



SNC•LAVALIN
ProFac

SNC-LAVALIN PROFAC

*Environmental Benchmarking for
Commercial Buildings*
C2P2 June 14, 2007



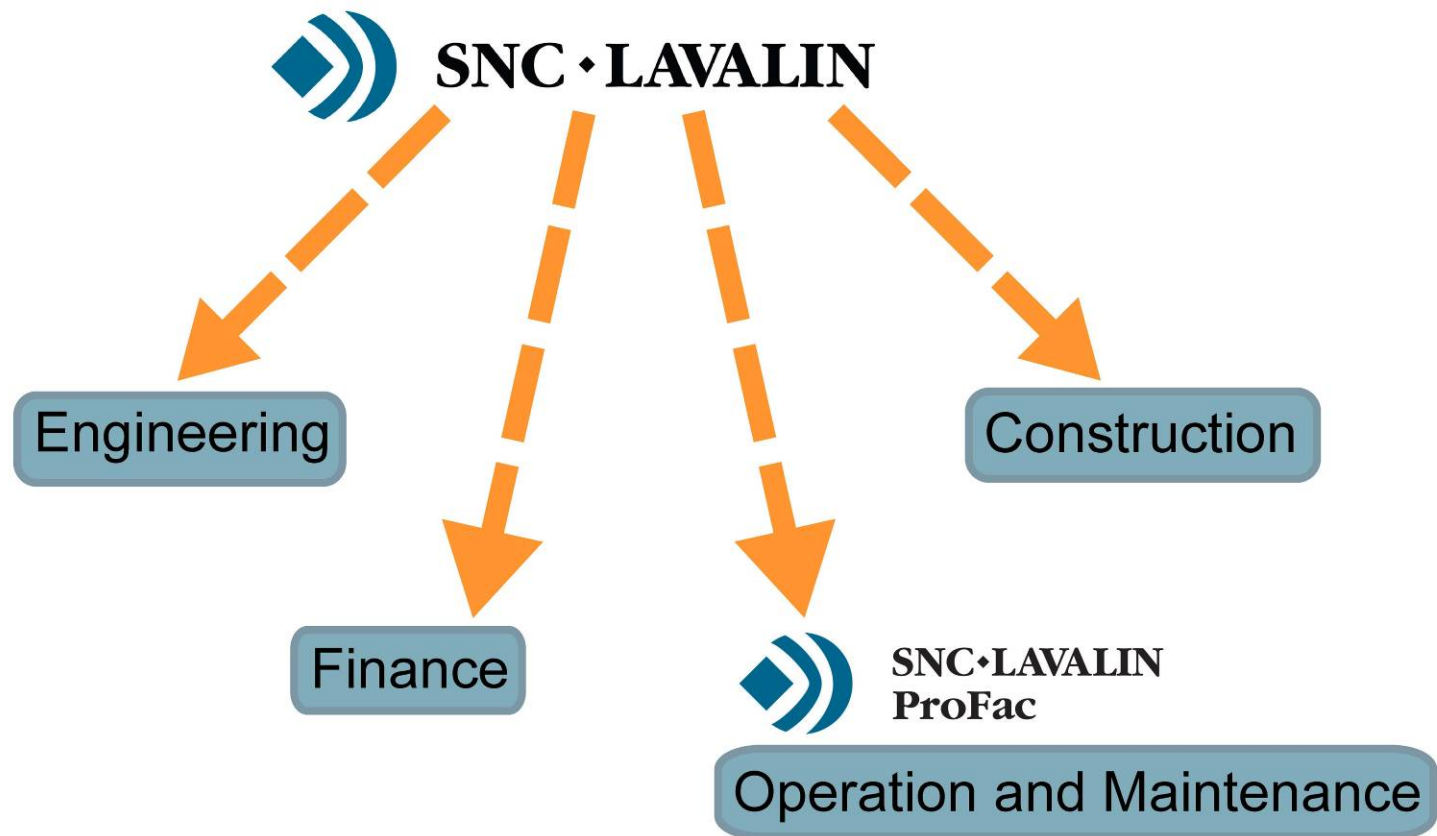
Lori Augustin
Environment Manager, Sustainability
119 King Street West, 5th Floor
Hamilton, Ontario
Tel: 905-521-7159
laugustin@snclavalinprofac.com

