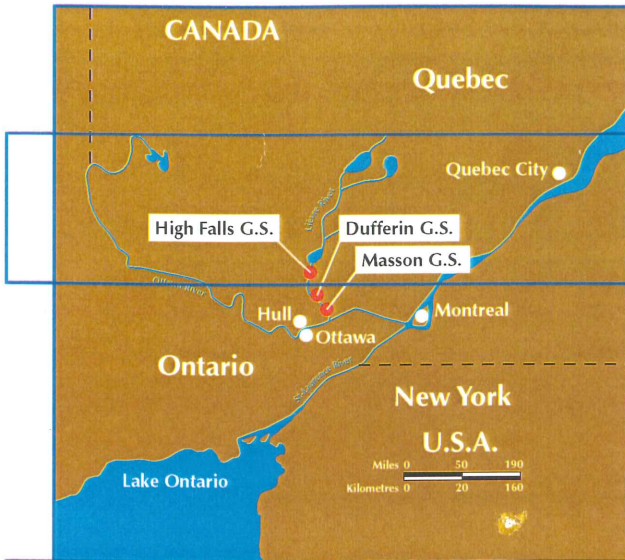




Strategically Focussed  
Stratégiquement positionné







# fact sheet

## Lièvre River Power

*Lièvre River Power, acquired in 1999, is an integrated hydroelectric power system located in western Quebec.*

The Lièvre River Power system is located in western Quebec along the Lièvre River, a tributary of the Ottawa River which it joins approximately 30 km east of the city of Gatineau. On average, approximately five billion cubic meters of water flow through the system's generating stations annually, producing in excess of 1,400 GWh of electricity.

Lièvre River Power's production base consists of three generating stations containing 10 generating units with a total installed capacity of 238 MW on the Lièvre River.

Water for these facilities is stored primarily at three reservoirs located upriver on the Lièvre River and two of its tributaries: *Poisson Blanc*, on the Lièvre River approximately 47 km north of High Falls; *Kiamika*, on the Kiamika River, a tributary of the Lièvre, 150 km north of the Ottawa River; and *Mitchinamécus*, on the *Mitchinamécus* River another tributary of the Lièvre River, 237 km north of the Ottawa river. These three reservoirs are owned and operated by the Government of Quebec and have a total useable water storage of 15,431 cms days.

The Lièvre River Power system also includes five substations and approximately 50 km of 120 kV transmission lines. These have four interconnections with the Quebec power grid and two interconnections across the Ottawa River with the Ontario power grid.

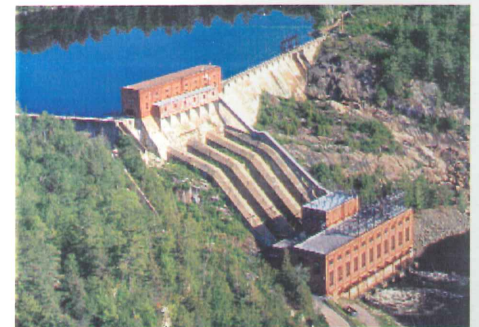
Power is delivered through this transmission system to a number of local industry customers.

### SYSTEM STATISTICS

Number of Stations	3
Number of Generating Units	10
Total Installed Capacity	238 MW
Watershed Area	9,560 km <sup>2</sup>
Average Annual Energy	1,418 GWh
Transmission Lines	50 km



Masson Generating Station



High Falls Generating Station



Dufferin Generating Station

**Long-Life, Low-Cost Generating Assets**



**FACT SHEET**



# High Falls

generating station

**LIÈVRE RIVER POWER**

*Reservoirs upstream of the High Falls power station have a combined storage capacity of 15,425 cms days.*

**OPERATING STATISTICS**

Installed Capacity	95.0 MW
Drainage Area	8,880 km <sup>2</sup>
Storage	15,425 cms days
Average Inflow	162.7 cms
Operating Head	55 m

**PLANT EQUIPMENT DATA**

Units	No. 1	Nos. 2-4
Turbine Type	Francis	Francis
Output per Unit	26.0 MW	23.0 MW
Speed	180 rpm	180 rpm

**MANUFACTURERS**

Turbines	Unit 1 - Allis Chalmers/ Dominion Engineering Works Units 2-4 - S. Morgan Smith/ Dominion Engineering Works
Generator	Westinghouse

The High Falls generating station, the third power station on the Lièvre River, is located 40 km north of the Ottawa River.

