

# La Cité collégiale

Ottawa Campus & Orleans Campus

## Conservation and Demand Management Plan

La version française sera disponible sous peu.



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## 1. Introduction

The purpose of La Cité collégiale's energy management plan and policies is to promote good stewardship of our environment and community resources. In keeping with our core values of Social, Economic, and Environmental Responsibility, La Cité collégiale's energy management program will reduce operating costs while ensuring sustainable development of the college. The report will ensure compliance with the Ministry of Energy's Regulation 397/11 – Energy Conservation and Demand Management Plans.

Utility and energy related costs are a significant part of overall operating costs. From April 2013 to March 2014 La Cité collégiale's total electricity consumption was over 11,000,000 kilowatt-hours. During this time frame nearly 550,000 cubic meters of natural gas was also consumed. This energy consumption resulted in a total of energy intensity of 26.4 ekWh/sq.ft.

With energy management an integral part of business decisions La Cité collégiale is aiming to reduce its greenhouse gas (GHG) emissions by 8% by 2018. As part of the sustainable development plan La Cité collégiale also intends on targeting a 60% waste diversion rate, a 15% reduction in waste sent to the landfill, and reducing potable water consumption by 10%.

## 2. Background

The Ministry of Energy's Ontario Regulation 397/11 *Energy Conservation and Demand Management Plans* was introduced on January 1, 2012. Along with yearly energy consumption and GHG emissions reporting, Regulation 397/11 requires all public agencies to develop and publish a five-year energy conservation and demand management plan. Public agencies, including post secondary educational institutions, are required to report on previous, current, and proposed measures for conserving energy and managing their demand for energy.

## 3. Guiding Principles for Strategic Energy Management

La Cité collégiale's energy management will be guided by these principles:

**Taking A Strategic Approach:** While La Cité collégiale actively manages energy costs by implementing opportunities as they are identified, by acting strategically, La Cité collégiale can significantly improve its energy-related performance. Internalizing energy management into our organization's every-day decision-making, policies, and operating procedures will help assure substantial and long-lasting reductions in energy use throughout our facilities.

**Supporting Mission-Critical Goals:** Strategic energy management will directly support La Cité collégiale's mission-critical goals of caring for the environment and the community; optimizing the educating and working environment; improving the institution's financial bottom line by reducing unnecessary energy costs; optimizing the capacity of existing energy systems to meet current and expanding operational needs. The impacts of La Cité collégiale's energy management efforts on those goals will be tracked and reported wherever possible.

**Pursuing Long-Term Change to Core Business Practices:** The core of a strategic approach is the consistent incorporation of energy management into our organization’s core practices and decision making such as the strategic planning and budgeting processes. Change in energy-related business practice will cover all applications of energy management – new construction and major renovations, existing facility operations and upgrades, and the economic analysis and procurement practices underlying these practices.

**Fostering Organizational Commitment and Involvement:** Executive and organizational commitment and involvement is critical to successful strategic energy management. Top management at La Cité collégiale will work with facility managers and other key staff to ensure that adequate organizational support and resources are provided to maximize the benefits of energy management to La Cité collégiale. Energy management will be integrated into the strategic planning and capital budgeting processes.

**Obtaining Solid Economic Returns:** Energy management investments will yield solid economic returns that meet La Cité collégiale’s standard return on investment requirements applied through the capital budgeting process. La Cité collégiale will apply consistent financial analysis methods that consider life-cycle to reduce total cost of facility ownership and operation.

**Using Available Resources and Assistance:** Use national, regional, and local sources of strategic, technical, and financial assistance to help achieve our energy management goals. These include programs offered through Hydro Ottawa, Hydro One, Enbridge, and government agencies.

#### 4. Energy Consumption and Benchmarking

In developing a strategic energy management plan an energy baseline must be established. Ontario Regulation 397/11 requires that energy consumption and GHG emissions for facilities be reported each year in the Ministry of Energy’s Energy Consumption and GHG Emissions template. The data reported to the Ministry will be used to establish baselines for La Cité collégiale. Table 1 below describes all of La Cité collégiale’s facilities including details of operating type, floor area, and operating hours.

