

New Brunswick Climate Change Action Plan

- Solid Foundation in Climate Change Action

2011 - 2012 Progress Report



Table of Contents



- Executive Summary..... 1
- New Brunswick’s Five Year Achievements..... 2
- The New Brunswick Situation 4
 - New Brunswick Greenhouse Gas (GHG) Emissions 4
- Actions to Reduce or Avoid GHG Emissions..... 6
 - Progress in 2011-2012 7
 - Energy Efficiency and Renewable Energy 7
 - Transportation 10
 - Waste Management 11
 - Industry 12
 - Electricity Generation 14
 - Future Energy Opportunities 15
 - Government Leading by Example 16
- Adapting to the Impacts of Climate Change 18
 - Progress in 2011-2012 18
 - Development of Policies 18
 - Managing Natural Areas 18
 - Risks and Damages..... 19
- Partnerships and Communications..... 24
 - Progress in 2011-2012 24
 - Partnerships with Communities and Working with Stakeholders 24
 - Public Education and Outreach..... 25
- Moving Forward..... 28
 - Accountability 28

Executive Summary



The *New Brunswick Climate Change Action Plan 2007 – 2012* includes a number of specific actions in the areas of greenhouse gas (GHG) emissions reduction, adaptation to the effects of climate change, as well as partnerships and education.

During the fifth year of implementation of the plan, the Province has made significant progress in meeting its GHG emissions target, in helping New Brunswick communities adapt to the impacts of a changing climate as well as supporting collaboration, engagement and partnerships.

The plan has been a framework for government departments, communities, organizations and New Brunswickers to adopt and foster change. This plan will continue to produce beneficial results in the future.

Highlights of the fifth year include:

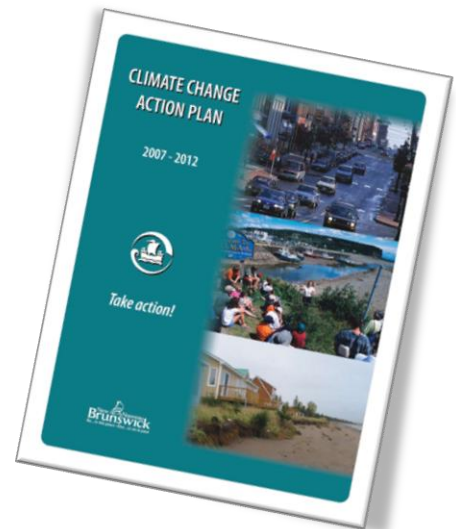
- regulations under the *Energy Efficiency Act* were updated in June 2012. This update included the addition of standards for light ballasts, ventilators, pumps, thermostats, traffic signals, toilets, urinals and wood stoves;
- since 2005, Efficiency New Brunswick programs have invested \$58.6 million to help make homes and businesses more energy efficient, and offered \$307 million in private sector efficiency investments. This prevents the release of 326,000 tonnes of GHG per year, and generates \$50.8 million per year in energy cost savings;
- nearly 25,000 residents have participated in the Residential programs of Efficiency NB;
- in general around one quarter of new homes being built in New Brunswick have participated in the Efficiency NB New Homes program, with long term energy bill savings and GHG reductions;
- the Province adopted the “Energy Blueprint” energy policy, in which climate change commitments are made that supports continued reduction in GHG emissions;
- the Province maintained oversight and management of applied studies in communities across New Brunswick as part of the Regional Adaptation Collaborative Project. This initiative, developed in collaboration with the other Atlantic Provinces, municipalities and Natural Resources Canada, promotes and enables climate change adaptation actions via applied case studies that address priority concerns, including coastal and inland flooding and erosion, infrastructure, community planning, and groundwater management; and
- New Brunswickers saved enough energy during Earth Hour 2012 to power approximately 15,000 homes, which is also the equivalent to turning off more than 2.1 million 13 watt compact fluorescent light bulbs (27.3 megawatts), making this year’s Earth Hour the most successful to date in the province.

New Brunswick's Five Year Achievements

In the five years since the release of the *New Brunswick Climate Change Action Plan 2007 – 2012*, New Brunswick has made significant progress in reducing greenhouse gas (GHG) emissions and increasing the climate resiliency of communities.

Here is an overview of New Brunswick's major achievements:

- the Province is on track to meet its 2012 GHG target of returning to 1990 emissions levels;
- 294 megawatts (MW) of wind power capacity have been developed in New Brunswick. With the Point Lepreau Nuclear Station return to service, more than 65 per cent of electricity used in the province will be from clean, renewable or non emitting sources;
- \$40 million federal funding allocation for public transit resulted in additional transit capacity, greater fleet efficiency and reduced GHG emissions;
- since 2005, Efficiency New Brunswick programs have invested \$58.6 million to help make homes and businesses more energy efficient, and leveraged \$307 million in private sector efficiency investments. This prevents the release of 326,000 tonnes of GHG per year, and generates \$50.8 million per year in energy cost savings;
- in partnership with the federal government, \$34 million has been invested in projects reducing greenhouse gas emissions around the province, with a potential reduction in GHG emissions of 700,000 tonnes per year;
- the 57 MW Grand Lake coal-fired power plant has been closed;
- the Province adopted the "*New Brunswick Energy Blueprint*" energy policy, in which climate change commitments are made that supports continued reduction in GHG emissions;
- amendments have been made to the following Acts and Regulations:
 - the *Municipalities Act* was amended to remove barriers to municipal green electricity generation;
 - the *Ozone Depleting Substances Regulation* was amended to control ozone-depleting replacement substances;
 - the *Clean Environment Act* was amended to authorize regional solid waste commissions to be generators of electricity;
 - the regulations under the *Energy Efficiency Act* were amended to increase regulated efficiency levels and increase the number of appliances and industrial products included in the regulations;
- significant investments have been made to improve the province's adaptive capacity to climate change, including:
 - 12 major projects through the Regional Adaptation Collaborative, a federal-provincial partnership, with a focus on managing flooding and erosion risks, and protecting water supply in communities; and
 - 50 projects through the Environmental Trust Fund, with work on predicting flood risk, mapping vulnerable areas, and engaging stakeholders in adaptation planning;



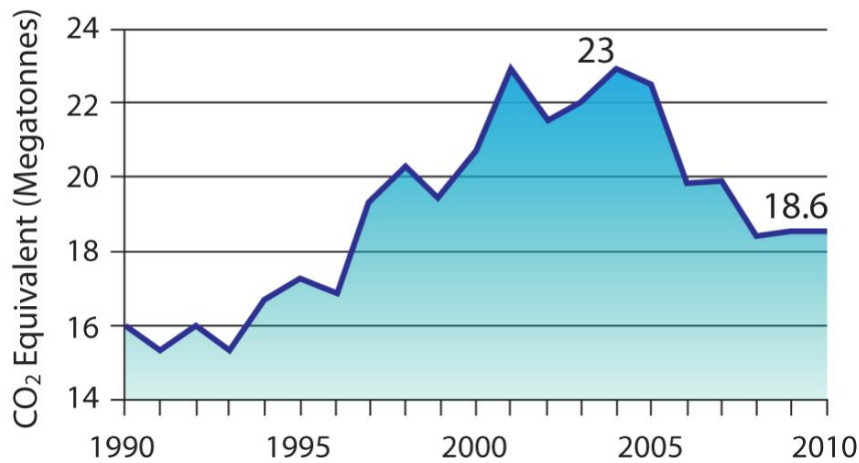
- the Province has partnered with environmental organizations, youth, families, and businesses on projects promoting green business practices, engaging the public on climate change issues, and working with individuals around the province to reduce their environmental footprint via eco-challenges;
- the region met the target in the 2001 New England Governors and the Eastern Canadian Premiers (NEG/ECP) Climate Change Action Plan of reducing GHG emissions to the 1990 level by 2010 while the Gross Domestic Product (GDP) in the region grew by 60 per cent. New Brunswick's reductions in GHG emissions contributed to this regional achievement.