The site consists of a dam and intake structure, with penstocks leading to a powerhouse at the bottom of the falls.

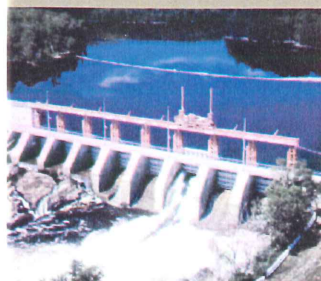
**Forebay and Headworks**

High Falls is a run-of-the-river station with a small forebay. The normal maximum pond level is at an elevation of 190 m. Flood handling at High Falls is via a gated overflow spillway section equipped with 11 "stoney gates".

**Dam** The water retaining structure consists of two channel dams separated by an island. The north channel is a 183 m long concrete gravity structure. The south channel is 232 m long and includes a concrete gravity structure and an intake structure. Four 86 m long penstocks bring the water from each intake unit to its respective turbine in the powerhouse.

Water for the High Falls station is stored primarily in three reservoirs located upstream on the Lièvre River and its tributaries, which have a combined storage capacity of 15,425 cms days.

**Power Plant** The High Falls powerhouse contains four generating units, with associated auxiliary equipment and a 150-ton overhead bridge crane. The building has a superstructure of structural steel with brick exterior finish and concrete floors.



*The Rapide-des-Cèdres Dam at the Poisson Blanc Reservoir.*

**Long-Life, Low-Cost Generating Assets**



## FACT SHEET



# Masson

generating station

## LIÈVRE RIVER POWER

*Masson has three interconnections with the Quebec and Ontario power grids.*

### OPERATING STATISTICS

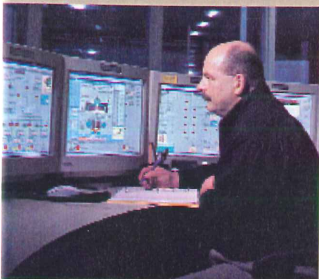
Installed Capacity	105.0 MW
Storage	Run-of-the-river
Average Inflow	162.7 cms
Operating Head	56 m

### PLANT EQUIPMENT DATA

Units	4
Turbine Type	Francis
Output per Unit	26.0 MW
Speed	164 rpm

### MANUFACTURERS

Turbines	Allis Chalmers/ Dominion Engineering Works
Generator	Westinghouse



*Masson is the operating centre for the three power stations in the Lièvre River Power system.*

The Masson generating station, the largest of the three power stations on the Lièvre River, is located in the town of Gatineau, just north of the Ottawa River.

Water for the power station is retained by the Rhéaume dam and a water intake structure located approximately 1.5 km upstream from the powerhouse. The maximum flow of the powerhouse is 225 cms.

The Masson power facilities also include an interconnection with the Quebec power grid and two transmission lines that connect across the Ottawa River with the Ontario power grid.

Masson is the operating centre for the three power stations in the Lièvre River system.

### Forebay and Headworks

Masson is a run-of-the-river station with a small forebay. The normal maximum pond level is at an elevation of 101 m.

Flood handling at Masson is via a 103 m gated overflow spillway section equipped with eight flood gates and two regulating gates, a 24 m overflow section and a 3.7 m trash sluice equipped with a vertical lift gate.

**Dam** The headpond is formed by the Rhéaume Dam, a 266 m long concrete gravity structure. The dam includes a 46 m long left embankment behind a concrete retaining wall, a 49 m long intake structure, a 127 m long spillway section and a 40 m right embankment behind a projecting retaining wall.

