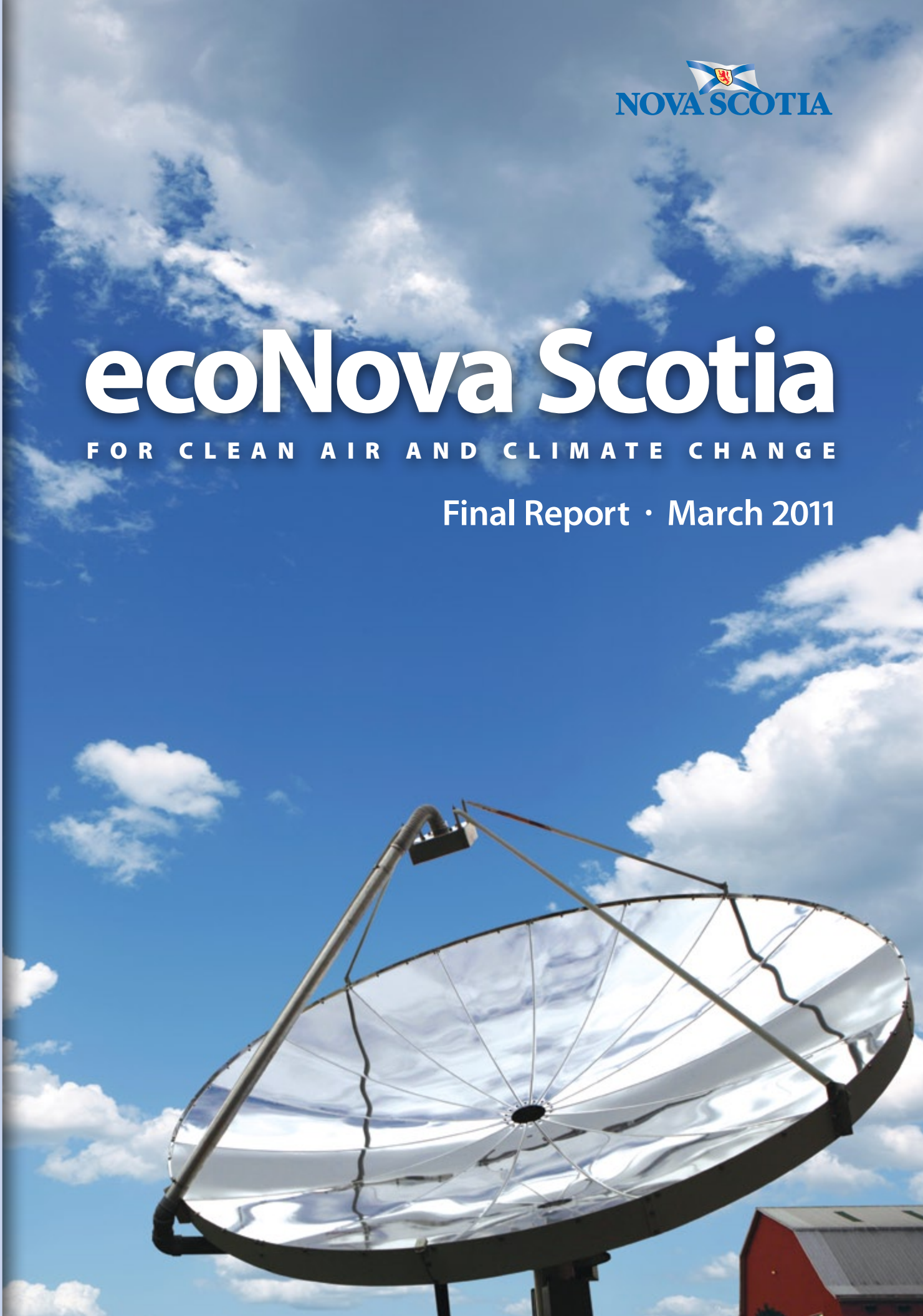
NOVA SCOTIA

ecoNova Scotia

FOR CLEAN AIR AND CLIMATE CHANGE

Final Report · March 2011



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Executive Summary

ecoNova Scotia for Clean Air and Climate Change, formerly called the *EcoTrust for Clean Air and Climate Change*, was designed to support the reduction of air pollutant and greenhouse gas emissions and build a foundation for future reductions in Nova Scotia. In March 2007 the Government of Canada distributed the Clean Air and Climate Change Trust Fund, about $1.5 billion, to the provinces and territories based on population. Nova Scotia's share of the trust fund was just under $42.5 million. The Nova Scotia government formed ecoNova Scotia to administer these funds.

ecoNova Scotia was led by the Departments of Environment and Energy. Projects were rigorously reviewed by a steering committee, which consisted of members of several provincial departments and agencies including Economic and Rural Development and Tourism, Service Nova Scotia and Municipal Relations, Treasury Board, Department of Finance and Conserve Nova Scotia.

This final report summarizes the achievements of the ecoNova Scotia program over its three-year mandate. It contains a full list of the projects and programs supported. It will also incorporate the results of an independent evaluation of ecoNova Scotia.

A total of 140 projects and programs received funding. These initiatives supported the provincial goal of reducing greenhouse gas (GHG) and air pollutant emissions as spelled out by the Environmental Goals and Sustainable Prosperity Act and the Climate Change Action Plan. They also helped to provide the necessary infrastructure, research and development, and education that will allow further greenhouse gas and air pollutant reductions in the future.

The project and program funding was distributed through several initiatives. ecoNova Scotia's Municipal Program (MP) provided grants to the province's municipalities. The Environmental Technology Program (ETP) offered grants to businesses and researchers. Eight other standalone projects supported reducing energy consumption, developing

new clean technology, and using innovative approaches to meet the province's environmental targets.

The guiding principles of the ecoNova Scotia program included developing, adopting and commercializing innovative environmental technologies, building capacity within the province for further emissions reductions, and creating economic and social benefits for Nova Scotia.

According to data provided by project proponents, it is anticipated that by 2020, projects funded by ecoNova Scotia will achieve 241,000 tonnes in greenhouse gas reductions and over 1,200,000 kilograms in air pollution reductions per year. Perhaps even more importantly, the program has laid a solid foundation that will lead to further reductions in the future, creating a healthier environment for all Nova Scotians for generations to come.

The project data received so far indicates that ecoNova Scotia also created over 100 good full-time jobs for Nova Scotians and helped to grow our economy.

An independent evaluation was also conducted of the ecoNova Scotia program. It validated the many benefits of the program, estimating that $15,763,000 was generated in wages and salaries in Nova Scotia and up to 428 jobs were created. The evaluation recommended that improvements be made to the process for tracking emission reductions, so that these benefits are definitively known. Such considerations should be made during the design phase of any future program.

We're proud of what the program has accomplished, and look forward to watching the momentum created by ecoNova Scotia continue well into the future.

Program Overview

THIS TABLE DETAILS THE PROJECTS AND PROGRAMS SUPPORTED BY THE ECONOVA SCOTIA PROGRAM.

Project/Program	Description
Municipal Program	$7.9 million to help municipalities reduce emissions and build capacity for further reductions in the future
Environmental Technology Program	$6.1 million to support innovative technologies developed by businesses and organizations
Tidal Energy Demonstration Project	$7.5 million to fund tidal energy demonstration projects in the Bay of Fundy
Capital Health Conversion to Natural Gas Project	$3.5 million to convert boilers at Capital Health's QEII Health Sciences Centre facilities to use natural gas
Wind Integration Study	$350,000 to evaluate the effect of adding electricity produced by renewable energy on Nova Scotia's existing transmission grid
Government-House-In-Order	$6.03 million to increase energy efficiency and reduce emissions from facilities owned or operated by the provincial government
Ice Rink Energy Project	$911,000 to reduce emissions from ice rink facilities in Nova Scotia
Transportation Sector Program	$3.5 million program to reduce air emissions from transportation, including school buses and courier companies
Halifax Seaport Farmers' Market	$1 million to reduce energy consumption and incorporate sustainable energy sources into the new facility
Residential Energy Affordability Program (REAP)	$2.5 million to provide free residential energy efficiency upgrades for low-income homeowners in homes that don't use electric heating.
Funds transferred to Efficiency Nova Scotia	Remaining funds from projects that came in under budget, or that were not able to be completed were transferred to Efficiency Nova Scotia. (Approximately $2.4 million)

Total Project Costs

$17.8 million
$22 million
$60 million up to $112 million
$6.8 million
$350,000
$12 million
$3.7 million
$3.5 million
$14.5 million
$2.5 million

What does this mean?