The New Brunswick Situation

New Brunswick Greenhouse Gas (GHG) Emissions

Figure 1 shows New Brunswick's Annual GHG Emissions from 1990 to 2010. In 2010, greenhouse gas (GHG) emissions from all sources in New Brunswick amounted to 18.6 megatonnes (Mt) of carbon dioxide equivalent (CO₂ eq.), 2.7 per cent of the Canadian total. Between 2004* and 2010, New Brunswick emissions declined by 4.4 Mt (19 per cent), with emissions from large industries and electricity generation falling by 33 per cent. The GHG emissions represented in Figure 1 appear different compared to charts in previous reports, since Environment Canada modified data reporting for all sectors from 1990 through to 2010. This affects the data slightly but the relative change in emissions remains essentially the same.

Figure 1 - New Brunswick Annual GHG Emissions

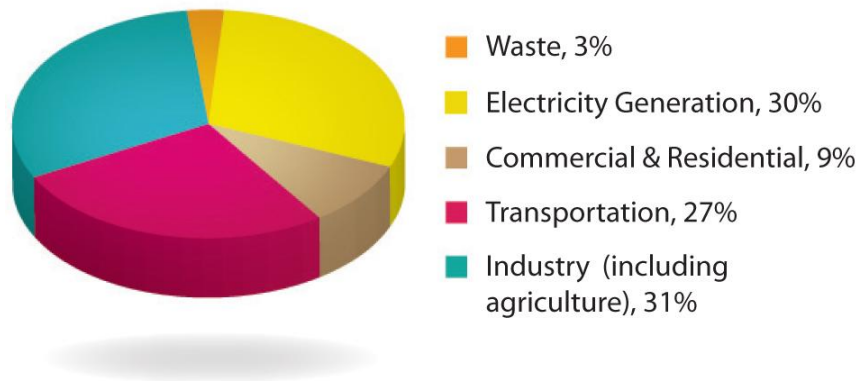


Source: National Inventory Reports, Environment Canada

*2004 data was used as the most recent baseline year available when developing the *New Brunswick Climate Change Action Plan 2007 – 2012*. The most recent data from Environment Canada is for 2010.

Figure 2, New Brunswick GHG Emissions, is a breakdown of emissions by sectors. In 2010, industrial emissions accounted for 31 per cent of the province's emissions and transportation accounted for 27 per cent. Emissions from commercial and residential buildings accounted for nine per cent of the province's emissions and waste accounted for three per cent. Electricity generation accounted for 30 per cent of total emissions in 2010, down from 40 per cent in 2004. Lower energy demand, growth in wind energy and electricity purchases from neighbouring utilities contributed to the reduction in GHG emissions from electricity generation.

**Figure 2 - New Brunswick GHG Emissions
in 2010 - 18.6 Mt**



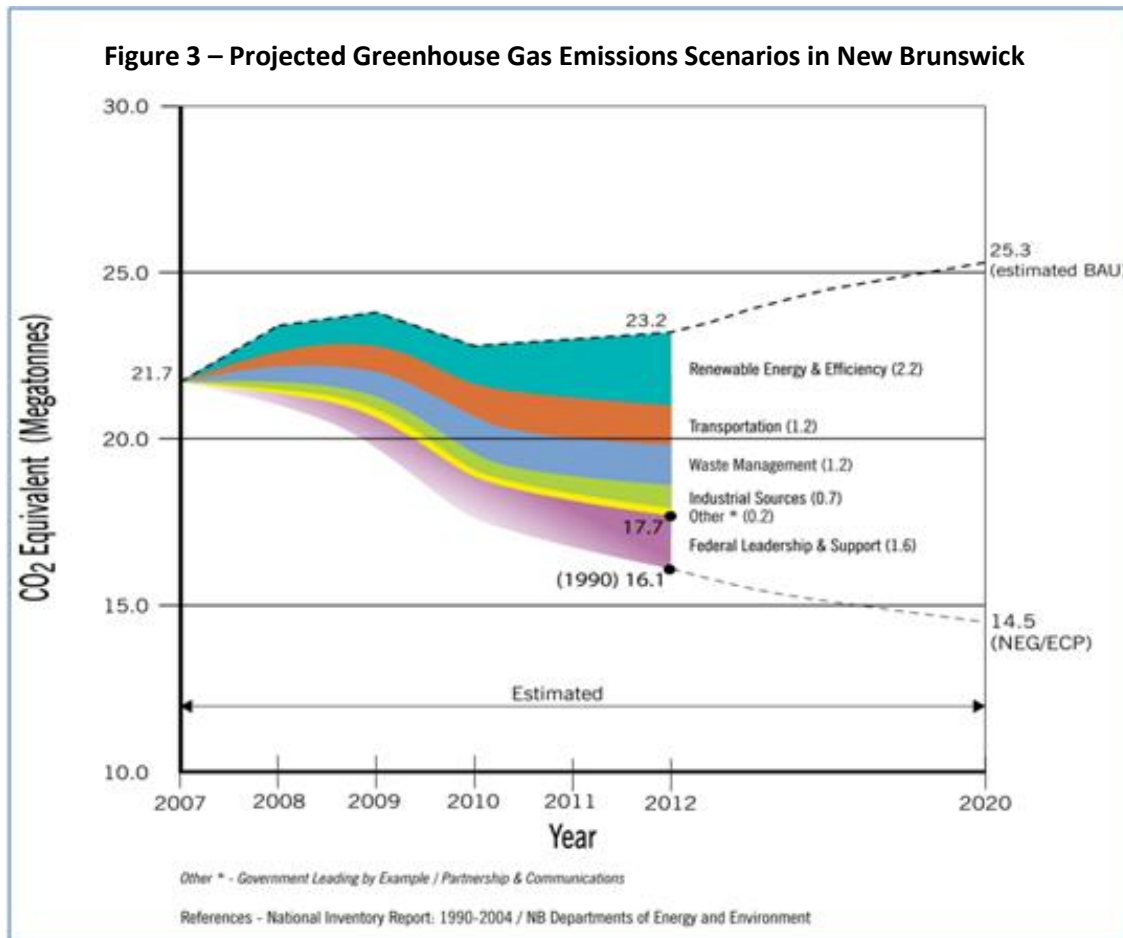
Source: National Inventory Reports, Environment Canada

Actions to Reduce or Avoid GHG Emissions

“Using energy more efficiently is a key factor in achieving greenhouse gas emission reductions and it makes our energy system less expensive to operate.” NBCCAP 2007-2012

In the *New Brunswick Climate Change Action Plan 2007 – 2012*, the Province established GHG reduction targets in the areas of energy efficiency and renewable energy, transportation, waste management and industrial sources.

Figure 3 illustrates the projected GHG emission reductions for each of the commitment categories outlined in the Action Plan compared to a Business As Usual (BAU) projection prepared at the time of release of the plan.



The provincial commitments coupled with those of the federal government will achieve a level of GHG emissions to 1990 levels in 2012.

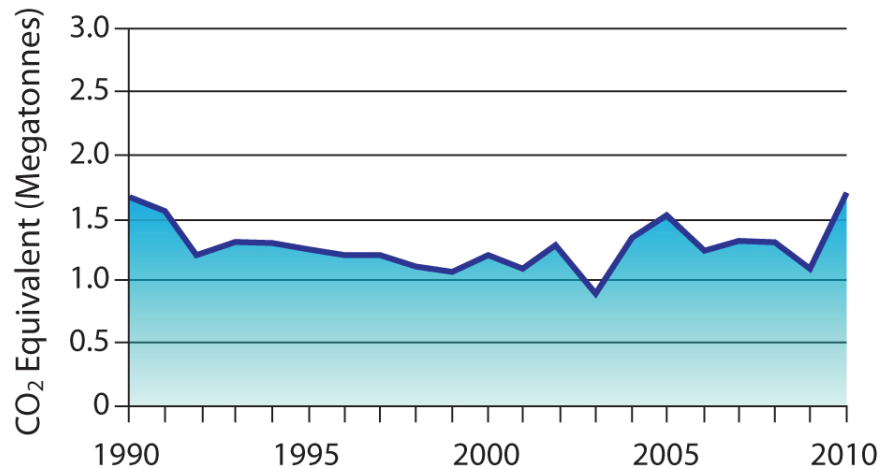
Progress in 2011-2012

Energy Efficiency and Renewable Energy

“Cleaner energy options are being made more widely available, and programs are being implemented to help ensure that all types of energy will be used more efficiently.” NBCCAP 2007-2012

Figure 4 shows that initiatives in energy efficiency and renewable energy have stabilized emissions in commercial and residential sectors over time. In 2010, total emissions from these sectors were at the same level as 1990.

