



NEW BRUNSWICK
CLIMATE CHANGE
ACTION PLAN
2014-2020

New Brunswick Climate Change Action Plan 2014–2020

Province of New Brunswick
PO 6000, Fredericton NB E3B 5H1

2014.04

www.gnb.ca

ISBN 978-1-4605-0287-7 (print edition)
ISBN 978-1-4605-0288-4 (PDF: English)
ISBN 978-1-4605-0289-1 (PDF: French)

Printed in New Brunswick

9631



Introduction from Minister Danny Soucy



Climate change poses wide-reaching challenges for our communities, our natural environment and our economy. As recently experienced in our province, extreme weather events, such as intense precipitation, storm surges and mid-winter melting and jamming of river ice, can cause significant loss of property, damage to livelihoods and costs to human health. Although no single event can be fully attributed to climate change such trends are a clear indication that we are experiencing “new normals” in weather that can have costly impacts.

Building on the positive actions completed under the Province’s initial Climate Change Action Plan, New Brunswick’s renewed Action Plan for 2014–2020 is again directed toward taking action on two fronts: increasing our resilience to the impacts of a changing climate and reducing greenhouse gas emissions while at the same time encouraging sustainable economic growth. These ambitious goals can only be achieved by engaging and partnering with New Brunswickers across the province, recognizing that we each play an important role in tackling climate change.

I therefore urge you to get involved and help New Brunswick achieve the targets and commitments presented in this renewed Action Plan. Together we can leave a lasting legacy of prudent action.

A handwritten signature in dark ink, appearing to read 'D. Soucy'.

Honourable Danny Soucy
Minister of Environment and Local Government



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Executive Summary

In November 2013, Working Group I of the IPCC Fifth Assessment Report¹ confirmed that warming of the earth's climate system is unequivocal and many of the changes are unprecedented. The atmosphere and oceans have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases (GHG) have increased; human activity is warming the planet with severe consequences. New Brunswick is particularly vulnerable to these changes since most of the population lives near watercourses and along the coastline.

In 2007, the province introduced its first Climate Change Action Plan, and established GHG emissions reduction targets for 2012 and 2020. Preliminary data indicates the Province has achieved its 2012 target. GHG emissions declined by 17 per cent since 2005 while at the same time the economy grew by 19 per cent. Also during this period, the Province made inroads in improving its understanding of climate change impacts and enhancing its ability to adapt through investments in 12 in-depth risk and vulnerability assessments conducted in communities across the province.

Despite this early success, the impacts of climate change continue in the form of extreme rainfall events, accelerated coastal erosion, inland and coastal flooding, disease and pest migrations as well as some new agricultural opportunities. These effects highlight the need for aggressive and sustained actions to head-off the otherwise resulting costs, liabilities and losses facing New Brunswick's citizens and communities and take advantage of the opportunities in some sectors. The provincial economy is also vulnerable due to climate change. Being one of Canada's most carbon intensive (GHG/Gross Domestic Product) and export-driven provinces, New Brunswick's economic performance and reputation is at risk without substantive GHG reductions that enable our companies to successfully compete in the global low-carbon economy. New Brunswick is therefore committed to proactively managing risks and seizing opportunities in order to build its resilience and secure its prosperity in the face of the new realities of a changing climate.

This *Climate Change Action Plan 2014–2020* builds on the foundation laid down in 2007 and establishes 2020 and 2050 provincial GHG emissions reduction targets of 10 per cent below 1990 levels by 2020 and 75 to 85 per cent below 2001 levels by 2050. It is a long-term strategy achieved through key incremental actions, many described in the plan, while other actions will evolve during the next six years. The actions put forward in this plan will help New Brunswick become ***a province that is prepared for and resilient to the impacts of climate change and has reduced its greenhouse gas emissions while sustaining economic growth.***

1 IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change

Four goals, each supported by a set of key action areas, form the foundation of the Plan:

Goal 1: Enhanced resilience to the impacts of climate change

Key Action Areas:

- **Data Collection and Research Into Climate Change Impacts:** *Building further knowledge about climate change and its impacts, through data collection, monitoring and research.*
- **Risk and Opportunity Assessments:** *Assessments to identify, quantify and localize the risks and opportunities presented by a changing climate.*
- **Mainstreaming Adaptation:** *Ensuring that adaptation to climate change is incorporated into every-day decisions.*

Goal 2: Reduced greenhouse gas emissions with sustained economic growth

Key Action Areas:

- **Energy Efficiency:** *Taking advantage of cost-effective opportunities to advance improvements in energy efficiency.*
- **Renewable and Low Emission Energy:** *Continuing the transition towards a low-carbon economy through an increase in the generation, use and promotion of renewable and low emission energy and clean technology.*
- **Reduced Industrial Emissions:** *Enhancing the reporting and management of industrial GHG emissions in keeping with emerging regulatory requirements.*
- **Reduced Emissions from Transportation:** *Working with industry and other stakeholders to support low emission vehicles, low-carbon and alternative fuels and enhanced transportation system efficiencies.*
- **Reduced Emissions from Other Sectors:** *Working to facilitate continued reduction of GHG emissions from agriculture and waste management.*
- **Planning for Smart Growth:** *Promoting smart growth principles in community planning in order to support the development of sustainable, healthy, low-carbon communities.*