Based on results provided by project proponents, the activity ecoNova Scotia supported is expected to result in:

- **GHG reductions of at least 241,000 tonnes each year**
- **Air pollutant reductions of over 1,200,000 kilograms per year, by cutting**
- **sulphur oxides emissions by 824,000 kilograms/year**
- **nitrogen oxides emissions by 409,000 kilograms/year**
- **Equivalent of over 53,500 cars off the road per year**
- **Creation of at least 100 and as many as 428 good jobs**
- **Over $15,763,000 generated in wages and salaries**

In other words, every $100 of ecoNova Scotia funds invested resulted in the following:

- **0.57 tonnes of GHG emissions reductions each year**
- **Over 2.94 kilograms annually of air pollutant reductions**
- **$236 in additional funding leveraged from public and private sector for Nova Scotian projects**

For more information on *ecoNova Scotia for Clean Air and Climate Change* and the projects it supported visit our website at *www.gov.ns.ca/ecoNovaScotia*.

Background

This final report explains the projects and programs that have been funded and describes what they achieved as of the writing of this report, as the program moves towards its conclusion on March 31, 2011. ecoNova Scotia's 2008 and 2009 annual reports are available at *www.gov.ns.ca/ecoNovaScotia*.

What is ecoNova Scotia?

On March 31, 2007, the Government of Canada provided approximately $1.5 billion for the Clean Air and Climate Change Trust Fund. The trust fund was divided between Canada's provinces and territories based on population. Its purpose was to achieve real reductions of greenhouse gas (GHG) and air pollutant emissions. Nova Scotia's share of the trust fund was just under $42.5 million. The province formed *ecoNova Scotia for Clean Air and Climate Change* (formerly called *EcoTrust for Clean Air and Climate Change*) to administer the fund.

PRINCIPLES

The principles of ecoNova Scotia, set out by the province, include encouraging projects that:

- **develop** innovative environmental technologies
- **adopt** and commercialize environmental technologies
- **create** economic and social benefits in Nova Scotia
- **encourage** investment by public and private sector organizations
- **build** capacity within the province to initiate further emissions reductions

PROVINCIAL AIR EMISSIONS GOALS AND ECONOVA SCOTIA

Nova Scotia's *Environmental Goals and Sustainable Prosperity Act* (EGSPA) sets goals to significantly reduce air emissions by 2020. To learn more about the EGSPA and review its annual progress report, visit *www.gov.ns.ca/nse/egspa*. ecoNova Scotia's goals reflect the air emissions objectives outlined in the EGSPA, which include:

- reducing greenhouse gas emissions to at least 10 per cent below 1990 levels by 2020
- reducing emissions of nitrogen oxides by 20 per cent by 2009, relative to emissions in 2000
- reducing sulphur dioxide emissions from sources existing in 2001 by 50 per cent by 2010,
- meeting the Canada-Wide Standards for airborne fine-particulate matter and ozone by 2010

The Climate Change Action Plan (CCAP), released in January 2009, contains actions to achieve the objectives of the EGSPA. Two of the CCAP's main goals are to reduce our contribution to climate change by lowering greenhouse gas emissions and to improve air quality by reducing air pollutant emissions. You can learn more about the CCAP at *www.climatechange.gov.ns.ca*.

The programs and projects supported by ecoNova Scotia play an important role in implementing the Climate Change Action Plan because they help develop, adopt and implement renewable energy and energy efficiency initiatives.

How was the money spent?

ecoNova Scotia was managed jointly by Nova Scotia Environment and the Department of Energy, and guided by a steering committee consisting of members from several provincial departments and agencies including Economic and Rural Development and Tourism, Service Nova Scotia and Municipal Relations, Treasury Board, Department of Finance and Conserve Nova Scotia.

In 2007, the steering committee developed a business plan for the use of trust fund monies. It included support for projects considered priorities for the province, such as tidal energy and converting the QEII Health Sciences Centre facilities to natural gas. It also developed the framework for two application-based programs - the Municipal Program and the Environmental Technology Program - to encourage the development and adoption of innovative technologies to reduce air emissions.

Members of the steering committee rigorously reviewed each application for project funding, to ensure that the ecoNova Scotia funds were used in the most effective way possible. Recognizing that environmental, social, and economic aspects are intricately linked, the committee's review process considered the benefits to all these areas. They evaluated each project using a standardized scoring process, taking into account the objectives of ecoNova Scotia and the strength of the project's business plan.

This report details some of the projects approved for the last three application rounds in 2010-11, as well as a list of all projects supported by ecoNova Scotia.

Activity Update: Budget Summary

The deadline for applying for ecoNova Scotia funding was January 31, 2010. In the three application rounds since the 2009 annual report, support totaling $11.8 million was given to 78 projects.

The following table summarizes the total amount of funds committed to ecoNova Scotia projects to March 31, 2011.

Category	Funding total*
Municipal Program	$7,900,000
Environmental Technology Program	$6,100,000
Tidal Energy Demonstration Project	$7,500,000
Capital Health Conversion to Natural Gas	$3,500,000
Wind Integration Study	$350,000
Government House-In-Order	$6,030,000
Ice Rink Energy Project	$911,000
Transportation Sector Program	$3,500,000
Halifax Seaport Farmers' Market	$1,000,000
Residential Energy Affordability Project	$2,500,000
Funds transferred to Efficiency Nova Scotia	$2,400,000 (estimated)
Administration	$815,000

** Numbers are rounded, are accurate as of the time of final report printing and are subject to change*

BUDGET ADJUSTMENTS

The numbers above reflect reallocations within the budget in 2010-11. For example, due to the high number of applications for the Municipal Program, additional funds were allocated in order to meet the overwhelming demand.

ADMINISTRATION

A small portion of the overall fund was allocated to administration. This amounts to $815,000 or 1.9 per cent of the budget.

The administration costs were used to ensure that the ecoNova Scotia funds were managed efficiently and responsibly and that the program was properly promoted. Throughout the process, we continuously worked to improve the way we monitored, managed, administered, and evaluated our operations.

Effectively tracking each project's progress was a critical part of ensuring accountability. A comprehensive filing system was used to manage all documentation and electronic records related to project approvals, terms and conditions, project milestones, tasks, payments forecast, status reports, final reports and correspondence.

The program's independent evaluation, the Momentum Project and the costs of preparing and printing this final report are all included in the administration budget.

Activity Update: Projects and Programs

Projects and Programs:

Projects fall under the Municipal Program, the Environmental Technology Program, or are standalone projects. The following section provides an update on the projects and programs supported by ecoNova Scotia.

Municipal Program

The Municipal Program (MP) supported municipal and community-based projects to target greenhouse gas and air pollutant emissions. ecoNova Scotia allocated $7.9 million to help municipalities promote sustainability in their local communities.

Over the course of the program, 40 municipalities completed energy inventories and audits with ecoNova Scotia's support, while five more municipalities completed inventories and audits prior to 2007. This means that 82 per cent of all municipalities in Nova Scotia have completed this process.

It is worth noting that approximately 80 per cent of the Municipal Program participants that conducted energy audits in phase one of the Municipal Program funding participated in phase two projects to do recommended upgrades and retrofits.

Once areas for energy savings and sustainable energy retrofits were identified, ecoNova Scotia approved funding for projects that implemented recommended changes. Since the last annual report, ecoNova Scotia supported 65 Municipal Program projects to reduce air emissions and have a positive impact on the operating costs for communities.

Project Results:
MUNICIPAL PROGRAM

ecoNova Scotia Commitments

$7,888,601 in grants committed to 106 projects

Total Project Costs

$17,800,000

Direct GHG Emissions Reductions

12,020 tonnes/year (projected)

Direct Air Pollutant Reductions

50,370 kilograms/year (projected)

Equivalent Cars Off Of the Road

2,671

OTHER BENEFITS

These grants lowered municipal energy costs by an estimated $5 million annually, supported community-based projects, and helped municipalities serve as an example to their residents.

Examples of Municipal Program projects

The following are examples of municipal projects supported by ecoNova Scotia. You can find a list of all supported Municipal Program projects in Appendix A.