Figure 4 – Energy Efficiency and Renewable Energy (Commercial and Residential)



Source: New Brunswick Department of Environment of Local Government

Department of Agriculture, Aquaculture and Fisheries:

- supplied funding to six agricultural producers through the Canada-New Brunswick Growing Forward Agreement to assist them to conduct energy audits and energy efficiency upgrades to farm buildings. This funding was in addition to funding available through Efficiency NB.

Department of Culture, Tourism and Healthy Living:

- commissioned an energy audit of Mactaquac Provincial Park and developed plans to implement energy retrofit measures;
- commissioned an energy audit of Mount Carleton Provincial Park. Any retrofits will be focused on renewable sources before traditional energy sources are considered; and
- partnership with the NBCC Moncton's Alternate Energy Systems program, completed the installation of 9 kilowatts (kW), 42 panel photovoltaic arrays at Mount Carleton Provincial Park. The

installation provided 90 per cent of the electrical needs of the camp store and washrooms at the Armstrong Campground.

Efficiency NB - Commercial Sector:

- adjusted the implementation incentive to \$30 per gigajoule (GJ) in June 2011 for the Existing Building Retrofit Program (Energy Smart) to encourage more participants to upgrade their buildings and save energy;
- completed Efficiency NB's Energy Smart program for 229 buildings by the end of 2011-2012. The buildings have reduced their annual energy consumption by 126 terajoules (TJ) and associated annual GHG emissions by 19,500 tonnes;
- increased participation to the Start Smart Modelling Path program for new buildings has to 37 completed projects with estimated annual energy savings of 28,100 GJ and associated reductions of annual GHG emissions of 2,400 tonnes;
- launched the Core Performance Prescriptive Path program for new building in 2010-2011 and had six participants complete in 2011-2012;
- continued to partner with the Canadian Manufacturing and Exporters, the Canadian Industry Program for Energy Conservation and private training organizations to expand market capacity through the delivery of energy efficiency workshops and training opportunities; and
- delivered commercial workshops aimed at building owners, operators, engineers, architects, energy management service providers, designers, etc.

Efficiency NB - Residential Sector:

- reviewed the results of the residential programs and made significant changes which were launched under the title "Residential Energy Efficiency Program" (REEP). Changes included:
 - targeting a 20 per cent increase in energy efficiency gains for both new and existing buildings;
 - enhancing incentives for environmentally friendly technologies such as geothermal and solar domestic heating systems;
 - offering maximum incentives for both new and existing homes or apartments that achieve a NetZero target energy; and
 - modifying the new residential construction program whereby new constructions that use electric resistance heating as their primary heating system are no longer eligible for incentives. Residential electric heating has high energy and GHG emissions intensity compared to other sources of heating sources.
- processed 2,046 applications under the former "New Brunswick Energy Efficient Existing Building" Program and a further 3,067 applications under the REEP – Existing Buildings. The estimated reductions in annual GHG emissions from upgrades done as part of the existing homes program, since the program inception, equal 88,500 tonnes per year;
- processed 506 applications under the former "New Brunswick Energy Efficient New Homes" Program and also processed 541 new applications to the REEP- New Construction. The estimated reductions in annual GHG emissions from construction of new residential buildings, since the program inception equals 14,000 tonnes per year which includes the GHG reductions from two Net Zero REEP – New Construction projects; and
- offered several residential workshops for contractors and builders to educate them on new products and energy efficiency building practices.

Department of Energy:

- updated the regulations under the *Energy Efficiency Act* in June 2012. This update included the addition of standards for light ballasts, ventilators, pumps, thermostats, traffic signals, toilets, urinals and wood stoves;
- worked closely with the Atlantic Canada Opportunities Agency and the Atlantic Council Bioenergy Cooperative (ACBC) to assess the biomass opportunities for New Brunswick and the region. ACOA has recently commissioned a report in which ACBC will be developing:
 - a regional asset inventory;
 - research analysis;
 - infrastructure build out investment analysis;
 - economic impact study; and
 - recommendations on a path forward for biofuels in the Atlantic region;
- continued to support the Laforge Bioenvironmental biogas plant (anaerobic digester), which can produce up to 600 kilowatts (kW) of electricity.

Department of Environment and Local Government:

- continued to administer projects funded by the New Brunswick Environmental Trust Fund, which provided more than \$113,000 for five GHG reduction projects:
 - Quoddy Futures encouraged citizen participation in activities that will reduce greenhouse gases at a local level;
 - the Groupe de développement durable du Pays de Cocagne assisted individuals from the Cocagne area in reducing their energy consumption;
 - the New Brunswick Lung Association undertook a program to reduce household electrical consumption by providing consumers with real time information about their energy usage, along with information on actions which will further reduce consumption;
 - EOS Eco-Energy promoted solar hot water heating systems to facilitate region-wide action to reduce greenhouse gas emissions; and
 - the K.C Irving Chair in Sustainable Development started developing an atlas on the availability of forestry biomass as a renewable energy source for New Brunswick.

Department of Natural Resources:

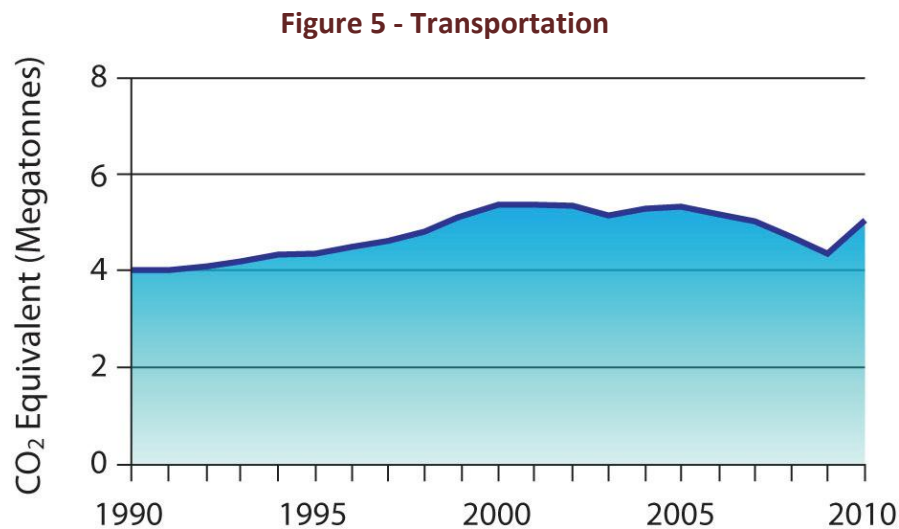
- continued to implement the policy entitled Allocation of Crown Lands for Wind Power Projects and allocated Crown lands for wind power exploration and wind farm developments. The department currently has 14 active licence holders conducting wind exploration on approximately 71,000 hectares of Crown lands. The department also has three active leases on Crown lands with TransAlta Corporation, Caribou Wind Park GP Limited (subsidiary of GDF Suez Renewable NA), and Acciona Lameque GP Inc. Wind Energy Canada that account for a total of 294 MW over an area of 87.34 hectares;
- adopted a new and more comprehensive policy entitled the Allocation of Crown Lands for Tidal In-Stream Energy Conversion (TISEC) Projects in June 2011 to replace its interim policy. Procedures were developed and combined with the guidelines outlined in the above-noted policy; the department is now in a position to address TISEC exploration and development on submerged Crown lands;
- under the biomass policy issued the Miramichi forest biomass Request for Proposal in 2011;

- in partnership with Natural Resource Canada (NRCan) investigated possible barriers and constraints for the implementation of GHG reduction in forest management projects; and
- provided NRCan with harvest projections for the Phase 2 GHG analysis as part of looking for potential carbon offset opportunities.

