clear message that the time has come to invest in climate change solutions rather than in the causes. It is unacceptable for our institutions to 'bet' financially on a future where we continue to utilize fossil fuels and push ourselves past levels of 'unsafe' global warming as a result. We outline reasons for the need to keep the vast majority of fossil fuels underground in the documents submitted.
 - c. Facilitate the growth and promotion of alternatives. Divestment also means reinvestment into industries that could include green energy alternatives. However, this is certainly not exclusively a one to one relationship in terms of reinvestment. In short, divestment can encourage the development of the economic and energy solutions we need provincially, nationally, and internationally. Indeed fossil fuel divestment has been accomplished and undertaken by numerous institutions worldwide, such as Glasgow University.

In response to discussion question 2, "What steps do you think need to be taken to better adapt to climate change?" we provide the following as core requirements for consideration:

1. The importance of financial and personnel support for municipalities, particularly in more distant rural communities, who are likely to face the greatest impacts. This could include regional or community level co-ordinators specifically working towards facilitating climate change adaptation.
2. The importance of improving and building upon existing social services and infrastructure to help lessen the impact of climate change on the most vulnerable in the province.

In response to discussion question 3, "How should the Provincial Government demonstrate leadership on climate change?" we provide the following points, as outlined extensively in the documents submitted, which are vital to the ability of the Provincial Government to be a climate leader:

1. The government must prevent the development of further fossil fuel resources which would be unburnable in order to meet climate targets, such as those which may potentially be extractable via hydraulic fracturing, and Arctic oil. The government must base future development and plans for growth around the understanding that most of the world's known fossil fuel reserves are unburnable, and that Arctic oil cannot be developed, as this would directly contradict the 2 degree centigrade target for avoiding the worst effects of global warming.
2. The government must fully ban hydraulic fracturing given both its immediate negative impacts, but also its contribution to climate change.
3. The government must commit to a timely transition to a fully renewable and green economy and to decarbonization.

In response to the concluding question, "Is there anything else you would like to add on the development of a climate change strategy for Newfoundland and Labrador?" We point out that, while the fossil fuel industry plays a role in the immediate economic future of the province, there appears to be a politically problematic closeness between the industry and government which has the potential to detrimentally influence the Province's ability to effectively mitigate and adapt to climate change and achieve decarbonization. The government needs to make its regulators as impartial as possible, and focus regulators purely on regulation (rather than on regulation and the encouragement of development). The government also needs to ensure it includes climate change contributions as core considerations in assessing all future carbon intensive projects.

Sincerely,

Divest MUN

**Submission to the Department of
Environment and Climate Change**

Feedback on:

**Climate Change Consultations for
Newfoundland & Labrador**

September 2016

Submitted by Food First NL



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1. Introduction

Food First NL would like to commend the Government of Newfoundland and Labrador on its commitment to addressing climate change through the development of a new Climate Change Strategy for Newfoundland and Labrador (NL). Climate change is a complex issue that requires a collaborative approach to make meaningful, long-term impact. Food First NL is pleased to provide comments to inform the current consultation and future action on this important issue.

Food First NL is a provincial, non-profit organization with a growing network of over 2,800 organizations and individuals actively engaged in improving food security across NL. Food First NL was founded in 1998 in response to growing concerns of hunger and poverty in the province, and since then has been at the forefront of mobilizing dialogue and action on food security in NL. Food First NL's mission is to actively promote comprehensive, community-based solutions to ensure physical and economic access to adequate and healthy food for all.

Since 2011, Food First NL has received annualized and project funding from the Government of NL through the Division of Wellness, Department of Children, Seniors, and Social Development. This support has provided Food First NL with the capacity to act as a leader for advancing food security across the province. See attached Annual Report and visit www.foodfirstnl.ca for more information about Food First NL's current activities.

Similar to climate change, food security is a multi-faceted, complex, and dynamic issue that impacts the social, environmental, and economic well-being of NL. Climate change and food security are deeply connected, and there is great opportunity to develop solutions that simultaneously advance both of these priority issues. There is great opportunity for cross-sectoral collaboration on these issues through the Government of NL's Food Security Interdepartmental Working Group, which includes representation from the Department of Environment and Climate Change. Food First NL is eager to continue to collaborate with the Government of NL, and this Working Group, to advance climate change and food security in NL.

2. Food Security in NL

Food security exists when all people at all times have physical and economic access to adequate amounts of nutritious, safe, and culturally-appropriate food to maintain a healthy and active life. Food security depends on the success of the food system, which includes food production, distribution, access, consumption and disposal. When elements of the food system are not functioning well together, access to food can be compromised.

NL faces diverse and complex challenges to achieving food security, including:

Only 10% of the fresh vegetables available through major wholesalers are produced in the province,ⁱ and the NL fishery, our largest food industry, is mostly for export with over 80% of the province's seafood products exported, making NL incredibly dependent on outside food sources.

NL has an estimated 2-3 day supply of fresh vegetables in the event of a disruption to food supply, such as environmental events, labour strikes, snow and ice conditions, or mechanical issues on vessels.

NL has an aging farmer population and new entrants face numerous barriers to starting farming. In 2011, the average age of farmers in the province was 55 as compared to 46 in 1991.ⁱⁱ In addition, new farmers face many obstacles to entering the sector, including access to land, start-up capital, and labour.

Many communities face high cost, poor quality, and inconsistent availability of healthy foods, as a result of being dependent on food that is transported long distances to reach communities across NL.

NL has greater access to less healthy food than to healthy options through retailers. For every 10,000 Newfoundlanders and Labradorians, there are 14 fast food outlets, eight corner stores, four gas stations with stores, and three grocery stores.ⁱⁱⁱ

Many Newfoundlanders & Labradorians face economic barriers to accessing enough food, with 13.4% of households experiencing some level of Household Food Insecurity in 2012. Additionally, in 2014, over 26,000 individuals in NL used a food bank, with 40% of this population being children.

NL has low vegetable and fruit consumption, with consumption decreasing since 2007. In 2014, only 25.7% of Newfoundlanders and Labradorians consume fruit and vegetable five or more times per day, compared to the national average of 39.5%.^{iv}

Northern, remote communities face barriers accessing traditional, wild foods. Traditionally, Inuit in Nunatsiavut subsisted on wild food, which provides both a nutrient-rich diet as well as mental, cultural, and physical health benefits through hunting on the land and sharing food within communities.

See attached *Everybody Eats*, a Discussion Paper on Food Security in NL that Food First NL published in November 2015 in partnership with the NL Public Health Association, which provides further information on food security challenges and opportunities in the province.

3. Food Security and Climate Change in NL

Climate change both impacts and is impacted by food security in NL, in the following ways:

Climate Change Impacts on Global & Local Food Production | Effects of climate change on global and local food production include increasing instances of droughts and floods; rising ocean temperatures and ocean acidification; and introduction of new plant pests, animal diseases, and invasive aquatic organisms. These and other factors impact the ability of farmers and fishermen to produce crops, livestock, and fish products, thereby reducing production of food, which decreases availability and increases the cost of food at stores in NL.

Climate Change Impacts on Food Distribution | Increasing instances of extreme and unpredictable weather disrupt the distribution of food to and around NL. As a province that is greatly dependent on outside food sources, disruptions to distribution leads to food shortages, inconsistent availability, poorer quality, and higher costs of food. This is experienced within the larger centres of the province, and is amplified in more rural, remote, and northern regions of NL. For instance, in 2010, Hurricane Igor destroyed portions of main access roads leaving many communities cut off from distribution of food and other necessities. Again, in 2014, communities in Nunatsiavut, along the north coast of Labrador, declared a state of emergency due to prolonged food shortages caused by weather and mechanical issues.

Climate Change Impacts on Wildlife Availability and Harvesting on Labrador's North Coast | Climate change effects food security of people living in northern Canada more extremely than in the south, as northern regions have the greatest warming trends in Canada, and traditional northern livelihoods depend greatly on arctic climates^v. Warming temperatures impact wildlife populations, calving grounds, migration patterns, and edible plant and berry distribution, which significantly influence access to wild food in northern regions of the province. Climate change has been identified as a major contributor to a northward shift in seal and fish habitat, and the decline of caribou populations in Labrador that led to the ban on hunting George River Caribou in Labrador in 2012. Warming temperatures also impact the longevity of snow and sea ice, thawing permafrost, disappearing pack ice that protects shorelines, rising sea levels and extreme tidal fluctuations, and an increase in the length of ice formation and break-up in the fall and spring. These changes cause travel on ice and land to be unsafe and unpredictable, limiting opportunities for people living in northern communities, including Inuit in Nunatsiavut, to get off on the land and participate in traditional ways of living including hunting and harvesting activities. Access to country foods is important for Inuit not only because of its nutritional benefits but also because of its broader importance in preserving traditional knowledge and skills. Barriers to traditional harvesting activity impacts physical, mental, and cultural health and well-being of Inuit in Nunatsiavut.

Food Security Impacts on Climate Change | Transportation, including distribution of goods, is one of the largest contributors to greenhouse gas emissions. NL's great dependence on outside food sources leads to food being transported greater distances to and around NL leading to increased emissions. Additionally, industrial agricultural practices around the globe can negatively impact climate change. Large-scale, input-intensive monocultures often rely on chemical fertilizers, pesticides, and preventative antibiotics that can cause negative environmental outcomes including degradation of land, water and ecosystems, and higher greenhouse gas emissions.

4. Opportunities & Recommendations

Food First NL has four recommendations to simultaneously advance climate change mitigation and adaptation, reduce greenhouse gas emissions, and improve food security in NL, as outlined below:

ONE | INVEST IN LOCAL FOOD

Despite the challenges a changing climate presents to NL, warming temperatures also present opportunity for increased local food production and enhanced green business development. In order to realize the potential of this opportunity, there is need for meaningful commitment and support to advancing local food production, including:

Supporting Young Farmers & Fisherman, New Entrants, & Innovation | New entrants into agriculture and fisheries face numerous barriers. Identifying and breaking down key barriers to entering agriculture, fisheries, and aquaculture industries, and promoting these as viable and rewarding career options in NL will lead to a growth in young and new entrants and increase local food production in NL. Additionally, there is great opportunity to support innovative, sustainable initiatives that contribute to increased food production, such as vertical growing and aquaponics.

Allocating Land for Agricultural Use | A major barrier to growing the agriculture industry in NL is preservation of and access to arable land. A streamlined, transparent process for accessing agricultural land by existing and new farmers is a critical first step to increasing local food production.

Supporting Research in Local Food Opportunities | In order to gain the most benefit from local food opportunities and support adaptation, there needs to be an understanding of what the risks and opportunities are. There is a need for further and sustained support for research investigating the potential opportunities and challenges of climate change for agriculture, fisheries, and aquaculture industries in NL. Research should include a focus on how agricultural producers can adapt to changes in climate through piloting new techniques and crops, as well as how the fisheries industry can adapt to changes in the ocean ecosystem. Research should be conducted in partnership with existing research institutions including the Boreal Ecosystem Research Institute at Grenfell, the Marine Institute, and the St. John's Research and Development Centre.

Supporting & Promoting Local Food | The Government of NL can play a lead role in supporting local food through its operations. Shifting procurement from imported foods produced through large-scale industrial agriculture to sustainably produced, local foods and ensuring locally-sourced, high-quality food is incorporated into school, university, and public institution cafeterias will provide meaningful support to local producers and contribute to the local food economy. Additionally, although the fishing industry will always be primarily export-based, there is opportunity for the industry to be better organized to produce food for local consumption. ^{vi}

Increasing local food production for local consumption will reduce NL's dependency on outside food sources, strengthen the province's food system, lead to lower vulnerability of food shortages resulting from extreme weather, as well as reduce greenhouse gas emissions from the distribution of food to and around the province. However, although transportation of food is a major contributor to greenhouse gas emissions, the manner in which food is produced can also contribute to emissions, and it is not always the case that locally produced food leads to lower

levels of greenhouse gas emissions than imported foods. As a result, when investing in local agriculture, it is important to consider the manner in which food is being produced. Typically, natural and organic approaches will lead to lower emissions.

TWO | SUPPORT MITIGATION & ADAPTATION THROUGH FOOD SECURITY PROGRAMMING

Communities in NL understand the local impacts of climate change on food security, and are best placed to inform the development of solutions to effectively mitigate these impacts and adapt to changes. Community-based food security initiatives help to overcome challenges and build upon local opportunities posed by climate change, while simultaneously improving access to healthy food, building a stronger local food system, and improving health outcomes for residents. Food First NL works with communities across NL to develop and implement such initiatives, by providing resources, information, and networking support. Examples of initiatives include:

Community Gardens & Greenhouses which provide increased access to healthy, fresh vegetables and fruits, improve gardening knowledge and skills, and build a sense of self-reliance and community.

Community Freezers which increase access to traditional wild food for individuals and families facing barriers to accessing nutrient-rich, culturally appropriate wild food.

Farmers' Markets which provide alternative retail infrastructures and an avenue for local producers to sell their products.

Food Skills Education & Workshops which build knowledge and confidence among residents on important core food skills including gardening, seed saving, harvesting wild foods, processing food, and preparing healthy meals.

The power and impact of these seemingly simple initiatives should not be underestimated. In many cases these initiatives lead to long term positive impact for individuals, families, and communities. Many communities across NL are eager to implement innovative, locally-appropriate solutions to effectively improve both food security and climate change. Food First NL is eager to work with the Government of NL to support further community food security programming across NL that can assist in climate change mitigation and adaptation.

THREE | CLIMATE CHANGE ADAPTATION STRATEGY FOR NORTHERN LABRADOR

Temperatures are projected to increase by 3.8°C in Nain by mid-century, as compared to 2.3°C in St. John's. Warming temperatures in Labrador greatly impact Inuit, Innu, and Metis communities, whose livelihoods are deeply connected to the environment and a historically cold arctic climate. In Labrador, a warming climate means shorter cold weather months, unpredictable ice conditions and extreme weather events. This limits the ability for safe participation in traditional food practices, such as wild food harvesting, and contributes to negative physical and mental health outcomes, such as increased rates of obesity and diabetes and a higher prevalence of addictions and rates of suicide.

Food First NL commends the Government of NL on its partnership with Nunatsiavut Government to support the harvest of moose from Gros Morne to stock Community Freezers in Nunatsiavut, which assists communities in coping with the caribou ban, caused in part by climate change. Food First NL encourages this partnership to continue, as the positive impact on the communities of Nunatsiavut has been evident. This partnership demonstrates the potential for future collaborations between indigenous and provincial Governments aimed at advancing food security and adapting to climate change.

There is great need for continued efforts to support adaptation and mitigation of climate change impacts in northern Labrador. Food First NL encourages the continued inclusion of a Climate Change Adaptation Strategy for Northern Labrador in the new provincial Climate Change Strategy. As food security and climate change are deeply connected, especially in the north, it is important that an Adaptation Strategy for Northern Labrador has food security as an

integral component, and includes assessments of vulnerability and resiliency strategies for northern Labrador communities in response to climate change.

Further opportunity for climate change adaptation and advancing food security in Northern Labrador include:

- Establishing partnership and resources to support community food security initiatives in northern Labrador that build resilience, support local food systems, and overcome negative impacts of climate change;
- Supporting research, in partnership with the Nain Research Centre of Nunatsiavut Government and the Labrador Institute, on assessing climate change impacts on wild food harvesting and adaptation strategies for harvesters to safely overcome these challenges; and,
- Supporting research and development of sustainable wild food industries in northern Labrador, including char and seal fisheries, as well as secondary processing opportunities, to reduce reliance on outside food sources, improve access to culturally-appropriate wild food, and create job and business development.

See attached *NiKigijavut Nunatsiavutinni: Our Food in Nunatsiavut Project Impact Report* for information on food security issues and current programming in Nain, Hopedale, and Rigolet, Nunatsiavut led by Food First NL in partnership with Nunatsiavut Government.

FOUR | COLLABORATIVE APPROACH TO ADVANCING CLIMATE CHANGE & FOOD SECURITY

Food security and climate change are complex inter-related issues that require sustainable solutions developed through strong collaboration and multi-sectoral approaches. Food First NL encourages the Government of NL's Department of Environment and Climate Change to continue to engage a wide range of stakeholders in developing the new provincial Climate Change Strategy, and to secure commitment from all Government of NL Departments to consider and address the impacts of climate change in their efforts. Specifically, Food First NL encourages ongoing consultation and engagement with the provincial Food Security Interdepartmental Working Group.

Food First NL would like to thank the Department of Environment and Climate Change for this opportunity to submit feedback on the development of a new Climate Change Strategy and we look forward to hearing the results of this consultation.

ⁱ Newfoundland & Labrador Public Health Association (NLPHA) (2013). Food Security Position Paper - October 2013. Available from http://www.nlpha.ca/pdf/11/NLPHA%20Food%20Security%20Position%20Paper_10_15_2013.pdf.

ⁱⁱ Average Age of Farm Operators in Newfoundland & Labrador (2011). Statistics Canada. Available from <http://www29.statcan.gc.ca/ceag-web/eng/community-agriculture-profile-profil-agricole?geoid=100000000&selectedVarIds=360%2C>.

ⁱⁱⁱ Analysis by J. Valcour, C. Mah, and the Healthy Corner Stores NL team, with advice from Service NL and the Newfoundland and Labrador Statistics Agency, and funding support from Health Canada. Based on the North American Industry Classification System (NAICS) (<http://www.statcan.gc.ca/eng/subjects/standard/naics/2012/introduction>), a comprehensive system that provides standard definitions for all economic activities carried out in Canada, Mexico, and the United States.

^{iv} Statistics Canada (2011) Fruit and vegetable consumption by sex, 5 times or more per day, by province and territory. Available from <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/health90b-eng.htm>.

^v Government of Canada, Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptations, 2014

^{vi} Neis, B., Ommert, R., Hall, P. (2014), Moving Forward: Building Economically, Socially, and Ecologically Resilient Fisheries and Coastal Communities.



PO Box 144, Bonne Bay, NL A0K1P0 (709) 453-2063

June 17, 2016

Climate change consultations
Office of Climate Change and Energy Efficiency
PO Box 8700
St John's, NL A1B 4J6

via email: ClimateChange@gov.nl.ca

**Re: UN climate change agreement in Paris
NL Climate change consultations 2016**

Dear Minister,

As we know, our children and grandchildren will bear the burden of the decisions we make today. Committing, in a concrete way, to addressing the impacts of climate change and the collective agreement Canada signed in Paris is imperative to reaching our goal of global temperature rising to a maximum of 2C.

Canada and Newfoundland & Labrador have the tools, technology, ideas, innovation and many sources of renewable power (wind, solar, geothermal, etc.) to meet the goals set in this international agreement of December 2015. Building an economy based on sustainable / renewable energies will result in reducing extreme weather events, improving human health, reducing our CO₂ emissions and new jobs.

In concrete terms, I suggest the following actions / policy decisions:

- 1) Eliminate subsidies to the fossil fuels industry.
- 2) Seriously engage with the other provinces and the federal government in transitioning from fossil fuels to sustainable / renewable energy sources.
- 3) Stop coal power for producing electricity and engage in an investment plan for sustainable / renewable energy.

- 4) Concentrate on the electrification of the transportation system / sector (eg. Light Rail System -Montreal).
- 5) Engage with the federal government in energy efficiency programs for businesses and homeowners.
- 6) Do not allow or promote oil / gas exploration and exploitation in the Gulf of St. Lawrence.

Canadians and people from this province believe that Canada and Newfoundland & Labrador can become a world leader in addressing climate change.

Submitted with respect and in the spirit of collaboration.

On behalf of the Board of Directors,

Raymond Cusson
Chair





HOSPITALITY

NEWFOUNDLAND & LABRADOR

Climate Change Consultations Submission

Sept. 14, 2016

Hospitality Newfoundland and Labrador, the voice of tourism, provides leadership and direction for the sustainability and growth of the tourism industry.

Climate Change Consultations

Tourism and travel in Newfoundland and Labrador is growing and is one of the most stable, revenue-generating industries in our province. Generating more than \$1.1 billion in annual spending, tourism offers a renewable resource and accounts for 8% of all provincial jobs. Comprised of primarily small- to medium-sized businesses, tourism supports the needs of a growing economy by providing the foundation of services and attractions that other business sectors need to grow, attract workers, and keep workers and investment in NL.

Tourism in Newfoundland and Labrador is synonymous with images of raw and breathtaking beauty enjoyed in undisturbed natural environments. From jagged coastlines to glacially carved fjords, Newfoundland and Labrador's principal tourism demand generators are enjoyed in an unaltered and purest form possible. Yet, these tourism icons upon which Newfoundland and Labrador has established a billion dollar tourism industry face unprecedented impediments to future growth and sustainability, namely, competing use conflicts and climate change.

The natural outdoors is a cornerstone on which Newfoundland and Labrador's tourism industry has been established and grown. In order to protect that which is foundational to the industry, one must assign a value to it and champion its worth to the industry, within the context of the value of the tourism industry to Newfoundland and Labrador's economy and way of life. The issue, however, as to the value of these cornerstones, and how to determine that value, is complex. *What is the value of an undisturbed forested viewscape? A deep breath of clean air or waves crashing against the coastline?* That which attracts people to our province as a tourism destination is the very thing that is most difficult to put a 'price' on and quantify. Furthermore, the value of that forested viewscape to the tourism industry is quite different than its value to the forestry industry and unfortunately, in more and more instances, the difference in value is proving contentious.

In NL, a heavy reliance on oil revenues has resulted in economic woes necessitating reductions to government services and spending. A robust and resilient economy is well recognized as one that is diversified; tourism offers such diversification. Tourism is one of the world's fastest growing industries and top creator of jobs, a versatile employer in our economy distributing jobs in all working age groups of our population and in all districts. A resource-based industry with our natural surroundings and untouched areas making Newfoundland and Labrador a desirable and unique travel destination, the continued success of tourism, and achievement of *Uncommon Potential: A Vision for Newfoundland and Labrador Tourism (Vision 2020)*, is dependent on the industry's ability to access and responsibly utilize the land and water resources of the province.

Strengthening and growing tourism requires a serious commitment to protecting and nurturing our natural environment, built heritage and the culture of the people of the province. The tourism industry has long recognized this fact and realized important sustainable tourism achievements including the establishment of the Gros Morne Institute for Sustainable Tourism (GMIST). GMIST enhances the quality and sustainability of Atlantic Canadian tourism operators through an array of training programs developed and offered at the Institute respecting: sustainable tourism practices, experiential tourism services and eco-adventure tourism.

Despite the proactive nature of the tourism industry, Newfoundland and Labrador does not have an integrated resource management or land use plan that protects and ensures the sustainability of the natural tourism assets of this province. As a result, Hospitality NL continues to find itself reacting to and providing consultation on land use and its sustainable development and protection. Moving forward, it is imperative that an innovative approach to managing our province's land and natural resources is implemented in order to achieve long-term economic, environmental and social goals.

For the tourism industry, economic viability and sustainability depends on environmental sustainability. A key component to product and experience development is environmental sustainability. Tourism offers one of the most stable, revenue-generating industries in the province; to ensure future growth and industry sustainability, the foundation upon which the industry is built must be protected with the development of policies that focus on the protection of irreplaceable assets. In many rural and remotely located communities, the tourism industry

represents one of the most sustainable economic opportunities available to entrepreneurs and those seeking employment. It is essential that government recognize the role tourism can play in future economic growth and diversification and ensure measures are included in the climate change strategy that facilitate sustainable tourism growth and development.

A tenet of our vision for industry growth and development is the protection and sustainability of our environment and natural/cultural assets. While the issue is complex, involves multiple government departments and is intricately tied to various existing legislation, with fiscal restraint facing Newfoundland and Labrador there is an immediate need for strong provincial leadership and clear direction, critical elements for sound land-use planning and resource management and development. Lack of sustainable management of our natural resources threatens the viability of sectors that depend on them, as well as potential future development and job creation.

The strategy developed must optimize social and economic benefits of resource use and ensure environmental responsibility and sustainability while recognizing multiple use opportunities all within the context of the cumulative effects on the environment. Such a strategy would best lead towards a balanced approach to future economic development, while mitigating the negative effects of climate change and seizing opportunities presented such as the extension of tourism seasons. To ensure the long-term sustainability of the tourism industry, while providing a balance with other resource-based industries and community development, the provincial government must take immediate steps. Development decisions are often irreversible and, as a resource-based industry, tourism requires vision and stewardship for the responsible development and protection of our natural areas.