FACE-TO-FACE MEETINGS WITHOUT THE TRAVEL

The Association of Municipal Administrators of Nova Scotia (AMANS) is installing a video conferencing system that will help reduce the need for travel for AMANS staff, as well as municipal councils and staff. The municipal partners are very excited about this project, and are looking forward to having the video conferencing system in place in Spring 2011. Not only will the project save mileage costs and reduce the organization's contribution to greenhouse gas and air pollutant emissions, it will save staff a great deal of travel time that can be put toward other tasks.

DAYSPRING VOLUNTEER FIRE DEPARTMENT/ MUNICIPALITY OF LUNENBURG: SOLAR RETROFITS

Energy management initiatives are saving the Dayspring Volunteer Fire Department (Municipality of Lunenburg) thousands of dollars a year that can go into much-needed fire and rescue equipment and training for firefighters. The fire department installed two solar heating systems, upgraded its insulation and installed higher efficiency lighting and a new furnace, which resulted in a 30 per cent reduction in electricity use and a 35 per cent reduction in furnace oil costs, far beyond the original savings estimates.

The overall project cost was just over $17,000. Funding from ecoNova Scotia covered approximately 50 per cent, while Conserve Nova Scotia solar rebates covered approximately 12 per cent. The balance was covered by the two project partners, Dayspring & District Volunteer Fire Department and Municipality of the District of Lunenburg.

NEW GLASGOW: WIND ENERGY AND BUILDING RETROFITS FIT THE BILL

The town of New Glasgow is blessed with an ample supply of constant and strong wind. Taking advantage of this renewable resource, the town installed a 50 kilowatt wind turbine to help offset the power costs for the municipality's wastewater treatment facility. In addition, council focused attention on the town hall, which was originally constructed as one of the first post offices in Canada in 1884. State-of-the-art heat pumps have generated cost-savings, even compared to the modern heat pumps installed in 1999, and realized a greenhouse gas reduction of 10 tonnes in the first four months of operation. Other retrofits to the library and local stadium are expected to result in total energy savings of nearly $35,000 a year.

GUYSBOROUGH: SOLAR POWER RETROFITS

The Municipality of the District of Guysborough initially intended to focus on the cost of heating the water in the community pool, because propane heating was costing the community as much as $10,000 per year. Solar panels for pool water heating, domestic hot water and air heating were installed at Chedabucto Place, which houses the local P-12 school and the pool, and at town hall. The project will also incorporate ongoing learning opportunities by putting the solar panels in a visible place and setting up an interactive computer system to allow students to see how the temperature of the air and water are controlled. It is expected that the municipality will save about $8,800 per year on propane alone and the project will pay for itself in approximately five years.

Environmental Technology Program

The Environmental Technology Program (ETP) allocated $6.2 million to support 26 projects started by provincial businesses, institutions, and organizations. ecoNova Scotia funded projects that covered a range of activities, all with a goal of reducing emissions.

The Environmental Technology Program has been invaluable in supporting and demonstrating emerging technologies ready for commercialization. The development of these technologies in Nova Scotia will demonstrate our intent to become the cleanest and greenest province in the country and be recognized as a leader in energy efficiency and renewable energy technology.

As part of its desire to keep momentum going in the clean technology sector, ecoNova Scotia has created a website that highlights cleantech companies operating in the province. You can find this information at *www.gov.ns.ca/nse/cleantech*.

Project Results

ENVIRONMENT TECHNOLOGY PROGRAM

ecoNova Scotia Commitment

$6,131,896 in grants committed to 26 projects

Total Project Costs

$22,000,000

Direct GHG Emissions Reductions

183,454 tonnes/year (projected)

Direct Air Pollutant Reductions

583,000 kilograms year (projected)

Equivalent Cars Off Of the Road

40,767

OTHER BENEFITS

These grants created at least 100 jobs, developed opportunities to export goods or services, supported made-in-Nova Scotia innovation, and provided other environmental benefits.

Examples of Environmental Technology Program projects

The following are examples of environmental technology projects supported by ecoNova Scotia. You can find a list of all supported projects in Appendix B.

SOLARTRON

The sun has always been a source of power on our planet, but new technology is allowing companies like SolarTron to harness the sun's power more efficiently and effectively. SolarTron's SolarBeam Concentrator is equivalent to 15 conventional solar panels, and it is built to withstand extreme weather conditions including winds of up to 140 km/h.

The system can track the sun, uses inexpensive piping systems, and can be roof-mounted or post-mounted on the ground. The SolarBeam Concentrator can be used as a source of heat, air conditioning and electricity production.

LAFARGE

The Lafarge Group owns and operates the only operating cement plant in Atlantic Canada, located in Brookfield, Nova Scotia.

Traditionally, the production of cement making requires applying very high heat to materials, a process called sintering. This process produces a substance called clinker, which makes up 85-95 per cent of the finished concrete product. Sintering consumes a lot of fuel and releases substantial amounts of greenhouse gases and air pollutants.

The reduced-carbon process at the Brookfield plant will replace a portion of the clinker with other materials that have similar chemical bonding characteristics, but with less need for sintering. Emissions will be reduced by up to 24 per cent, and the project has global potential within the cement sector.

CARBON SENSE SOLUTIONS - FULL SCALE CONCRETE CURING TECHNOLOGY

Carbon Sense Solutions Inc., based in Halifax, Nova Scotia, invested over $1 million toward its award-winning concrete curing process, which improves the material performance of precast concrete, and, using unique technology, consumes carbon dioxide, which is a greenhouse gas.

Funding from the Nova Scotia government allowed Carbon Sense Solutions to undertake the first full-scale industrial trial of its concrete curing technology in 2010 as part of the ecoNova Scotia program. This technology has attracted national and international attention.

Other Projects

The following section provides descriptions of the standalone projects and programs funded by ecoNova Scotia.

TIDAL ENERGY DEMONSTRATION PROJECT AND TIDAL ENERGY RESEARCH

With the highest tides in the world, the Bay of Fundy offers tremendous potential for tidal energy generation. Initial estimates suggested tidal energy could supply 300 megawatts (MW) of clean, renewable energy, or about ten per cent of Nova Scotia's electricity needs, but more recent estimates by the Fundy Ocean Research Centre for Energy (FORCE) indicate that that the potential for tidal energy production in the Bay of Fundy is as high as 8,500 MW. The early development of tidal technology could lead to further emissions reductions and millions of dollars in investments in the province.

The Tidal Energy Demonstration Project has deployed one in-stream tidal energy device in the Minas Passage, and there are plans to test more devices in the near future. Each of these devices will represent a unique, emerging technology. The project is funded by ecoNova Scotia and other private and public sources, and managed by the Fundy Ocean Research Centre for Energy (FORCE).

Provincial and federal regulators approved the project with conditions in September 2009. The first generator was successfully deployed on November 12, 2009 by Nova Scotia Power and OpenHydro, an Irish company specializing in tidal energy. The environmental effects of the device were closely monitored. It has been removed for analysis by engineers and to gather data from its test. FORCE hopes to return this turbine to the Bay of Fundy as soon as possible.

In addition, ecoNova Scotia funded two small-scale tidal projects, in collaboration with the Department of Energy. A total of $500,000 will support this valuable research, which, like the other emerging technologies ecoNova Scotia has supported, will build a foundation from which further clean energy strategies may evolve in the future.

Project Results:
TIDAL ENERGY

ecoNova Scotia Commitment
$7,500,000

Total Project Costs
$60,000,000 up to $112,000,000

Direct GHG Emissions Reductions
18,000 and up to 233,000 tonnes/year (projected)

Direct Air Pollutant Reductions
37,700 kilograms year (projected)

Equivalent Cars Off Of the Road
2,700

OTHER BENEFITS

These include the development of a new industry in Nova Scotia, and the attraction of investment in renewable energy projects.

GOVERNMENT HOUSE-IN-ORDER PROJECT

The provincial government owns or controls the operations of about 2,000 buildings. Retrofits of these buildings will help reduce energy consumption, as well as lowering greenhouse gas and air pollutant emissions, and set an example for all Nova Scotians.

The Department of Transportation and Infrastructure Renewal conducted feasibility studies for provincial government buildings, including schools, to identify how energy is currently used and provide recommendations on what changes can reduce energy consumption. Once the information was gathered, projects were identified for retrofits to reduce energy consumption and use sustainable forms of energy. An initial $4.15 million was committed by ecoNova Scotia to fund these projects, and in 2010, a further $2.65 million was added to provide more retrofits to government buildings.

