



2003 Environmental Performance Report



Énergie NB Power

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We want to know your views. Direct comments to:
www.nbpower.com/en/enviro/performance/performancereport/comments.html

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HIGHLIGHTS



CORPORATE

NB Power is committed to excellence and innovation in protecting the environment while providing economic and reliable energy to the people of New Brunswick.

- An Environmental Council was established to maintain compliance with the Environmental Policy through corporate restructuring.
- NB Power is a member of the Canadian Electricity Association and participates in the Environmental Commitment and Responsibility Program. An independent verification audit confirmed that indicator reports are accurate and that environmental management systems are consistent with the ISO 14001 standard.

GENERATION

NB Power operates one of North America's most diverse generating systems, consisting of fourteen hydro, coal, oil, diesel and Orimulsion®-powered stations with an installed capacity of 3,133 MW.

- Coleson Cove and Dalhousie received regulatory approvals to operate wastewater treatment systems.
- Regulatory approvals were received to operate the domestic sewage systems at Belledune, Mactaquac, Tobique and Dalhousie.
- The Canadian Gypsum Company received more than 190,000 tonnes of gypsum, a by-product of desulphurization at Dalhousie and Belledune. Over 3,200 tonnes of flyash from Belledune was sold for use in concrete products. More than 1,600 tonnes of ash from Dalhousie and Coleson Cove was recycled for use by the steel industry.
- Work with the Coleson Cove Environmental Liaison Committee continued.
- Wood removal and clean-up programs continued at several hydro facilities.

NUCLEAR

The CANDU 6 – 635 MW Unit at Point Lepreau supplies up to 30% of provincial energy requirements and displaces significant carbon dioxide, sulphur dioxide and nitrogen oxide emissions.

- An Ecological Effects Review revealed no significant indications of environmental impacts as a result of routine station operations.
- The Radiation Monitoring Program continued to analyse samples to define background radiation from natural and human sources.
- To better understand groundwater movement, eleven new wells were drilled near the station.
- To demonstrate response capability to a radiation event, Point Lepreau and the New Brunswick Emergency Measures Organization conducted an emergency exercise.

TRANSMISSION

Transmission is responsible for transmitting electricity from generating stations to in-province and point-to-point transmission customers. Employees operate and maintain transmission lines and substations, terminals and microwave sites.

- Work continued on the environmental management system to develop procedures, enhance management programs and formalize the Emergency Response Plan.
- To better protect stream banks and beds, a vehicle destined for retirement was fitted with a hydraulic bridge allowing employees and equipment to cross watercourses.
- Consultation began with the New Brunswick Federation of Snowmobile Clubs and the New Brunswick All-Terrain Vehicle Federation to identify ways to communicate environmentally friendly snowmobile and all-terrain vehicle riding habits.
- A joint development agreement with Bangor Hydro was reached to proceed with acquisition of state and federal permits for the construction of the United States portion of the International Power Line.

CUSTOMER SERVICE

Serving residential, commercial and industrial customers across the province, Customer Service delivers safe, reliable and competitively-priced energy. It also provides services through its regional operating offices, customer contact centres, account managers and energy advisors.

- Work continued with local interests to promote wind energy development. A request for proposals for wind energy was issued.
- Four new innovative vegetable oil transformers were installed at two wellhead pump houses in the province.
- Vegetation management programs continued with changes to cutting standards on the rural distribution system.
- Sixteen thousand water heaters removed from residences were fully recycled.
- NB Power joined the City of Moncton, the Town of Riverview and the Metro Moncton Communities in Bloom for Arbor Day 2003 celebrations. Tree care experts from NB Power and the City of Moncton provided tips on caring for trees and proper planting to avoid growth into power lines.

ENVIRONMENTAL POLICY

Five principles guide NB Power's environmental performance and affirm the Corporation's commitment to environmental protection:

LEADERSHIP

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

ENVIRONMENTAL STANDARDS

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

ENVIRONMENTAL AUDITS

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

PARTNERSHIP

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

Each business unit – Generation, Nuclear, Transmission and Customer Service – integrates the Environmental Policy with its operations. Environmental management systems and protection programs are in place and employees are expected to perform their work in an environmentally responsible manner.

To provide support, the Corporate Environmental Affairs Division assists the business units and development projects to:

- integrate environmental management with operations and project planning
- acquire regulatory approvals for facilities and new construction
- monitor compliance with regulatory approvals and report to regulating agencies
- consult with external agencies and stakeholders on environmental issues
- provide environmental information to customers, staff, regulatory authorities and the public
- monitor and provide input on new and revised environmental standards and legislation



MESSAGE FROM THE PRESIDENT & CEO



NB Power operates one of North America's most diverse generating systems and interconnected transmission networks. Electricity is generated at 15 facilities using oil, uranium, water, coal, Orimulsion® or diesel as fuel. It is transmitted to 360,000 direct and indirect customers within the province and to surrounding markets via terminals, substations and interconnections linked by more than 32,000 km of power lines.

With this power comes responsibility. That is why most major generating facilities have state-of-the-art environmental protection equipment and our operations are undertaken in compliance with environmental regulations. Further, each operating company has implemented an ISO-consistent Environmental Management System and the Point Lepreau Generating Station is ISO registered. These varied integrated activities – maximizing benefits from environmental upgrades, operational compliance and assurance programs – have together brought about a significant advance in better protecting the environment in New Brunswick:

- sulphur dioxide emissions are below regulated limits
- particulate emissions are below federal levels for new station sources
- tested wastewater effluents are below regulated annual limits
- more than 200,000 tonnes of generation by-products are recycled each year
- generating stations at Coleson Cove, Belledune, Mactaquac, Tobique and Dalhousie received various regulatory approval for wastewater treatment systems and/or domestic sewage systems

We are not standing still. Our current development plan will result in further environmental performance improvements.

During 2003, progress was achieved on refurbishment projects at Coleson Cove and Point Lepreau and a new international power line. In particular, completion of the Coleson Cove project, expected during 2003/04, will make the station one of the most environmentally-advanced thermal generators in Canada. Moreover, we will then have advanced environmental protection equipment at each major thermal station – an unmatched record in Canada.

A request for proposals was issued during the year for the development, ownership and operation of up to 20 MW of wind powered generation by March 2006. This is the first phase of NB Power's objective to acquire 100 MW from renewable energy projects by the end of the decade. Along with the Coleson Cove and Point Lepreau refurbishments, renewable energy will help to meet future emission stabilization and reduction targets.

NB Power's Environmental Performance Report 2003 is the most complete summary of our environmental activities. Produced in a CD-ROM format, it speaks to our commitment to communicate effectively with all our stakeholders.

I trust you will find the report informative and we would certainly welcome your comments.



David D. Hay
President & CEO
May 21, 2004





NB Power is committed to excellence and innovation in protecting the environment while providing economic and reliable energy to the people of New Brunswick.

Environmental Council

The Government of New Brunswick is creating a competitive market for wholesale and large industrial electricity consumers and expanding non-utility generation opportunities. Coincident to the market transformation, New Brunswick Power – a Crown Corporation vertically integrated with generation, transmission and distribution functions – will be restructured as a holding corporation with separate operating companies. To assist in communicating and maintaining the commitment to the Environmental Policy through the period of restructuring, a council with representatives from each operating company has been formed. The purpose of the new council is to:

- ensure there is clear understanding of environmental responsibilities between the new operating companies and Environmental Affairs 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
- 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

Environmental Management System

NB Power's Environmental Management System (EMS) program provides a structured approach to managing environmental issues in the business units. Activities are based on the ISO 14001 standard of continual improvement through planning, implementation, auditing, corrective action and management review.

By providing a framework that can be audited, the EMS ensures there are environmental goals with defined accountabilities and performance measures. Other benefits include due diligence and improved relationships with stakeholder communities and regulatory agencies.



National Benchmarks

NB Power is a member of the Canadian Electricity Association and participates in the Environmental Commitment and Responsibility (ECR) Program. In 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.
- To reduce the adverse environmental impact of our business.
- To be accountable to our constituents.
- To ensure that our employees understand the environmental implications of their actions and have the knowledge and skills to make the right decisions.

As part of the ECR Program, an independent verification audit was undertaken in June 2003 to ensure the indicator reports are accurate and that EMS implementation is consistent with ISO 14001 standard. A verification team, comprised of an independent assessor and a provincial representative, conducted interviews and reviewed program data. The verification team concluded that NB Power has met the ECR Program requirements for EMS implementation and that EMSs have been developed covering all relevant operations, activities and services for the business units and corporate activities within stipulated timelines. A review of implementation activities to date indicates that the EMSs, while continuing to mature, are well established, supported by a robust auditing process, and enjoy a high profile. In addition, ISO 14001 registration has been obtained for the Nuclear business unit.