Ninety percent of Canada's lands and all of its waters are public, stewarded by governments on behalf of Canadians. It is essential that legislated policies, procedures and strategies be based on sound research and detailed analysis to ensure that future land development works in harmony with the sustainability of all resources and industries that rely on natural resources, such as tourism, so that all regions of Newfoundland and Labrador can benefit economically, environmentally and socially.

In Newfoundland and Labrador, there are places that can be considered 'crown jewels of tourism' and require special consideration when deliberating land use and management regulations and legislation. One of these crown jewels is Gros Morne National Park, a designated UNESCO World Heritage Site recognized for its spectacular natural beauty and unique geological features that are of Outstanding Universal Value (OUV) transcending national boundaries and of common importance for present and future generations of all humanity. While Parks Canada is responsible for managing Gros Morne National Park, the federal and provincial governments as well as local communities share responsibility for managing the surrounding land and seascapes. One of three UNESCO World Heritage Sites situated along a pristine corridor, Gros Morne National Park is an essential asset to the provincial tourism industry with close to 25% of non-resident travel parties visiting the Gros Morne area each year during peak season; it is essential that the Government of NL give priority attention, within the climate change strategy, to the protection and sustainability of such areas.

Newfoundland and Labrador's coastal environment is an integral component of the province's tourist imagery and successful marketing campaigns. Rapid deterioration in the landscapes and coastal areas of the province is alarming and given its significance as a tourism attractor and local recreational amenity, attention and priority must be given to its protection and sustainability. While premier hiking and walking destination trails have been developed along Newfoundland and Labrador's coastline, there is little in legislation or policy that protects it. With recognition from National Geographic that includes being ranked the world's number one coastal destination in 2010 and named one of the 10 best adventure destinations in the world in 2012, the significance cannot be disputed. Given the nature of the province's coastline in combination with coastal erosion taking place, and its status as an international treasure and vital attraction, it must be protected and maintained within a comprehensive land use plan.

Newfoundland and Labrador's tourism industry has established a long-term vision for the future that focuses on a sustainable tourism industry contributing to a healthy diversified economy. Even in times of economic

volatility and fiscal restraint, tourism and travel has continued to flourish as a renewable resource industry that benefits all regions of our province. As the tourism industry association responsible for ensuring that tourism values and interests are adequately represented in provincial decision making processes, Hospitality NL supports a balanced and proactive management of our province's natural resources, an approach that is paramount to the growth and development of our economy and the quality of life for our residents.

Hospitality Newfoundland and Labrador, the provincial industry association representing tourism services and attractions throughout the province, would like to thank you for the opportunity to contribute to the climate change consultation process. For further discussion, I encourage you to contact Craig Foley, Hospitality NL's Chief Executive Officer, at 709-722-2000 ext. 232 or cfoley@hnl.ca.

Sincerely,



Dion Finlay
Chair

September 16, 2016

SENT BY E-MAIL TO: climatechange@gov.nl.ca

The Honourable Perry Trimper
Minister of Environment and Climate Change
Department of Environment and Climate Change
5th Floor, West Block, Confederation Building
PO Box 8700
St. John's, NL A1B 4J6

Dear Minister Trimper:

For consideration by the Department of Environment and Climate Change, this submission has been prepared by Insurance Bureau of Canada (IBC) on behalf of Canada's private property and casualty (P&C) insurance companies in response to your Department's request for submissions to inform a new provincial climate change strategy. IBC members account for 90% by premium volume of the private auto, home, and commercial insurance sold in Canada.

IBC commends the Government of Newfoundland and Labrador for seeking input on adapting to the changing climate as outlined in its discussion guide document *Climate Change Consultation for Newfoundland and Labrador*. IBC values the opportunity to share our industry's experience with the impact of severe weather which results from climate change with you, your Department, and all Newfoundlanders and Labradorians.

IBC agrees with Premier Ball's assertion that all jurisdictions must be part of the climate change solution. Our industry's experience led IBC to establish adaptation to climate change as a strategic priority for our organization in 2008, with an increased focus on natural catastrophes and flooding three years ago.

Flooding is Canada's most frequent natural hazard, and is a peril that significantly impacts citizens, communities, and governments across the country. IBC believes that addressing flooding must be an integral part of both Newfoundland and Labrador's and Canada's climate change adaptation response, and supports this effort through this submission. In this respect, I have enclosed IBC's national flood program proposal which was submitted for review to the federal government's Federal, Provincial, Territorial (F/P/T) Working Group on Climate Adaptation and Resilience in June. Also enclosed is information about the flood maps IBC commissioned to support the federal government's efforts to assess residential flood risk in Canada's communities.

IBC values the opportunity to contribute to the work of the Department of Environment and Climate Change, and welcomes questions and further collaboration with the government to assist in the development of a meaningful and proactive climate change strategy that serves all Newfoundlanders and Labradorians.

Sincerely,



Amanda Dean

AD/JW

Encl.: IBC Submission – *Building a Strong Response to Climate Change*
IBC Proposal to the Federal, Provincial, Territorial Working Group on Climate Adaptation and Resilience
IBC National Flood Program: About IBC's Flood maps



Building a Strong Response to Climate Change

*Submission to the Government of Newfoundland and
Labrador's Climate Change Consultation*

~September 2016 ~

INSURANCE BUREAU OF CANADA (IBC)

This submission has been prepared by Insurance Bureau of Canada (IBC) on behalf of Canada's private property and casualty (P&C) insurance companies. IBC members account for over 90% by premium volume of the private auto, home and commercial insurance sold in Canada. The P&C insurance industry is one of Canada's largest employers, providing over 122,000 jobs.

In 2014, P&C insurers paid over \$8.2 billion in taxes and levies to municipal, provincial and federal governments across Canada, of which \$79.1 million was paid to the province of Newfoundland and Labrador. In 2015, insurers also paid approximately \$578 million in direct claims in Newfoundland and Labrador for the replacement of stolen commercial goods and personal property, repairs to damaged homes and businesses, and benefits to people involved in motor vehicle collisions.

The industry works to improve the quality of life in Canada's communities by promoting safer roads and improved building codes, as well as injury and crime prevention. Also, it engages in coordinated preparation for, and response to, natural disasters, which help Canadian families quickly return to their normal lives following an unexpected event. In times of economic weakness and strength, the industry performs an important risk management role and provides a sense of security to millions of people who own homes, run businesses and drive automobiles.

Climate Change Is Affecting Newfoundlanders and Labradorians

Adapting to climate change in Canada is not a future proposition – these changes are affecting homes and businesses now in Newfoundland and Labrador and across Canada. Although it is not possible to attribute any single event to climate change, the trends in the occurrence of severe weather events are clear. It is for this reason that our industry was glad to see the Newfoundland and Labrador government emphasize the importance of adapting to climate change as a priority topic in the consultation discussion guide. Given our industry's experience in recent years, adaptation to climate change is chief among our priorities and we welcome the opportunity to partner with the government and work to implement solutions.

In Canada, weather events that used to happen every 40 years are now occurring every 6 years in some regions¹. Between 2009 and 2012, insured losses from natural catastrophes across the country were hovering around \$1 billion annually. In 2013, the summer flood in Alberta, the rainstorm in the Greater Toronto Area, and the ice storm that hit eastern and Atlantic Canada helped propel insured losses to \$3.6 billion (Canada)². In 2014, insured losses exceeded \$1 billion, making it the sixth consecutive year that insured losses were close to or over \$1 billion. By comparison, insured losses from natural catastrophes averaged \$396 million a year over the 25-year period from 1983 to 2008.

Newfoundland and Labrador has not been immune to these effects, with no fewer than 12 severe weather-related events occurring since 2000, including Hurricane Igor in 2010 which caused over \$76 million in damage in the province³. This is part of a sustained trend. Considering the damages from all perils, during the five years ending in 2015, the annual average cost of direct claims for personal property damage in Newfoundland and Labrador was \$88.7 million⁴. For commercial property lines, for the same five-year period, annual claims costs averaged \$59.1 million⁵. Over a 20-year period, the cost of personal property claims in the province skyrocketed from \$16.9 million in 1996 to a whopping \$97.5 million in 2015⁶.

It does not go unnoticed by our industry that governments are also seeing increased spending due to severe weather events. In the chart below is a sample of large scale events that were eligible for Disaster Financial Assistance Arrangements (DFAA) and through which financial assistance was provided by the federal government.

Severe weather events and federal reimbursement through DFAA	Date	Amount
Stephenville Flood	2005	\$18,461,755
Spring Flood	2006	\$3,235,813
Northern Peninsula Storm Surge	2007	\$1,620,015
Tropical Storm Chantal	2007	\$19,073,933
Hurricane Igor	September 2010	\$85,800,000 ⁷

¹ The Institute for Catastrophic Loss Reduction (ICLR) Telling the weather story, 2012

² Property Claim Services(PCS) Canada, Catastrophe Indices and Quantification Inc. (Cat IQ)

³ IBC with data from MSA, adjusted for inflation (\$ 2015).

⁴ IBC with data from MSA, adjusted for inflation (\$ 2015).

⁵ IBC with data from MSA, adjusted for inflation (\$ 2015).

⁶ IBC with data from MSA, adjusted for inflation (\$ 2015).

⁷ Parliamentary Budget Office, 2015.

Severe weather events are taking an increasing toll on Newfoundland and Labradorians, the government, and the insurance industry. Because climate change is a provincial, national and global problem that contributes to the increasing frequency of severe weather events, IBC has made adapting to severe weather a priority.

IBC has engaged with the Newfoundland and Labrador Department of Environment and Climate Change, and Fire and Emergency Services NL regarding climate change and the urgent need to increase awareness about the necessity to adapt to severe weather. IBC has also held discussions with provincial government representatives through the Atlantic Climate Adaptation Solutions Association, and worked extensively with Municipalities Newfoundland and Labrador and other stakeholders who play a strategic role relative to this topic. Through these efforts, IBC has fostered strategic partnerships with stakeholders, including the Red Cross and Ducks Unlimited Canada at the national level, who share concerns and the commitment to build a strong response to severe weather that serves Newfoundlanders and Labradorians and all Canadians.

Building a Strong Response

The Paris Agreement reached at the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) 21 recognizes that a comprehensive climate strategy must provide solutions for both mitigation and adaptation. The ensuing Vancouver Declaration may prove to be a watershed moment for Canada, as all orders of government embraced the challenge of responding collectively, and in a coordinated manner, to climatic change.

Canada's P&C insurance industry was encouraged to see that one of the outcomes of the Council of the Federation meeting in Whitehorse in July was that the Premiers urged the federal government to work with the insurance industry to expand the availability of and access to insurance products related to disasters and to improve federal disaster assistance for replacement infrastructure that has been built to a more resilient standard.

On August 9, 2016, Canada's Minister of Environment and Climate Change and the four Atlantic Premiers affirmed that managing climate risks is a priority and agreed to work together to adapt to the risks of climate change. The Premiers specifically noted that

partnering with the federal government on this issue is key to helping advance the clean growth and climate change pillar of the Atlantic Growth Strategy.

Flooding is Canada's most frequent natural hazard. It is a peril to citizens across the country, and IBC believes that addressing flooding must be an integral part of both Newfoundland and Labrador's and Canada's adaptation response.

Between 1970 and 2013, \$6.2 billion or 74% of all federal disaster-relief spending in Canada was due to flooding⁸. This was in addition to costs borne by provincial and municipal governments, indigenous people, the private sector, charities and individuals. There is a clear need for Canada to develop a National Flood Strategy.

National Flood Strategy

IBC has, in cooperation with partners – University of Prince Edward Island, Intact Centre on Climate Adaptation, Ducks Unlimited Canada and Institute for Catastrophic Loss Reduction – made a proposal to the Federal Provincial Territorial (F/P/T) Working Group on Climate Adaptation and Resilience for a National Flood Strategy⁹.

When it comes to establishing a National Flood Strategy, there is no “one size fits all” solution. Different nations face different challenges and need different solutions. Canada's flood solution must be built from the ground up. It must recognize that provinces and municipalities play the leading role in preparing for, responding to and recovering from disasters.

Federal, provincial and territorial Disaster Financial Assistance Arrangements (DFAA) are invaluable tools and cannot be replaced by any measure, including private sector insurance. However, they are only one tool in a toolkit that must be diversified. Canada needs a new model that shifts disaster relief to the private sector and educates and empowers homeowners to self-mitigate, while allocating public funds efficiently to community-mitigation projects.

⁸ IBC's analysis on Public Safety Canada DFAA data.

⁹ Government of Canada;
www.letstalkclimateaction.ca/index.php?option=com_publivateideamodule&view=ideas&layout=1pagetwocontent&Itemid=168&search=sendai&wb_srch_sub=&ii=1.

The United Nations Sendai Framework for Disaster Risk Reduction was established in 2015. This framework lays out four key priorities to proactively reduce the effects of any disaster, and it should guide the development of any National Flood Strategy.

The priorities¹⁰ of this approach are:

1. Understanding Disaster Risk
2. Strengthening Disaster-Risk Governance
3. Investing in Risk Reduction/Building Resilience
4. Increasing Disaster-Risk Awareness and Building Back Better to Expedite Recovery

Understanding Disaster Risk

Understanding and identifying flood risk is the crucial first step in developing an effective risk-reduction strategy. Simply put, Canada needs accurate, up-to-date flood-hazard mapping to properly assess vulnerability to both fluvial and pluvial flood risk.

IBC has taken a leadership role by investing \$1.5 million in developing a Canada-wide flood model that uses the best local climatic and nationally consistent geospatial data available. It takes into account not just flood plains (fluvial risk), but locally depressed urban areas at risk of pooling water (pluvial flooding). The maps also overlay a full national residential property database to identify areas where flood risk affects the most Canadians and property.

This type of insight, in turn, can empower local governments to target infrastructure and other risk-mitigation investment where it is needed most. Presently, the maps tell us that about 20% of Canadians (or one in five) face some level of overland flooding risk, with as many as 10% facing moderate to high risk. In Newfoundland and Labrador, approximately 16% of homes are at risk of river or stormwater flooding.

¹⁰ United Nations Office for Disaster Risk Reduction, Sendai Framework for Disaster Risk Reduction; <http://www.unisdr.org/we/coordinate/sendai-framework>.

Strengthening Disaster-Risk Governance

Laws, regulations and other public-policy levers can directly help by serving as disincentives and reducing risk. To address the problem at its source, it is essential to establish planning and building standards in provinces and municipalities across Canada that inhibit flood risk. Many groups across Canada have been engaged in this type of work to strengthen standards to reduce flood risk.

The recent introduction of residential flood-insurance products in Canada provides an opportunity to directly leverage the private market to incentivize flood-risk reduction and limit the strain on government finances that is escalating through DFAA. However, while insurers are starting to offer flood insurance to homeowners, coverage remains limited and is not accessible or affordable for the approximately 10% of Canadians who are at highest risk.

To address this issue, IBC recently proposed establishing a non-profit Flood Insurance Entity built on a public-private partnership between the insurance industry and the federal and provincial governments.

This entity would provide flood coverage to otherwise uninsurable Canadians. It would include partly subsidized premiums for families whose homes are at high risk of flooding, especially for those in low-income households. It could be achieved with no new net costs to governments. In fact, this approach would cost governments less than they currently pay out through existing disaster-relief programs, such as DFAA.

An insurance-based approach to flood loss compensation is the most efficient vehicle for stimulating quick economic recovery post-disaster, and it can transfer a significant portion of the risk away from governments. Insurance coverage and claims-processing expertise provide comprehensive and faster compensation than government relief, which tends to be limited and slower to arrive. The insurance-based approach reduces business interruption, increases consumer confidence, and ensures a timely flow of capital.

Investing in Risk Reduction/Building Resilience

Investments in disaster-risk reduction for resilience can play a key role in helping communities avoid or reduce effects of climate change and flooding. They also allow for a faster recovery. Infrastructure investments and financial management of flood risk are both key to developing more resilient communities.

Adapting to the financial risk of flooding can help Canadians rebuild and recover more quickly in the event of a disaster. However, infrastructure holds the potential to remove the risk in whole or in part, and must therefore be part of any comprehensive approach to addressing flood risk. Canada's current infrastructure is already being strained by the effects of climactic change. Future community infrastructure spending should be targeted, effective and implemented quickly. Upgrading and replacing aged stormwater infrastructure is one proven option for helping communities address risk. Low-impact development measures such as permeable pavements and bioswales can also redirect water and help communities become more resilient to extreme weather. While built infrastructure can play a key role in reducing community risk, natural infrastructure such as wetlands holds the potential to significantly reduce risk and provide the greatest return on investment (ROI) of any option available.

Increasing Disaster-Risk Awareness and Building Back Better to Expedite Recovery

An important hurdle to developing Canada's capacity to respond to a disaster is to improve societal understanding of the risk. In increasing numbers, Canadians are accepting climate change as a serious challenge and are demanding a response to it. Recent flood and fire events have demonstrated the effects that Canadians can face. But how communities and individuals can adapt to this risk and better prepare themselves is not as clearly understood.

There is also a pervasive perception that adaptation to climate change is costly to implement. Although this can be the case, adaptation initiatives can also be relatively inexpensive and offer a favourable return on investment.

The ultimate driver in building awareness is, unfortunately, having a disaster occur. Only then do communities realize the level of risk they are exposed to. Knowing this,

governments must incentivize communities to “build back better” after disaster strikes – a concept deeply rooted in the Sendai framework.

Submission Recommendations

The joint submission that IBC presented to the F/P/T Working Group on Adaptation and Climate Resilience made five recommendations, outlined below:

i) Transfer Risk from DFAA to Private Industry: The insurance industry will continue with the rollout of flood-insurance products. Simultaneously, the Government of Canada and IBC should jointly pursue a P3 to ensure access to affordable insurance for Canadians at high risk of flood and who would otherwise be uninsurable – especially low-income, marginalized families living in high-risk zones. This P3 should also coordinate the development of consistent high-resolution flood maps, maintain a catalogue of flood defenses, continually adjust flood-risk zones to assist governments in prioritizing mitigation efforts and advise stakeholders on risk reductions. These efforts will link community mitigation and subsequent premium deductions for households in high-risk areas. A link between DFAA eligibility and insurability should be strengthened as a disincentive to further flood-plain development. The P3 should disseminate risk data to real estate associations to include in Multiple Listing Services.

ii) Enhance Risk Identification: The National Disaster Mitigation Program (NDMP) should be expanded and include further explicit funding for identifying flood risk. As part of this funding envelope, CLIVE (University of Prince Edward Island Climate Lab) and similar initiatives should be expanded nationally on a municipal consultation basis. This will raise community awareness of both coastal and inland flood exposure, and prioritize mitigation efforts funded by the program. Furthermore, the NDMP should match funds to better leverage the insurance industry’s investment into the ICLR’s Residential/Municipality Awareness program. This program increases the capacity of homeowners, homebuilders, municipalities and home insurers to understand and mitigate urban flood risk.

iii) Expand the Definition of Green Infrastructure to include Natural Systems: A portion of Green Infrastructure funding should be allocated to wetland restoration.

Further life-cycle analysis should be conducted to determine the relative ROI of wetlands vs. physical infrastructure in mitigating flood damage.

iv) Educate and Empower Homeowners to Mitigate: The Home Adaptation Assessment Program, developed by the Intact Centre on Climate Adaptation at the University of Waterloo, should be expanded nationally through government investments. This will educate homeowners and reward them for mitigating flood risk. As reliable data become available, insurers could incorporate future premium reductions as incentives for mitigation, just as they do for installing home security systems and smoke detectors.

v) Amend the National Model Construction Code's Objectives to Include Climate and Disaster Resilience Wording: Federal and provincial technical and legal support to municipalities should be strengthened. This will encourage planning regulations that incorporate disaster-risk reduction into infrastructure and land-use planning decisions.

Conclusion

There is a clear benefit to Newfoundland and Labradorians in supporting a National Flood Strategy that would allow for the transfer of risk from government disaster-funding mechanisms to private insurers. In parallel with this, and to ensure that flood coverage is available to otherwise uninsurable Canadians, a non-profit Flood Insurance Entity built on a public private partnership between the insurance industry and the federal and provincial governments should be established. Provincial support and input into this process is crucial at this point, especially given the direct response that provincial governments must make when disaster strikes within their boundaries.

IBC encourages you to support the proposal to develop a holistic National Flood Strategy that incorporates a risk-transfer component. This proposal has the potential to positively impact the future of Newfoundland and Labrador communities.

IBC is committed to a continuing dialogue with provincial officials as Newfoundland and Labrador reviews the work of the F/P/T Working Group on Climate Adaptation and Resilience. Additionally, IBC is committed to continuing to work with the Newfoundland and Labrador government as it leads the development of a climate change strategy to help build strong communities and a prosperous economy.

PROPOSAL TO F/P/T WORKING GROUP ON CLIMATE ADAPTATION AND RESILIENCE

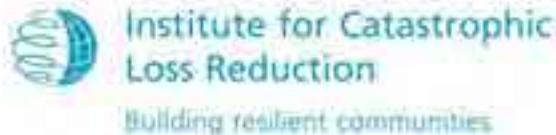


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EXECUTIVE SUMMARY

Adapting to climate change in Canada is not a future proposition – these changes are affecting Canadian homes and businesses now. Although it is not possible to attribute any single event to climate change, the trends in occurrence of severe weather events seem clear.

Flood is Canada's most frequent and costly natural hazard; a peril shared by citizens across the country. As organizations with longstanding interest in adaptation, we believe that addressing flooding must be an integral part of Canada's adaptation response. We collectively call for a National Flood Strategy to be developed within the context of Canada's broader national Climate Strategy. We offer recommendations here for what such a Strategy may contain.

The U.N. Sendai Framework for Disaster Risk Reduction was established in 2015. This framework lays out four key steps to proactively reduce the effects of any disaster and can guide the development of this National Flood Strategy. The Sendai Framework maintains four priorities for Reducing Disaster Risk: Risk Identification, Risk Governance, Investing in Risk Reduction and Disaster Preparedness for Expediting Recovery.

Given these priorities, we propose the following elements as the basis for a Canadian National Flood Strategy:

- i) Transfer Risk from Government Disaster Financial Assistance Arrangements (DFAA) to Private Industry: The insurance industry will continue with the rollout of flood-insurance products. Simultaneously, the Government of Canada and IBC should jointly pursue a P3 to ensure access to affordable insurance for Canadians at high risk of flood and who would otherwise be uninsurable – especially low-income, marginalized families living in high-risk zones. This P3 should also coordinate the development of consistent high-resolution flood maps, maintain a catalogue of flood defenses, continually adjust flood-risk zones to assist governments in prioritizing mitigation efforts and advise stakeholders on risk reductions. These efforts will link community mitigation and subsequent premium deductions for households in high-risk areas. A link between DFAA eligibility and insurability should be strengthened as a disincentive to further flood plain development. The P3 should disseminate risk data to real estate associations to include in Multiple Listing Services.
- ii) Enhance Risk Identification: The National Disaster Mitigation Program (NDMP) should be expanded and include further explicit funding for identifying flood risk. As part of this envelope, CLIVE (UPEI Climate Lab) and similar initiatives should be expanded nationally on a municipal consultation basis. This will raise community awareness of both coastal and inland flood exposure, and prioritize mitigation efforts funded by the program. Furthermore, the NDMP should match funds to better leverage the

insurance industry's investment into ICLR's Residential/Municipality Awareness program. This program increases the capacity of homeowners, homebuilders, municipalities and home insurers to understand and mitigate urban flood risk.

- iii) Expand the Definition of Green Infrastructure to include Natural Systems: A portion of Green Infrastructure funding should be allocated to wetland restoration. Further life-cycle analysis should be conducted to determine the relative ROI of wetlands vs. physical infrastructure in mitigating flood damage.
- iv) Educate and Empower Homeowners to Mitigate: the Home Adaptation Assessment Program, developed by the Intact Centre on Climate Adaptation, University of Waterloo, should be expanded nationally through government investments. This will educate homeowners and reward them for mitigating flood risk. As reliable data becomes available, insurers could incorporate future premium reductions as incentives for mitigation, just as they do for installing home security systems and smoke detectors.
- v) The National Model Construction Code's objectives should be amended to include climate and disaster resilience wording. Federal and provincial technical and legal support to municipalities should be strengthened. This will encourage planning regulations that incorporate disaster-risk reduction into infrastructure and land-use planning decisions.