The measures included converting heating plants to natural gas, upgrading boilers and heating plant control systems, and energy retrofits with more efficient lighting, insulation, windows and other building improvements.

Project Results:
GHIO

ecoNova Scotia Commitment
$6,028,500

Total Project Costs
$12,000,000

Direct GHG Emissions Reductions
6,500 tonnes per year (projected)

Direct Air Pollutant Reductions
8,159 kilograms per year (projected)

Equivalent Cars Off Of the Road
1,444 (projected)

OTHER BENEFITS

A key component of this project was converting several buildings to natural gas, which was an incentive to having natural gas service extended to the local area, where it now benefits other buildings.

CAPITAL HEALTH CONVERSION TO NATURAL GAS PROJECT

Atlantic Canada's largest hospital complex, the Queen Elizabeth II Health Sciences Centre in Halifax, is a major energy consumer. With $3.5 million in support from ecoNova Scotia two of its facilities - the Victoria General site buildings and the Halifax Infirmary are converting to natural gas.

The fuel burning boilers used over 15.5 million litres of fuel per year before the project upgrades. After almost one year in operation, the full 15.5 million litres of fuel was saved, reducing greenhouse gas emissions by over 16,000 tonnes.

Project Results:
CAPITAL HEALTH

ecoNova Scotia Commitment
$3,500,000

Total Project Costs
$6,800,000

GHG Emissions Reductions
16,131 tonnes/year

Air Pollutant Reductions
440,100 kilograms/year

Equivalent Cars Off Of the Road
3,580

OTHER BENEFITS

Capital Health's operating costs will be reduced with lower capital costs to operate the new heating system. Local air quality near Halifax's downtown core will also be improved. The conversion of Capital Health buildings to natural gas acted also as a catalyst for bringing natural gas to the Halifax peninsula, where it is benefiting other businesses and homes in the area.

HALIFAX SEAPORT FARMERS' MARKET (NS FARMERS' MARKET DEVELOPMENT CO-OP)

The Halifax Farmers' Market, founded in 1750, is the oldest continuously running farmers' market in North America. The market has had tremendous success, and in August 2010 opened its new location at Pier 20 on the Halifax waterfront. The building is an ecological and cultural showpiece that links the province's urban and rural economies with sustainable practices that focus on local food and goods.

ecoNova Scotia contributed $1 million to support aspects of construction that helped make the Seaport Farmers' Market a leader in environment and energy design. The renovated Pier 20 building is built to LEED gold standards, and consumes no fossil fuels directly. Overall energy requirements are minimized. Heating requirements are met by geothermal and solar means, effectively heating the building without fossil fuels or greenhouse gas emissions. A combination of wind and solar energy powers the system. In summer, excess heat from the solar tubes is stored in the geothermal wells for winter use.

One of the largest green roofs in North America cools the building naturally, eliminating the need for power-hungry air conditioning, and the sun preheats hot water for bathrooms and vendors. Stormwater flows are mediated; rainfall irrigates the roof and supplies a grey-water cistern. The roof increases natural habitat in an urban environment, providing an ecological oasis for many species of butterflies, bees, insects, and birds. It's also great for the human spirit.

The new market is a clean-air environment: ventilation is natural and materials are non-toxic. The design lets in natural light to provide a brighter indoor environment to work and shop in, while significantly reducing electrical usage.

Project Results:

FARMERS' MARKET

ecoNova Scotia Commitment

$1,000,000

Total Project Costs

$13,700,000

GHG Emissions Reductions

576 tonnes/year (projected)

Direct Air Pollutant Reductions

1,717 kilograms/year (projected)

Equivalent Cars Off Of the Road

128

OTHER BENEFITS

The market helps consumers support local agriculture and small businesses. Showcasing sustainable design educates the public and construction trades about sustainable building options.

MOBILE DEWATERING TRUCK DEMONSTRATION PROJECT

Many municipalities need to have their sewage collection systems pumped in order for the wastewater to be treated at approved composting facilities. A Nova Scotia-based technology is available that separates wastewater solids from water, reducing the volume of materials to be hauled by 75-85 per cent. This decreases the number of trips made by the truck, helping municipalities to lower their fuel consumption, and also reduce their greenhouse gas and air pollutant emissions.

ecoNova Scotia contributed $300,000 to a mobile dewatering truck demonstration project that will take this technology to municipalities across the province, so they can gain a better understanding about how it might benefit their community.

TRANSPORTATION SECTOR PROJECTS

The ecoNova Scotia program provided funding to various initiatives within the transportation sector:

- Greening the School Bus Fleet program: $2.18 million in funding contributed by ecoNova Scotia to reduce fuel use, air pollutants and greenhouse gas emissions. Funding supported equipment purchase and installation, training costs for anti-idling and emission control devices, fleet management tools, route organization for fuel reduction, and other upgrades to save fuel on over 800 buses.
- Class 8 Trucking Program: ecoNova Scotia provided $670,000 in funding to offer financial incentives to Class 8 Heavy Duty Trucks to use technology to reduce fuel consumption and greenhouse gas and air pollution emissions. The Atlantic Provinces Trucking Association and Conserve Nova Scotia worked on this project, paying rebates to cover retrofit costs to tractor trailers for 25 companies.
- Hybrid Truck Program: Conserve Nova Scotia used $560,000 in ecoNova Scotia support to provide incentives to businesses to purchase hybrid heavy-duty trucks. In 2010, the program allowed Purolator Courier to purchase 43 hybrid trucks.
- Green Personal Driver Program: This program supported the DriveWiser education campaign, Green Mobility Grants to communities for sustainable transportation projects, and the development of a campaign to further educate the general public about personal vehicles and energy efficiency.

RESIDENTIAL ENERGY AFFORDABILITY PROGRAM (REAP)

ecoNova Scotia contributed $2.5 million in funding to the Residential Energy Affordability Program, aimed at providing free energy-efficiency upgrades to low-income homeowners who use non-electric heating. (Houses that are heated by electricity were supported by electricity demand-side management funds through Nova Scotia Power and they are now assisted by Efficiency Nova Scotia.)

In partnership with Community Services, families in 340 homes were able to complete energy-efficiency upgrades. These retrofits will help homeowners and their families save money. It will also reduce air pollution and greenhouse gas emissions.

Project Results:
TRANSPORTATION SECTOR

ecoNova Scotia Commitment
$3,500,000

Total Project Costs
$3,500,000

GHG Emissions Reductions
1,367 tonnes/year (projected)

Direct Air Pollutant Reductions
12,083 kilograms/year (projected)

Equivalent Cars Off Of the Road
300

Project Results:
REAP

ecoNova Scotia Commitment
$2,500,000

Total Project Costs
$2,500,000

GHG Emissions Reductions
1,334 tonnes/year (projected)

Direct Air Pollutant Reductions
2,646 kilograms/year (projected)

Equivalent Cars Off Of the Road
296

ICE RINK ENERGY PROJECT (IREP)

Nova Scotia has more than 100 skating, hockey, and curling rinks. These facilities have an enormous potential to conserve energy and reduce emissions because many of the rinks are more than 30 years old and lack the more efficient technology used in construction today. This funding was announced in December 2009.

Through $910,500 from ecoNova Scotia, IREP helped 34 arenas upgrade their operations to increase energy efficiency. Typical improvements included:

- high bay fluorescent light fixtures that use less energy and reduce heat on the ice surface
- better controls to shut off unnecessary lights
- low emissivity reflective ceilings to reduce ice plant operation and increase effective light levels
- heat recovery tanks to use waste heat from refrigeration plants to preheat flood water and domestic hot water
- dehumidifiers to reduce refrigeration plant run times
- controls to optimize the operation of ice plant and brine • pumps to save energy by eliminating unnecessary use

The ecoNova Scotia funding was administered by the Recreation Facility Association of Nova Scotia (RFANS), a provincial non-profit association, in partnership with Conserve Nova Scotia, Nova Scotia Power and the Department of Health and Wellness.

