



Pre-Budget Submission

A path to a Low-Carbon Economy that creates jobs and sustains families and communities

By Dr. Louise Comeau
Director of Climate Change and Energy Solutions

November 2016

Contents

Executive Summary	3
Where will the reductions come from?.....	4
CCNB’s Climate Action Plan	7
Electricity	7
Provincial Investment Plan	9
Provincial Policy Package.....	10
About the Conservation Council.....	13

Figures

Figure 1:	5
Figure 2:	6

Executive Summary

There is a strong scientific consensus that the climate is becoming unbalanced mostly because of human activity. We need policies and programs that are fair and cut waste by encouraging polluters to use clean energy and practice more sustainable agriculture and forestry. If we act together we can limit the risks to our health and communities from a more extreme climate and help each other thrive.

Climate change has no boundaries. It affects us all even if to varying degrees depending on how rich we are or where we live. The poor, the old and the sick will be hurt the most even here in Canada and New Brunswick, but especially in poorer nations. It affects us whether we contribute a lot or a little to the problem. And we all have a role in the solutions: as citizens, consumers, business and community leaders, policy makers, and elected representatives. As citizens, we can support the policies called for by the Conservation Council of New Brunswick to show governments and community leaders that we are ready to move forward. As consumers, we can support the transition to a low-carbon economy by redirecting our purchases to products that use less energy and help us transition to renewable energy. As business and community leaders, policy makers and government leaders we can collaborate to build social consensus so we do our fair share.

Government has asked for views on how to allocate revenue from a carbon price, one component of an overall climate action plan. Let's set a carbon price in context. New Brunswick needs to secure deep greenhouse gas emissions first to meet its regional commitment to 35% to 45% reductions below 1990 levels by 2030 and to decarbonization by 2050. Carbon pricing is an important tool the province can use to encourage less polluting choices. The province can choose to comply with the recently announced federal floor price that requires a minimum carbon price of \$10 by 2018 and rising by \$10 a year until at least 2022 (There is no reason to assume that this price would not continue to increase after 2022). Or, it can pursue a cap and trade regime, or combination of the two. Current and proposed carbon pricing levels in Canada are not high enough to secure the greenhouse gas emissions reductions required to meet our goals on their own. As a result, carbon pricing must be complemented by targeted spending, legislation and regulation.

The Conservation Council believes that revenue raised by Government through carbon pricing should be revenue-neutral to Government. Revenue neutral to Government implies that all revenue raised through carbon pricing is redirected to investments valued at an amount equal to the revenue raised. To ensure transparency, revenue should be directed toward greenhouse gas reduction purposes, established through legislation, with requirements for annual reporting of all revenues and expenditures. To further increase public confidence, carbon pricing revenue could be managed by a stand-alone Climate Fund, or directed to the Environmental Trust Fund. Regardless of the vehicle chosen, carbon pricing revenue should be directed toward the investments needed to support the shift in behaviours and decisions away from fossil fuel consumption and toward non-emitting or lower-emitting activities and investments.

There is potential as decarbonization takes hold to use carbon pricing revenue to support reductions in income taxes, but we caution against such an approach. The point of carbon pricing is to reduce pollution meaning that, over time, revenue should decline as pollution declines. What are the long-term implications of depending on carbon pricing for essential government revenue? The cautious approach is to direct carbon pricing revenue to the purpose it was raised, including ensuring that low-income and fixed-income people are protected from increases in prices and supported early in investing in energy efficiency retrofits of their homes. Reinvestment in the economy keeps transition costs lower and minimizes negative impacts on the economy.

Putting a price on carbon, then, is just one part of a comprehensive package of actions needed to make our economies and lifestyles less reliant on fossil fuel energy and unsustainable approaches in forestry and agriculture. To put the province on a pathway to a low-carbon economy that creates jobs and sustains families and communities, we need a comprehensive climate action plan that starts with, and is funded, by carbon pricing.

Climate Change is urgent as is the Province's need to create jobs and stimulate innovation. There is no reason why New Brunswick need wait until 2018 to announce its approach to carbon pricing. The Province should announce in the 2017 budget its carbon pricing plan with a commitment to implement it in 2017. In the next section, the Conservation Council summarizes its ideas for how the Province should use its carbon pricing revenue covering electricity, provincial investments, and government policy.

Where will the reductions come from?