- **Research and Innovation:** *Encouraging research and innovation in low-carbon technologies and processes and taking advantage of economic opportunities offered by the emerging low-carbon economy.*
- **Biological Sequestering of Carbon:** *Encouraging the development of land-use management plans and practices that enhance carbon storage.*

Goal 3: Demonstrated leadership by the provincial government

Key Action Areas:

- **Public Buildings:** *Undertaking targeted energy efficiency retrofits and encouraging the use of cleaner fuels and renewable materials in public buildings.*
- **Vehicle Fleet and Employee Travel:** *Continuing efforts to reduce transportation-related GHG emissions from the public sector.*
- **Low Carbon Procurement:** *Promoting green and low carbon procurement of goods and services in the public sector.*
- **Inter-jurisdictional Partnerships:** *Continuing to participate in productive and collaborative relationships with other provinces, territories, states, regions and other levels of government, to share resources and information and promote accountability both within and outside New Brunswick's borders.*

Goal 4: Measured and reported progress

Key Actions:

- **Energy Use and Emissions Inventory:** *Tracking and reporting on energy use and GHG emissions by key sectors, including government.*
- **Reporting Progress:** *Reporting progress to demonstrate continual advancements in achieving the goals of this plan.*



Climate Change: What We Know Today

A Global Perspective

Human activity has dramatically increased emissions of greenhouse gases (GHGs) in the atmosphere. When fossil fuels are burned, gaseous emissions including carbon dioxide, methane and nitrous oxides, are released. These GHGs are accumulating in the atmosphere “thickening the blanket” of powerful heat-trapping gases (Figure 1). This affects global climate resulting in melting glaciers, rising sea levels, more extreme temperatures, and more intense storms.

Currently, global GHG emissions are on a path to increase average global temperatures by 3.5°C over the next 100 years. According to the World Bank, this scenario is “devastating”, and represents “new risks that threaten our ability to anticipate and plan for future adaptation needs.”²

The evidence for human-induced climate change is now unequivocal, with 97 per cent of climate scientists agreeing that it is happening and is caused by human activity.³

The path to substantially reducing GHG emissions is long and requires action by all citizens in all countries. Climate change cannot be reversed in the short term. Citizens of the world will therefore have to adapt to its impacts, while addressing GHG emissions.

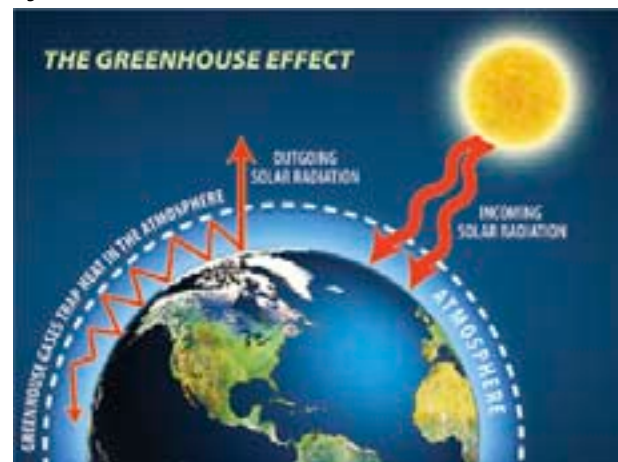
Climate Change in New Brunswick

In New Brunswick, the impacts of climate change have already begun to appear. Temperatures are rising, high intensity precipitation events are becoming more common, sea levels are rising and inland and coastal areas are experiencing greater rates of erosion and more frequent flooding. In other words, New Brunswick’s “normal” weather is no longer what it used to be, and more change is anticipated in the future.

² World Bank, 2012

³ National Academy of Sciences, 2010

Figure 1



Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.

IPCC Climate Change, 2013 Summary for Policy Makers

Warmer Temperatures

Average annual temperatures in New Brunswick have already increased by 1.5°C over the past century, with most of this warming, 1.1°C, taking place over the last 30 years. Temperatures have increased in all parts of the province.

Climate models predict that by the end of the century, New Brunswick’s average temperatures will increase by around a further 3 to 3.5°C. New Brunswick can expect longer and warmer summers and a shorter winter season. This will have repercussions for various sectors across the province, including recreation

and tourism, (e.g. reduced opportunities for winter activities), and agriculture, (e.g. a longer growing season and potential introduction of new pests and invasive species).

Warmer temperatures are expected to have other adverse effects such as an increased probability of ice jam flooding in New Brunswick rivers, stress on cold-water fish species, including the Atlantic salmon, and an increased risk of forest fires.

Changing Precipitation

Some communities in New Brunswick are experiencing more extreme storm and rainfall events, defined as 50 millimetres or more of rain over a 24 hour period. For example, in the 2000s, Fredericton and Moncton had more extreme rainfall events than during any other decade on record.



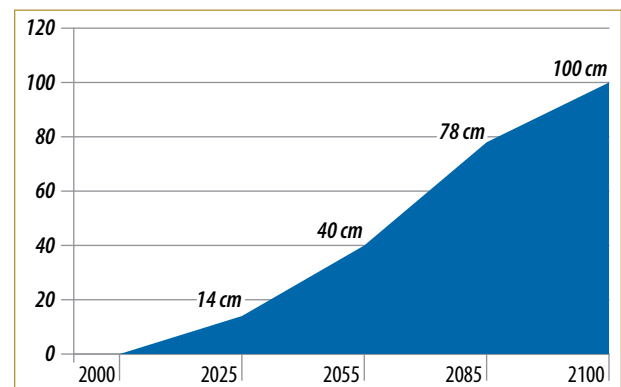
High water levels from extreme rainfall event washed out a road in Northampton, December 13–14, 2010.

