



Énergie NB Power

Groupe Group

Environmental Performance Report 2005



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Message from the President and Environmental Committee Chair

The NB Power Environmental Annual Report 2005 is another demonstration of the importance placed on conscientious environmental stewardship by every member of our team. Protection of the natural environment goes hand-in-hand with providing reliable electricity service to the people of New Brunswick.



In 2005, the benefits of Coleson Cove refurbishment were reflected in our environmental reporting for the first time – with emissions flowing through the new control systems. NB Power also took an important step toward green energy development through calls for proposals to add more wind power generation.

In July 2005, NB Power also welcomed the Provincial Government decision to refurbish Point Lepreau Generating Station, a project that will contribute to greenhouse gas emission reductions in the future and help to sustain the domestic supply of electricity for consumers.

We rely on consistent guiding principles, clear corporate policies, and active environmental management systems to deliver our products and services in a manner that harmonizes to the greatest degree possible with the varied community surroundings hosting our operations throughout the Province.

This report provides a factual snapshot of our effectiveness in sustaining a practical, precautionary approach to environmental management. In many instances comparisons are also included to communicate the progress being made to continuously improve our approach.

The people of NB Power Group are justifiably proud of our environmental track record and committed to continued excellent performance in this aspect of our work.



Bernard Cyr

David D. Hay



David D. Hay,
President, CEO NB Power Group



Bernard Cyr,
Chair, Environmental Committee, NB Power Group Board of Directors

Environmental Governance

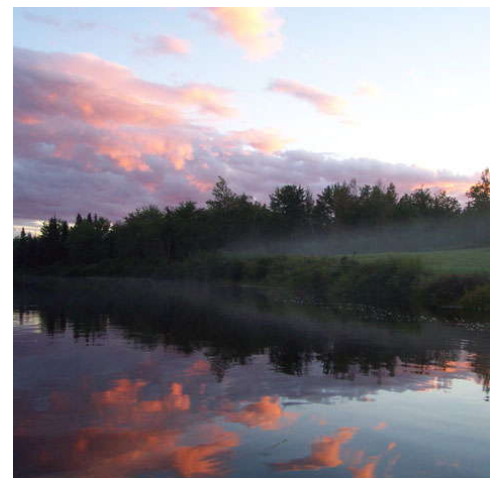
The Environment Committee exists to assist the Boards in establishing and maintaining appropriate Board policies that guide the companies in respect to the outcomes to be achieved in meeting or exceeding their environmental obligations.

Accordingly, the Environment Committee will regularly review:

- the scope of company operations and the environmental regulatory requirements under which the company(ies) operate;
- the environmental expectations of the shareholders and of New Brunswick citizens; and,
- the economic impact of environmental options on the company.

The Committee will also:

- monitor environmental trends and significant changes in related environmental technology,
- assess the impact of emerging environmental issues as the companies change their operations in pursuit of their strategic vision or as regulatory requirements and/or society's expectations shift, and



- prepare a range of well-researched policy options and their implications of each for board deliberation, debate and decision.

The members of the Environment Committee of the Board are: Bernard Cyr (Chair), Lise Bastarache, Susan Hicks and David D. Hay (ex-officio).



Susan Hicks Bernard Cyr David D. Hay Lise Bastarache

The NB Power Group

The NB Power Group provides reliable, safe, and reasonably-priced electricity with respect for the environment, while providing a commercial return to the Province. The electricity is generated at fifteen (15) facilities and delivered via power lines, substations and terminals to more than 360,000 direct and indirect customers within New Brunswick and surrounding areas.



The NB Power Group consists of a holding company and four operating companies:

- New Brunswick Power Holding Corporation ('Holdco'), which provides governance as well as corporate and shared services to the Group's other business segments.
- New Brunswick Power Generation Corporation ('Genco'), which is responsible for the operation and maintenance of the oil, hydro, coal, Orimulsion[®] and diesel-powered generating stations.
- New Brunswick Power Nuclear Corporation ('Nuclearco'), which is responsible for the operation and maintenance of the Point Lepreau Generating Station ('PLGS').
- New Brunswick Power Transmission Corporation ('Transco'), which is responsible for operating and maintaining the transmission system.
- New Brunswick Power Distribution and Customer Service Corporation ('Disco'), which is responsible for operating and maintaining the distribution system.

Environmental Policy

NB Power Group Environmental Policy is designed to communicate the Corporation's commitment to protecting the environment.

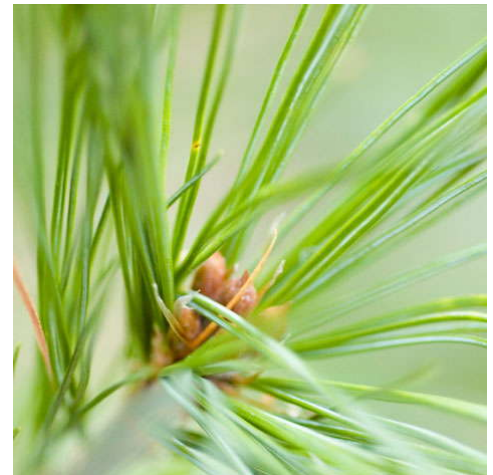
Statement

NB Power Group is committed to the achievement of excellence and innovation in protecting the environment of the province, while meeting its mandate to provide economic and reliable energy to the people of New Brunswick. NB Power Group considers that the environmental performance of its facilities is as important to its customers as the quality of the service which they receive.

The environmental principles which follow guide NB Power Group's environmental performance, and affirm NB Power Group responsibility for, and commitment to, environmental protection.

Leadership

NB Power Group maintains a leadership role in the investigation of new environmentally responsible technologies and methodologies, through cooperative efforts with the public, industry, researchers, and government.



Environmental Standards

NB Power Group complies with all applicable environmental legislation and other non-regulatory commitments at its facilities, from early planning through operation and finally to decommissioning.

Environmental Audits

NB Power Group is committed to periodic environmental audits of its facilities and associated monitoring programs, to assess compliance with regulatory requirements and consistency with industry standards and internal procedures.

Environmental Protection

NB Power Group provides a framework for setting and reviewing objectives, targets and procedures to assist its employees in meeting the utility commitment to environmental protection, prevention of pollution and improvement of its environmental management systems.

Partnership

NB Power Group strives to ensure that its Environmental Policy is respected by all its partners, including contractors, consultants, and suppliers of goods and services.

2005 Environmental Reporting Highlights

Genco received seventeen (17) environmental regulatory approvals during 2005:

- Eight (8) Petroleum Storage Site Licences
- Four (4) Approvals to Operate – Air
- Three (3) Approvals to Operate – Water
- Two (2) Approvals to Operate – Domestic Sewage



Emissions have been going through the Flue Gas Desulphurization Unit at the newly refurbished Coleson Cove Generating Station since July 2005.

On July 29, 2005, the Government of New Brunswick announced that Nuclearco will proceed with the refurbishment of Point Lepreau Generating Station.

Transco received five (5) environmental regulatory approvals during 2005:

- Blanket Watercourse and Wetland Alteration Permit – May 2005
- Letter of Approval from the International Boundary Commission (revised) for the International Power Line (IPL) Project
- Watercourse and Wetland Alteration Permit for International Power Line (IPL) Project
- License of occupation for work in Loch Alva Protected Natural Area
- Letter of approval to proceed from the Department of Fisheries and Oceans for work on submarine cables

A Request for Expression of Interest for wind energy proposals was issued by Disco increasing their planned percentage of generation from renewable sources to ten percent (10%).

Disco put in place a net metering policy designed to encourage private, small-scale development of renewable or alternate generating assets.

Disco launched a pilot re-lamping program to refit street lights with the Lumalux Plus[®]Eco[®] energy-efficient high pressure sodium (HPS) lights.

NB Power Holding Corporation (Holdco)

Overview

Environmental Services, a division of Holdco, provides support to the four operating companies by:

- integrating environmental management with operations and project planning;
- acquiring regulatory approvals for facilities and new construction;
- monitoring compliance with regulatory approvals and reporting to regulating agencies;
- consulting with external agencies and stakeholders on environmental issues;
- providing environmental information to customers, staff, regulatory authorities and the public; and,
- monitoring and providing input on new and revised environmental standards and legislation.



Environmental Council

The Environmental Council, comprised of members from each operating company, assists in communicating and maintaining the commitment to the Holdco Environmental Policy throughout the group of companies.

Their purpose is to:

- Ensure there is clear understanding of environmental responsibilities between the new operating companies and Environmental Services in order to fulfill environmental responsibilities;
- Develop a co-operative approach between council members to share knowledge and identify key resources;
- Review the status of environmental management systems;
- Communicate key environmental challenges facing the areas represented by council members; and
- Establish and maintain a database of environmental legislation appropriate to the operating companies and assign responsibility to track legislative changes so there will be appropriate communication to council members and operating personnel.

National Benchmarks

Holdco, as the parent company, is a member of the Canadian Electricity Association and participates in the Environmental Commitment and Responsibility (ECR) program.

Through this industry-wide initiative, electric utilities report on specific measures and indicators to benchmark performance. The principles of the ECR program are to:

- Be more efficient in our use of resources;
- Reduce the adverse environmental impact of our business;
- Be accountable to our constituents; and
- Ensure that our employees understand the environmental implications of their actions and have the knowledge and skills to make the right decisions.

Holdco submitted data to the Environmental Commitment and Responsibility (ECR) Program for the year 2004 on behalf of NB Power Group.