Transportation

“The Province will work to improve transportation options and help consumers make informed decisions about vehicles, fuels and transportation in general.” NBCCAP 2007-2012

Figure 5 demonstrates that in 2010, although emissions in the transportation sector increased by 0.6 Mt compared to 2009 levels, they remain below the peak of 5.4 Mt in 2000. Emissions from road transportation, which accounts for 76 per cent of total transportation emissions, have remained steady since 2007 and are currently at 3.8 Mt. Compared to 2009, emissions from passenger vehicle use increased by 5 per cent while emissions from freight vehicles and off road transportation increased by 27 per cent. Emissions from air travel and marine remained steady while emissions from rail have increased by 13 per cent. Transportation related emissions were 5.1 Mt, which is 1.0 Mt above 1990 levels.



Source: New Brunswick Department of Environment of Local Government

Department of Transportation and Infrastructure:

- completed work in 2011 with the State of Maine on a Border Information Flow Architecture aspect of a Regional Intelligent Transportation Systems. This study focuses on the border regions to build a planning framework for data integration, information flow, work efficiencies, transportation standards, operational and maintenance concepts and future planning. The goal is to establish a framework that guides new projects and policies to contribute to efficiencies in sector wide transportation;

- completed upgrade work at the Longs Creek Weigh-in-motion (WIM) site. There are 5 WIM sites in the province. WIM sites significantly reduce GHG emissions from idling, starting and stopping of heavy commercial vehicles at conventional scales;
- continued participation in the Transportation and Air Quality Committee of the New England Governors and Eastern Canadian Premiers concerned with issues such as reducing GHG emissions in the transportation sector;
- continued to monitor transportation initiatives that improve efficiency and help reduce emissions from the transportation sector, such as the installation of auxiliary power units on owner-operated trucks and installation of aerodynamic skirting on van trailers; and
- worked with the trucking industry in issuing an increased number of special permits to operate long combination vehicles (LCVs) on four-lane highways in New Brunswick. This type of vehicle configuration allows greater volumes of cargo to be hauled with the same power unit and results in fuel savings of about 40 per cent. The number of special permits issued for the use of single wide tires also increased.

Department of Environment and Local Government:

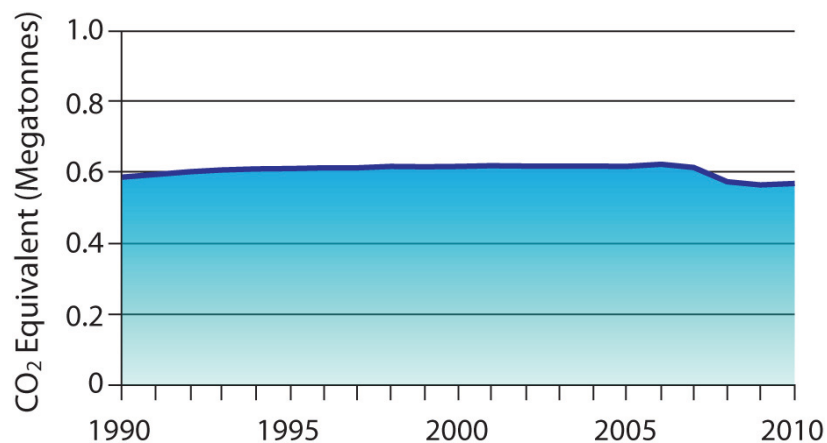
- partnered with the New Brunswick Economic and Social Inclusion Corporation to organize a Provincial Transportation Dialogue event in June 2012. The two day workshop convened approximately 200 stakeholders. The goal of the event was to enable participants to address their common transportation needs.

Waste Management

“New Brunswick has an action plan to reduce and divert waste in order to address broad waste management issues. The Province will build upon this action plan.” NBCCAP 2007-2012

Figure 6 shows that emissions from landfills have been declining and were 565 kilotonnes (kt) in 2010, or 50 kt below 1990 levels. This reduction is due to improved landfill gas and waste management practices.

Figure 6 – Waste Management



Source: New Brunswick Department of Environment and Local Government

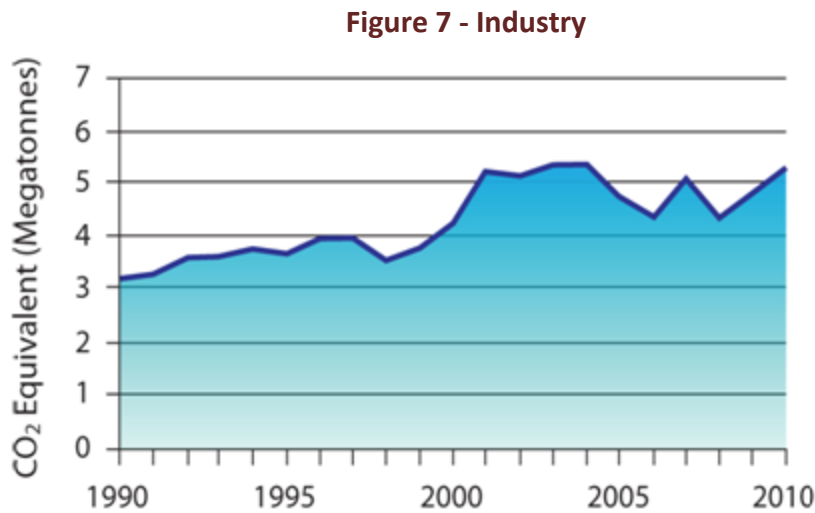
The Department of Environment and Local Government:

- continued to support the installation of methane management systems by the regional solid waste commissions. The Fredericton, Nepisiguit-Chaleur, and South West solid waste commissions are collecting landfill gas; the COGERNO and Westmorland-Albert Solid Waste Corporation are commissioning these systems. Fredericton has ordered two electricity generators for their landfill site and COGERNO is also in the process of commissioning an electricity generator; and
- required wholesalers and end users to obtain permits from the department for the sale and purchase of ozone depleting substances and replacement substances (hydrofluorocarbons). A total of 265 permits were issued for ozone depleting substances.

Industry

“The Province will work with New Brunswick Industries and the federal government to help ensure there is fairness and consistency in implementing emission standards for industrial sources among industry sectors, provinces and territories.” NBCCAP 2007-2012

Figure 7 depicts industry (excluding agriculture and electricity generation) emissions from 1990 to 2010. In its 2012 release of the National Inventory Report, Environment Canada modified data reporting in the industrial sector for all years from 1990 through to 2010. GHG emissions from large industrial facilities were 5.3 Mt in 2010.



Source: New Brunswick Department of Environment and Local Government

Department of Agriculture, Aquaculture and Fisheries:

- continued to support the adoption of Nutrient Management Plans through financial assistance to agricultural producers to have nutrient management plans developed, funding of agro-environmental clubs to ensure that nutrient management expertise is available to producers and ongoing operation of the New Brunswick Soil and Feed Laboratory.

Department of Economic Development:

- provided more than \$5 million in loans and loan guarantees from to leverage corporate investment for energy, productivity and efficiency initiatives from the Financial Assistance to Industry Program delivered by the Economic Development Department;
- through the New Brunswick Growth Program, invested nearly \$1.8 million in energy, productivity and efficiency initiatives;
- through the Technology Adoption and Trade Program provided more than \$250,000 for projects and related initiatives that focused development and trade of energy efficiency, and clean technologies; and
- assisted businesses in marketing green products at trade events in Canada, the United States, Europe and Asia.