ENVIRONMENTAL COMMITMENT AND RESPONSIBILITY PROGRAM INDICATORS 2002*

OBJECTIVE	NB POWER	INDUSTRY	NOTES
Energy Conversion Efficiency of Fossil Fuel Generating Stations	35.5%	33.6%	
Internal Energy Efficiency – Generation	94.4%	97.5%	
Internal Energy Efficiency – Transmission	97.3%	96.1%	
Internal Energy Efficiency – Distribution	95.1%	95.8%	
Reuse of Electrical Insulating Oil	93.9%	74.3%	
Utilization of Solid Combustion By-Products	61.5%	24.8% ¹	
Atmospheric Emissions ²			
Mass Gross Carbon Dioxide Emitted Per Unit of Net Fossil Generation (kg/kWh)	0.84	0.95	
Mass Gross Carbon Dioxide Emitted Per Unit of Net System Generation (kg/kWh)	0.54	0.25	
Mass Net Carbon Dioxide Emitted Per Unit of Net Fossil Generation (kg/kWh)	0.84	0.89	
Mass Net Carbon Dioxide Emitted Per Unit of Net System Generation (kg/kWh)	0.54	0.23	
Mass Sulphur Dioxide Emitted Per Unit of Net Fossil Generation (g/kWh)	7.8	4.89	
Mass Sulphur Dioxide Emitted Per Unit of Net System Generation (g/kWh)	5.0	1.28	
Mass Nitrogen Oxide Emitted Per Unit of Net Fossil Generation (g/kWh)	2.1	1.74	
Mass Nitrogen Oxide Emitted Per Unit of Net System Generation (g/kWh)	1.4	0.46	
Number of Spills Reported to External Agencies	116	1,173	
PCB Management			
Total inventory of high level PCB material in storage (tonnes)	0	55.3	
Total inventory of low level PCB material in storage (tonnes)	37.9	1,013	
Total amount of high level PCB material sent for destruction (tonnes)	7.7	199.2	
Total amount of low level PCB material sent for destruction (tonnes)	20.5	1,216.9	
Generation of Low and Intermediate Level Radioactive Waste (m ³)	87.9	353.6 ³	

¹ NB Power's measure is significantly higher than the industry average (61.5% versus 24.8%) due to the utilization of gypsum from the flue gas desulphurization units at Belledune and Dalhousie Generating Stations.

² NB Power's measure is higher than the industry average due to the fact that the industry average includes a large percentage of hydroelectric generation in Canada. NB Power's emission rate of sulphur dioxide per unit of fossil generation is higher than the industry average due to generation from fuels with a higher sulphur content.

³ NB Power's measure is significantly lower than the industry average due to the number of reactors in prolonged outages in Ontario.

*These figures are for calendar year 2002 consistent with the reporting timeframe for the Environmental Commitment and Responsibility Program.

GENERATION



NB Power operates one of North America's most diverse generating systems, consisting of fourteen hydro, coal, oil, diesel and Orimulsion®-powered stations. This network of conventional generating stations produces safe, economical and dependable electricity and has an installed capacity of 3,133 MW.

Overview

NB Power is committed to protecting the environment and producing economical and reliable energy for New Brunswickers. Installing advanced environmental protection equipment has effectively managed air emissions and wastewater discharges. NB Power has also established a progressive waste management and minimization program. Each thermal generating station operates with approvals issued under New Brunswick's Department of Environment and Local Government's (NBDELG) *Clean Environment Act* and *Clean Air Act*.

NB Power is committed to ensure that its generating stations meet air emission standards. The Coleson Cove and Grand Lake Generating Stations have electrostatic precipitators to control particulate emissions. The Dalhousie Generating Station has an electrostatic precipitator and a flue gas desulphurization system called a "scrubber," which significantly reduces sulphur dioxide emissions. The Belledune Generating Station also has an electrostatic precipitator and a "scrubber" as well as a specifically designed burner to limit nitrogen oxide emissions.

Each thermal generating station has equipment to monitor air emissions. Stations at Dalhousie, Belledune, Millbank, Grand Lake and Courtenay Bay receive sulphur dioxide data from monitors connected to local ambient air quality networks. This helps to ensure that regulated ambient air quality levels are being met. Stations at Dalhousie, Belledune, Grand Lake and Coleson Cove also run an air-quality computer model that predicts hourly sulphur dioxide levels. These stations also have continuous emissions monitoring systems and/or computer software systems to measure sulphur dioxide and nitrogen oxide emissions and opacity.

Proactive recycling of thermal generation by-products has significantly reduced landfill requirements. Dalhousie and Coleson Cove recycle bottom ash and flyash for the extraction of vanadium for use in the steel industry. Courtenay Bay also recycles ash containing vanadium. Belledune recycles flyash for use in concrete products and industrial operations. Any unmarketable ash, gypsum and wastewater treatment sludge from the generating stations is contained in engineered landfills that protect groundwater. At the Grand Lake and Belledune Generating Stations, coal pile run-off is collected and treated.



All thermal generating stations have treatment systems to monitor and control wastewater quality. Combustion turbines at Millbank and Ste.-Rose are equipped with water treatment plants that produce ultra-high pure water to reduce nitrogen oxide emissions. Millbank, Ste.-Rose and Grand Manan use a low-sulphur light fuel oil which ensures low sulphur dioxide emissions.

Hydroelectricity is a renewable energy source that does not emit the by-products of thermal generators. NB Power operates six hydro generating facilities on the St. John, Tobique and St. Croix Rivers. The primary impact of hydro stations is on the rivers that power them and NB Power has measures in place to reduce that 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 dams on the Tobique River headwaters for fish habitat. Additionally, four hydro stations at Mactaquac, Tobique, Beechwood and Milltown have facilities enabling fish to make their way upstream.

The spring thaw brings high water and potential ice jams to New Brunswick rivers. Together with the Provincial Emergency Measures Organization and the River Forecasting Centre, NB Power monitors water and ice levels. In addition, NB Power clears driftwood and debris that accumulate in the headponds above the dams.

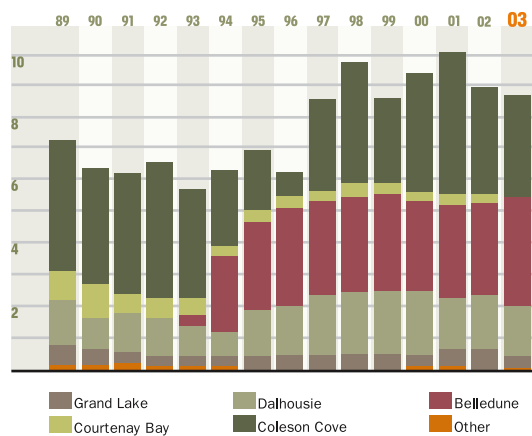
Air Quality

NB Power and NBDELG operate the New Brunswick Acid Rain Monitoring Program. This program showed 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. Last year, audits of all sites were conducted ensuring proper procedures were followed in collecting samples and recording information.

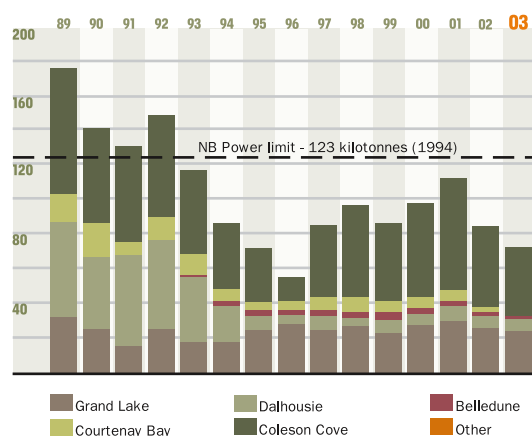
During 2003, carbon dioxide emissions were lower year-over-year due to increased hydro generation, a higher Point Lepreau capacity factor and lower fossil fuel generation.

NB Power's sulphur dioxide emissions control program has reduced emissions from over 176 kilotonnes in 1989 to 72 kilotonnes in 2003. During 2003, sulphur dioxide emissions were lower year-over-year because of increased hydro generation, a higher Point Lepreau capacity factor and lower fossil fuel generation.

Carbon Dioxide Emissions (CO₂)
megatonnes



Sulphur Dioxide Emissions (SO₂)
kilotonnes



NB Power has consistently kept sulphur dioxide emissions under its annual limit of 123 kilotonnes established in 1994. Between 1994 and 2003, accumulated sulphur dioxide emissions were 502 kilotonnes less than annual limits. This success is primarily due to emissions control equipment installed at the Belledune and Dalhousie Generating Stations.

Annual particulate emission tests at Belledune, Dalhousie and Grand Lake demonstrated success in keeping particulate emissions below 160 mg/m³, 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 conducted at Courtenay Bay because NB Power did not operate Unit #4 in 2003. Data was not available for Coleson Cove at the time of report preparation.