INTRODUCTION

The Paris Agreement reached at the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) 21 recognizes that a comprehensive climate strategy must provide solutions for both mitigation and adaptation.

The ensuing Vancouver Declaration may prove to be a watershed moment for Canada, as all orders of government embrace the challenge of responding collectively, and in a coordinated manner, to climatic change.

Insurance Bureau of Canada (IBC), the Institute for Catastrophic Loss Reduction (ICLR), Ducks Unlimited Canada (DUC), the Intact Centre for Climate Adaptation at the University of Waterloo and the University of PEI are committed to working with provincial and federal agencies to develop a holistic approach to climate adaptation and disaster resilience.

Flood is Canada's most frequent natural hazard; a peril shared by citizens across the country. As organizations with longstanding interest in adaptation, we believe that addressing flooding must be an integral part of Canada's adaptation response. Between 1970 and 2013, \$6.2 billion or 74% of all federal disaster-relief spending in Canada was due to flooding. This was in addition to costs borne by provincial and municipal governments, indigenous people, the private sector, charities and individuals. When it comes to establishing a National Flood Strategy, there is no "one size fits all" solution out there in the world. Different nations face different challenges and need different solutions.

Any flood solution must be built from the ground up. It must recognize that provinces and municipalities play the leading role in preparing for, responding to and recovering from disasters. Federal, provincial and territorial Disaster Financial Assistance Arrangements (DFAA) are invaluable tools and cannot be replaced by any measure, including private sector insurance. However, they are only one tool in a toolkit that must be diversified.

Currently, many countries maintain perverse incentives, which encourage persistent risk exposure. Developers, businesses and residents are permitted to build, live and work in high-risk areas, knowing that governments will backstop their risk, paying for any damage that might ensue. As a result, there is little incentive not to build in such areas, nor for individuals to mitigate risk themselves. The taxpayer is therefore exposed, effectively subsidizing those who should be encouraged to manage their own risk. This proposal addresses this issue.

THE SENDAI FRAMEWORK FOR REDUCING FLOOD RISK

The U.N. Sendai Framework for Disaster Risk Reduction was established in 2015. This framework lays out four key steps to proactively reduce the effects of any disaster and should guide the development of any National Flood Strategy.

The pillars¹ of this approach are:

1. Understanding Disaster Risk
2. Strengthening Disaster-Risk Governance
3. Investing in Risk Reduction/Building Resilience
4. Increasing Disaster-Risk Awareness and Building Back Better to Expedite Recovery

Importantly, we already have the know-how to address facets of this complex issue. A multifaceted flood strategy can be developed within the Sendai framework and by using ingenuity already proposed and being deployed across Canada. A range of solutions is presented below; the appendices to this document provide more detail in several areas. Recommendations are summarized at the end of this document.

A COMPREHENSIVE APPROACH TO REDUCING FLOOD-DISASTER RISK

1. Understanding Disaster Risk

Understanding and identifying flood risk is the crucial first step in developing an effective risk-reduction strategy. Simply put, Canada needs accurate, up-to-date flood-hazard mapping to properly assess vulnerability to both fluvial and pluvial flood risk.

IBC has taken a leadership role by investing \$1.5 million in developing a Canada-wide flood model that uses the best local climatic and nationally consistent geospatial data available. In addition to helping insurers determine accurate risk-based underwriting for providing flood insurance, these flood maps can help local officials make smarter decisions about where and what to build. They take into account not just flood plains (fluvial risk), but locally depressed urban areas at risk of pooling water (pluvial flooding). They also overlay a full national residential property database to identify areas where flood risk affects the most Canadians and property. This type of insight, in turn, can empower local governments to target infrastructure and other risk-mitigation investment where it is needed most. Presently, the maps tell us that

¹ Sendai Framework for Disaster Risk Reduction 2015-2030 – Priorities for Action

about 20% of Canadians (or one in five) face some level of overland risk, with as many as 10% facing moderate-to-high risk.

Given the effect that flood exposure can have on property values, such maps are very sensitive for consumers. However, Canadians understand the importance of risk awareness and they want information so they can make informed choices. Preliminary polling by the **Interdisciplinary Centre on Climate Change** at the University of Waterloo suggests that more than 90% of Canadians agree or strongly agree that flood maps should be made public, and that real estate transactions should include disclosures about flood zones and previous floods. The **BC Real Estate Association** is playing a leadership role by advocating that consumers and municipalities have access to flood plain maps to identify risk. Clearly, such maps should continually be updated for accuracy as better data becomes available. They should also be updated when flood-mitigation structures are put in place so that return on investment (ROI) from provincial and municipal investments can be quantified. Insurers may use improved flood zone maps incorporating flood defences when re-evaluating premiums.

Such maps are limited because they do not yet include coastal exposure. With rising sea levels combined with increasing coastal storms, certain parts of Canada are at increased risk of storm surges, tidal flooding and coastal erosion. To further improve awareness of homeowners, local businesses and communities, the UPEI Climate Lab has developed CLIVE, a tool that fuses geomatics, gaming and virtual reality technologies to visualize coastal flood risk based upon different return periods.

The **UPEI Climate Lab** has shown that CLIVE increases knowledge and awareness of flood risk, raises concern about flooding, and increases the willingness to adapt to reduce risk of flooding. Originally developed to demonstrate coastal erosion in PEI, CLIVE has tremendous potential to assist both coastal and inland communities in identifying and visualizing flood risk before prioritizing mitigation efforts.

On the west coast, **Environment Canada** and **Simon Fraser University's Adaptation to Climate Change Team (ACT)** are collaborating within the Coastal Cities at Risk program. The goal is to help Vancouver successfully adapt to, and cope with, risks that the effects of climate change pose, including sea level rise, in the context of urban growth and development. Natural Resources Canada and Public Safety Canada are co-leading the development of flood-mapping guidelines as part of the **National Disaster Mitigation Program**. The **Canada Centre for Mapping** at Natural Resources Canada is also proposing to create an improved, nationally consistent terrain and hydrological map, which could vastly improve flood-risk prediction including coastal areas.

Currently, **Ducks Unlimited Canada (DUC)** is helping drive the completion of the Canadian Wetland Inventory (CWI) with the Canadian Wildlife Service. This information will be essential to establishing a baseline and understanding how further wetland loss may contribute to flood risk where they have been drained to ditches and streams.

DUC and the Intact Centre on Climate Adaptation are using this information and land-conversion studies to determine when areas become prone to flooding due to upstream wetlands loss. They also use the information to learn how much wetland needs to be preserved or restored for a watershed to mitigate flood risk. Completing the Canadian Wetland Inventory will provide critical data and knowledge to inform flood-risk management and decision-making.

2. Strengthening Disaster-Risk Governance

Laws, regulations and other public-policy levers can directly help in disincentivizing and reducing risk. To address the problem at its source, it is essential to establish planning and building standards in provinces and municipalities across Canada that inhibit flood risk. Introducing risk-based insurance premiums can significantly deter buying or building homes and businesses in high-risk locations. Adapting DFAA eligibility requirements could also provide a federal and provincial lever to inhibit new development in high-risk areas.

Ontario currently has the lowest draw on federal DFAA resources. This is largely the result of the decision to transfer flood plain development approvals to Conservation Authorities. Each province will likely wish to implement its own model. However, the time has come for other provinces to learn from Ontario's success. Within this context, the **Canadian Institute of Planners** has a demonstrated role in educating planners and facilitating knowledge exchange to shape resilient communities.

Governance often involves the ability to lead and coordinate in the face of fragmented mandates. **Fraser Basin Council** is leading a multi-sectoral Flood Management Strategy to identify and address vulnerabilities, then to implement the changes to policies and practices across the Lower Mainland of British Columbia. This integrated approach is groundbreaking on a complex issue that is almost always stymied by jurisdictional divisions.

Indigenous communities are also often at significant risk of flooding and need to be involved in developing cross-national solutions. **The Assembly of First Nations**, collaborating with **Indigenous and Northern Affairs Canada**, could develop a program to help guide reserve development where the Band Council oversees housing as a commercial operation.

Standards for buildings and public infrastructure construction must account for our changing climate. Typically, infrastructure is built to provide protection for many decades; national

advisory building standards should incorporate future climate change risk. The ICLR has been engaged with the home-building and building-code communities to change building codes across Canada to reduce disaster risk. It has successfully changed the Ontario Building Code to reduce wind and water risk for new residential structures. IBC and ICLR have developed further resilience-oriented code-change requests for national and provincial building codes. They have also secured insurance industry representation on the Canadian Commission on Building and Fire Codes. This will help ensure that disaster resilience is appropriately reflected in Canada's model codes. Further, co-chaired by ICLR and **Engineers Canada**, the **NRCAN Adaptation Platform's Infrastructure and Buildings Working Group** comprises federal, provincial, industry and non-profit partners across the country. It is working to develop strategies and fund projects to improve codes and standards for infrastructure, engineered buildings and private homes.

The **National Research Council** and the **Canadian Codes Centre** also have roles to play in developing common standards for flood resilience across Canada. This should include resilience to the risk of damage from urban, riverine and coastal flooding. The Canadian government can add climate and disaster resilience as an objective to the National Advisory Building Code. This would send a clear signal that Canada is committed to helping communities adapt to climate change.

ICLR research reveals that legal and planning mechanisms applied at the municipal government level can significantly increase resilience to extreme weather events. To effectively apply these measures, however, municipalities need technical and legal support from federal and provincial governments. This support can take the form of planning regulations that accommodate disaster-risk reduction and accurate climate change information, which can then be incorporated into infrastructure and land-use planning decisions.

The cost of adapting infrastructure to flooding and other climate-driven challenges is a barrier to municipal implementation. **Simon Fraser University's Adaptation to Climate Change Team (ACT)**, the **Cowichan Valley Regional District**, the **Pacific Institute for Climate Solutions**, and the **Real Estate Foundation of BC**, developed key analysis supported by the **Economics Working Group of Canada's Adaptation Platform**. The report *Paying for Urban Infrastructure Adaptation in Canada* is a valuable resource for analyzing the applications and suitability of funding sources available to Canadian local governments that can be used to pay for urban climate change adaptation.

The recent introduction of residential flood-insurance products to Canada provides an opportunity to directly leverage the private market to incentivize flood-risk reduction and limit the strain on government finances that is escalating through DFAA. However, while insurers are starting to offer flood insurance to homeowners, coverage remains limited and is not accessible or affordable for the approximately 10% of Canadians at highest risk.

To address this issue, **IBC** recently proposed establishing a non-profit **Flood Insurance Entity** built on a public-private partnership between the insurance industry and the federal and provincial governments. This entity would provide flood coverage to otherwise uninsurable Canadians. It would include partly subsidized premiums for families whose homes are at high risk of flooding and especially for those in low-income households. It could be achieved with no new net costs to governments. In fact, this approach would cost governments less than they currently pay out through existing disaster-relief programs, such as DFAA.

Ideally, the Flood Insurance Entity would also oversee flood-risk mapping updates to ensure the adequacy of insurance premiums for high-risk households over time, maintain a catalogue of flood defences, and share this information with stakeholders to promote risk mitigation and subsequent premium reductions in defended high-risk areas, thereby incentivizing desired behaviour. Properly costed premiums, based on accurately mapped risk, would encourage individual homeowners and businesses, as well as local communities, to implement local mitigation measures. An insurance-based approach to flood loss compensation is the most efficient vehicle for stimulating quick economic recovery post-disaster, and it can transfer a significant portion of the risk away from governments. Insurance coverage and claims-processing expertise provides comprehensive and faster compensation than government relief, which tends to be limited and slower to arrive. The insurance-based approach reduces business interruption, increases consumer confidence and ensures a timely flow of capital.

3. Investing in Risk Reduction/Building Resilience

Investments in disaster-risk reduction for resilience can play a key role in helping communities avoid or reduce effects of climate change and flooding. They also allow for a faster recovery. Infrastructure investments and financial management of flood risk are both key to developing more resilient communities.

Adapting to financial risk of flooding can help protect Canadians rebuild and recover in the event of a disaster. However, infrastructure holds the potential to remove the risk in whole or in part, and must therefore be part of any comprehensive approach to address flood risk. Green infrastructure funding by **Infrastructure Canada** dedicated to repairing stormwater drainage and creating new flood defences, is a welcome contribution by the federal government.

Our current infrastructure is already being strained by the effects of climactic change. Future community infrastructure spending should be targeted, effective and implemented quickly. Upgrading and replacing aged stormwater infrastructure is one proven option for helping communities address risk. Low-impact development measures such as permeable pavements and bioswales can also redirect water and help communities become more resilient to extreme weather.

ICLR has developed comprehensive resources for municipalities to facilitate investing in infrastructure and improving home construction to reduce flood risk. For example, Western University and ICLR have developed a web-based tool that allows governments and water-management professionals to incorporate climate change projections into local urban flood management decisions. With more than 550 municipal, provincial, insurance and consulting sector users, the tool has contributed substantially to managing climate change-related flood risk across a variety of sectors in Canada.

While built infrastructure can play a key role in reducing community risk, natural infrastructure such as wetlands holds the potential to significantly reduce risk and provide the greatest ROI of any option available. A single dollar spent on wetlands can return \$6 over a five- to 10-year period. Wetlands around cities act as major flood mitigators and **DUC** has been fighting to reduce the daily loss of wetlands across the country.

In southern Ontario, IBC and DUC have observed a direct correlation between areas drained of wetlands and an increase in flood risk. Wetland preservation and restoration can help protect communities and our vital waterways from the destructive effects of floods. A national program designed to secure properties and/or compensate landowners for wetland restoration would be a cost-effective solution, compared to traditional hard infrastructure. It could also complement the objectives of any green infrastructure program.

4. Increasing Disaster-Risk Awareness and Building Back Better to Expedite Recovery

An important hurdle to developing our capacity to respond to a disaster is to improve societal understanding of the risk. In increasing numbers, Canadians are accepting climate change as a serious challenge, and are demanding a response to it. Recent flood and fire events have demonstrated the effects that Canadians can face. But how communities and individuals can adapt to this risk and better prepare themselves is not as clearly understood.

There is also a pervasive perception that adaptation to climate change is costly to implement. Although this can be the case, adaptation initiatives can also be relatively inexpensive and offer a favourable return on investment. For example, the **Intact Centre on Climate Adaptation, University of Waterloo**, offers the Home Adaptation Assessment Program (HAAP), a cost-effective, face-to-face basement flood risk reduction program. Based on best practices from lot level flood risk programs across the globe, the HAAP identifies means by which water might enter into a basement, and then helps homeowners prioritize actions to reduce their risk.

The cost benefit analysis of one of the programs the HAAP builds upon, delivered in 450 homes, in Kitchener, Waterloo and Calgary (by Green Communities Canada), produced an ROI of

\$1 invested yielding \$7 in flood avoidance over 10 years. This program was well received by home owners, who voluntarily operationalized 2/3 of the flood mitigation recommendations within 6-8 weeks of their initial home assessment.

Unique among its predecessors, the HAAP integrates critical municipal infrastructure risk and insurance perspectives into its comprehensive assessment for home owners. It is now being deployed across 4,000 homes in Burlington, Ontario (2016-2017), to demonstrate the large-scale utility of the program, and to identify means to further de-risk residential flood potential under varying conditions of house size, age of home, local flood potential, etc. The Home Adaptation Assessment Program is simply one illustration of a relatively simple means to limit flood risk, with a positive return on investment that is well received by politicians, home owners and insurance professionals.

The post-disaster period is an important window of opportunity to implement measures that increase the resilience of housing stock to future disaster events, ICLR research consistently reveals. Reflecting this work, the insurance industry has supported ICLR's *Insurers Rebuild Stronger Homes* program. This provides practical urban flood, wildland fire, wind and hail risk-reduction measures that should be incorporated into home renovation and rebuilding processes after insured loss events.

The ultimate driver in building awareness is, unfortunately, when a disaster occurs. Often only then do communities realize the level of risk they are exposed to. In this event, equipped with such awareness, governments must incentivize communities to "build back better" – a concept deeply rooted in the Sendai framework.

After Hurricane Katrina, the Press Park district of New Orleans was deemed uninhabitable and the community decided not to rebuild it. Conversely, after the Calgary floods, Elbow Park residents did rebuild, incorporating resiliency measures to avoid a repeat of losses. As mentioned above, by excluding DFAA use or by attaching conditions for rebuilding in high-risk areas, these agencies would help ensure we learn from, and don't repeat, past errors. **Public Safety Canada** should review DFAA infrastructure rebuilding requirements to ensure that key infrastructure is relocated outside of floodways and/or rebuilt to more resilient standards.

SUMMARY AND RECOMMENDATIONS

Clearly, Canadians have the range of expertise to develop a world-leading strategy to reduce the risk of flood disasters. The Sendai Framework provides clear guidance about ensuring we expand on a number of disparate efforts to develop a nationally consistent strategy. Unsustainable DFAA costs will spur provincial and federal treasury officials to protect taxpayers. Canada needs a new model that shifts disaster relief to the private sector, educates and empowers homeowners to self-mitigate, while allocating public funds efficiently to community-mitigation projects.

With this in mind, IBC proposes several priority recommendations:

- i) Transfer Risk from DFAA to Private Industry: The insurance industry will continue with the rollout of flood-insurance products. Simultaneously, the Government of Canada and IBC should jointly pursue a P3 to ensure access to affordable insurance for Canadians at high risk of flood and who would otherwise be uninsurable – especially low-income, marginalized families living in high-risk zones. This P3 should also coordinate the development of consistent high-resolution flood maps, maintain a catalogue of flood defences, continually adjust flood-risk zones to assist governments in prioritizing mitigation efforts and advise stakeholders on risk reductions. These efforts will link community mitigation and subsequent premium deductions for households in high-risk areas. A link between DFAA eligibility and insurability should be strengthened as a disincentive to further flood plain development. The P3 should disseminate risk data to real estate associations to include in Multiple Listing Services.
- ii) Enhance Risk Identification: The National Disaster Mitigation Program (NDMP) should be expanded and include further explicit funding for identifying flood risk. As part of this envelope, CLIVE (UPEI Climate Lab) and similar initiatives should be expanded nationally on a municipal consultation basis. This will raise community awareness of both coastal and inland flood exposure, and prioritize mitigation efforts funded by the program. Furthermore, the NDMP should match funds to better leverage the insurance industry's investment into ICLR's Residential/Municipality Awareness program. This program increases the capacity of homeowners, homebuilders, municipalities and home insurers to understand and mitigate urban flood risk.
- iii) Expand the Definition of Green Infrastructure to include Natural Systems: A portion of Green Infrastructure funding should be allocated to wetland restoration. Further life-cycle analysis should be conducted to determine the relative ROI of wetlands vs. physical infrastructure in mitigating flood damage.

- iv) Educate and Empower Homeowners to Mitigate: the Home Adaptation Assessment Program, developed by the Intact Centre on Climate Adaptation, University of Waterloo, should be expanded nationally through government investments. This will educate homeowners and reward them for mitigating flood risk. As reliable data becomes available, insurers could incorporate future premium reductions as incentives for mitigation, just as they do for installing home security systems and smoke detectors.
- v) The National Model Construction Code's objectives should be amended to include climate and disaster resilience wording. Federal and provincial technical and legal support to municipalities should be strengthened. This will encourage planning regulations that incorporate disaster-risk reduction into infrastructure and land-use planning decisions.

CLIVE APPENDIX

Issue: Geo-visualizations, such as the Coastal Impacts Visualization Environment (CLIVE), have been shown to increase the awareness, concern and willingness of individual Canadians to adapt to climate change impacts such as flooding

Organization: Climate Research Lab, University of Prince Edward Island and the Spatial Interface Research Lab, Simon Fraser University

Sendai Stage: Increase Risk Awareness

Background:

The challenges to Canada in addressing climate change impacts are many; but perhaps the most important being the impact of inland and coastal flooding through extreme rainfall, larger snowmelts, storm surges and rising sea levels. Inland and coastal flooding will continue and likely become more severe, threatening public and private infrastructure at great economic cost. For many Canadian communities, it is expected that changes in extreme storm events and sea level rise resulting from a changing climate will dramatically enhance the risk of damage to infrastructure and extensive flooding in low-lying areas. It has often been recognized that the local scale (community) is indeed an effective realm within which to pursue collective action on environmental issues such as climate change (Robinson, 2000; Bulkeley, 2003). Most, if not all, of Canada's communities will need to implement some adaptation plans and response actions to address the increasing risk of flooding under climate change.

The application of 3D visualization offers a unique learning opportunity by providing the potential to enhance the capacity of Canadian communities to strengthen their risk management practices (Burch, 2010). An emerging approach to enhancing participation and awareness-building at the local level is the use of 3D landscape visualisation to depict past and future community scenarios. Various forms of imagery including GIS-based tools, 3D modeling and photo-manipulation have been explored to investigate landscape change and management (Al-Kodmany, 1999; Tress, 2003; Lewis, 2006) including some early research on the potential to visualize climate change futures (Dockerty, 2005; Nicholson-Cole, 2005; Sheppard et al., 2005). These highlight the potential for visualization to influence individuals' perceptions of landscapes, floods, and a changing climate, which in turn may influence cognitive and affective (or emotive) understanding and influence individual and collective behaviour to respond appropriately to risks.

Solution:

Introducing CLIVE - The Coastal Impacts Visualization Environment (CLIVE) is an analytical geovisualization tool created by researchers at the University of Prince Edward Island (UPEI) Climate Research Lab and Simon Fraser University's (SFU) Spatial Interface Research Lab. CLIVE is a geovisual interface that combines available water level data, historical records and predictive climate change models and translates them into a 3D geovisual information tool that can be explored and queried by non-scientist stakeholders. It allows individuals and communities to explore past environmental change, and how climate change may impact through inland and coastal flooding as well as sea-level rise at various scales. CLIVE combines data from numerous sources, including an extensive archive of aerial photographs, and the latest high-resolution digital elevation data derived from laser surveys known as LiDAR, a remote sensing technology that measures distance by illuminating a target with a laser and analyzing the reflected light. These historical data and IPCC model projections of future sea-level rise (IPCC, 2013) are used to develop analytical visualizations of flooding regimes and potential future sea-level rise scenarios. These geovisual outputs are then delivered using a 3D game engine technology adapted to serious scientific communication.

CLIVE enables citizens to interactively navigate and view a 3-dimensional (3D) virtual environment of the province of Prince Edward Island (PEI) constructed from accurate historical spatial data and recent LiDAR surveys of topography. Users can view this 3D environment from a distance, by flying around it overhead for an overview. They can also explore the data and virtual landscape from first-person-on-the-ground perspectives, to inspect detailed local-scale historical environmental change, and projected future impacts. While navigating CLIVE from any perspective, at any scale, users are able to select and manipulate multivariate overlays of historical data and projected models through time.

By allowing citizens to view scientific data and explore climate change projections at any scale in their own neighborhood, the aim is to help them understand these often abstract phenomena of environmental change at local, human scales. By delivering this science and its implications for real communities using agile non-technical game engine technology (rather than specialized and expensive geographical information systems) closes the gap between expert science and citizens. Reconnecting abstract expert science to geographic spaces at risk, with a public information tool, using an inclusive public engagement approach, is a way to connect all stakeholders to this mutual problem. By educating citizens and raising awareness, the CLIVE project aims to encourage engagement, support dialogue and collaborative problem-solving at all scales of society and government.

CLIVE was toured across Prince Edward Island during the month of July 2014, to the communities of Victoria, Souris, Abram-Village, Montague, North Rustico, Charlottetown,

Summerside and Alberton. The CLIVE community consultation meetings were vibrant, passionate affairs. Each session was hosted by Dr. Adam Fenech who presented an introduction to PEI's vulnerability to coastal erosion and sea level rise, introduced CLIVE, examined the vulnerability of local communities and answered questions. Each session was also preceded and concluded with a written survey to gauge attendee's awareness, concern and willingness to adapt to coastal flooding and sea level rise. All aspects increased after viewing CLIVE. Most importantly, these sessions motivated coastal home or cottage owners to respond to their vulnerability by increasing their resilience to the anticipated sea level rise and coastal flooding.