Efficiency NB - Industry Sector:

- entered the second full year of the Small and Medium Industry program, and participation has doubled to roughly 50 companies. To date, projects in operation are providing annual energy savings of \$356,000 and 30.2 terajoules (TJ) which have reduced annual GHG emissions in this market sector by 2,500 tonnes;
- received Canadian Industry Program for Energy Conservation (CIPEC) Leadership Award for their innovation in energy efficiency at the annual Energy 2011 conference within three of the Large Industry program participants. The Large Industry program has 68 active capital projects or Energy Management Information System (EMIS) implementations. To date projects in operation are providing annual energy savings of \$21.4 million and 2,451 TJ which have reduced annual GHG emissions by 167,700 tonnes; and
- offered several technology or industry-specific training days where Efficiency NB identified the subject matter expert for a given topic and then brought them to the market. This ensured that clients, big and small, have equal access to the best experts in the field. Topics of workshops included boilers, kilns, pumping systems, EMIS, process integration, compressed air, etc. A 5-day Comprehensive Course was also provided to Energy Managers in New Brunswick.

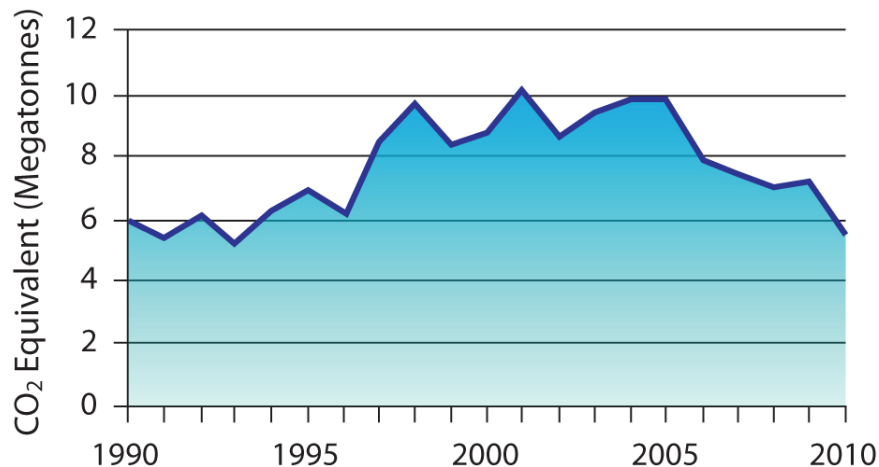
Department of Environment and Local Government:

- continued to ensure that emissions in the province are minimized as much as practically possible through the Environmental Impact Assessment process and other approvals processes. Approvals to Operate are only issued once an industrial operation has installed or upgraded equipment or implemented technology that can meet air quality standards. Approvals to Operate are reviewed and issued every 5 years for each facility.

Electricity Generation

Figure 8 depicts electricity generation emissions from 1990 to 2010. Electricity generation emissions were eight per cent below 1990 levels in 2010. This reduction is due to the closure of the coal fired power plant at Grand Lake and an increase in renewable energy including wind power.

Figure 8 - Electricity Generation



Source: New Brunswick Department of Environment and Local Government

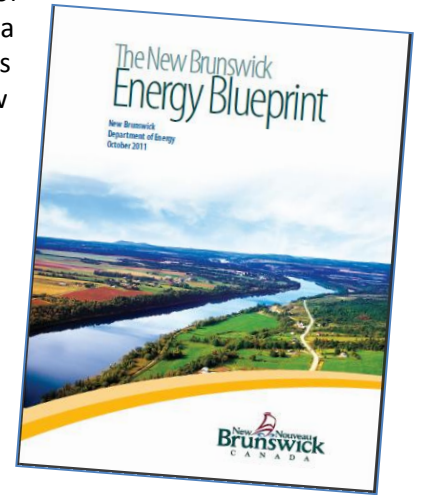
NB Power:

- reduced its GHG emissions from a high of 9.94 million tonnes in 2001 to 3.29 million tonnes in 2011;
- connected a 600 kW biogas generator (Laforge Bioenvironmental biogas plant) to its distribution network;
- explored new lighting technologies and potential energy savings by testing new LED lights in 500 locations with 41 community partners across the province;
- continued to evaluate all options to reduce its carbon footprint such as small hydro, tidal power, biomass co-firing and electricity generated from landfill gas;
- offered energy appliance meters at local libraries as of April 2012 (partnership with New Brunswick Public Library Service) to enhance efforts of “energy literacy”; and
- continued the Powershift Atlantic “Maritime Load Control for Wind Integration Project”. The project is using customer load control to help integrate wind power into the Maritime electricity systems.

Future Energy Opportunities

The New Brunswick Energy Blueprint is the result of the government's review of the Final Report of the New Brunswick Energy Commission and outlines both a long-term vision and a three year action plan to work towards the objectives that were identified through the public engagement process of the New Brunswick Energy Commission.

The *Energy Blueprint* lays out the steps to ensure the province and citizens enjoy stable, secure and cost-effective access to the energy required to support our economy and society, to protect our environment by using less energy and to maximize the energy potential that exists today for the benefit of New Brunswickers. A number of the actions presented in this section reinforce and complement the commitments made. As the *Energy Blueprint* states, with the rising cost of fossil fuels and increasing constraints on carbon emissions, energy efficiency along with renewable, clean, and non-emitting energy need to have an increased role in New Brunswick's future energy profile.



Department of Agriculture, Aquaculture and Fisheries:

- conducted field trials on several varieties of grasses with potential use for bioenergy; and
- contracted laboratory evaluation of these varieties with the University of New Brunswick Department of Chemical Engineering.

Department of Energy:

- amended the *Gas Distribution Act* in December 2011 to better encourage the delivery of natural gas to areas not accessible by pipeline transmission;
- released the New Brunswick Energy Blueprint, which provides ways for the energy sector to decrease emissions through the development of additional renewable resources and energy efficiency and demand side management measures. Other commitments within the blueprint include:
 - the development of Local and First Nations Small Scale Renewable Energy Projects. This will encourage the development of First Nations and community owned renewable energy projects where the benefits remain in the communities throughout the province;
 - work with funding partners to support feasibility studies and business plans for district heating, combined heat and power, and other renewable energy project opportunities; and
 - collaboration with Efficiency NB to encourage the replacement of oil fired boilers and furnaces with wood heating.

Government Leading by Example

“The Province will use the leadership position of the public sector to demonstrate best environmental practices and encourage environmentally sustainable practices within government and beyond.” NBCCAP 2007-2012

The Province has reduced GHG emissions with its buildings and through the purchase of more fuel efficient vehicles and technology for the government fleet.

Department of Transportation and Infrastructure:

- submitted École Sainte-Thérèse and Northrup Frye School to the Canada Green Building Council (CaGBC) for Leadership in Energy and Environmental Design (LEED) Certification. The Eleanor Graham School in Rexton has achieved Gold Certification;
- in conjunction with the Department of Social Development, five new nursing homes have been designed with energy efficiency in mind; Loch Lomond Villa Phase 1, Nashwaak Villa, Jodin Edmundston, Foyer Notre-Dame Bathurst and Grand Manan. There are five nursing homes that are now in the design phase and will follow the same design approach: Loch Lomond Villa Phase 2, Mill Cove, Victoria Glen Perth Andover, Villa Maria in St-Louis-de-Kent and Kiwanis Sussex;
- achieved Four Globes Verification with Green Globes Canada, through the renovation and addition at the Kennebecasis Park School;
- designed and constructed the following buildings to meet the Green Building Policy using the CaGBC LEED Silver Rating system, these buildings will be submitted to CaGBC for Certification in 2012:
 - E-Block NBCC Moncton;
 - NBCC Fredericton;
 - NBCC Allied Health, Saint John;
 - NBCC Grandview, Saint John;
 - Rexton Health Centre;
 - École Régionale Restigouche Est, Balmoral; and
 - Dalhousie Correctional Centre.
- designed the following buildings to meet the Green Building Policy:
 - Fredericton North Elementary;
 - Kennebecasis Park;
 - Moncton Nord;
 - Riverview Elementary;
 - École Sainte-Bernadette;
 - Campbellton Forensic Hospital;
 - Moncton High;
 - Southern Carleton, Woodstock; and
 - Woodstock Centennial;
- invested \$3.9 million in energy auditing and implementation of energy retrofit measures. Projected savings for the measures completed is \$550,000 per year while emission reductions are expected to be 4,200 tonnes CO₂ equivalent per year. Nearly \$3.4 million was invested in health care facilities, \$400,000 in education buildings and \$50,000 in community colleges;