Environmental Commitment and Responsibility Program Indicators 2004⁰

	NB Power	CEA
Energy Conversion Efficiency of Fossil Fuel Generating Stations	35.5%	33.84%
Internal Energy Efficiency – Generation	94.6%	96.38%
Internal Energy Efficiency – Transmission	98.0%	96.95%
Internal Energy Efficiency – Distribution	96.0%	95.58%
Reuse of Electrical Insulating Oil	46.5%	63.33%
Utilization of Solid Combustion By-Products	65.4%	29.89% ¹
Atmospheric Emissions ² :		
Mass Gross CO ₂ Emitted Per Unit of Net Fossil Generation (kg/kWh)	0.760	0.95
Mass Gross CO ₂ Emitted Per Unit of Net System Generation (kg/kWh)	0.455	0.34
Mass Net CO ₂ Emitted Per Unit of Net Fossil Generation (kg/kWh)	0.760	0.93
Mass Net CO ₂ Emitted Per Unit of Net System Generation (kg/kWh)	0.455	0.34
Mass SO ₂ Emitted Per Unit of Net Fossil Generation (g/kWh)	6.7	4.96
Mass SO ₂ Emitted Per Unit of Net System Generation (g/kWh)	4.0	1.79
Mass NO _x Emitted Per Unit of Net Fossil Generation (g/kWh)	1.8	1.77
Mass NO _x Emitted Per Unit of Net System Generation (g/kWh)	1.1	0.64
Number of Spills Reported to External Agencies	139	597
PCB Management:		
Total inventory of high level PCB material in storage (tonnes)	0	27.5
Total inventory of low level PCB material in storage (tonnes)	40.5	374.6
Total amount of high level PCB material sent for destruction (tonnes)	0	154.8
Total amount of low level PCB material sent for destruction (tonnes)	35.50	924.7
Generation of Low and Intermediate Level Radioactive Waste ³	56.42	361.6

⁰ Figures are for calendar year 2004 consistent with the reporting timeframe for the ECR Program.

¹ Genco number is significantly higher than the industry average due to the utilization of gypsum from the Flue Gas Desulphurization units at Belledune and Dalhousie.

² Genco numbers are higher than the industry average due to the fact that the industry average includes a large percentage of hydroelectric generation in Canada. Genco emission rate of SO₂ per unit of fossil generation is higher than the industry average due to generation from fuels with higher sulphur content.

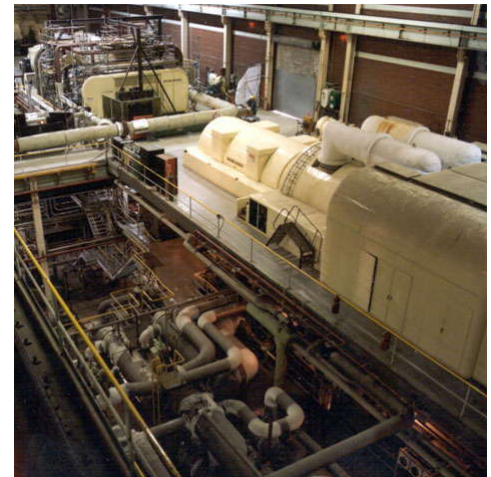
³ Nuclearco number is significantly lower than the industry average due to the number of reactors in prolonged outages in Ontario.

Findings from the ECR Program are used to assess where NB Power companies are relative to other Canadian organizations wherever there is a 'like-to-like' basis for comparison.

NB Power Generation Corporation (Genco)

Overview

Genco operates one of North America's most diverse generating systems consisting of fourteen (14) hydro, coal, oil, diesel and Orimulsion[®]-powered stations. This network of conventional generating stations produces safe, economical and dependable electricity with a generating capacity of 3,313 MW.

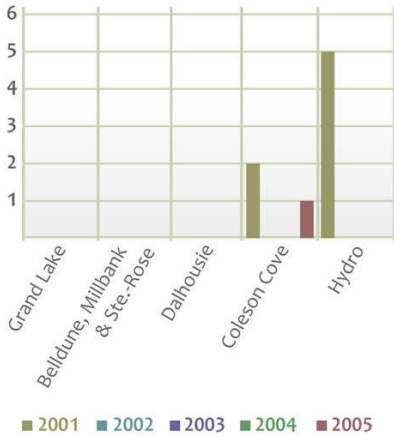


Genco is committed to protecting the environment while generating electricity. Each generating station operates with approvals issued under the New Brunswick Department of Environment's *Clean Environment Act* and *Clean Air Act* and in accordance with provincial and federal acts and regulations.

Installed advanced environmental protection equipment allows Genco to effectively manage air emissions and wastewater discharges. Genco has also established a progressive waste management and minimization program.

Major Non-conformance

EMS element not addressed or not implemented



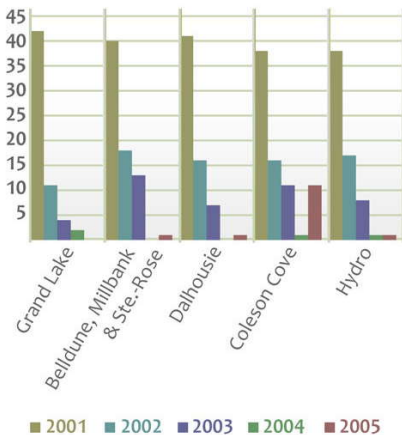
Environmental Management System

Genco has five (5) distinct Environmental Management Systems (EMS) in place at:

- Belledune (which includes Millbank and Ste.-Rose combustion turbines)
- Dalhousie
- Grand Lake
- Coleson Cove (including Grand Manan combustion turbine)
- Hydro stations (Mactaquac, Grand Falls, Beechwood, Tobique, Milltown and Sisson)

Minor Non-conformance

Deficiencies in EMS concerning conformance to ISO 14001 or planned arrangements



The Genco EMS is a voluntary program that is consistent with ISO 14001 standards. The station staffs maintain their EMS by:

- Monitoring performance (through internal and external audits);
- Training employees; and,
- Reviewing the accuracy of procedures and emergency response plans

Contractors and other non-Genco employees whose work may have an impact on the environment are also required to adhere to the Genco EMS.

Audit Results

In 2005 external audits were conducted at all five Genco EMS locations.

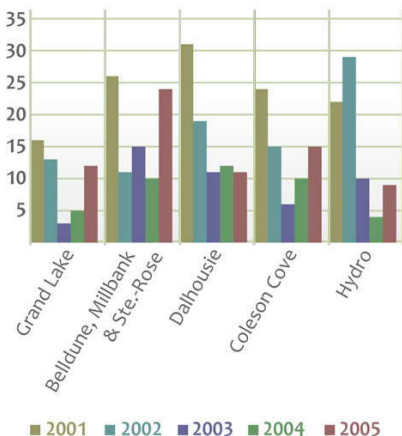
Each audit team consisted of a NB Power employee from a different station, or Environmental Services (a department within Holdco) as well as an external consultant as lead auditor. Each of the five audits focused on the activities, products and services that were managed by the particular station's EMS.

In all cases, the ISO 14001:1996 standard and each station's policies, procedures and programs were used as the audit criteria. In addition, a gap assessment against the requirements of the ISO 14001:2004 standard was completed. Genco EMS will be updated in 2006 when the audits will measure compliance to the new standards ISO 14001:2004.

The 2005 audit represented a measurably increased effort over the previous year. Each station has maintained an acceptable level of conformance over the last five years. In the case of Coleson Cove, the refurbishment project resulted in the requirement to make significant changes to their EMS. This year's EMS audit occurred before these changes were complete, which contributed to the increased number of

Opportunity for Improvement

Suggested improvements to elements of the EMS that could avoid future non-conformances or result in efficiencies in the system



audit findings. Plans are currently being developed to address non-conformances found as a result of the audit.

The graphs below summarize how each station has progressed compared with previous audits.

Hydro Generating Stations EMS

Objective	Target	Performance
Beechwood and Tobique		
Oil Management Program	Governor Oil Level Gauges: <ul style="list-style-type: none"> Change lighting in the accumulator tank tunnel at Beechwood and around the tanks at Tobique Develop procedure on taking governor oil volumes Develop graphs for governor oil volumes 	Target achieved
	Check what is available for appropriate sight glasses for accumulators and sumps and change out sight glasses	Target not achieved; need to review
	Review shutdown settings for governor oil pumps	Target not achieved; need to review
		Target not achieved; waiting for new sight glasses
		Target not achieved; finish date set as 06/09/30
Milltown		
Oil Management Program	Install reliable timers for pumping turbine bearing grease on Unit 5	Target achieved

Thermal Generating Stations EMS

(Dalhousie – DH, Belledune – BD, Millbank – MB, Ste.-Rose – SteR, and Grand Lake – GL)

Objective	Target	Performance
Spill Management Program		
Reduce potential for spills that may cause a significant impact on the environment	DH – Test one Orimulsion [®] spill plan	Target achieved
	DH – Clean & inspect one Orimulsion [®] fuel oil tank and develop procedure(s) for cleaning oil storage tanks	Cancelled – Project cannot be done, due to unavailability of tank and fuel shipment schedule.
	DH – Repair fuel delivery pipeline supports	Target achieved
	DH – Change motors on second sea truck from two-cycle to four-cycle	Target achieved
	DH – Install tube inserts in Unit #1 turbine lube oil coolers	Target achieved
	BD – Clean coal sedimentation lagoon	Target achieved
	BD – Review and determine appropriate repair options for the equalization basin	Target achieved
	BD – Identify piping/manholes that require inspection for possible cleaning	Carried to 2006