ABOUT SNC-LAVALIN

- ◆ Canada's industry leader as an engineering and construction enterprise
- ◆ Providing full range of integrated management services and solutions
- ◆ Key player in ownership, operation and maintenance of infrastructure
- ◆ Serving 38 countries worldwide



HOW DO WE FIT IN?



SNC-Lavalin ProFac

- ◆ Operations and maintenance division
 - Approximately \$900 million annual revenue
 - 2,200 employees
 - \$5.6 billion in services currently under contract
 - Over \$10 billion in asset value under management
 - ISO 9001-2000 and 14001 certified

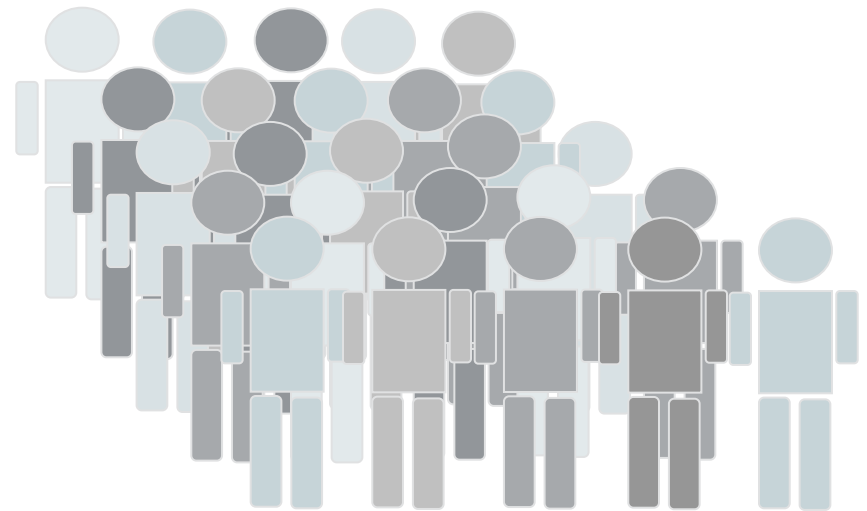
SNC-LAVALIN PROFAC'S EVOLUTION

From
Yesterday



- ◆ Facilities Management
- ◆ 200 Team Members

To
Today



- ◆ Five Lines of Business
- ◆ Approximately 2,200 Team Members

SNC-LAVALIN PROFAC'S FIVE LINES OF BUSINESS

Logistics



**Facilities
Management**



**Industrial
Operations**



**Naval
and
Marine
Support**



**Infrastructure
Operations**



WHAT IS Go Green Plus?

- ◆ On-line building assessment tool that evaluates and rates the environmental performance of existing commercial buildings
- ◆ Measures environmental performance against best industry and operational practices
- ◆ BOMA Canada launched Go Green Plus on a national level in 2006
 - Advantageous for the environment and for the bottom line
 - Interest in measuring and improving environmental performance of their buildings