Project Results:

IREP

ecoNova Scotia Commitment

$910,500

Total Project Costs

$3,700,000

GHG Emissions Reductions

8,079 tonnes/year (projected)

Direct Air Pollutant Reductions

99,353 kilograms/year (projected)

Equivalent Cars Off Of the Road

1,795

ECONOVA SCOTIA MOMENTUM PROJECT

As the program entered its final year of operation, the ecoNova Scotia team wanted to ensure that the momentum generated continued beyond the March 31, 2011 program completion date. The ecoNova Scotia Momentum Project was created to produce two website projects:

Dollars and Sense: Better Energy Practices for Municipalities was created in collaboration with the Union of Nova Scotia Municipalities. This website offers inspirational success stories from among ecoNova Scotia's Municipal Program projects, and information on how communities can begin their journey toward reducing energy consumption and using more sustainable forms of energy. For more information please visit *www.sustainability-unsm.ca/* and click on the Dollars and Sense link.

The Cleantech Sector in Nova Scotia: An exciting element of the ecoNova Scotia program was the opportunity to work with and support clean technology (cleantech) companies originating or operating within Nova Scotia. We created a website highlighting the achievements of some of these companies, offering links that will inform local, national, and international companies and investors. The website can be found at *www.gov.ns.ca/nse/cleantech*.

Providing benefits to Nova Scotians today, and into the future

One of the key principles of ecoNova Scotia is to create economic, environmental and social benefits in Nova Scotia. The following sections outline how the program has lived up to this principle, reaping immediate and future environmental, economic and social rewards for the province.

Environmental Benefits

The steering committee's first consideration in supporting projects was to ensure that they would reduce air emissions. Each project was evaluated to determine what its effect on emissions would be. Some projects, such as those that improved building energy efficiency, began to reduce energy use immediately and those savings will continue every year for the life of the building. Other projects have longer-term results that will grow more dramatically over time. For example, a newly developed product that is used in just a few households in its early days can be used in hundreds or thousands of households after it becomes established.

The projects and programs supported by ecoNova Scotia, described in this report, will significantly cut air emissions in Nova Scotia. Based on information provided by project proponents, by 2020, these projects will:

- reduce GHG emissions by 241,000 tonnes each year
- lower air pollutant emissions by over 1,200,000 kilograms/year by cutting
- sulphur oxide emissions by 824,000kilograms/year
- nitrogen oxide emissions by 409,000 kilograms/year
- remove the equivalent of 53,500 cars from provincial roads
- net the equivalent of $176 per tonne of ecoNova Scotia investment for every tonne of greenhouse gas reduction

Many projects that were supported by ecoNova Scotia are expected to result in spinoff reductions as they transform technology and standard practices in the province, encouraging other innovations.

Economic Benefits

COST SAVINGS FOR MUNICIPALITIES

Many of the projects supported by ecoNova Scotia directly involved the participation of municipalities or organizations funded by municipalities such as ice rinks, libraries and swimming pools. By undertaking energy audits and investing in energy saving technology and sustainable sources of energy such as solar and wind power, municipalities are saving money now and down the road. These funds can, in turn, be invested back into the community.

COST SAVINGS FOR THE PROVINCE

The Nova Scotia government has made living within its means a key priority. By investing in energy retrofits to many provincially-owned buildings, the province is saving money that can be invested in health care, education and other programs and services valued by Nova Scotians.

EMPLOYMENT

The projects listed in this report required millions of dollars in equipment and materials and they generated a significant level of involvement from all kinds of Nova Scotia's citizens. Hundreds of people were employed during the development of projects, many of which are creating new jobs upon their completion, growing Nova Scotia's economy. The 140 projects poured millions of dollars of wages and salaries into the economy. The projects under the Environmental Technology Program are expected to create even more permanent jobs as these companies grow and expand their markets.

The ecoNova Scotia projects also leveraged millions of dollars in additional investments by private business and other levels of government.

Social Benefits

Clean air is important if we want to lead healthy lives. Air pollutant emissions such as nitrogen oxides, sulphur oxides, and particulate matter can lead to reduced outdoor air quality, including smog. This can harm those most vulnerable—young children, seniors, and those with heart or lung conditions. Reducing air emissions will lead to better local air quality, which is a part of improving our communities' health. The greenhouse gas and air emissions reductions from the ecoNova Scotia program could produce health benefits valued at millions of dollars by 2020. To learn more about air quality and its relationship with human health, visit *www.gov.ns.ca/nse/air/*.

The social benefits of projects funded through ecoNova Scotia have been substantial. Significant economic activity leads to more jobs for Nova Scotians, which benefits their well-being. Increased training opportunities in environmental technologies will lead to good jobs in our workforce, and help the province's economy to grow, which increases the standard of living.

A number of community-based projects were undertaken through the Municipal Program. These projects improved recreation facilities, volunteer fire halls, and other community facilities, and they helped reduce energy consumption and operating costs for municipalities across the province.

ecoNova Scotia resulted in:

$15.8 million in wages and salaries

$26,974,000 million in GDP

As many as 428 jobs

Evaluation of ecoNova Scotia (2011), ICF Marbek

Evaluation of ecoNova Scotia

Throughout its history, ecoNova Scotia has placed a high value on accountability. That is why ICF Marbek, an environmental and energy management consulting firm, was hired to conduct an independent evaluation of the program. The evaluation report highlighted the many successes of the program, while providing valuable insight into how a similar program might be managed in the future.

Due to the structure of ecoNova Scotia, and its March 31st, 2011 end date, Marbek reviewed the program while it was still progress. As a result, a number of projects were still in the process of completion, so not all data was available at the time of preparing their report. Marbek also identified opportunities for improving emissions data collection so that it will be easier to measure benefits in the future.

Emissions data presented elsewhere in the ecoNova Scotia final report are based on projections for all projects for the year 2020 (Nova Scotia's greenhouse gas reduction target year), and on data provided by project proponents. We also took the step of having Marbek evaluate emissions reductions. Their data is based on a subset of projects, and on what reductions should be expected in 2011-12.

For the 13 projects Marbek was able to evaluate with confidence, emissions reductions were 26,196 tonnes per year of greenhouse gases, and a further 753,000 kilograms per year in air pollutant reductions. These numbers represent the level of greenhouse gas and air pollutant reductions from a subset of projects for one year (2011-12). Information from other projects continues to flow into ecoNova Scotia from proponents.

Aside from immediate emissions reductions, the evaluation report indicates that ecoNova Scotia lived up to its principles in the following ways:

BUILDING CAPACITY TO INITIATE FURTHER EMISSIONS REDUCTIONS

ecoNova Scotia helped build capacity among municipalities, allowing them to undertake projects that reduce emissions.

ecoNova Scotia filled a funding gap for the pre-commercial development phase of new environmental technologies. This is essential to enable technologies to progress towards market entry in Nova Scotia.

Our projects and programs helped to develop technical capacity through important research and by increasing technical knowledge in Nova Scotia; and

Human capacity was supported and expanded through the educational components included in projects. In particular, using in-person methods to deliver this education was seen as a positive achievement of ecoNova Scotia.

ECONOMIC BENEFITS FOR NOVA SCOTIANS

- $15,763,000 in wages and salaries in Nova Scotia
- 428 jobs created
- $541,000 in tax revenue was generated

There was a significant economic impact in Nova Scotia as a result of the program, with nearly $27 million in GDP generated.

SOCIAL BENEFITS FOR NOVA SCOTIANS

Marbek estimated that the 26,196 tonnes per year in emissions reductions from the 13 projects it was able to evaluate with confidence would result in between $4 and $15 million in health benefits in 2011-12.

OTHER OBSERVATIONS

Marbek had a number of additional observations and recommendations for how evaluation and measurement could be conducted in similar projects in the future. These included:

The program has clearly achieved many successes, and has funded a number of excellent and very important projects;

The ability to capture and report environmental benefits would be enhanced if evaluation plans, protocols, recipient reporting requirements and internal impact tracking systems were in place. In future programs, a greater portion of the budget should be allocated to these components to align with best practices.

Conclusion

This is ecoNova Scotia's final year of operation. It has been a privilege to help communities, companies, institutions, individuals and organizations make the province a cleaner place to live. A number of quality projects and programs resulted from ecoNova Scotia, offering all Nova Scotians the promise and reality of a sustainable future.

