

Collège Boréal 5-Year Corporate Energy Conservation and Demand Management Plan

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Prepared in co-operation with:



Table of Contents

TABLE OF CONTENTS	2
INTRODUCTION – EXECUTIVE SUMMARY	3
BACKGROUND	3
PURPOSE OF THE PLAN	3
1.0 HISTORIC ENERGY PERFORMANCE	4
HISTORICAL ENERGY USAGE.....	4
ENERGY CONSERVATION PROJECT SUCCESSES	6
2.0 ENERGY CONSERVATION AND MANAGEMENT POLICY	7
OUR COMMITMENT	7
OUR VISION.....	7
OUR GOALS AND OBJECTIVES.....	7
STRATEGIC ACTION PLAN	8
3.0 STRATEGY 1: ENERGY MANAGEMENT CORPORATE PRACTICES	9
THE ENERGY MANAGEMENT TEAM: ROLES AND RESPONSIBILITIES.....	9
4.0 STRATEGY 2: EDUCATION, AWARENESS AND OUTREACH	10
ENERGY SKILLS TRAINING PROGRAM	10
OUTREACH, ENGAGEMENT, RECOGNITION AND ENERGY AWARENESS TRAINING PROGRAM.....	10
FEEDBACK SYSTEM FOR EMPLOYEE AND STUDENT SUGGESTIONS	10
5.0 STRATEGY 3: ENERGY CONSERVATION ACTIVITIES AND INFORMATION MANAGEMENT	11
ENERGY CONSERVATION ACTION PLAN	11
ENERGY INFORMATION MANAGEMENT.....	11

Introduction – Executive Summary

Background

Collège Boréal’s Energy Conservation and Demand Management (ECDM) Plan was developed in response to Ontario Regulation 507/18 which requires all public sector organizations to complete an update to their original 2014 ECDM Plans. In response to this regulatory requirement, as well as rising energy costs, the College has developed this Energy Conservation and Demand Management (ECDM) Plan. This comprehensive Plan is an effective method of identifying energy conservation opportunities, selectively implementing the best projects and then measuring our effectiveness. The Plan has been developed to protect the interests of our residents and ensure that Collège Boréal obtains the best possible value from our operating budgets. In addition to meeting our regulatory obligations, the College believes that a strong commitment to energy conservation and a reduction of energy use is demonstrated evidence of our belief in becoming a more sustainable community while operating in a cost-effective manner that respects the value of taxpayer dollars.

Purpose of the Plan

The 5-Year Corporate Energy Conservation and Demand Management Plan is designed to guide Collège Boréal towards a more energy-efficient future. The policies, practices and energy conservation measures identified illustrate the importance the College places on acting responsibly towards energy consumption through the wise use of resources in operations. To enhance our understanding of energy use and return on investment through conservation, this document contains a thorough review of the measures implemented since the creation of the original plan, issued on July 1, 2014. Since then, the College has initiated several substantial energy projects, yielding significant savings results including:

- LED Lighting Upgrades
- Updating Equipment Schedules and Reducing Runtime Hours

The above projects received utility incentive funding to cover a portion of the costs. The wise and efficient use of energy are important options for meeting energy rising energy demands. They also provide many other environmental, economic and social benefits, including reducing greenhouse gas (GHG) emissions, cost avoidance and savings. Along with the primary benefits, the responsible use of energy also promotes local economic development opportunities, energy system reliability, improved energy supply security and reduced-price volatility.

Following the path of our previous ECDM Plan, this document is a continuation of a process involving the:

- Integration of establishing and evaluating a baseline for performance to be measured against;
- Reviewing the effectiveness of previous conservation efforts while setting future performance goals and objectives;
- Continuous improvement through identification of energy conservation potential;
- Strategic alignment of improvement measure implementation and fiscal constraints;
- and,
- Evaluation, measurement and communication of results achieved.

The following report summarizes the significant efforts applied by Collège Boréal Energy Conservation Team to create a Plan that can be implemented responsibly, over time, to create lasting results. The Plan takes advantage of internal expertise as well as all available external financial incentives and rebates currently being offered to support the implementation of energy savings ideas. The current energy picture for Collège Boréal and our future Vision, Goals and Objectives as shown in the Corporate Energy Conservation and Management Policy, are outlined. Our strategic focus areas are discussed in detail and our 5-year Action Plan is also laid out.

1.0 Historic Energy Performance

Historical Energy Usage

Effectively managing energy requires the creation of a robust energy monitoring strategy, and procedures and establishing an accurate energy baseline is an essential first step in this process. This baseline assists with energy conservation and greenhouse gas reduction target setting, energy procurement and budgeting, bill verification, energy awareness, and the selection and assessment of potential energy projects. Collège Boréal, similar to many other public sector entities, relies on utility bills to establish this energy baseline.

