



St. Clair Catholic District School Board

Energy Conservation and Demand Management Plan

June 27, 2014

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St. Clair Catholic District School Board

Energy Conservation and Demand Management Plan

Introduction

The Energy Conservation and Demand Management Plan fulfills the requirements under the Green Energy Act, Ontario Regulation 397/11, to support the reduction of energy consumption and the five-year Demand Management Plan covering the St. Clair Catholic District School Board's (SCCDSB) fiscal years 2014 to 2018.

The Plan highlights past and future opportunities to further this commitment to energy conservation, energy reduction and green initiatives.

The Green Energy Act

Ontario's Green Energy Act was created to expand renewable energy generation, encourage energy conservation and promote the creation of clean energy jobs.

The Government of Ontario is committed to fostering the growth of renewable energy projects, which use cleaner sources of energy, and to removing barriers to and promoting opportunities for renewable energy projects and to promoting a green economy.

The Government of Ontario is committed to ensuring that the broader public sector, including government-funded institutions, conserve energy and use energy efficiently in conducting their affairs.

Ontario's Long-Term Energy Plan

On December 2, 2013, Ontario released its updated Long-Term Energy Plan, "Achieving Balance", which has adopted a policy of Conservation First, focusing on rate mitigation over major investments in generation or transmission to curb costs for ratepayers. This will mean pursuing lower-cost options to meet energy needs when and where we need it.

The Long-Term Energy Plan will be flexible; Ontario will plan for a lower demand scenario, with the ability to adjust to potential demand changes. For that reason, an annual Ontario Energy Report will be issued to provide an outline of how supply and demand are tracking and also to review progress in implementing the Long-Term Energy Plan.

Broader Public Sector (BPS) - Energy Conservation and Demand Management Plans

Under the *Green Energy Act*, Energy Conservation and Demand Management Plans define the requirements for all BPS organizations including hospitals, municipalities, universities, colleges, school boards and municipal service boards (for water and sewage treatment and pumping operations) to:

- a) Report on annual energy use and greenhouse gas (GHG) emissions in designated buildings/facilities by July 1, 2013.

- b) Develop and implement 5-year Energy Conservation and Demand Management Plans by July 1, 2014. The regulation also requires that the document be made public and posted on the Board's website.

Education Sector Background

Funding and Energy Management Planning

All Boards receive a majority of their funding from the Ministry of Education. The Ministry announces each Board's funding allocation in March for the next fiscal year which runs from September 1 to August 31. The Ministry does not provide Boards with multi-year funding allocations.

As a result, while a Board may have a five-year energy management strategy, the Board's ability to implement their strategy is dependent on the funding that they receive in each of the five years covered by their energy management plan.

Asset Portfolios and Energy Management Planning

Energy consumption at a site can be impacted by a number of variables. The following lists provide education sector examples that may impact changes in consumption at a site from one year to the next. These examples will play a significant role in the Board's assessment of energy management priorities.

Facility Variables

- Year of Construction
- Building Area
 - Major additions
 - Sites sold
 - Portables
 - installed
 - removed
- Site Use
 - Elementary school
 - Secondary school
 - Administrative building
 - Maintenance/warehouse facility
- Shared Use Sites (e.g. one building, two boards share common areas and/or partnered with a municipality)
 - Swimming pools
 - Libraries
 - Lighted sports fields
 - Enclosed sports domes
- Equipment/Systems
 - Age
 - Type of technology

- Lifecycle
- % air conditioned building area

Other Variables

- Programs
 - Day care
 - Before/After School Programs
 - Summer School
 - Community Use
- Occupancy
 - Significant Increase or decrease in number of students
 - New programs being added to a site

About the Board

The St. Clair Catholic District School Board was created on January 1, 1998 as a result of the amalgamation of the former Lambton and Kent County Roman Catholic Separate School Boards. In the past, we were separated by geography, yet united by our common bonds as Catholic educators. In 1998 we came together, united by our traditions, philosophies, and a renewed dedication to a strong and vibrant Catholic education.

The St. Clair Catholic District School Board provides educational services to approximately 8,485 students (2012-2013). In 2012-2013 the Board operated 26 elementary schools, 3 secondary schools, 1 Catholic Education Centre and 2 Maintenance Facilities with an accumulated area of 1,321,430 square feet (including portables).

Energy Consumption Data for the Board

Electrical energy to the Boards’ properties is supplied by Hydro One Inc., Entegrus and Bluewater Power Distribution Corporation. Natural gas is supplied by Union Gas Limited.

The values below are “metered” data for the Board.