A 1.5 km long concrete-line power tunnel conveys water flows from the intake structures at the dam to the powerhouse. Two steel surge tanks prevent excessive pressure fluctuations in the tunnel and the penstocks.

**Power Plant** The Masson powerhouse is a brick building and contains four generating units with associated auxiliary equipment and a 170-ton capacity overhead bridge crane.

**Long-Life, Low-Cost Generating Assets**



**FACT SHEET**



# Dufferin

generating station

**LIÈVRE RIVER POWER**

*The Dufferin Generating Station is the second station on the Lièvre River.*

**OPERATING STATISTICS**

Installed Capacity	<b>38.0 MW</b>
Storage	<b>Run-of-the-river</b>
Average Inflow	<b>16.2 cms</b>
Operating Head	<b>18 m</b>

**PLANT EQUIPMENT DATA**

Units	<b>2</b>
Turbine Type	<b>Kaplan</b>
Output per Unit	<b>19.0 MW</b>
Speed	<b>164 rpm</b>

**MANUFACTURERS**

Turbine	<b>English Electric</b>
Generator	<b>Westinghouse</b>

The Dufferin Generating Station, the second station on the Lièvre River, is located in the City of Gatineau, five km north of the Ottawa River.

The plant has an installed capacity of 38 MW at a design head of 18 m and a maximum flow of 245 cms. The main features include a dam and spillway, an intake structure and powerhouse.

**Forebay and Headworks**

Dufferin is a run-of-the-river station with a small forebay. The normal maximum pond level is at an elevation of 123 m.

Flood handling at Dufferin is via an overflow dam with two spillway sections.

**Dam** The dam is a concrete gravity structure with a maximum height of approximately 12 m and a crest length of 185 m. The dam includes an intake structure consisting of six intake openings with water passages leading to the turbines in the powerhouse and a gatehouse.

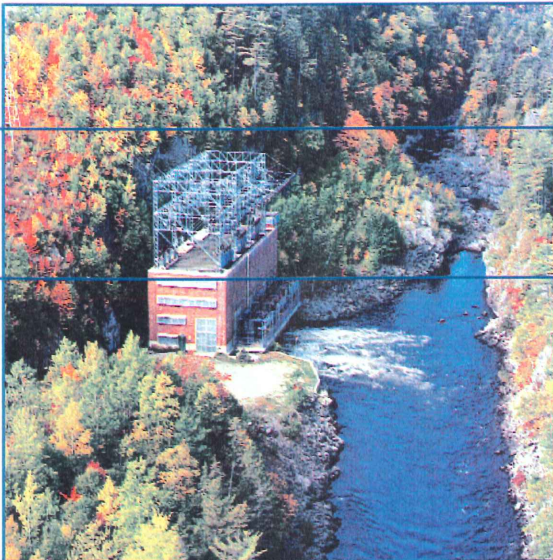
**Power Plant** The Dufferin powerhouse consists of a reinforced concrete substructure built on rock and a superstructure with structural steel columns and trusses and concrete walls.

The power facilities are comprised of two generating units with associated auxiliary equipment and a 100-ton capacity overhead bridge crane.



*The Kiamika Dam and Reservoir are located on a tributary of the Lièvre River.*





# fact sheet

## Maine Power

*Maine Power System was acquired by the Fund in February 2002.*



**WELDON** The Weldon generating station houses four units. The generators of the four units are identical at 4.8 MW each. The run of the river generating station can deliver up to 18 MW at a head of 12.5 meters.

**NORTH TWIN** The North Twin dam was built to create the Pemadumcock reservoir to better regulate the river. The North Twin generating station houses two fixed-blade propeller turbines and one adjustable blade Kaplan turbine. This reservoir-type generating station can deliver up to 7 MW at a net head of 8.5 meters.