- promoted use of wood pellets by signing Renewable Energy Supply Agreements with private Contractors for Grand Falls General Hospital and École Marie Gaétane in Kedgwick which are in close proximity to a reliable pellet supply produced from waste wood:
 - a wood pellet plant will be included in a tender package for Les Résidences Jodin, Edmundston; and
 - a wood pellet plant will be incorporated into the design of two new Schools for the Woodstock area;
- made an investment of \$110,000 to continue building control system updates required to enable monitoring of energy data. This will enable facility managers to reduce energy costs through tighter scheduling of heating, ventilation, and air conditioning (HVAC) systems and an increased level of graphical monitoring of system operating parameters. When the control system transfers are complete, access to approximately 55 per cent of the energy data for schools will be available for monitoring and reporting purposes;
- continued to monitor the pilot hybrid school bus project;
- invested in buses and plow trucks equipped with new diesel engines that are clean burning;
- continued to monitor the results of upgrading conventional ferry engines to fuel-efficient engines;
- continued to encourage anti-idling as part of the Green Vehicle Policy. The policy was introduced in 2006 to help make the government fleet more fuel-efficient and reduce GHG emissions. The Anti-idling Policy came into effect on June 1, 2007; and
- worked towards the installation of Global Positioning System (GPS) units on 430 plow trucks within the government fleet to reduce fuel consumption and increase operational efficiencies.

Department of Social Development:

- through the Public Low Income Housing program, invested approximately \$3 million on efficiency-related upgrades. An estimated 500 tonnes of GHG emissions will be saved per year;
- through Nursing Home Services, 18 nursing home projects are in various stages of planning and construction, with a goal for all to be completed within the next six or seven years; and
- through the ecoEnergy Retrofit Program, invested \$ 1.1 million (homeowner/rental) in grant funding for 231 low income households to make energy improvements to their homes. As of April 2012, the department had 27,928 gigajoules (GJ) of total savings.

Adapting to the Impacts of Climate Change

“Climate change has already made impacts on New Brunswick communities, and they are unavoidable in the immediate future.” NBCCAP 2007-2012



Significant progress has been made in understanding the climate change impacts faced by New Brunswick. The Province is on the continuing path to collaborate with individuals, businesses and communities to better understand climate change risks and opportunities in New Brunswick, and how to manage them.

Progress in 2011-2012

Development of Policies

“Development in New Brunswick’s rural and urban areas must be carried out with consideration of the way it will contribute and respond to the effects of climate change.” NBCCAP 2007-2012

Most New Brunswick communities are built along or near the coasts and rivers. With sea level rise and precipitation changes, New Brunswick communities will need to prepare for more frequent severe flooding in the future.

Department of Environment and Local Government:

- continued work to consider flood risk areas, wetlands, coastal areas, and other features in a watershed context; and
- is working on a long-term wetland management strategy that reflects consultations with the public and stakeholders. The strategy contains 13 project areas to be implemented in phases.

Managing Natural Areas

“Climate change will challenge present practices in the agriculture, aquaculture, forestry, and traditional fishery sectors.” NBCCAP 2007-2012

An increased understanding of the risks and vulnerabilities to ecosystems is an important component in developing an adaptive management strategy for New Brunswick. Significant work remains to be done in systematically assessing the risk to some important sectors in New Brunswick, including natural resource sectors.

Department of Agriculture, Aquaculture and Fisheries:

- established an active surveillance program for aquaculture production which includes monitoring at freshwater and marine sites for both shellfish and finfish. The department collaborates with the Federal Department of Fisheries and Oceans for the monitoring of aquatic invasive species.

Department of Natural Resources:

- is in the final stages of the process for the designation of some New Brunswick Nature Trust (NBNT) and Nature Conservancy Canada (NCC) properties as private land Protected Natural Areas (PNA)s, and for the designation of additional Crown PNAs. The NBNT sites include two properties totaling 188.4 hectares, the NCC sites include three properties totaling 841.7 hectares, and the Crown sites include six properties totaling 227.5 hectares; and
- identified 190 candidate Protected Natural Areas on Crown lands, totaling 143,000 hectares (353,000 acres). These sites were selected based on their ecological value, their importance as wildlife habitat, and their distribution throughout the province. The department intends to select approximately 122,000 hectares (301,000 acres) of these candidate sites, and designate them as new Protected Natural Areas.

Risks and Damages

“It is important to transfer our scientific knowledge of how our environment is being affected by climate change to the development of applied solutions for government, businesses, and communities.” NBCCAP 2007-2012

The general understanding of the potential for climate change impacts in New Brunswick has improved significantly in recent years. Since most New Brunswickers live near water, the increased risk of flooding and erosion (both along the coasts and inland) has been one primary focus of research in the province. Research has also been carried out on climate scenarios and climate adaptation tools. Ensuring risks and opportunities are identified and managed will help the Province set priorities in building a resilient province. The following includes progress in regards to monitoring, research, and planning.

Monitoring

Department of Environment and Local Government:

- continued the review of monitoring networks, both internal and external to guide the department in seeking the means to address network deficiencies. Efforts are ongoing to improve the department’s ability to assess lakes and their vulnerabilities to algal blooms;
- engaged a new partner to monitor the contribution of snow pack water equivalent to provincial water resources and improvements in monitoring technology are being pursued to extend seasonal precipitation monitoring to provide year-round data for assessments of water availability;
- purchased two Geonor real-time recording precipitation gauges to augment the provincial rate of precipitation monitoring network;

- purchased snowpack survey kits to expand the provincial snow survey program to additional areas and improve coverage, especially in the Miramichi catchment, eastern and northern parts of the province; and
- continued to administer projects funded by the New Brunswick Environmental Trust Fund, which provided \$76,000 to three climate change adaptation projects:
 - the Canadian Rivers Institute continued to develop the framework for a monitoring program for New Brunswick lakes which will include chemical, physical and biological metrics;
 - the Société des Estuaires et du Littoral extended the study area of its coastal erosion monitoring program; and
 - Vision H₂O assessed the condition of the coastline in the Cap-Pelé area in order to better understand the threat of erosion.

Research

Department of Environment and Local Government:

- continued to configure and integrate forecast models within a new forecasting platform within the NB Hydrology Center. Testing was conducted of new system elements and new linkages to modeled products from United States colleagues. Efforts continue toward achieving the full integration and function of all elements of the new forecast platform into day to day operations, which will improve surveillance capabilities and enhance reporting products, capabilities and efficiencies;
- managed a project to improve the understanding of surface water temperature, temperature vulnerabilities, and potential impacts on the functioning of aquatic systems;
- continued research on practical climate adaptation tools and climate scenarios by applying a watershed approach to understanding the influence of a built landscape, wet areas, elevation and climate projections on inland flooding vulnerabilities, and continued work toward a better understanding of saltwater intrusion vulnerabilities in coastal areas;
- maintained oversight and management of applied studies in communities across New Brunswick as part of the Regional Adaptation Collaborative (RAC) Project. This initiative, developed in collaboration with the other Atlantic Provinces, municipalities and Natural Resources Canada, promotes and enables climate change adaptation actions via applied case studies that address priority concerns, including coastal and inland flooding and erosion, infrastructure, community planning, and groundwater management. The following is an overview of products delivered:
 - technical reports on coastal flooding and erosion in Acadian peninsula communities were completed : *Infrastructures à risques dans trois municipalités de la Péninsule Acadienne*, and *Adaptation aux changements climatiques : planification de l'utilisation du territoire à Shippagan, Le Goulet et Bas-Caraquet*. These reports and many other items and resources relating to climate change adaptation in the province and region can be found on the Atlantic Climate Adaptation Solutions Association (ACASA) website - www.atlanticadaptation.ca, which was updated with a range of new content throughout the year;