CLIVE was so successful in its application to Prince Edward Island that it won a major international award for communicating coastal flooding issues from the Massachusetts Institute of Technology (MIT); the Murray Pinchuk Community Builder Award from the PEI Association of Planners to recognize the awareness raised in coastal flooding to help make Prince Edward Island communities a better place today and for the future; and a prime keynote invitation to the World Innovation Summit at Gujarat, India in 2015. The success of CLIVE continues with discussions on applying the technology to Colchester County, Nova Scotia; Collingwood, Ontario; the City of Los Angeles, California, USA; and three separate coastal climate impact visualization systems in British Columbia.

Implementation – To launch a pilot program ramping up to a national approach over a five-year planning period requires CLIVE to be developed in tandem with the unveiling of a flood insurance program. It is recommended that CLIVE – a geovisualization of flooding risk using video-gaming technology that allows the user to experience (virtually) the risk to their property and buy insurance accordingly – be launched as a pilot in one community per province and territory across Canada. By the end of five years, a full implementation of CLIVE across all flood risk communities across Canada would be fulfilled.

The success of CLIVE will be measured by the number of individuals that purchase insurance after viewing the risk to their property.

Cost: The cost of developing CLIVE for each community depends on several factors including: size of the community; and the amount of existing data (digital elevation models, aerial images, LiDAR) available for the community. For example, where all detailed imagery/data are available for a 2,500 km² community, CLIVE implementation costs can be as low as \$20,000. Where high-resolution imagery or other data need to be captured, costs will be higher. For smaller communities, both the Climate Research Lab at the University of Prince Edward Island and the Spatial Interface Research Lab at Simon Fraser University have the capability to capture imagery and generate 3D landscape models using small unmanned aerial vehicles ('drones'). The costs for the development of CLIVE in different communities will be largely offset by the increased amount of insured properties motivated to purchase coverage due to this tool.

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DUCKS UNLIMITED CANADA (DUC) APPENDIX

Issue: Reducing flood risk through wetland loss mitigation and restoration

Organization: Ducks Unlimited Canada

Sendai Stage: Understanding Disaster Risk & Mitigation

Background:

Ducks Unlimited Canada (DUC) is working collaboratively with the Insurance Bureau of Canada and other partners to draw attention to the urgent need for maintaining and restoring wetlands as a mean of attenuating flood risks.

DUC proposes specific solutions that would reduce the risk and severity of flood events and that would reduce the costs that Canadians face as a result of climate change.

We note that this Appendix is focused on flood risk only; a more detailed and comprehensive submission has been prepared and submitted by Ducks Unlimited Canada to the Panel.

Solution:

DUC prepares annual fiscal and budgetary recommendations each year as a lead member of the Green Budget Coalition (GBC), a group of 18 of Canada's largest and best-known national environmental and conservation organizations. For the last three years, the GBC has recommended funding for Green Infrastructure as a key support measure for climate change adaptation. Although we applaud the recent investments in Green Infrastructure and the announced Low Carbon Economy Fund, DUC notes the absence of definite investments in ecosystems that provide vital natural solutions to climate change impacts. A core "natural" solution is through the restoration of lost or degraded wetland complexes, particularly in those Canadian watersheds that are habitually prone to flooding.

Solution #1 – Wetland Mapping and Analyses

As described in further detail in the DUC submission to this Working Group, the national inventory of wetlands is not yet complete in Canada. Furthermore, while the Federal Government monitors landscape change, such as the National Forest Inventory, under NRCAN's National Terrestrial Monitoring Framework, this national mechanism does not include or track wetland loss against a baseline inventory. In documented regional case studies where wetland conversion analyses have been completed (based on remote sensing data and soil samples) and a baseline inventory of wetlands have been established, it has become clear that wetland loss in these same areas has significantly increased the risk of flood events. Communities located

downstream of extensive drainage by agriculture and urban development continue to experience high and growing costs as a result of flood damage.

To better understand how wetland loss and flooding costs are related, we recommend the following:

<u>Recommendations</u>	<u>Investment required</u>
Complete the Canadian Wetland Inventory	\$50M over 5 years
Integrate temporary and permanent wetlands into the National Terrestrial Monitoring Framework	\$4M annually on an ongoing basis for the NTMF
Develop vulnerability assessments in key watersheds where communities are susceptible to flooding	\$115M over 5 years for community vulnerability assessments.

Solution #2 – Restore Wetland Capacity

As municipalities, provinces and the federal government position themselves to invest in infrastructure for flood attenuation and water treatment, it is paramount to recognize that natural and restored wetlands already provide these services on an ongoing basis. All levels of government should retain and value these critical natural heritage assets and the critical ecosystem services they provide.

Where wetland loss puts downstream users at an elevated and unacceptable level of risk, upstream wetland restoration can return the capacity of the land to hold water much more cost-effectively than traditional engineered bricks and mortar infrastructure. Wetlands also provide a multitude of complementary benefits such as natural resilience for species at risk, water filtration of excess nutrients that contribute to algal blooms, and a multitude of green jobs.

DUC proposes to work with municipalities, provinces and federal governments to identify critical geographies for project implementation, to provide some degree matching funds for project implementation, to retain registered restrictive covenants on the land, such as conservation agreements or easements to ensure that all funds invested are secure, with the overall objective of using wetland restoration and natural infrastructure to support biodiversity, local economic activity, climate change adaptation and landscape resilience.

DUC has the capacity to deploy several tools to collaborate with upstream landowners and ensure that they retain core uses of their land, such as registered conservation easements, long-term (≥ 25 years) conservation agreements, landowner extension incentives, and reverse auctions. When working at the watershed level to restore wetlands, contractual obligations

with landowners would have to be negotiated and administered to ensure long-term protection of these wetlands, all of which involve costs that need to be factored into the overall initiative.

To mitigate against flooding and build climate change resilience through the use of natural tools, DUC offers the following recommendation:

<u>Recommendation</u>	<u>Investment required</u>
A portion (15%) of the Green Infrastructure Investments and the Low Carbon Economy Fund should be specifically dedicated to the implementation of climate resilient, natural infrastructure.	\$250M per year over 5 years

Integrating innovative green and climate-resilient solutions into a new generation of infrastructure renewal can save energy, leverage nature's services to complement hard infrastructure, and provide important co-benefits for communities and ecosystems (e.g., improved outdoor recreational opportunities, conserving biodiversity), all while saving money and increasing benefits per dollar spent.

Cost:

The return on investment for these recommendations will be watershed-specific. Cost-benefit analyses are ongoing or completed for some watersheds (e.g. Smith Creek in Saskatchewan, Broughton's Creek in Manitoba, the Credit and Black Rivers in Ontario), and more is currently underway in the Camrose Creek Watershed in central Alberta and the Souris River watershed that spans the jurisdictions of Saskatchewan, North Dakota, and Manitoba. Further analysis is required to effectively deploy new resources around the country.

DUC looks forward to working with the Federal and provincial governments, and with industry partners like the Insurance Bureau of Canada and other NGO partners to identify and prioritize key watersheds requiring urgent study and strategic restoration efforts that will benefit all Canadians.

ICLR APPENDIX

Issue: Managing Urban Flood Risk

Organization: Institute for Catastrophic Loss Reduction

Sendai Stage: Governance, Mitigation and Build Back Better

Background: Urban Flood Risk in Canada

ICLR estimates that urban flooding resulted in more than \$20 billion in loss and damage over the past decade. Aging infrastructure and change in the climate threaten to increase the losses unless action is taken. Key issues that need to be addressed in the context of managing the risk of flood damage due to extreme rainfall in urban areas, outside of riverine flood hazard areas, include:

- Management of inflow & infiltration (I&I) in sanitary sewer systems;
- Management of extreme stormwater flows;
- Management of groundwater risks, and;
- Issues related to private properties.

I&I causes excess, unnecessary storm and groundwater to enter sanitary sewer systems, leading to overloaded sanitary sewer systems causing sewer backup flooding. I&I sources include private downspout and foundation drain connections, deteriorated private and public sewer infrastructure, and sources associated with poor construction practices. With respect to stormwater flood risk, most urban areas in Canada built before the 1970s are vulnerable to extreme rainfall events because they were designed to cope with relatively minor storms (2-10 year storms). Newer subdivisions are typically prepared to manage flows associated with 100 year storms, but climate change impacts and increasing urbanization will erode the reliability of stormwater management systems to handle extreme flows in the coming decades.

Groundwater risks, which result in infiltration flooding (or seepage) in residential structures, have been inadequately managed in Canada.

There are two primary methods for management of urban flood risk at the private property-level (or lot-level), including reduction of contribution of excess stormwater to municipal storm and wastewater systems, and application of lot-level flood protection measures. Municipalities frequently rely on educational and voluntary approaches to engage property owners in flood risk reduction at the lot-level. These measures have resulted in poor uptake of measures, greatly reducing the ability of municipal governments to control urban flood risk.

Solution: Reducing the Risk of Damage from Extreme Rainfall

The Institute for Catastrophic Loss Reduction proposes a five-year \$10 million program focussed on increasing the capacity of homeowners, homebuilders, municipalities and home insurers to better understand and manage urban flood risk. The program will focus on engagement and knowledge dissemination within the insurance and municipal sectors via ICLR's Insurance and Municipal Advisory Committees.

ICLR will support municipalities, homeowners and the insurance industry through the provision of educational materials and resources on urban flood risk reduction best practices. Specifically, ICLR will develop strategies to transfer knowledge to insurers, municipalities, homeowners and homebuilders from the ICLR/U of G/Western University project focussed on assessment of basement flood mitigation technologies. This project will produce evidence on the reliability of lot-level protection measures under a variety of installation and operational conditions.

Outcomes of the project are relevant to insurers who base water damage coverage pricing and conditions on lot-level flood protection measures. Further, municipalities have requested information on reliability of different backwater valve technologies to better define homeowner engagement education, financial subsidy, and mandatory implementation programs. In year 1, ICLR will produce resources based on the outcomes of the project, modified to suit specific needs of municipalities, insurers, homeowners and homebuilders. In years 2 and 3, ICLR will work with relevant sectors to refine information to ensure that it can be effectively integrated into risk assessment and risk mitigation work.

Insurance and Municipal Advisory Committee members have identified specific needs for understanding of effective means to engage homeowners in lot-level flood risk reduction. In years 1 and 2, ICLR will develop evidence to support increased homeowner engagement in urban flood reduction. Specific projects will focus on understanding best practices for homeowner engagement, including a comprehensive assessment of the social science literature and an international survey of governments (local and senior) to identify effective resident engagement programs that have resulted in significant increases in adoption of property-level disaster mitigation measures. Years 3, 4 and 5 will emphasize the development of specific tools and resources to support action, including methods to adapt best practices identified in other jurisdictions for the urban flood risk reduction context in Canada.

Effective management of urban flood risk will require application of lot-level and public-side measures in existing and new development. Thus, best practices for new subdivisions will also be a focus, including improving construction and inspection practices to limit the risk of I&I in new subdivisions and incorporation of innovative stormwater management measures to control extreme stormwater flows. In year 1, ICLR will produce a report outlining best practices that can be applied to limit the risk of I&I in new subdivisions and incorporate subdivision design

practices to better manage risk associated with extreme rainfall events (i.e., those that exceed common design standards in Canada). These findings may provide the science foundation for provincial guidance for municipal decision makers. In years 2 and 3, ICLR will work directly with municipalities to implement these practices.

Groundwater presents a significant risk to residential structures with basements and is the most difficult type of flood to address in existing homes. To date the risk of damage from groundwater has largely been ignored in Canadian flood management practice. In years 1 and 2, ICLR will engage its Insurance and Municipal Advisory Committees to identify key issues related to management of groundwater risks. In years 3 and 4, ICLR will develop practical guidance that can be applied to improve the management of groundwater flood risk in through application of planning and design measures for new subdivisions.

ICLR will work on the continued integration of ICLR's *Insurers Rebuild Stronger Homes* program in insurance industry practice. This program provides information on how to incorporate urban flood risk reduction measures into homes as part of rebuilding and renovation processes following insured loss events. During years 1 and 2, ICLR will work with insurers and the contracting industry to better define key parameters of the program, including cost of incorporating measures into homes under a variety of conditions. In years 3 to 5, ICLR will work with a significant number of its insurance members to make *Insurers Rebuild Stronger Homes* common practice in rebuilding processes following insured loss events.

ICLR is committed to provide municipal users with continual access to the leading tool supporting design and management of municipal stormwater systems under climate change conditions. With over 550 Canadian users from a variety of sectors, the IDFCC tool is widely used as a key source of information on the impacts of GCM outputs on local rainfall intensity-duration-frequency curves. Ongoing consultation has revealed a number of needs in the IDFCC tool user community, including improved understanding of uncertainty associated with climate change projections and downscaling of GCM outputs. As part of this program, ICLR will work to continue supporting and improving the IDFCC tool.

Green approaches through Low Impact Development (LID) are effective climate change adaptation measures for managing pollution associated with stormwater. To date, little work has been completed on the role of LID in the management of stormwater, sewer backup and groundwater flood risks. In years 1, 2 and 3, ICLR will work directly with its Municipal Advisory Committee and academic partners to identify best LID practices for management of risk associated with extreme rainfall events. The assessment will include an evaluation of LID's potential to intensify some types of urban flood risk and mitigate others. In years 4 and 5, ICLR will work to disseminate information on the effectiveness of LID in the management of urban flood risk, drawing on inputs from the ICLR Municipal Advisory Committee.

By year five, the following milestones will have been achieved:

- Development of sector-relevant resources based on the ICLR/U of G/Western lot-level flood mitigation technology testing project.
- New resources to increase implementation of effective lot-level engagement programs.
- Development of a strategy to implement best practices to control I&I and extreme stormwater flood risk in new development at the public and private-sides.
- Development of a guidance document focussed on reduction of groundwater flood risk in the planning and design of new residential subdivisions.
- Improved integration of *Insurers Rebuild Stronger Homes* in insurer rebuilding practice.
- Continued improvement of the IDFCC tool.
- An assessment of the role of LID in the management of urban flood risk.

Cost:

The private insurance industry has committed to provide more than \$1,000,000 per year to support work on these issues. To complete the above work program ICLR will require a matching \$1,000,000 per year. Lot-level urban flood mitigation measures can achieve the same benefits of public-side infrastructure measures at 1/5 the cost. Academic literature has revealed over \$5 in savings for each \$1 invested in flood mitigation. Recent urban flood events have caused \$billions in damages and individual basement flood insurance payouts ranged from \$16,000 to \$30,000 during recent flood events, while the cost of installing effective lot-level flood mitigation measures in new construction ranges in the hundreds of dollars.

IBC APPENDIX

Issue:

Currently, the dominant strategy for addressing flood disasters is Disaster Financial Assistance Arrangements (DFAA). Given escalating costs this approach, which is solely taxpayer funded, is unsustainable. A new public-private partnership that transfers risk to incentivize flood risk reduction by municipalities and homeowners should be developed.

Organization:

Insurance Bureau of Canada (IBC) is the national industry association representing Canada's private home, auto and business insurers. Its member companies make up 90% of the property and casualty (P&C) insurance market in Canada. For more than 50 years, IBC has worked with governments across the country to help make affordable home, auto and business insurance available to all Canadians.

P&C insurance touches the lives of nearly every Canadian. It employs more than 120,000 Canadians, pays \$8.2 billion in taxes, maintains over \$114 billion in invested assets and has a total premium base of \$49 billion.

Sendai Stage: Governance

The insurance industry and governments can follow the lead of other G7 nations in collaborating to strengthen the governance of flood risk.

IBC recommends establishing a more effective disaster preparation regime, which deters buying or building homes in high-risk locations. It also recommends enhancing our nation's disaster resilience, encouraging mitigation and freeing up taxpayer funds to help the Canadians who need it the most.

Background:

Between 1970 and 2013, \$6.2 billion or 74% of all federal disaster-relief spending in Canada was due to flooding. This was in addition to costs borne by provincial and municipal governments, indigenous people, the private sector, charities and individuals. When it comes to establishing a National Flood Strategy, there is no "one size fits all" solution out there in the world. Different nations face different challenges and need different solutions.

Like many countries, Canada maintains perverse incentives that encourage persistent exposure to risk. Developers, businesses and residents are permitted to build, live and work in areas of

high risk with the understanding that governments will backstop their risk, paying for any damage that might ensue, as demonstrated by DFAA payouts for recent flood events in Canada.

As a result there is little incentive not to build in such areas. There is also little incentive for individuals or communities to mitigate risk themselves. The taxpayer is therefore left exposed, effectively subsidizing those who should be encouraged to manage the risk themselves.

Solution:

Some insurers have recently started to offer flood insurance in parts of the country. However, these policies are likely not available or affordable for many of the Canadians who are at highest risk of flood. Ensuring access to affordable flood insurance for those at high risk of flood requires a partnership between the insurance industry and the federal and provincial governments to create a residential flood insurance program tailored to these properties.

This partnership would provide a means for offering affordable insurance to Canadians who are at highest risk of flood and are without access to affordable insurance. It would financially benefit taxpayers who would otherwise be on the hook after a catastrophic flood. Without it, Canadians at high risk of flood will continue to rely on government financial support to compensate them for flood losses.

Evidence shows that many of the households in high-risk flood zones are disproportionately low income; consequently, they may not be able to afford flood coverage through the private insurance market without government support. Many of these properties are built in river valleys or on flood plains, and are positioned in such a way that flood losses are all but inevitable.

An analysis of flood risk across the country shows that a residential flood insurance program tailored to high-risk households can be established with no new net costs to governments. In fact, this approach would cost governments less than what they pay out through existing disaster-relief programs, such as Disaster Financial Assistance Arrangements (DFAA). This approach would also encourage homeowners in high-risk areas to undertake their own flood-mitigation work by offering the prospect of lower premiums.

IBC is proposing a framework for the financial management of flood risk, with shared responsibilities for the insurance industry, all tiers of government and consumers.

The proposal is based on a market-based approach to flood insurance that would be viable for the vast majority of Canadians, with a small portion of high-risk properties insured through a flood program in which both the industry and government play a role.

- **INSURERS** would take on most of the financial risk, offering comprehensive water coverage to the vast majority of Canadians through the competitive market while encouraging risk mitigation through risk-based pricing.
- **GOVERNMENT** would enable the availability and affordability of flood insurance to Canadians living in zones at high risk of flooding. It would do this by partnering with the insurance industry to establish a public-private partnership to manage these risks, which would not otherwise be insurable by the private market alone. This would involve establishing a small, not-for-profit independent entity (i.e., not a government agency) that would leverage the operational infrastructure and expertise of insurers to service those at high risk of flooding. It would also involve providing an annual contribution to guarantee that premiums for high-risk properties are affordable – especially for low-income households.
- **CONSUMERS** would have access to affordable flood insurance and could rely on receiving fast and adequate loss compensation after a flood. They would assume responsibility for mitigating risk by undertaking measures to make their homes more resilient to severe weather and by planning ahead for the financial impact of floods.

The entity administering the flood program would:

- Be operated on a not-for-profit basis;
- Set premiums for policyholders at high risk of flooding to reflect the underlying risk to incent mitigation action while ensuring affordability;
- Continuously evaluate properties at high risk of flood by integrating flood risk maps that are regularly updated with the best available data;
- Maintain a database of flood-risk data and community-level flood defences so that insurers and other public- and private-sector stakeholders can more accurately assess changes in flood risk, guide mitigation efforts and quantify premium reductions within high-risk zones where mitigation investment has been made;
- Promote a culture of risk awareness by operating under open-data principles and ensuring that real estate organizations have access to flood-risk data that consumers have a right to understand; and
- Conduct risk assessments to mirror any expansion of private market flood perils (i.e., coastal flooding).

Cost:

While DFAA will still be an important tool, it shouldn't be the only tool in our toolbox. Those funds can and should be targeted toward assisting communities with costs associated with rebuilding their infrastructure. Current spending on residential losses can, and should be, addressed through other mechanisms.

As our analysis has shown, this partnership to redefine how Canada financially manages flood risk would be fiscally neutral, insofar as investments required to guarantee the availability of affordable insurance for properties at high risk of flood would be more than offset by reductions in DFAA payouts.

INTACT APPENDIX

Issue: Basement flooding

Organization: Intact Centre on Climate Adaptation, Home Adaptation Assessment Program (HAAP)

Sendai Stage: (Risk Identification/Governance/Mitigation/Build Back Better)

Risk Identification:

Sharp increase in the number of basement water claims (sewer backup and sump pump failures) as a result of:

Increased frequency and intensity of storms placing more water on the landscape and into municipal infrastructure

Aging municipal infrastructure (clogged and overwhelmed sewers, combined sewers), aging lot level infrastructure (collapsed and/or clogged foundation drains connected to sump pumps, poorly maintained sump pumps, lack of backup battery systems, non-existent or poorly maintained backwater valves)

Lack of homeowner knowledge about the risks of flooding, appropriate flood prevention maintenance activities and lack of knowledge about what their insurance policies cover related to basement flooding

Increased risk of growing number of flood coverage claims (as overland flood coverage grows in Canada) as a result of:

Poor lot grading, leaks and cracks in windows, clogged drains in window wells and at base of basement doors and reverse slope driveways

Lack of homeowner knowledge about the risks of flooding, appropriate flood prevention maintenance activities and lack of knowledge about what their insurance policies cover related to basement flooding

Governance:

Years 1 and 2: Intact Centre of Climate Adaptation, through the Home Adaptation Assessment Program, will develop, test, provide continuous improvement and report on the results of the for a nation-wide basement flood prevention pilot program.

Year 3 and beyond: After year two the Intact Centre will train and certify assessors, and will manage and analyze the national database. Local municipalities, non-profits and/or businesses will manage the daily operations of local programs

Mitigation:

HAAP program managers and certified assessors work directly with municipalities to identify homes at risk of basement flooding due to issues with aging municipal infrastructure and frequent flooding complaints (e.g. flooding caused by sump failure). Education and outreach will be focused on high risk areas identified by municipalities in order to make the best use of funds available.

The homeowner accompanies the certified HAAP Assessor on a 50-point site assessment of flood risks inside and outside the home. The HAAP tool facilitates an in-depth discussion with the homeowner about flood risks to the property, opportunities to reduce risk by taking practical action (installation, maintenance, flood resilient renovation tips), subsidies available and how to find qualified local contractors. Messages are also conveyed to the homeowner to help them effectively engage their insurer so that they can come to understand their insurance coverage, apply for additional coverage if needed and determine if premium reductions are available if they take specific actions.

The HAAP report provides a written summary of the site assessment including a prioritized list of short and long term actions, subsidy information, contractor selection tips and a wide variety of fact sheets and how-to videos, including what to do in case of a flood.

Follow-up is completed at 1 week, 6 month and 1 year intervals to determine what additional support people need to take action and to record actions completed. A voluntary site inspection is completed at 10% of homes in order to verify self-reported results.

A customer support line provides additional assistance 5 days per week and customized seasonal maintenance reminders ensure that participants are aware of critical maintenance activities that will help prevent flooding long term.

Build Back Better:

In the HAAP report information is provided to homeowners about how to renovate or rebuild after flood events to make basements flood resilient. Fact sheets and how-to videos will be available and help-line associates will also be familiar with this information in order to support customers.

Background:

Problem to be solved:

Across Canada, an increase in the frequency and severity of extreme rainfall events, aging municipal infrastructure, and inadequate flood protection measures at the household level have combined to create a basement flood crisis across the country. Nationally, such flooding has resulted in Property & Casualty (“P&C”) insurance claims exceeding \$1 billion per year since 2009 onwards, whereas in previous years, annual claims were typically in the range of \$200-500 million (IBC 2014).

Along with the thousands of homeowners who have been hit so far with one-time flood events, pockets of housing are surfacing across Canada that are subject to chronic flooding. After repeated claims many of these homeowners have been denied access to sewer backup coverage, putting them at significant risk of mortgage default when the next flood hits. This gravity of this challenge cannot be overestimated in light of the fact that home ownership represents the single greatest investment of most Canadians.

Homeowners, municipalities and insurance companies share the burden of basement flood risk and accordingly also share the opportunity to reduce risk and increase homeowner protection.

Solution:

The Home Adaptation Assessment Program (HAAP) provides a practical solution to reducing basement flood risk across the country that effectively achieves long term changes on the ground and by brokering beneficial partnerships between all parties directly impacted by basement flood risk; homeowners, insurance companies and municipal government.