We recognize that many of the projects supported by ecoNova Scotia were foundational in nature, which fits with ecoNova Scotia's goal to build capacity and create an environment where future and continued energy savings and emissions reductions will be realized. We are confident that the educational and innovative projects supported by ecoNova Scotia will continue to reap environmental rewards for generations to come, resulting in:

- GHG and air pollutant reductions, and building the potential for more
- helping Nova Scotian communities, businesses, and institutions contribute solutions to our environmental challenges
- ushering in the next generation of environmental technologies
- moving Nova Scotia to a more sustainable economy

All ecoNova Scotia funds were committed to projects and programs, however some projects finished under budget, while a few were withdrawn by proponents. This resulted in a portion of the budget being unspent at the time the program was concluded. The Province has decided to allocate these remaining funds to Efficiency Nova Scotia so they can continue efforts to reduce emissions in Nova Scotia.

In conclusion, this unique environmental fund resulted in greenhouse gas and air pollution emission reductions now, as well as building the capacity for future reductions. It allowed emerging environmental technologies to be demonstrated and prepared for entry into the marketplace. Our projects created good jobs and contributed millions of dollars to the economy. Best of all, ecoNova Scotia showed just how creative and capable Nova Scotians really are.

We look forward to seeing the momentum of the ecoNova Scotia program continue to grow in the years to come.

Appendix A

The chart below provides details of committed project grants under the Municipal Program. Proponents are listed in alphabetical order, with the project review round in parentheses.

Proponent	Description	MP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
Amherst, Town (8)	Energy emissions inventory & audit**	9,923	12,403	Capacity building
Amherst, Town (9)	50kW wind turbine for Town of Amherst sewage treatment plant	144,900	335,000	GHG – 120 tonnes/year SOx – 252 kilograms/year NOx – 105 kilograms/year
Amherst, Town (9)	LED street light conversion	580,000	1,160,000	GHG – 375tonnes/year SOx – 790 kilograms/year NOx – 329 kilograms/year
Amherst, Town (9)	Fire department electrical heating system conversion to natural gas	38,000	76,000	GHG – 135 tonnes/year SOx – 1,511 kilograms/year NOx – 397 kilograms/year
Annapolis, Municipality (2)	Energy emissions inventory & audit	10,000	31,031	Capacity building
Annapolis, Municipality (9)	Building envelope upgrades to 11 municipal buildings	12,000	24,000	GHG – 75 tonnes/year SOx – 182 kilograms/year NOx – 66 kilograms/year
Annapolis, Municipality (9)	Building lighting systems retro-fit in up to five municipal buildings	32,000	64,000	GHG – 101 tonnes/year SOx – 215 kilograms/year NOx – 88 kilograms/year
Antigonish, Municipality (1)	Energy emissions inventory & audit	6,014	11,308	Capacity building
Antigonish, Municipality (2)	Purchase of septage/sludge dewatering truck to reduce diesel consumption and reduce methane emissions	150,000	300,000	GHG – 158 tonnes/year SOx – 118 kilograms/year NOx – 1,787 kilograms/year
Antigonish, Town (6)	Energy emissions inventory & audit	10,000	17,576	Capacity building
Antigonish, Town (9)	Renovation of an existing building into an energy efficient library, including geothermal heat and energy efficient computer network	409,781	896,515	GHG – 166 tonnes/year SOx – 349 kilograms/year NOx – 145 kilograms/year
Antigonish, Town (9)	LED street light conversion	49,500	99,000	GHG – 27 tonnes/year SOx – 56 kilograms/year NOx – 23 kilograms/year
Argyle, Municipality (7)	Energy emissions inventory & audit	10,000	16,000	Capacity building
Argyle, Municipality (9)	Energy efficient upgrades at the town administration building	3,250	6,500	GHG – 4 tonnes/year SOx – 42 kilograms/year NOx – 11 kilograms/year
Argyle, Municipality (9)	West Pubnico sewer treatment plant, heat recovery system	37,500	75,000	GHG – 29 tonnes/year SOx – 61 kilograms/year NOx – 26 kilograms/year

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Proponent	Description	MP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
Arthur Irving Academy for the Environment (5)	The Community Emissions Challenge: develop a web-based household air emission calculator and carry out educational outreach on energy conservation	120,000	240,000	GHG – 3,950 tonnes/year SOx – 8,316 kilograms/year NOx – 3,465 kilograms/year
Association of Municipal Administrators of NS (9)	Municipal video conferencing program	127,030	254,360	Capacity building
Barrington, Municipality (7)	Energy emissions inventory & audit	10,000	18,540	Capacity building
Berwick, Town (1)	Energy emissions inventory & audit	6,000	8,000	Capacity building
Berwick, Town (3)	Installation of monitors on 200 homes to measure effect of energy monitoring on consumer energy use	64,000	147,500	Capacity building
Berwick, Town (8)	Energy efficient modifications to town hall	47,000	94,000	GHG – 17 tonnes/year SOx – 54 kilograms/year NOx – 15 kilograms/year
Berwick, Town (9)	LED street light conversion	101,573	235,966	GHG – 184 tonnes/year SOx – 387 kilograms/year NOx – 161 kilograms/year
Bridgetown, Town (1)	Energy emissions inventory & audit	8,000	10,000	Capacity building
Bridgewater, Town (2)	Energy emissions inventory & audit	10,000	22,000	Capacity building
Bridgewater, Town (8 & 9)	Energy efficient modifications to municipal buildings, including solar thermal and oil heating retrofits	160,000	320,000	GHG – 369 tonnes/year SOx – 4,142 kilograms/year NOx – 1,088 kilograms/year
Canso, Town (7)	Energy emissions inventory & audit	10,000	24,500	
Canso, Town (9)	LED street light conversion	98,250	196,500	GHG – 42 tonnes/year SOx – 88 kilograms/year NOx – 37 kilograms/year
Caped Breton Regional Municipality, (9)	Energy emissions inventory & audit	10,000	62,178	Capacity building
Chester, Municipality (4)	Energy emissions inventory & audit	8,000	13,700	Capacity building
Chester, Municipality (4)	Energy efficient modifications to Church Memorial Park arena	80,080	326,000	GHG – 51 tonnes/year SOx – 81 kilograms/year NOx – 34 kilograms/year
Chester, Municipality (8)	Incorporation of a hybrid vehicle for daily operation	4,700	38,500	GHG – 1 tonnes/year SOx – 0 kilograms/year NOx – 3 kilograms/year
Colchester, Municipality (8)	Energy emissions inventory & audit	10,000	15,000	Capacity building
Colchester, Municipality (9)	Construction of a new energy efficient branch library in Tatamagouche	60,825	127,650	GHG – 37 tonnes/year SOx – 78 kilograms/year NOx – 33 kilograms/year
Cumberland, Municipality (2)	Energy emissions inventory & audit	10,000	12,500	Capacity building
Cumberland, Municipality (9)	Installation of a SolarTron's SolarBeam Concentrator	9,753	19,505	GHG – 8 tonnes/year SOx – 20 kilograms/year NOx – 5 kilograms/year

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Proponent	Description	MP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
Dayspring & District Volunteer Fire Department (6)	Solar air and water heating retrofit	8,613	17,388	GHG – 9 tonnes/year SOx – 24 kilograms/year NOx – 8 kilograms/year
Digby, Municipality (1)	Energy emissions inventory & audit	7,400	11,000	Capacity building
Digby, Municipality (6)	Energy efficient modifications to municipal administration building	190,000	505,238	GHG – 34 tonnes/year SOx – 72 kilograms/year NOx – 30 kilograms/year
Dr. Bernie Maclean Cultural & Recreation Centre (9)	Replacement of refrigeration system	47,183	353,868	GHG – 111 tonnes/year SOx – 235 kilograms/year NOx – 98 kilograms/year
East Hants, Municipality (8)	Energy emissions inventory & audit	10,000	30,000	Capacity building
East Hants, Municipality (9)	Energy efficient upgrades at up to seven municipal building	145,000	290,000	GHG – 500 tonnes/year SOx – 1,065 kilograms/year NOx – 438 kilograms/year
Guysborough, Municipality (7)	Energy emissions inventory & audit	10,000	14,062	Capacity building
Guysborough, Municipality (9)	Pool solar heating project and school domestic hot water system	93,861	187,722	GHG – 156 tonnes/year SOx – 458 kilograms/year NOx – 129 kilograms/year
Guysborough, Municpality (8)	Replacement of hot water boiler with high efficiency step-fired boilers	3,850	32,852	GHG – 5 tonnes/year SOx – 17 kilograms/year NOx – 5 kilograms/year
Halifax Regional Municipality (1)	Installation of solar hot water panels at Centennial Pool	220,000	440,000	GHG – 65 tonnes/year SOx – 206 kilograms/year NOx – 58 kilograms/year
Halifax Regional Municipality (1)	Energy efficient modifications to Metro Transit building in Burnside	284,577	579,155	GHG – 499 tonnes/year SOx – 1,035 kilograms/year NOx – 437 kilograms/year
Halifax Regional Municipality (1)	Energy efficient modifications to Sackville Sports Stadium	400,000	800,000	GHG – 72 tonnes/year SOx – -53 kilograms/year NOx – 45 kilograms/year
Halifax Regional Municipality (2)	Energy efficient modifications to 11 HRM facilities	550,000	1,400,000	GHG – 494 tonnes/year SOx – 3,436 kilograms/year NOx – 574 kilograms/year
Halifax Regional Municipality (9)	Installation of hybrid cooling systems on 8 transit busses to improve fuel efficiency by up to 10%	107,980	215,960	GHG – 81 tonnes/year SOx – 259 kilograms/year NOx – 73 kilograms/year
Halifax Regional Municipality (9)	LED street light conversion	918,807	1,837,613	GHG – 934 tonnes/year SOx – 1,967 kilograms/year NOx – 820 kilograms/year
Kentvillev, Town (1)	Energy emissions inventory & audit	10,000	15,000	Capacity building
Kings, Municpality (1)	Energy emissions inventory & audit	10,000	14,100	Capacity building
Lockeport, Town (5)	Energy emissions inventory & audit	4,160	5,162	Capacity building
Lockeport, Town (8)	LED light conversion on harbourfront boardwalk	2,405	24,045	GHG – 9 tonnes/year SOx – 107 kilograms/year NOx – 28 kilograms/year