- the Greater Moncton RAC Project report, *Climate Change Adaptation Measures for Greater Moncton area, New Brunswick* was completed. A Climate Action Committee was formed by the City of Moncton to help oversee the implementation of the recommendations in the report, and related work;
- the Grand Falls RAC Project, *Slope Stability, Erosion Assessment and Adaptation Solutions within the Town of Grand Falls, New Brunswick* was completed;
- a final report examining the risk of dyke failure in the Tantramar region was delivered;
- work progressed on development and testing of a flood visualization tool for the Town of Sackville, which was presented to municipal officials;
- a socio-economic vulnerability analysis for residential assets in Sackville was completed. This involved developing an inventory and database of existing properties damaged by flooding, conducting a literature review of related economic impacts and flood vulnerability assessments, and a methodology to process the inventory to estimate the damage costs from flood risk. The adaptation scenarios were assessed against a baseline economic assessment;
- a Geographic Information System (GIS) mapping study on flooding impacts in the Tantramar dykelands was completed;
- a report entitled *Agricultural Adaptation Strategy for the Tantramar Region* was completed;
- a pilot test application of the Community Vulnerability Assessment Tool developed in the United States and adapted by the Newfoundland and Labrador RAC Program was carried out in Grand Bay-Westfield. A report on this exercise, *Assessment and Test Application of the Community Vulnerability Assessment Tool in Grand Bay-Westfield, New Brunswick*, was prepared in March 2012;
- case study summary documents were prepared to showcase climate adaptation work being carried out in Grand Bay-Westfield and the Tantramar area;
- groundwater studies in the community of Richibucto progressed. Fieldwork, groundwater sampling and modeling studies continued and a technical paper, *Application of Electrical Resistivity Tomography (ERT) to the investigation of seawater intrusion at Richibucto New Brunswick*, was presented at a national conference in Quebec City. Three-dimensional groundwater flow simulations with boundary conditions representative of future sea level and climate (i.e. groundwater recharge) conditions were carried out;
- a technical report, *Sea-level rise and flooding estimates for New Brunswick coastal sections*, was updated in January 2012, which includes estimates for the entire coastline of NEW BRUNSWICK;
- two draft fact sheets on sea water intrusion into coastal aquifers were prepared;
- a project to develop guidelines for the monitoring of flood events was completed and a report was delivered in March 2012, *Real-time assessment and monitoring of inland and coastal flooding events for Atlantic Canada*;
- a project to gather climate change impacts and adaptation experiences via video documentary has begun. Nearly 40 video-based interviews were conducted to date, a project brochure and preliminary video were developed for discussion with project

- participants and partners, and continued expansion of the study across the Atlantic region. Research and planning regarding an online distribution system for results was initiated; and
- a consultant was retained and work begun on the design and implementation of a comprehensive data management system for all climate adaptation projects, reports and outputs, to serve the whole Atlantic region. This information 'toolkit' will ultimately be accessible via the ACASA web site;
- continued to administer projects funded by the New Brunswick Environmental Trust Fund, which provided more than \$198,000 for four climate change adaptation projects:
 - the Fundy Biosphere Reserve developed a data set and climate change model specific to the Fundy Biosphere Reserve area;
 - the University of New Brunswick:
 - provided academic support on climate change adaptation in coastal and river system areas; and
 - undertook an analysis of climate change impacts on the New Brunswick/NS transport corridor in order to determine and evaluate adaptation strategies;
 - the University of Moncton:
 - studied the impact of climate change on the quality of our drinking water by analyzing the impact of stream water temperature on surface water supply.

Planning

Department of Environment and Local Government:

- presented and discussed the application of hydrological mapping in relation to land use planning and development, infrastructure design and identifying areas at risk with municipal officials in Moncton, Sackville and Quispamsis;
- has progressed in the climate mapping project with information on climate conditions in New Brunswick to the year 2100. Mapping was completed for four time periods, two emission scenarios and 14 climate parameters;
- in cooperation with the *Association francophones des municipalités du Nouveau-Brunswick* (AFMNB), a climate change adaptation conference was held in Tracadie-Sheila, on January 26th, 2012. The conference was attended more than 60 representatives from municipalities, universities, and non-profit organizations. Presentations and documents of this conference are posted on the AFMNB website - www.afmnb.org/contenu.cfm?id=50; and
- continued to administer projects funded by the New Brunswick Environmental Trust Fund, which provided more than \$230,000 for eight climate change adaptation projects;
 - the *Institut de recherche sur les zones côtières* worked with local municipalities and the scientific community in developing planning tools to deal with the threats of climate change;
 - Mount Allison University identified the key barriers and policy gaps in implementing climate change adaptation strategies within provincial planning commissions;
 - the New Brunswick Association of Planners educated its members on the challenges of climate change which impact community planning;
 - North Shore Micmac District Council - Aboriginal Aquatic Resource & Oceans Management assisted NB Mi'gmaq Communities in planning and adapting for future sea level rise and increased storm surges due to climate change;

- the Université de Moncton assisted residents in the Kent District Planning Commission area in making informed decisions concerning adaptation to sea-level rise;
- the Town of Tracadie-Sheila studied coastal infrastructure and erosion in the context of climate change adaptation and long-term planning;
- the University of New Brunswick:
 - mapped and classified potential flooding risks for inland areas and coastlines in New Brunswick; and
 - mapped and evaluated hydrological threats including coastal/inland flooding and slope instabilities.

Department of Health:

- in partnership with Health Canada, developed the Heat Alert and Response System (HARS) pilot project in Fredericton into a program intended to reduce the rate of heat-related illness in the province. Due to climate change, forecasters predict that Fredericton will have a significantly greater number of days exceeding a humidex of 40°C. Because of this, it has been chosen as the Atlantic Provinces site for this pilot project. The other pilots have been conducted in Winnipeg and Assiniboine, Manitoba and Windsor, Ontario. As result of the pilots, Health Canada has developed a best practices guide for the preparation of heat alert and response programs on a broader scale; and
- has developed a new category of licensed on-site sewage system installers for non-conventional sewage disposal systems. This will be beneficial to property owners who may experience a reduction in lot size as a result of climate change (e.g. flooding, sea level rise) and will assist in reducing risks to public health and the environment.

Department of Natural Resources:

- collected high precision Global Positioning System (GPS) data in 12 parks beach and compiled results in the New Brunswick Beach Profile Database. A series of graphics were produced to examine the recent beach erosion or accretion trends in each park. High precision GPS data was also collected in four municipalities and two First Nation reserves to document the impact of recent storm surges. A series of maps showing the long and short terms erosion rates in these coastal areas were published by the Geological Surveys Branch. Finally, high precision GPS data was collected at 16 wharves to determine the exact elevation of the increased high water level – large tide.

Department of Public Safety - New Brunswick Emergency Measures Organization (NB EMO):

- continued to develop the Emergency program in Charlotte County. Multi-agency Emergency Management Committees have been established, and are undergoing Emergency Measures training. Regional planning is supported by comprehensive local risk and threat assessment. During the remainder of this project period, a regional plan will be completed, exercised and validated. Mutual support arrangements, roles and responsibilities will be formalized, and the Charlotte County area will have a much improved all hazard response plan to address severe weather events and evacuation requirements. This work will support the Government Renewal Office initiative to improve regional emergency response capacity; and
- developed a new flood mapping application which has improved the Riverwatch web-site.

Partnerships and Communications

“Our ability to manage our environment in a sustainable manner, reduce emissions and adapt to climate change impacts relies on our recognition that acting to protect the environment is a shared responsibility.” NBCCAP 2007-2012



The Province has been working with communities and planning commissions to develop effective zoning policies that take advantage of conservation design, and that adopt smart growth community-planning principles that consider climate change impacts (adaptation and emissions reductions).

Progress in 2011-2012

Partnerships with Communities and Working with Stakeholders

“The Province acknowledges that communities will play a critical role in greenhouse gas emissions reductions and adaptation strategies to address climate change impacts.” NBCCAP 2007-2012

The Province has developed partnerships with communities to address GHG emissions and adaptation strategies. Developing new partnerships will enhance the province’s climate change strategies and actions.

Department of Agriculture, Fisheries and Aquaculture:

- continued the delivery of the environmental component of the Canada-New Brunswick Growing Forward Agreement. The suite of Beneficial Management Practices eligible for financial assistance includes, among others: soil erosion control, streambank stabilization, agricultural water supply development, farmland drainage and improved pest management technologies; and
- continued the funding of eight agri-environmental clubs across the province to assist agricultural producers to address environmental issues such as climate change adaptation, nutrient management planning and environmental protection.