Table 1

Building Name	Operation Type	Address	City	Postal Code	Total Floor Area (m2)	Average Hours per Week
<b>Ottawa Campus</b>	Classrooms and Related Facilities	801 Aviation Parkway	Ottawa	K1K 4R3	54,090	74
<b>Orleans Campus</b>	Workshops	8700 Jeanne d’Arc Boulevard North	Ottawa	K4A 0S9	5,297	70

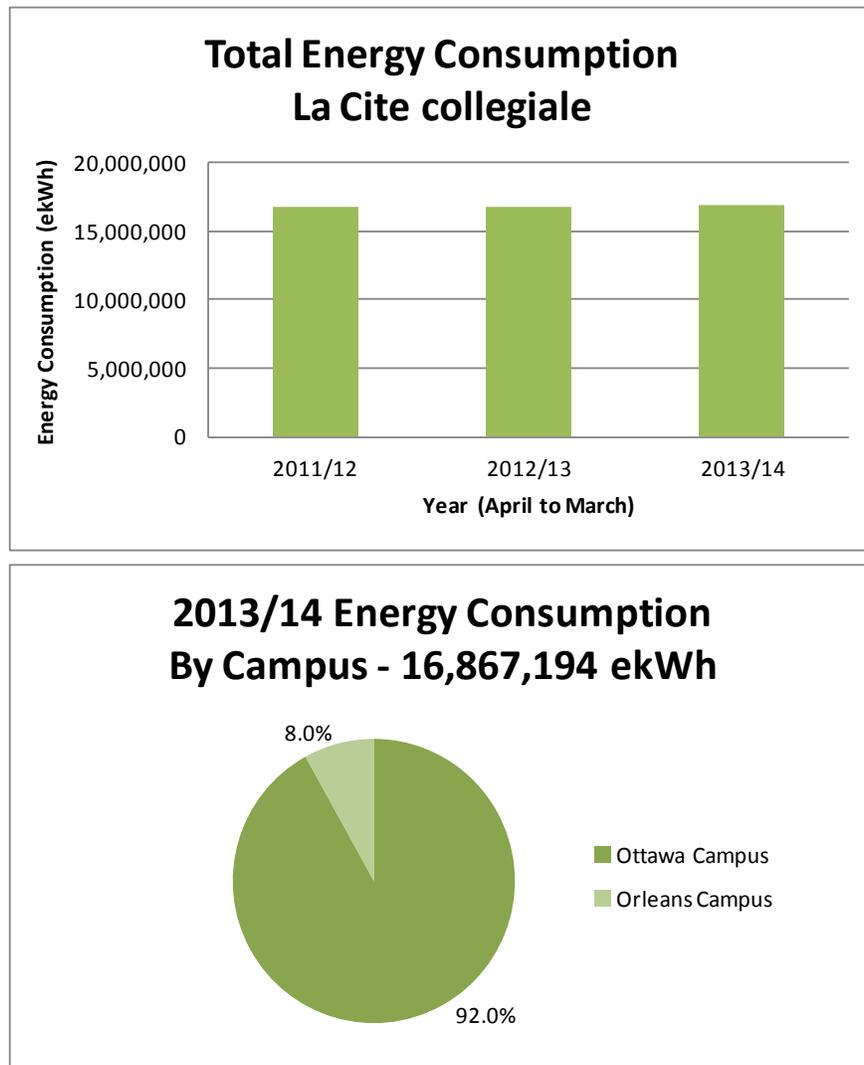
Energy consumption for La Cité collégiale’s facilities during the period of April 2013 to March 2014 is displayed Table 2 below. Electricity and natural gas consumption for each facility is shown as well as the calculated GHG emissions and energy intensities. Energy intensity measures building efficiency by summing all forms of energy, in common units, per square foot of floor area. The combined total values for all of La Cité collégiale’s facilities are shown at the bottom of the table.

Table 2

Building Name	Electricity Consumption (kWh)	Natural Gas Consumption (m3)	Total GHG Emissions (kg)	Energy Intensity (ekWh/ft2)
Ottawa Campus	10,268,063	493,876	2,776,738	26.7
Orleans Campus	783,019	53,379	241,296	23.7
<b>TOTAL</b>	<b>11,051,082</b>	<b>547,255</b>	<b>3,018,034</b>	<b>26.4</b>