Objective	Target	Performance
	BD – Monitor ash leachate lagoon liner/inlet pipe	Target achieved
	MB – Study feasibility of recommissioning fuel oil storage tank #1	Target achieved
Waste Management Program		
Reduce waste (garbage and fly ash) sent to landfill	DH – Program discontinued, waste management handling at Dalhousie is optimized at this time	
Air Quality Improvement Program		
Reduce the number of reportable air quality exceedences in the long term	DH – Report on air quality situations such as the plume visibility issue, testing programs, and new technology as required	Target achieved
	DH – Replace Unit 1 opacity meter	Target achieved
	DH – Replace current limit reactors (CLR's) for Wet Electrostatic Precipitator (WESP)	Target achieved
	DH – Purchase SO ₂ ground level analyzer calibrator	Target achieved
	BD – Improve operation of dry fly ash chute	Cancelled due to operating changes
	BD – Carry out ash transport lines inspection program	Target achieved
	BD – Install hi-voltage monitor on west side of property	Target achieved
	BD – Pave a section of site road	Cancelled
	BD – Identify and repair source of flue gas leak at ID fan dampers	Carried to 2006
	BD – Replace NO _x analyzer used with the ambient air quality monitoring system (replacement due to planned upgrade)	Target achieved
	BD – Review and determine future requirements for upgrade/replacements for the analyzers used with the CEMS and ambient air quality monitoring network	Target achieved
	BD – Determine requirement for capping of the ash cell. Carry out work if deemed necessary.	Target achieved
Air Quality Improvement Program		
Comply with Approval to Operate – Air assisted by completion of (2) projects	GL – Facilitate Upgrade to Environmental Information System computer system	Target achieved
	GL – Ensure required documents are submitted to Department of Environment re: Application for Approval To Operate – Air	Target achieved

Objective	Target	Performance
Water Use Management Program		
Reduce freshwater consumption	DH – Maximize use of recycled water	An average of 30.07% of treated wastewater was recycled per month; target was 30%
	DH – Divert spring water to Flue Gas Desulphurization make-up	5,521,580 USG diverted; target of 2,500,000 exceeded
	DH – Ensure the firewater consumption does not exceed target	5,110,000 USG less firewater used per month than targeted
	DH – Monitor and clean, if required, piping system for wastewater discharge (Flue Gas Desulphurization to mist eliminator tank)	Target achieved
	DH – Determine possibility of re-routing other sources of groundwater to Flue Gas Desulphurization or other uses instead of wastewater	Two potential re-routing projects have been identified
	DH – Continue efforts to determine alternate fresh water sources	Pilot testing program of ultra filtration unit completed September 2005; carried to 2006
	DH – Complete modifications to CW Cooling System to reduce use of firewater of Unit 1 boiler feed pump coolers	Target achieved
	DH – Identify options for recovering reverse osmosis reject water	Reject water can be used in absorber tower; carried to 2006
	DH – Optimize water collection from gypsum product vacuum filter belts	Carried to 2006
Wastewater Management Program		
To effectively operate the ash lagoon	GL – Arrange for hydroseeding of Ash Lagoon	Carried to 2006
	GL – Coordinate removal of grey ash from Ash lagoon as required	Cancelled
	GL – Investigate possibility of fly ash removal system	On target
	GL – Review recommendations of Ash Lagoon improvements	Target achieved
	GL – Coordinate ash lagoon improvement projects as required	Carried to 2006
	GL – Ensure required documents are submitted to Department of Environment re: Application for Approval To Operate – Water	Target achieved
	GL – Facilitate upgrade of CPRO/Ash lagoon pH monitoring systems.	Target achieved
	GL – Assess long term storage requirements of grey ash bags	Target achieved

Objective	Target	Performance
EMS Improvement Program		
To ensure continual improvement of the EMS system	BD – Continue the EMS training program for Belledune staff	Carried to 2006
	BD – Ensure compliance with the ISPS (International Ship & Port Security) Code adopted by the Marine Transportation Security Regulation	Target achieved
	BD – Review and update the Station orientation program	Carried to 2006
	BD – Provide an “open house” to members of the public	Carried to 2006
	MB – Replace data acquisition system for ground water well level and conductivity monitoring	Target achieved
	MB – Install jumbo starter	Target achieved
	MB – Expand on the Millbank EMS Awareness Course to include Belledune employees	Target achieved
	SteR – Replace the data acquisition system for ground water well level and conductivity monitoring	Target achieved
	SteR – Expand on the Ste.-Rose EMS Awareness Course to include Belledune employees	Target achieved
Revise EMS Management Program		
To align the EMS with key business objectives	GL – Revise C-IPP#51 Environmental Management System (EMS) – Identification of Significant Aspects	Target achieved
	GL – Review the activities, products and services at Grand Lake and using new criteria, score the significance of the associated aspects	Target achieved
	GL – Develop a new list of Significant Environmental Aspects (SEAs)	Target achieved
	GL – Review and Approval of new SEAs	Target achieved
	GL – Develop Management Summaries for new SEAs	On target
	GL – Review and revise EMS Manual and Training Manual as required	Target achieved
	GL – Present revised EMS to employees (EMS awareness)	Carried to 2006

Releases of Petroleum Products



Waste Management

Genco reports annual results to the National Pollutant Release Inventory (NPRI), a nationally legislated (CEPA1999), publicly-accessible data repository for facilities that match the reporting requirements. The NPRI tracks:

- on-site releases to air, water, land;
- off-site transfers for disposal; and,
- off-site transfers for recovery, reuse, recycling.

In 2005, Genco reported a total of nineteen (19) spills of petroleum products - none involving PCB contaminated oil. Cleanup and reporting of the spills to the appropriate regulatory authorities was done in all cases.

Combustion Products Management

Genco has identified and implemented measures to reduce landfill requirements for its combustion products:

- The synthetic gypsum (a product of the flue gas desulphurization system) produced at the Belledune, Dalhousie and Coleson Cove stations, was sent for processing into wallboard.
- Fly ash (another combustion product from the burning of coal) produced at the Belledune station was diverted from landfill through sale to the concrete industry, through a partnership with Separation Technologies Canada (STC).
- Fly ash and bottom ash from the combustion of Orimulsion® at the Dalhousie station was recycled for the extraction of vanadium.
- Fly ash and bottom ash from the combustion of heavy fuel oil at the Coleson Cove station is also being recycled for the extraction of vanadium.

Air Quality

All thermal generating stations as well as the Millbank Combustion Gas Turbine station have equipment to monitor ambient air quality and emissions appropriate for each station. The equipment is used to monitor and report findings to the appropriate sources and corrective actions at the station are taken when required.

A flue gas desulphurization system (called a scrubber), which significantly reduces sulphur dioxide (SO₂) emissions is installed at each of the Coleson Cove, Belledune, and Dalhousie Generating Stations

Electrostatic Precipitators are used to control particulate emissions at Coleson Cove, Belledune, Dalhousie, and Grand Lake.

Low NO_x burner - a specifically designed burner to limit nitrogen oxide emissions - is used at the Belledune Generating Station. To control nitrogen oxide emissions at the Millbank and Ste.-Rose combustion turbines, high-efficiency water injection systems (using ultra-pure water produced from each station's water treatment plant) are used. In addition, advanced combustion control systems are in place at Coleson Cove to limit NO_x.

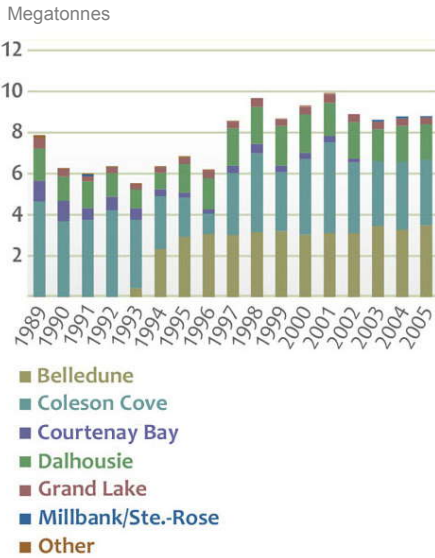
A low-sulphur light fuel oil, which ensures low sulphur dioxide emissions, is used at Millbank, St.-Rose and Grand Manan.

During 2005, Dalhousie, Belledune, Grand Lake and Coleson Cove received renewed regulatory air quality approvals.

The Approval to Operate for the Grand Lake Generating Station was re-issued in 2005 under a Plan that was submitted to the NB Department of Environment in 2004: *Emissions Reduction – Management Plan for the Grand Lake Generating Station*. The Plan presented the results of investigations into the future of the station including its remaining useful life and the potential for re-powering of Unit #8; as well as the feasibility of installing and operating air pollution control devices for sulphur dioxide, mercury, and nitrogen oxides. The Plan also outlined an operating strategy based on the remaining useful life of the facility. The condition of the Approval to Operate requires that Genco submit an update to the Plan prior to March 31, 2008.

Genco continued to operate seven (7) Precipitation Monitoring sites for the measurement of wet sulfate deposition (acid rain). Genco participates jointly with the New Brunswick Department of Environment in operating a combined total of thirteen (13) sites which constitute the New Brunswick Precipitation Monitoring Network. Biannual audits were conducted at each site as per the quality assurance requirements for internal audits to be performed on the Precipitation Monitoring Network. The precipitation monitoring program provides weekly information on the chemistry of precipitation at selected locations throughout New Brunswick.

Carbon Dioxide Emissions



This program has shown that as much as 85% of the acid rain falling on New Brunswick is transported by weather systems from other parts of Canada and the United States.

Information from the program is shared with Environment Canada’s Meteorological Service of Canada and is included in the National Atmospheric Chemistry Database (NAtChem). The database was set up in 1987 and its main purpose is to determine the chemistry of regional-scale precipitation in Canada and the US. Complete information is available on the Environment Canada website at:

http://www.msc-smc.ec.gc.ca/natchem/index_e.html

In 2005, carbon dioxide emissions of 8.79 megatonnes were virtually unchanged from 8.78 megatonnes in 2004.