### SYSTEM STATISTICS

Number of Stations	6
Number of Generating Units	31
Total Installed Capacity	126 MW
Average Annual Energy	730 GWh

**EAST MILLINOCKET** The East Millinocket generating station is the lowest head and lowest capacity station in the six-station system, and comprises six units. The run of the river generating station can deliver up to 7 MW at a head of 7.9 meters.

**DOLBY** The Dolby generating station houses seven units. Two major renovations have taken place: the first in 1974, when the original units 6 and 7 were replaced by two inclined shaft "tube type" units, and the second in 1985, when a third inclined shaft "tube type" unit was installed at position number 5. The run of the river generating station can deliver up to 21 MW at a head of 14.9 meters.

**MILLINOCKET** The Millinocket generating station houses eight horizontal-shaft Francis turbines. The run-of-the-river generating station can deliver up to 36 MW at a head of 33.8 meters.

**MCKAY** The Ripogenous dam was built to create a reservoir and now consists of a gravity-type dam. In 1953, a generating station, along with an intake structure, tunnel, and surge tank built in the mountain were commissioned to produce energy. The reservoir-type generating station can deliver 37 MW at a net head of 51.9 meters. All units at McKay were overhauled during the 2000-2001 period. Such overhaul included the installation of more efficient turbine runners which increased the generating station's output by more than 10%, to 263 GWh annually, on average.

**Long-Life, Low-Cost Generating Assets**





# fact sheet

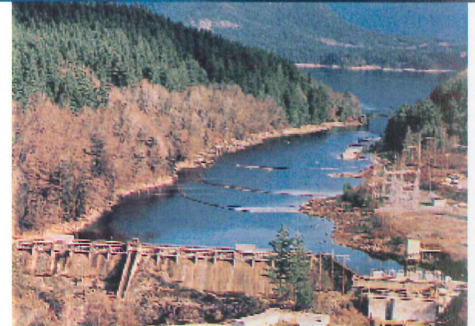
## Powell River Energy

*Powell River Energy was acquired in February 2001 by the Fund.*

The Powell River Energy system was built to supply the electricity needs of the pulp and paper facilities located in the town of Powell River on the west coast of the British Columbia mainland, approximately 160 km north of Vancouver.

The power system's production base consists of two generating stations containing seven generating units with a total installed capacity of 82 MW producing in excess of 520 GWh on an average annual basis. The Powell River generating station comprises three powerhouses containing five generating units located in the town of Powell River. The Lois generating station consists of one powerhouse containing two units located 16 km south of the Powell River facilities.

Water for the facilities is stored in two very large lakes created by the dams of the two facilities. Powell Lake is approximately 42 km in length. Lois Lake, together with three interconnected lakes, is approximately 16 km in length. These lakes have a total usable water storage of 12,241 cms days.



Powell River Generating Station



Lois Lake Generating Station

### SYSTEM STATISTICS

Number of Stations	2
Number of Generating Units	7
Total Installed Capacity	82 MW
Watershed Area	1,979 km <sup>2</sup>
Live Storage	12,241 cms days
Average Annual Energy	524 GWh
Transmission Lines	20 km

The system is interconnected to the British Columbia power grid and includes 20 km of transmission lines, which deliver power from the Lois Lake facilities to the distribution system located in Powell River.

The Powell River facilities are also connected to this distribution system.

**Long-Life, Low-Cost Generating Assets**



**FACT SHEET**



# Mississagi Power

*Combined, the four Mississagi Power stations provide an average annual electricity output of about 700 GWh, enough power to run a city the size of Sudbury for almost one year.*

**COMPETITIVE ADVANTAGES**

**Quality Long-Life Assets**

- > Facilities originally built between 1950 and 1970 and well maintained
- > Diversification through eight units in four plants
- > Remote operation from Brascan Power's control centre in Sault Ste. Marie
- > Stable historical generation
- > Reservoir capacity providing the ability to maximize output through storage of water
- > Facilities inspected and assessed by Acres International Limited with a detailed capital program for the next 25 years

**Strategic Location**

- > Close proximity to generation base of 441 MW in Sault Ste. Marie
- > Key component of Brascan Power's power marketing strategy, allowing for price maximization for peaking power

**Low Cost Producer**

- > Operating costs estimated at 0.6¢ per KWh

The Mississagi plants have a special value to Brascan. They are operated in conjunction with our 12 other hydroelectric power plans in Northern Ontario, in order to optimize operating flexibility. They also fit strategically with Brascan's interconnection being developed between Ontario and Michigan, and our existing interconnection between Ontario and Quebec.