In October, mercury emissions testing was conducted at the Grand Lake Generating Station. Three tests were completed in accordance with the “Standard Test Method” for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method). Results of the testing were reported to NBDELG.

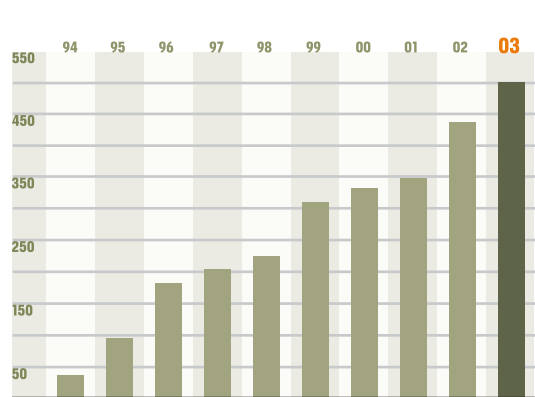
Water Quality

Coleson Cove and Dalhousie both received approval to operate its wastewater treatment systems under the *Clean Water Act*. In addition, approvals to operate the domestic sewage systems at Belledune, Mactaquac, Tobique and Dalhousie were issued by NBDELG.

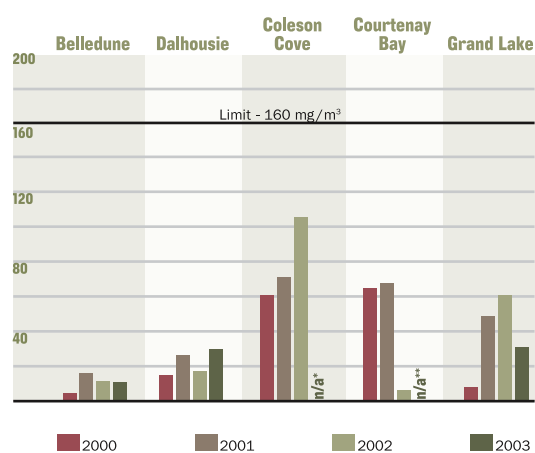
The Environmental Emergency Regulation, under the authority of the *Canadian Environmental Protection Act*, came into effect in 2003. This new regulation requires that each of NB Power’s generating stations have emergency response plans in place to deal with spills or releases of various substances that may pose a danger to public safety or the environment. Each generating station has an emergency response plan as part of its Environmental Management System (EMS), these plans will be revised as required to ensure consistency with the new regulation.

As part of Dalhousie’s Orimulsion® Spill Response Plan, a mock spill exercise was held in September 2003, and witnessed by the Canadian Coast Guard, the Eastern Canada Response Corporation and NB Power personnel. The officials were pleased with the overall effectiveness and efficiency of the operations.

Accumulated Sulphur Dioxide Emissions Below Limit
kilotonnes



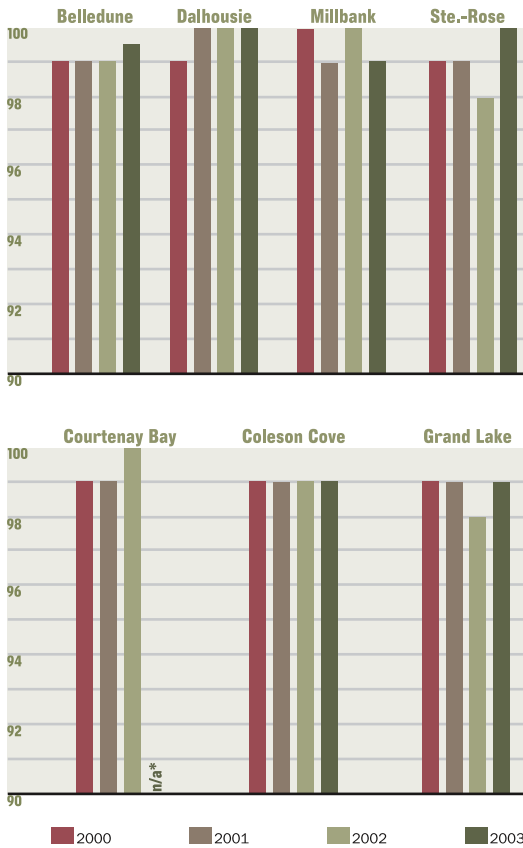
Particulate Emissions
mg/m³



* Data was not available at the time of report preparation.
** Unit #4 did not operate in 2003.

Wastewater

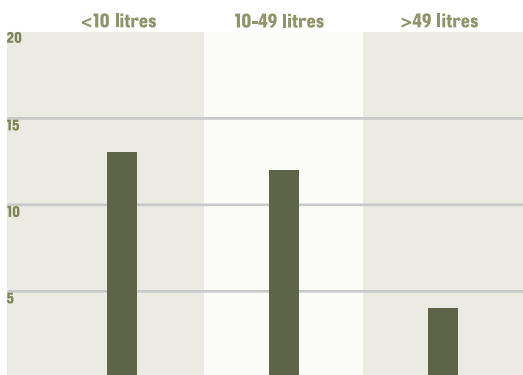
% of analysis within approval limits



* Data is being reported by Bayside Power.

Releases of Petroleum Products

number of spills



NB Power permitted and completed a dredging program at the Port of Dalhousie west wharf during 2003. The purpose of this program was to remove naturally accumulated sediment from the berthing area. The project was registered for screening under the Canadian *Environmental Assessment Act* with Transport Canada, the designated federal Responsible Authority. During the permitting process, several federal and provincial departments reviewed the project and a public information session was held in Dalhousie. Approval to proceed with the project was obtained in August and the dredging of approximately 38,000 cubic meters of sediment was completed by November.

Analyses were performed on wastewater effluent in accordance to each generating station's environmental approval to operate. During the year, over 99% of wastewater effluent analyses were found to be within approval limits.

Waste Management

NB Power has found creative ways to use generation by-products to reduce landfills. The Canadian Gypsum Company received over 190,570 tonnes of gypsum, a by-product of desulphurization at Dalhousie and Belledune, for processing into wallboard. All the gypsum produced was sent for processing.

Over 3,240 tonnes of flyash from Belledune was sold for use in concrete products. Approximately 1,660 tonnes of ash from Dalhousie and Coleson Cove were recycled for the extraction of vanadium, used in the steel industry. Again, this reduced the materials sent to landfill.

NB Power's Environmental Policy requires all petroleum product spills be reported. In Generation, there were 29 spills compared to five the previous year – 13 of these spills involved less than nine litres, while four spills were more than 50 litres. There were no spills involving PCB contaminated oil. The increase in the number of spills reported in 2003 was due to an increase in activities associated with the Coleson Cove Refurbishment Project. All spills were contained, cleaned up and reported to the appropriate regulatory authorities.

Environmental Management Systems

Environmental Management Systems (EMS) consistent with the ISO 14001 standard are in place at Coleson Cove, Grand Lake, Dalhousie, Belledune, Millbank, Ste.-Rose, Grand Manan and within the Hydro Region. Station staff maintain their management systems by monitoring performance, training employees, and reviewing the adequacy of procedures and emergency response plans.



External EMS audits were conducted at Grand Lake, Belledune, Dalhousie, Millbank, Ste.-Rose, Coleson Cove, and hydro Generating Stations during early 2003. Remote sites managed by five stations were also assessed. Nonconformances related to the lack of documented procedures for addressing the communication of changes to legislation and the lack of some corrective actions to address findings in the 2002 audit report. Other non-conformances related to issues such as document control, records management, emergency preparedness and the implementation of operational control. Plans are being developed to address these nonconformances. Although not ISO 14001 registered, the independent EMS audits have demonstrated that the stations could satisfy the requirements of a registration audit.

The following tables offer a complete list of objectives and targets established as part of the EMS Program. The EMS is a voluntary program implemented to manage environmental impacts of business activities.