To evaluate the effectiveness of the College's previous energy conservation measures, the year 2013 was chosen as the base year for measurement; this aligns with the Ministry of Energy's Regulation 507/18 requirements for reporting. Overall, the College's consumption in 2013 was 8.9 million kWh of electricity and 626,000 m³ of natural gas. This usage equates to spending \$1,000,000 for electricity and \$173,000 for natural gas for the year (2013).

The breakdown of energy use by facility type is as follows:

Figure 1-1 – Energy Use by Facility Type in 2013

Facility Type	Electricity (kWh)	Natural Gas (m3)
Administrative offices and related facilities	3,325,595	242,613
Laboratories	88,902	20,304
Classrooms and related facilities	4,837,967	319,505
Student Residences	672,428	43,862

For comparative purposes, the raw energy consumption breakdowns by year since the original baseline for the College are as follows:

Figure 1-2 – Electricity Use (2013 – 2017)

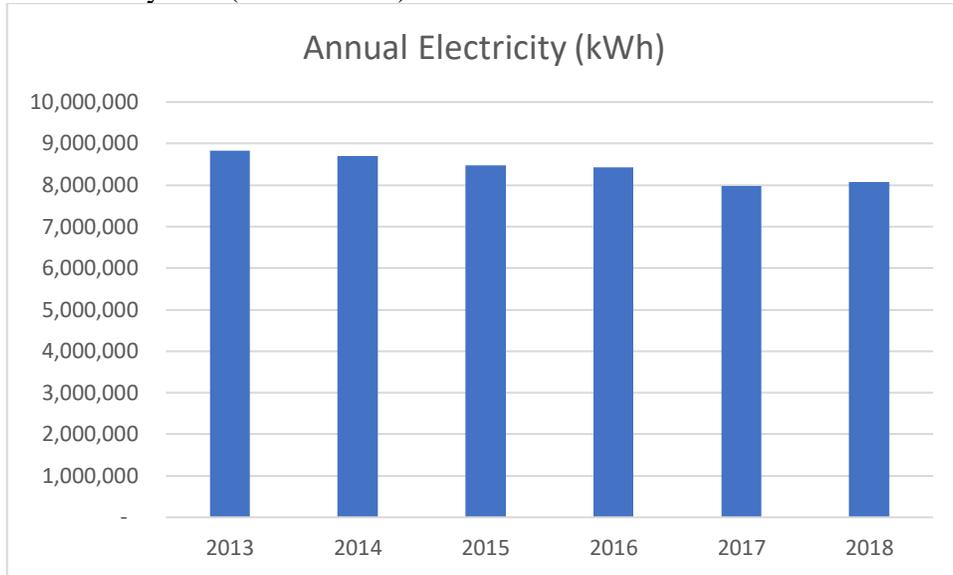
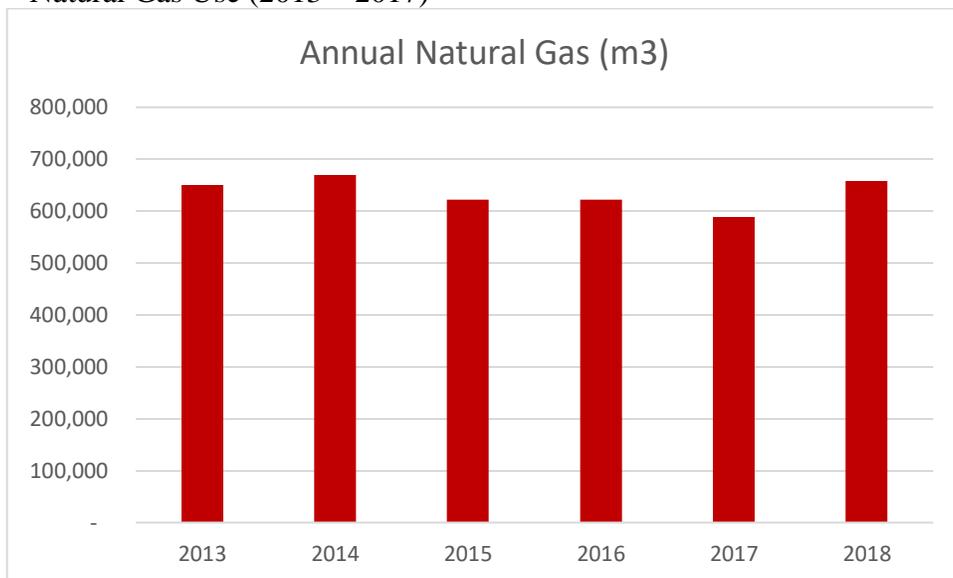
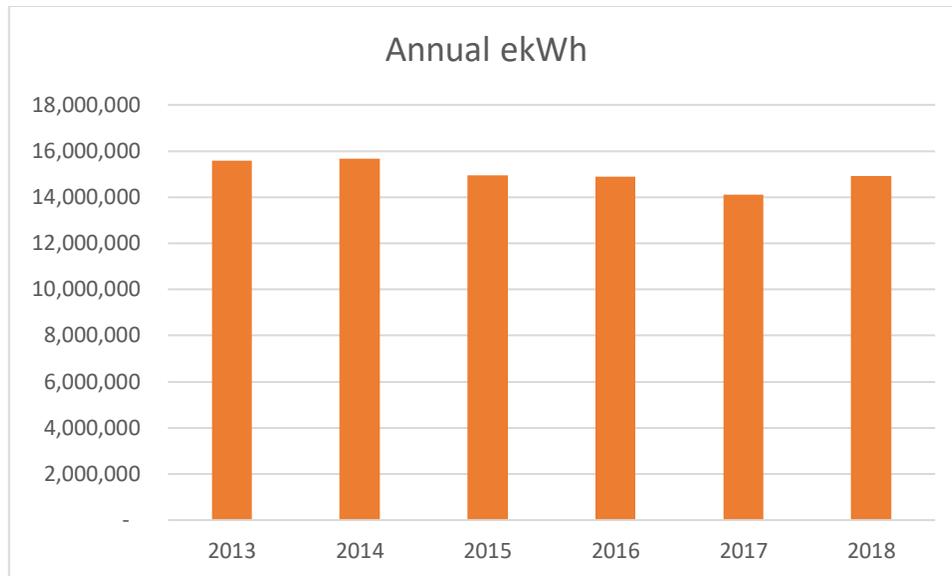