The first place to look for emissions reduction potential is to look at where our emissions come from now. Figure 1 shows that electricity is a big part of the problem (as well as the solution!), followed by industry and transportation. Buildings relying on natural gas also have a contribution to make, as does cutting waste and making agriculture and forestry more sustainable. These numbers do not include the potential to increase absorption of carbon dioxide by increasing soil and forest cover. Figures 2 shows how New Brunswick stacks up compared to other provinces and territories, and where our emissions are expected to go from now until 2030.

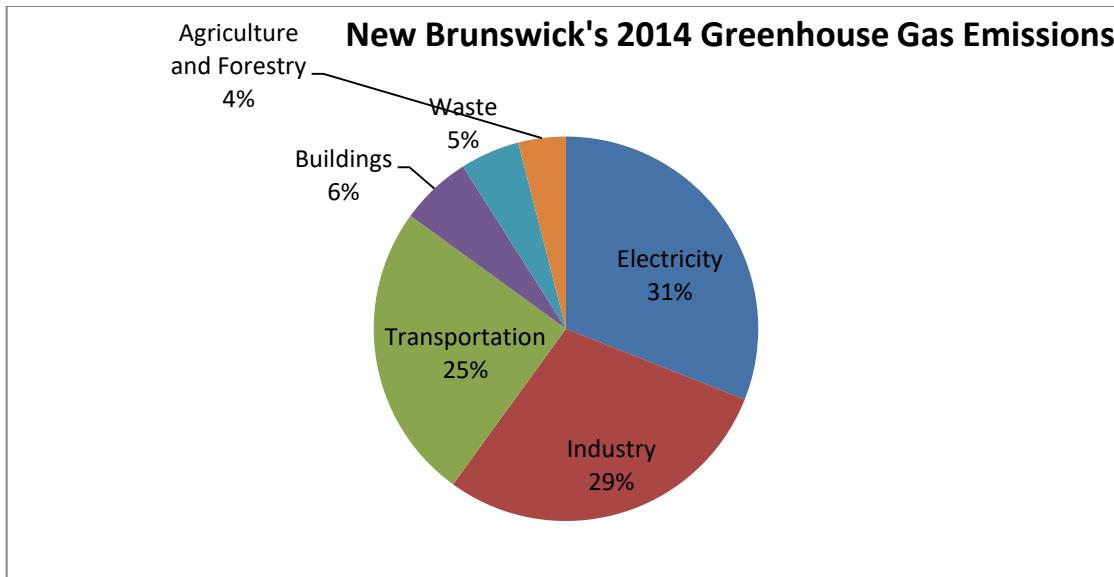


Figure 1:
New Brunswick's greenhouse gas emissions come from burning coal at the Belledune Generating station (2.8 million tonnes in 2014) and heavy oil at Coleson Cove (half a million tonnes) to make electricity; oil and natural gas to process natural resources and manufacture products in the industrial sector; and oil and diesel fuel to run vehicles, trucks and buses.¹

¹ http://www.ec.gc.ca/ges-ghg/donnees-data/index.cfm?do=results&lang=en&year=2014&gas=all&fac_name=Belledune&prov=all&city=&naics=all&submit=Submit; Environment Canada. (2016). National inventory report: Canada's greenhouse gas sources and sinks 1990 - 2014. Ottawa.

Per Capita by Province/Territory

TABLE A25: PROVINCIAL AND TERRITORIAL PER CAPITA GHG EMISSIONS: 2005 TO 2030 (T/CAPITA)

	2005	2013	2020	2030	Change 2005 to 2020	Change 2005 to 2030
Newfoundland and Labrador	20.1	16.4	17.7	15.0	-2.4	-5.1
Prince Edward Island	15.3	12.3	12.1	11.4	-3.2	-3.9
Nova Scotia	25.5	19.4	16.2	14.8	-9.3	-10.7
New Brunswick	27.5	20.8	22.4	22.2	-5.0	-5.3
Quebec	11.9	10.1	9.9	9.9	-2.0	-2.0
Ontario	16.8	12.6	11.8	11.5	-5.1	-5.4
Manitoba	17.5	16.9	15.9	15.2	-1.7	-2.3
Saskatchewan	70.0	67.6	63.7	57.6	-6.3	-12.3
Alberta	70.4	66.7	64.1	57.9	-6.3	-12.5
British Columbia	15.4	13.7	14.5	15.3	-0.8	-0.1
Yukon Territory	14.6	9.8	15.4	17.7	0.8	3.1
Northwest Territory	38.2	33.2	41.5	47.3	3.3	9.1
Nunavut	11.4	6.2	8.7	9.4	-2.7	-2.0
Canada	23.2	20.7	20.3	19.8	-2.9	-3.5

Note: Numbers may not sum to the total due to rounding.