SOUTHERN REGION (Coleson Cove – CC, Grand Lake – GL and Grand Manan¹ – GM Generating Stations' EMS)

OBJECTIVE	TARGETS	PERFORMANCE	NOTES
Reduce energy consumption	Have no more than 9 work-ordered high pressure steam leaks at one time – CC	Target not achieved due to increased activities associated with the refurbishment project	1 - The waste recycling reduction target for Grand Manan is being monitored by the EMS Team but is no longer reported. 2 - The air quality improvement target for Grand Lake is being monitored by the EMS Team but is no longer reported.
	Have no more than 8 work-ordered low pressure steam leaks at one time – CC	Target not achieved due to increased activities associated with the refurbishment project	
	Reduce electrical requirements by replacing failed lighting with high efficiency models - CC	Replaced failed lighting with high efficiency models as required	
Reduce freshwater consumption	Reduce freshwater consumption at the station - CC	Target not achieved due to an increase in water consumption associated with the refurbishment project.	
Reduce potential for spills that may cause a significant impact on the environment	Reduce the number of reportable spills as defined by the CEA Environmental Commitment and Responsibility Program - GL	Target achieved	
Reduce waste on-site	Maintain less than 9 barrels of oily waste on site at any one time – CC	Target achieved	
	Improve wastewater quality	Reduce number of wastewater exceedences from 7 in 2002 to 6 - CC	Achieved 7 wastewater exceedences
Improve local air quality ²	Reduce number of weekly and monthly wastewater exceedences to 11 - GL	Target achieved	
	Reduce number of opacity exceedences to 1 not including unit start-ups – CC	Target not achieved. Work is underway to develop a corrective action plan	
Assure scheduled job specific and EMS awareness training is provided to all employees	Provide scheduled training courses to 3 work groups - CC	Target not achieved. A non-conformance was generated to take appropriate action	

NORTHERN REGION (Dalhousie – DH, Belledune – BD, Millbank – MB and Ste.-Rose – SteR Generating Stations’ EMS)

OBJECTIVE	TARGETS	PERFORMANCE
Reduce potential for spills that can have a significant impact on the environment	Reduce the number of spills in Northern Region from 7 in 2002 to 4	Target achieved – 4 spills in 2003
Reduce freshwater consumption	Maintain average freshwater consumption of 50 litres/second - BD	Target achieved – 45 litres/second
	Maximize use of recycled water by 30% - DH	Target achieved – 29%
	Divert spring water to FGD make-up by 4.0 million US gallons - DH	Achieved 5.3 million US gallons
	Reduce fire water consumption by 15 million US gallons - DH	Achieved 9.6 million US gallons
	Reduce auxiliary steam consumption by 6 million pounds - DH	Target will no longer be tracked due to the fact that staff could not determine a measurable target.
Reduce waste sent to landfill	Maintain average freshwater consumption at 63 m ³ /day - MB	Achieved 107 m ³ /day due to higher than normal operating hours
	Increase recycled paper and cardboard by 10,000 lbs. - DH	Target achieved – 19,800 lbs.
	Recycle 100% of ash and gypsum - DH	Target achieved – 100%
	Maintain amount of waste oil disposal at/or below 2001 baseline (3,720 gallons) - BD	Target achieved – 1,621 gallons
	Maintain or reduce amount of waste to landfill from 2001 baseline (73 tonnes) – BD	Achieved 9 tonnes
Improve local air quality	Increase fly ash sales from 1,864 tonnes in 2002 – BD	Target achieved due to the installation of fly ash processing plant – 3,249 tonnes
	Reduce number of reportable fugitive dust exceedences from 7 in 2002 – BD	Achieved 13 exceedences. Readings over limit were reported to NBDELG.
	Provide employees regular updates on air management program – DH	Target achieved
Improve EMS Program	Develop and implement an EMS Awareness Program, including procedures for monitoring procedures to conform with section 4.5.1 of the ISO standard – MB and SteR	Target achieved
	Finalize emergency response plan – SteR	Target achieved

Compliance audits were conducted at all generating stations except Grand Manan. Action plans have been developed to address audit findings at each facility.

A Fish Entrainment and Impingement Monitoring Study began at the Belledune Generating Station in 2003. NB Power committed to this study as part of the Environmental Impact Assessment conducted for the Belledune Generating Station project in the early 1990s. It will determine the accuracy of the predictions made on the affects of the cooling water system on the entrainment and impingement of marine species. Additional monitoring work will be conducted in 2004 followed by the preparation of a report.



In the Community

At each of its generating stations, staff strive to be active in their communities. NB Power, as a partner in the Furbish's Lousewort Recovery Team, continued its support of the Recovery Team in 2003 and partnered with the The Nature Trust of New Brunswick to develop a Furbish's Lousewort Conservation Plan for areas in the Upper St. John River Valley.

Wood removal and clean-up programs at several hydro facilities have been successful in making the shoreline and headpond cleaner and safer for recreational activities. During 2003, employees at the Beechwood and Mactaquac Generating Stations removed over 885 truckloads of wood from the headponds.



Also, NB Power continued to collect wood debris from the area around the dams at Grand Falls, Beechwood and Mactaquac Generating Stations. The debris was ground to produce a coarse mixture of wood which was delivered to power stations in northern Maine for use as fuel. By providing an alternative fuel source, this innovative activity reduced both the waste destined for landfills and fossil fuel consumption.

Thermal stations offer site tours to the public, as well as providing information on operations and environmental controls. Grand Lake's recycling program continues to support Minlak, a community-recycling depot. The depot is funded by the New Brunswick Department of Health and Community Services and supported by NBDELG and the Village of Minto.



The Atlantic Salmon Federation, with the support of Fisheries and Oceans Canada and NB Power, continues to examine salmon management in the St. John River Basin. Discussions with stakeholders have provided a forum on issues such as the operation of the Mactaquac Fish Hatchery, salmon stocking and salmon support programs.

The Beechwood site offers an arboretum where visitors can enjoy native trees, flowers, shrubs and also 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.

Staff worked with volunteers of the Lorneville / Seaview Cemetery Incorporated in an effort to restore the local cemetery and church. Initiatives included hoisting a new steeple built by a local resident to the top of the church and providing gravel and small amounts of waste concrete for cemetery posts.

As part of the Coleson Cove Refurbishment Project, a Community Environmental Liaison Committee was formed in 2002 and members continued to meet on a regular basis over the past year. The Committee was formed to share information and provide community input and recommendations regarding effective mitigation and monitoring of health, community and environmental effects of the project. Topics, reviewed and discussed with members, included air quality monitoring, traffic, spill response and fuel delivery.

Future Issues

Local, regional and global responses to environmental issues have an influence on Generation's operations and system development as the licensing of existing or new generating stations must consider current or emerging regulatory requirements for environmental performance.

Climate Change

On May 9, 1992, Canada was one of 150 world governments to adopt the United Nations Framework Convention on Climate Change. Building upon the climate change convention, in 1997, the world governments adopted the Kyoto Protocol with its legally-binding constraints on greenhouse gas emissions. Canada has ratified the Kyoto Protocol on climate change with a commitment to reduce greenhouse gas emissions (GHG) by six percent of 1990 levels during the period between 2008 and 2012. On an international level however, the outcome of the Kyoto Protocol is not clear.



The rules for enforcement of the Kyoto Protocol require 55 countries to ratify the Protocol, including industrialized countries accounting for 55% of the carbon dioxide emissions in 1990. As of November 2003, 120 countries have ratified the accord with industrialized countries accounting for 44% of 1990 CO₂ levels. The United States has stated that it will not be ratifying the Kyoto Protocol, therefore legal implementation will depend on Russian ratification, because the Russian Federation accounts for more than 17% of 1990 emissions. Regardless of the outcome of the ratification process, the Canadian Government appears committed to adopting its emission targets. Canada's commitment regarding emission reduction represents a 30% decrease from projected 2010 levels.



While New Brunswick accounts for 3% of Canada's GHG, all jurisdictions will be called upon 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 9 million tonnes.

New Brunswick's economy is largely natural resource based and the manufacturing industries are energy intensive and export driven. This presents the challenge of linking GHG emission reduction strategies to energy costs and economic competitiveness.

The Canadian Government has outlined its plans regarding the Kyoto Protocol in its *Climate Change Plan for Canada*. This plan outlines steps Canada will take to meet its target under the Kyoto Protocol. Actions proposed in the plan consist of:

- Large Final Emitter (LFE) Program
- targeted reduction measures
- agriculture and forestry carbon sinks
- clean energy export credits and/or international offset credits

The LFE program, which encompasses companies in the energy sector, oil and gas, mining and manufacturing, will have the greatest bearing on NB Power's preparations regarding the greenhouse gas reductions.

The Large Final Emitter Program proposes:

- An emission-trading program for large industry—based on Natural Resources Canada's Business As Usual (BAU) forecast—encompassing efficiency gains as well as additional reductions for LFEs and allocations through separate industry covenants.
- Each industry would be allocated an emission intensity factor of carbon dioxide per unit of output (e.g. Mte of CO₂ /GWh).
- Each industry would meet the intensity factor or purchase offset credits. The LFE can generate surplus credits for sale only if it operates below the intensity rate.



The impact of the LFE Program on NB Power's future activities will be clarified through further definition of the mechanics of the trading program by the federal government. As yet no specific method of allocation by province or region has been finalized. Only the principle that an egalitarian approach to regional disparity is required has been agreed to. NB Power has been working with other Maritime area utilities as well as the provincial and federal governments in an attempt to achieve an equitable allocation.