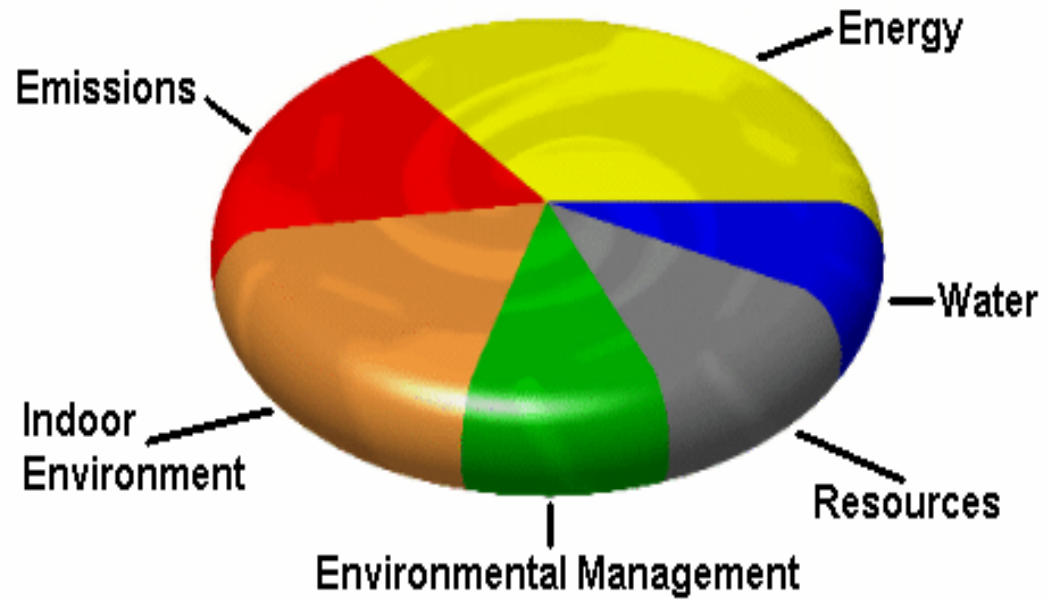
Go Green Plus

- ◆ On-line application; with data gathered and input by on the site personnel
- ◆ Provides immediate report response, in clear, comprehensive format, identifying strengths and weaknesses
- ◆ Provides detailed 'Opportunities for Improvement' in each key indicator category, to develop comprehensive action plans
- ◆ Provides potential dollar savings for energy and water

Go Green Plus

- ◆ Certify buildings under 100,000 square feet – 500,000+ square feet
- ◆ Scoring is broken down to reflect data on the various criteria
- ◆ Overall scoring is provided

KEY AREAS



ENERGY CONSUMPTION

Go Green Comprehensive - Energy Consumption Information - Microsoft Internet Explorer

Address: http://www.greenlobes.com/bomagreen/energy1a.asp

Environmental Certification for Commercial Buildings

Energy Consumption

The data for this building is open for entry and modification.

Updating information for Lincoln M. Alexander Building (Office Building 250,000-499,999 sq.ft.)

Please specify the ending month of the 12 month period for which energy consumption figures are being entered. Month: Year:

What was the building's total energy bill for the 12 month period specified? \$

What was the total energy consumption for each non-renewable fuel type, in total or by month, for the 12 month period specified?

Gas month	m ³	Cost
Gas month 1:	<input type="text" value="208,068"/>	<input type="text" value="\$81,461.92"/>
Gas month 2:	<input type="text" value="199,144"/>	<input type="text" value="\$78,068.65"/>
Gas month 3:	<input type="text" value="150,250"/>	<input type="text" value="\$59,475.75"/>
Gas month 4:	<input type="text" value="127,135"/>	<input type="text" value="\$43,787.21"/>
Gas month 5:	<input type="text" value="78,099"/>	<input type="text" value="\$27,361.40"/>
Gas month 6:	<input type="text" value="6,940"/>	<input type="text" value="\$2,581.61"/>
Gas month 7:	<input type="text" value="3,031"/>	<input type="text" value="\$1,242.90"/>
Gas month 8:	<input type="text" value="3,937"/>	<input type="text" value="\$1,589.37"/>
Gas month 9:	<input type="text" value="3,569"/>	<input type="text" value="\$1,448.61"/>

Done

Start | Inboxes - Micro... | Personal | Go Green C... | FW: BOMA G... | Document1 - ...