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Proponent	Description	MP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
Lunenburg, Municipality (3)	Energy emissions inventory & audit	7,191	10,000	Capacity building
Lunenburg, Town (2)	Energy emissions inventory & audit	4,400	5,500	Capacity building
Lunenburg, Town (6)	Energy efficient upgrades to several municipal buildings	14,692	89,968	GHG – 117 tonnes/year SOx – 284 kilograms/year NOx – 103 kilograms/year
Lunenburg, Town (9)	LED street light conversion	76,191	152,382	GHG – 7 tonnes/year SOx – 78 kilograms/year NOx – 20 kilograms/year
Mahone Bay, Town (6)	Energy emissions inventory & audit	9,799	12,940	Capacity building
Mahone Bay, Town (9)	Energy efficient modifications to fire hall	5,665	12,231	GHG – 17 tonnes/year SOx – 45 kilograms/year NOx – 15 kilograms/year
Mahone Bay, Town (9)	Energy efficient modifications to town hall	3,116	6,232	GHG – 3 tonnes/year SOx – 0 kilograms/year NOx – 0 kilograms/year
Mahone Bay, Town (9)	Energy efficient modifications to water/waste water facility	2,847	5,694	GHG – 23 tonnes/year SOx – 259 kilograms/year NOx – 68 kilograms/year
Mahone Bay, Town (9)	LED street light conversion	16,839	33,678	GHG – 14 tonnes/year SOx – 28 kilograms/year NOx – 12 kilograms/year
Mobile dewatering truck demonstration project	Demonstration of mobile dewatering truck technology to municipalities	300,000	550,000	Capacity building
Mulgrave, Town (3)	Energy emissions inventory & audit	9,104	11,400	
Mulgrave, Town (7)	Energy efficient modifications to public works building	11,638	52,956	GHG – 10 tonnes/year SOx – 31 kilograms/year NOx – 9 kilograms/year
New Glasgow, Town (1)	Municipal building optimization and arena heat recovery	214,042	453,585	GHG – 148 tonnes/year
New Glasgow, Town (9)	50KW turbine for water treatment plant	156,000	312,000	GHG – 115tonnes/year SOx – 243 kilograms/year NOx – 101 kilograms/year
Northumberland Regional High School (9)	Wind and solar energy education module	10,582	21,328	GHG – 1 tonnes/year SOx – 1 kilograms/year NOx – 1 kilograms/year
Parrsboro, Town (1)	Energy emissions inventory & audit	4,400	5,800	Capacity building
Pictou, Municipality (3)	Energy emissions inventory & audit	8,262	10,981	Capacity building
Pictou, Town (3)	Energy emissions inventory & audit	9,279	12,529	Capacity building
Pictou, Town (8)	Energy efficient modifications to municipal buildings	37,990	75,980	GHG – 113 tonnes/year SOx – 673 kilograms/year NOx – 181 kilograms/year
Port Hawkesbury, Town (8)	Energy emissions inventory & audit	10,000	15,024	Capacity building

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Proponent	Description	MP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
Port Hawkesbury, Town (9)	Energy efficient modifications to municipal buildings	180,000	543,758	GHG – 363 tonnes/year SOx – 2,301 kilograms/year NOx – 618 kilograms/year
Queens, Municipality (9)	Energy emissions inventory & audit	10,000	13,239	Capacity building
Queens, Municipality (9)	Beyond conventional energy efficiency for Queens Place Recreation Centre	137,150	408,300	GHG – 232 tonnes/year SOx – 670 kilograms/year NOx – 206 kilograms/year
Richmond, Municipality (8)	Energy emissions inventory & audit	9,920	12,400	Capacity building
Richmond, Municipality (9)	Energy efficient modifications to Richmond arena	16,308	35,000	GHG – 29 tonnes/year SOx – 320 kilograms/year NOx – 84 kilograms/year
Richmond, Municipality (9)	Energy efficient modifications to Arichat/ Petit de Grat Sewage Treatment Plant	18,162	38,000	GHG – 33 tonnes/year SOx – 376 kilograms/year NOx – 99 kilograms/year
Richmond, Municipality (9)	Energy efficient modifications to Arichat/ Petit de Grat Water Treatment Plant	25,008	50,016	GHG – 38 tonnes/year SOx – 420 kilograms/year NOx – 110 kilograms/year
Richmond, Municipality (9)	Energy efficient modifications to Louisdale Sewage Treatment System	30,827	61,654	GHG – 49 tonnes/year SOx – 550 kilograms/year NOx – 144 kilograms/year
Ross Creek Centre for the Arts (8)	Energy efficient modifications to arts centre	27,808	162,500	GHG – 54 tonnes/year SOx – 44 kilograms/year NOx – 45 kilograms/year
Shelburne, Municipality (5)	Energy emissions inventory & audit	9,487	11,887	Capacity building
Shelburne, Town (5)	Energy emissions inventory & audit	9,641	12,412	Capacity building
Shelburne, Town (9)	Municipal buildings energy management heating program	2,650	5,300	GHG – 9 tonnes/year SOx – 18 kilograms/year NOx – 7 kilograms/year
St. Mary's, Municipality (8)	Energy emissions inventory & audit	10,000	13,000	Capacity building
St. Mary's, Municipality (9)	Energy efficient modifications to Sherbrooke sewer and water utility plants	17,700	35,500	GHG – 36 tonnes/year SOx – 75 kilograms/year NOx – 31 kilograms/year
Telile Community Television (9)	Installation of a solar wall	5,000	10,600	GHG – 7 tonnes/year SOx – 16 kilograms/year NOx – 7 kilograms/year
Trenton, Town (1)	Energy emissions inventory & audit	8,666	19,591	Capacity building
Trenton, Town (5)	Energy efficient modifications to Trenton arena	165,425	610,850	GHG – 564 tonnes/year SOx – 1,682 kilograms/year NOx – 503 kilograms/year
Truro, Town (6)	Energy emissions inventory & audit	10,000	18,843	
Truro, Town (8)	Installation of heat recovery system on the existing refrigeration plant and a low emissivity ceiling	138,457	596,213	GHG – 95 tonnes/year SOx – 272 kilograms/year NOx – 84 kilograms/year

