

Energy management throughout the  
**OTTAWA CATHOLIC SCHOOL BOARD**



Celebrating years of  
**efficient energy management**

5740 W Hunt Club Road, Nepean, ON, K2G 3R4

*Energy management is key to saving energy in any organization, and the Ottawa Catholic School Board is no different. With over 10 years of optimizing and fine-tuning its energy conservation targets, the School Board earned its spot in the top 5 sustainable schools in Ontario.*

**"If we can get a building that's better designed and more energy efficient, we can spend that money that we save from energy toward school resources"**

*- Don Wood, Architectural Project Officer*

**1/3**

**Third of the Board's annual energy budget allocated towards rooftop and building insulation**



**Replacement of old lighting systems with high efficiency systems with occupancy sensors**

# 1 INTRODUCTION

The Ottawa Catholic School Board (OCSB) is a publicly funded institution that operates as a separate school board, which governs English-speaking Catholic schools in Ottawa. Formally known as the Ottawa-Carleton Catholic School Board, the Board decided to change its name in 2007 to the OCSB in order to focus their commitment to the Ottawa community<sup>[2]</sup>.

The Board is responsible for 85 schools within the greater Ottawa area, employing around 4,000 teachers and staff members.

The OCSB introduced a framework for energy management and conservation in 2005 in an effort to reduce expenditures on energy utilities<sup>[3]</sup>. The goal of the energy management plan was to comply with the Ontario Green Energy Act, while maintaining the same level of comfort for occupants and leveraging energy savings to contribute to student and staff success<sup>[4]</sup>.

The Board established a baseline from actual 2003-04 energy consumption data that was statistically balanced to account for climatic variations, and targeted a \$670,000 reduction in energy consumption for the 2005-06 school year<sup>[5]</sup>.

The Planning and Facilities Department of OCSB used the information gathered during the 2005-06 pilot year to subsequently establish reduction targets for future years<sup>[5]</sup>. Since 2006, the Department has provided energy conservation targets based on the energy savings potential for each facility on an annual basis.

The energy plan's efforts also focus on retrofitting windows with thermal breaks to reduce the flow of thermal energy passing through the glass, as well as the installation of solar blinds to aid with the process<sup>[3]</sup>.

Another area of focus is lighting. The Board commissioned the retrofit of their old lighting systems with high efficiency systems consisting of T-8 fixtures with high efficiency ballasts<sup>[3]</sup>.

All their new facilities are fully equipped with LEDs and high efficiency ballasts. Furthermore, as the price of LEDs has dropped over time, the Board re-lamped all exterior lightings and some large gymnasiums and auditoriums with LEDs. They are also installing 30 occupancy sensors per year<sup>[3]</sup>.

As for the Energy Management Control Systems, head caretakers organize and schedule HVAC systems to meet seasonal guidelines. Mechanical system economizer equipment are used when outdoor air conditions are between 7°C and 17°C<sup>[5]</sup>.

## At certain times of the year, opportunities for free cooling are used through make-up air units.

Moreover, the Board continues to benefit from revenue related to four large solar installations through Feed In Tariff<sup>[5]</sup>. St. Patrick and St. Dominic Elementary Schools have fixed mount solar installations, while St. Mother Teresa and St. Gabriel High Schools are equipped with full tracking systems to maximize solar capability<sup>[3]</sup>.

# 2 PROJECT DETAILS

Nearly a third of the Board's facilities renewal budget is spent on upgrading existing equipment including rooftop insulation, which benefits the schools both from an energy and building integrity stand-point<sup>[3]</sup>. 12-inch insulation with high R-Values is being utilized (R-Value is a measure of insulating ability: the higher the value, the better the material insulates against the cold).



Figure 1: Rooftop Solar Panel on St. Dominic High School<sup>[6]</sup>

## 3 RESULTS

**Energy results:** Since the implementation of their energy management plan in 2005, the School Board has reduced their annual electricity consumption by 19,290,000 kWh (33%) and their total natural gas consumption by 1.54 million m<sup>3</sup> (26%), despite the addition of 34,600 m<sup>2</sup> (5.2%) of new construction<sup>[5]</sup>.

**GHG reduction:** The success of the Board's energy management plan has prevented approximately 52,000 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) from being released into the atmosphere<sup>[5]</sup>.

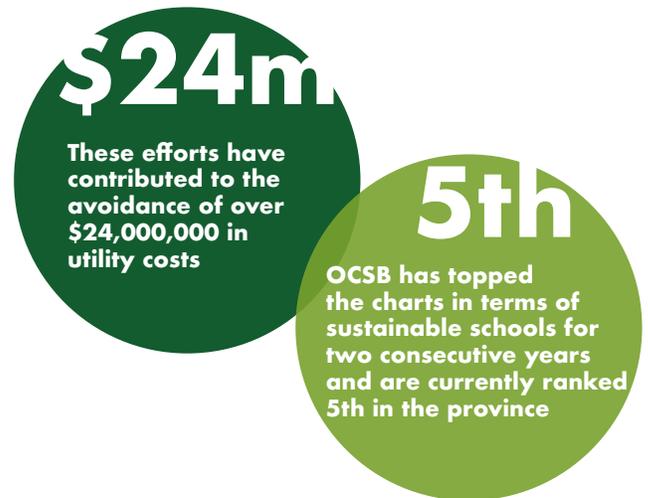
**Equivalent to eliminating the carbon footprint of over 11,000 passenger cars.**

## 4 CONCLUSIONS & REFLECTIONS

After running the energy management program for 12 years, the Board has come a long way in identifying energy savings potential for each facility. In addition to surpassing the provincial reduction requirement of 10%, these efforts have contributed to the avoidance of over \$24,000,000 in utility costs<sup>[4]</sup>.

Since the Ministry of Energy began collecting performance data for all school boards in Ontario, the OCSB has topped the charts in terms of sustainable schools for two consecutive years and are currently ranked 5th in the province, solidifying their stance as a provincial leader in energy management and conservation.

With utility costs projected to increase further, the Board is looking to refine their energy management practices by using renewal grants to further improve building envelopes as well as mechanical and electrical systems<sup>[5]</sup>.



## 4 REFERENCES

- [1] [http://storage.ottawasun.com/v1/dynamic\\_resize/sws\\_path/suns-prod-images/1297319389012\\_ORIGINAL.jpg?size=520x](http://storage.ottawasun.com/v1/dynamic_resize/sws_path/suns-prod-images/1297319389012_ORIGINAL.jpg?size=520x)
- [2] [https://en.wikipedia.org/wiki/Ottawa\\_Catholic\\_School\\_Board](https://en.wikipedia.org/wiki/Ottawa_Catholic_School_Board)
- [3] Meeting with Gerry Sancartier and Thomas Burke (September 29, 2017)
- [4] <http://ocsb.ca/energy/>
- [5] <https://drive.google.com/file/d/0B2TLzexuT2V9dFhVbmEzUmhoU28/view>
- [6] <http://www.pressreader.com/canada/ottawa-citizen/20150908/281694023553836>