Climate models project that in the future total precipitation will also increase, falling in fewer but more intense events with less snow and more rain across all parts of New Brunswick. More frequent flooding of low-lying areas, increased soil erosion and water contamination due to events, such as overflowing of municipal waste treatment systems, are potential outcomes.

Sea Level Rise

Sea level in New Brunswick is predicted to rise by about an additional one metre by the end of this century, leading to deeper and more frequent coastal flooding (Figure 2). Coastal areas also face the risk of greater rates of erosion, water well contamination by sea water and permanent loss of low-lying coastal areas. The loss of coastal land through erosion poses risks to homes and industries, native plant and animal species and ecosystems, and tourist sites such as the Hopewell Rocks. The annual cost of damage to homes due to coastal flooding is expected to reach \$730 to \$1,803 per New Brunswicker by 2050, higher than any of the other Atlantic Provinces and five times higher than the Canadian average.

Figure 2: Predicted Average Sea Level Rise in New Brunswick



Source: Daigle, 2011

Online resources

The New Brunswick climate change website:

www2.gnb.ca/content/gnb/en/departments/elg/environment/content/climate_change.html

A Historical Flood Information Database is accessible at: www.elgegl.gnb.ca/0001

Maps and Data on New Brunswick Climate Futures: www.acasamaps.com



Vision, Principles and Goals: 2014–2020

A Climate Action Vision for the Future

The actions put forward in New Brunswick’s Climate Change Action Plan 2014–2020 will help New Brunswick become *a province that is prepared for and resilient to the impacts of climate change and has reduced its greenhouse emissions while sustaining economic growth.*

Guiding Principles

The actions put forward in New Brunswick’s Climate Change Action Plan 2014–2020 recognize that:

- Decisions must be based on reliable and accurate information.
- Decisions must consider the implications of long-term climate predictions and their anticipated impacts on future generations.
- All New Brunswickers share the responsibility of responding to climate change and should therefore be informed and engaged.

Goals

The actions put forward in this climate change action plan will contribute to:

- **Goal 1: Enhanced resilience to the impacts of climate change**
- **Goal 2: Reduced greenhouse gas emissions with sustained economic growth**
- **Goal 3: Demonstrated leadership by the provincial government**
- **Goal 4: Measured and reported progress**

Actions for 2014–2020

Goal 1: Enhanced Resilience to the Impacts of Climate Change

GHG emissions remain in the atmosphere for many years after being released, so some degree of climate change is unavoidable. The effects of climate change in New Brunswick are already evident.

Meaningful progress toward a greater resilience to climate change has already been made. For example, through the federal-provincial Regional Adaptation Collaborative program, established to promote research in adaptation to climate change, 12 risk and vulnerability assessment studies were conducted in communities across New Brunswick addressing flooding, erosion, groundwater protection, and sea level rise. In addition, the New Brunswick Environmental Trust Fund has supported initiatives identifying areas vulnerable to floods and other climate-related impacts and engaging communities in adapting to the effects of climate change.



New Brunswick is committed to continuing its efforts to: achieve a greater understanding of climate-related impacts on the province; identify the risks and opportunities resulting from a changing climate; share knowledge and build capacity; mobilize decision-makers; and incorporate climate change adaptation into decision making.

Data Collection and Research into Climate Change Impacts

Building further knowledge about climate change and its impacts through data collection, monitoring and research.

The need to accurately measure climate change and track the resultant impacts in New Brunswick underlies the importance of maintaining a robust system of monitoring and information gathering that yields sound and reliable data. Because of the increasing risk of high water levels and erosion along coasts and rivers, information about the causes, frequency, severity and consequences of flooding is an important focus.

Key actions for 2014–2020 include:

- The Province will continue to strengthen research capabilities by establishing research priorities and seeking greater collaboration with academia and other jurisdictions, including the federal government.
- The Province will develop a more coordinated approach to tracking changes in the physical environment, including continued efforts to track climate change indicators such as temperature, precipitation, sea levels, and migration of pests and invasive species.
- In parallel with the development of a New Brunswick Flood Risk Reduction Strategy, the Province will work to renew and increase its existing set of flood hazard data and mapping, and ensure that these predictive tools incorporate the anticipated effects of climate change.

Risk and Opportunity Assessments

Assessments to identify and quantify the risks and opportunities presented by a changing climate.

Assessing the Province's vulnerabilities to climate change is a key first step toward enabling adaptation and building a more resilient and sustainable province.

Some of New Brunswick's resource-based industries draw on natural resources such as trees, fish and wildlife and are therefore inherently vulnerable to a changing climate. New Brunswick's built environment is also increasingly vulnerable, facing sea level rise, more frequent and intense rainfall events, and other extreme weather.

Climate change impacts on New Brunswick's natural environment include the migration of new pests and invasive species into the province, rising temperatures pushing the suitable ranges for fish and wildlife northward and to higher elevations, changing migration patterns of birds and other wildlife, and the changing effect of storms and forest fires on natural landscapes.