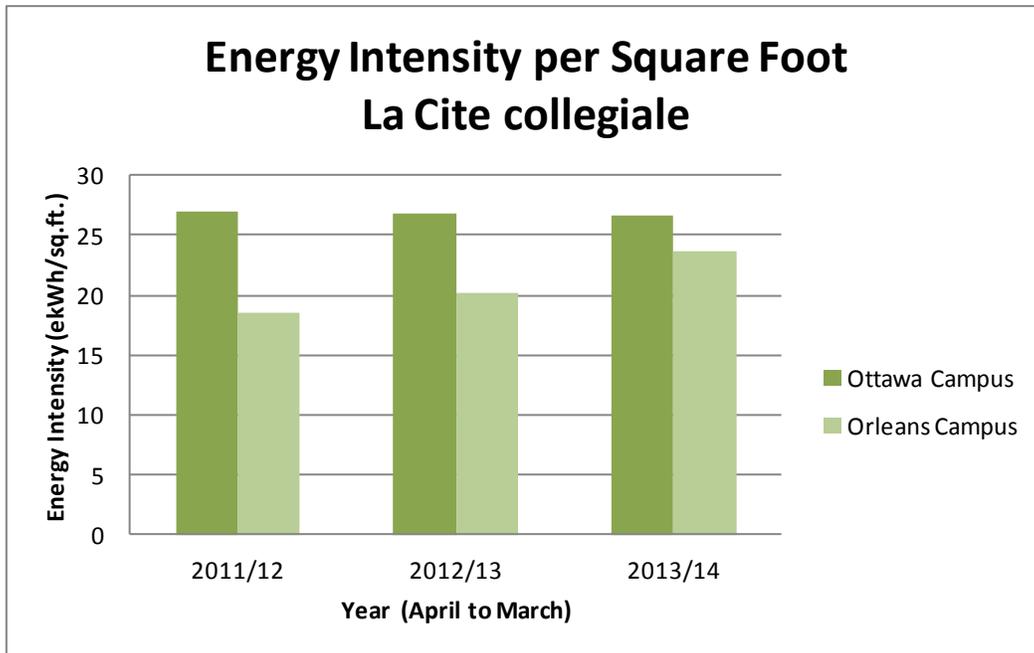
La Cité collégiale’s yearly energy consumption and the 2013/14 energy consumption breakdown by facility is shown in Figure 1. As shown, the majority of the energy is consumed at the Ottawa Campus and for this reason efforts for energy conservation should be focused towards the Ottawa Campus.

Figure 1



Energy intensity is also higher at the Ottawa Campus, shown in Figure 2, which indicates efforts for energy conservation should be focused towards this campus.

Figure 2



Monthly electricity, natural gas, and greenhouse gas consumption for each facility is shown in Figure 3, Figure 4, and Figure 5 for the period of April 2013 to March 2014. Electricity at all facilities is relatively constant throughout the year. Natural gas trends at all facilities indicate seasonal trends for heating.