The Mississagi plants are in excellent physical condition, with low operating costs, long-life expectancy and interconnections through high voltage transmission lines with the Hydro One network. The Mississagi River System includes the following assets:

**Wells Generating Station** a two-unit generating station located about 110 kilometres east of Sault Ste. Marie. It was built between 1968 and 1970 and has an installed capacity of 239 MW.

**Aubrey Falls Generating Station** a two-unit generating station about 110 kilometres northeast of Sault Ste. Marie. It was built by the former Ontario Hydro between 1966 and 1969, and has an installed capacity of 162 MW.

**George W. Rayner Generating Station** a two-unit generating station located about 100 kilometres east of Sault Ste. Marie with an installed capacity of 46 MW. It was built between 1947 and 1950, and was the first station built on the Mississagi River.

**Red Rock Falls Generating Station** a two-unit generation station about 100 kilometres east of Sault Ste. Marie. It was built between 1958 and 1961 with an installed capacity of 41 MW.

**Four water storage dams on Rocky Island Lake** built in 1949, provide storage for all the hydroelectric facilities located along the Mississagi River. The four dams - Control Dam, Side Dam No.1, Side Dam No.2 and Round Lake Dam - facilitates the peaking operation of these power plants.

**The Algoma Service Centre** a facility located near the Rayner and Wells Generating Stations, serves as an office, warehouse and workshop for the Mississagi River facilities.

*The total drainage area of this power system is 9,300 km<sup>2</sup> and its storage capacity totals 6,698 CMS days. Rocky Island Lake is the primary storage facility, located in the upper portion of the watershed.*

**RIVER STORAGE OVERVIEW**

	Storage (cms-days)	Unit Discharge (m <sup>3</sup> /s)	Run Time for Full Storage (days)
Rocky	4560	-	-
Aubrey	702	140	5
Wells/Rayner	1185	207	5.7
Red Rock	251	77	1.75

**Long-Life, Low-Cost Generating Assets**





**Aubrey Falls GS is operated as a peaking plant.**

In-Service Date	1968	Annual Generation (est.)	167 GWh
No. of Units	2	Operating Head (m)	55
Installed Capacity	162 MW	Generating Unit Type	Francis
Capacity Factor	11%		



**Red Rock Falls GS is operated as an intermediate generating plant.**

In-Service Date	1961	Annual Generation (est.)	199 GWh
No. of Units	2	Operating Head (m)	28
Installed Capacity	41 MW	Generating Unit Type	Propeller
Capacity Factor	46%		



**Wells GS is operated as a peaking plant.**

In-Service Date	1970	Annual Generation (est.)	383 GWh
No. of Units	2	Operating Head (m)	65
Installed Capacity	239 MW	Generating Unit Type	Francis
Capacity Factor	15%		



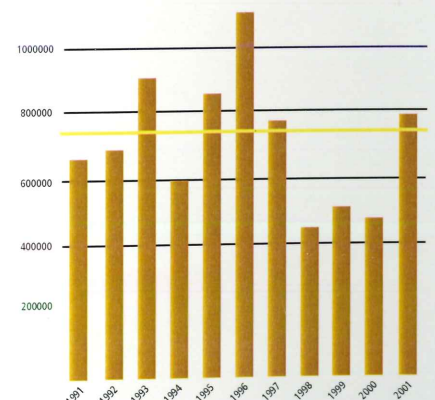
**G.W. Rayner GS is used currently as backup for Wells GS.**