In addition to the Kyoto Protocol, the New England Governors and Eastern Canadian Premiers agreed in 2001 to a Climate Change Action Plan to reduce regional GHG in a manner that is cost effective while maintaining reliable energy supplies. That plan set regional reduction targets:

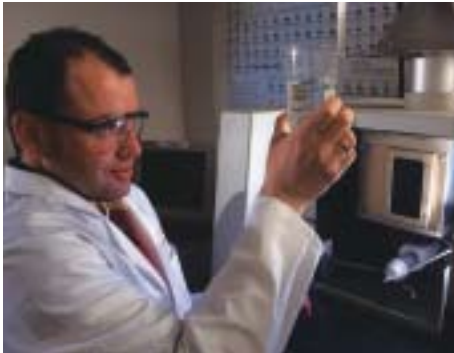
- Reduce regional GHG emissions to 1990 emission levels by 2010.
- Reduce regional GHG emissions by at least 10% below 1990 emissions by 2020 and establish a five-year process in 2005 to adjust or establish future emissions reductions goals.
- Reduce regional rate of emissions by 20% per MWh by 2025 from 2000 rate.

The Provincial Government is developing a Climate Change Action Plan for New Brunswick. In early 2003, a consultation process encompassed discussion of emissions reductions targets, sequestration measures and the economic impact of mitigation and adaptation actions.

As options to substantially change the generation mix in the short term to address GHG are limited, the refurbishment of the Point Lepreau Generating Station is key to NB Power's strategy to mitigate carbon dioxide emissions and meet projected limits. On an annual basis, the station reduces carbon dioxide emissions by about 2.0 million tonnes compared to other generation alternatives, particularly natural gas, but its value relative to emission intensity requirements in the LFE trading system is uncertain. An action that can be taken to reduce emission intensity is the utilization of lower carbon fuels such as natural gas and Orimulsion® in place of higher carbon fuels such as coal. Replacement of fossil generation with emission free sources such as wind and biomass are also part of NB Power's current strategy. A target of 100MW of wind equivalent has been set for 2010. NB Power is also monitoring the development and acquisition of offset credits from emission reduction projects such as landfill gas capture, improved agricultural practices and forestry sequestration.

Nitrogen Oxide

Nitrogen oxide emissions are regulated by federal government point source emission guidelines applied as generating units are constructed or upgraded. In addition, the New England Governors and Eastern Canadian Premiers have targeted a 30% reduction in nitrogen oxide emissions by 2007. The Coleson Cove Generating Station currently contributes about 60% of NB Power's nitrogen oxide emissions. The proposed refurbishment project at the station includes control technology that will enable nitrogen oxide emissions to be significantly reduced.



Sulphur Dioxide

The Government of Canada and the New England Governors and Eastern Canadian Premiers are working to achieve regional and national reductions in sulphur dioxide emissions. The New Brunswick Department of Environment and Local Government has indicated it favours a two-phase reduction of NB Power's 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)

NB Power's *Sulphur Dioxide Emissions Reduction Program – January 2001* outlined specific actions to satisfy the emission constraints. The proposed Coleson Cove Generating Station Refurbishment project, described below, will enable NB Power to meet emerging sulphur dioxide emissions reduction targets.

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 2005, scientific, technical and economic analysis will be completed by government agencies to reduce information gaps and establish the PM and ozone CWS for 2015.

Mercury

Canada Wide Standards for mercury emissions from coal-fired electric power generation are being developed. Working through the Canadian Electricity Association (CEA), NB Power believes a decision is most appropriately timed for 2005 when information from the CEA Mercury Program will be available as will similar policy direction from the United States on the development of control strategies for climate change, particulate matter and ozone.

NB Power 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 key components to the program are a laboratory round robin, research and development, and a mercury sampling and analysis program. During 2003, mercury sampling and analysis was conducted at the Belledune Generating Station, with results reported to the CEA. The findings of this program will provide critical information for establishing and reviewing a mercury standard for Canada, and finding cost-effective and efficient management options for mercury emissions over the long-term. Further information is available at <http://www.canelect.ca>.



The New England Governors and Eastern Canadian Premiers are developing an implementation plan for reductions 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) and a 60-90% reduction by January 2010.



NB Power's mercury emissions account for 1.7% of the total from northeastern North America and are mostly attributable to use of indigenous coal. The Belledune Generating Station stopped using indigenous coal in 2002 thereby significantly reducing its mercury emissions. Following the retirement of the Grand Lake Generating Station, system emissions should be reduced by 85% from the base year.

Federal Emissions Guidelines

NB Power participated in consultations with the Federal Government on *Thermal Power Generation Emissions – National Guidelines for New Stationary Sources* issued under the *Canadian Environmental Protection Act*. Revisions enacted in early 2003 apply to new generating units including a generating unit that replaces an existing unit.

By undertaking a provincial environmental impact assessment and meeting significant emission reductions for the Coleson Cove refurbishment project, these new national guidelines were satisfied.

BUSINESS DEVELOPMENT

Coleson Cove Generating Station Refurbishment

Operation of the oil-fired Coleson Cove Generating Station beyond 2005 requires investment to meet new environmental standards. The \$750 million refurbishment, underway since 2002, will see advanced environmental control equipment installed which will significantly reduce emission rates of sulphur dioxide, nitrogen oxide and particulate.

The Corporation intends to convert the station's fuel to Orimulsion® though a fuel supply agreement is the subject of legal action. As of February 25, 2004, construction of the fuel delivery system has been halted because of the legal action and the associated regulatory applications are on hold.

During 2002, the project received environmental approval from NBDELG. The review concluded that the project would not have a significant impact on the environment if appropriate proposed mitigation measures were implemented. The impact of the project on the environment was a major factor in the approval, specifically reductions in emission rates for sulphur dioxide, particulate matter and nitrogen oxide. The environmental approval has conditions that require additional work in the areas of air quality, marine impacts, spill prevention/response and fuel delivery. Many of these requirements must be fulfilled before the station receives a license to operate from the environmental regulator.

The Construction Environmental Protection Plan (EPP) has played a key role in managing the environmental aspect of construction. Some of the challenging areas were sedimentation and erosion control during site preparation activities. The EPP is updated quarterly and reviewed by the regulator. Additionally, an environmental compliance officer was assigned by NBDELG and plays an active role on site. Contractors received environmental awareness training upon arrival at site and contract supervisors were provided training and an environmental handbook related to their responsibilities.

The Coleson Cove Generating Station's EMS is being updated to include the environmental aspects associated with upgraded equipment.

NUCLEAR



The CANDU 6 – 635 MW Unit at Point Lepreau supplies up to 30% of New Brunswick’s energy requirements.

This station is important to the performance of NB Power as it displaces significant carbon dioxide, sulphur dioxide and nitrogen oxide emissions.

Overview

Compared to electricity generated from other thermal sources, nuclear generation emits far less emissions into the air. However, environmental aspects must be addressed quite differently because the station’s fuel is radioactive. Point Lepreau operates under approval from the Canadian Nuclear Safety Commission (CNSC), the federal regulator of nuclear facilities. It also has approval from the New Brunswick Department of Environment and Local Government (NBDELG) under the *Clean Environment Act* and *Clean Air Act*.

Whether it’s the transportation of fuel to the site, station operations or the storage of used fuel, activities at Point Lepreau are carefully managed, regulated and monitored. All radioactive liquid and gaseous effluents are closely measured and monitored. In addition, Point Lepreau operates an Environmental Radiation Monitoring Program. Results are available to the public and reviewed by the CNSC each year.

Point Lepreau plays an extremely important role in NB Power’s climate change and sulphur dioxide management initiatives. For instance, in 2003, nuclear generation avoided emissions of approximately 62,475 tonnes of sulphur dioxide, 3.6 million tonnes of carbon dioxide and 12,750 tonnes of nitrogen oxide.

Climate Change

The refurbishment of the Point Lepreau Generating Station is key to NB Power’s strategy to mitigate carbon dioxide emissions and meet projected limits. On an annual basis, the station reduces carbon dioxide emissions by about two million tonnes compared to other generation alternatives, particularly natural gas. The contribution of nuclear energy to Canada’s national Climate Change strategy is currently being defined and of particular importance will be the Federal Government’s position on emission credits.

Radiation Monitoring

The objectives of Point Lepreau's Environmental Radiation Monitoring Program are:

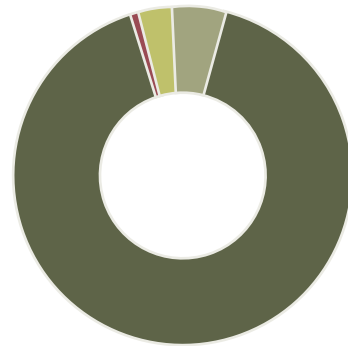
- To provide data confirming Point Lepreau's compliance with applicable guidelines and regulations.
- To establish and maintain the capability for monitoring so that an effective response can be made to emergency conditions.
- To maintain a database of results to help with the detection of trends.