Figure 1-3 – Natural Gas Use (2013 – 2017)



To better understand the College’s overall energy use, an analysis of ekWh allows for an complete energy comparison (natural gas and electricity together). This is illustrated in the graph below:

Figure 1-4 – Annual ekWh



In the original ECDM Plan, Collège Boréal set a target of a 5% reduction in energy consumption over the 5-year term of the Plan (2014-2019). The graph below illustrates that the College came close to meeting this target with an overall 4.5% reduction in ekWh over the 5-year period when compared to the original base year of 2013. This decrease was driven by a large decrease electricity consumption (8.5%).

Energy Conservation Project Successes

Since the creation of the last 5-Year ECDM Plan, Collège Boréal has initiated significant investments in energy efficiency and energy-cost reduction including several LED lighting conversions.

2.0 Energy Conservation and Management Policy

Our Commitment

Collège Boréal is committed to allocating the necessary resources to develop and implement a strategic Energy Conservation and Demand Management (ECDM) Plan to reduce energy consumption and its related environmental impact. As an organization, we value the notion of efficient operations and creating a more sustainable community. We are committed to managing energy responsibly and will use energy efficiency practices throughout all our facilities, operations and equipment wherever it is cost effective and we are able to secure funding to do so.

Our Vision

Collège Boréal endeavours to minimize energy consumption, related costs, and carbon emissions by continuously improving its energy management practices without compromising the level of service delivery to the College community.

Our Goals and Objectives

As part of our current ECDM Plan, Collège Boréal created several strategic avenues to achieve specific goals and targets with regards to energy management. We have re-examined our past objectives and are re-committing to this updated version.

1. Reduce energy intensity in College facilities by 5% by 2024. This is in addition to the reduction achieved between 2013 and 2018.
2. Enhance our culture of conservation through training and outreach to staff, students and business partners. Through this training employees and students will have the appropriate awareness of the College's energy use to be empowered to embrace reductions energy consumption.
3. Expand upon our comprehensive corporate energy management policy and practices by enhancing key existing business practices to include energy efficiency standards and energy management best practices.
4. Expand our energy monitoring and tracking program for energy use by providing access to our energy management system to make energy consumption visible to everyone in the corporation and support facility/management decision-making.
5. Deliver energy cost savings through the identification and implementation of processes, programs and projects that will reduce energy consumption.
 - Re-assess and benchmark the top energy consuming facilities in the College.
 - Review previously identified energy savings opportunities through review of past energy audits and plan to renew energy audits and analysis of the capital asset renewal program. (Ongoing)
 - Review and/or enhance standard operating and maintenance procedures to include energy conservation best practices. (Ongoing)
 - Seek funding for energy-related projects from various sources to enhance the payback and reduce implementation costs. (Ongoing)

Strategic Action Plan

To achieve our new ECDM Plan, Collège Boréal will employ three strategic actions designed to ensure a positive outcome over the next 5 years. These key strategies support the delivery of our Goals and Objectives.

