THE RAINBOW DISTRICT SCHOOL BOARD
Energy Conservation and Demand Management Plan
2018-19 to 2022-23

Education Sector Background

Funding and Energy Management Planning

All school boards receive 100% of their funding from the Ministry of Education.

The Ministry announces each Board's funding allocation in March for the next school board Fiscal Year that runs from September 1st to August 31st. 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 is received for each of the five years covered by their plan.

Asset Portfolios and Energy Management Planning

The education sector is unique in that a board's asset portfolio can experience significant changes that significantly affect a board's energy consumption over a five-year period.

The following is a list of some of the most common variables and metrics that change in the education sector.

Facility Variables

- Construction
    - Year built
    - Number of floors
    - Orientation of the building
- Building Area
    - Major additions
    - Sites sold/closed/demolished/leased
    - Portables
        - Installed
        - Removed
    - Areas under construction
- Equipment/Systems
    - Age
    - Type of technology
    - Lifecycle
    - % air conditioned space
-

- Site Use
    - Elementary school
    - Secondary school
    - Administrative building
    - Maintenance/warehouse facility
    - Community Hubs
- Shared Use Sites (e.g. one building, two or more boards share common areas and/or partnered with a municipality)
    - Swimming pools
    - Libraries
    - Lighted sports fields
    - Enclosed sports domes

Other Variables

- Programs
    - Child care
    - Before/After School Programs
    - Summer School
    - Community Use
- Occupancy
    - Significant increase or decrease in number of students
    - Significant increase in the hours of operation
    - New programs being added to a site
- Air Conditioning
    - Significant increase in air conditioned space
    - Portables

PART I – A REVIEW OF PROGRESS AND ACHIEVEMENTS IN THE PAST FIVE YEARS

A. The Board's Asset Portfolio

The following chart outlines the energy-related variables/metrics in the Board's asset portfolio that changed from the baseline year (FY 2012-13) to the end of the five-year reporting period (FY 2017-18).

	FY 2012-13 (Baseline)	FY 2017-18	Variance
Total Number of Buildings	45	44	-1
Total Number of Portables	8	4	-4
Total Floor Area	2,414,694	2,407,965	-6729
Average Operating Hours	76	76	0
Average Daily Enrolment	12,588	12,608	20.135
Child Care Spaces	1195	2117	922

Note: Negative values indicate increase in use.

B. Energy Consumption Data for the Board

The chart below lists the "metered"[1] consumption values in the common unit of ekWh.

Utility (Raw Data)	Fiscal Year 2012-13 (Baseline)	Fiscal Year 2017-18 (Current)	Difference
Total Natural Gas (ekWh)	35,069,390	36,937,192	-1,867,802
Total Heating Fuel Oil (ekWh)	3,347,280	2,976,438	370,842
Total Propane (ekWh)	297,927	369,076	-71,149
Total Electricity (kWh)	12,181,829	12,207,473	-25,644
Total Savings (ekWh)	**50,896,426**	**52,490,179**	**-1,593,753**

Note: Negative values indicate increase in use.

- Metered (also known as "raw") consumption data does not take into consideration the impact of weather on energy usage and as a result, it does not allow an accurate analysis of energy performance from one year to the next.

C. Weather Normalized Energy Consumption Values

To put the impact of weather in context, the following chart shows the Heating Degree Days (HDD)[2] for Sudbury Airport weather station CYSB. Normalization factors are based on year 2012-13 Data.

Sudbury Heating Degree Days	Base Year	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
HDD	9522	12071	10287	8838	8873	9610
Normalization Factor	100%	79%	93%	108%	107%	99%

NOTES TO THE READER

1. The balance point for calculating the above HDD values is 65F.
2. Boards have an energy management tool, the Utility Consumption Database (UCD), which calculates the balance point for each meter based on energy consumption patterns. The actual HDD and CDD values for each meter are based on the data from the closest Environment Canada weather station to the facility and are used to calculate weather normalized values.