Key actions for 2014–2020 include:

- The Province will support the development of analytical and educational tools to help communities assess their risks and opportunities and prioritize their actions to adapt to climate change.
- The Province will examine existing funding arrangements with communities, to identify ways to encourage the preparation and implementation of local climate change adaptation plans.
- The Province will work with communities to evaluate vulnerabilities of municipal infrastructure and help ensure that facilities such as drinking water supplies, drainage systems, water and sewage treatment systems are resilient to climate change impacts, particularly extreme storms and flooding.
- The Province will continue to examine vulnerabilities of provincial infrastructure to a changing climate. For example, the Asset



Management System for provincial highways is used to determine optimal maintenance schedules. Continuing to incorporate updated climate data into this system will result in more efficient and better-timed investments in the province's infrastructure.

- Agricultural land and some communities in southeast New Brunswick are currently protected by dykes. As a result of sea level rise, some of these dykes are already at risk of overtopping. The Province will work to reform dyke land management and related legislation, in order to address this risk.
- The Province will continue to assess public health risks associated with a changing climate, including risks to drinking water quality and quantity, health impacts from extreme weather events, and the potential spread of vector-borne diseases.
- The Province will work to examine and identify the vulnerabilities of New Brunswick's natural environment (e.g., coastal features, plant and animal species and their habitats, etc.) to a changing climate.

Mainstreaming Adaptation

Ensuring that adaptation to climate change is incorporated into every-day decisions.

Provincial plans and processes, such as the *Coastal Areas Protection Policy*, already acknowledge the potential impacts of climate change. Incorporating information on the province's changing climate into a wider variety of plans and processes will help embed adaptation more comprehensively into province-wide decision-making.

While the provincial government has an important role to play in building New Brunswick's resilience to climate change, many of the most important decisions will be made at the local level. There is therefore an increasing need for the dissemination of important adaptation information and tools to individuals and groups around the province,

including community planners, property owners, local governments, First Nations, infrastructure owners, businesses, community and environmental groups and resource managers.

"Mainstreaming" adaptation simply means making the consideration of climate change impacts a regular part of "day to day" decisions. Examples include considering sea level rise in bridge design, and ensuring that buildings are located and constructed in such a way that the living space is located above predicted flood elevations.

Key actions for 2014–2020 include:

- Environmental Impact Assessment guidelines will be modified to include consideration of climate impacts on projects in addition to GHG emissions management.
- The Province will work with municipalities and Regional Service Commissions to help ensure that community land-use planning activities consider anticipated climate change impacts.
- The Province will continue to work with First Nations to share information, tools and guidance about adapting to a changing climate.
- The Province will integrate long-term climate change considerations into the management of provincial natural resources, such as Crown forests, provincial parks and Protected Natural Areas.
- The Province will integrate climate change considerations into its planning, design, maintenance and replacement processes for infrastructure and encourage others to do the same.
- The Province will continue to foster collaboration amongst government departments on climate change through its Interdepartmental Committee on Climate Change.

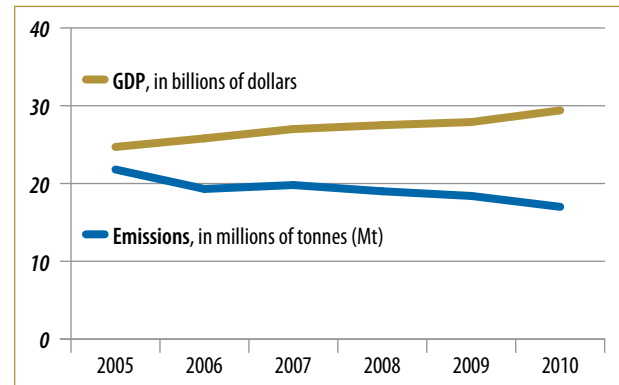
Goal 2: Reduced Greenhouse Gas Emissions with Sustained Economic Growth

New Brunswick's economy faces challenges due to its high "carbon intensity". In other words, the province consumes a relatively large amount of energy per dollar of economic production, and despite recent progress, much of the energy New Brunswick uses still comes from refined petroleum products. With the transition to a lower carbon economy well on its way, people around the world are making significant changes to the way they do business. As a province that exports much of what it produces, New Brunswick's reputation and real performance in climate change may affect its trade competitiveness in international markets.



Any successful program of action on climate change must therefore support two objectives: reducing greenhouse gas emissions and maintaining economic growth. This means that "carbon productivity", the amount of Gross Domestic Product (GDP) produced per unit of CO₂ emitted (Figure 3), must increase. For example, natural gas can play a key role by replacing more carbon-intensive energy such as fuel oil and coal, just as renewable energy can replace carbon energy sources. Finding the balance between reducing GHG emissions and continued economic growth is critical. By boosting its economic activity for each unit of carbon emitted, the province can enhance its competitiveness in the global marketplace as it transitions towards a lower carbon economy.