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Proponent	Description	MP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
Union of NS Municipalities (9)	Municipal sustainability scan	5,600	12,000	Capacity building
Victoria, Municipality (5)	Energy emissions inventory & audit	7,884	9,855	Capacity building
West Hants, Municipality (6)	Energy emissions inventory & audit	10,000	87,204	Capacity building
West Hants, Municipality (8)	Construction of a new fire station with enhanced insulation, geothermal heating system, and high efficiency mechanical systems	193,931	387,863	GHG – 658 tonnes/year SOx – 1,365 kilograms/year NOx – 569 kilograms/year
West Hants, Municipality (9)	Energy efficient modifications to Falmouth Sewage Treatment Plant	9,644	19,289	GHG – 39 tonnes/year SOx – 81 kilograms/year NOx – 34 kilograms/year
West Hants, Municipality (9)	Municipal office building HVAC upgrade	77,020	192,901	GHG – 77 tonnes/year SOx – 163 kilograms/year NOx – 68 kilograms/year
Westville, Town (3)	Energy emissions inventory & audit	6,595	9,742	Capacity building
Westville, Town (6)	Energy efficient upgrades to the fire and police station	43,602	87,204	GHG – 67 tonnes/year SOx – 205 kilograms/year NOx – 60 kilograms/year
Wolfville, Town (1)	Energy emissions inventory & audit	8,000	10,000	Capacity building
Wolfville, Town (6)	Energy efficient upgrades to the town hall/fire station/ambulance facility	25,000	50,000	GHG – 43 tonnes/year SOx – 105 kilograms/year NOx – 38 kilograms/year
Yarmouth, Municipality (1)	Energy efficient modifications to new administration building	265,164	572,839	GHG – 241 tonnes/year SOx – 506 kilograms/year NOx – 211 kilograms/year
Yarmouth, Town (2)	Energy emissions inventory & audit	10,000	21,800	Capacity building
Totals		**7,888,601**	**11,825,638**	**GHG – 12,020 tonnes/year SOx – 36,381 kilograms/year NOx – 13,989 kilograms/year**

*Environmental benefits are presented in projected emissions reduction per pollutant in Nova Scotia in the year 2020. Projects are continuously monitored, and the latest available data on potential emissions may mean the benefits published in the final report differ from the 2009 annual report.

**Energy emissions inventories & audits involve measuring energy use and emissions directly attributable to municipal operations, as well as identification of opportunities to reduce energy use and emissions.

Appendix B

The chart below provides details of committed project grants under the Environmental Technology Program. Proponents are listed by the project review round, with the round number in parentheses.

Proponent	Description	ETP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
Carbon Sense Solutions (9)	Full scale implementation of concrete curing technology in pre-formed concrete (in partnership with Shaw Brick)	467,188	1,145,692	GHG – 3,470 tonnes/year SOx – 1,955 kilograms/year NOx – 685 kilograms/year
Clare Machine Works Ltd. (9)	Development and commercialization of a programmable bait release apparatus used in trap fishing industries	69,123	138,245	GHG – 15,642 tonnes/year SOx – 49,729 kilograms/year NOx – 14,008 kilograms/year
LaFarge North America (9)	Low carbon cement with equivalent performance	670,000	2,412,500	GHG – 76,000 tonnes/year SOx – 179,000 kilograms/year NOx – 158,000 kilograms/year
Mersey Tobeatic Research Institute (9)	Carbon neutral demonstration site in the Southwest Nova Biosphere Reserve	56,526	135,012	GHG – 55 tonnes/year SOx – 116 kilograms/year NOx – 48 kilograms/year
Rainbow Net and Rigging(9)	Environmentally friendly sustainable aquaculture net servicing facility using biomass, solar wall, solar thermal and waste water treatment technology	94,000	3,581,050	GHG – 640 tonnes/year SOx – 1,967 kilograms/year NOx – 572 kilograms/year
SolarTron Energy Systems (9)	4.5m die and tooling equipment for manufacturing of SolarBeam Concentrator	50,567	101,135	GHG – 1,140 tonnes/year SOx – 6,250 kilograms/year NOx – 3,000 kilograms/year
N-Viro Systems Canada LP (8)	Full scale plant test run of N-ViroFuel	221,000	507,000	GHG – 22 tonnes/year SOx – 46 kilograms/year NOx – 20 kilograms/year
Scotian Windfields Inc. (8)	Phase change materials thermal storage system	53,627	243,453	GHG – 24 tonnes/year SOx – 76 kilograms/year NOx – 21 kilograms/year
Soil and Crop Improvement Association of NS (8)	Adapting the Holos GHG Calculator for emission estimation of whole farms in Nova Scotia	18,500	48,000	GHG – 45,000 tonnes/year
Clearwater Seafoods Ltd. Partnership (7)	Installation of Double Mechanism Sorptive Refrigeration (DMSR) technology on off-shore fishing platforms	232,000	2,250,000	GHG – 1,635 tonnes/year SOx – 2,933 kilograms/year NOx – 44,609 kilograms/year
Shean Co-Operative Limited (with Avide Developments) (7)	Installation of multi-parallel compressor plant with heat reclaim technology and high-speed defrost technology	74,000	443,000	GHG – 136 tonnes/year SOx – 432 kilograms/year NOx – 122 kilograms/year
Acadian Seaplants Ltd. (6)	Elimination of sand in the recovery of seaweed by-product	250,000	775,806	GHG – 3,417 tonnes/year SOx – -1,012 kilograms/year NOx – 26,359 kilograms/year
West Nova Agro Commodities Ltd. (6)	Heat recovery system for the grain drying industry	60,000	120,000	GHG – 365 tonnes/year SOx – 2 kilograms/year NOx – 350 kilograms/year

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Proponent	Description	ETP Grant ($)	Total Project Costs ($)	Projected Emissions Reductions Every Year*
3225076 NS (5)	Solar hot water heating	60,963	142,000	GHG – 16 tonnes/year SOx – 52 kilograms/year NOx – 15 kilograms/year
BioGas Energy Inc. (5)	Containment and purification of methane and CO_2 from anaerobic digestion facilities	65,000	130,000	GHG – 6,755 tonnes/year
LED Roadway Lighting (4)	Pilot demonstration of 1100 LED streetlights on NS roadways	756,000	1,901,000	GHG – 368 tonnes/year SOx – 774 kilograms/year NOx – 323 kilograms/year
NS Community College (4)	Incorporate energy conservation and efficiency measures in the Centre for the Built Environment	1,414,000	4,186,400	GHG – 1,592 tonnes/year SOx – 2,132 kilograms/year NOx – 648 kilograms/year
South Shore Fieldhouse Society (3)	Build a new indoor soccer fieldhouse with energy efficient technologies	191,328	514,903	GHG – 163 tonnes/year SOx – 344 kilograms/year NOx – 143 kilograms/year
Carbon Sense Solutions (2)	Carbon Sense concrete preliminary GHG demonstration study	141,718	344,831	Pilot, emissions related to full scale project
Eon WindElectric Inc. (2)	Cost effective residential scale wind turbine	73,317	152,633	GHG – 4,811 tonnes/year SOx – 10,128 kilograms/year NOx – 4,220 kilograms/year
SF Rendering (2)	Investigating and developing biomass pellets for use in an industrial heating application	142,057	284,114	GHG – 146 tonnes/year SOx – 464 kilograms/year NOx – 131 kilograms/year
Thermo Dynamics Limited (2)	Design improvements to existing solar thermal panel technology to make it more efficient and cost effective	81,000	178,000	GHG – 20,543 tonnes/year SOx – 51,538 kilograms/year NOx – 18,162 kilograms/year
Université Sainte-Anne (2)	Convert an oil-fired boiler to a combination biomass boiler and solar hot water system	614,000	1,928,000	GHG – 1,331 tonnes/year SOx – 3,800 kilograms/year NOx – 100 kilograms/year
NS Federation of Agriculture (1)	Develop a system to audit energy use and identify opportunities to reduce consumption at NS farms	37,000	83,000	GHG – 120 tonnes/year
Windsor Curling Club Ltd (1)	Construct a new facility that incorporates energy efficient technology	135,409	530,565	GHG – 63 tonnes/year SOx – 538 kilograms/year NOx – 128 kilograms/year
Parrsboro Metal Fabricators (1)	Design and develop a commercial scale biomass boiler to encourage fuel switching	103,573	328,614	withdrawn
Totals		**6,131,896**	**22,379,912**	**GHG – 183,454 tonnes/year SOx – 311,200 kilograms/year NOx – 271,637 kilograms/year**

* Environmental benefits are presented in projected emissions reduction per pollutant in Nova Scotia in the year 2020. Projects are continuously monitored, and the latest available data on potential emissions may mean the benefits published in the final report differ from the 2009 annual report.

For more information on ecoNova Scotia for Clean Air and Climate Change and the projects it supported, visit our web site at **www.gov.ns.ca/ecoNovaScotia**