The best way to compare energy consumption values from one year to another is to use weather-normalized values as they take into consideration the impact of weather on energy performance and allows an "apple-to-apple" comparison of consumption across multiple years.

1 Metered consumption is the quantity of energy used and does not include a loss adjustment value (the quantity of energy lost in transmission).

[2] Heating Degree Day (HDD) is a measure used to quantify the impact of cold weather on energy use. In the data above, HDD are the number of degrees that a day's average temperature is below 18C (the balance point), the temperature at which most buildings need to be heated

However a straight comparison of Total Energy Consumed between one or more years does not take into consideration changes in a board's asset portfolio, such as changes in buildings' attributes (see Facility Variables listed on pages 1 & 2), and newly implemented programs (see the Note to Readers on pages 5 & 6) which will significant impact energy consumption.
As a result, weather normalized Energy Intensity[3] is the most accurate measurement that allows the evaluation of a board's energy consumption from one year to another as it negates any change in floor areas.

Weather Normalized Values	Fiscal Year 2012-13 (Baseline Year)	Fiscal Year 2017-18	Variance
Total Energy Consumed (ekWh)	50,896,426	52,121,305	-1,224,879
Energy Intensity (ekWh/ft2)	21.08	21.65	-0.57

D. Review of Previous Energy Conservation Goals and Achievements

In 2013, the Board set annual energy conservation goals for the next five fiscal years. The following chart compares the Energy Intensity Conservation Goal with the Actual Energy Intensity Reduced for each year.

Fiscal Year	Conservation Goal			Weather Normalized (Sudbury CYSB)
	ekW/ft2	%	eKW/ft^2	Difference
2012-13			21.08	
2013-14	0.31	1.5%	19.72	1.36
2014-15	0.11	0.5%	20.96	-1.24
2015-16	0.72	3.5%	20.16	0.80
2016-17	0.16	0.8%	20.34	-0.18
2017-18	0.34	1.7%	21.65	-1.31
Total Energy Savings	**4.81**	**4.66%**	**-0.57**	**-0.57**

Note: Negative values indicate increase in use.

3 Energy Intensity (EI) is the quantity of total energy consumed divided by the total floor area. EI is typically expressed as ekWh/ft2, GJ /m2 etc., depending on the user's preference.

NOTE TO READERS:
The Conservation Goals were forecasted in The Spring of 2014. Since then a number of factors, which impact energy consumption, have been introduced to the education sector that may either increase or limit a board's ability to achieve the forecasted Conservation Goals.

Some of these factors include:

Full Day Kindergarten (FDK)

The introduction of FDK resulted in many new spaces being created through new additions or extensive renovations of existing facilities which resulted in more floor area and in some cases more energy-intensive designs due to factors such as higher ventilation requirements, the implementation of air conditioning etc. which increase the energy intensity of a building. Under FDK, spaces for more than 470,000 new students were added to the education sector.

Before and After School Programs

These programs were implemented to support the introduction of FDK spaces. However Before and After School Programs require a facility's HVAC system to operate for an extended period on a daily basis, which increases overall energy intensity.

Community Use of Schools

The Ministry of Education introduced funding to all school boards so they can make school space more affordable for use after hours. Both indoor and outdoor school space is available to not-for-profit community groups at reduced rates, outside of regular school hours. As a result of this funding, the use of spaces in schools, typically gymnasiums and libraries, increased to maximum utilization. The use of these spaces during non-school hours requires a facility's HVAC system to operate for an extended period of time on a daily basis, which increases overall energy intensity.

Community Hubs

In 2016, the Ministry of Education introduced funding for boards to implement Community Hubs within their asset portfolios. As a result, many schools now offer a wider range of events (cultural), programs (arts, recreation, childcare) and services (health, family resource centres.)