Go Green Comprehensive - Energy Efficiency Features - Microsoft Internet Explorer

Address: http://www.greenlobes.com/bomagreen/energy2.asp

Other Energy Efficiency Features

Are hot water temperatures maintained between 50° and 55° Centigrade? Yes No

Are there other energy efficiency measures such as:

- Percentage of chillers in the facility that are high-efficiency? 50 - 100 25 - 49 < 25 N/A (no chillers)
- Variable speed drives? Yes No
- Cogeneration? Yes No
- Energy recovery ventilation systems? Yes No

Are other energy-saving systems or measures being used? Yes No

Description:

Green Energy

Is "green electricity" purchased? Yes No

Does the building utilize any of the following renewable on-site energy sources:

- Active Solar? Yes No
- Wind? Yes No
- Photo Voltaic? Yes No
- Ground Source? Yes No
- Bio-mass? Yes No


Done

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WATER MANAGEMENT

Go Green Comprehensive - Water - Microsoft Internet Explorer

Address <http://www.greenglobes.com/bomagreen/water1.asp>

 BOMA CANADA

Water-Conserving Fixtures

Are there the following water-conserving fixtures:

• low flow toilets that use less than 6L/flush?	<input checked="" type="radio"/> Yes <input type="radio"/> No
• ultra low flush urinals that use less than 3L/flush?	<input checked="" type="radio"/> Yes <input type="radio"/> No
• automatic valve controls and/or proximity detectors?	<input checked="" type="radio"/> Yes <input type="radio"/> No
• low flow or laminar flow faucets (7.5 L/min)?	<input checked="" type="radio"/> Yes <input type="radio"/> No
• other water-saving features?	<input checked="" type="radio"/> Yes <input type="radio"/> No

Describe:

Does the landscaping minimize the need for irrigation? Yes No N/A

Are other sources of water used for irrigation such as:

• Rainwater?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
• Graywater?	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A

Does the building use once-through water-cooled units? Yes No

Water Management

Is there a written policy intended to minimize water use, and encourage water conservation?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Is water consumption being monitored?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Has a water audit been done within the last three years?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Are there water-reduction targets?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Are there regular procedures for checking and fixing leaks?	<input checked="" type="radio"/> Yes <input type="radio"/> No

Start | Go Green C... | FW: BOMA G... | Document1 - ... | 100% | 10:46 AM

WASTE REDUCTION & RECYCLING

The image shows two overlapping browser windows from the BOMA Environmental Certification for Commercial Buildings website. The top window displays the 'Waste Reduction and Recycling' section, and the bottom window displays the 'Emissions - Hazardous Materials' section. Both windows are for the 'Lincoln M. Alexander Building (Office Building 250,000-499,999 sq.ft.)'.

Waste Reduction and Recycling Section:

The data for this building is open for entry and modification.

Updating information for Lincoln M. Alexander Building (Office Building 250,000-499,999 sq.ft.)

Facilities for Storing and Handling Recyclable Materials

- Are there separate storage/handling facilities for used paper products, glass, metal and plastic? Yes No N/A
- Are there collection points for sorting paper, glass, metal and plastic waste is generated? Yes No N/A
- Is there a composting program in place? Yes No N/A

Waste Reduction Workplan

- Has a waste audit been done within the last three years? Yes No N/A
- Is regular monitoring of waste conducted? Yes No N/A
- What is the current diversion rate?
- Are there waste-reduction targets? Yes No N/A
- Is there a construction, renovation and demolition waste management plan? Yes No N/A

Emissions - Hazardous Materials Section:

The data for this building is open for entry and modification.

Updating information for Lincoln M. Alexander Building (Office Building 250,000-499,999 sq.ft.)

Asbestos

- If the building was completed at a time when asbestos was used in construction (up to 1981), is there an up-to-date inventory based on an asbestos survey, that includes records of locations and the condition of all asbestos? Yes No N/A
- Is there any friable asbestos in the building that has not been encapsulated (i.e. Is there any possibility that asbestos fibers could become air-borne)? Yes No N/A
- Is there a documented asbestos management plan that includes precautions to be taken during repairs and renovations? Yes No N/A

Radon

- Is the building located outside a high risk area or has a radon survey been done which indicates levels below 200 Bq/m³? Yes No