Figure 3

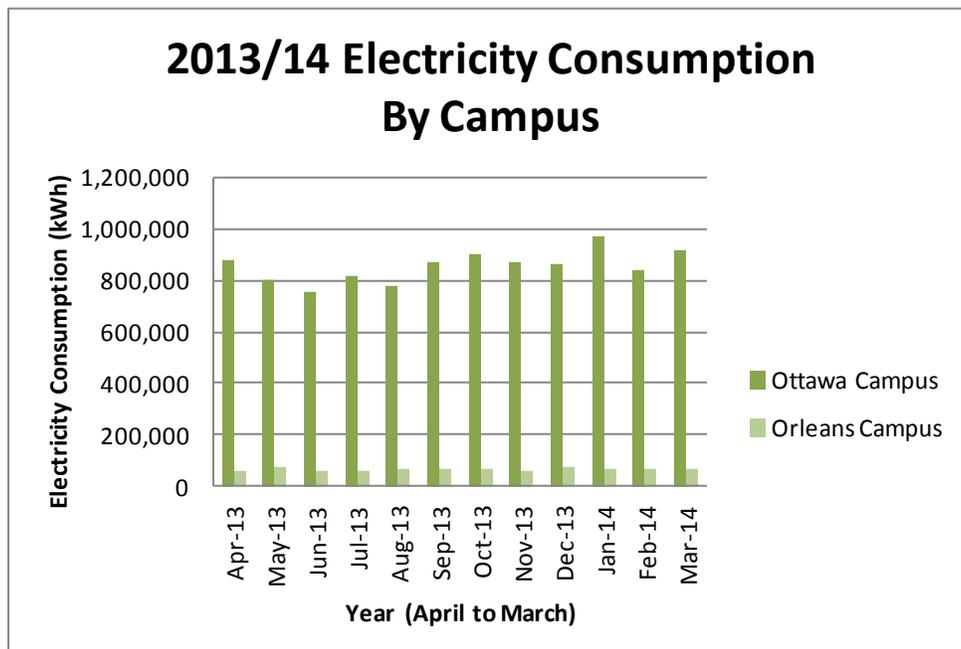


Figure 4

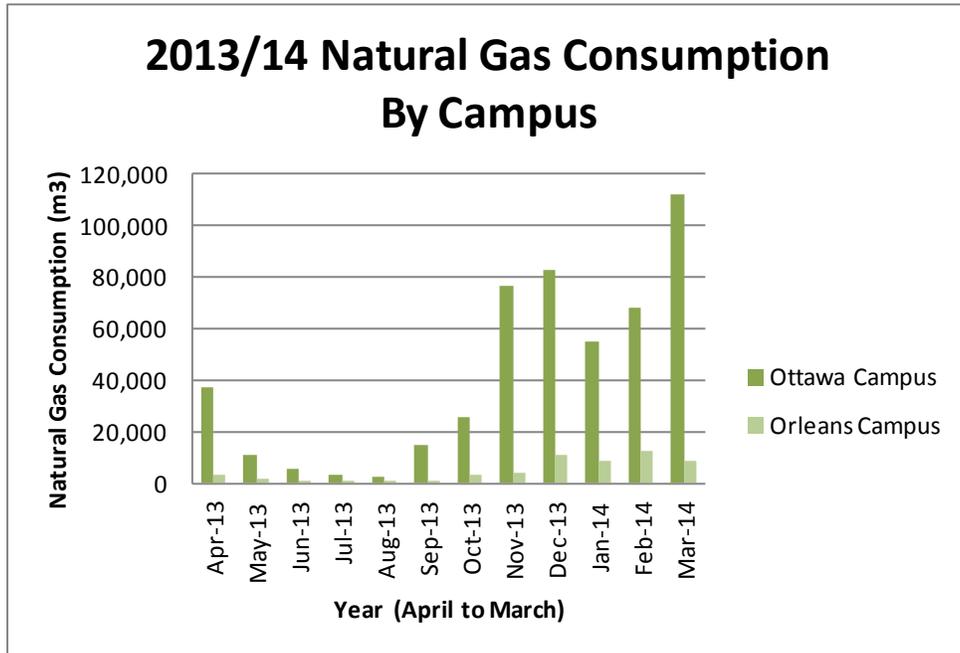
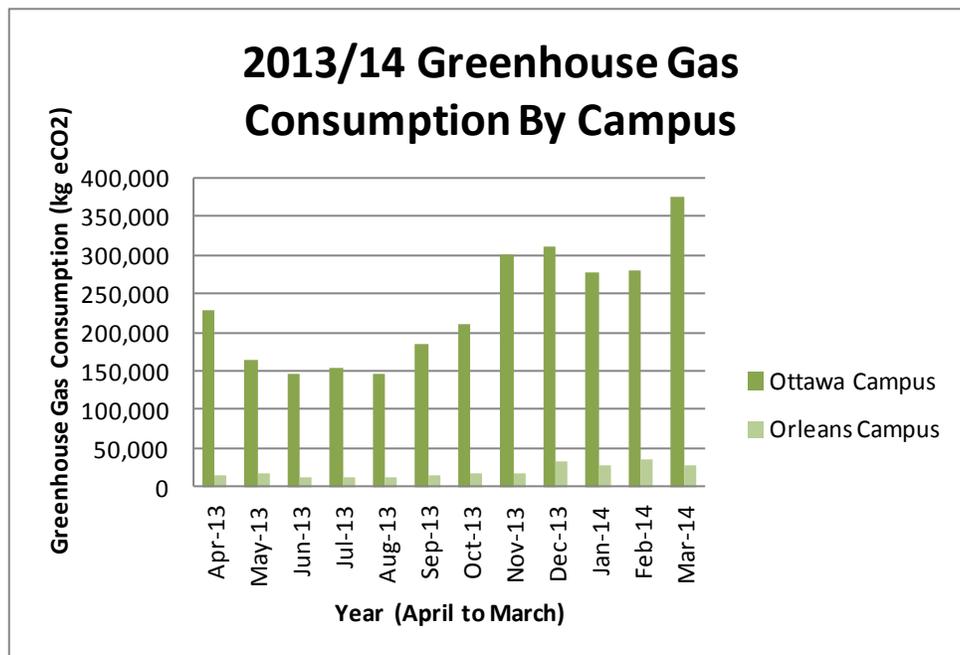


Figure 5



## 5. Energy Conservation Measures

If energy management considerations are integral to relevant business practices, policies, procedures, and decision-making processes, La Cité collégiale’s energy consumption can be reduced. With the goal of reducing GHG emissions by 8% by 2018 many energy conservation measures have previously been implemented with others currently being planned and investigated. Below is an outline of some of the La Cité collégiale’s previous, current, and proposed energy conservation measures.