The dramatic increase in community use means that many schools now operate from 6:00 a.m. until 11:00 p.m. during weekdays and are open for large quantities of time on weekends. As a result, a facility's HVAC system must operate for significantly longer to support community hubs and overall energy consumption/intensity is increased.

Air Conditioning

Historically schools have not had air conditioning or it has been a minimal space within the facility. However with changing weather patterns, "shoulder seasons" such as May, June and September are

experiencing higher than normal temperatures and parents are demanding that schools have air conditioning. Air conditioning significantly increases a facility's energy consumption.

Compliance with current Ontario Building Code (OBC)

When renovations are done or an addition is built onto an existing school, in-place equipment such as HVAC systems, lighting etc., may be required to meet current OBC standards, which may result in increased energy consumption.

For example, under the OBC buildings constructed today have increased ventilation requirements meaning more outside air is brought into a facility. As a result, HVAC systems need to work longer to either heat or cool the outdoor air to bring it to the same temperature as the standardized indoor temperature for the building.

E. Cumulative Energy Conservation Goals

The chart below compares the 2013 Forecasted Cumulative Energy Intensity Conservation Goal with the Actual Cumulative Energy Intensity Reduced Savings.

2014 Board Plan	Forecasted Cumulative Energy Intensity Conservation Goal FY 2013-14 to FY 2017-18 (ekWh/ft2)	**4.81**
	Forecasted Cumulative Energy Intensity Conservation Goal as a Percentage	**4.66%**
FY 2017-18	Actual Cumulative Energy Intensity Reduced/Increased between FY 2013-14 to FY 2017-18 - weather normalized (ekWh/ft2)	**-0.57**
Variance	2014 Forecasted Cumulative Conservation Goal and Actual Cumulative Energy Intensity Reduced/Increased - weather normalized (ekWh/ft2)	**-5.4**
	% of Cumulative Energy Intensity Conservation Goal Achieved - weather normalized	**-112%**

Note: Negative values indicate increase in use.

F. Measures Implemented from FY 2012-13 to FY 2017-18

A list of the measures implemented, the associated costs, and the fiscal year that the measure was implemented within the Board are outlined in:

Appendix A: Investment in Design, Construction and Retrofit Strategies

NOTE TO READERS

IMPORTANT CONSIDERATION - It takes a minimum of one full year after an energy management strategy has been implemented before an evaluation can determine the associated actual energy savings achieved.

All consumption data taken from Energy Consumption and Greenhouse Gas Emissions Reports submitted, on an annual basis, to the Ministry of Energy, Northern Development and Mines.

PART II – ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN FOR FY 2018-19 TO FY 2023-24

Part II outlines the board's plan to reduce energy consumption through renewable energy and energy management strategies including Design/Construction/Retrofit, Operations and Maintenance, and Occupant Behaviour.

Background

1. To date the Board's energy management strategy has included the following:

Design, Construction and Retrofit Strategies

2. The Board has an energy management position, In-house shared job function.

3. Energy Management Strategies

   Energy management strategies fall into 2 key categories:

   - Renewable Energy
   - Design/construction/retrofit

Renewable Energy

Renewable energy through solar panels is a strategy to reduce a board's energy consumption from the province's electricity grid.

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.

For the Board's relevant projects over the next five years, please refer to:

Appendix B – Design, Construction and Retrofit Strategies

Appendix C – Occupant Behavior Strategies

Appendix D – Conservation Goal outlines the combined investment and expected savings.

A. Future Energy Conservation Goals

The Board has set out the following energy intensity reduction conservation goals for the next five fiscal years.

Annual Energy Intensity Conservation Goals

Annual Energy Intensity Conservation Goal	Fiscal Year				
	2018-19	2019-20	2020-21	2021-22	2022-23
% Decrease	0.91%	1.50%	0.70%	1.49%	1.14%
ekWh/Ft2	0.20	0.33	0.15	0.32	0.25

Cumulative Conservation Goal

The following chart indicates the board's Cumulative Energy Intensity Conservation Goal for the next five fiscal years.