The development and testing of the Home Adaptation Assessment Program is funded as part of a gift from Intact Financial (the largest property and casualty insurer in Canada). Assistance with promotion of the program and maintenance reminders to homeowners will also be facilitated by the insurance industry. Local municipalities are involved in supporting the technical accuracy and the promotional success of the program by identifying neighbourhoods at greatest risk and providing critical program promotions support. Homeowners themselves take ownership of the challenges facing their home by participating in the HAAP’s flood risk assessment and working together with the certified HAAP assessor to develop a prioritized short and long term action plan to reduce risk. Homeowners receive information about subsidies available, how to information and tips for selecting qualified contractors. A HAAP Help-line and seasonal maintenance reminders help to provide ongoing customer support.

(1-2pp describe phased in approach, ramping up from pilots to national approach over five year planning period. Describe where we want to be at in terms of measurable targets at end of five years.)

Project Targets and Timelines:

Over the next 4 years the HAAP will be tested in a total of 5 communities representing all Regions of Canada. Communities that are selected for participation will possess a diversity of characteristics (population size, age of home, age of home owners, income, home size, rental versus owner-occupied, first language spoken, past flood experience etc.) in order to gain insights into the most impactful means of rolling out the HAAP under various different conditions. Continuous improvement of the project will be achieved by integrating lessons learned from each phase of the project into its next phase. In year 5, a nationally applicable HAAP program will be implemented in an additional 10 communities across Canada. By the end of year 5, HAAPs will have been completed at 13,000 homes in 15 communities across Canada with 9,750 home owners taking key actions to reduce basement flood risk.

Phase 1: August - November 2016

Promote and complete 500 HAAPs, Burlington, Ontario

Evaluation and program improvement

Measurable Targets:

500 HAAPs completed

75% of participants acted on key measures recommended by the HAAP

80% of participants report that they are satisfied or very satisfied with their experience of the HAAP program

Phase 2: March - November 2017

Promote and complete 3,500 HAAPs, Burlington, Ontario

Evaluation and program improvement

Measurable Targets:

3,500 HAAPs completed

75% of participants acted on key measures recommended by the HAAP

80% of participants report that they are satisfied or very satisfied with their experience of the HAAP program

Phase 3: March 2017- November 2019

Promote and complete 1000 HAAPs each in

Nova Scotia

British Columbia

Alberta

Quebec

Measurable Targets:

4000 HAAPs completed

75% of participants acted on key measures recommended by the HAAP

80% of participants report that they are satisfied or very satisfied with their experience of the HAAP program

Phase 4: March – March- November 2020

Implement national scale rollout

Promote and complete 500 HAAPs each in 10 municipalities across Canada

Measurable Targets:

5000 HAAPs completed

75% of participants acted on key measures recommended by the HAAP

80% of participants report that they are satisfied or very satisfied with their experience of the HAAP program

Cost:

A wide variety of basement flood risk assessments have been tested internationally. The best practices of these assessment tools as well as additional factors including municipal infrastructure risk and insurance perspectives will be integrated into the development Home Adaptation Assessment Program (HAAP). In order to estimate a return on investment calculation for the HAAP, figures from a HAAP-like program are used for illustrative purposes.

During 2012-2014, a test trial of basement flood risk assessments was tested on 450 homes in Calgary, Alberta and Kitchener/Waterloo, Ontario. Based on the results of this test trial, the ROI associated with these assessments was calculated as presented in Fig. 1.

Figure 1: Basement Flood Risk Assessment ROI

*(figures based on basement flood risk assessment test trials of 450 homes in Calgary, Alberta and Kitchener/Waterloo, Ontario, 2012-2014 (Green Communities Canada))

The cost of each assessment = \$275/house

The average cost of a flooded basement in Canada = \$20,537 (IBC, 2014)

Average basement flood avoidance over 10 years attributable to assessment (based on actuarial analysis) = 10%

Cost to apply assessment to 1,000 homes = $1,000 \times \$275 = \$275,000$

Flood Savings per 1,000 assessed homes = $(0.1 \times 1,000) \times \$20,537 = \$2,053,700$

ROI: \$275,000 invested vs. \$2,053,700 savings = 1 to 7.5

Return on Investment: \$1 invested yields \$7.50 return (over 10 years)

Cost of Implementation:

A cost sharing model is used to fund HAAP delivery. Homeowners, municipal governments and insurance companies share the cost and share the savings that result from avoided losses associated with basement flood damage.



Assessing the risk of flood:

About the IBC- commissioned flood maps

Insurance Bureau of Canada (IBC), on behalf of the Canadian property and casualty insurance industry, is proposing a national flood program to address the rising costs of flooding stemming from climate change. Canada is the only G7 country without a national flood insurance program. This is of particular concern because flooding across Canada is on the increase.



Why flood maps are necessary

IBC has commissioned the creation of flood maps to support the federal government's efforts to assess residential flood risk in Canada's communities.

Before the creation of these maps, there was not a consistent, national approach to mapping flood risk. The maps provide information that is important to understanding where the flood risks are and how to best help Canadians protect themselves. By incorporating information on the property values of homes exposed to flood risk, the data highlight the economic costs associated with water damage.

The risk-assessment data that the maps provide will allow users to underwrite an ever-increasing share of today's largely uninsured flood risk. This will ultimately help to transfer risk away from governments and toward the private insurance industry.

The maps will also provide decision-makers in all tiers of government with a way to prioritize their investments in mitigation infrastructure. The maps allow them to target their infrastructure spending on the highest-risk zones where infrastructure improvements are needed most.

...over



How the maps were created

IBC commissioned LexisNexis Risk Solutions, JBA Risk Management, DMTI Spatial and Brookfield RPS to create the maps using the best available local river, rainfall, snow-melt and terrain data , resulting in completely updated river flow and rainfall estimates.

JBA created a Canadian flood model that incorporates the best available data to develop consistent country-wide maps that express the probability of flooding. The model uses hazard ratings, confidence assessments and property replacement costs to achieve a unique picture of both fluvial (river) and pluvial (stormwater) flood risk.

The maps include Canadian river gauge and rainfall record data to measure flood extent and depth, flood defence information, historical flood event records, snow-melt data, and terrain composition and land use data.

The maps allow for risk assessments based on a variety of boundary levels, such as provincial, territorial and electoral districts, as well as municipal boundaries.

Analysis from the model allows IBC to identify the number and value of properties that are at high risk of flooding, as well as possible damage costs associated with flooding.

About IBC

Established in 1964, Insurance Bureau of Canada (IBC) is the national industry association representing 90% of the Canadian property and casualty (P&C) insurance market (private home, auto and business insurers).

For further information:

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September 16, 2016

Mr. Martin Goebel
Assistant Deputy Minister - Environment
Executive Branch
Department of Environment and Conservation
4th Floor, West Block, Confederation Building
100 Prince Philip Drive
PO Box 8700
St. John's NL A1B 4J6

Re: IOC Submission to the Government of Newfoundland and Labrador on Climate Change Consultations

Submitted via email to: mgoebel@gov.nl.ca

Please accept the attached submission in response to the Government of Newfoundland and Labrador on its climate change consultations.

Iron Ore Company of Canada (IOC) and its majority shareholder Rio Tinto together recognizes that climate change is real, and we are committed to working with the province, other Canadian jurisdictions, academia, communities, First Nations and our industry partners to develop real solutions to this global challenge. To succeed, a coordinated approach that builds on flexible regulatory and policy frameworks is required to make marked reduction in greenhouse gases emissions.

IOC has taken early action in reducing its greenhouse gas emissions starting in the 1990s.

As the Government of Newfoundland and Labrador designs a new climate change action plan, IOC recommends that the following key components are considered:

- Recognize the need for appropriate protection to emissions intensive and trade exposed sectors like iron ore pelletizing sector;
- Reward good performance and early actions;
- Establish a flexible and transparent market-based mechanisms program, ideally linked with other Canada's jurisdictions; and
- Ensure there is no duplication in carbon pricing between the federal government and the province.

At IOC, we look forward to continuing to work with the Government of Newfoundland and Labrador and others to develop a coordinated and effective climate action plan.

We thank you in advance for your consideration of these recommendations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Thierry Martel".

Thierry Martel
Chief Operating Officer

Overview

Iron Ore Company of Canada and Rio Tinto welcome the opportunity to contribute our significant expertise and perspectives to the Government of Newfoundland and Labrador as it develops its plan to tackle the challenges of climate change. This submission will profile: Rio Tinto's global, national and provincial presence, our efforts to manage greenhouse gas (GHG) emissions, and the principles that we think should guide future actions to address climate change.

IOC and Rio Tinto together believe global action on climate change is required. Rio Tinto has watched closely developments in Paris last year and the work of the federal, provincial and territorial governments as they work to develop a national action plan on climate change. It is important that any national or provincial climate change action plan takes advantage of opportunities to collaborate across jurisdictions, industries and stakeholders. Until such a national plan is in place, IOC/Rio Tinto recognise it will be necessary for individual jurisdictions to take action. This jurisdiction-specific action, however, should not lose sight of the global nature of the issue and the competitiveness impacts faced by industry, especially for companies exposed to global competition.

In addition, Rio Tinto supports market-based mechanisms that have maximum flexibility through the use of emissions trading as the best way of achieving emissions reductions at least cost. And finally Rio Tinto suggests the revenues raised from carbon pricing regimes be used to spur innovation through a number of initiatives including research and development funds.

Rio Tinto's global experience in carbon pricing regimes

Rio Tinto is a leading global fully integrated resource extraction company with a history that spans over 100 years. From its diverse portfolio Rio Tinto supplies the metals and minerals that help the world to grow. Its major products are aluminium, copper, diamonds, gold, industrial minerals (borates, titanium dioxide and salt), iron ore, thermal and metallurgical coal and uranium. Its 60,000 employees work in more than 40 countries across six continents. The company is strongly represented in Australia, Canada and the United States with significant businesses in Asia, Europe, Africa and South America.

As a global metal and mining company, Rio Tinto has been exposed to early-mover jurisdictions when it comes to carbon pricing. British Columbia and Quebec, where Rio Tinto has its largest Canadian footprint, have been on the forefront of carbon pricing in Canada. In British Columbia, where it operates its Kitimat aluminium smelter, the provincial government introduced its carbon tax in 2008. In Quebec, Rio Tinto's aluminium assets have been part of the cap and trade regime since its introduction in 2013. Rio Tinto also has assets in Alberta, which is undergoing its own carbon pricing reforms, but has in place currently the *Specified Gas Emitters Regulation (SGER)*. Similarly, Rio Tinto also has operations in California, which has cap and trade and is a member with Quebec and Ontario with the Western Climate Initiative. All this is to suggest Rio Tinto has a good deal of experience in carbon pricing across Canada and around the globe, and would be pleased to share that experience with the Government of Newfoundland and Labrador as it develops its climate change policies and programs.

IOC's Assets in Newfoundland and Labrador

IOC which was incorporated in 1949 is one of Canada's largest iron ore producers and a leading global supplier of iron ore pellets and concentrate. Operating an open pit mine, concentrator and pelletizing plant in Labrador West, our operations are linked via a 470 km railway to the port facilities in Sept Iles, Quebec.

We are the largest private employer in Newfoundland and Labrador with approximately 2400 employees in total, 1800 based in Labrador City. If you factor in induced and indirect employment, IOC accounts for more than 3500 jobs. We employ the highest number of apprentices in the province, with the majority of the tradespersons being trained through the province's postsecondary institution, the College of the North Atlantic. Women and Indigenous represent approximately 25 percent of our employee population.

Contributing over \$200 million in taxes annually, we play a major role in the province's mining industry. However, our operations in Labrador West are under stress. Iron ore price and production volumes are key drivers of IOC profitability in a market characterized by lower prices and price volatility. The price decline in iron ore, and ongoing production challenges at our operations has lead us to revisit our plans for future iron ore production. Our distance to growing and emerging markets and the regulatory environment also impacts IOC's cost, productivity and efficiency.

Principles and Policy Consideration for GHG Management

Given the emission intensive and trade exposed (EITE) characteristics of the global iron ore mining industry, IOC/Rio Tinto recommend that the Government of Newfoundland and Labrador climate change action plan be based on the following basic principles:

- A coordinated global approach that considers the policies occurring in other jurisdictions where carbon pricing regimes include provisions for EITE industry to reduce the risk of leakage of carbon, jobs, and production to countries that do not have carbon pricing.
- A coordinated national approach that considers federal/provincial/territorial carbon pricing policies, with a goal of establishing a national carbon pricing regime, starting with a national offsets system;
- A stable regulatory framework that recognizes the long term investment horizon required to justify multi-million dollar investments such as those made by IOC
- A market-based mechanism, such as cap and trade, to determine the price on carbon and include economic incentives to reduce emissions.

Additional factors we recommend for consideration include:

- Competitiveness – design climate policies or programs to enhance local economic growth; enabling industry to continue to contribute to local economies over the long-term
- Transparency – ensure policies and programs are easy to understand;
- Maximum flexibility – ensure maximum flexibility through the use of trading, linkages with other jurisdictions, and other policy mechanisms; and
- Innovation – create incentives for large emitters to invest in research and development, which will lead to technological advancements and in turn, to short, medium and long term emissions reduction and maintain profitability of industries, thus enabling long-term benefits to flow to local, provincial and national economies.

Considerations for Emission Intensive Trade Exposed industries like iron ore pelletizing sector

As the Government of Newfoundland and Labrador develops climate change policies and programs and targets the province's large emitters in the first instance, certain assumptions should be considered. In the case of IOC, most of our emissions come from the combustion of fossil fuels. Many large emitters across the country can reduce their carbon footprint through fuel switching, but this option is not available to IOC because of our remote geography. We lack access to additional hydro-power or other lower carbon energy alternatives like liquefied natural gas. Other than a step-change in the induration process itself (for which the technology does not yet exist), there is little we can do to reduce these emissions.

IOC also competes globally. So there needs to be a thorough understanding of the impact of any carbon cost will have on industry competitiveness in the province. The bulk of our emissions (85 percent) at IOC come from the production of iron ore pellets, and one third of our pellet plant emissions originate from the induration process itself. In other words, they are fixed process emissions. Any carbon pricing regime should also exclude in the calculation process emissions until there is a level playing on carbon pricing globally. To do otherwise will undermine the economic viability of our sector, and lead to carbon leakage. In general, IOC's position with regard to Fixed Process Emissions (FPE) is that the definition and use of FPE to reduce targeted emissions should be aligned with other industry sectors. For example, if solid carbon (coke breeze, petroleum coke, anthracite coal) is included as a Fixed Process Emission in other sectors, they should also be included for the iron pelletizing sector. Excluding process emissions is consistent with carbon pricing regimes elsewhere, including in British Columbia.

Recognition of early action

IOC/Rio Tinto believe that climate policy should recognise early action that reduced emissions and also acknowledge that further reductions are substantially more difficult and expensive to achieve.

IOC has been proactively reducing its GHG emissions and improving energy efficiency over the years and as such has submitted in 2008 a Notice of Interest on Credits for Early Action under the federal initiative *Turning the Corner*.

Offsets and a coordinated Pan-Canadian approach

Newfoundland and Labrador is a relatively small economy with just a few large emitters – all of whom are experiencing unprecedented market challenges. One of the key principles for the Government of Newfoundland and Labrador climate action plan should be to have a coordinated approach with carbon pricing regimes across Canada, starting with the offset system and building out from there. This will ensure consistency and predictability and allow companies with operations in multiple jurisdictions, such as Rio Tinto's, to operate within similar programs and policies. Our preferred approach would be a Cap-and-Trade scheme, considering Quebec and Ontario have already adopted this approach, and other provinces are considering the same.

Offset policy is a critical element of such a framework, and should be part of the Government of Newfoundland and Labrador's approach to carbon pricing policy to start. By harmonizing offset program rules across Canada, your government will be taking an important first step towards a pan-Canadian approach of managing climate change. Industry needs broad

access to offsets if it is to contain program costs, reduce emissions, invest in technology and still be competitive. Other market-based instruments will also allow for cross-border collaboration and linkage. Access to bigger markets means greater access to a wider range of abatement opportunities and contribution to a national effort to reduce Canadian GHG footprint.

Design of a Carbon Pricing Mechanism

IOC/Rio Tinto believe that a cap-and-trade scheme is the better policy framework in which to encourage the reduction of process emissions and make sure that a GHG emissions cap could be reached at an optimum cost. The design elements of a cap-and-trade program should include the following:

- I. **Benchmark Approach** – Realistic benchmarks - ideally based on historical performance - should be established, with improvement targets. Such an approach will force industries to implement best technologies, but also incentivize best performers.
- II. **Base Year** – All benchmarks, baselines and reference years should be in line with climate change actions. In addition, consideration could be given for the early actions of large emitters that can demonstrate they have permanently reduced their emissions.
- III. **Bank, Sell or Trade Credits** – Large industrial emitters should be able to bank, sell or trade credits on a basis which includes among the different sites of a single corporation, between different corporations and across various jurisdictions.
- IV. **Possibility to link with other schemes** – This will enlarge and secure any scheme on a long term perspective.

This last point is particularly valid in light of the Canadian situation.

Potential Linkages to other Canadian Jurisdictions

Regardless of what future climate change policy or program Newfoundland and Labrador adopts, it will be difficult to act separately from other jurisdictions. Indeed, Quebec and Ontario – Canada's two largest provinces – together with California constitute a sizeable carbon market. How Newfoundland and Labrador links to other jurisdictions and markets will be instrumental to the province and its industries' overall competitiveness. The bigger and broader the market, the more efficiencies to be realized, driving down any potential program costs.

In recent years we have seen other Canadian jurisdictions such as Quebec and Ontario explore and embrace cap-and-trade programs, and it is expected that others will follow. IOC/Rio Tinto believe greater certainty, opportunities and flexibility would exist for both emitters and governments if cap-and-trade programs could be consistent and designed on the same basic foundations.

As you work with your federal and provincial/territorial counterparts on a national climate change action plan, particularly a carbon pricing regime, it is extremely important from a competitiveness perspective that there is no duplication or overlap in carbon pricing regimes. If the Government of Newfoundland and Labrador adopt carbon pricing provincially, it should be recognized that the federal government will not, and vice versa. Also from a competitiveness perspective, the burden of carbon pricing should be the same across the country.

Conclusion

Since the mid-1990s, IOC and Rio Tinto have proudly embarked on a number of initiatives, most voluntarily, to reduce GHG emissions from our mining and processing operations around the world. As a result of this effort, IOC/Rio Tinto have gained considerable expertise and appreciation for the elements of climate change programs that will meet the government's climate change objectives, encourage corporations to reduce emission in an economical manner and enhance the environment in which we all live. IOC/Rio Tinto are committed to sharing this expertise with the Government of Newfoundland and Labrador as well as that of other jurisdictions that will inform the development of climate change programs that enhance our environment while growing the economy.

Municipal Governments and Climate Change in Newfoundland and Labrador

*A submission to the
Provincial Climate Change Strategy Consultations*

16 September 2016



Municipal Governments and Climate Change in Newfoundland and Labrador: A submission to the Provincial Climate Change Strategy Consultations

Our Organization

Municipalities Newfoundland and Labrador (MNL) was formed in 1951 to represent the interests of the growing number of municipal councils in the province. At that time, there were approximately fifty incorporated municipalities; today there are 276, collectively representing roughly ninety percent of the provincial population. Over 97 percent of these councils are paying members of MNL, providing the representative base that drives MNL's considerable advocacy and policy efforts.

MNL is an incorporated, non-profit entity with federal charitable status. An eleven-member Board of Directors representing seven regions as well as small town and urban constituencies governs the organization. Directors are elected from among the delegates at our Annual General Meeting, one of the largest conventions in the province.

MNL activities are coordinated by a staff of seven professionals based in the organizational headquarters in St John's. From this office, economic development workshops are developed and delivered, cutting edge research and facilitation of inter-municipal cooperation is conducted, and sector-leading membership services are coordinated. These services include a province-wide municipal general insurance program, a free legal telephone referral program, an air travel discount program, and an exclusive debt collection service. A new human resources service and a free project management consultation program were launched earlier this year. Membership programs are always in development to provide councils with access to needed resources or referral services.

The Provincial Climate Change Strategy consultations were launched in July with four regional meetings supplemented with three on-line sessions¹. In addition to comments provided to government by various representatives of MNL member municipalities during the consultation period, Community Collaboration Officer Kathleen Parewick participated in the inaugural on-line consultation (July 19th) in order to provide some initial input to the process.

The consultations were framed by the following three discussion topic areas:

1. Growing the Green Economy
2. Adapting to Climate Change
3. Government Leadership

This submission responds both to the questions posed in the consultation process and the larger municipal sector perspective on climate change in Newfoundland and Labrador.

¹ Details available at <http://www.exec.gov.nl.ca/exec/ccee/consultations.html>

Municipal Interests in Relation to Climate Change

Broadly speaking, municipal governments in Newfoundland and Labrador have two functions in relation to climate change, these being:

1. **Adaptation** – Municipalities need to take stock of available climate information, assess the full spectrum of their community's assets and operations for vulnerabilities, and make the necessary adjustments to anticipate and/or react to changes; and,
2. **Mitigation** – As significant greenhouse gas emitters, municipalities bear a responsibility to both reduce their carbon footprint and lead the way to a more sustainable future for the community at large.

Municipalities here face many challenges on an ongoing basis so it is critical that our towns take a long view and give priority to planning and systematic investments that move them towards well-defined adaptation and mitigation goals.

A Municipal Sector Response for Newfoundland and Labrador

In consideration of the consultation questions and the important climate change adaptation and mitigation functions that local government needs to play, MNL has identified the following key responses:

Net Metering implementation

The lack of a net metering system in this Province represents a major impediment to the development of alternative energy sources and technologies here. It also presents some serious challenges to our competitiveness – nationally and internationally – as we remain one of the few jurisdictions where this critical enabling framework is lacking. This has ramifications not solely for entrepreneurial interests here, but also for more general access by provincial stakeholders to federal programs and funding geared to accelerating a diverse array of GHG-reducing initiatives over the next 2-5 years. There's a tremendous window of opportunity right now nationally that we need to be making the most of and we are starting from behind.

The provincial government first committed in 2007 to implementing a net metering program. In 2014, a consultant was engaged to explore how such a program should proceed here. This report was released in December 2014, when the government committed once again to implementation. Last summer, the provincial government introduced a policy implementation framework directing the utilities to develop net metering programming and bring it to the PUB to review. Firm timelines, however, were not put in place.

As a primary benefit of installing alternative energy resources is found in reducing one's electricity costs, there are significant opportunities here for municipalities to offset their energy use. Town halls, community centres, hockey rinks – operating costs for all of these facilities could conceivably be reduced as our energy sector diversifies. In short, we need firm and ambitious net metering implementation timelines established right now.

Sustainable community infrastructure

The majority of our core infrastructure is owned and operated by municipalities: It is also aging and vulnerable to climate change impacts. The recent Canadian Infrastructure Report Card issued by FCM, CSCE, CPWA, and CCA places one-third of our core infrastructure in the *fair*, *poor*, or *very poor* condition categories, and states that the anticipated condition in all categories is declining. Climate change impacts infrastructure directly (e.g. flooding outstripping local drainage system capacity) and those elements that are aging and deteriorating are even more vulnerable. Failure of such public infrastructure could lead to significant property damage and risks to the public.

The good news is that infrastructure maintenance and replacement activities are ongoing so opportunities to make improvements occur more or less constantly in a local government context. What is conspicuously lacking, however, is the consistent guidance and incentivizing of more sustainable infrastructure outcomes in new-builds, repairs, incremental upgrades and retrofits.

A variety of suggested initiatives fall under this category; some entirely within the control of municipalities, others requiring the action of other stakeholders. A preliminary list follows:

- Accelerating LED streetlight implementation (Key Actor: Newfoundland Power);
- Adopting and modeling LEED construction/landscaping standards;
- Prioritizing green, climate change adaptation and mitigation targets in municipal asset management planning and procurement (e.g. vehicle fleet replacement, alternative energy-efficient technology sourcing); and,
- Adjusting the *Public Tendering Act* to similarly provide for municipalities to sole-source pilot projects with vendors offering more sustainable goods and technologies (e.g. energy-efficiency technologies, more durable construction and paving materials) because, “*we do not always get the best product at the lowest cost*”.

For some time now, MNL has been asking for an integrated federal/provincial and municipal infrastructure plan for the province. Climate change needs could be most effectively advanced as a core component of this kind of joint infrastructure strategy.