In-Service Date	1950	Annual Generation (est.)	1 GWh
No. of Units	2	Operating Head (m)	65
Installed Capacity	46 MW	Generating Unit Type	Francis
Capacity Factor	9%		

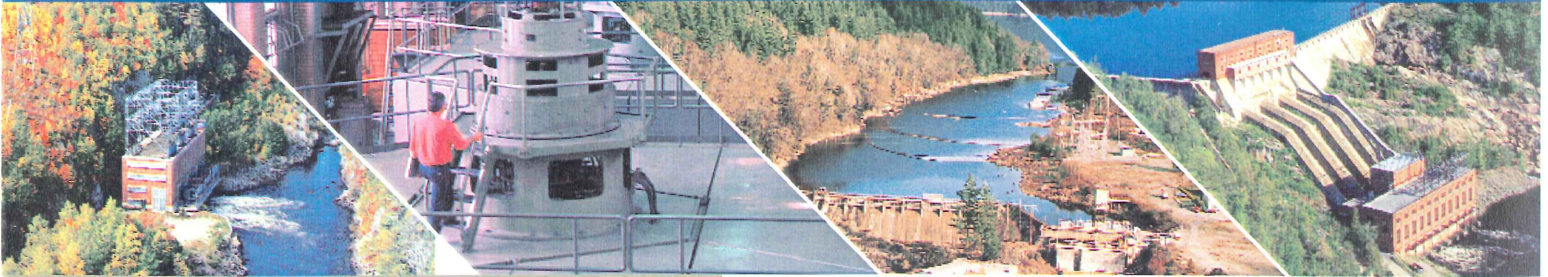
**MISSISSAGI POWER  
FAST FACTS**

Generating Stations	4
Generating Units	8
Installed Capacity (MW)	488
Average Annual Energy (GWh)	750
Average Price (¢/KWh)	5.7
Watershed Area (km <sup>2</sup> )	9,300
Cash Operating Cost (¢/KWh)	0.6

**10 YEAR HISTORICAL GENERATION**







*We have developed and successfully operated hydroelectric power facilities primarily across North America for over 100 years.*

**COMPETITIVE ADVANTAGES**

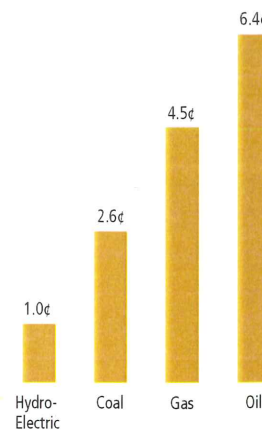
**Low Cost Producer.** The cost of producing hydroelectric power is lower than competing sources of energy such as coal, gas and oil.

**Operating Flexibility.** Brascan Power's facilities in North America are located on 14 river systems in five geographic regions with water storage capacity, which allows for production and sale of energy during peak periods.

**Long Life Assets.** Our high quality hydroelectric power facilities are among the most reliable sources of electricity, requiring minimal sustainable capital to maintain their value and long life.

**Transmission Capability.** Our operations are strategically located with transmission interconnections between Ontario and Quebec, and with interconnections under development into the United States markets.

*Brascan Power comprises the power operations of Brascan Corporation. We are the largest independent producer and distributor of power in Ontario and Quebec and one of the lowest cost producers of hydroelectric power in North America. With 37 hydroelectric power plants and one co-generation facility, our combined generating capacity exceeds 1,600 megawatts (MW).*



**POWER OPERATING COSTS**

US CENTS/KILOWATT HOUR

Hydroelectric power generation is low cost, and when combined with the effective management of water storage facilities, generates superior returns.



*We currently have five hydroelectric plants in Ontario, BC and Brazil under development, with 130 MWs of installed capacity.*

**RECENT DEVELOPMENTS**

- > Successfully completed the acquisition of 16 hydroelectric generating stations in Northern Ontario, Maine and New Hampshire with 645 MWs of installed capacity.
- > Acquired remaining half of Lake Superior Power co-generation facility from Duke Energy.
- > Expanded energy marketing operations, with cross-border transmission interconnections into the U.S. under development.