In 1994, the Department of Environment set the annual limit for sulphur dioxide emissions at 123 kilotonnes. Genco has consistently operated below this limit since 1993.

In 2005 the limit was lowered to 86.1 kilotonnes. The total sulphur dioxide emissions for 2005 by Genco were 52.6 kilotonnes, well below the Department of Environment target.

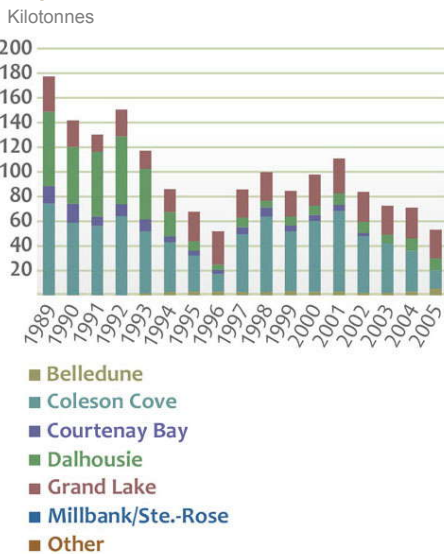
Cumulatively since 1989 the emissions from Genco facilities have been 588.5 kilotonnes below the annual limits.

Annual particulate emission tests at Belledune, Dalhousie, Coleson Cove and Grand Lake demonstrated success in keeping particulate emissions below 160 mg/m³, (milligram of particulate per cubic meter of exhaust gas) which is Environment Canada’s guideline for new stationary sources.

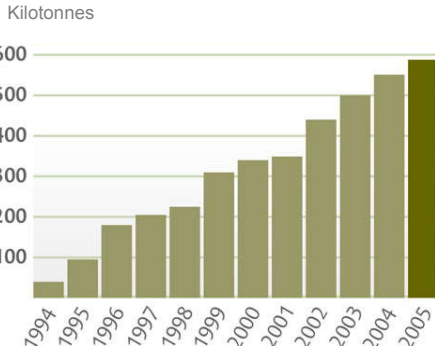
There are no significant particulate emissions from the Millbank and Ste.-Rose combustion turbines.

Particulate testing was not required at Courtenay Bay as Genco did not operate Unit #4 in 2005.

Sulphur Dioxide Emissions

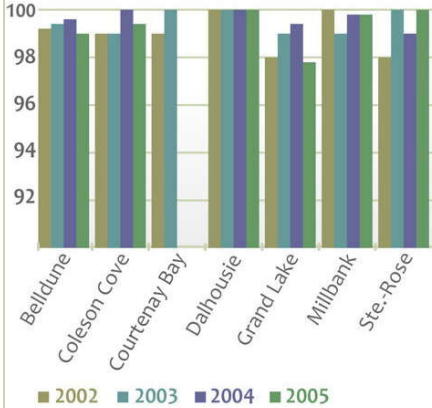


Accumulated Sulphur Dioxide Emissions Below Limit



Wastewater

% of Analysis within approval limits



Water Quality

Genco operates six (6) hydro generating stations on the St. John, Tobique, and St. Croix Rivers.

Hydroelectricity is a renewable energy source that does not emit the by-products of thermal generators. The primary impact of hydro stations is on the rivers that power them and Genco has mitigating measures in place to reduce the impact.

An agreement with Fisheries and Oceans Canada and the New Brunswick Department of Natural Resources ensures that there is enough water above and below the dam on the Tobique River headwaters for fish habitat. Facilities enabling fish to make their way upstream are in place at the Mactaquac, Tobique, Beechwood and Milltown stations.

All thermal generating stations have wastewater treatment systems to monitor and control the quality of effluent. In addition, at the Grand Lake and Belledune Generating Stations, a coal pile runoff is also collected and treated.

In accordance with their regulatory Approval to Operate, analyses were performed on wastewater effluent at each station. During the year, over 99% of wastewater effluent analyses were found to be within approval limits.

During 2005, Belledune, Grand Lake and Coleson Cove each received a renewed regulatory Approval to Operate for their wastewater treatment systems under the *Clean Environment Act*.

Approvals to operate the domestic sewage systems at Beechwood and Grand Falls were also issued by New Brunswick Department of Environment.

In addition, petroleum storage site licenses were issued for each thermal generating station and each combustion turbine.

In 2005, Genco submitted *Final Report – Fish Entrainment and Impingement Study – Belledune Generating Station* to Fisheries and Ocean Canada. The report was required as part of an Environmental Impact Assessment (EIA) submitted in 1989.

The purpose of the Study was to validate the predictions made regarding the effects of the water cooling system on the entrainment and impingement of marine species at the Belledune Generating Station. The predications from the EIA conducted stated, “the impact of the plant

operation on resident fish populations in Chaleur Bay and within the bounded area is predicted to be insignificant.”

The Report was based on data collection, field work and monitoring conducted in 2004. It found that a higher number of fish larvae were entrained than predicted, however the density of fish larvae was much higher in 2004 than in 1998. Even though the Report concluded that “there is no reason to challenge the statement in the Principal Findings in the 1989 EIA Report”, Genco has committed to additional harbour sampling in 2007/08 to better understand the fluctuation in densities.

The *Canada Shipping Act* requires that the Dalhousie Generation Station conduct annual oil spill response training and exercises. In August 2005, a mock spill exercise was held. The exercise was held at the Dalhousie Regional Marina and included observers from Genco, the Canadian Coast Guard, Environment Canada, Department of Fisheries and Ocean, and Transport Canada. The officials were satisfied with the overall effectiveness and efficiency of the operations.

Refurbishment of Coleson Cove

In 2005, the refurbishment of Coleson Cove Generating Station was successfully implemented with the output of all units going through the scrubber.

The implementation required verification and fine tuning of all equipment to ensure the specifications of the intended design performance were indeed being achieved. The findings were:

- SO₂ emission rates were reduced by 77% as a result of flue gas desulphurization equipment being installed.
- NO_x emission rates were reduced by 70% through modifications to the boiler.
- Particulate release rates reduced by 75% with the addition of the wet electrostatic precipitator.

Climate Change and Other Future Planning

In May 1992, Canada was one of 150 world governments to adopt the United Nations Framework Convention on Climate Change. In 1997, the world governments adopted the Kyoto Protocol with its legally-binding constraints on greenhouse gas (GHG) emissions. Canada has ratified the Kyoto Protocol on climate change with a commitment to reduce greenhouse gas emissions by 6% of 1990 levels during the period

between 2008 and 2012. In December 2004, Russia ratified the Kyoto Protocol and it came into effect February 16, 2005.

While New Brunswick accounts for 3% of Canada's GHG, all jurisdictions will be called to address climate change. Approximately 90% of New Brunswick's 20 million tonnes of carbon dioxide emissions come from the combustion of fossil fuels with electricity generation accounting for 47% or nine million tonnes.

A Greenhouse Gas Committee was formed by Genco in late 2004, to address the challenge of reducing emissions starting in 2008. The Committee continued its work through 2005, with the mandate to "ensure compliance with the impending climate change regulations in such a way as to minimize the impact to the rate payers of New Brunswick."



The objectives of the Committee are to:

- ensure the NB Power Group has a voice in the on-going development of climate change rules and regulation(s);
- establish dialogue with the appropriate provincial departments who are currently developing the Provincial Climate Change Action Plan;
- provide a forum for resolving intra-company issues relating to climate change;
- stay abreast of developments in other jurisdictions (federal and provincial) and industry sectors;
- ensure senior management is informed on key issues and developments;
- make informed recommendations to senior management; and,
- develop and implement an overall compliance strategy for the NB Power Group.

Nitrogen Oxide

The New England Governors and Eastern Canadian Premiers have targeted a 30% reduction in nitrogen oxide emissions by 2007. The

recently completed refurbishment of the Coleson Cove Generating Station has significantly contributed to Genco reaching these targets.

Sulphur Dioxide

In addition to nitrogen oxide reductions, the Government of Canada and the New England Governors and Eastern Premiers are working to achieve regional and national reductions in sulphur dioxide emissions.

The New Brunswick Department of Environment has indicated it favours a two-phase reduction of Genco existing annual sulphur dioxide limit of 123,000 tonnes.

- Phase 1 – a 30% reduction by 2005 (86,100 tonnes limit)
- Phase 2 – a 50% reduction by 2010 (61,500 tonnes limit)

Through its' *Sulphur Dioxide Emissions Reduction Program – January 2001* and the refurbishment of the Coleson Cove Generating Station, Genco has met the Phase 1 reduction, with total sulphur dioxide emissions for 2005 at 52,600 tonnes.

Particulate Matter and Ozone

In 2000, federal, provincial and territorial governments signed the Canada Wide Standards (CWS) for particulate matter (PM) and ozone. These standards commit governments to significantly reduce PM and ground-level ozone by 2010.

By 2010, scientific, technical and economic analyses will be completed to reduce information gaps and establish, if appropriate, revised targets for PM and ozone CWS for the year 2015 and beyond.

Mercury

Canada Wide Standards for mercury emissions from coal-fired electric power generation are being developed, with a decision expected in 2006 when information from the CEA Mercury Program will be available. At that time, similar policy direction will also be available from the United States on the development of control strategies for climate change, particulate matter and ozone.

Genco joined forces with other coal-fired power generation companies in Canada to develop and implement the CEA Mercury Program. The program is designed to improve the information base around the measurement and control of mercury emissions from coal-fired generation facilities.