Advancing the use of existing climate change adaptation resources

Over the last decade, MNL has been a partner to a series of climate change research, education and support projects. Two key municipal resources we worked on are:

- *7-Steps to Assess Climate Change Vulnerability in Your Community*, 2012 (Note: A more interactive e-version of this toolkit will be launched in late 2016 as part of MNL’s new website); and,
- *Managing Municipal Infrastructure in a Changing Climate* –a companion workbook to the *7-Steps* focused on municipal infrastructure.

As is the case with most toolkit resources, additional supports will contribute to enhanced uptake and implementation rates, for instance:

- third party facilitation (supplementing local planning capacity with government staff, graduate students or other independent service providers);
- integrating toolkit resource messaging into Departmental guidance and sector SOPs;
- reinforcing usage with reference to a simple roadmap of scaffolded sustainability activities (e.g. Initiating the *7-Steps Vulnerability Assessment* process as a prelude to committing to the FCM's *Partners in Climate Protection* (PCP) milestone-based program for developing and implementing a local Climate Change Action Plan).

Supporting municipal climate change leadership

It is often forgotten that our local governments are actually *part of* the workings of the Government of Newfoundland & Labrador. Municipalities are “creatures of” the Province and are delegated their authorities through a number of legislative and regulatory means, not least of which being the *Municipalities Act, 1999*. As such, the climate change strategy under consideration must recognize the fundamental role of our towns in the strategic – if tiered – leadership needed to advance climate change policies and practice throughout our society.

There are a number of key prior-year municipal initiatives that require a timely revisiting and reactivation. In particular, the *Integrated Community Sustainability Plans* (ICSPs) – a previous Gas Tax Agreement deliverable that unfortunately failed to receive substantive government oversight or follow-through. While many communities elsewhere in Canada are into their second and third ICSP iterations, the local strategies developed for (if not always by) municipalities in Newfoundland and Labrador were never adequately monitored, evaluated or otherwise taken account of in subsequent community decisionmaking. The lack of Provincial follow-through on what was a key nationally-mandated and step-wise mechanism to advance a variety of local sustainability targets has certainly contributed to the lack of progress by communities here relative to their peers in the rest of the country.

Once again, a variety of collaborative approaches are recommended to better leverage municipal-tier experience and leadership:

- Convene an ‘expert panel’ to assess and prioritize critical public infrastructure investment for climate change resiliency. Given the high proportion of core infrastructure owned and operated by municipalities, this entity should be co-chaired by the Province and an MNL designate.
- Support municipally-led and delivered programs that initiate, reinforce and celebrate place-based development practices and those municipalities choosing to embrace more sustainable and adaptive pathways (e.g. forthcoming MNL *Tidy Towns* program redesign with partners such as the Heritage Foundation, Food First NL, and Memorial University’s Community Health, Geography and Harris Centre researchers); and,

- Critically examining municipal-sphere actions/authorities affecting other sectors vulnerable to climate change. For example, with respect to **Food Security**, municipalities can contribute to the resilience of our food production and distribution systems by:
 - suitably-(re)framing land use and development controls to support local/urban agriculture;
 - cultivating pollinator-friendly practises;
 - encouraging community gardens and farmers' markets.

Conclusion

Newfoundland and Labrador is at a critical pass. We face numerous challenges – demographic, democratic and fiscal. We don't just have the maintenance and upgrade costs for aging infrastructures; we have brand new systems to design and construct in order to meet national wastewater standards in short order. And then there's climate change: a pervasive and accumulating source of new risks in a sector already rife with potential liabilities.

Municipalities are essential partners in the Provincial Climate Change Strategy. We are on the front line of adaptation and mitigation efforts throughout Newfoundland and Labrador and, in many respects, we are in the best position to lead some of the most important types of change needed here. We look forward to this opportunity to co-create a more sustainable Province.



A New Climate Change Strategy for Newfoundland and Labrador

A Submission from the
Newfoundland and Labrador
Environmental Industry Association
(NEIA)

September 16, 2016

Soon, when Muskrat Falls comes online, 98% of electricity generated in Newfoundland and Labrador will originate from renewable and low-emissions sources. For this reason, the path to lowering greenhouse gas emissions (GHGs) is not as direct as in other provinces. Newfoundland and Labrador also faces significant fiscal challenges, limiting the capital available for investment in GHG reduction activities.

Therefore, an effective climate change strategy for Newfoundland and Labrador must be customized to reflect these conditions – taking action where demonstrable GHG reductions can be achieved.

NEIA's recommendations come from direct engagement with its membership, partners, and other green economy stakeholders. This document will focus on recommending activities the government can undertake to: reduce GHGs; address concerns with electricity generation; increase resiliency in a changing climate; empower Newfoundland and Labradorians to contribute; and provide the leadership necessary to drive change. Throughout this submission is a focus on innovation and economic growth and diversification.

Reducing Greenhouse Gas Emissions

After Muskrat Falls comes online, the largest contributors to GHGs in Newfoundland and Labrador will emanate from large industry, transportation, building fuels, and waste. Therefore, a climate change reduction strategy should focus on GHG reductions which have tangible impacts in these areas. The following recommendations address opportunities in each category, and also explore how a carbon pricing system could be designed for the province.

Large Industry

There are a limited number of 'large industry' emitters in the province, but they are responsible for 36% of the province's GHGs. Many of these activities are being addressed by the government's recent legislation "*An Act to Regulate Greenhouse Gas Emissions from Industrial Facilities in the Province*" which was introduced in the Spring of 2016. This act, however, does not include offshore oil and gas activities where jurisdiction is shared between the province and the Federal government.

Action Recommended: Newfoundland and Labrador to work immediately with the Federal government and offshore operators to develop GHG regulations for the oil and gas sector. Regulations should be based on the same framework as of large industry emitters – e.g. emitters can acquire credits through contribution to the Newfoundland and Labrador Greenhouse Gas Reduction Fund or local offset projects with demonstrable GHG reductions.

A new federal and provincial focus on GHGs and environment will be accompanied by new supports for the development and application of clean technology. Clean technology can be viewed as any product, service, or process that reduces negative environmental impacts. This can often be achieved through finding new efficiencies. New supports will provide funding mechanisms for firms to acquire and innovate clean technologies, however those operating in industries not typically associated with 'environment' often do not consider their operations as being suitable or related to clean technology.

Action Recommended: Newfoundland and Labrador to work with its industry partners, sector by sector, to create a greater awareness and understanding of clean technology opportunities.

New legislation addressing GHGs from industrial facilities includes reference to a *Newfoundland and Labrador Greenhouse Gas Reduction Fund* and the opportunity for emitters to acquire credits through the contribution to local offset projects.

Action Recommended: Newfoundland and Labrador to work with the environmental sector in the development of its technology fund and offset program regulations to ensure the maximization of business opportunity for local firms and perpetual, broad reaching benefits.

Transportation

'Transportation' accounts for 34% of Newfoundland and Labrador's GHGs and, aside from large industry, is the biggest source of emissions in our province. Transportation emissions arise from the movement of goods, services, and people from one location in the province to another.

Electric Vehicles

59% of transportation emissions arise from cars and busses on-road. This source of GHGs must be addressed in a climate change strategy, and a strong component of this plan should be electric vehicle (EV) adoption. From a financial perspective, EVs are a proven technology which provide value through fuel savings and lower maintenance costs.

In the context of Newfoundland and Labrador's 98% renewable energy framework, each single adoption of an EV (1) reduces per unit emissions to near zero, and (2) adds new demand for electricity from the utilities. Rapid advances in technology and adoption will continue to drive down costs, making EVs even more economical. Electric trucks and busses are also beginning to hit the market.

Widespread adoption of EVs in Newfoundland and Labrador can have a significant positive **impact on the province's GHGs**. To prepare for an increased adoption of EVs, the province must support the implementation of EV infrastructure.

Action Recommended: Newfoundland and Labrador to work with public and private partners to install EV charging infrastructure strategically throughout province with eye to widespread adoption.

Action Recommended: Newfoundland and Labrador to provide supports to businesses, institutions, municipalities, and other organizations who wish to install EV charging stations on their properties.

Action Recommended: Newfoundland and Labrador to work with vehicle retailers to ensure appropriate maintenance expertise exists within province for EVs.

The province can influence the demand of EVs, and the rate of adoption, through a variety of incentives and disincentives, including (but not limited to):

Action Recommended: Newfoundland and Labrador to provide rebates or tax advantages to those who purchase EVs. Given one EV can equate to approximately 5 tonnes of GHG reductions per year (plus an increased consumption of electricity), consumer rebates provide great value for the province.

Action Recommended: Newfoundland and Labrador to tie vehicle registration charges directly to a vehicle's rated fuel consumption. Consumers making

environmentally sound choices will be rewarded, while consumers choosing vehicles with less efficiency are penalized and educated in the process.

Action Recommended: Newfoundland and Labrador to support the transition of public and private fleets to EV technology, including assistance in the development business cases for interested organizations. Taxis, civic vehicles, delivery vehicles, etc. spend many hours on the road and their operators could benefit from the decreased costs associated with an EV fleet.

Without intervention, a problematic cycle exists: the lack of infrastructure deters car buyers from deciding electric, while the lack of EVs on roads stifles demand for infrastructure.

Public Transportation

Another approach to reducing GHGs associated with transportation is to reduce the number of vehicles on the road. **With much of the province's population living in the Northeast Avalon region, there is an opportunity to reduce emissions through the implementation of stronger public transportation systems in the region.**

Provincial leadership is required to move this issue forward. Despite continued public interest, municipalities in the region have been unable to work together on a public transportation strategy. The approach by the service provider in the City of **St. John's (Metrobus)** of attempting to grow services from the capital city outwards has proven to be unsuccessful. It is challenging for each individual municipality to view public transportation through a regional lens. As in other Canadian jurisdictions, provincial government leadership is needed to establish and support a regional public transportation service.

Action Recommended: Newfoundland and Labrador to provide the leadership and resources required to develop a new regional public transportation system for the Northeast Avalon.

It is important to remember that petrol-powered busses will only achieve significant GHG reductions if ridership reaches a critical mass.

Action Recommended: New regional public transportation system to include express routes, park and rides, and participation incentives to demonstrate clear advantages to this mode of transportation to the public and grow ridership.

Action Recommended: New regional transportation system to replace busses as they are retired with electrical counterparts (once economical), with the intent to fully electrify the fleet.

Advances are being made in the delivery of public transportation in rural areas.

Action Recommended: Newfoundland and Labrador to investigate successful models of public transportation in rural areas and assess their transferability to regions in the province.

Aside from strictly environmental considerations, there are many reasons to lead the development of an efficient public transportation system, including:

- Efficient public transportation links resources, contributing to the ease of knowledge transfer and idea sharing – and is a factor in the innovative potential of an economy
- Efficient public transportation facilitates labour mobility, while helping ensure potential workers can reach employers regardless of their ability to own a vehicle

- Efficient public transportation mitigates the negative economic symptoms of aging transportation networks – congestion, disconnection, and urban sprawl
- Effective public transportation infrastructure encourages economic development along frequently used routes and corridors
- Effective public transportation discourages urban sprawl, contributing to increased efficiency in municipal service delivery
- Increased use of public transportation reduces the land use pressures imposed by passenger vehicle use on municipalities – e.g. parking spaces, more and wider roads.

Use of Diesel

18% of transportation GHGs are emitted from freight on-road, much of which would be from diesel engines. In addition, 9% of transportation GHGs emanate from off-road diesel activities. There may be opportunities to reduce the emissions resulting from diesel use with the introduction of bio-fuels to the local market.

Action Recommended: As per the 2011 Report “An Analysis of the Economic Development Opportunities Associated with the Green Economy in Newfoundland & Labrador”, Newfoundland and Labrador to develop and implement a liquid bio-fuels strategy which identifies the most promising pathways for bio-fuels production and opportunities to grow the local market. Any bio-fuels program should ensure there is a net reduction in GHGs.

Support Research Addressing Efficiency of Marine Transportation

6% of transportation emissions can be attributed to domestic marine activities. While this **represents a small portion of the province’s** overall GHGs, solutions developed in this area can be exported to other marine centres worldwide.

Action Recommended: Newfoundland and Labrador to support research, development, and entrepreneurship focused on efficient marine transportation technologies and processes, building on the province’s excellence and range in ocean technology development.

Building Fuels

9% of NL’s greenhouse gas emissions originate from the use of building fuels, which is divided near equally between residential and commercial/institutional. The province can take a three-pronged approach to tackling this issue.

Reduce the Use of Building Fuels

The province can encourage the reduction of fossil fuel use in buildings through a number of initiatives.

Action Recommended: Newfoundland and Labrador to introduce incentives for home and building owners to convert to more renewable heating technologies, e.g. electric, geothermal, or biomass.

Action Recommended: Newfoundland and Labrador to implement GHG standards in building codes to discourage the implementation of fossil fuel heating systems in new builds.

In some industrial buildings, furnaces are presently being used to generate heat from waste oil from diesel, hydraulics, or transmissions systems. These hazardous materials create GHGs and other toxic gasses, and should be disposed of according to hazardous waste management best practices.

Action Recommended: Newfoundland and Labrador to ban waste oil burners and offer supports to existing users to implement more efficient and environmentally sustainable heat sources.

Support Energy Efficient Measures Aimed at Those Using Building Fuels

Energy efficiency measures are an important component in a provincial climate change strategy. **Given that 98% of the province's energy will soon be provided by renewable sources, energy** efficient measures should be focused on those using fossil fuels to heat homes and buildings.

Action Recommended: Newfoundland and Labrador to mandate the inclusion of fossil fuel heating service providers in the TakeCharge! program or a similar construct, to make the program's energy efficiency financing opportunities (relating to heat) available to fossil-fuel heating customers.

Action Recommended: Newfoundland and Labrador to support firms reducing their GHGs through the installation of on-site small scale renewable energy generations (see section: 'net metering').

Action Recommended: Newfoundland and Labrador to require recent energy audits as part of the sale of homes and buildings to educate consumers on the importance of energy efficiency and how it impacts their finances and the environment.

Support the Providers of Building Fuels and Services

The providers of building fuel infrastructure and services will be negatively affected by the above measures, and need to be provided an opportunity to advance innovation in the heating industry and develop services which have lower GHG emissions.

Recommended Action: Newfoundland and Labrador to provide supports for fossil fuel heating service providers to research, develop, and commercialize more efficient or environmentally sustainable services.

Waste

'Waste' is responsible for 8% of Newfoundland and Labrador's greenhouse gas emissions. The most significant GHG produced from waste is methane which is released during the breakdown of organic matter in landfills.

Action Recommended: Newfoundland and Labrador to accelerate plans to address organic waste management, with GHG emissions a primary consideration in developing solutions.

Action Recommended: Newfoundland and Labrador to provide aggressive new incentives for firms to address industrial waste. Solutions developed in rural, remote, and island settings are exportable to other regions facing similar challenges in economies of scale and geography.

Action Recommended: Newfoundland and Labrador to assist municipalities in developing waste management programs for commercial and multi-dwelling units. Increased diversion will prolong the lifespan of landfills and generate broader environmental awareness.

Carbon Pricing

As a signatory to the Paris Agreement on Climate Change in 2015, the Federal government has **an aggressive interest in reducing Canada's GHGs. It has sent signals to its provinces that carbon pricing may be applied arbitrarily where programs are not developed within jurisdictions. Therefore, it is in Newfoundland and Labrador's best interests to develop its own carbon pricing mechanisms which it can customize to the intricacies of its economy, control as variables change, and choose where benefits are directed.**

Given the province's recent legislative activities aimed at capping emissions for large industrial emitters, the reasonable approach to apply broader carbon pricing on the economy is through a carbon tax on fossil fuels. This creates a predictable framework for businesses to operate within, low management costs, and also provides incentives at the consumer level to make sustainable decisions. Carbon pricing has been shown to be the most practical and cost-effective way to lower greenhouse gas emissions – while encouraging low-carbon innovation.

Action Recommended: Newfoundland and Labrador to reposition a portion of the provincial gas tax as a carbon tax and apply it on other fossil fuel purchases.

It is important that the public understands where revenue from a carbon pricing program will be applied. Revenues should not be absorbed into the general provincial coffers. If the intent of applying a price to carbon emissions is to reduce overall GHGs, revenues from the program must be used in direct support of GHG reduction initiatives. This is particularly true with a carbon tax, where actual emissions reductions depend on consumer sensitivities to prices.

Action Recommended: Newfoundland and Labrador to publicly account for carbon tax revenues and directly, wholly, and transparently apply them towards initiatives outlined in its new climate change strategy.

Electricity

The introduction of power from Muskrat Falls will put Newfoundland and Labrador in the enviable position of generating 98% of its electricity from low GHG-emitting, renewable resources.

However, there are issues with the current energy framework. First, the cost of electricity is expected to increase significantly. Second, dated energy legislation in the province is causing hardship for industry. These issues must be addressed in a new provincial climate change strategy.

Cost of Electricity

It is important that Newfoundland and Labrador control the price of electricity generation for the long term. If the costs of electricity significantly rise for consumers, the advantages of the **province's 98% renewable energy mix evaporate. Developers and consumers will choose fossil fuels as the preferred heating source, which will have two effects: (1) it will increase the**

province's GHGs; and (2) it will reduce the demand for electricity – which could potentially serve to further increase its costs. This cycle of activity could become dangerous for Newfoundland and Labrador. It is in the province's interests, both from an environmental and financial perspective, to encourage (and not discourage) the electrification of infrastructure.

Action Recommended: Newfoundland and Labrador to control the price of electricity to ensure its competitiveness, and signal this policy direction in the short term to discourage the adoption of fossil fuel heating systems.

See sections: 'electric vehicles' and 'building fuels' for related recommendations.

Renewable Energy

Newfoundland and Labrador's archaic energy policies are out of step with those in the rest of North America and are putting local firms and industries at a competitive disadvantage nationally and internationally.

Net Metering

Net metering policies were promised ten years ago in **Newfoundland and Labrador's 2007 Energy Plan**. The continued delay in the introduction of programming is now having a tangible negative and lasting effect on businesses in the province:

- Local firms are unable to invest in small scale renewable energy technologies to increase the efficiency of their operations, putting them at a competitive disadvantage against businesses in other parts of Canada and the world;
- Local firms engaging in export and international business activities are unable to demonstrate the compatibility of their products and services with small scale renewable energy technologies as the infrastructure and expertise does not exist 'back home'. This puts them at a disadvantage with international competitors in a world that has become very interested in clean and sustainable systems; and
- A new federal focus on clean technology has opened the door to many new opportunities in the renewable energy field – research, development, and commercialization funding opportunities which are passing over Newfoundland and Labrador.

From an environmental perspective, net metering programming would allow buildings and homes powered and/or heated by fossil fuels to reduce their emissions.

Action Recommended: Newfoundland and Labrador to work with its partners to expedite processes and immediately introduce net metering programming. As the framework was announced in 2015, and such programs exist in almost every North American jurisdiction, the introduction can be swift.

Replacement of Diesel Systems in Remote Areas

Remote communities continue to be powered by diesel generation to the detriment of both the environment and the economy. Technology and services exist today which are environmentally sustainable and can eliminate costs associated with the purchase and transportation of fuels in to isolated regions.

Action Recommended: Newfoundland and Labrador to replace or augment diesel generation in remote and isolated communities with renewable energy systems.

Other Renewable Energy Policies

There are types of large industry which through the nature of their operations (e.g. farming, composting, or forest harvesting) have the potential to generate significant electricity. In other jurisdictions, these industries would be able to generate that electricity and sell it as a utility or sell it directly to a utility. As this practice is not allowed in Newfoundland and Labrador, industry located in the province finds itself at a disadvantage competing on cost when the bottom lines of competitors benefit from such sales. This is an obstacle in industry / business attraction and retention. It is an environmental concern as the alternative to this energy generation in some cases is waste – **‘waste’ in the form of GHGs**.

Action Recommended: Newfoundland and Labrador to modernize energy legislation and regulations to allow for the generation and sale of electricity in specific cases where environmental benefits are accrued from generation.

There are significant opportunities in Newfoundland and Labrador for green energy developments in wind and tidal – opportunities being pursued by local firms. In the current legislative framework, these firms must look beyond provincial borders to advance their technologies and business models. This inhibits development, investment, and innovation in green energy within our province. The solutions developed here could not only provide economic growth and diversification domestically, but also be exported (as a technology or as electricity through the Maritime Link) for the benefit of the environment beyond our provincial borders.

Action Recommended: Newfoundland and Labrador to work with local firms in the development of renewable energy projects and enable their success where economic development opportunities exist.

Green energy development is taking place rapidly worldwide and is becoming integrated in to more and more processes. The longer Newfoundland and Labrador keeps its doors closed to modern energy programming, the larger the technology and knowledge gap between our province and other jurisdictions – and the more exacerbated the problems will become for local firms.

Empowering Businesses to Contribute

Individuals, groups, and communities can have a significant impact on environmental and business issues if the opportunities are present. Sometimes, however, there are barriers in place which prevent action or progress. These barriers can take the form of: rules and regulations; a lack of resources; information gaps; stakeholder education; etc. The following opportunities to empower and enable firms to contribute to reducing GHGs in Newfoundland and Labrador can be addressed in a new climate change strategy.

Procurement Reform

Dated public procurement policies act as barriers to success for local firms. Current policies are in cases structurally excluding the products and services of local firms, denying them the opportunity for significant business despite the possible superiority of their offerings.

Specifically to environmental products and services, government is seeking validation of environmentally friendly products and technologies that are already widely used in other jurisdictions. Environmental products and services that introduce new efficiencies are often different and innovative in their application or may even disrupt a supply chain. Without their own government as a previous client, local firms are encountering credibility issues when engaging in business activities outside of the province.

It is NEIA's view that many of these issues are caused by processes which delineate a project or product in exact terms, e.g. defining not just the final deliverable but also how that deliverable should be achieved. This eliminates new ideas and alternative solutions from the outset, and discourages innovative thinking.

Work has already been done within government in the preparation of new public procurement policies. NEIA supports the direction that these proposed policies have taken, given that they recognize the importance of the following:

- ‘Environmental Impact’ being Explicit as a Value Consideration
- A Focus on Desired Outcomes while Avoiding Prescribing Processes
- Strategic Deconstructions of Bundled Procurement
- Supplier Engagement and Communications throughout the Process
- Avoiding Lock-In
- Workforce Education to Ensure Public Officials Understand New Processes
- A Commitment to Continuous Improvement

An additional advantage to including *environmental impact* explicitly within the procurement process is that government will be able to, over time, track the GHG reductions it has been able to achieve through reformed processes.

Action Recommended: Newfoundland and Labrador to introduce new public procurement legislation in 2016.

More information on NEIA's recommendations for reform of the public procurement process can be found in a detailed submission to Government in June of 2016.

Private Sector Supports

Taking action to address GHGs will introduce new challenges for local industry – be it in mining, manufacturing, oil and gas, fishery, etc. – to reduce costs and be more competitive. It will also provide new opportunities for firms who provide clean technology products and services. A climate change strategy should recognize that, in both cases, support will be required for the private sector to meet reduction expectations and growth potential.

Supports for Industry

Investing in new technology is risky. As ‘clean technology’ is a relatively new idea for those outside of environmental industries, there is an uncertainty related to what clean technology is and how it can impact their organizations.

Action Recommended: Newfoundland and Labrador to work with its industry partners, sector by sector, to create a greater awareness and understanding of clean technology opportunities.

Action Recommended: Newfoundland and Labrador to provide incentives and financial supports to mitigate risks for firms who engage in research, development, and

acquisition relating to clean technology and increased resiliency. This can be done through the new Newfoundland and Labrador Greenhouse Gas Reduction Fund or a separate mechanism.

Action Recommended: Newfoundland and Labrador to reward firms who acquire clean technologies that provide demonstrable GHG reductions.

Supports for the Local Green Economy

As industry is regulated and becomes more aware of the opportunities relating to environmental efficiencies, new opportunities will arise for local firms to provide solutions. The government can work proactively with local firms to make them aware of emerging opportunities within industry. Solutions developed in Newfoundland and Labrador can be marketed to industry worldwide.