Provincial/Territorial Emissions

TABLE A24: PROVINCIAL AND TERRITORIAL GHG EMISSIONS: 2005 TO 2030 (MT CO₂ EQ)

	2005	2013	2020	2030	Change 2005 to 2020	Change 2005 to 2030
Newfoundland and Labrador	10	9	9	8	-1	-3
Prince Edward Island	2	2	2	2	0	0
Nova Scotia	24	18	15	14	-9	-10
New Brunswick	21	16	17	16	-4	-4
Quebec	90	83	85	90	-6	0
Ontario	211	171	171	181	-40	-30
Manitoba	21	21	22	24	1	3
Saskatchewan	70	75	75	73	6	4
Alberta	234	267	297	320	63	86
British Columbia	64	63	72	83	7	18
Yukon Territory	0	0	1	1	0	0
Northwest Territory	2	1	2	2	0	0
Nunavut	0	0	0	0	0	0
Canada	749	726	768	815	18	66

Note: Numbers may not sum to the total due to rounding.

Figure 2:

Provincial per capita and total emissions are expected grow slightly to 2020 and remain flat to 2030 compared to 2013 emissions of 16 million tonnes (emissions were 15 million tonnes in 2014).²

²

At least 40% of the reductions we are looking for to meet our 2030 target should come from phasing out fossil fuels from the electricity system³, including coal phase-out like Ontario has already done and Alberta will do by 2030. Phasing out fossil fuels from the New Brunswick electricity system is a big challenge and one not to be taken lightly. The Conservation Council of New Brunswick takes seriously both climate change and the need for a reliable and sustainable electricity system that keeps bills reasonable for consumers.

Any talk of phasing out fossil fuels in the electricity system generally is met with the response that change will increase power rates. Low power rates encourage consumption and actually cost consumers more. Bloomberg, citing World Energy Council and International Energy Agency data, notes that German households pay an average monthly electricity bill of \$96.36, at a rate of 33.88 cents a kilowatt-hour and usage of 284.42 kilowatts. U.S. households, on the other hand, pay an average of \$111.95 a month, at a rate of 11.88 cents per kilowatt-hour and usage of 942.33 kilowatts. In Italy where the average monthly bill is \$65.99, the power rate is 28.84 cents per kilowatt-hour. In France, the monthly power bill is only \$75.64, at an average rate of 17.51 cents per kilowatt-hour⁴. Clearly, higher rates do not imply higher bills.

The key to lower bills is a comprehensive approach to conservation and energy efficiency that is part of an overall climate plan that benefits consumers and creates jobs while protecting the climate. We urge the Government of New Brunswick to lay the ground work for these investments in its 2017 budget.

CCNB's Climate Action Plan

We propose a three-part climate action plan covering electricity, provincial investments and government policy.

Electricity

The electricity program would be supported by investing a significant portion of any federal and carbon pricing revenue to generate greenhouse gas emission reductions as follows:

1. An economy-wide investment in energy efficiency through building retrofits in social and low-income housing, the residential, commercial/institutional/government (including municipal), and industrial sectors; and equipment and appliances. The goal would be to advance NB Power's Reduce and Shift Demand objective of 609 MW by 2038 to between 2020 and 2025⁵. NB Power, or an independent agency, should also be given an all fuels

³ If we assume 6.5 million tonnes of reduction (splitting the 6 to 7 Mt requirement down the middle) is required then 2.8 million tonnes which are from burning coal to make electricity contributes 40% to the overall goal; phasing out other fossil fuel generation would contribute a further 1.8 million tonnes.

⁴ <http://www.bloomberg.com/news/articles/2015-04-22/u-s-power-grid-s-2-trillion-upgrade-needs-european-efficiency>

⁵ <https://www.nbpower.com/media/102794/irpjuly2014-english.pdf>, p.128

mandate to invest in energy efficiency targeting electricity, natural gas and oil dependent buildings.