The New England Governors and Eastern Canadian Premiers are developing an implementation plan for reduction in mercury emissions. Their current recommendations for annual total mass-basis mercury emissions in the coal-fired electric utility sector call for a:

- 20-50% reduction by January 2005 (base year 1995)
- 60-90% reduction by January 2010

Genco mercury emissions account for 1.7% of the total from North-eastern North America and are mostly due to use of indigenous coal.

The Belledune Generating Station stopped using indigenous coal in 2002 thereby significantly reducing its mercury emissions, allowing Genco to meet the target for 2005.

Following the retirement of the Grand Lake Generating Station, system emissions should be reduced by 85% from the base year.

Dalhousie Generating Station – Supply of Fresh Water

All thermal generating stations require a secure supply of fresh water, and the fresh water for the Dalhousie Generating Station is supplied via the reservoir associated with the Eel River Dam.

The dam was originally constructed in the late 1960s to supply fresh water for the Town of Dalhousie and other local industrial and commercial users.

In 2004, the Department of Supply and Services made application to the Department of Environment through the Environmental Impact Assessment (EIA) regulation to remove the dam and restore the

Eel River estuary to its pre-existing conditions. The EIA is expected to be finished in 2006.

If the dam is removed the Dalhousie Generating Station will lose its fresh water supply, therefore Genco is currently evaluating various options to replace the Eel River supply.

In the Community

The spring thaw brings the potential for high water and ice jams to many New Brunswick rivers. Genco actively monitors water and ice levels along with the provincial Emergency Measures Organization and the River Forecasting Centre.

Genco has significantly advanced the recycling and reuse of combustion products including fly ash, bottom ash, and gypsum from all fossil generating facilities.

Staff from the Coleson Cove Generating Station actively participated in the Community Environmental Liaison Committee and the Saint John Air Quality Working Group.

All thermal stations offer site tours to the public, as well as providing information on operations and environmental controls.

The site adjacent to the Beechwood Generating Station offers an arboretum where visitors can enjoy native trees, flowers, shrubs, and a nine-metre flower clock. The Milltown site is used by members of the community for walking, biking, picnics, and sports as well as the annual New Brunswick Day Lumberjack Competition.

Genco staff participated in 2005 Arbour Day by donating and planting trees around their communities.

The Grand Lake Generating Station continues to support Minlak, a community-recycling depot.

System Map



Station	Capacity	Units	First Service	Fuel	Environmental Protection
Thermal					
Belledune	458	1	1993	Coal	Scrubber, electrostatic precipitators, wastewater treatment, emissions monitoring, low NO _x burners, gypsum recycling
Dalhousie	300	2	1994	Orimulsion®	Scrubber, electrostatic precipitators, wastewater treatment, emissions monitoring, gypsum recycling, ash recycling
Coleson Cove	978	3	1976	Oil	Scrubber, electrostatic precipitators, wastewater treatment, emissions monitoring, ash recycling
Grand Lake	57	1	1963	Coal	Electrostatic precipitators, wastewater treatment, air quality monitoring
Courtenay Bay	109	3	1961-1967	Oil	Wastewater treatment, emissions monitoring, ash recycling
Combustion					
Millbank	199	4	1991	Diesel	Wastewater control, NO _x control
Ste.-Rose	100	1	1991	Diesel	Wastewater control, NO _x control
Grand Manan	28	1	1989	Diesel	Noise control
Hydro					
Mactaquac	672	6	1968-1980	Water	NB Power operates six hydro dams on the St. John, Tobique, and St. Croix Rivers. Each station operates its reservoir with consideration for recreational users. Mactaquac, Beechwood, Tobique and Milltown have fish passage facilities.
Beechwood	113	3	1957-1962	Water	
Grand Falls	66	4	1928-1931	Water	
Tobique	20	2	1953	Water	
Sisson	9	1	1965	Water	
Milltown	4	7	1928-1969	Water	
Nuclear					
Point Lepreau	635	1	1983	Uranium	Point Lepreau operates with approval from the Canadian Nuclear Safety Commission, the federal regulator of nuclear facilities, and the New Brunswick Department of Environment and Local Government under the <i>Clean Environment Act</i> and <i>Clean Air Act</i> . Point Lepreau monitors all radioactive liquid effluent and gaseous effluent. Station activities are managed, regulated and monitored from the transportation of the fuel to the site, through station operation, to the storage of used fuel.

NB Power Nuclear Corporation (Nuclearco)

Overview

Nuclearco owns and operates the Point Lepreau Generating Station (PLGS). The Point Lepreau Generating Station is a CANDU 6 – 635 MWE unit, supplying up to 30% of New Brunswick's energy requirements.

Compared to electricity generated from other thermal sources, nuclear generation's airborne emissions are insignificant.

However, some of the station's environmental aspects must be addressed quite differently because the station's fuel is radioactive.

Whether it's the transportation of fuel to the site, station operations, or the storage of used fuel, activities at PLGS are carefully managed, regulated and monitored. All radioactive and conventional liquid and gaseous effluents are closely measured and monitored.

In addition, PLGS operates an Environmental Radiation Monitoring Program. Results are available to the public and reviewed by the Canadian Nuclear Safety Commission (CNSC), the federal regulator of nuclear facilities, each year. For the most recent report, go to:

[PLGS Environmental Radiation Monitoring Report 2005](#)



PLGS operates under approvals from the CNSC, which maintains an on-site office. It also has approvals to operate from the New Brunswick Department of Environment under the *Clean Environment Act* and the *Clean Air Act* for the non-nuclear systems at the station, including the wastewater treatment, domestic waste water, auxiliary boiler and diesel generator operations.

Environmental Management System

The PLGS Environmental Management System (EMS) covers all conventional and radiological activities and operations that may create an impact on the environment. Contractors and other non-PLGS employees working at the station whose work may have an impact on the environment are also required to adhere to the EMS.



ISO 14001
EMS 64989

PLGS registered its EMS to the international standard ISO 14001 in 2001. All registrations are required to be assessed each year by a maintenance audit conducted by the station's ISO Registrar (BSI). Every three years, PLGS is required to be re-registered to the ISO standard. The next registration audit will be conducted in the fall of 2007.

In 2005, the station EMS was audited by the CNSC, the ISO Registrar and the station internal Assessment Group. No major findings were identified in any of the audits.

Some minor non-conformances were identified in the audit related mainly to administration and documentation. Corrective actions are in place.

Point Lepreau Generation Station EMS		
Objective	Target	Performance
Air Emissions - Conventional		
Replace the stations chillers with units using a low level or negligible Ozone Depleting Potential (ODP) refrigerant	Design and prepare procurement of replacement chillers	On target
Spent Radioactive Waste Management Facility (SRWMF) – Waste Relocation		
Reduce the amount of inactive waste	Reclaim waste at the same rate it is generated during fiscal year 2005-06	On target

Objective	Target	Performance
Integration of Refurbishment Activities to Station Level EMS		
To fully integrate Refurbishment Project Activities in the Station EMS	To have the required monitoring completed and documentation issue to enable integration to Point Lepreau EMS	On target
Effluent From Inactive & Sewage Treatment Facility		
To minimize the number of wastewater exceedences	To decrease the number of out of spec lagoon effluent releases to less than 5 per year	On target
Landfill Closure		
To develop a closure plan and to assess any impacts from the landfill use	To install sample wells, conduct test and prepare a report on the status of the landfill and its closure plan	On target
Fire Training Grounds – Self Assessment		
To clean up the training grounds and minimize any impacts to the area	To install sample wells, conduct test and prepare a status report on the fire training grounds. Conduct a self assessment on the fire training program	On target

Waste Management

A Solid Radioactive Waste Management Facility (SRWMF) is used to store radioactive waste that is not fuel related in above ground vaults specifically designed to enable the station to add boxes, drums or other containers of solid radioactive waste. Currently there are four vaults and a Quadra cell at the SRWMF.

At PLGS, used nuclear fuel is stored in an on-site, water-filled spent fuel bay for approximately seven years. This spent fuel is then removed from the bay, dried, sealed in special flasks and moved to the on-site above-ground, dry fuel storage canisters. These canisters, which are made of concrete and steel, provide safe and reliable storage of used fuel, with regular monitoring by staff and regulators.

In 2002, Canadian nuclear utilities established the Nuclear Waste Management Organization (NWMO) to meet the requirements of the *Nuclear Fuel Waste Act*. The *Act* requires that nuclear utilities identify and implement a long-term management approach for spent nuclear fuel in Canada.

In 2005, the NWMO published its final report, entitled *Choosing a Way Forward*; the report recommends an Adaptive Phase Management for the long-term care of used nuclear fuel.

The Adaptive Phased Management is both a technical method and a management system. The method is implemented in three phases with the end goal of centralizing all of Canada's used nuclear fuel in one location and isolating and containing it deep underground in a suitable rock formation.

This recommendation was submitted to the Federal Department of Natural Resources. The Federal Government will decide on the appropriate choice.

Water and Spills

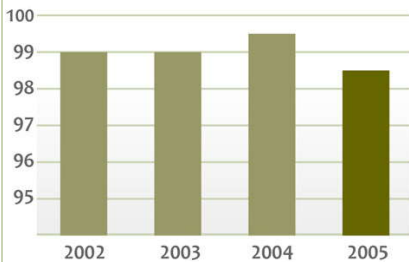
More than 98.5% of the analysis performed on conventional wastewater effluent from PLGS produced results within the approved limits.

Nuclearco is required to report all spills of hazardous materials including petroleum products to the appropriate regulatory authority.

During 2005, two oil spills were reported to the Department of Environment. Neither spill involved PCB contaminated oil and each were quantities of less than 50 litres. Both spills were contained, cleaned up and reported to the appropriate regulatory authority.