Utility	Fiscal Year 2011-12 (Baseline)	Fiscal Year 2012-13 (Current)
Total Electricity (kWh)	8,542,610	9,366,353
Total Natural Gas (m3)	854,055	959,183

The values below are raw data.

	Fiscal Year 2011-12 (Baseline)	Fiscal Year 2012-13 (Current)
Total Energy Consumed (eKWh)	17,356,459	19,265,129
Energy Intensity (eKWh/m2)	40	44

Energy Conservation Goal

The Board has set out the following energy conservation goals for the next five fiscal years:

Fiscal Year	2013-14	2014-15	2015-16	2016-17	2017-18
% reduction in ekWh consumed	1	1	1	1	1
Or ... equivalent reduction in ekWh	1,926,513	1,926,513	1,926,513	1,926,513	1,926,513
Or ... equivalent reduction in edWh/m2	2.18	2.18	2.18	2.18	2.18

Energy Management Strategies

The Board endeavours and continues to reduce energy consumption resulting in a reduction in greenhouse gases. The Board focuses on:

- Pursuing grants/rebates and energy incentives from public agencies and utility providers
- Procurement of energy units at the lowest cost through energy consortia
- Energy efficient designs in new schools, additions, renovations and administrative buildings

To date the Board's energy management initiatives were funded by grants made available by Good Places to Learn, Capital Priorities, School Renewal and Energy Efficient Schools grants as well as incentives/rebates from local utilities. Between fiscal year 2009-10 and 2012-13, the Board has received \$210,000 in incentive funding from various agencies to support the implementation of energy efficient projects.

Projects completed by the Board focusing on energy efficiency include:

- Installation and densification of Building Automation Systems (BAS)
- Lighting retrofits for florescent lighting from T12 to T8/T5/ LED
- Conversion of incandescent lighting to florescent or LED
- Conversion of exit lighting from incandescent to LED
- Occupancy sensors for lighting & HVAC Control
- Retrofitting of boilers to high efficiency boilers (condensing or near condensing), hot water tanks, heat pumps
- Variable speed drives on motors for pumps and fans
- Increasing thermal insulation at the time of roof replacements
- Weather stripping
- Replacing windows from single glazing to thermo-pane
- Third party energy audits
- Foaming of the space between the roof and the intersecting exterior walls

Energy management strategies fall into three key categories:

- Design/construction/retrofit
- Operations and maintenance
- Occupant Behaviour

Design/Construction/Retrofit

Definition

Design/construction/retrofit encompasses the original and ongoing intent of how a building and its systems are to perform as a whole through the integration of disciplines such as, architecture and engineering.

Energy Audits

The Board engaged an engineering consultant to perform energy audits on all of its schools during year one of the Ministry's Energy Efficient Schools funding initiative (2009). The audits enabled us to prioritize and consolidate projects to utilize the funding in the most cost effective manner.

Energy Efficient Incentives

The Board continues to utilize the services and expertise of Robert Smith, the Ministry's Incentive Programs Advisor, and also applies to incentive programs to support the implementation of energy efficient projects.

Building Automation Systems (BAS)

A building automation system (BAS) offers savings on energy costs and increases the efficiency and comfort of indoor air for buildings.

HVAC and lighting are the two largest users of energy in buildings and are usually the first systems to be automated. BAS reduces the energy and amount of greenhouse gases released into the atmosphere.

In addition to monitoring energy usage, BAS is able to monitor and collect data from the building and reports the results on the system's computer. It allows operators' the ability to identify and diagnose problems early, which saves costs on maintenance and prevents breakdowns.

Upgrading existing BAS improves levels of comfort, data collection of energy consumption and saving energy because temperature settings can be scheduled and controlled. Integrate BAS systems of all the buildings onto a single front end computer allows an operator to monitor and control all facilities from a single source. Estimated energy savings that a BAS can save ranges between 5% and 15% on utility costs by managing HVAC and lighting systems.

Over the years, the board has continued to upgrade, improve and consolidate its BAS for HVAC only. The board plans to integrate and control lighting with its BAS in the future for additional energy savings.

Roof and Window Replacement

Additional roof insulation increases the "R-value" associated with the building envelope.

Replacing windows beyond their life-cycle improves on the building's energy efficiency and occupant comfort by eliminating drafts.

For the Board's relevant projects over the next five years, please refer to Appendix B.

Operations and Maintenance

Definition

Operations and maintenance includes the strategies the Board uses to ensure that the existing buildings and equipment perform at peak efficiency. The St. Clair Catholic District School Board, in all of its operations and programs, will give assiduous attention to the care of the environment.

Chatham-Kent Lambton Administrative School Services (CLASS) Consortium

In partnership with the Lambton-Kent District School Board an Energy & Environmental Coordinator was recently hired. This position is responsible for energy management planning and reporting, conducting facility and system audits, and research and investigation of energy incentives and rebates.