Cumulative Conservation Goal	FY 2018-19 to 2022-23
% Decrease	5.74%
ekWh/Ft2	1.25

NOTE TO READERS:

Numerous factors influence a board's ability to meet energy conservation goals. A list of some of these factors include, but are not limited to:

- *Changes in programming*
  - Example
    - Introduction of Before and After School programs to schools meant that the number of hours that a facility's HVAC system operates on a daily basis was expanded by four or more hours per weekday to reflect the longer occupancy hours

- *Changes to Ontario's Building Code*
  - Example
    - Regular changes/updates to Ontario's Building Code can affect energy consumption. For example, an increase in levels of ventilation in newly constructed buildings or other requirements. As a result, more fresh air is brought into a school to meet the ventilation requirements throughout the day requires heating/cooling of the air (dependent on the season) to meet standard classroom temperatures

- *Changes to school board funding models*
  - Forecasted Conservation Goals are based on current funding models being in place throughout the next five years.

- Boards' funding is determined on an annual basis. Any changes to the funding model will impact forecasted values.

- *Changes in technology*
  - Forecasted Conservation Goals are based on current technologies and associated energy savings. If new technologies become available, anticipated energy savings may increase.

B. Environmental Programs

1. In 2018-19, **27** RDSB Schools participated in the EcoSchools program with one School earning Platinum for the first time.

2. Energy Efficiency Incentives

1. The Board applies to incentive programs to support utility costs on a regular basis.

   Between Fiscal Year 2013-14 and Fiscal Year 2017-18, the Board has received **$253,247** in incentive funding from Hydrone, Greater Sudbury Hydro and Union Gas.
2. The Board uses the services of the sector's Incentive Programs Advisor (IPA).

Energy Procurement

1. The Board participates in CSBSA Natural Gas Management and Advisory Services

2. Demand Management

1. The Board uses the Invoices to monitor electrical Demand.
2. The board does not currently participate in any Demand Management strategies.

3. Senior Management Approval of this Energy Conservation and Demand Management Plan

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

[signature] June 28, 2019

Name Date

Job Title

Appendix A - Invetment in Design, Construction and Retrofit Strategies

Lighting	2013-14	2014-15	2015-16	2016-17	2017-18
	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies
High Efficiency Lighting Systems (T-8, T-5, CFL,	$ 12,593	$ -	$ 53,479	$ 333,329	$ 209,140
Daylight Sensors	$ -	$ -	$ -	$ -	$ -
Outdoor Lighting	$ -	$ -	$ -	$ -	$ -
Occupancy Sensors	$ -	$ -	$ -	$ -	$ -
Daylight Harvesting	$ -	$ -	$ -	$ -	$ -
Other (Describe)	$ -	$ -	$ -	$ -	$ -

HVAC	2013-14	2014-15	2015-16	2016-17	2017-18
	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies
Efficient Boilers (near condensing)	$ 651,302	$ -	$ 960,931	$ 69,802	$ 35,745
High Efficiency Boilers (condensing)	$ -	$ -	$ -	$ -	$ -
High-efficiency boiler burners	$ -	$ -	$ -	$ -	$ -
Geothermal	$ -	$ -	$ -	$ -	$ -
Heat recovery/enthalpy wheels	$ -	$ -	$ -	$ -	$ -
Economizers	$ -	$ -	$ -	$ -	$ -
Energy efficient HVAC systems	$ 152,369	$ -	$ 778,738	$ 739,735	$ 284,111
Energy efficient Rooftop units	$ -	$ -	$ -	$ -	$ -
High Efficiency Domestic Hot Water	$ -	$ -	$ -	$ -	$ -
Efficient Chillers and Controls	$ -	$ -	$ -	$ -	$ -
High-efficiency motors	$ -	$ -	$ -	$ -	$ -
VFD	$ -	$ -	$ -	$ -	$ -
Demand Ventilation	$ -	$ -	$ -	$ -	$ -
Entrance Heater Controls	$ -	$ -	$ -	$ -	$ -
Other (Describe)	$ -	$ -	$ -	$ -	$ -