Since 1976, the monitoring program has analysed more than 29,000 samples to define background radiation from natural and human sources. Staff in the Health Physics Department are responsible for managing the Environmental Radiation Monitoring Program. The program is reviewed annually to ensure that the samples collected, collection frequency and analytical techniques are appropriate. A 2001 CNSC evaluation of the monitoring program demonstrated favourable results.

During 2003, analyses were performed on samples of air, water, food, vegetation, soil, sediment and sea life. In order to assess local environmental radiation, samples were collected from around the station and from remote locations. These analyses found that the public radiation dose from Point Lepreau's total emissions is about 0.3 microsieverts per year (the lowest since 1984). This is well below:

1. Legal limit of 1,000 microsieverts per year.
2. Natural radiation background in the area (about 2,000 to 3,000 microsieverts per year).
3. Station design target of 50 microsieverts per year.

Radiation Sources
μSv/yr



- Actual emissions from Point Lepreau - less than 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

Environmental Management System

Following an audit in October 2001, Point Lepreau registered its Environmental Management System (EMS) to the International Standard ISO 14001. An ISO 14001 Maintenance Audit was conducted in August 2003 to assess



the station's abilities in accordance with key EMS procedures, programs and standards. The audit concluded that Point Lepreau maintains a good system for managing its environmental aspects. However, the auditors identified opportunities for improving the EMS and noted minor non-conformances related to employee awareness training, document control and records management. Subsequently, a corrective action plan was developed to address nonconformances raised by the auditors. Staff are also preparing for a reassessment audit which will be conducted in 2004. A reassessment is required every three years for ISO 14001 registered companies.

ENVIRONMENTAL MANAGEMENT SYSTEM¹

OBJECTIVE	TARGETS	PERFORMANCE	NOTE
Improve Ozone Depleting Substances (ODS) management	Develop five-year strategy to minimize the use of ODS at site by March 2004	Target achieved	1 - In accordance with the budget and work management processes, the objectives and targets are tracked on a fiscal year basis.
Upgrade Sewage Treatment Plant	Develop engineering design and obtain approval from the regulator by March 31, 2003	Target achieved – upgrades to the Sewage Treatment Plant have been completed	
Decrease number of out of specification lagoon effluent releases	Reduce out of specification effluent releases relative to the period from 2000 to 2002 inclusive	Target achieved	
Reduce energy consumption	Work with Customer Services Energy Advisor and the Environmental Overview Committee to develop a plan for energy conservation	Target in progress	

As part of the EMS program, a staff project team has begun exploring energy conservation strategies for the station. The purpose of the project is to develop a plan to reduce energy consumption and determine cost savings. The project team is currently identifying the station's primary energy expending areas. Once the amount of energy is benchmarked, the cost versus benefit factor will be determined and a plan will be implemented to reduce energy consumption.

An Ecological Effects Review (EER) was commissioned to identify potential impacts and risks to the ecological environment within and around the Point Lepreau site resulting from the current operations of the nuclear facility and associated support systems and to examine the effectiveness of current environmental monitoring programs in assessing these risks. The results of the EER did not identify any unacceptable levels of exposure to any Contaminants of Concern (COCs) originating from the Point Lepreau facilities. In addition, the EER has revealed no significant indications of environmental impacts as a result of routine station operations.

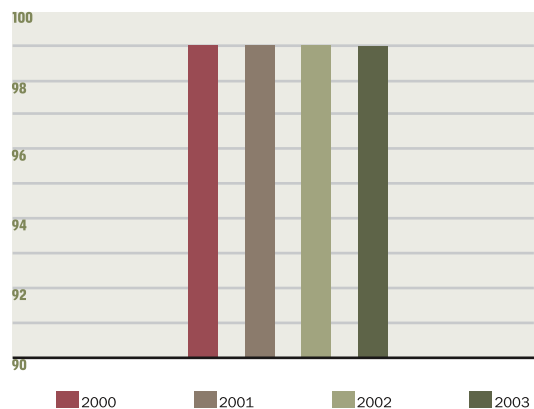
In addition to routine groundwater monitoring at the station, 11 new wells were drilled near the station to better understand groundwater movement. Each well was sampled three times in 2002 and the data was provided to hydrogeologists for evaluation. A report issued in 2003 confirmed previously expected groundwater movement and water quality on the peninsula.

Water and Air Quality Management

The sewage treatment system has been significantly modified to improve effluent parameters such as pH and turbidity. More than 99% of the analyses performed on conventional wastewater effluent produced results within the approved limits. The gaseous effluent air-monitoring program observes radioactive emissions from Point Lepreau. The station is well below its operational target, which is a fraction of the radiation level occurring naturally in the environment.

Wastewater

% of analysis within approval limits



Waste Management

At Point Lepreau, used nuclear fuel is stored in on-site fuel bays for seven years. This spent fuel is then moved to on-site, above-ground, dry fuel storage containers. These containers, which are made of concrete and steel, are designed to protect the environment from spent fuel radiation.

Point Lepreau had implemented a program to reduce the amount of solid radioactive waste stored in the facility. In 2003, a team from the service maintenance department retrieved waste paper metal-framed filters from the Solid Radioactive Waste Management Facility for activity segregation and compacting. The filters found to be non-active were processed and sent to the regional landfill while those found to be active were disassembled, compacted, processed and returned to the Solid Radioactive Waste Management Facility.

Addressing broader used fuel management issues, Canadian nuclear utilities have established the Nuclear Waste Management Organization (NWMO) to meet the stipulations of the new *Nuclear Fuel Waste Act*. This act requires that nuclear utilities identify and implement a long-term management approach for spent nuclear fuel in Canada.



During 2003, the NWMO published its first major discussion paper entitled *Asking the Right Questions? Future Management of Canada's Used Nuclear Fuel*. The discussion paper provides a background on used nuclear fuel and seeks input from the public in developing a long term management approach that is socially acceptable, technically sound, environmentally responsible and economically feasible. *Asking the Right Questions? Future Management of Canada's Used Nuclear Fuel* is available at www.nwmo.ca. A second discussion paper is expected in 2004, which will present the potential options for long-term management of used nuclear fuel.

In the Community



Point Lepreau employees play a very active role in the community, both in areas related to station operation and as a good neighbour to local residents.

In 2003, staff celebrated Earth Day by participating in a clean-up day around the station and visiting an area school to speak with students about Earth Day and the importance of protecting the environment. A community relations committee, including employees from the station and members from local communities, was established during the year. It provides a means to share information about the operation of the station and answer any questions from community members. This new committee supports the existing program of newsletters, mail-outs and website information.

Station staff work closely with local, provincial, federal and international agencies on emergency planning activities encompassing various exercises and drills. These are undertaken with the New Brunswick Emergency Measures Organization with participation from local fire departments, hospitals, and the RCMP as well as volunteers from the community. A large-scale emergency planning exercise was held in August 2003 to demonstrate to regulatory authorities the station's capability to respond to a radiation event.

Station visits and workshops are offered to school groups, university students, organizations and the public, although tours within protected areas have been suspended.

Over the past several years, the public has attended numerous information sessions on the proposed refurbishment of the station. In addition, presentations on the socio-economic, environmental and economic impacts of the station have been delivered to special interest groups and various levels of governments.

BUSINESS DEVELOPMENT

Point Lepreau Refurbishment

NB Power is proposing to refurbish the Point Lepreau Generating Station during an 18-month outage expected to begin in April 2008. The major activity during the outage would be replacement of all 380 fuel channel and calandria tube assemblies and other reactor components. Other equipment replacements, inspections and upgrades would also be completed during the outage. Successfully completing the project would allow the station to operate for an additional 25 to 30 years.

In September 2002, following a public review, the New Brunswick Board of Commissioners of Public Utilities (PUB) recommended to NB Power's Board of Directors that the project, as presented, not proceed because there was no significant economic advantage. NB Power recognizes that many factors outside the scope of the PUB economic review will be important inputs towards a final decision on refurbishment. These include the environmental benefits from continued operation of the station along with the uncertainty in the pricing and supply of natural gas, a potential replacement source of generation.

The refurbishment project was registered under the federal *Canadian Environmental Assessment Act* and provincial Environmental Impact Assessment Regulation. Since August 2000, NB Power has been working with these agencies to supply necessary background information needed for understanding the steps required in the assessment. Through the environmental assessment process, the public had an opportunity to comment on both the guidelines and the assessment.

In August 2003 following two hearings, a positive decision on the environmental assessment was received from both the provincial and federal authorities. This release from the environmental assessment process allowed NB Power to proceed to the next regulatory step, which involves amending its existing Waste Facility Operating Licence to allow construction and operation of the new storage structures.

Following public hearings in September and November 2003, the CNSC decided to amend the existing Waste Facility Operating Licenses for the Point Lepreau Solid Radioactive Waste Management Facility to permit construction of additional radioactive waste storage structures. During the public hearing, the Commission considered written submissions and oral presentations from NB Power, CNSC staff and intervenors and concluded that NB Power is qualified to operate the facility and will make adequate provisions for the protection of the environment, the health and safety of persons, and the maintenance of national security measures and international obligations. The operating licenses remain valid until July 31, 2009.