2. Phase out fossil fuels in electricity production, with coal phase out no later than 2030. Current federal regulations affecting coal plants require coal and coke-burning plants to achieve an emissions intensity standard of at least 420 grams of carbon dioxide equivalent/MWh⁶ within the 45-year economic life of a plant. The Conservation Council, along with health and environmental organizations across Canada, is urging that all coal plants be retired by 2030, in line with Alberta's commitment. This goal could be achieved by updating current federal regulations to further reduce the emissions intensity standard and to require the standard be achieved by 2030 or within the 40-year economic life of a plant, whichever comes first. Coal-fired generation should be replaced primarily with renewable energy. Our electricity sector should be fully zero emitting no later than 2050 (i.e., natural gas phase out).
3. Electrification of the New Brunswick economy using clean electricity. The province is already the second most electricity-intensive economy after Québec. We can build on this foundation to significantly accelerate investments in the Smart Grid (the Energy Internet) to give the electricity system the capacity it needs to significantly increase the supply of renewable energy (aiming for 100% renewable). The Smart Grid is central to managing a more distributed energy system, as well as providing load balancing services to Nova Scotia, PEI and New England. The electrification strategy, or roadmap, can build on work completed under the Atlantic Energy Gateway Initiative and take advantage of new federal support aimed at identifying opportunities for regional electricity cooperation⁷. Our electrification roadmap needs to be regionally focused, particularly because Nova Scotia will also need to phase out coal/fossil fuels, and include a regional and long-term system investment plan (i.e. modernizing and integrating regional transmission networks, as well as regional targets for renewable energy to replace the loss of fossil-fuel generation. Acceleration of Smart Grid investments could advance installation of additional renewable energy technologies along with installation of next generation meters, hot water heaters, and storage devices using telecommunications systems to manage a distributed load (including micro-grids; beyond what is already currently funded). Expanded regional investment in renewable energy would include accelerated solar rooftop targets. A stretch target for New Brunswick could be 200,000 kilowatts (kW) of cumulative installed commercial and residential solar power by 2025 (100,000 kW each for residential and commercial, grid connected and off-grid), with NB Power working with suppliers to develop

⁶ The level of emissions from a best-in-class natural gas generation in 2012, but which could be set lower in the updated regulation. Current average emissions intensity of coal plants is over 1,000 grams carbon dioxide equivalent/MWh

⁷ <http://www.acoa-apeca.gc.ca/eng/publications/ResearchStudies/Pages/Home.aspx#aeg>; Federal budget 2016 provided \$5 million over two years to engage provinces and utilities in assessing regional electricity cooperation opportunities

home equity loan and/or leasing programs, and power purchase agreements aimed at lowering payback periods from the current 13 to 15 years to between 5 and 10 years.⁸

4. Accelerated scale-up of electricity transportation infrastructure and incentives to increase the sale of electric plug-in and low-emission hybrid vehicles. Québec has a legislated target of putting 100,000 electric vehicles on the road by 2020: that's about 1.2% of the total fleet of over 8 million vehicles registered or about 16% of new car sales in 2020.⁹ A similar scheme for New Brunswick would set a goal of 10,000 electric vehicles on the road by 2020, with the number of electric car sales increasing each year so that by 2030 there would be 140,000 to 150,000 electric vehicles on the road.¹⁰ A vehicle driven 20,000 kilometres a year generates about 5 tons of greenhouse gases. A rough estimate of the emissions reduction potential is at least 500,000 tonnes.¹¹

Electricity-related investments would be complemented by a provincial investment plan.

Provincial Investment Plan

Province-wide investments using carbon pricing revenue could be in the form of tax incentives, grants, and/or loan guarantees to generate emissions reductions from transportation, industry, waste, agriculture, and forestry. Investments could include:

1. Industrial telecommunications technologies to support electrification and management of industrial processes (Industry 4.0 or the Internet of Things, Big Data management, Cloud-based services), as well as carbon capture technologies appropriate to industrial processes as part of an overall shift to closed-loop manufacturing. This effort should be integrated as appropriate with investment in Smart Grid¹².
2. Transportation investments to accelerate the sale of energy-efficient vehicles beyond what will occur naturally as a result of Canada's Corporate Average Fuel Economy standard. The federal regulation, which is in line with the US, Europe, Japan and China, requires new vehicles sold in 2025 to be twice as efficient as they are today. New Brunswick's goal would be to encourage consumers to purchase energy-efficient vehicles now to keep their operating costs low once the carbon pricing regime takes effect. Heavy trucks and transit vehicles should be a priority for programs aimed at more electric options, as well as biofuels.