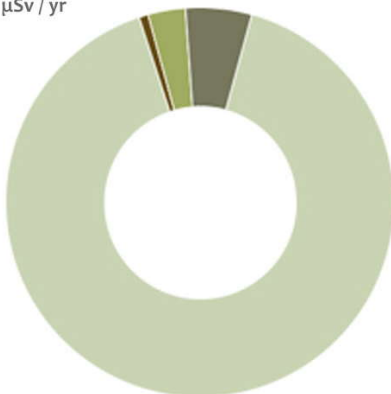
Wastewater

% of Analysis within approval limits



Radiation Sources

µSv / yr



- Actual emissions from Point Lepreau: < 1 µSv/yr
- Emission target from Point Lepreau: 50 µSv/yr
- Dose from a single chest X-ray: about 70 µSv/yr
- Natural background radiation: 3,000 µSv/yr

Radiation Monitoring

The PLGS effluent monitoring program measures radioactive airborne emissions from the station. Emissions were measured at levels well below the operational target, which itself is approximately one-fiftieth (2%) of the radiation level occurring naturally in the environment.

Nuclearco's Environmental Radiation Monitoring Program objectives are to:

- provide data confirming PLGS's compliance with applicable guidelines and regulations;
- establish and maintain the capability for monitoring so that an effective response can be made to emergency conditions; and,
- maintain a database of results to help with the detection of trends.

Staff of the Nuclearco Health Physics Department is responsible for managing the monitoring program. Since 1976, more than 32,000 samples have been analyzed in order to define background radiation from natural and human sources. The program is reviewed annually to ensure the samples collected, collection frequency and analytical techniques are appropriate.

During 2005, analyses were performed on samples of air, water, food, vegetation, soil, sediment and sea life from around the station as well as from remote locations. These analyses found that the public radiation dose from PLGS was about 0.54 microsieverts for 2005. This is well below the legal limit of 1,000 microsieverts per year and even further below the natural radiation background for the area which is measured at between 2,000 and 3,000 microsieverts per year. The measurement is also below the station design target of 50 microsieverts per year.

Emissions have always been well below the station design target since PLGS was commissioned in 1983.

Refurbishment

On July 29, 2005, the Government of New Brunswick announced that Nuclearco will proceed with the refurbishment of the Point Lepreau Generating Station with Atomic Energy of Canada Limited as the general contractor.

The major activity during the outage will be replacement of all 380 fuel channel and calandria tube assemblies and other reactor components. Refurbishing the station will extend its life by 25-30 years and is important to both climate change and sulphur dioxide management initiatives.

Refurbishment project activities began in 1999, they include:

- a two-year study to determine scope and cost, based on an extensive condition assessment; and, safety and licensing has been completed
- early engineering activities
- extensive discussions and agreements with CNSC staff on licensing framework
- completion and approval of environmental assessment
- modification of waste licence for required new structures

To store the radioactive material being removed from the reactor as part of the retube activity, additional storage structures need to be

constructed at the existing licensed onsite Solid Radioactive Waste Management Facility (SRWMF). Additional vaults will be constructed to house the low-level radioactive wastes that will be generated over the extended life of the station. The land within the waste management area will also be prepared for additional fuel storage canisters that will be constructed later, on an as needed basis, to house the used fuel generated over the extended operating period.

The required modification of the Waste Facility Operating Licence to allow construction of these additional radioactive waste management structures triggered an Environmental Assessment (EA) under the *Canadian Environmental Assessment Act* (CEAA). The project was also registered under the provincial Environmental Impact Assessment Regulation.

Nuclearco worked with the responsible Federal and Provincial agencies to supply them with the necessary background information and to clearly understand the steps required in the assessment. It was agreed that the two EA processes would be coordinated and would be based on a single set of documentation. The EA was entered into the public registry with CEAA and is # 27931 on the Federal Environmental Assessment Index (FEAI). It is entitled "Modification to Point Lepreau SRWMF" and listed on the CEAA Website (<http://www.ceaa.gc.ca/>).

Through the EA process, the public had the opportunity to comment on both the guidelines and the assessment itself.

The draft guidelines were issued for public comment in February 2002. Approximately 130 comments from 10 groups were received. A Canadian Nuclear Safety Commission (CNSC) hearing was held on May 22, 2002 to approve the guidelines. As a result, the guidelines were approved and Nuclearco was delegated the responsibility of preparing the EA Study Report.

The guidelines defined the scope of the project to include:

- "the modification, construction and operation of the physical works; and,
- the specific refurbishment activities which would generate waste requiring management in the SRWMF and the handling and transport of those wastes."

In addition, the guidelines included "the incremental environmental effects of continued operation of the Point Lepreau Generating Station following completion of the refurbishment activities" as a factor to be considered in the assessment.

Nuclearco prepared the EA Study Report and after regulatory review and comment, the document was revised and re-submitted to both regulatory agencies.

The CNSC issued a draft Screening Report for public review, based upon much of the information contained in the EA Study Report. Comments from the public were reviewed, responded to and modifications were made to both reports. A Commission Member Document (CMD) was prepared and issued both to the CNSC as well as to the public in support of the one-day hearing held on June 27, 2003 in Saint John, New Brunswick. This hearing provided the opportunity for the public to intervene either by written or oral presentation to the CNSC.



A positive decision on the EA from both the Federal and Provincial authorities was received on August 25, 2003, allowing Nuclearco to proceed to the next regulatory step, which involved amending its existing Waste Facility Operating Licence to allow construction and operation of the new storage structures that were addressed in the EA.

The two-day Licence amendment hearing with the CNSC was held on September 25, 2003 and November 26, 2003 in Ottawa. There were 19 interveners at the November hearing.

Following the hearing, the CNSC issued a positive decision on January 13, 2004 and the amended licence was issued on February 5, 2004. Following the issuance of the amended licence, and consistent with the positive EA Decisions in August 2003, Nuclearco has implemented its "Environmental Assessment Follow-up Program". This document was issued on May 13, 2004, was available for public comment until July 9, 2004, and has been accepted by the CNSC.

Consistent with the requirements of the *Canadian Environmental Assessment Act*, a follow-up program has been initiated and is scheduled as part of the project. It is intended to verify the accuracy of the assessment and to determine the effectiveness of the measures taken to mitigate the adverse environmental effects of the project.

The following are the five activities involved in the follow-up program, consistent with the CNSC Screening Report and Nuclearco's environmental assessment study report:

- **Internal assessments of health, safety and environmental programs.** PLGS has an extensive series of health, safety and environment programs, and these will be expanded to address any unique refurbishment project activities. Consistent with existing station processes to ensure that programs are working well, assessments will be conducted of:
 - environment training;
 - environmental monitoring activities; and
 - environmental management oversight.
- **Expansion of PLGS's existing operational environmental radiation monitoring program.** The existing program will be expanded to encompass the new facilities at the waste site, and will continue throughout the project and future operations. In particular, new boreholes will be installed to encompass the new waste facilities.
- **Implementation of baseline, non-radiological monitoring.** Work was initiated in 2004 to establish a baseline inventory of fish (if any are found to be present) in the nearby stream, determine non-radiological baseline chemistry in the nearby stream, and confirm non-radiological baseline chemistry in groundwater around the waste site. The baseline was completed in summer 2005.
- **Implementation of a construction environmental protection program.** A construction environmental protection program has been prepared for the construction activities at the waste site, and establishes expectations and requirements related to:
 - roles and responsibilities for Nuclearco, Atomic Energy of Canada Ltd. and contractors;
 - construction environmental monitoring;
 - contingency / emergency planning;
 - training;
 - regular and emergency reporting; and documentation



- **Communications and consultation.** Throughout the project there has been an active communications plan, with the objective to inform and receive feedback from the general public, stakeholders and representatives from the aboriginal community. To achieve this, there have been, and will continue to be:
 - general public information sessions;
 - stakeholder / First Nations and Community Liaison Committee meetings; and
 - issue of the "From the Point" newsletter.

Corporate communications may schedule other communication and can be reached at any time using the dedicated; toll free number established for any questions or issues (1-866-754-7727).

Climate Change

Although Canada's national climate change strategy does not qualify nuclear power as a climate friendly energy source, the refurbishment and continued operation of PLGS are key to avoiding an increase in carbon emissions.

In 2005, the operation of PLGS avoided emissions of approximately 3.63 million tonnes of carbon dioxide. In addition 59,000 tonnes of sulphur dioxide and 13,000 tonnes of nitrogen oxide were avoided.

In the Community

Staffs strive to be good neighbours by having open communication with their community. A community liaison committee, comprised of Point Lepreau employees, Holdco employees and local residents meet regularly to share information about the operation of the station and local community activities as well as addressing any questions or concerns that residents of the community may have. The community liaison committee group also publishes a newsletter and provides information through their website.

A speaker's bureau has been established, regarding the environmental impact of the Point Lepreau Refurbishment project, information is shared by participating in public information sessions.

Point Lepreau Generating Station (PLGS) employees take great pride in their communities. They continue to play an active role in celebrating Earth Day with the local school, participate in local environmental beautification programs for the area, and take part in the Fundy Fisherman's Day event. They also participate in various activities with emergency responders including fire departments, RCMP and Emergency Measures Organization.



With the support and cooperation of Nuclearco, the Peninsula of Point Lepreau has been made accessible to the Saint John Naturalists' Club Inc. for studying the migration of the Black Scooter and also to raise awareness of the importance of the migration of the Black Scooter in the area.