Action Recommended: Newfoundland and Labrador to facilitate the connection of opportunities within industry with local product and service providers. Financial supports will be provided to aid in research, development, and commercialization of new solutions. This can be done through the new Newfoundland and Labrador Greenhouse Gas Reduction Fund or a separate mechanism.

Action Recommended: Newfoundland and Labrador to afford support to local firms to establish empirical evidence that their products or services provide demonstrable GHG reductions.

It must be ensured that any future offset program or funding mechanisms recognize the strengths and needs of the local green economy. Intricacies exist with the sector which, if **unknown during the drafting of regulations, may negatively affect a firm's ability to participate** in programming despite the superiority of a product of service. For example, an initiative to increase the use of energy efficient elements during the construction phase should logically include solutions that eliminate the need for electricity from the outset.

Action Recommended: Newfoundland and Labrador to work closely with its federal government partners to design clean technology programming which complements and/or enables (rather than competes with) national programs and supports.

Action Recommended: Newfoundland and Labrador to work with the environmental sector in the development of its technology fund and offset program regulations to ensure the maximization of business opportunity for local firms.

The proactive use of pilot projects can provide great benefit to local firms engaged in the development of new solutions. The increased use of pilot projects will contribute to the local economy, support innovation, provide local firms with a government client (a critical influencing factor when conducting international business), and also afford the local firm with important real-world feedback on their product or service. **The Government of Canada's Build In Canada Innovation Program (BCIP)** can be used as a model; local firms have accessed the BCIP and have found it valuable.

Action Recommended: Newfoundland and Labrador to implement the use of pilot projects across its departments and agencies as a common approach to solving challenges.

Government Leadership

The Government of Newfoundland and Labrador is a very large organization which employs many. As a result, its environmental footprint is also significant. It is estimated that the government, through its operations, is responsible for about 2.5% of total provincial emissions. Municipal governments also contribute to climate change, and it is estimated that they are responsible for 0.9% of total provincial emissions - and that number is increasing.

Governments construct and/or occupy buildings. Governments purchase many goods and services. Governments make choices on investments and infrastructure. Governments educate and interact with people. As a result of the scale at which governments operate, they can have significant influence. A climate change strategy should include commitments by the government to make environmental advancements in its own activities.

Walk the Talk

If the private sector and public are expected to contribute to reducing GHGs by funding programs, paying new carbon taxes, adhering to new legislation, changing behaviours, etc., it is incumbent on the provincial government to commit to addressing GHG emissions related to its own operations.

Transportation

Action Recommended: Newfoundland and Labrador to replace fleet vehicles, as required, with EVs.

Action Recommended: Newfoundland and Labrador to support public sector employees who are adopting EVs by installing charging stations strategically on government properties.

Action Recommended: Newfoundland and Labrador to provide incentives and encouragement for public sector employees who use public transportation.

Building Fuels

Action Recommended: Newfoundland and Labrador to invest in electric retrofits, energy efficiency upgrades, and/or small scale renewable energy generation where public properties are using fossil fuels for heating purposes.

Action Recommended: Newfoundland and Labrador to develop partnerships or alternative plans where it is the tenant in a property which uses fossil fuels for heating purposes.

Waste

Action Recommended: Newfoundland and Labrador to ensure modern best practices relating to waste management are being employed on all public properties.

It is understood the province is facing a challenging fiscal situation. However, many of the recommendations proposed here provide cost savings – and thus value for the taxpayer – in the medium to long term.

Resiliency

An important component of a climate change strategy is how to manage the current and future effects GHGs are having on our environment.

The use of modern landscaping techniques on properties can protect against climate change, reduce the burden on local water management infrastructure (pipes, drains, pumps, etc.), contribute to bio-diversity, reduce energy costs, and be aesthetically superior.

How buildings are designed, constructed, and maintained will impact their resiliency to the effects of climate change and mitigate future costs associated with repairing damages.

Action Recommended: Newfoundland and Labrador to develop provincial regulations requiring the incorporation of climate change adaptation into the design and planning of infrastructure and homes and buildings.

As an island in the North Atlantic with an enormous coastline, Newfoundland faces adaptation challenges. Labrador, with its coastline and northern territory, is vulnerable. Both portions of the province feature rural and remote regions. The climate change solutions developed in this province will have applications worldwide and are exportable.

Action Recommended: Newfoundland and Labrador to support research, development, application, and commercialization of climate change adaptation technologies and processes as they relate to ocean, rural and remote, island, and northern settings.

Environmental Enforcement

There is very little inspection to ensure compliance with environmental legislation and conditions in permits, approvals, licenses, etc. As a result there is negligible incentive for firms to invest in environmental staff or environmental management systems to ensure conditions are satisfied, which limits the growth of aggregate environmental expertise in the province. This of course also increases the likelihood that conditions are not being met and that environmental damage is taking place. Additionally, the lack of enforcement slows the adoption of environmental practices that are needed to compete internationally or even nationally. These problems are prevalent in all stages of construction, resource development, and in the areas of water quality and waste management.

Action Recommended: Newfoundland and Labrador to make new investments, incorporating the latest available technologies, in environmental enforcement.

Energy Efficiency

Inefficient buildings and their operations represent a significant source of waste. This waste takes the form of escaping heat, excess electricity or energy consumption, inadequate diversion of ‘garbage’, and more. While in some cases investments are required to make buildings more efficient, the reduction of these sources of waste has proven to represent a significant cost savings; many of these investments can be paid for by operational savings after just a few short years. The government of Newfoundland and Labrador has many property assets throughout the province, representing a large footprint. Increased building efficiency could save taxpayers money while providing new opportunities for businesses engaged in green building activities.

Action Recommended: Newfoundland and Labrador to audit the energy consumption of the properties within its portfolio to benchmark and identify opportunities to reduce waste and increase efficiencies.

Action Recommended: Newfoundland and Labrador to work with industry to develop a program of retrofits and upgrades for public properties which: (1) provides value to the taxpayer in the form of reasonable payback periods and savings; and (2) maximizes the benefit to local firms.

Action Recommended: Newfoundland and Labrador to explore energy performance contracting, whereby payments for services are made over time based on actual energy savings.

Influencing Habits

Changing the Culture

It has been the environmental sector's experience that a resistance to change exists within many provincial government departments and agencies. This includes environmental protection and best practices. As government employees are decision makers and also represent a significant portion of the province's entire population, this must be addressed. The public sector must be open to new products, services, and processes. The status quo must be disrupted.

Action Recommended: Newfoundland and Labrador to engage in a comprehensive internal education program for public sector employees on the importance of the environment, best-practices, and the acceptance of new ideas to address environmental challenges.

The same resistance to change and lack of awareness of the importance of environmental protection and best practices exists outside of government.

Action Recommended: Newfoundland and Labrador to explore with its partners and decide on solutions to educate and create meaningful change in how the public interacts with the environment.

Connecting Local Products with Local Consumers

The use or consumption of local products and services has the dual benefit of decreasing environmental footprints (e.g. the displacement of goods which were produced, packaged, and transported great distances to reach Newfoundland and Labrador) and supporting the business activities of local firms.

An example is the use of wood products originating from resources harvested in the **province's** forests in building construction. The use of such local products in building can reduce the environmental footprint of construction, while bolstering local industry at the same time. This requires an increased awareness of such opportunities for property owners, developers, designers, and builders.

Action Recommended: Newfoundland and Labrador to provide targeted incentives and play a facilitating role where the use of local products can benefit local industry and reduce GHGs in the process.

An important **consideration is that of 'food security'.** A focus on food security considers the production, distribution, and access and food for a local population. From an environmental

perspective, a food security strategy protects the land, water, and air so localities can keep producing food. From an economic perspective, it supports supply chain development and sustainability by connecting local food with local people.

Action Recommended: Newfoundland and Labrador to invest in its food security by supporting the growth of established and new farms, and working with interested parties to develop appropriate venues to connect locally produced foods with the public.

Work with Other Governments

Newfoundland and Labrador does not operate in isolation of other public decision makers. As such, it must work with Federal and Municipal governments to achieve climate change strategy objectives.

Work with the Government of Canada

The new focus of the federal government on environment and clean technology offers enormous opportunity for both the Government of Newfoundland and Labrador and the private sector within the province. In addition to the collaborative actions already recommended, the following issues can be pursued.

Action Recommended: Newfoundland and Labrador to work closely with its federal government partners to identify areas for partnership in its provincial climate change strategy. The reduction of GHGs in this province help the Canadian government reach its international commitments.

Action Recommended: Newfoundland and Labrador to work closely with its federal government partners in addressing how its municipalities can adhere to national wastewater standards by prescribed timelines.

Action Recommended: Newfoundland and Labrador to ensure that GHG targets set for (or by) the province recognize that historical emissions data may not include any offshore oil and gas activities; targets which reference emissions levels before the emergence of this industry will present significant challenges for the province.

Build Capacity Within Municipalities

Just as with the provincial governments, the activities of municipalities can have significant environmental impacts. Municipalities construct and/or occupy buildings. Municipalities purchase many goods and services. Municipalities make choices on investments and infrastructure. Municipalities educate and interact with people – and are closest form of governance to the people. As a result of the scale at which municipalities collectively operate and their ‘distance’ to the people, they can have significant influence.

Unfortunately, most municipalities within Newfoundland and Labrador lack the human resources capacity to engage in the green economy. With the increased interest in environment and climate change at the federal level, new opportunities will arise for municipalities; however municipalities do not have the resources to seize these opportunities. The provincial government alone cannot provide the levels of support required.

Action Recommended: Newfoundland and Labrador to develop new regional constructs to support the capacity of municipalities to proactively engage in GHG reduction, climate change adaptation, and green economic development activities.

Conclusion

NEIA applauds the provincial government for embarking on the development of a new climate change strategy, and appreciates the opportunity to make a submission of recommendations.

It is the hope of NEIA's members and partners that the resulting strategy will provide targeted interventions that address the primary sources of GHGs in the province, reform of the province's electricity regulations, tools to empower local firms to contribute to the cause, and strong leadership on behalf of government.

Disincentives that penalize negative environmental choices should be balanced by incentives and supports which encourage and facilitate positive environmental choices – particularly for those who will have greater challenges adapting.

NEIA looks forward to discussing its recommendations in detail with its Government partners, and anticipates that the collaborative approach the Department of Environment and Conservation has taken to this point will continue as the development of the strategy enters its next phase.

submission to:

Newfoundland and Labrador's
Climate Change Consultations 2016

**Responsible Outdoor Lighting
Energy Consumption
And
Environmental Impact**

**Royal Astronomical Society of Canada
St. John's Centre
September 23, 2016**



www.stjohnsrasc.ca

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1. 0 Executive Summary

The purpose of outdoor lighting is to create a safe environment for persons that must be outside after dark and to ensure the security of property. All stakeholders in Newfoundland and Labrador win by correcting the problems of wasteful and inefficient outdoor lighting.

Newfoundland and Labrador has over 65,000 streetlights at an estimated energy consumption of 34 million kW hours (2015). The greenhouse gas emitted in the process of powering streetlights alone represents about 13,000 tonnes annually (non-baseload emission rate). The estimated annual operating cost is over \$3 million.

The International Dark Sky Association estimates that approximately 30% of the light is wasted from most existing street and roadway lighting through light shining where it serves no purpose: projected up into the sky, glaring into the eyes of drivers and pedestrians, and spilling into areas adjacent to roadways and properties. This unused light represents not only wasteful consumption of energy and needless operating costs for all levels of government, but it detracts from the quality of life of inhabitants (both domestic and wild) by:

- unnecessary greenhouse gas (GHG) emissions and air pollution from hydrocarbon powered generating stations, contributing to global climate change,
- impacts on the health of humans and wildlife by impacting bio-rhythms, sleep cycles etc as well as nocturnal animals which rely on darkness (ie. protection while foraging etc.)
- degraded safety and security from glare and light trespass, and
- washout of the starry night sky (part of our heritage) behind the reflected glow of wasted light.

The Royal Astronomical Society of Canada (St. John's Centre) strongly believes that the Province of Newfoundland and Labrador can, in part, achieve its goals of reducing energy consumption, improving energy efficiency, and reducing GHG emissions by responsibly evaluating and changing its lighting practices and by formulating policy for itself and for other levels of government. Further savings could follow from a similar policy governing commercial lighting. Such a strategy would yield collateral benefits such as energy cost savings, enhancement of quality of life, improvement in safety and security, and protection of the environment.

In addition to the aesthetic benefits of responsible lighting, Newfoundland and Labrador taxpayers can realize significant real dollar savings (over \$1M/yr) as well as a reduction in greenhouse gas emissions of about 4,000 tonnes per year, by only considering street lighting. These reductions would increase considerably if unnecessary street lights were removed or residential and commercial outdoor lighting were included.

This submission is in line with Newfoundland and Labrador's Climate Change Strategy, particularly with respect to the focal points "using less energy", "leading by example", "air quality", "government action", and "government intervention". The RASC is a society that deals with light. In pursuing their studies, astronomers—both professional and amateur—have

become expert at gathering and interpreting information from very faint and distant light sources. Naturally, astronomers notice the negative aspects of bad lighting long before anyone else, and have become champions of responsible outdoor lighting. In a sense, we have become “the canaries in the coal mine”.

2.0 The Royal Astronomical Society of Canada: Who Are We?

National Organization

The beginnings of The Royal Astronomical Society of Canada (RASC) go back to the middle of the 19th century. The Society was incorporated within the province of Ontario in 1890, received its Royal Charter from King Edward VII in 1903, and was federally incorporated in 1968. The National Office of the RASC is located at 136 Dupont Street in Toronto. The business office and library are also housed there.

The RASC is devoted to the advancement of astronomy and allied sciences, and its members are from many countries and from all walks of life. Its 5000+ members belong to one of 28 Centres located in cities across the country. The Society is unique in accepting both professional and amateur astronomers as members. The RASC is highly regarded internationally and many RASC members have received distinctions for their activities.

<http://www.rasc.ca/>

Local Organization

The St. John’s Centre of the RASC was established in the 1960s. Since that time, Centre members have been involved in many public education projects in the field of astronomy. Planetarium shows, public viewing sessions, school presentations, radio and television appearances, and public lectures are just some of the ways that the Centre and its members have contributed to the quality of life in Newfoundland and Labrador. The St. John’s Centre has an active Responsible Lighting Committee, who collectively worked on this submission.

www.stjohnsrasc.ca

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3.0 Introduction to Responsible Lighting

Proper outdoor lighting enhances the safety of citizens and ensures the security of property. Outdoor lighting is used to illuminate roadways, parking lots, yards, sidewalks, public meeting areas, work sites, homes, and building exteriors. Good lighting increases the visibility of hazards, improves the safety of citizens, and provides a sense of security in the community. Visibility can be compromised by light pollution, but this can be mitigated by responsible lighting practices.

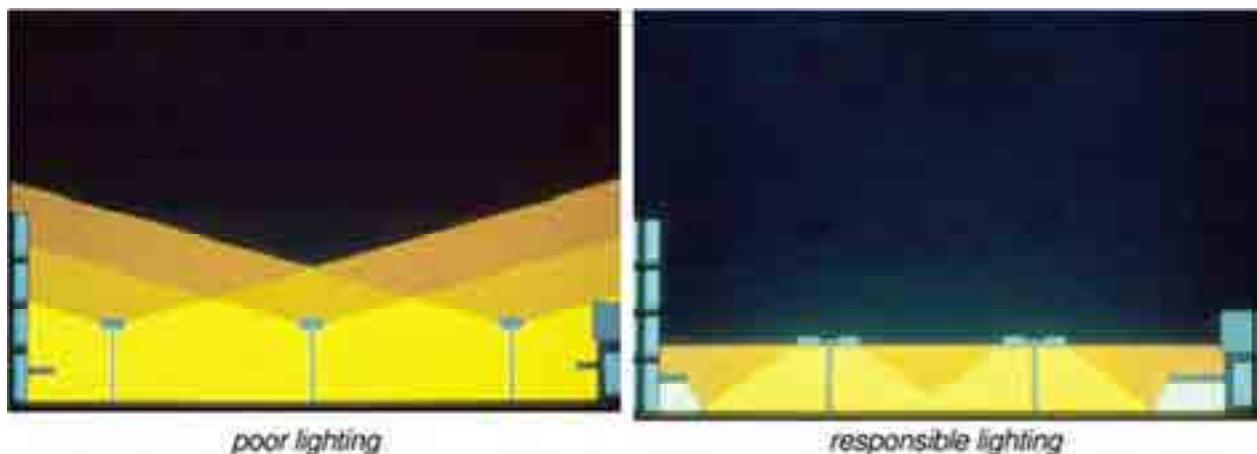
Definitions

Light Pollution is the combined effects of glare, light trespass, and sky glow. In some cases, light pollution can actually reduce the safety and security it is intended to provide, since light may be directed where it was not intended. The associated energy waste is costly in terms of public expenditures, quality of life, and the environment.

Glare is the visual discomfort resulting from insufficiently shielded light sources in the field of view. The light source itself hinders a person's ability to see details not directly illuminated by the light. This degrades safety and security. One should see the hazards, not the light source. Glare will become particularly important as our population ages.

Light Trespass is misdirected light that invades neighbouring property. It creates a nuisance by shining into bedroom windows and other areas. Light should be directed to where it is needed.

Sky Glow is produced by two phenomena. Natural sky glow is produced at night by emissions from gases high in our atmosphere. Artificial sky glow dominates the natural form in and around urban areas. It is caused by light scattered off dust and large air molecules over a city. This light was intended to illuminate the ground but, due to poor design, it is misdirected upward into the sky. This wastes energy and obliterates the view of the night sky.





Example before and after in Calgary 1

Responsible Lighting uses energy-efficient lighting fixtures which incorporate shielding and lenses to direct the light to where it is needed, thereby providing adequate illumination at lower power, resulting in a reduction in energy consumption, real dollar savings, and reduced environmental impact. It can also mean controlling lighting by using timer or motion-control devices that ensure lighting is only on when it is needed.

Discussion

- Reduction in energy consumption will contribute to reduction of GHG emissions, now acknowledged to be a significant factor in global climate change.
- Many types of outdoor lighting designed for advertising, security and visibility are actually wasteful, invasive and sources of disabling glare.
- Light trespass, the poor control of outdoor lighting which crosses property lines, detracts from our quality of life, and confuses the instinctive daily and seasonal cycles of humans, animals and plants.

- Public hazards have been created by the use of glaring, high wattage floodlighting along roadways and business parking lots, shining directly into a driver's line of sight.
- Public safety is also being compromised by commercial enterprises using excessive light levels to attract business. The eye's inability to adjust quickly to large swings from light to dark leaves a driver temporarily blind when exiting an overly lit business area at night. It is not uncommon to see businesses using three to six times the recognized lighting industry recommendations for site lighting.
- Because of light pollution, most citizens today have already lost much of the starry night sky behind the glow of wasted light, limiting their imaginations to the man-made boundaries around them.

4.0 Values and Principles

It is hoped that the following values and principles proposed for planning and policymaking with respect to responsible lighting are seen to be fully in line with the goals of Newfoundland and Labrador's Renewed Energy Strategy and will find a home in the Climate Change Action Plan.

Experiences in other parts of the world have shown that the primary drivers around the issue of responsible lighting fall into broad categories: Fiscal Responsibility, Environment Stewardship, Ensuring Safety & Security and more recently Environment and Health Implications.

Fiscal Responsibility

The Province of Newfoundland and Labrador and its municipalities have undertaken many initiatives to realize efficiencies and cost savings in their budgetary processes. Regardless of how much is done, there will continue to be pressure from many quarters to save every available dollar. Roads must be maintained, police and fire services must be expanded as the population grows and settlements spread, recreational facilities must be maintained, and so on. Real dollar savings can be achieved without compromising the effectiveness of lighting systems by simply re-evaluating and changing lighting practices. Municipalities that have already done so find they recoup the changeover cost through reduced energy costs within the first several years. The value the benefit earned can be multiplied by directing the revenue into alternate clean energy sources and the development of other energy-saving measures. Thus, implementing responsible lighting practices will produce net benefits in several areas affecting the quality of life in our province. These will be explored further.

All stakeholders in Newfoundland and Labrador win by correcting the problems of wasteful and inefficient outdoor lighting at night. Newfoundland and Labrador has approximately 65,000 streetlights at an estimated annual energy consumption of 34 million kW hours (2015). The greenhouse gas emitted in the process of powering this lighting represents 13,000 tonnes annually. The estimated annual operating cost is over \$3 million.

Approximately 30% of the light from outdoor lighting is wasted through light shining where it serves no purpose: projected up into the sky, glaring into the eyes of drivers and pedestrians, and spilling into areas adjacent to roadways and properties. By using lower wattage bulbs, lenses, and shielded reflectors, the electrical costs can be significantly lowered, while useful light intentionally reaches the place where it is needed. If the 30% of energy that is wasted by current street lighting practices were recovered, Newfoundland and Labrador taxpayers would realize significant real dollar savings as well as a reduction in greenhouse gas emissions of about 4,000 tonnes per year. These reductions would increase considerably if unnecessary street lights were removed or residential and commercial outdoor lighting were included.

Environmental Stewardship

It should no longer be necessary to repeat the facts and figures linking GHG emissions to climate change. In its most recent (2007) Synthesis Report, the International Panel on Climate Change states “Most of the observed increase in globally-averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations”. In very unlikely event that it were shown that there is no link between emissions and warming, there would still be excellent reasons for Newfoundland and Labradorians to reduce our reliance on non-renewable fossil fuels to conserve energy and to ensure a clean environment for our future.

Newfoundland and Labrador produces approximately 40000 tonnes of greenhouse gas emission annually. One of the significant contributors is electric power generation. Newfoundland and Labrador generates a some of its electrical energy from fossil fuels (Holyrood Power Plant, Gas Turbines, Diesel Generator in remote locations).

One of the largest of these power plants is located at Holyrood located just outside St. John's. There are also numerous diesel generating stations located in small communities throughout the province. When the plant at Holyrood is operating and burning Bunker “C” the exhaust plume is highly visible.

The City of Calgary estimates that their past efforts at responsible lighting through their EnviroSmart Streetlights program reduce carbon dioxide emissions by as much as 25,000 tonnes a year. By implementing a responsible outdoor lighting policy and by aiding other levels of government and commercial operations in complying, the Province of Newfoundland and Labrador has the opportunity to significantly reduce greenhouse gas emissions and other air pollutants, joining the international efforts to mitigate climate change and improve air quality.

Environment and Health Implications – Humans and Wildlife

Few are aware that outdoor lighting has become a form of pollution in its own right, with consequences just as serious as air and water pollution.

There are serious risks to human health as well as negative ecological impacts associated with light pollution in habitats within and adjacent to areas of human habitation. Life on Earth evolved over the eons in the presence of a daily light-dark cycle with a seasonally shifting photoperiod. Not surprisingly then, ecological processes are hard wired to a sharp contrast between the light of day and the dark of night. The bio-rhythms of all living things, including humans, depend on a significant day/night contrast. This contrast sets the internal biological clock that controls the ebb and flow of various hormones that help our bodies to recover from work, stress and injury. Nighttime lighting reduces the day/night contrast which confuses the internal clock and this can lead to sleep disorder problems that affect physical and mental health. Many hormones and cells in the immune system, including those that combat certain cancers, function only in total darkness.

Both the AMA (American Medical Association) and the WHO (World Health Organization) have recognized artificial light at night (ALAN) as a health risk. The AMA has recently determined that the current generation of LEDs being used or considered for replacing existing street lights increases the health risk of ALAN by a factor of 5. This is linked to the blue component (short wavelength/high energy) included in the overall waveband of light emitted by LEDs.

Ensuring Safety and Security

Everyone wants safety and security for their homes, businesses, and families. It is for these reasons that we light our streets, walkways, building entrances, parking lots and other outdoor areas. These goals may actually be compromised when we fail to make the correct selections for outdoor lighting fixtures.

The eye adapts to the brightest object in the field of view, and if this happens to be a glaring light fixture, all other areas with reduced illumination will appear dark or very hard to see. The best lighting reduces harmful glare by shielding the source so the illumination is directed only where needed: on the ground and not into your eyes! A rule of thumb: if you can see the bulb, the lighting fixture has poor design.

Lighting for crime prevention is achieved through uniform illumination at an appropriate intensity. It is the uniformity and coverage of the lighting that improves visual performance and contributes to safety and security, NOT the brightness! Properly adjusted and shielded sensor-activated lighting may be a good option to improve security for homes, buildings, and storage yards, reducing energy consumption and cost at the same time.