A final decision on the refurbishment project is pending. The Provincial Government is exploring the potential for third-party equity participation in the project. Meanwhile, engineering and preparation work is ongoing and a final decision for the refurbishment of the facility is expected in 2004.

TRANSMISSION



Transmission is responsible for transmitting electricity from generating stations to in-province and point-to-point transmission customers. Employees operate and maintain more than 6,700 km of transmission lines and numerous substations, terminals and microwave sites.

Overview

The Transmission Business Unit is responsible for transmitting electricity from the generating stations to the distribution system and point-to-point transmission customers. 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 Transmission are subject to provincial environmental legislation. The construction, maintenance and dismantling of transmission lines require approval under the *Clean Environment Act*. Work that could affect waterways is performed in accordance with the *Clean Water Act*, and work conducted during the fire season requires approval from the Department of Natural Resources. The use of pesticides must be approved and in accordance with the *Pesticide Control Act*.

Vegetation Management

During 2003, transmission employees maintained brush on approximately 940 kilometers of transmission line rights-of-way. In addition, hardware maintenance extended the life of existing transmission lines along 310 kilometres of transmission lines. Work included replacing insulators, cross-arms and poles on older lines, which are susceptible to weather conditions such as wind and snow.

Herbicides are not used to control vegetation along transmission line rights-of-way. Herbicides are used to control weeds located inside the yards of substations, terminals, remote radio sites, as well as at the fuel tank farms of the generating stations. All herbicides are applied under controlled conditions with a trained crew and with the appropriate Pesticide Application Permits from NBDELG following a code of practice. In 2003, NBDELG and Dow AgroSciences audited the pesticide program. No issues were identified by the auditors.

Watercourse crossings are one of the environmental risks for the Transmission Business Unit. To remedy this challenge, a portable bridge was developed. A vehicle destined for retirement was fitted with a hydraulic bridge that allows employees and equipment to cross watercourses of up to 15 feet wide safely and without damaging stream banks or beds.

NB Power has developed a handbook titled *Migratory Birds Commonly Nesting on Rights-of-Way* which is used to instruct employees and contractors of the importance of the nesting period and protection of nests. During training sessions, employees are instructed to identify and mark nests during vegetation management activities so they can be avoided until after the nesting period.

Environmental Management System



During the year, Transmission strived to ensure that its environmental management system (EMS) was consistent with the ISO standard. Work continued on developing procedures, enhancing the environmental management programs and formalizing the Emergency Response Plan. The latter will provide procedures for responding to environmental events, whether a spill, sedimentation in watercourses or fires. An independent external EMS audit was conducted in April 2003 to determine whether the appropriate procedures, processes and plans were in place in order to meet the established objectives, targets and policy commitments, as well as to assess if the EMS was properly implemented and maintained by staff. Although the audit found the EMS to be consistent with the ISO 14001 standard, a number of non-conformances were identified which related to document control, records management, emergency preparedness and implementation of operational control. Plans have been developed to address these non-conformances.

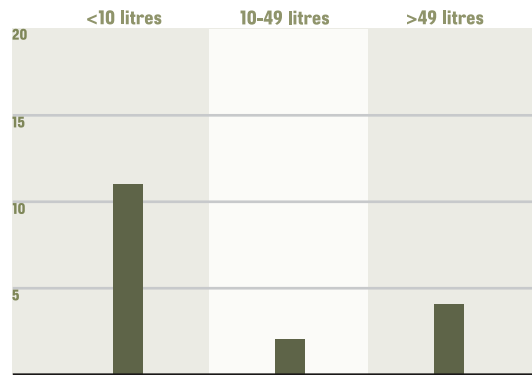
In addition to an EMS audit, compliance audits were conducted as crews worked on transmission lines in the Fredericton, Moncton and Saint John areas. Subsequently, action plans were implemented to address issues raised by the audits.

Specialized environmental training continued. Maintenance employees participated in a general pesticide safety course and were certified to apply a pesticide to treat the tops and bottoms of poles to prevent decay and insect infestation. Employees and contractors were trained on the Environmental Protection Plan. This plan involves minimizing the environmental impact of route selection, design, construction and maintenance of transmission lines. Additionally, five employees successfully completed the Watercourse Alteration Certification course. The course provides a better understanding of the importance of environmental protection and the *Fisheries Act* to those involved with vegetation management activities.

Waste Management

From 2002 to 2003, the number of reported releases of petroleum products involving Transmission decreased from 23 to 17. Thirteen spills involved less than 50 litres. Most significantly, a 6,000 litre spill occurred at a substation site near Chipman. During the incident, co-ordination, communications and standard operating response procedures were followed. This spill was contained, cleaned up and reported to NBDELG. Monitoring wells examined the groundwater and an assessment determined that no major waterways were contaminated. The site was cleaned up with over 4,000 tonnes of contaminated soil removed from the area.

Releases of Petroleum Products
number of spills



NB Power has developed and implemented several successful programs to reuse and recycle materials from the 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.

RECYCLING PROGRAMS

MATERIAL	QUANTITY	HANDLING
Street lights and dusk-to-dawn lights	3,000	Refurbished for reuse
	6 tonnes	Sold to scrap dealer for recycling
Insulating oil from low-voltage electrical apparatus	69,752 litres	Recycled at Marysville Service Centre and returned to inventory
	0 litres	Recycled during field operations and reused
	0 litres	Sold to contractor for energy recovery
PCB contaminated oil	200,000 litres	Recycled by a third party for use other than in electrical equipment (i.e., chain saw oil, lubricating oil, asphalt)
	31,217 litres	Sent for disposal by a hazardous waste contractor
	Transformers	570
Scrap metal	1,860	Sold to scrap dealers for recycling
	159	Rewound by a third party and returned to inventory for reuse
Aluminium	40 tonnes	Sold to scrap dealer for recycling
Copper	385 tonnes	Sold to scrap dealer for recycling
	140 tonnes	Sold to scrap dealer for recycling

In the Community

Transmission facilities have an impact on those who live near substations, terminals and transmission lines.

For this reason, NB Power offers communication programs to ensure that communities and individuals understand the technical, economic and environmental aspects of new construction and maintenance work. Public activities for projects in Dieppe, Memramcook, St. Stephen and Chipman have included meetings with community residents, property owners and elected representatives, as well as public advertising.

In 2003, discussions began with the New Brunswick Federation of Snowmobile Clubs and the New Brunswick All-Terrain Vehicle Federation to identify ways to minimize environmental challenges or impact on the transmission system. By working with the federations and provincial government stakeholders, a joint program will be developed to communicate environmentally sensitive snowmobile and ATV riding habits.



Regular patrols of transmission lines during 2003 discovered 14 new osprey nests, bringing the total number of nests on the transmission system to 315. There were also 17 crow's nests and one hawk nest built on Transmission structures. Transmission employees routinely trim these nests to preserve the osprey's habitat and prevent contact with electrical conductors. A new design for platforms was placed in 2003.

Another example of community involvement was the planting of trees and shrubs by transmission employees at several schools and work locations throughout the province to celebrate Arbor Day.

BUSINESS DEVELOPMENT

International Power Line Project

Greater transmission access in the region will be enhanced with the construction of a second New England interconnection. The 345 kV transmission line and interconnection with Maine would increase opportunities to import and export power, improve overall system reliability and enhance transmission efficiency.

NB Power applied to the National Energy Board (NEB) in May 2001 for approval to construct a 345 kV International Power Line that would run from the existing transmission terminal at Point Lepreau to a point on the Maine – New Brunswick border. The NEB process included an environmental assessment under the *Canadian Environmental Assessment Act* that was prepared and submitted to the Canadian Environmental Assessment Agency and NBDELG for review, public consultation and a Ministerial decision.

A public hearing was held on March 24, 2003 in Saint John, where NB Power presented evidence, including an environmental protection plan, to support its application for the construction of the International Power Line. The NEB issued a decision in May stating it was satisfied from the evidence that the proposed International Power Line was required. In addition, NBDELG issued a number of conditions that must be satisfied prior to construction and operation. These relate to the implementation of a number of protection measures prior to, during and following construction activities.

A joint development agreement with Bangor Hydro, an EMERA Inc. company, was reached to proceed with the acquisition of state and federal permits for the construction of the United States portion of the transmission line. Bangor Hydro is currently conducting public consultation and performing the necessary studies to identify an acceptable route to satisfy the environmental regulatory requirements in Maine. Clearing on the Canadian side is to begin in August 2005.



CUSTOMER SERVICE



Serving residential, commercial and industrial customers across the province, the Customer Service Business Unit delivers safe, reliable and competitively-priced energy by way of its 20,000 km of distribution lines. It also provides valuable customer services through its regional operating offices, customer contact centres, account managers and energy advisors.