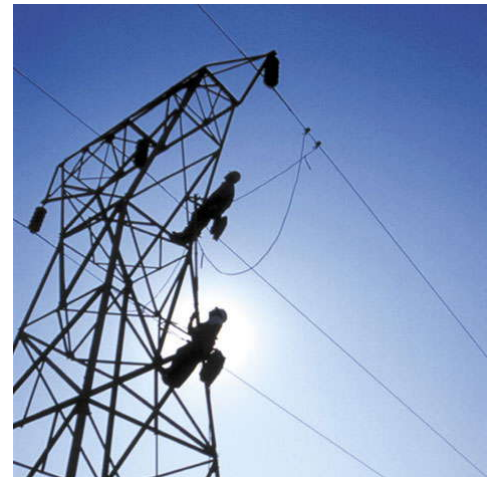
All PLGS employees act responsibly towards the fishing industry and the local communities. They donate generous amounts of time and expertise through community volunteerism, contributing to raising awareness about environmental protection and safe operation of the plant. They take great pride in their commitment to the community.

NB Power Transmission Corporation (Transco)

Overview

Transco operates and maintains 49 terminals and switchyards that are interconnected by over 6,700 km of transmission lines ranging in voltage from 69 kV to 345 kV, linked with neighbouring electrical systems including Québec, Maine, Nova Scotia and Prince Edward Island.

Transco environmental efforts are focused on minimizing impacts related to the construction, operation and maintenance of transmission lines, rights-of-way, substations and terminals. Many activities in Transco are subject to provincial environmental legislation. The construction, maintenance and dismantling of transmission lines require approval under the *Clean Environment Act* and work conducted during the fire season requires approvals from the Department of Natural Resources. The use of pesticides must be approved in accordance with the *Pesticide Control Act*.



Environmental Management System

Transco has an Environmental Management System (EMS) consistent with ISO 14001 standards. Employees, contractors and other non-Transco employees are all required to adhere to the EMS.

An external audit was conducted in the summer of 2005 by a certified lead auditor to determine whether the operation, activities and facilities of Transco conformed to the audit criteria. Audit findings were collected through interviews with employees and examination of documents.

Three major non-conformances were identified, involving records management, emergency response planning and management review.

Minor non-conformances were also found, related mostly to EMS administration and documentation issues.

There has been an increase in Transco non-conformances from previous years due to the reorganization of key EMS staff within this company. Corrective action plans have been developed to address these findings.

Work is also underway to align the EMS with the requirements of the revised version of the ISO 14001 standard.

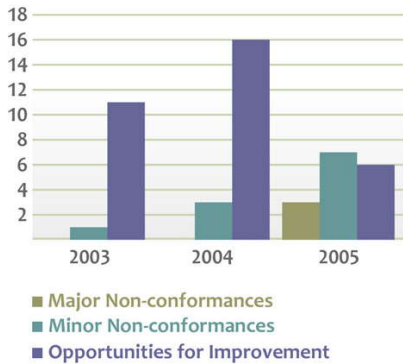
In addition to an EMS audit, compliance audits were conducted as crews worked on transmission lines in the Saint John area. Subsequently, action plans were developed and implemented to address issues raised by these operations audits.

Transco is currently developing a field guide for staff. The guide will be a summary of the Environmental Protection Plan which outlines environmental protection measures related to field activities. It will also provide instructions to personnel for conducting clearing, construction, and operation activities in order to minimize potential adverse effects and comply with regulatory requirements.

Approvals

As customers' needs for electricity continue to grow, the transmission facilities eventually reach capacity and system upgrades may be required to maintain a reliable supply of electricity.

Summary of Audit Findings



Five (5) environmental regulatory approvals were received during the year to perform work on the transmission system. These included:

- blanket Watercourse and Wetland Alteration Permit for rights-of-way management
- letter of Approval from the International Boundary Commission for the International Power Line (IPL) Project
- watercourse and Wetland Alteration Permit for the IPL Project
- license of occupation for maintenance work in the Loch Alva Protected Natural Area
- letter of approval to proceed from Department of Fisheries and Oceans for maintenance work on several submarine cables

Transmission requirements are identified when technical assessments based on load and generation forecasts identify a potential need for system modifications or new transmission facilities. Once the need for the project is established, a study area is defined that includes the start and end points of the transmission line. Potential solutions are then assessed on various criteria including cost, lead-time, and impacts on the environmental and the local community. Various consultations and approvals may be required depending on the type of work proposed.

Transco also continued to monitor compliance with conditions of existing regulatory approvals received during previous years for the International Project Line (IPL) Project.

Waste Management

Transco has developed and implemented several successful programs to reuse and recycle various materials from transmission lines. During the decommissioning of existing lines, hardware such as conductors, insulators, cross-arms and poles are removed and transported off-site for reuse or recycling. If reuse or recycling opportunities are not available, the hardware is disposed of at approved facilities.

Transco employees generate a variety of other types of waste while doing their work. Waste that is a by-product of work includes rags, various hardware, cylinders, paint cans, cardboard and crates.

A waste segregation roadmap was developed and distributed to Transco personnel in 2004 to clearly identify waste streams and to reference applicable waste management requirements, thereby preventing pollution, improving environmental performance, and promoting more efficient use of resources. The roadmap has increased employee awareness and facilitated waste segregation, both at the operation

centres and in the field. The roadmap is updated as new streams are identified.

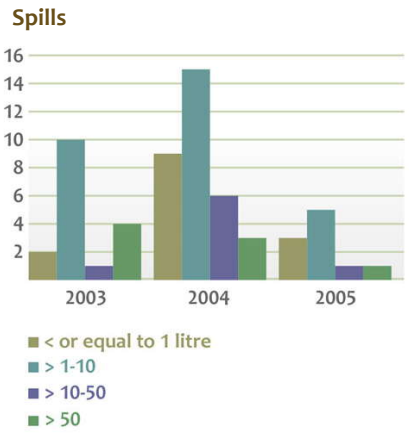
Transco also participated in the group of companies Investment Recovery Program. The Investment Recovery Program allow each company the opportunity to dispose of items that they no longer need. Items are first made available to the other operating companies. If these items are not needed for operation, they are sold through a tendering process. As part of the program, Transco was able to recycle and recover funds for scrap transformers, furniture and scrap metals such as copper, aluminium and steel.

Spills

From 2004 to 2005, the number of reported releases of petroleum products involving Transco decreased from 33 to 10.

None of the spills involved PCB contaminated material and 30 percent of the spills were quantities of less than one litre.

All spills were contained, cleaned up and reported to the New Brunswick Department of Environment.



Asset Management & Vegetation Management

Transco has a mature asset management program in place to ensure the reliability of its transmission system and to extend the life of its existing infrastructure. In 2005, work was conducted along 120 km of transmission lines. This work involves replacing insulators, cross-arms and poles on older lines, in a manner that limits disruption to the surrounding environment.

Uncontrolled vegetation can hinder access to maintenance and repair crews, increasing the chance of fire, and possibly resulting in costly outages.

Transco controls the growth of trees and brush along transmission lines through its Vegetation Management Program. A Vegetation Management Program provides background information, safety precautions, and important policies to staff regarding the safest and most effective forms of vegetative control.

During 2005, Transco employees maintained brush on approximately 960 km of transmission line rights-of-way (ROW) by slashing and

mowing the vegetation with the use of hand tools such as saws as well as with wheel or track-mounted equipment.

Herbicides are used to control weeds located inside the yards of substations, terminals, and remote radio sites, dam sites and fuel tank farms at Genco generating stations. All herbicides are applied under controlled conditions with a trained crew and with the appropriate Pesticide Application Permits from New Brunswick Department of Environment.

The Vegetation Management Program is being revised to ensure compliance with the requirements of the North American Electric Reliability Council (NERC) Reliability Standard FAC-003-1 for vegetation management. The purpose of this standard is to improve the reliability of the electricity transmission systems by preventing outages caused by vegetation located on, or adjacent to, rights-of-way.

International Power Line (IPL)

Greater transmission access in the region will be enhanced with the construction of a second New England Interconnection, referred to as the International Power Line (IPL). The IPL is a 345 kV line and interconnected with the state of Maine.

To date the following activities have taken place.

- 2001 – Application was made to the National Energy Board (NEB) for a Certificate of Public Convenience and Necessity to construct, operate and maintain the 345 kV line from Point Lepreau to a point on the Maine-New Brunswick border.
- 2002 – A Comprehensive Study Report (CSR), consisting of an environmental assessment, was submitted to the NEB. As part of the Report, Transco filed a Project Specific Environmental Protection Plan (EPP). The EPP outlines specific environmental mitigation measures Transco will implement during clearing and construction activities to minimize potential effects on sensitive areas such as wetlands, watercourses, deer wintering areas, archaeological resources and species at risk. After reviewing the CSR the Minister of Environment of Canada concluded that the project, with mitigation, was not likely to cause significant adverse environmental effects and no further environmental assessment by a review panel or mediator was required.

- 2003 – A public hearing was held in Saint John, New Brunswick. Following the public hearing, the NEB issued a decision stating that it was satisfied from the evidence that the proposed IPL was required by the present and future public convenience and necessity. In addition, the Provincial Government issued a number of conditions that must be satisfied prior to construction and operation. These relate to a number of environmental protection measures to be taken prior to, during and following construction activities.
- 2004 – Transco placed advertisements in local newspapers inviting community members to participate on the IPL liaison committee. Transco also participated in the U.S. regulatory process through the Maine Public Utilities Commission (MPUC) in support of Bangor Hydro-Electric Company's request for a certificate of public convenience and necessity to construct the U.S. portion of the transmission line.

In 2005 a session was held with the newly formed liaison committee to outline the mandate and Terms of Reference for future meetings. Since then, meetings have been conducted on a regular basis.