Strategy 1. Corporate Practices

Develop Corporate policies and practices to support our energy conservation effort and show leadership and commitment within the College community.

- Energy Management Team: Roles, Responsibilities and Accountability
- Energy Procurement

Strategy 2. Education, Awareness & Outreach

Provide the guidance, leadership and framework necessary to empower employees and students to embrace a culture of conservation.

- Energy Awareness
- Outreach, Engagement and Recognition Programs
- Feedback System for Employee and Student Suggestions
- Employee Brainstorming Sessions

Strategy 3. Energy Conservation Action Plan and Energy Information Management

Continually identify and deliver energy conservation processes, programs and projects in all areas of the College (facilities, equipment, etc.). Demonstrate sound operating and maintenance practices to complement the energy efficiencies implemented through the capital asset renewal program. Employ a robust Energy Information Management System to ensure that all conservation activities are measured and verified to ensure Collège Boréal receives and maintains specified energy reductions and savings.

Energy Conservation Action Plan

- Key facility energy audits and re/retro-commissioning studies
- Asset renewal plan and energy conservation project delivery
- Standard facility operations procedure review

Energy Information Management

- Maintenance of the online energy monitoring and reporting system (electricity, natural gas and fuels)
- Energy bill verification and rate optimization
- Reporting requirements for Regulation 507/18 (formerly 397/11)
- Consistent update and review of key performance indicators (KPIs)/benchmarking
- Standardize and implement project measurement and verification

3.0 STRATEGY 1: Energy Management Corporate Practices

Collège Boréal has implemented essential corporate practices, including key personnel deployment, to ensure a strong focus on energy management and savings. These efforts remain a key component of our renewed ECDM Plan.

The Energy Management Team: Roles and Responsibilities

Energy Champion: Directeur des ressources physiques

The Energy Champion has direct knowledge of the College's major energy-using systems and is responsible for developing and maintaining the focus for the Energy Management Team. This role is responsible for setting and/or legitimizing the program's high-level goals and objectives, keeping track of major project activities and seeking resources and funding for the team and its approved projects.

The Energy Champion coordinates meetings, sets agendas, and delegates and manages tasks related to the Energy Management Team. This role also helps create the vision for the program and will help the program maintain momentum, particularly when barriers arise. The Energy Champion is also responsible for ensuring that the monitoring and tracking systems for energy are accurate, up-to-date and available for use by College employees.

Energy Management Team

The Corporate Energy Management Team functions on a strategic level to set expectations for each of the College facilities, develops metrics for tracking overall energy improvement, and build accountability for energy management activities. In addition, this cross-functional team has direct responsibility for the consumption of energy within their respective departments. As a group, the team supports and monitors the energy management initiatives (processes, programs, and projects) at the various facilities and across the College.

Actions: Continue to seek cross-departmental membership and support for the Energy Management Team. Continue to meet to discuss the Energy Management Program to ensure implementation of new savings ideas as well as maintain the positive momentum built over the past 5 years.

Energy Procurement

Collège Boréal currently has a natural gas procurement program in place. This program provides options for fixed-price natural gas procurement services, permitting the College to maintain predictable natural gas commodity costs.

Actions: Continue to review the natural gas procurement program. Review potential alternative programs for merit and analyze the net result of College participation annually.

4.0 STRATEGY 2: Education, Awareness and Outreach

Collège Boréal's Education, Awareness and Outreach program will provide guidance, leadership and the framework to empower employees and students and foster our culture of conservation. The program informs the organization of current energy use, operational practices as well as improvement opportunities, while ensuring that all members of the Collège Boréal community have an opportunity to remain informed of the College's energy reduction efforts. This continued practice will foster the greatest possible impact of education and awareness. This will be achieved by raising the level of awareness, understanding and general knowledge amongst staff regarding energy spending, usage and conservation.

Collège Boréal will utilize a successful combination of program engagement, direct awareness marketing and hands-on training to enhance our energy reduction efforts to support the achievement of our energy conservation goals and objectives. As well, energy will continue to be a regular agenda item at staff meetings to solicit new ideas for reduction of energy use, promote continued awareness of the cost of energy and ensure that energy conservation remains a key consideration.