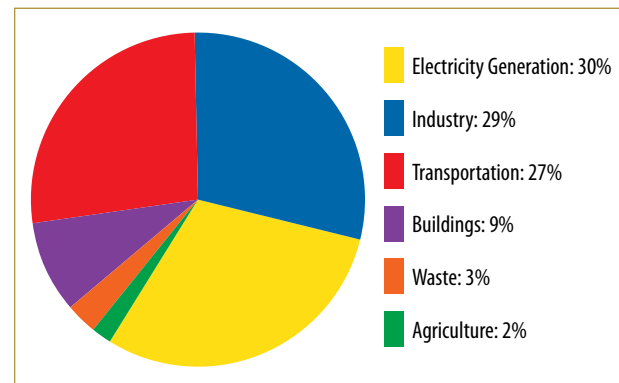
Figure 3: GHG Emissions versus GDP for New Brunswick



Source: Statistics Canada; Environment Canada

Between 2005 and 2010, New Brunswick's GHG emissions declined by 17 per cent, while the province's economy grew by 19 per cent. In 2011, New Brunswick emitted 18.6 million tonnes (Mt) of CO₂ equivalent (Figure 4); the third highest per capita emissions in Canada after Saskatchewan and Alberta. Electricity generation, large industrial emitters and transportation are the three main contributors to provincial GHG emissions.

Figure 4: New Brunswick GHG Emissions in 2011



To do its part under the Conference of New England Governors and Eastern Canadian Premiers (NEG-ECP) 2013 *Climate Change Action Plan*, New Brunswick has committed to achieving GHG reduction targets of:

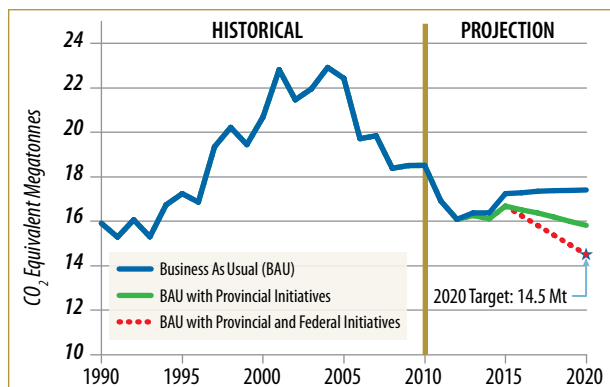
- 10 per cent below 1990 levels by 2020; and
- 75–85 per cent below 2001 levels by 2050.

New Brunswick's GHG emissions have decreased significantly over the past decade. While current



actions are projected to stabilize GHG emissions (Figure 5), it is clear that additional actions must be taken in order for New Brunswick to meet its regional NEG-ECP commitments while creating new economic opportunities. Areas of focus include energy efficiency, cleaner energy, reduced emissions (from industry, transportation, waste management and agriculture), research and innovation, and carbon sequestration.

Figure 5: Greenhouse Gas Emissions and Target



Source: Environment Canada, Climate Change Secretariat

Energy Efficiency

Taking advantage of cost-effective opportunities to advance improvements in energy efficiency.

The cleanest and cheapest energy is the energy we don't use through efficiency measures. Opportunities still exist to reduce energy waste and get more value from the energy the province produces and buys. Investments made within the province in energy efficiency are a sensible and attractive alternative to buying imported energy. The Province is working to improve New Brunswick's energy efficiency, thereby reducing GHG emissions and energy costs.

Key actions for 2014–2020 include:

- **NB Power and municipal electric utilities, in partnership with the Province, will develop an Electricity Efficiency Plan as described in the NB Energy Blueprint. This plan will be implemented in phases beginning in 2013 and will boost investment to enhance the efficiency of homes, businesses and industries. Phase 1 will provide customers with efficiency and demand side**

management products. Phase 2 will integrate Smart Grid Technology and innovation into the Plan.

- **The Province will continue its commitment to advance energy efficiency standards for new and renovated residential and commercial building construction by phasing in the adoption of national standards. In addition, energy efficiency will be a consideration in project assessment under the Built Heritage Programs.**

Demand Side Management (DSM) is used by energy utilities to help customers to reduce their energy consumption and to shift the timing of demand away from peak periods. DSM methods include education and awareness, incentive programs and innovative rate structures.

A smart grid is created by adding monitoring, analysis, control, and communication capabilities to an electrical distribution system in order to maximize efficiency and reduce consumption.

Renewable and Low Emission Energy

Continuing the transition towards a low-carbon economy through an increase in the generation, use and promotion of renewable and low emission energy and clean technology.

New Brunswickers can be proud of the fact that, on average, 60 to 70 per cent of the province's electricity comes from renewable or emission-free sources. The 2011 Energy Blueprint increased the Province's commitment by setting a target of 75 per cent of electricity demand to be met with renewable or emissions-free sources by 2020.

New Brunswick is endowed with a wealth of renewable energy sources (hydro, biomass, wind and solar), which can offer an array of local benefits for sustainable economic development including lower emissions. For example, the use of domestic, wood-based biomass such as wood pellets, offers direct and

indirect economic development opportunities, while providing a low-emission, affordable alternative to oil and electric heating. The *New Brunswick Energy Blueprint* (2011) commits the Province to developing and implementing supporting policies to optimize the energy output from wood based biomass resources with a specific focus on pellets. The Province has also developed a *Value-added Wood Sector Strategy 2012–2016* that includes the objective of promoting the development of green energy projects that use wood-based biomass.

Domestic natural gas plays a key role in low emission energy production by replacing energy sources that emit more GHG emissions when used, such as heavy fuel oil and coal. Domestic production will also help ensure that energy users who have already shifted to natural gas will continue to have access to a stable and cost effective supply. Because natural gas can be used in a range of fuel-efficient, flexible and scalable applications, it is a natural partner for renewable energy in a low-carbon future.

