



## **Nipissing-Parry Sound Catholic District School Board Energy Conservation and Demand Management Plan**

### **Education Sector Background**

#### **Funding and Energy Management Planning**

All Boards receive 100% 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<sup>st</sup> to August 31<sup>st</sup>. 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
  - Daycare
  - 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 following statistics apply to the Board's Fiscal Year 2013-14

Total Number of Sites: 15

Total Number of Students: 2900

**Background**

1. The Board has a qualitative energy conservation goal.

Yes Our goal is to implement energy savings designs into our new buildings as well as renovations within existing buildings.

No

2. The Board has an energy management position.

In-house

Full time

Part time

Shared job function

Contracted third party

None

### **Energy Consumption Data for the Board**

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

<b>Utility</b>	<b>Fiscal Year 2011-12 (Baseline)</b>	<b>Fiscal Year 2012-13 (Current)</b>
Total Electricity (kWh)	4,654,739.50	4,330,336.50
Total Natural Gas (m3)	704,600.05	787,857.80

The values below are raw data.

	<b>Fiscal Year 2011-12 (Baseline)</b>	<b>Fiscal Year 2012-13 (Current)</b>
Total Energy Consumed (ekWh)	11,926,212.00	12,461,029.00
Energy Intensity (ekWh/m2)	0.69	0.74

### **Energy Conservation Goal**

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

<b>Fiscal Year</b>	<b>2013-14 (ekWh/m2)</b>	<b>2014-15 (ekWh/m2)</b>	<b>2015-16 (ekWh/m2)</b>	<b>2016-17 (ekWh/m2)</b>	<b>2017-18 (ekWh/m2)</b>
<b>Conservation Goal</b>	0.23	3.24	1.09	1.07	2.61

	<b>FY 2013-14 to 2017-18 (ekWh/m2)</b>
<b>Cumulative Conservation Goal</b>	22.12

### **Renewable Energy**

For a list of the Board’s renewable energy projects, please see Appendix A.

### **Energy Management Strategies**

Energy management strategies fall into three key categories:

1. Design/construction/retrofit
2. Operations and maintenance
3. Occupant Behaviour

### 1. 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.

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

### 3. Occupant Behaviour

#### Definition

Strategies that the Board uses to educate occupants, including staff, students and community users, with an emphasis in changing specific behaviours to reduce energy consumption. For the Board's relevant projects over the next five years, please refer to Appendix D.

### Energy Efficient Incentives

1. The Board applies to incentive programs to support the implementation of energy efficient projects on a regular basis.

Yes     No

If yes,

Between Fiscal Year 2009-10 and 2012-13, the Board has received approximately \$400,000 in incentive funding from various agencies to support the implementation of energy efficient projects.

2. The Board uses the services of the sector's Incentive Program Advisor.

Yes    No

### Energy Procurement

1. The Board participates in a consortia arrangement to purchase electricity.

Yes    No

If yes,

CSBSA Electricity Consortia

Other

Provide Name of Consortia: \_\_\_\_\_

2. The Board participates in a consortia arrangement to purchase natural gas.

Yes     No

If yes,

CSBSA Natural Gas Consortia

Other

Provide Name of Consortia: \_\_\_\_\_

### **Demand Management**

1. The Board monitors electrical Demand.

Yes    No

If yes,

Daily

Monthly

Quarterly

Annually

2. The Board uses the following method to monitor electrical Demand:

Invoices

Real-time data

Online data from the Local Distribution Company (LDC)

Other

\_\_\_\_\_

3. The Board uses the following methodologies to reduce electrical Demand:

Equipment scheduling

Phased/staged use of equipment

Demand-limit equipment

Deferred start-up of large equipment (e.g.: chiller start-up in spring)

Other

\_\_\_\_\_

4. The Local Distribution Companies (LDCs) for the Board explicitly state the Power Factor on each bill.

Yes

The Board monitors Power Factor.

Yes    No

If yes,

Monthly

Quarterly

Annually

No

Some LDCs provide Power Factor, some don't.

**Senior Management Approval of this Energy Conservation and Demand Management Plan**

I confirm that Nipissing-Parry Sound Catholic District School Board's senior management has reviewed and approved this Energy Conservation and Demand Management Plan.

  
\_\_\_\_\_  
Grace Barnhardt  
Superintendent of Business & Treasurer

\_\_\_\_\_  
June 30, 2014

# APPENDIX A

Renewable Energy	Define	Number of systems in asset portfolio	Total size (kW)	Total number of generated annually	Actual or Estimated Generation
Solar photovoltaic	Roof Top Solar Panels	1	20		30MWh
Solar air					
Solar water					
Wind Turbine					
Biomass					
Other					





# APPENDIX C

Operations and Maintenance Strategies		2013-14		2014-15		2015-16		2016-17		2017-18		2013/14-2017/18	
Policy and Planning	Quantity of Time that Measure will be in place (years)	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 Cost of Implementation	Estimated Total Accumulated Energy Savings (ekWh)	
		New school design/construction guidelines and specifications	5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Day and Night Temperature Guidelines for all Schools	10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
Night time blackout of sites	10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
Procurer only Energy Star certified appliances	5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
Daylight Harvesting (servicing)	3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
Demand Ventilation (servicing)	3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
Other (Describe)		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
<b>Energy Audits</b>													
Quantity of Time that Measure will be in place		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 Cost of Implementation	Estimated Total Accumulated Energy Savings (ekWh)	
Walk Through Audit	5	\$ -	\$ 1,000	\$ 12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,000	47	
Engineering Audit	5	\$ -	\$ 3,000	\$ 30	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	178	
Other (Describe)													
<b>Real Time Monitoring</b>													
Quantity of Time that Measure will be in place		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 Cost of Implementation	Estimated Total Accumulated Energy Savings (ekWh)	
Real-time energy data for operators to identify and diagnose building issues	5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
Other (Describe)		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	
<b>Operations and Maintenance Strategies Total</b>			\$ 4,000	\$ 47	\$ -	\$ -	\$ -	\$ -	\$ 3,000	\$ -	\$ -	\$ 228	

# APPENDIX D

## 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 Cost of Implementation	Estimated Annual Energy Savings (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Building Operator Training	3	\$ -	-	\$ 300	1,060	\$ -	-	\$ -	-	\$ -	-	\$ -	-
NRCan Benchmarking Program	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-
Building Automation Training (site-specific)	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-
Ongoing training and awareness programs for energy conservation	5	\$ -	-	\$ 400	320	\$ -	-	\$ -	-	\$ -	-	\$ -	-
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	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-
Other tools (Define)	1	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-
<b>Occupant Behaviour Strategies Total</b>		\$ -	-	\$ 700	1,380	\$ -	-	\$ -	-	\$ -	-	\$ -	1,380