Overview

Customer Service is responsible for the delivery of electricity from the transmission system to NB Power customers. Environmental efforts are focused on minimizing impacts related to the construction, operation and maintenance of the distribution system, rights-of-way and substations. To this end, the company has implemented an Environmental Management System (EMS) consistent with the ISO 14001 standard. The business unit is also involved in awareness programs with homeowners encouraging efficient energy use and R2000 construction practices, as well as advising customers on acceptable limits when planting trees near power lines.

Vegetation Management

The vegetation maintenance program continued with changes to cutting standards for the rural distribution system. Recent winter storms and extensive power outages have resulted in the need to improve tree trimming practices. All trees



along rural roads are now being removed out to 8 feet behind the pole for single-phase lines and 11 feet behind the pole for 3-phase lines. As well, a more aggressive Danger Tree Removal Program has been implemented. Both of these strategies have been implemented to improve reliability and reduce line outages due to tree contacts.

Herbicides are not used to control vegetation along the rights-of-way of distribution lines but are used to control weeds located inside the yards of substations, terminals and remote radio sites. This work is performed by trained staff from the Transmission Business Unit with the appropriate Pesticide Application Permits.

Environmental Management System



Customer Service has five operating regions which have implemented an Environmental Management System (EMS) consistent with ISO 14001 standard. This provides a structured and systematic approach to managing environmental issues. The program focuses on continual improvement through planning, implementation, auditing, corrective actions and management review. It ensures common environmental goals with defined accountabilities and performance measures. While improved environmental performance is the primary objective of the programs, other benefits include better relationships with communities and regulatory agencies.

During this past year, three compliance field audits were conducted while crews and contractors worked on distribution lines. Action plans were developed and implemented to address the few minor issues that were identified by auditors.

Waste Management

The Customer Service environmental team has continued its use of environmentally friendly transformer insulating oils. Envirotemp FR3 – a vegetable oil manufactured by Cooper Power Systems – is being used at two municipal well heads where the Provincial Government has protected the community drinking water supply.

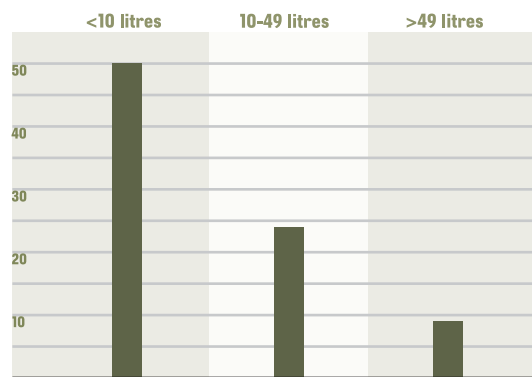
Envirotemp FR3 is composed of vegetable oils and food grade additives from renewable sources. The fluid is naturally non-toxic and biodegradable, easing environmental concerns associated with mineral oil-based insulating oils. NB Power has installed four new vegetable oil transformers at two wellhead pump houses in the province. These transformers are identical to existing mineral oil transformers, but the oil is potentially less damaging to aquifers if a spill should occur.

This past year, there were 83 oil spills reported with 50 spills less than nine litres and 24 spills less than 50 litres.

One spill involving two litres of PCB-contaminated oil was contained and cleaned up. A successful hydraulic oil spill management program is continuing with the number of spills caused by ruptured hydraulic hoses significantly lower over the past two years. Contractors are required to follow this program while performing power line and tree trimming work for NB Power. The program involves replacing worn hoses on vehicles, improving maintenance programs, conducting inspections and training staff.

Releases of Petroleum Products

number of spills



NB Power has developed and implemented several successful programs to reuse or recycle materials and one example is the disposal of water heaters. Managing one of the most successful water heater rental programs in the country, with 85% of residential customers who use electricity to heat water renting units from NB Power, creates the opportunity to manage the disposal process in an environmentally responsible manner. To this end, the 16,000 water heaters removed from residences each year are fully recycled thereby avoiding requirement for landfill.

In the Community

Several communities in eastern New Brunswick were affected by ice storms in February 2003 and employees were heavily involved in cleanup efforts. These activities included removal of downed trees and the trimming of trees and branches near power lines.

In the wake of the Groundhog Day Ice Storm, NB Power, the City of Moncton, the Town of Riverview and the Metro Moncton Communities in Bloom joined forces to make Arbor Day 2003 unique. Area residents were invited to the Moncton Market for free seedlings and a chance to win a 12 foot tree. Tree care experts from NB Power and the City of Moncton were on hand to share tips on caring for trees and planting new ones. Especially important, information was available on planting trees to avoid growth into power lines and other equipment.



Support for Arbor Day coincides with NB Power's tree trimming program to ensure reliability and improve safety. The utility must maintain proper clearance from trees for its transmission and distribution lines. Selective pruning helps to maintain service during wind and ice storms when trees or branches can come in contact with power lines. The trimming program also improves public and employee safety by eliminating hazards.

Business Development – Green Energy

The Government of New Brunswick is creating a competitive market for wholesale and large industrial electricity consumers and expanding non-utility generation opportunities. Coincident to the market transformation, New Brunswick Power – a Crown Corporation vertically integrated with generation, transmission and distribution functions – will be restructured as a holding corporation with separate operating companies.

As a successor company, NB Power Distribution and Customer Service will be responsible to secure adequate energy supplies for its customers. In December 2003, a request for proposals was issued for the development, ownership and operation of up to 20 MW of EcoLogo, certified wind-powered generation in New Brunswick. The wind proposal submissions are due April 2004 and are to propose a commercial operation date of no later than March 2006.

NB Power has worked with local interests to promote wind energy development in the province. Wind generation assessments have been carried out at a number of locations and to enhance the understanding of alternative energy development, wind energy information seminars were held in the province.

The Corporation has been awarded one of three Market Incentive Program (MIP) contracts by the federal government to help market green power. NB Power is considering developing a green power pricing option. The funds collected would be channelled towards the purchase of energy from an EcoLogo certified renewable energy project.

2003 MILESTONES



JANUARY

Independent external audit on environmental management systems in Generation

FEBRUARY

Employees participate in tree trimming and clean-up activities following Groundhog Day Ice Storm

MARCH

Generation Domestic Sewage Summary Report submitted to New Brunswick Department of Environment and Local Government

APRIL

Independent external audits on environmental management systems in Transmission and Customer Service

MAY

NB Power receives positive regulatory decision on construction and operation of International Power Line

JUNE

Canadian Electricity Association's verification team concludes NB Power satisfies Environmental Commitment and Responsibility Program requirements

JULY

Dredging project at the Port of Dalhousie registered under the *Canadian Environmental Assessment Act*

AUGUST

Point Lepreau Solid Radioactive Waste Management Facility receives positive regulatory decision from provincial and federal authorities

SEPTEMBER

Belledune Generating Station begins fish entrainment and impingement monitoring study

OCTOBER

Mercury emissions tests conducted at Grand Lake Generating Station

NOVEMBER

NB Power partners with Nature Trust of New Brunswick to develop conservation plan for the Furbish's Lousewort

DECEMBER

NB Power issues request for proposals for wind energy

GOVERNANCE



NB Power's Board of Directors is responsible for directing the affairs of the Corporation consistent with the *Electric Power Act*. The Environment Committee of the Board is one of three committees that meet regularly, reviewing activities in specific areas. These reviews encompass environmental policies and protection programs. This assists all Board members in effectively carrying out their governance responsibilities related to the environmental performance of the Corporation.

The mandate of the Environment Committee is:

- To examine the suitability of NB Power's Environmental Policy Statement
- Evaluate the effectiveness of corporate environmental programs
- Review environmental operating activities and results of environmental audits

The members of the Environment Committee of the Board are Phillippe DesRosiers (Chair), Roger Clinch, Jean-Marc Violette and Leon Furlong.

Five areas the committee focused its attention on were:

- Environment management systems implementation
- Environmental compliance audits
- Provincial environmental issues, facility re-licensing and environmental events
- Changes to environmental legislation and emerging development issues
- Environmental aspects of capital projects



Phillippe DesRosiers
Chair



Roger Clinch



Jean-Marc Violette



Leon Furlong

SYSTEM MAP



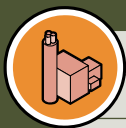
STATION CAPACITY UNITS FIRST SERVICE FUEL ENVIRONMENTAL PROTECTION

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	998	3	1976	Oil	Electrostatic precipitators, wastewater treatment, emissions monitoring, ash recycling
Grand Lake	57	1	1963	Coal	Electrostatic precipitators, wastewater treatment, air quality monitoring
Courtenay Bay	110	3	1961-1967	Oil	Wastewater treatment, emissions monitoring, ash recycling

COMBUSTION TURBINES



Millbank	199	2	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 Narrows	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.
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