PCBs

- Are there any PCBs present in the building? Yes No N/A
- Is there a PCB management plan that designates responsibilities, requires inventory of all materials containing PCBs, including transformers, as well as records showing locations of major PCB-containing equipment, stipulates storage requirements, and describes a strategy for phasing out and disposing of PCB-containing equipment? Yes No N/A
- Are there procedures in place to ensure that any PCB containing materials are safely stored, regular inspection of storage sites is conducted by designated persons and spill response includes training for staff? Yes No N/A

INDOOR AIR QUALITY/EMS

Go Green Comprehensive - Indoor Environment - Air Quality - Microsoft Internet Explorer

Address: http://www.greenglobes.com/bomagogreen/indoor1.asp

BOMA Environmental Certification for Commercial Buildings

Indoor Air Quality

The data for this building is open for entry and modification.

Updating information for Lincoln M. Alexander Building
(Office Building 250,000-499,999 sq.ft.)

Ventilation System

Are air intakes located far from sources of pollution such as parking areas, bus stops, cooling towers or stagnant water? Yes No

Are air intakes located at least 30 ft. away from building exhaust outlets? Yes No

Are outdoor air intakes checked regularly to ensure that the openings are protected and free from obstruction? Yes No

Is there free-standing water which cannot drain away in the condensate drip trays? Yes No

Are there signs of corrosion, loose material (such as damaged filter bags) or sound attenuation material in the air-handling unit (AHU)? Yes No

Are measured CO₂ levels less than 850 ppm (assuming outdoor levels 400 ppm)? Yes No

Is there permanent carbon dioxide monitoring or are there sensors to maintain pre-set levels of carbon dioxide? Yes No

Do the occupants have personal control over the ventilation rates in the area in which they work, either through hybrid system (operable windows) or personalized HVAC controls? Yes No

Filtration System

Are filters able to remove particles as small as 0.3 micrometers from incoming air? Yes No

Go Green Comprehensive - Environmental Management System (EMS) Documentation - Microsoft Internet Explorer

Address: http://www.greenglobes.com/bomagogreen/ems1.asp

Go Green Plus

BOMA Environmental Certification for Commercial Buildings

Environmental Management System (EMS) Documentation

The data for this building is open for entry and modification.

Updating information for Lincoln M. Alexander Building
(Office Building 250,000-499,999 sq.ft.)

Does building management have a written environmental policy? Yes No

Are there stated goals and targets documented in the policy manual with respect to each of the following:

- Energy conservation?
- Water conservation?
- Waste reduction and recycling?
- Environmental purchasing?
- Reduction in use and proper handling of hazardous products?
- Training and education?

Are there action plans to improve the environmental and energy performance of the building? Yes No

Update

Implementation: Key Points

- ◆ **Environment in cooperation with Facility team registers with local BOMA Chapter to obtain system access to complete the questionnaire on-line.**
 - **All aspects are coordinated through Environment, Facility Solutions**
- ◆ **Regional external consulting firm arranges to audit survey document with a mandatory site visit**
- ◆ **BOMA verifies building score and certifies (70%+) if appropriate.**

Certification

- ◆ **Certification granted for 3 year period following approval (scoring at least 70%)**
- ◆ **Must re-submit application and review prior to expiry date**
- ◆ **Certification can be displayed at, or promoted by, approved building**

Key Points

- ◆ **Questionnaire data will be analyzed to produce reports by building/Region**
- ◆ **Monitoring & Reporting**
 - **Building Performance**
 - **Regional Performance by key environmental indicators**
 - **Integration into capital planning**
 - **Regulatory Compliance**

Buildings Certified

- ◆ **OMAFRA Building, Guelph**
 - 88% certification
- ◆ **Lincoln M. Alexander, Orillia**
 - 83% certification
- ◆ **Canadian Broadcasting Centre, Toronto**
 - 75% certification
- ◆ **Dominion Public Building, Toronto**
 - 77% certification

Buildings Certified

- ◆ **200 Town Centre, Toronto**
 - 82% certification
- ◆ **25 St. Clair, Toronto**
 - 71% certification