Key actions for 2014–2020 include:

- Under the *Electricity Act*, the Renewable Portfolio Standard will require NB Power to source 40 percent of in-province electricity sales by 2020 from renewable sources, by increasing renewable energy generation and by reducing demand through efficiency measures.
- NB Power, in partnership with the Province, will review its renewable energy programs, such as embedded generation and net metering, in order to ensure programs continue to support individual and community-based renewable electricity generation while maintaining low electricity rates for New Brunswickers.
- The Province will continue to encourage the involvement of local communities and First Nations in small scale renewable projects such as wind, solar, bio-energy, small scale hydro and other emerging energy technologies.
- Through the *Value-added Wood Sector Strategy 2012–2016*, and in keeping with the *New Brunswick Energy Blueprint*, the Province will seek to develop policies that encourage the use

of renewable energy technologies, including biomass heating and combined heat and power systems in residential, commercial and public sector buildings across the province.

Reduced Industrial Emissions

Enhancing the reporting and management of industrial GHG emissions in keeping with emerging regulatory requirements.

Industrial facilities and power plants contribute approximately 60 per cent of the province's GHG emissions. Currently, emitters producing at least 50 kilotonnes of carbon dioxide equivalent units each year are required to report their GHG emissions to the federal government. Some provinces require lower thresholds for reporting.⁴

The federal government is developing GHG emissions regulations for industry on a sector-by-sector basis. Regulations for coal-fired electricity generation are in place; and regulations for several other sectors including oil and gas, and pulp and paper are forthcoming. Several provinces are exploring the option of achieving equivalent outcomes to federal GHG emissions regulations through provincial measures.

Key actions for 2014–2020 include:

- The Province of New Brunswick will work with high emission industries, including the oil and gas sector, to require, and where possible, harmonize the reporting of their GHG emissions.
- Furthermore, the Province will develop GHG management plan guidelines for adoption by industry that integrate energy efficiency and GHG emissions reduction into their operations.
- The Province will continue to work with the federal government as well as the other provinces and territories to ensure that the regulation of industrial GHG emissions is effective in reducing emissions and results in fair and equitable outcomes for New Brunswick's industrial emitters.

⁴ Nova Scotia, Quebec and British Columbia's GHG reporting thresholds are 10 kt, while Ontario's is 25 kt.



Reduced Emissions from Transportation

Working with industry and other stakeholders to support low emission vehicles, low-carbon and alternative fuels and enhanced transportation system efficiencies.

Transportation-related emissions contribute about 30 per cent of all GHG emissions in the province. In order to reduce these emissions, a combination of strategies and programs are needed in three broad areas: 1) vehicle technologies and efficiencies; 2) vehicle fuels; and 3) transportation system efficiencies, including transportation modes and land use patterns that influence transportation demand. This three-tiered approach is the basis of the *New England Governors and Eastern Canadian Premiers Transportation and Air Quality Action Plan 2013–2020*.

The market for alternative fuel vehicles, particularly electric vehicles (EVs) and hybrids, is growing rapidly across Canada. These vehicles offer the environmental benefits of producing lower GHG emissions and air pollution as well as economic benefits such as lower fuel costs and independence from fluctuating gasoline prices. Since the majority of the province's electricity comes from low emission or non-emitting sources, the environmental benefits of switching to electricity-fuelled vehicles in New Brunswick are significant. In addition, most EVs can be charged during off-peak night-time hours, when electricity is generated primarily from renewable sources such as hydro and wind.

Key actions for 2014–2020 include:

- Under the guidance of the *Electric Vehicle Advisory Group*, NB Power will undertake a series of pilot projects and technical demonstrations. These include education of drivers and automobile dealers, reviews of provincial and municipal fleets to determine opportunities to incorporate EVs, potential linkages with the Smart Grid, and consideration of options favourable to electric vehicle owners who recharge their batteries during off-peak times.
- In the freight sector, the Province will promote a shift towards the use of natural gas in medium and heavy-duty vehicles, where appropriate,

by identifying and addressing barriers to using natural gas, supporting convenient refuelling opportunities, and promoting education about natural gas vehicle technology.

- The Province will work with industry, shippers and other stakeholders to identify opportunities and partnerships to facilitate multi-modal transportation aimed at improving trip efficiencies and reducing GHG emissions.
- The Province will work with its industrial and regional partners toward continuing improvements in the fuel efficiency of freight vehicles, including facilitating implementation of fuel saving technologies and addressing any regulatory barriers to implementation.

Canada's federal vehicle emission standards were amended in 2012 and 2013 to harmonize with those of the US, including California, which has long been a global leader in addressing climate change. Canada's amended standards apply to all vehicles, from passenger cars to heavy-duty trucks, requiring any sold for use in Canada to meet increasingly stringent GHG emission standards.

Reduced Emissions from Other Sectors

Working to facilitate continued reduction of GHG emissions from agriculture and waste management operations.

The majority of GHG emissions in New Brunswick result from the burning of fossil fuels for energy generation, transportation and industry. Other GHG emissions are caused by chemical and biological reactions, including those released from, soil, fertilizers, livestock and the decomposition of waste.

All six of New Brunswick's regional landfills are either equipped with landfill gas management systems or are in the process of having them installed. This means that the methane generated from the decomposition of the organic waste can be captured and used to

generate electricity. Additional opportunities for GHG emission reduction are available in both the waste management and the agricultural sectors.