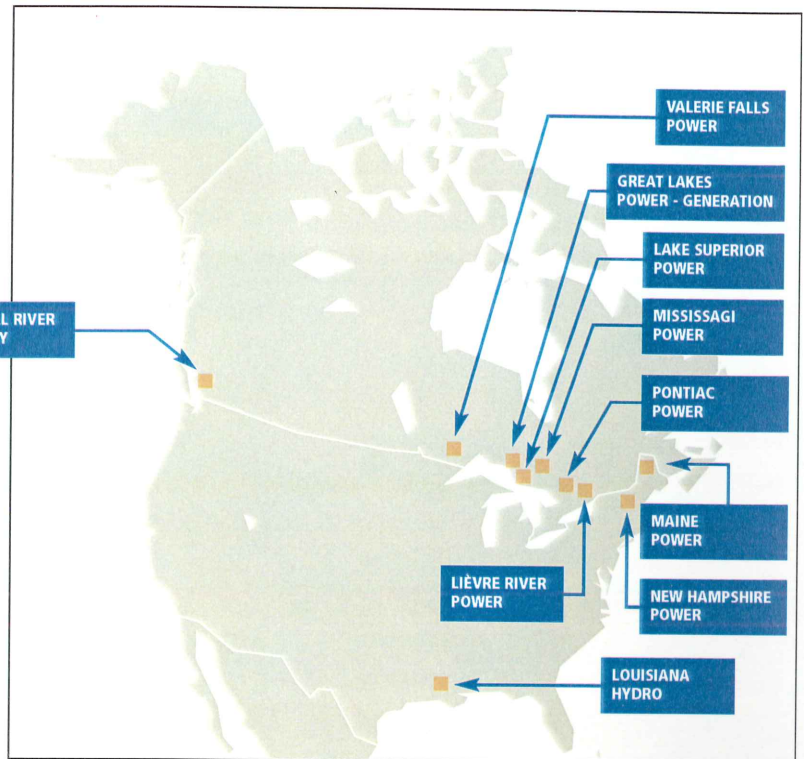
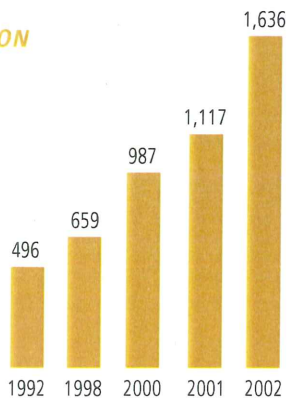


## Location of Operations

Brascan Power's operations are primarily focussed in the Northeast.

### PRODUCTION CAPACITY

MEGAWATTS



## Power Generating Facilities

2003		Number of Plants	Installed Capacity (MEGAWATTS)	10-Year Average Generation (GIGAWATT HOURS)
Ontario	Great Lakes Power – Generation	12	331	1,610
	Lake Superior Power	1	110	850
	Valerie Falls Power	1	10	52
	Mississagi Power	4	488	750
Québec	Lièvre River Power	3	238	1,418
	Pontiac Power	2	28	210
	Powell River Energy	2	82	522
British Columbia				
United States	Maine Power	6	126	730
	New Hampshire Power	6	31	185
	Louisiana Hydro	1	192	869
<b>Total</b>		<b>38</b>	<b>1,636</b>	<b>7,196</b>

### Contact Information

Inquiries about Brascan Power can be directed to the professionals listed below at BCE Place, 181 Bay Street, Suite 4400, PO Box 762, Toronto, Ontario, M5J 2T3, Telephone: 416-363-9491, Facsimile 416-363-2856, Website [www.brascancorp.com](http://www.brascancorp.com).



Edward C. Kress  
Chairman



Harry A. Goldgut  
Vice-Chairman  
and Chief  
Executive Officer



Richard Legault  
President and Chief  
Operating Officer