5.0 Action Plan

In order to develop options for consideration and action, the RASC St. John's Centre recommends that the Province of Newfoundland and Labrador allocate resources to study the cost, extent, and consequences of wasteful and inefficient outdoor lighting. Furthermore, a responsible lighting policy should be formulated and implemented for public, commercial, and residential outdoor lighting. Such a policy should include education and outreach.

For new installations, procuring and installing the newer, energy-efficient luminaires should be made mandatory. Existing lighting installations and illumination standards need to be audited to identify instances of over-lighting and these should be corrected.

In 2011 the provincial government released the “Charting Our Course: Climate Change Action Plan 2011” and the “Energy Efficiency Action Plan 2011”. Finding energy efficiencies was identified as a key, direct and immediate means of reducing greenhouse gas emissions. Specifically it defines energy efficiency as “using products or systems that use less energy to provide the same or better level of service than conventional products”. We believe that implementing responsible lighting using LED technology would achieve just that – same or better lighting requirements with less energy. In addition it could have the additional benefit of reducing harmful impact on our Health, reducing harmful effect on environment’s wildlife and improving safety of driver’s and comfort of the general public.

We also believe that some leadership at the provincial government level, possibly through the enactment of additional legislation may be required to help motivate municipalities, companies and the general public with these important initiatives.

Please note that our organization, RASC, is available for further consultation if additional advice or information is required.

6.0 Sources of Information

Because of the importance of responsible lighting to the healthy growth of our communities, here are some samples of the wealth of information available from accredited sources.

The Illuminating Engineering Society of North America

The IESNA is the recognized technical authority on illumination. For over ninety years its objective has been to communicate information on all aspects of good lighting practice to its members, to the lighting community, and to consumers through a variety of programs, publications, and services. The strength of the IESNA is its diversified membership:

engineers, architects, designers, educators, students, contractors, distributors, utility personnel, manufacturers, and scientists, all contributing to the mission of the Society: to advance

knowledge and disseminate information for the improvement of the lighted environment to the benefit of society.

The IESNA is a forum for the exchange of ideas and information and a vehicle for its members' professional development and recognition. Through its technical committees, with hundreds of qualified members from the lighting and user communities, the IESNA correlates research, investigations, and discussions to guide lighting experts and laypersons via consensus based lighting recommendations.

The Society publishes nearly 100 varied publications including recommended practices on a variety of applications, design guides, technical memoranda, and publications on energy management and lighting measurement. The Society, in addition, works cooperatively with related organizations on a variety of programs and in the production of jointly published documents and standards.

In addition, the Society publishes Lighting Design and Application (LD+A) and the Journal of the Illuminating Engineering Society (JIES). LD+A is a popular application-oriented monthly magazine. Every issue contains special feature articles and news of practical and innovative lighting layouts, systems, equipment and economics, and new of the industry.

The Journal contains technical papers, most of which are presented at the Society's Annual Conference. IESNA has a strong education program with basic and intermediate level courses and seminars offered through its Sections. The Society has two types of membership: individual and sustaining. Applications and current dues schedules are available upon request from the Membership Department. IESNA local, regional, and international meetings, conferences, symposia, seminars, workshops, and lighting exhibitions (LIGHTFAIR INTERNATIONAL) provide current information on the latest developments in illumination.

<http://www.iesna.org/>

The City of Calgary

In Calgary, Alberta, the streetlight system is the single largest electricity consumer. In response to rising energy costs, The City of Calgary initiated a series of pilot projects in 2000 to install lower-wattage, flat-lens, streetlight fixtures on several streets. The pilot projects successfully demonstrated that the retrofit fixtures use less energy and cut down on light pollution, while maintaining safe levels of lighting in Calgary neighborhoods.

In July 2001, City Council approved a proposal to retrofit most of the residential streetlights to lower-wattage, flat-lens fixtures over the following four to five years. By November 2004 the city retrofitted 37,000 street lights out of a total of 73,000. On residential roads the wattage was reduced from 200W to 100W and on collector roads it was reduced from 250W to 150W. This power reduction allows for energy savings of about 30-35%. This corresponds to a yearly energy

savings of 25,000 MWh and 25,000 fewer tonnes of GHG emissions. The yearly cost savings is \$1.7 Million.

Most recently, Calgary has embarked on a new program to replace 80,000 streetlights with LED versions to further realize operating/maintenance savings. The city expects to maintain lighting levels while improving the quality and lighting and reducing “light wastage” (reduces impact on environment). The city is also embracing use of “warmer” light (reduced blue/white colour) which also reduces impact on the environment.

<http://www.calgary.ca/Transportation/Roads/Pages/Traffic/Traffic-signals-and-streetlights/Energy-Efficient-LED-Lighting-Project.aspx>Light Pollution Awareness Website

Nova Scotia and the City of Halifax Regional Municipality

In 2007 Nova Scotia introduced legislation requiring all “inefficient” streetlights be replaced with more efficient technology by 2022. In 2011, the act was amended to include high pressure sodium streetlights as “inefficient”. High pressure sodium streetlights make up most of Newfoundland’s streetlight infrastructure. Implementation of Nova Scotia’s legislation has largely been left to municipalities and Halifax Regional Municipalities has been very progressive in this regard. An important element of their replacement program has been the use of “full cut-off” LED light fixtures, directional control of the light and remote programmability to maximize the use of the light generated and thus minimize the total energy required.

<http://www.halifax.ca/traffic/LED/#benefits>

Dark Sky Awareness Website

This site is a comprehensive reference on issues associated with light pollution. IT is a Cornerstone project of the IAU and UNESCO collaborating with the US National Optical Astronomy Observatory.

<http://www.darkskiesawareness.org/>

The International Dark Sky Association

The International Dark Sky Association was incorporated in 1988. IDA's goals are to be effective in stopping the adverse environmental impact on dark skies by building awareness of the problem of light pollution and of the solutions, and to educate everyone about the value and effectiveness of quality nighttime lighting. The IDA does not manufacture responsible lighting fixtures, but does evaluate and endorse commercial products that meet its criteria.

<http://www.darksky.org>

The Royal Astronomical Society of Canada

The mission of the Light Pollution Abatement Committee of the RASC is to reduce the levels of light pollution in urban and rural areas by advising Federal, Provincial and Municipal governments and departments along with business and concerned citizens to take action to reduce unnecessary glare, uplight and light trespass for the advancement of astronomy and the preservation of dark skies. The RASC maintains a web site with useful information concerning responsible lighting:

<http://www.rasc.ca/light-pollution-abatement>

7.0 Conclusions

The purpose of outdoor lighting is to create a safe environment for persons that must be outside after dark and to increase the security of property. It is also used to enhance the architecture of the urban nightscape. This is accomplished by illuminating hazards and by discouraging theft and vandalism as well as illuminating surfaces to produce a "sense of place" for motorists and pedestrians. These goals are met by selecting appropriate luminaires that minimize glare and provide well-defined illumination.

In addition to the aesthetic benefits of responsible lighting, Newfoundland and Labrador taxpayers can realize real dollar savings and a significant reduction in greenhouse gas emissions of about 4,000 tonnes per year. These reductions would increase considerably if unnecessary street lights were removed or residential and commercial outdoor lighting were included.

The Royal Astronomical Society of Canada (St. John's Centre) strongly believes that the Province of Newfoundland and Labrador can in part achieve its goals of reducing energy consumption, improving energy efficiency, and reducing greenhouse gas emissions by responsibly evaluating and changing its lighting practices and by formulating policy for itself and other levels of government. Further savings would follow from a similar policy governing commercial lighting. Such a strategy would yield collateral benefits such as energy cost savings, enhancement of quality of life, improvement of road and property safety, and protection of the environment.

The provincial governments 2011 "Charting our Course" action plan identified the improvement of energy efficiency as a key means of reducing GHG's. Here is an opportunity for the Province of Newfoundland and Labrador to be one of the leaders in Canada to recognize the environmental effects and waste of energy caused by poor lighting practices. The province can show leadership by legislating, implementing, and educating the public about responsible lighting.

Newfoundland and Labrador Federation of Labour



Submission to:

Climate Change Consultations for
Newfoundland and Labrador

September 2016

“We are the first generation to be able to ***end poverty*** and the last generation that can take steps to avoid the worst impacts of ***climate change***. Future generations will judge us harshly if we fail to uphold our moral and historical responsibilities.”

Ban Ki-moon
Secretary-General
United Nations

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Introduction

The Newfoundland and Labrador Federation of Labour (NLFL) represents 25 affiliated unions, 500 union locals and 65,000 working women and men in every sector of our economy, in every community in our Province.

For 75 years, we have worked to advance the rights of working people. We advocate for them on issues such as occupational health and safety, workers compensation, retirement security, equality, childcare, labour standards and worker rights.

The Federation also advocates for improved public services (such as healthcare and education), as well as public policy and laws that support our principles of social and economic justice – including the overall wellbeing and welfare of all citizens.

We have long advocated for measures in our society that enhance the quality of life for all Newfoundlanders and Labradorians, that enhance community, economic, social and environmental sustainability, ensuring we are well positioned to leave this province a much better place for the next generation. Our 2009 discussion document entitled “Good Jobs, Green Jobs: Exploring Opportunities for Newfoundland and Labrador” helped guide our advocacy work around investing in the green economy and the economic and social impacts that flow from such investments.

Historically in Newfoundland & Labrador, budgets have not been created with a vision of long-term sustainability; budgets have mostly focused on short-term fixes. They have not included funding, or programs to generate funds, for adequate climate change and other sustainability initiatives. The April 2016 budget took a small step in the right direction by adding a fuel tax (including gasoline, diesel, auto propane, marine fuel and aviation fuel), which will help encourage conservation

and reduce emissions, and raise a projected \$140 million per year. However, that was a very small step, and it was not designed to consider fairness and equality.

Climate change impacts are already being felt across Canada. Newfoundland and Labrador is projected to experience increases in temperatures, higher sea levels and increases in extreme weather. The only way toward a global solution is for individual jurisdictions to all play a part, including Newfoundland and Labrador.

Climate change and how we collectively address it is critical issue facing our province. Public policy, education, investment and leadership today will define our province tomorrow.

Growing the Green Economy

In order to obtain significant reductions in greenhouse gas emissions and support clean economic growth, the government will need to address emissions from the entire economy, including sectors of the economy that create significant emissions. As noted on Page 6 of the consultation discussion guide, large industry causes 36% of emissions, and transportation causes 34% of emissions, for a combined total of 70% of provincial emissions.

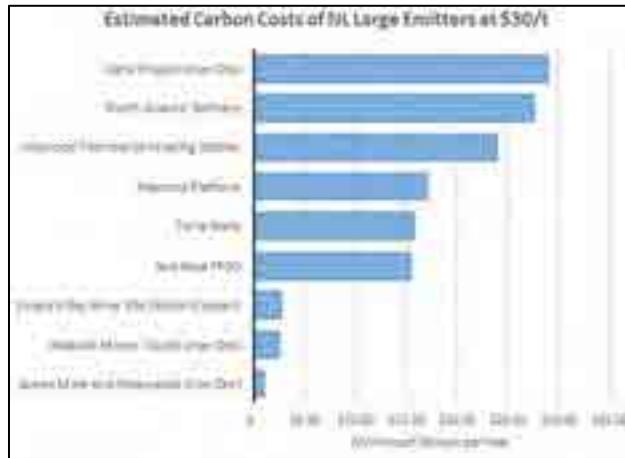
Any climate change strategy is going to be judged by how effectively it will reduce emissions in those key sectors, and across the entire economy. However, setting targets is not enough; the reductions will not come unless policy changes are actually put in place.

The most effective and efficient way to reduce emissions is through carbon pricing. Carbon pricing also generates significant revenues, which can be used to provide transfers and programs that improve the lives of lower-income and middle-income people - making them *better off than they were without the carbon pricing system*. Carbon pricing revenues can also be used to help reduce the deficit, and provide

funds for investment in green technologies, green jobs creation, energy efficiency, and similar initiatives.

Carbon pricing provides incentives for individuals, businesses, and communities to reduce their emissions. A carbon tax could easily raise in the order of \$200 million per year if similar to the systems found in British Columbia and Alberta (\$30 per tonne). We specifically request that the Government:

Government:



1. Adopt carbon pricing at a level that will achieve its greenhouse gas reduction targets;
 - a. Use the carbon pricing revenues to:
 - i. Increase transfers and programs for lower-income and middle-income people, making them at least as well off as they were before the carbon price was adopted;
 - ii. Support public transit improvements and energy efficiency retrofits for lower-income and middle-income households, which will help to boost affordability of living and create green jobs; and
 - iii. Provide support for low emissions sectors that provide high levels of employment.

Research that has been produced across the globe from organizations such as the ILO (International Labour Organization), the OECD, the United Nations and our own federal and provincial governments have all reached the same conclusion - investing in the green economy and moving towards a low-carbon economy to produce outcomes that include but are not limited to:

- Job creation;

- Gender equality;
- Increased competitiveness of economies and businesses...provincially and regionally; and
- Poverty reduction.

Finally in the context of Newfoundland and Labrador's fiscal challenges, investing in the green economy and the creation of green jobs will also contribute to greater economic diversification, create employment, positively contribute to regional and local economies and increase innovation as well as social capital. Areas such as energy efficiency upgrades to reduce heating costs, renewable energy development along with access to the provincial energy grid, underpinned by collaboratively built public policy can help offset the dire predictions outlined in the recent budget that forecast unemployment rates of over 19% into 2019/20.



A comprehensive green economy strategy focused on job creation, sustainability and diversification is badly needed in Newfoundland and Labrador; A strategy that will facilitate less focus on the black economy, more emphasis on the green economy, and similar to what we are seeing in other provincial jurisdictions. Additional recommendations include:

2. Promote and encourage innovation in green energy i.e. wind, solar, wave, small scale hydro etc. (This would require allowing producers of alternative energy the ability to sell into the provincial grid as the lack of access inhibits innovation);
3. Develop a green economy strategy focused on job creation, sustainability and diversification; and
4. Take a leadership position amongst provincial jurisdictions in the areas of legislation, public policy and programs related to growing the green economy.

Adapting To Climate Change

The number one way to minimize risks associated with climate change, especially to property and public health and safety, is to reduce the global emissions that cause climate change. The best cure is prevention. As noted above, this requires action on the part of all jurisdictions, including Newfoundland and Labrador. Secondary ways to reduce risk include the provision of key information, along with public infrastructure investments.

Newfoundland and Labrador is seeing increased impacts from climate change on an annual basis, some of which are highly visible. The longer we delay taking action that educates and changes the behaviour of the public means future generations will pay for our failure to act.

We specifically request that Government:

1. Adopt significant reduction targets, as well as effective policies that will result in the achievement of those targets;
2. Boost its provision of public information on the economic and social risks of climate change, noting in particular the risks to businesses, to elderly and infirm people, to people in rural areas, and to people with lower or fixed incomes;
3. Move towards enacting legislation and collaboratively built public policy focused on changing the mindset of the public, communities, business community and workplaces; and
4. Evaluate the risks to public infrastructure (such as schools, hospitals, and other public buildings), and to public programs and services (such as increased needs for lower income people), and make investments based on needs.

Government Leadership

Leadership, especially in an area such as climate change is critical for success. Climate change presents an opportunity to the existing administration to not only open up an untapped area of economic growth in the province, but also to move to the forefront in developing legislation, policies and programs that will open up opportunities for investment, create new employment, create more opportunities for business growth and enhance community sustainability. There are many examples of how government can take a leadership role in this area. More importantly, as we have seen in the past, usually when government sets the tone in a key policy area, local governments will also follow as well as private business, especially when the results are overwhelmingly positive and supported by the majority. We specifically request that the Government:

1. Increase its grants to low-income households, and extend the grants to middle-income households, for energy efficiency home retrofits.
2. Pass legislation to require automatic adoption of higher energy efficiency standards for buildings and products such as home appliances, where other provinces have adopted those standards.
3. Adopt a Newfoundland and Labrador first procurement policy, which would create new business opportunities in local markets, while reducing the distance that products need to travel, and thus the associated greenhouse gas emissions.
4. Adopt greenhouse gas emissions reduction targets for 2030 and 2040, and provide for a steady linear reduction in emissions over time, rather than a sharp reduction at a later point in time.

Conclusion

Newfoundland and Labrador is running out of time to develop and implement a progressive green economy strategy that can produce outcomes that will have long term impacts on economic growth and diversification, employment growth, gender equality, poverty reduction and sustainability. British Columbia (BC), which is at the forefront in Canada in building a carbon free economy, has many of the same

sectors that we have, albeit on a larger scale. However green economy initiatives implemented in BC have created significant employment growth across all sectors, produced positive GDP growth, brought economic diversification on a regional level and made significant contributions to the social well-being of the province overall.¹

The NLFL supports government's efforts to address climate change in the province, however it needs to be done in a collaborative way that engages key stakeholders. It needs to include a green jobs strategy, carbon-pricing that is fair and equitable, meaningful legislation with targets and must take into account poverty reduction and gender equality impacts.

¹ GROWING GREEN JOBS B.C.'s Green Economy UPDATE 2014 accessed September 15, 2016
http://www2.gov.bc.ca/assets/gov/environment/climate-change/policy-legislation-and-responses/the-green-economy/bc-green-economy_2014.pdf

Summary Of Key Recommendations

1. Adopt carbon pricing at a level that will achieve its greenhouse gas reduction targets;
2. Promote and encourage innovation in green energy (i.e. wind, solar, wave, small scale hydro etc.);
3. Develop a green economy strategy focused on job creation, sustainability and diversification;
4. Take a leadership position amongst provincial jurisdictions in the areas of legislation, public policy and programs related to growing the green economy;
5. Adopt significant reduction targets, as well as effective policies that will result in the achievement of those targets;
6. Boost the provision of public information on the economic and social risks of climate change, noting in particular the risks to businesses, to elderly and infirm people, to people in rural areas, and to people with lower or fixed incomes;
7. Move towards enacting legislation and collaboratively built public policy focused on changing the mindset of the public, communities, business community and workplaces;
8. Evaluate the risks to public infrastructure (such as schools, hospitals, and other public buildings), and to public programs and services (such as increased needs for lower income people), and make investments based on needs;
9. Increase grants to low-income households, and extend the grants to middle-income households for energy efficiency home retrofits;
10. Pass legislation to require automatic adoption of higher energy efficiency standards for buildings and products such as home appliances, where other provinces have adopted those standards;
11. Adopt a Newfoundland and Labrador first procurement policy, which would create new business opportunities in local markets, while reducing the distance that products need to travel, and thus the associated greenhouse gas emissions; and

12. Adopt greenhouse gas emissions reduction targets for 2030 and 2040, and provide for a steady linear reduction in emissions over time, rather than a sharp reduction at a later point in time.

/jr

Unifor 597



NUNATSIAVUT
Inuit Tapiri Iajinnunaq pikkutut
10 Years of Continuous Progress

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October 7, 2016

Re: NG written submission to GNL climate change 'consultation'

Dear Ms. Janes:

Thank you for speaking with us on September 22 regarding the Government of Newfoundland and Labrador's climate change consultations. Further to our letter of July 4, 2016, and as discussed during our teleconference it is unfortunate that officials with your office were unable to meet with the Nunatsiavut Government (NG) here in Nain, and engage directly with our communities. We feel that the ongoing and projected impacts of climate change within our region are sufficient to have warranted the opportunity for Nunatsiavummiut to share their perspectives, experiences, and concerns regarding climate change in a meaningful, in-person consultation. While we appreciate the informative conference call, this does not represent consultations with the Nunatsiavut Government nor Nunatsiavummiut.

During our teleconference there was consensus that climate change poses unique risks and challenges for our communities and Labrador Inuit Lands given our northern latitude and coastal locality, and that some of these impacts are already being felt. The ongoing and potential effects of climate change are especially concerning given the region's existing infrastructure deficit, housing crisis, socio-economic and health indicators, and the fact that all five communities are off-grid and diesel-dependent.

Considering the immense implications of climate change for our communities it is not sufficient to say that a public consultation was held in Happy Valley-Goose Bay, and that Nunatsiavummiut were able to share their views online; the cost and feasibility of travel to Happy Valley-Goose Bay is prohibitive, internet access and connectivity are very limited within Nunatsiavut, and English is a second language for many residents of our region. It is also disappointing that – to our knowledge – no bilateral meetings were held with Inuit-owned businesses or organizations. Furthermore, plans for our teleconference were only initiated on September 1 despite NG's letter of July 4 expressing interest in engaging in this process, and we were only made aware of the distinction between public and online consultations, and written submissions, during the teleconference which occurred late in your process.

The Nunatsiavut Government has identified and documented observations, challenges and solutions to climate change through various written submissions made to your government and through our own public resources. As a starting point, we encourage you to visit these documents:

- Letter from Nunatsiavut President Sarah Leo to Minister Perry Trimper on Proposed Greenhouse Gas Emissions Reduction Framework, dated April 12;
- SakKijânginnatuk Nunalik: The Sustainable Communities Initiative; and
- Nunatsiavut Energy Security Plan (forthcoming 2016)

Currently, the Muskrat Falls hydroelectric project is being promoted by the Province as a “clean and green” renewable energy project that is addressing the energy needs of Newfoundland and Labrador. None of the energy from the Lower Churchill Project will be coming to Nunatsiavut communities that solely rely on diesel generators. Additionally, a scientific research partnership from Memorial and Harvard University has shown through peer-reviewed literature that the Muskrat Falls project will significantly raise methylmercury levels in fish and seals, exposing thousands of people to this harmful neurotoxin. These exposures will exceed both Heath Canada and the US Environmental Protection Agency guidelines. It needs to be acknowledged that this project is not “clean and green”, it is not addressing any climate change issues for Nunatsiavut and will increase food insecurity levels for our beneficiaries.

We look forward to the opportunity to review the What We Heard Document, which we understand your office plans on releasing following the public consultation period. In addition, we request that our government and Nunatsiavummiut be properly consulted with once a draft of the Climate Change Strategy is prepared. In doing so, we hope to avoid a similar situation as this in the future.

Nakummek,



Carl McLean
Deputy Minister, Lands and Natural Resources
Nunatsiavut Government

Sierra Club Presentation



Re: Climate Change Recommendations to the Government of Newfoundland and Labrador

Fred Winsor
Conservation Chair
Sierra Club Canada
St. John's
Newfoundland
July 2016

E-mail: winsorf@nl.rogers.com

Policies and Programs to reduce Greenhouse Gas(GHG) emissions in Newfoundland and Labrador

1. Encourage the reduction of greenhouse gas emissions with the establishment of a carbon tax. All taxes collected from this source would be used for the following : retrofit dwellings, support low income and fixed income earners, assist large consumers of fossil fuels to reduce their consumption, improve public transit in the province, and expand renewable energy technologies.

There are well over 200,000 dwellings in this province. The aim of the retrofits will be to upgrade and certify that the houses are properly insulated and achieve a standard energy efficiency rating. Newfoundland and Labrador has a highly skilled labour force of

construction workers, plumbers, electricians, carpenters and engineers - all very capable of meeting this task

To ensure that high quality construction standards are maintained will require an appropriate Standardized Building Code for the province.

2. Institute net-metering - a system in which solar panels or other renewable energy generators are connected to a public-utility power grid and surplus power is transferred onto the grid. This would allow customers to offset the cost of power drawn from the utility.

Immediately follow this with programs to permit the local installation of green renewable energy technologies such as wind, solar, and bio-mass, combined with battery storage, to function effectively as power sources in our province. With such ample solar and wind energy supplies, we could displace much of our dependence on fossil fuels and reduce dependence on the Holyrood generating station and burning Bunker "C," diesel fuel, and furnace oil.

3. Establish an off-peak rates program to reduce electricity consumption during high use periods.

4. Encourage Atlantic Lotto to include Zero Energy, green homes among its prizes.

5. Establish downtown St. John's as a model pedestrian neighbourhood, promoting walking and healthy living using covered walkways and electric buses. This will also reduce carbon emissions and improve the health of our citizens.

6. Support local industrial greenhouse gas reduction initiatives

Several Newfoundland and Labrador inventors have developed various green energy technologies over the past few decades but have not succeeded in introducing them in the province. The development of an industrial strategy to support greenhouse gas reduction efforts from these and other local initiatives is needed.

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