For the Board's relevant projects over the next five years, please refer to Appendix C.

Occupant Behaviour

Definition

Strategies that the Board uses to educate occupants, including staff, students and community users, with an emphasis on changing specific behaviours to reduce energy consumption.

For the Board's relevant projects over the next five years, please refer to Appendix D.

Energy Procurement

The Board participates in an arrangement to purchase electricity through the Catholic School Boards Services Association (CSBSA) Electricity Consortia.

The Board participates in a consortia arrangement with a subsidiary of the Association of Municipalities of Ontario known as Local Authority Services (LAS) to advise upon and purchase natural gas.

Senior Management Approval of this Energy Conservation and Demand Management Plan

I confirm that St. Clair Catholic District School Board's senior management has reviewed and approved this Energy Conservation and Demand Management Plan.



Jim McKenzie

Associate Director & Treasurer

June 27, 2014

Date

APPENDIX A

Renewable Energy	Define	Number of systems in asset portfolio	Total size (kW)	Total number of ekWh generated annually	Actual or Estimated Generation (ekWh)
Solar photovoltaic					
Solar air					
Solar water					
Wind Turbine					
Biomass					
Other					

SCCDSB

Design, Construction and Retrofit Strategies												
New School Design and Construction	Quantity of Time that Measure will be in place (years)	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Energy Efficiency considerations in new school design, major renovations, construction and equipment installations.	30							750,000	1,947,862			3,895,724
Lighting												
Lighting	Quantity of Time that Measure will be in place (years)	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	15		3,000									15,000
Daylight Sensors	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Outdoor Lighting	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Occupancy Sensors	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Daylight Harvesting	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
HVAC												
HVAC	Quantity of Time that Measure will be in place	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Efficient Boilers (near condensing)	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
High Efficiency Boilers (condensing)	15		22,000	\$ -	-	\$ 50,000	10,000	\$ 150,000	30,000	\$ -	-	200,000
High-efficiency boiler burners	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Geothermal	15	\$ 250,000	46,296	\$ -	-	\$ -	-	\$ -	-	\$ -	-	231,481
Heat recovery/enthalpy wheels	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Economizers	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Energy efficient HVAC systems/Heating/Chilled Water/Pipe Insulation	30		57,500	\$ 5,200	823	\$ 900,000	142,497	\$ -	-	\$ -	-	718,283
Energy efficient Rooftop units	15		5,000	\$ -	-	\$ -	-	\$ -	-	\$ -	-	25,000
High Efficiency Domestic Hot Water	15		10,000	\$ -	-	\$ -	-	\$ -	-	\$ -	-	50,000
Efficient Chillers and Controls	25	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
High-efficiency motors	20	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
VFD	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Demand Ventilation	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Entrance Heater Controls	20	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Controls												
Controls	Quantity of Time that Measure will be in place	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Building Automation Systems - New	10		21,700	\$ -	-	\$ -	-		20,000		80,000	228,500
Building Automation Systems - Upgrade	10		4,000	\$ -	-	\$ -	-	\$ -	-	\$ -	-	20,000
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Building Envelope												
Building Envelope	Quantity of Time that Measure will be in place	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Glazing	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Increased Wall Insulation	50	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
New Roof	25	\$ 255,000	23,725	\$ 74,200	6,904	\$ 803,966	74,801	\$ 614,568	57,180	\$ 500,000	46,520	531,525
New Windows	30		40,000	\$ -	-	\$ -	-	\$ -	-	\$ 402,800	93,692	293,692
Treatments	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Shading Devices	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Design, Construction and Retrofit Strategies Total		505,000	233,222	79,400	7,727	1,753,966	227,298	1,514,568	2,055,042	902,800	220,212	6,209,206