Department of Environment and Local Government:

- administered the Gas Tax Fund in 2011, for which 93 of 236 projects will have an effect on reducing GHG emissions;
- continued to work with communities and developers to encourage the implementation of sustainable community design (SCD) at the local level; supported the implementation of SCD on the Crossroads Project in Woodstock, SCD Bouctouche Project and Le village en haut du Ruisseau (LeV) project in Dieppe to help protect local wetlands and other sensitive and important natural habitats;

provided information and training sessions to numerous partners and stakeholders on SCD concepts and opportunities;

- promoted the concept of integrated planning in relation to climate change for projects, reviews, and working committee groups;
- completed an update of the SCD that integrates subdivision building and smart growth principles adapted to the New Brunswick context and priorities, including the climate change action plan objectives to foster knowledge on how development, buildings, streets and land can be carried out;
- worked with selected communities to identify local climate change issues and opportunities, and determine appropriate actions;
- held four SCD seminars and four information sessions in New Brunswick, in partnership with the Canada Mortgage and Housing Corporation, Efficiency NB, and the Association of Municipal Administrators of New Brunswick, to deliver information to decision-makers for subdivision building on how to build more sustainably; and
- continued to administer projects funded by the New Brunswick Environmental Trust Fund, which provided \$122,000 to support the implementation of green plans/sustainability plans for Memramcook, Saint-Léonard, Shippagan and Tantramar, as well as to research green development options for the town of Sackville and to promote the use of the conservation design concept in developing subdivisions through the Association of Municipal Administrators.

Public Education and Outreach

“The Province recognizes that public awareness and education initiatives are essential in engaging people in making choices that both reduce greenhouse gas emissions and respect the challenges of a changing environment.” NBCCAP 2007-2012

The Province has undertaken significant work to encourage businesses, individuals and municipalities to reduce their GHG emissions, including in areas of energy efficiency, transportation, and waste reduction. Partnerships have been fostered between the Province and a number of players around the province, including municipalities, business groups, and environmental groups to raise awareness and understanding of climate change issues.

The engagement of New Brunswickers in developing and implementing actions to address climate change has taken various forms in recent years.

Department of Environment and Local Government:

- delivered presentations and workshops at conferences, information sessions, home shows and events to raise awareness in regards to GHG emissions reduction and adaptation;
- developed partnerships with various agencies, communities, departments, groups, organizations and schools to assist in delivering climate change outreach initiatives;
- continued to implement the climate change engagement strategy. The department:
 - continued, in conjunction with the Project Planning Committee for the Climate Change Youth Engagement Network, to provide training and organize public awareness events for youth; such as Earth Hour events. The department in collaboration with NB Power,

- Efficiency NB, Saint John Energy, Perth-Andover Electric Light Commission, Edmundston Energy and the Department of Education and Early Childhood, encouraged all New Brunswickers to participate in Earth Hour 2012. New Brunswickers saved enough energy during Earth Hour 2012 to power approximately 15,000 homes, which is also the equivalent to turning off more than 2.1 million 13 watt compact fluorescent light bulbs (27.3 megawatts), making this year's Earth Hour the most successful to date in the province;
- in partnership with the CSA Canadian Standards Association, Efficiency NB, and the *Université de Moncton*, undertook the Family Eco-Challenge. Families from across New Brunswick made a commitment to reduce their carbon and water footprint as part of recognizing the families' contribution to the importance of climate change.
 - continued to administer projects funded by the New Brunswick Environmental Trust Fund, which provided more than \$437,000 for 20 climate change educational projects:
 - ACAP Saint John assisted the public appreciate the diversity of plants and wildlife within Greater Saint John, and discover their role and responsibilities in improving the environment in light of climate change;
 - the Bathurst College Foundation created an energy consumption analysis centre where groups, organizations and the general public can learn about ways to reduce energy consumption;
 - the Bathurst Sustainable Development:
 - continued to operate a Climate Change Action Centre which will provide information to the public about Climate Change, energy efficiency, reducing GHG emissions, and the programs available to help address climate change; and
 - partnered with the local Solid Waste Commission to assist local elementary schools in implementing green plans,
 - the Canadian Parks and Wilderness Society raised awareness regarding implementation of the NEW BRUNSWICK Climate Change Action Plan as it relates to natural areas conservation, forest management, community planning and smart growth;
 - Cape Jourimain Center:
 - promoted the use and adoption of renewable energy technologies on a provincial level; and
 - continued to deliver educational programs with an emphasis on biodiversity and renewable energy;
 - the Climate Change Hub continued to facilitate public education and build capacity among communities with regard to reducing greenhouse gas emissions;
 - the Comité de Gestion Environnementale de la Rivière Pokemouche educated school children about wetlands, climate change, ecological gardens and energy efficiency;
 - the Conservation Council of New Brunswick:
 - continued a Renewable Energy Assistance Hub for Southwestern New Brunswick. It served as a clearinghouse of information on renewable energy, linked people with technology demonstration projects and provided advice on adopting renewable; and
 - encouraged the consumption of locally produced food in order to reduce the greenhouse gas emissions associated with long-distance transportation;
 - Falls Brook Centre continued to operate a Renewable Energy Information and Assistance Centre for North-Western New Brunswick. The Center provided information on renewable

- energy technologies, linked people with demonstration sites, and provided advice on adopting renewable;
- Fredericton Community Services created a community garden with connection to the Fredericton Food Bank. Information sessions and displays will be part of the project;
 - Fredericton Green Shops conducted Sustainable Business Sessions for local enterprises that encouraged them to adopt sustainable and environmentally aware business practices;
 - New Brunswick Community Harvest Gardens created community garden spaces and deliver public workshops on sustainable gardening techniques;
 - the New Brunswick Lung Association expanded upon the SIMPLE Driver Stewardship Program which was designed to encourage Canadians to reduce fuel consumption and GHG emissions through the way they drive, maintain, and even purchase their vehicles;
 - the Really Local Harvest Coop developed a green plan for the Dieppe Farmers Market;
 - the Shediac Bay Watershed Association conducted educational sessions in schools and local businesses in order to promote energy and water conservation;
 - the Tabusintac Watershed Association educated the public about how to reduce their impact and adapt to climate change within their watershed; and
 - Vision H₂O educated students, businesses and the general public about energy conservation, climate change and greenhouse gas emissions.

Efficiency NB:

- continued to generate significant awareness and educate New Brunswickers about the importance of energy efficiency through a variety of partnerships.

Moving Forward



Accountability

“A Climate Change Secretariat has been created to help co-ordinate activities of government departments and to develop and implement initiatives for achieving the objective of the Climate Change Action Plan and raise awareness of climate change issues.” NBCCAP 2007-2012

The region met the target in the 2001 New England Governors and the Eastern Canadian Premiers (NEG/ECP) Climate Change Action Plan of reducing GHG emissions to the 1990 level by 2010 while the Gross Domestic Product (GDP) in the region grew by 60 per cent. New Brunswick’s reductions in GHG emissions contributed to this regional achievement. New Brunswick has contributed with GHG emissions trending downward and will meet the provincial target of returning to 1990 levels in 2012.

The Province has put in place numerous measures to monitor progress in order to remain accountable for its commitments to reduce GHG emissions and increase adaptive capacity to climate impacts. The Climate Change Secretariat collaborates with several government departments and agencies that deliver climate change activities and their actions are represented in this report. Many communities, industries, businesses, non-profit organizations and individuals have also contributed significantly to climate change efforts. This ongoing partnership between governmental departments and nongovernmental partners is essential to the success of the plan.

New Brunswick Climate Change Secretariat and Green Economy Project

New Brunswick Department of Environment and Local Government

P.O. Box 6000

Fredericton, New Brunswick E3B 5H1

Telephone: (506) 453-2690

Fax: (506) 457-4991

www.gnb.ca/climatechange

The summary and progress report are also available electronically.