Controls	2013-14	2014-15	2015-16	2016-17	2017-18
	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies
Building Automation Systems - New	$ -	$ -	$ -	$ -	$ -
Building Automation Systems - Upgrade	$ 18,849	$ -	$ 153,590	$ 140,038	$ 45,031
Other (Describe)	$ -	$ -	$ -	$ -	$ -

Building Envelope	2013-14	2014-15	2015-16	2016-17	2017-18
	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies	Investment in Energy Management Strategies
Glazing	$ -	$ -	$ -	$ -	$ -
Increased Wall Insulation	$ -	$ -	$ -	$ -	$ -
New Roof	$ 36,840	$ -	$ 2,076,131	$ 1,655,446	$ 3,245,719
New Windows	$ -	$ -	$ -	$ -	$ -
Treatments	$ -	$ -	$ -	$ -	$ -
Shading Devices	$ -	$ -	$ -	$ -	$ -
Other (Describe)	$ -	$ -	$ -	$ -	$ -

Total Investment in Design, Construction and Retrofit Strategies	**$ 871,953**	**$ -**	**$ 4,022,869**	**$ 2,938,350**	**$ 3,819,746**
				TOTAL	**$ 11,652,918**

Appendix B - Design, Construction and Retrofit Strategies

Lighting	Quantity of Time that Measure will be in place (years)	2018-19		2019-20		2020-21		2021-22		2022-23		2018/19-2022/23	Energy Payback Period	% related to Electricity	% related to Natural Gas
		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	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7	100	0
Outdoor Lighting	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7	100	0
Occupancy Sensors	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	100	0
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100

HVAC	Quantity of Time that Measure will be in place	2018-19		2019-20		2020-21		2021-22		2022-23		2018/19-2022/23	Energy Payback Period	% related to Electricity	% related to Natural Gas
		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	$ -	-	$ -	-	$ -	-	$ 235,311	370,701	$ -	-	741,401	15	5	95
High Efficiency Boilers (condensing)	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	5	95
High-efficiency boiler burners	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	5	95
Geothermal	20	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	35	100	0
Heat recovery/enthalpy wheels	30	$ 418,611	165,412	$ 1,045,229	413,016	$ 380,762	150,456	$ 616,426	243,577	$ 326,618	129,061	3,546,709	40	20	80
Economizers	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7.5	50	50
Energy efficient HVAC systems	30	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	75	50	50
Energy efficient Rooftop units	15	$ 1,101,854	187,092	$ 2,028,000	344,349	$ -	-	$ -	-	$ 1,520,155	258,118	2,570,971	56	50	50
High Efficiency Domestic Hot Water	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	15	85
Efficient Chillers and Controls	25	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	100	100	0
High-efficiency motors	20	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	100	0
VFD	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	75	25
Demand Ventilation	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	50	50
Entrance Heater Controls	20	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	50	50
Destratification Fans	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7	100	0
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100

Controls	Quantity of Time that Measure will be in place	2018-19		2019-20		2020-21		2021-22		2022-23		2018/19-2022/23	Energy Payback Period	% related to Electricity	% related to Natural Gas
		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	$ -	-	$ -	-	$ -	-	$ -	-	$ 294,899	112,164	112,164	25	50	50
Building Automation Systems - Upgrade	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	15	50	50
Real-time energy data for operators to identify and diagnose building issues	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	3	50	50
Voltage Harmonizers	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7	100	0
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-		-	-	0		100