Key actions for 2014–2020 include:

- The Province will continue to encourage and improve the capture of landfill gas and its use for generating electricity and will also encourage the diversion of waste from landfills, through recycling and composting, where economically feasible and environmentally appropriate.
- The Province will continue to provide information on sustainable farming practices, including nutrient management planning to help ensure responsible application of fertilizers and manure.

Planning for Smart Growth

Promoting smart growth principles in community planning in order to support the development of sustainable, healthy, low-carbon communities.

Smart growth means development that is concentrated and compact, incorporating mixed-use land development and providing opportunities for alternative modes of transportation such as walking, bicycling and public transit. Community planning using smart growth principles can be a powerful tool for creating sustainable, healthy, energy-efficient, low-carbon communities.

Key actions for 2014–2020 include:

- The Province will continue to promote conservation design principles by identifying appropriate tools and resources, including land-use planning.
- Working with municipal and regional planning authorities, the Province will identify and remove barriers to sustainable community design and will also offer resources, guidance and training opportunities in smart growth principles.
- The Province will continue to support the repurposing of heritage buildings in keeping with smart growth development principles.

Research and Innovation

Encouraging research and innovation in low-carbon technologies and processes and taking advantage of economic opportunities offered by the emerging low-carbon economy.

Technological innovations are critical in driving increases in productivity. Despite a growing clean technology sector, Canada currently faces challenges in low-carbon innovation particularly with respect to its commercialization. The New Brunswick Innovation Foundation (NBIF) is a provincial, not-for-profit corporation that invests in promising industries and research. Energy and the environment, including clean, alternative energy and energy efficiency-enhancing technologies, is one of the focus areas for investment. Examples of previous investments in low-carbon innovation include support for commercializing a process for removing carbon from natural gas, and investment aimed at developing a technology to lower solar cell manufacturing costs. The NBIF also administers a Research Innovation Fund that links researchers with businesses in order to create new products and services and provide access to new markets.

Key actions for 2014–2020 include:

- In keeping with “Strategies for Innovation,” the Province will enhance its collaboration with academic and business partners to facilitate access to NBIF and other investment support.

Biological Sequestering of Carbon

Encouraging the development of land-use management plans and practices that enhance carbon storage.

Plants absorb carbon dioxide (CO₂) from the atmosphere during photosynthesis. While some CO₂ is released back to the atmosphere when plants die, a significant amount of carbon can be stored or “sequestered” in soils, organic matter and vegetation (e.g., trees, wetlands, agricultural crops, marine algae, etc.). Sequestering CO₂ can be an important method of mitigating climate change, by keeping some CO₂ out of the atmosphere. Land-use management decisions



applied to forests and agricultural land can either add to or reduce carbon storage. For example, natural carbon sequestration can be enhanced by measures such as conservation tillage (leaving crop residue on farm fields), conversion of marginal agricultural lands back to forests, forest restoration and urban forestry.

Key actions for 2014–2020 include:

- The Province will continue work with partner agencies to assess opportunities for forest and agricultural carbon sequestration, as part of the development and promotion of sustainable forest programs and beneficial management practices in agriculture.
- Working with municipal and regional planning authorities, and through strategies such as Smart Growth Planning and other planning policy initiatives, the Province will encourage restoration, preservation and management of green spaces and urban forests.

Goal 3: Demonstrated Leadership by the Provincial Government

The Province of New Brunswick owns and operates approximately 1,000 buildings and 4,500 vehicles. These assets produce around 400,000 tonnes of annual GHG emissions, with energy costs of \$85 million each year. As a major consumer of energy in the province, government is committed to showing leadership by continuing the progress it has already made in reducing the environmental and climate change impact of the public sector's operations.



Solar panels installed at Mount Carleton Provincial Park.

Public Buildings

Undertaking targeted energy efficiency retrofits and encouraging the use of cleaner fuels and renewable materials in public buildings.

The Province's 2010 *Green Building Policy* sets high environmental standards for the construction and refurbishment of all buildings that receive public funding. Energy audits have been completed in schools, hospitals and provincial parks across the province; and up to 50 public buildings will be considered for conversion to cleaner energy over the next several years. Biomass and natural gas energy systems have already been installed in numerous public buildings.

When used as a construction material, wood has a significantly lower "carbon footprint" than more resource-intensive materials such as steel and concrete. Wood also stores carbon for the lifetime of the structure.

There are further opportunities for leadership, including the completion of additional energy audits and the selection of building materials, building components and heating fuels. Labeling buildings with energy ratings is another opportunity, allowing the comparison of buildings in the same class and creating an incentive to reduce energy use.

Key actions for 2014–2020 include:

- In keeping with the 2012–2016 *Value-added Wood Strategy*, the Province will encourage the use of wood and wood products in the public sector through the implementation of the *Green Building Policy* and the private sector's *Atlantic Wood Works Initiative*.
- In keeping with LEED (Leadership in Energy and Environmental Design) and Green Globe standards, the Province will encourage the inclusion of environmental and carbon attributes into new building construction and retrofits and encourage

the location of public buildings on routes accessible by public transit, walking and cycling.

- The Province will continue phasing out the use of heavy fuel oil for heating public sector buildings, and replacing it with cleaner-burning fuels such as natural gas or renewable energy.
- The Province will examine the feasibility of implementing a pilot program for energy performance benchmarking and labelling for all publicly funded new construction and major building renovations.
- The Province will continue conducting energy audits of existing government buildings using tools such as the *Energy Star Portfolio Manager*. Audit results will be used to identify opportunities to further reduce New Brunswick's GHG emissions.