The purpose of the Committee is to focus on community views and environmental matters. It also serves as a channel from and to the community during the construction of the IPL.

A detailed route hearing was also held in 2005 by the NEB in response to written statements of opposition concerning portions of the detailed IPL route and the most appropriate methods and timing of construction. The NEB decision was that Transco detailed route is the best possible route for the IPL. Work also continued on the acquisition of the necessary land rights.

In order to ensure that work is carried out in accordance with the measures, obligations and commitments made during the regulatory environmental process, an Environmental Inspector and Quality Assurance Inspectors will monitor future activities for the duration of the IPL Project. In addition, an environmental orientation will be mandatory for all Transco Project staff and contractor staff who will be present on the construction site to ensure that environmental requirements are understood to prevent non-conformances.

In the Community

Over the years, regular patrols of transmission line have discovered approximately 330 osprey nests on the transmission system. Transco employees routinely trim these nests to preserve the osprey's habitat and prevent contact with electrical conductors.



Transco has actively celebrated Arbour Day since 1991 as part of their membership with the International Society of Arboriculturists. Arbour Day celebrations provide Transco a chance to interact with and educate communities across the province about vegetation management and the importance of proper tree selection. In 2005, more than 50 trees and shrubs, as well as 1,000 seedlings, were generously provided by various donors, and planted at various generating stations across New Brunswick by Transco staff.

Transco has a Secondary Use Agreement Program in place which allows landowners to cultivate low growing plant species such as Christmas trees, ornamental trees and blueberries on lands occupied by transmission lines. Landowners who participate in the program are required to maintain the right-of-way of trees which must not exceed a height of twelve feet. The Agreement allows landowners to make a profit from the land that would otherwise be unused, while aiding in the vegetation management process and ensuring the reliability of the line.

Distribution and Customer Service (Disco)

Overview

Disco delivers safe, reliable and competitively-priced energy by way of 20,000 km of distribution lines to its customers.

Environmental efforts are focused on minimizing impacts related to the construction, operation and maintenance of the distribution system and substations.



Environmental Management System

Disco has an Environmental Management System (EMS) consistent with the ISO 14001 standard, providing a structured and systematic approach to managing environmental issues. Disco employees, contractors and other non-employees whose work may have an impact on the environment are all required to adhere to the Disco EMS.

The program focuses on continual improvement through:

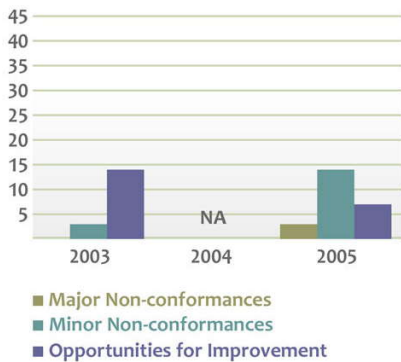
- planning;
- operational control;
- auditing (both internal and external);

- corrective actions; and,
- management review.

The program was first developed in the fall of 2002 and became operational in 2003. Efforts during this time were directed at:

- forming an EMS team with representation from around the province
- completing an audit of the EMS program
- auditing the electrical equipment maintenance facilities
- addressing deficiencies found as a result of the audit
- identifying and documenting significant environmental aspects

Summary of Audit Findings

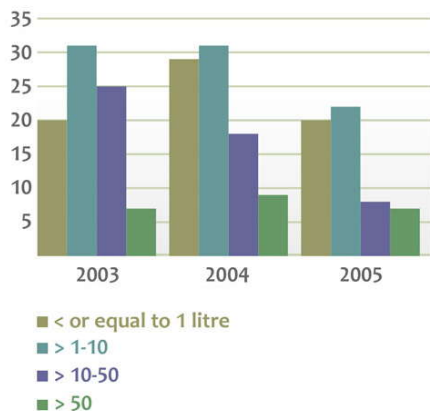


Major non-conformance: EMS element not addressed or not implemented

Minor non-conformance: Deficiencies in EMS concerning conformance to ISO 14001 or planned arrangements

Opportunity for improvement: Suggested improvements to elements of the EMS that could avoid future non-conformances or result in efficiencies in the system

Spills



In 2004, efforts were directed at day-to-day activities by reviewing field operations, allowing the EMS team to provide feedback and corrective actions for issues identified at the operational level.

2005 saw the program continue to yield numerous successes as a result of increased environmental awareness among staff, resulting in continued review of oil spill cleanup policies, more regular interaction with the NB Department of Environment on cleanup requirements and focus on replacing deteriorating transformers before failure, thereby avoiding potential spills.

As a result of the field operations review, two new environmental guidelines have been created and implemented for operational testing, including Environmental Guidelines for Engineering and Line Designers for Pole Placement Along a Watercourse, and the Treated Wood Disposal Guideline.

Due to reorganization of staff, an EMS audit was not conducted in 2004. An audit was conducted in November 2005. Three (3) major non-conformances, fourteen (14) minor non-conformances, and twelve (12) opportunities for improvement were identified. Most of these findings revolved around EMS administrative and documentation issues. Corrective action plans have been developed to address these findings.

Waste Management

In 2005, there were a total of 61 spills. More than 30% of the total spills were of quantities of less than 1 litre. Two of the spills were PCB-contaminated oil. An official warning was issued by the Department of Environment as a result of not immediately reporting a transformer spill. All spills were contained and cleaned up. Over the past three years

Disco has made noticeable improvement in spill management, decreasing both the number and volume of spills.

Water Heater Management

Disco rents hot water heaters to 85 percent of its residential customers. This translates to a need to dispose of 16,000 units annually.

The disposal of these units is done in an environmentally approved manner. Units that are less than five years old are returned to the manufacturer for reprocessing. Units that are more than five years old are sent to a smelter to be recycled, thereby avoiding requirement for landfill.

In addition, all new installed water heater tanks comply with the latest Enercan standard for energy efficiency, reducing the percentage of standby losses.

Vegetation Management

Disco works closely with its contractors to ensure consistent adherence to cutting standards, vehicle inspection programs, safety programs, environmental awareness training, and water course alteration regulations.

These efforts have resulted in consistent quality throughout the vegetation management program. The end result has been fewer hydraulic fluid spills, higher quality tree pruning, and improved reliability.

Through its "right tree, right place" education program, Disco continues to reach out to homeowners to increase awareness of the types of trees and shrubs that can be planted near power lines. Another initiative under the vegetation management program is improved communications with customers and community leaders by informing them of proposed vegetation programs in the communities. Plans are underway to include more information on the vegetation management program on the website, again working towards improving communications with customers.

Herbicides are not used to control vegetation along the distribution line rights-of-way. Herbicides are used to control weeds inside the yards of substations, terminals and remote radio sites. Trained staff from Transco performs this work for Disco with the appropriate pesticide application permits.

Green Energy

In October 2005, a Request for Expression of Interest was issued for wind power projects. Disco has committed to purchasing up to 400 MW of wind energy from private sector producers across New Brunswick by 2016. The Expression of Interest requested developers to submit plans to develop own and operate additional wind-powered generation for purchase by Disco. Disco is looking for wind energy projects that are EcoLogo™-certified and geographically dispersed in high wind areas across the province: Bay of Fundy, Tantramar, Miramichi Bay, Acadie/Chaleur, or Inland New Brunswick.

Thirty-five (35) proposals from nineteen (19) different, interested parties were received in response to the Request. Ensuring geographical dispersion of new wind sites will allow Disco to purchase energy from wind generators in areas experiencing high winds at times when wind in other areas of the province may be too low to generate any electricity, thereby increasing the overall efficient use of wind generators.



Other options are also being explored by Disco to obtain incremental renewable energy from sources such as biomass, small hydro, tidal power and electricity generated from landfill gas. All of the sources of supply will help meet targets for renewable energy set by the provincial government. In addition, Disco contributed money to a major Electric Power Research Institute study on tidal power, the study identified 90MW of tidal power resources in New Brunswick. The study is being evaluated and options for further research/development are being considered.

In June 2005, Disco put in place a net metering policy. Under the policy a customer may connect a generation unit that uses renewable fuels and has a nameplate rating of up to 100 kW to the Disco distribution grid. The output of the generation unit may be used to offset the customer's own consumption. Monthly credits not used within any month may be carried forward and used to reduce future consumption until March 31 of that fiscal year. For more information on Disco's net metering policy visit www.nbpower.com.

Disco has been providing lighting to towns and municipalities for more than 45 years and currently maintains approximately 70,000 street lights. In 2005, Disco launched a pilot re-lamping program to refit street lights with the Lumalux Plus[®]Eco[®] energy-efficient high pressure sodium (HPS) lights. The new lamp has an average extended lamp life of 30,000 hours, representing a 25% increase over the standard high pressure sodium lamp life. In addition, the new lamps contain up to 90% less mercury than standard HPS lamps, and they are lead free.

Disco is also evaluating more fuel efficient vehicles and recently added a hybrid truck to their vehicle fleet.

In the Community

Disco has energy advisors located around the province, conducting home evaluations through the Home Energy Check program. Energy advisors provide expert information to customers on how to use energy as efficiently as possible. They are trained to discuss heating options, heating system sizes and provide advice to assist in minimizing energy consumption.

Disco employees marked Arbour Day by participating in school events and making presentations on planting trees away from power lines. These fun events allow employees to share their vegetation management expertise with children by answering a variety of environmental questions.

Contact Us

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For information on NB Power, visit: www.nbpower.com

For information on the Canadian Electricity Association's Environmental Commitment and Responsibility Program, visit: www.canelect.ca

We want to know your views. Direct comments to:

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