The program is comprised of the following focus areas:

Outreach, Engagement, Recognition and Energy Awareness Training Program

Collège Boréal will engage all users of our facilities (staff, students and the general public) and recognizes that this is essential to the continued success of the energy management program. Our energy program will continue to employ a comprehensive approach to both engaging employees and students and recognizing the efforts that provide important support and ideas.

Feedback System for Employee and Student Suggestions

Collège Boréal will create and employ a feedback system to encourage input and ideas. Suggestions will be sent to a specific address and forwarded to members of the Energy Management Team in order to ensure prompt response. The Energy Team members can engage relevant employees to ensure that all ideas are captured and explored.

Actions: Review available energy training opportunities both generally (i.e. all staff) and for specific departments. Establish and maintain at least annual Outreach and Engagement efforts to keep energy conservation 'top-of-mind' for staff, students and stakeholders.

5.0 STRATEGY 3: Energy Conservation Activities and Information Management

Energy Conservation Action Plan

The Energy Conservation Action Plan forms the blueprint for implementing energy conservation and cost saving measures. The College has created a list of potential projects based on previous facility energy audits and evaluations. The attached action plans have been created to guide this process based on a prioritized implementation schedule. All available incentives and funding sources will be explored to minimize the implementation cost of each measure. In addition to the measures shown, the College anticipates that further energy audits, completed over the next 5 years, will augment the list of available energy conservation measures. There will be an emphasis on additional LED lighting upgrades as well as operational monitoring and improvements.

Additional measures will be added as funding becomes available on an annual basis. In general terms, our actions are expected to yield the following results:

- Education, Awareness and Outreach: 1-2% annual energy savings
- On-going regular reviews of consumption and baselines: 0.5 to 1% annual energy savings
- Re/retro Commissioning: 2-7% annual energy savings within the facilities where it is implemented (estimated to be 1 to 2% overall potential total annual savings)

Actions: Maintain a schedule of energy audit renewals to ensure that our list of measures is up-to-date and that previous measures are still functional and providing savings. Perform periodic reviews of available incentives and stay up-to-date on potential sources of funding to offset the implementation costs of the proposed future measures. Review the list of measures at least annually and update as necessary.

Energy Information Management

Energy Management Presentations for Management, Accountable Staff, Students and Energy Users

To gain traction for the initiatives within this Plan and ensure that Collège Boréal reaches its stated reduction targets, it is imperative that information regarding energy usage and cost, as well as our energy conservation plans and projects, are well understood and top of mind of everyone from front-line employees to senior department heads. This broad awareness will lead to additional buy-in and support for our continued efforts to reduce energy usage and spending.

Actions: Make energy a key topic at staff and senior management meetings as well as provide an update on energy use and conservation to Senior Management at least annually.

Key Performance Indicators (KPI's) and Monitoring and Verification

To ensure momentum continues, and that the College receives value-for-money with regards to its energy conservation efforts, a rigorous program of establishing KPI's and then monitoring and verifying ongoing savings is an essential element of this Plan. By establishing agreed upon KPI's (as suggested in the table below) and then performing regular and frequent monitoring, not only will Collège Boréal personnel be able to verify that savings expected from various projects is achieved, but that the savings continue for the duration of the project or retrofit's useful life. This practice will protect the College's investments as well as provide transparency and support for successful savings initiatives.

Figure 5.1 – KPI Suggestions

Facility Type	Energy KPIs	Measured Variables
Residences, Classroom Facilities, Indoor Recreational Facilities	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month 	<ul style="list-style-type: none"> • Daily Weather • Occupancy Rates / month • Facility rentals / month
	Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month 	
	Other Energy Sources	

Administrative Offices	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month Other Energy Sources	<ul style="list-style-type: none"> • Daily Weather
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Actions: Review all conservation initiatives to understand the most appropriate monitoring and verification process. Review the project savings at pre-defined regular intervals and report outcomes to senior management.

Bill Verification and Rate Optimization

A consistent, periodic review of the College’s energy invoices is important to ensure that rates and recorded consumption values on energy bills is accurate. This ensures that the invoices presented by utilities are correct and are providing appropriate and relevant data to the College’s Energy Management Platforms.

Actions: Perform a rationalization check on monthly invoices and conduct at least annual detailed billing reviews to ensure accuracy.

Ongoing Ontario Regulation 507/18 Reporting

In addition to completing this Plan, the Collège Boréal is required to submit annual energy consumption and greenhouse gas emissions templates to the appropriate Ministry of Energy portal. Gathering and recording monthly energy invoices are necessary to complete these reports.

Actions: Complete all required regulatory reporting by July 1 of each year.