Vehicle Fleet and Employee Travel

Continuing efforts to reduce transportation-related GHG emissions from the public sector.

The Province's 2006 *Green Vehicle Policy* contains a commitment to take advantage of stringent engine emission standards when replacing certain vehicles and supports the purchase of fuel efficient vehicles. Additional work is required to ensure that the Province continues to lead by example.

Key actions for 2014–2020 include:

- The Province will explore new and innovative fleet procurement and management systems, including alternative fuel vehicles that improve fuel efficiency and lower GHG emissions.
- The Province will promote a culture of minimized travel by public servants through measures such as enhanced teleconference capabilities in government offices, strengthened employee travel policy to improve travel efficiency, and encourage alternative methods of transportation for commuting.

Low Carbon Procurement

Promoting green and low carbon procurement of goods and services in the public sector.

Green and low-carbon procurement is about achieving better value for money by understanding more fully the environmental costs and benefits associated with the production, purchase, use and disposal of goods and services. It requires the integration of environmental performance considerations into the procurement process. The Province has already implemented a number of green procurement practices and is purchasing an increasing range of green products and services.

Key actions for 2014–2020 include:

- The Province will prepare Green Procurement Strategies in support of Parts 1 and 2 of Government, to be phased-in between 2014–2020 with the objective of assisting client departments and supporting suppliers in delivering environmentally responsible products, having a low carbon footprint, with the highest quality at the lowest price.
- When seeking space for government use, consideration will be given to rehabilitated or repurposed heritage buildings that meet government's requirements.

Inter-jurisdictional Partnerships

Continuing to seek and participate in productive and collaborative relationships with other provinces, territories, states, regions and levels of government to share resources and information, and promote accountability both within and outside New Brunswick's borders.

Collaboration with partners continues to be an important cornerstone for successfully addressing climate change, and is particularly important for a small province like New Brunswick.

The New England Governors and Eastern Canadian Premiers (NEG-ECP) is comprised of the Premiers of the four Atlantic Provinces and Quebec, and the State Governors of Connecticut, Maine, Massachusetts, New



Hampshire, Rhode Island and Vermont. Collectively, the northeastern United States comprises New Brunswick's largest trading partner. The NEG-ECP has adopted its own Climate Change Action Plan and is working to enable collective action on climate change. New Brunswick and the other Atlantic Provinces have established their respective GHG reduction targets in the context of the NEG-ECP GHG targets.

Key actions for 2014–2020 include:

- The Province will continue to contribute actively to the implementation of the *NEG-ECP Climate Change Action Plan* and the *Transportation and Air Quality Action Plan*.
- The Province will maintain relationships with its municipal partners and with Regional Service Commissions in order to encourage actions at the level where community planning is implemented and local development decisions are made.
- The Province will continue to collaborate closely with the federal government in priority areas such as climate change monitoring and research, GHG regulations, access to export markets for New Brunswick's low-carbon products and technologies, and other areas of shared concern.

Goal 4: Measured and Reported Progress

Measurement and reporting allows the Province to track success in adapting to climate change and to determine the effectiveness of GHG emissions reduction initiatives. Any necessary adjustments required to meet adaptation and GHG management targets can then be made. Progress tracking also ensures that the province remains accountable to New Brunswickers regarding its Climate Change Action Plan commitments.



Caribou Wind Park

Greenhouse Gas Emissions Inventory

Continuing to track and report on New Brunswick's energy use and GHG emissions by all sectors, including government.

A solid understanding of the province's energy consumption and emissions profile is necessary to allow continued tracking of progress in GHG emissions reduction and for assessing opportunities for further emission reductions.

Key directions for 2014–2020 include:

- The Province will use the Long Range Energy Alternatives Planning (LEAP) model to continue to track, project and report on GHG emissions to ensure accountability to regional, provincial and sector-specific emissions reduction targets.

The Long Range Energy Alternatives Planning (LEAP) system, is a computer-based tool for energy policy analysis and climate change mitigation assessment. Many jurisdictions use LEAP to estimate, track, and predict their GHG emissions.

- The Province will also complete the development and implementation of a Government Energy Management System to allow individual government departments to track energy use and corresponding GHG emissions.

- **The Province will promote the measurement, tracking and reporting of energy use and GHG emissions by local governments and businesses, and encourage them to develop climate change action plans, including green procurement policies and energy efficiency targets for buildings and fleets.**

Reporting Progress

Reporting progress on implementing this Action Plan.

Annual progress reports on addressing climate change have been released by New Brunswick each year since 2008. While measuring and reporting progress in reducing GHG emissions is relatively straightforward, New Brunswick's preparedness for climate change is more difficult to measure. The identification of appropriate indicators to measure progress in enhancing climate change resilience will help identify strengths and weaknesses in adaptation programming and help direct efforts to programs that produce the best results.

Key actions for 2014–2020 include:

- **The Province will explore appropriate ways of measuring and reporting progress in adapting to climate change.**
- **The Province, in collaboration with its Climate Change Interdepartmental Committee and the NEG-ECP, will develop and implement annual climate change work plans.**
- **The Province will continue to release annual progress reports on implementation of the measures identified in this Action Plan and in annual work plans.**

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