Previous Energy Conservation Measures							
Description	Facility	Start Date	End Date	Status	Capital Cost (\$)	Energy Savings (ekWh/yr)	Cost Savings (\$/yr)
LEED Silver Certified Buildings	Orleans Campus & Ottawa Campus (Emergency Services Training)		September 2010 & September 2011	Complete			
Details	The Orleans Campus, completed in 2010, was built to the requirements of LEED Silver certification. In 2011 the Emergency Services Training Centre at Ottawa Campus was also built to the requirements of LEED Silver certification.						
Photocell Lighting Control	All Facilities			Complete			
Details	Photocells were added to areas of the facilities where sufficient natural light is provided to illuminate the space.						
Classroom Lighting Control	All Facilities			Complete			
Details	Step dimming lighting controls was added to trigger lights to a low level based on occupancy. A keyed switch can be operated by the teachers to control lighting to a higher level when desired. Occupancy sensors disables all lighting after a set amount of time.						
BAS Scheduling	All Facilities			Complete			
Details	Fully automated building systems are controlled to operate based on classroom schedules.						
Computer Lab Controls	All Facilities			Complete			
Details	All computers have been equipped with energy savings software to reduce energy consumption of computers when not in use.						

Current Energy Conservation Measures							
Description	Facility	Start Date	End Date	Status	Capital Cost (\$)	Energy Savings (ekWh/yr)	Cost Savings (\$/yr)
Lights Off Campaign & Visual Displays	All Facilities			Active			
Details	Reminders around light switches to turn off lights when leaving the room.						
Employee and Student Engagement	All Facilities			Active			
Details	The Environment and Sustainable Development Committee is comprised of a dozen members of the administrative staff, teachers, support staff, as well as representatives from the Student Association.						
Exit Light Upgrade	Ottawa Campus	May-14	Aug-16	Active			
Details	Exit lights are being converted to LED light sources to reduce energy consumption and required maintenance.						
Lighting Feasibility Study	Ottawa Campus	Apr-14	Jun-14	Active	\$3,600		
Details	A feasibility study is being completed to review possible lighting upgrades in the gym, cafeteria, and exterior of the Ottawa Campus.						
Real-time Energy Dashboard	All Facilities			Active			
Details	Real-time energy monitoring dashboards are being reviewed. The dashboards will allow facilities staff to monitor and track building energy consumption instantaneously. Increases in energy consumption which had the potential to go unnoticed are able to be addressed early should an energy monitoring dashboard be implemented.						

Proposed Energy Conservation Measures							
Description	Facility	Start Date	End Date	Status	Capital Cost (\$)	Energy Savings (ekWh/yr)	Cost Savings (\$/yr)
Energy Audit	Ottawa Campus			Under Consideration			
Details	The option of performing a detailed energy audit of the facility is being investigated. An energy audit would allow for a detailed review of the energy consumption in the building as well as an introductory review of future energy conservation measures						
Lighting Upgrades	Ottawa Campus			Pending	\$470,000	240,000	\$29,000
Details	Lighting in the gym, cafeteria, and exterior of the Ottawa Campus has been reviewed and is under consideration for upgrades. The lighting will upgrade various existing technologies to LED. LED lighting consumes significantly less electricity and reduces overall maintenance requirements when compared to existing lighting technologies.						
Heat Recovery	Ottawa Campus			Under Consideration			
Details	Make up air heat recovery is being reviewed as an option to reduce heating and cooling energy requirements throughout the Ottawa Campus. Energy from conditioned exhaust air can be captured and used to preheat/cool incoming make up air through the use of an energy recovery ventilator.						
Demand Control Kitchen Ventilation	Ottawa Campus			Under Consideration			
Details	The cafeteria operates extended hours to serve the needs of students and staff on campus. Throughout the day the volume of cooking in the cafeteria varies significantly. A demand control kitchen ventilation system is being investigated to reduce kitchen make up air and exhaust air requirements during periods where little to no cooking is occurring.						
Condensing Boilers	Ottawa Campus			Under Consideration			
Details	A review of the main boiler plant is being conducted to investigate the option of installing high efficient condensing gas-fired heating boilers. Condensing boilers improve thermal efficiency by roughly 20% over their atmospheric equivalents.						

## 6. Conclusion

La Cité collégiale’s commitment to energy management has been approved and adopted by stakeholders at the college. The guiding principles for strategic energy management are playing a vital role in decision making for upcoming projects and day-to-day activities. With these principles and the implementation of further energy conservation measures La Cité collégiale will be able to reduce its greenhouse gas emissions to meet their sustainable development goals.