⁸ <https://www.nbpower.com/media/169863/dsm-plan-2016-18.pdf>; represents stretch target for achievable potential

⁹ <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ58a-eng.htm>; assuming at 50,000 new car sales a month = 600,000 a year so 100,000 electric vehicles in 2020 would be equivalent to at least 16% of all new sales

¹⁰ Assuming at 5,000 new car sales a month or 60,000 a year that 16% would be 9600 vehicles so rounding to 10,000

¹¹ Assuming 2017: 1k, 2018: 2k, 2019: 3k, 2020: 4k (cumulative = 10k), 2021: 6k, 2022-2030: 8k rising to 20k/year for a total of 140,000 to 150,000 electric vehicles on the road and declining greenhouse gas reductions from fleet fuel economy standards.

<http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ58a-eng.htm>

¹² <http://www.mckinsey.com/business-functions/operations/our-insights/manufacturings-next-act>

3. Waste investments could include methane capture in landfills and wastewater treatment plants, composting programs to reduce future methane emissions from landfills, and improved recycling programs to reduce the use of virgin materials in manufacturing.
4. Agriculture investments could be tied to development of farm-management plans that include incentives for methane and fertilizer management (to reduce nitrous oxide emissions), installation of renewable energy, soil conservation through organic and mixed crop practices, as well as riparian zone protection. Additional initiatives could include:
 - a. Pasture management, including grazing strategies and mixed forage to reduce methane emissions and increase carbon sequestration and water retention.
 - b. Restore/protect wetlands, riparian buffers, shelterbelts/swales, increase tree cover to improve water quality (less fertilizer/pesticides in water bodies) and mitigate storm water and floods. Modify agricultural practices (e.g. pasture management), contributing to water quality improvement and storm water and flood management.
 - c. Mitigation technologies (methane digestors) and renewables (wind and solar) on agricultural lands. Biofuel development should avoid compromising food security by focusing on marginal lands and include a climate cost-benefit analysis to yield high-efficiency/high-value biofuels (e.g. limiting water and energy resource inputs, minimizing loss in energy conversion, etc.).
 - d. Increase understanding of, support for, and access to new markets (e.g. organic, foreign, and domestic).
5. The New Brunswick forest industry already relies extensively on biofuels for processing forest products like paper and lumber, but biofuels can also be used in other forest operations, including heavy equipment and vehicles. Changes to harvesting practices to better protect soil, combined with increased silviculture, including of hardwoods, would diversify our forests making them more resilient to climate change and generating an increase in carbon capture capacity through photosynthesis.

A provincial policy package also must be implemented for our climate action plan to be successful.

Provincial Policy Package

For New Brunswick to contribute its fair share to Canada's national objectives and meet our commitment to cutting emissions 35% to 45% below 1990 levels by 2030, additional Government actions are required. These include:

1. Making climate action legally required through passage of a Climate Action Act that establishes the provincial greenhouse gas emissions reduction target of 35 to 45% below 1990 levels by 2030, put in place the mechanisms needed to implement the climate action plan, including carbon pricing, industry targets, and fossil fuel phase-out from electricity production. This legislation would require entities generating more than 10,000 tonnes of greenhouse gas emissions per year to report those emissions. The current reporting

threshold is 50,000 tonnes. The change to a 10,000 tonne threshold is in line with legislated reporting requirements in Ontario, Québec and British Columbia.

2. Establishing an economy-wide carbon pricing regime (either through a carbon levy or cap and trade and/or hybrid). Regardless of the system chosen, the Climate Action Act should require that revenue from the levy or the sale of allowances be invested in low-or-zero emitting investments just as Ontario and Québec have done. Revenue could be placed in a Climate Fund or we could use the Province's Environmental Trust Fund) as Québec has done or legislation could establish investment requirement categories for Government spending as Ontario has done.
3. Reforming the Energy Utilities Board to remove barriers to reducing electricity demand through mechanisms that decouple NB Power revenue from throughput or volume sales through performance-based ratemaking that includes energy efficiency and conservation performance metrics.
4. Requiring lifecycle assessment of all infrastructure projects, including the impacts of climate change and more extreme weather and the implications for greenhouse gas emissions and biodiversity compared to other options, to find the best available solution. Green infrastructure, such as restoration and enhancement of natural features (e.g. wetlands, sloughs, swales, buffers) for water quality and flood/storm water mitigation, should be considered alongside traditional infrastructure solutions.
5. Including water conservation requirements in all investments in water and wastewater treatment facilities to save energy and to reduce emissions, including methane.
6. Adding low-carbon requirements to all government procurement.
7. Adopting the Energy Code for Buildings in the year it is released nationally and investing in training of inspectors to ensure adequate enforcement. The goal should be to:
 - a. Update national and provincial building codes for all new construction to meet nearly zero emission standards by 2025.
 - b. Require electric vehicle charging infrastructure and solar readiness
 - c. Establish a performance-based standard for retrofits, triggered by major renovation.
 - d. Incorporate the use of carbon sequestering or low-embodied carbon materials into building code requirements, and ensure that new construction and retrofitted buildings can withstand the changing climate by reflecting stronger winds and heavier rainfall in building codes.
 - e. Set best-in-class energy and water use standards for equipment and appliances.
 - f. Require home energy labeling and audits at point of sale, using the national EnerGuide protocol.
8. Investing in formal and informal education and training that demonstrates to New Brunswickers the causes of climate change, and the opportunities for all citizens to participate in solutions and that supports retraining and training of workers, particularly in the trades, including general contracting, electrical engineering, renewable energy technicians, software engineers (for Smart Grid and other electricity-related innovations). A