Building Envelope	Quantity of Time that Measure will be in place	2018-19		2019-20		2020-21		2021-22		2022-23		2018/19-2022/23	Energy Payback Period	% related to Electricity	% related to Natural Gas
		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	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	80	20	80
Increased Wall Insulation	50	$ -	-		-	$ -	-		-	$ -	-	-	40	20	80
New Roof	25	$ 1,463,435	92,523		-	$ 2,439,029	154,203	$ 2,168,464	137,097	$ -	-	1,199,418	250	20	80
New Windows	30	$ -	-	$ -	-	$ 280,922	29,601		-	$ 621,403	65,478	154,282	150	20	80
Treatments	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	20	80
Shading Devices	30	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	20	100	0
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100
Design, Construction and Retrofit Strategies Total		**$ 2,983,900**	**445,026**	**$ 3,073,229**	**757,365**	**$ 3,100,713**	**334,260**	**$ 3,020,201**	**751,375**	**$ 2,763,075**	**564,821**	**8,324,944**			

	= Default value
	= Calculated Value
$0.175	**= cost of 1 ekWh electricity**
$ 0.0353	= cost of 1 ekWh natural gas
0.0955	m^3 = 1 ekWh (as per NRCan conversion table)
$0.37	**= cost of 1 m^3 of natural gas**

Appendix C - Occupant Behaviour Strategies

Training and Education	Quantity of Time that Measure will be in place (years)	2018-19		2019-20		2020-21		2021-22		2022-23		8/19-2022/23	Energy Payback Period	% related to Electricity	% related to Natural Gas
		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 Operator Training	3	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	3	60	40
Energy Benchmarking Program	5	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1000	50	50
Building Automation Training (site specific)	3	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1	60	40
Ongoing training and awareness programs for energy conservation	5	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	90	10
Provide detailed information on Building Operational costs	1	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1000	50	50
Provide detailed information on energy consumption (e.g. via the Utility Consumption Database or other database)	1	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1000	50	50
Participate in environmental programs, such as **EcoSchools**, Earthcare	1	$ 25,000	31,049	$ 25,000	31,049	$ 25,000	31,049	$ 25,000	31,049	$ 25,000	31,049	465,742	5	90	10
Other tools (Define)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100
Occupant Behaviour Strategies Total		**$ 25,000**	**31,049**	**$ 25,000**	**31,049**	**$ 25,000**	**31,049**	**$ 25,000**	**31,049**	**$ 25,000**	**31,049**	**465,742**			

$0.000	**= cost of 1 ekWh electricity**
$ 0.1750	**= cost of 1 ekWh natural gas**
0.035335	**m^3 = 1 ekWh**
$0.10	**= cost of 1 m^3 of natural gas**

Appendix D - Conservation Goal

	2017-18
Total Building Area (includes portables) (ft^2)	2,407,965
Energy Consumption for the board (ekWh)	52,490,179

	2018-19		2019-20		2020-21		2021-22		2022-23		2018/19-2022/23
	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	$ 2,983,900	445,026	$ 3,073,229	757,365	$ 3,100,713	334,260	$ 3,020,201	751,375	$ 2,763,075	564,821	8,324,944
Appendix C; Operations and Maintenance Strategies Total	$	0	$	0	$	0	$	0	$	0	0
Appendix D; Occupant Behaviour Strategies Total	$ 25,000	31,049	$ 25,000	31,049	$ 25,000	31,049	$ 25,000	31,049	$ 25,000	31,049	465,742
TOTAL	**$ 3,008,900**	**476,076**	**$ 3,098,229**	**788,415**	**$ 3,125,713**	**365,310**	**$ 3,045,201**	**782,424**	**$ 2,788,075**	**595,871**	**8,790,686**
Percentage reduction		**0.91**		**1.50**		**0.70**		**1.49**		**1.14**	**5.73**
Conservation Goal ($ekWh/ft^2$)		**0.20**		**0.33**		**0.15**		**0.32**		**0.25**	**1.25**