ENERGY SAVINGS

energy	month	year1	value1 - kWh	year2	value2 - kWh	difference	percentage
Electricity	01	(2005)	1,171,146	(2006)	1,143,956	-13,051	-2.3%
Electricity	02		1,059,350		1,049,535	-4,711	-0.9%
Electricity	03		1,137,123		1,149,632	6,004	1.1%
Electricity	04		1,071,163		1,013,051	-27,894	-5.4%
Electricity	05		1,114,629		1,126,728	5,808	1.1%
Electricity	06		1,310,157		1,191,678	-56,870	-9.0%
Electricity	07		1,405,269		1,334,397	-34,019	-5.0%
Electricity	08		1,339,233		1,380,360	19,741	3.1%
Electricity	09		1,171,324		1,089,566	-39,244	-7.0%
Electricity	10		1,069,117		1,060,344	-4,211	-0.8%
Electricity	11		1,070,434		1,065,139	-2,542	-0.5%
Electricity	12		1,142,537		1,050,365	-44,243	-8.1%
Total						-195,231	-2.9%

Natural gas	01	(200 5)	3,030,458	(200 6)	2,251,511	-233,684	-25.7%
Natural gas	02		2,831,270		2,050,480	-226,429	-27.6%
Natural gas	03		2,397,672		1,958,354	-123,009	-18.3%
Natural gas	04		1,435,206		1,178,561	-66,728	-17.9%
Natural gas	05		866,459		800,341	-24,464	-7.6%
Natural gas	06		758,290		653,115	-42,070	-13.9%
Natural gas	07		873,998		780,962	-53,031	-10.6%
Natural gas	08		742,942		713,358	-18,342	-4.0%
Natural gas	09		648,364		677,377	10,155	4.5%
Natural gas	10		909,222		1,032,879	38,334	13.6%
Natural gas	11		1,482,461		1,484,498	672	0.1%
Natural gas	12		2,352,809		1,902,200	-153,207	-19.2%
Total						-891,803	-14.5%

Water	01	(2005)	4,444	(2006)	3,368	-323	-24.2%
Water	02		3,976		2,945	-320	-25.9%
Water	03		4,878		3,637	-310	-25.4%
Water	04		5,665		3,118	-688	-45.0%
Water	05		5,954		3,572	-500	-40.0%
Water	06		9,832		6,322	-1,369	-35.7%
Water	07		10,954		7,027	-1,728	-35.8%
Water	08		7,970		8,435	149	5.8%
Water	09		6,166		3,643	-984	-40.9%
Water	10		3,679		3,781	33	2.8%
Water	11		3,621		3,709	29	2.4%
Water	12		3,417		3,768	123	10.3%
Total					53,325	-5,888	-24.8%

Difference-CO2 kg	Difference-SO2 kg	Difference-Nox kg	
-10,963	-95	-42	
-3,957	-34	-15	
5,044	44	19	
-23,431	-203	-89	
4,878	42	19	
-47,771	-413	-181	
-28,576	-247	-109	
16,582	144	63	
-32,965	-285	-125	
-3,537	-31	-13	
-2,135	-18	-8	
-37,164	-322	-141	
-41,794	-1,699	-745	
-40,497	-1,646	-722	
-22,000	-894	-392	
-11,934	-485	-213	
-4,375	-178	-78	
-7,524	-306	-134	
-9,485	-386	-169	
-3,280	-133	-59	
1,816	74	32	
6,856	279	122	
120	5	2	
-27,401	-1,114	-489	
-323,493	-7,903	-3,468	

Moving Forward

- ◆ Public Works & GSC
 - 300+ buildings for potential certification
- ◆ Ontario Realty Corporation
 - 22 buildings for potential certification
- ◆ Canadian Broadcasting Corporation
 - 3-4 buildings for potential certification



Thank you!

SNC Lavalin ProFac Inc.
304 The East Mall, Suite 900
Etobicoke ON M9B 6E2

www.snclavalinprofac.com