just transition for workers should be a priority with displaced energy and electricity sector workers the first in line for training and work in low-carbon economy jobs.

9. Adopting smart community land-use planning requirements and Smart City (integrated communications and telecommunications to manage infrastructure, transportation, and communications just like the Smart Grid manages the electricity internet and Industry 4.0 manages industrial processes more efficiently) to reduce climate pollution and to adapt to climate change impacts; encourage in our larger cities and towns investing in multi-modal transportation (encourage car sharing and shift to public transit, and active transportation like walking, cycling).
10. Assessing the potential of Property Assessed Clean Energy (PACE) financing to help home and business owners who are reluctant to invest in energy upgrades due to a lack of available capital¹³. PACE uses property taxes as a repayment vehicle for financing energy improvements from public or private third party capital pools. The property tax assessment placed on the property for the term of the PACE contract stays with the property until it is repaid. In the event of a default, the municipality can exercise a tax impact against the property. This makes property assessed financing programs extremely secure, with low default rates. Access criteria are often based on the property value and history of tax payments and are often independent of a participant's personal credit. Thousands of PACE projects have been financed across the US since the start of the first programs, and thirty states now have enabling legislation in place.
11. Increasing public education – both formal and informal – about how to prepare for more extreme weather, including supporting efforts to ensure all New Brunswickers take seriously the need to prepare by having on hand supplies sufficient to survive at least 72 hours and perhaps seven days.
12. Reforming disaster relief programs to require community adaptation to climate change and working with the insurance industry to develop shared cost mechanisms to manage the costs to the economy, our communities and our families from extreme weather events. The shift over the last 50 years to relying on imported food also makes us more vulnerable when systems break down. Programs to increase the availability of local, sustainably produced food are good for the economy and lower greenhouse gas emissions associated with transporting food over long distances.
13. Expanding investments in research and development related to the development of a bio-refining and bio-processing innovation hub in New Brunswick; Smart Grid; Smart Industry and Smart Cities, and potentially renewable energy component recycling (such as with solar panel components).

¹³ <http://www.pacenation.us/>

14. Developing a New Brunswick/Atlantic Canada roadmap for exports of clean technology, including clean electricity from our region.¹⁴

The Conservation Council of New Brunswick's Climate Action Plan is designed to generate the greenhouse gases reductions now that are needed to protect us from a more extreme climate. Our plan would achieve our environmental goal while stimulating our economy and creating long-term sustainable jobs to keep our young people and their families here in New Brunswick where they want to be.

Our Climate Action Plan is comprehensive because climate change is a big problem that requires big solutions. We need to act urgently to change how we use energy and manage our natural resources. The 2017 provincial budget is an opportunity to start the province down the pathway to sustainability.

For more information, contact: Louise Comeau, louise.comeau@conservationcouncil.ca; 506 238 0355

About the Conservation Council

As a partner in New Brunswick's Climate Action Plan and a RenewablesNB hub member, CCNB is committed to doing its part to help New Brunswick move to a 100 % renewable energy future. Join the Conservation Council of New Brunswick. Your local environmental organization is working on supporting the transition to clean energy in New Brunswick.

Contact the Conservation Council of New Brunswick

180 St. John St., Fredericton, NB E3B 4A9 Canada

Phone: 506 458-8747; Email info@conservationcouncil.ca Visit: conservationcouncil.ca

¹⁴ Clean technology refers to products, procedures, processes, and services that minimize the use of non-renewable resources and use resources in ways that reduce costs, waste, and pollution, leading to sustainable development. They include using renewable energy sources such as wind, solar, hydro, and geothermal, as well as low-carbon fuels; water management, and recycling technologies; waste management techniques; and environmentally friendly buildings and transportation.