Operations and Maintenance Strategies												
Policy and Planning	Quantity of Time that Measure will be in place (years)	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
School Closure Strategies	Until Sold	\$ -	-	\$ -	765,120	\$ -	765,120	\$ -	1,245,120	\$ -	1,245,120	9,091,200
Day and Night Temperature Guidelines for all Schools	10	\$ -	-	\$ -	137,000	\$ -	137,000	\$ -	137,000	\$ -	137,000	1,370,000
Night time blackout of sites	Interior	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
	Exterior	\$ -	-	\$ -	24,000	\$ -	24,000	\$ -	24,000	\$ -	24,000	240,000
Procures only Energy Star certified appliances	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Daylight Harvesting (servicing)	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Demand Ventilation (servicing)	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Maintenance Replacement of Failed Equipment	5	\$ 30,000	35,000	\$ 30,000	35,000	\$ 30,000	35,000	\$ 30,000	35,000	\$ 30,000	35,000	525,000
Energy Audits												
Energy Audits	Quantity of Time that Measure will be in place	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Walk Through Audit	5	\$ -	-	\$ -	50,000	\$ -	50,000	\$ -	50,000	\$ -	50,000	500,000
Engineering Audit	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Describe)			-		-		-		-		-	-
Real Time Monitoring												
Real Time Monitoring	Quantity of Time that Measure will be in place	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Real-time energy data for operators to identify and diagnose building issues	5	\$ -	-	\$ 1,000	2,907	\$ 1,000	2,907	\$ 1,000	2,907	\$ 1,000	2,907	29,065
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Operations and Maintenance Strategies Total		\$ 30,000	35,000	\$ 31,000	1,014,027	\$ 31,000	1,014,027	\$ 31,000	1,494,027	\$ 31,000	1,494,027	11,755,265

\$0.135 = cost of 1 ekWh electricity
 \$ 0.0334 = cost of 1 ekWh natural gas
 0.0955 m³ = 1 ekWh
 \$0.35 = cost of 1 m³ of natural gas

Energy Payback Period	% related to Electricity	% related to Natural Gas
5	50	50
5	20	80
7	100	0
7	100	0
5	100	0
5	100	0
5	50	50
0		100

Energy Payback Period	% related to Electricity	% related to Natural Gas
1000	50	50
1000	50	50
0		100

Energy Payback Period	% related to Electricity	% related to Natural Gas
3	80	20
0		100

Occupant Behaviour Strategies												
Training and Education	Quantity of Time that Measure will be in place (years)	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18 Estimated Total Accumulated Energy Savings (ekWh)
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	
Building Operator Training	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
NRCan Benchmarking Program	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Building Automation Training (site specific)	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Ongoing training and awareness programs for energy conservation	5	\$ -	-	\$ 3,000	2,403	\$ 6,000	4,806	\$ 6,000	4,806	\$ 6,000	4,806	38,448
Provide detailed information on Building Operational costs	1	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Provide detailed information on energy consumption (e.g. via the Utility Consumption Database or other database)	1	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Participate in environmental programs, such as EcoSchools, Earthcare	1	\$ -	-	\$ -	-	\$ 50,000	80,101	\$ 50,000	80,101	\$ 50,000	80,101	480,606
Other tools (Define)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Occupant Behaviour Strategies Total		\$ -	-	\$ 3,000	2,403	\$ 56,000	84,907	\$ 56,000	84,907	\$ 56,000	84,907	519,054

Energy Payback Period	% related to Electricity	% related to Natural Gas
3	60	40
1000	50	50
1	60	40
10	90	10
1000	50	50
1000	50	50
5	90	10
0		100

\$0.135 = cost of 1 ekWh electricity
 \$ 0.0334 = cost of 1 ekWh natural gas
 0.0955 m³ = 1 ekWh
 \$0.35 = cost of 1 m³ of natural gas

Conservation Goal

	FY2013
Total Building Area (includes portables) (m ²)	122,764
Total Building Area (includes portables) (ft ²)	1,321,430
Energy Consumption for the board (ekWh)	19,265,129

1 ft² = 0.0929 m²

	2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18
	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Appendix B; Design, Construction and Retrofit Strategies Total	\$ 505,000	233,222	\$ 79,400	7,727	\$ 1,753,966	227,298	\$ 1,514,568	2,055,042	\$ 902,800	220,212	6,209,206
Appendix C; Operations and Maintenance Strategies Total	\$ 30,000	35,000	\$ 31,000	1,014,027	\$ 31,000	1,014,027	\$ 31,000	1,494,027	\$ 31,000	1,494,027	11,755,265
Appendix D; Occupant Behaviour Strategies Total	\$ -	0	\$ 3,000	2,403	\$ 56,000	84,907	\$ 56,000	84,907	\$ 56,000	84,907	519,054
TOTAL	\$ 535,000	268,222	\$ 113,400	1,024,156	\$ 1,840,966	1,326,232	\$ 1,601,568	3,633,975	\$ 989,800	1,799,146	18,483,525
Percentage reduction *		1		5		7		19		9	19.18858207
Conservation Goal (ekWh/m ²)		2.18		8.34		10.80		29.60		14.66	150.56
Conservation Goal (ekWh/ft ²)		0.202978319		0.775036486		1.003633644		2.750032518		1.361514138	13.98751765

* Estimated Percent Reduction is based on all estimated annual energy savings from projects, (Capital, Renewal, School Condition Improvements) as calculated from appendices B,C & D. The Board has chosen to adopt a more conservative 1% reduction per year.