



REPORT TO

REGULAR BOARD

GREENHOUSE GAS REDUCTION FUND - ENERGY RETROFIT PROJECTS (ALL WARDS)

*"I can do all this through Him who gives me strength."
Philippians 4:13 (NIV)*

Created, Draft	First Tabling	Review
May 4, 2017	May 18, 2017	

M. Iafrate, Senior Coordinator, Renewal
 K. Elgharbawy, Senior Coordinator Maintenance and Energy Management
 M. Farrell, Coordinator, Materials Management
 P. de Cock, Comptroller, Business Services
 A. Della Mora, D. Yack, J. Shanahan, G. Grant, J. Wujek, K. Malcom, M. Caccamo, P. Aguiar,
 S. Campbell, Superintendents of Learning, Student Achievement and Well-Being
 M. Puccetti, Superintendent of Facilities Services

RECOMMENDATION REPORT

Vision:

At Toronto Catholic we transform the world through witness, faith, innovation and action.

Mission:

The Toronto Catholic District School Board is an inclusive learning community uniting home, parish and school and rooted in the love of Christ.

We educate students to grow in grace and knowledge to lead lives of faith, hope and charity.


R. McGuckin

Associate Director of Academic Affairs

A. Sangiorgio

Associate Director of Planning and Facilities

C. Jackson

Executive Superintendent of Business Services and Chief Financial Officer

Angela Gauthier

Director of Education

A. EXECUTIVE SUMMARY

In April 2017, the Ministry of Education announced a new investment to school boards in the amount of \$200 million called the Greenhouse Gas Reduction Fund (GGRF). The fund can be utilized for Renewal projects for existing buildings that are initiated after April 2017 and that must be completed by March 2018. The investment share allocated for the Toronto Catholic District School Board (TCDSB) totals \$7,092,190.00.

This report recommends the approval of Renewal projects for a total estimated budget of \$7,092,190.00 as detailed in Appendix A, funded through the Greenhouse Gas Reduction Fund.

The cumulative staff time dedicated to developing this report was 30 hours.

B. PURPOSE

1. Board approval is sought for a strategic plan to upgrade/replace critical, end-of-life building components and also invest in future energy cost reduction measures at various schools and administrative facilities by utilizing the new Greenhouse Gas Reduction Fund.
2. It is of benefit to the Board to maintain and repair its buildings, to insure the value of the capital asset and provide a safe and healthy teaching environment for students and staff. Energy-savings and improved operation are generated through the replacement of older components and systems.

C. BACKGROUND

1. In June 2014, the Board approved a five-year Energy Management Plan, to support a framework for the energy and sustainability initiatives within the built environment, and that the plan reflect our values as a Catholic Board, as stewards of the environment.
2. On March 10, 2016 the Board resolved to become a “Net Zero Energy” school Board.
3. On February 15, 2017, Corporate Services, Strategic Planning and Property Committee approved the 2016-2018 Revised Renewal Program under the following fund portfolios: *(Ren 2016 045)*
 - a) School Renewal Grant (SRG)
 - b) School Condition Improvement Grant (SCI)
 - c) School Renewal Allocation (SRA)

4. By 2018, it is anticipated the Board will have a cumulative deferred maintenance backlog of approximately \$833 M upon completion of the 2016-2018 school renewal program, which has an anticipated expenditure of \$106.9 M. The deferred maintenance backlog will continue to increase as building components reach the end of their life cycle. The primary focus is to replace critical building components or systems that have reached the end of their life cycle, are in poor condition or no-longer function as intended, and that has a significant impact on the operation or viability of the facility.
5. As the cost impacts of carbon pricing and hydro rate-increases continue to pressure the Operations and Maintenance budget, Staff are proposing to ease the burden by undertaking projects such as:
 - Installing new photovoltaic (solar) systems which will offset the cost of hydro.
 - Installing power harmonizers to control the incoming power supplied by Toronto Hydro whereby decreasing power loss through heat while increasing life of building components such as lighting, pumps and variable frequency drives (VFD's).
 - Installing energy efficient LED lighting technology.
 - Installing building automation systems.
6. On April 12, 2017, arising from the Government of Ontario's Climate Change Action Plan introduced in 2016, the Ministry announced a \$200.0 million initiative to help school boards reduce greenhouse gas emissions in its existing facilities. The TCDSB is eligible to receive \$7,092,190.00 provided that it meets the following conditions:
 - a) Funds be utilized for projects initiated after April 12, 2017 and completed by March 31, 2018 (unspent funds cannot be carried over to the following year);
 - b) Projects estimates are submitted via VFA facility asset management software and EFIS by June 30, 2017;
 - c) Funds are utilized for projects undertaken in secondary schools, elementary schools and administrative buildings that are TCDSB owned and expected to remain open and operational for a minimum of five (5) years. It's important to note that School Renewal and School Condition Improvement grants are not permitted to be used for Renewal upgrades in administrative buildings;

d) Funds are spent on projects to reduce greenhouse gas emissions, by upgrading to energy efficient building components and other pre-defined enhancements to the building envelope.

7. Ministry guidelines for building components that can be upgraded and/or installed and be eligible for GGR funding are shown in table below:

Category	Eligible Components
Lighting	High Efficiency Lighting Systems (e.g. LED)
	Controls and Sensors
HVAC & Controls	High Efficiency Boilers & Furnaces
	High Efficiency Boiler Burners
	Heat Recovery/Enthalpy Wheels for Ventilation
	Economizers
	High Efficiency HVAC Systems
	High Efficiency Rooftop and MUA units
	High Efficiency Domestic Hot Water
	High Efficiency Motors
	Variable Frequency Drives
	Demand Ventilation
	Controls and Entrance Heaters
	Building Automation Systems – New or Upgrades
	Real-time Energy Monitoring
	Voltage Harmonizer
	Ground Source Heat Pump (Geothermal)
	Air Source Heat Pump
	Solar Air & Water
	Energy Efficient Ventilation
Building Envelope	Energy Efficient Windows/Doors/Skylights (e.g. lower thermal conductivity fenestration)
	Increased Wall & Roof Insulation (with increased air tightness)
	New Roof (with high insulation factors)
Various	Solar Photovoltaic
	Commissioning/Retro-commissioning (as part of a capital project)
	Electric Vehicle Charging Stations
	Other technologies (only if approved by the Ministry of Education in advance)

Note: Table referenced from Ministry of Education 2017: SB08 memorandum

8. As per the conditions and guidelines stipulated by the Ministry of Education, Facilities staff analysed the energy data for the TCDSB-owned schools and

administrative facilities and shortlisted **buildings that have the highest energy consumption.**

9. Refer to Appendix A for projects that were chosen to be funded through GGRF. A select number of lighting upgrade and power harmonizer installation projects were previously approved in the 2016-2018 Revised Renewal Plan funded through the School Condition Improvement Grant. It is recommended that these projects be transferred from SCI to GGRF since it meets the requirements specified by the Ministry. Total project budget recommended for transfer from SCI to GGRF is \$1,842,971.40.
10. On December 05, 2016, Associate Directors' Council approved a revised project budget of \$493,854.87 to complete the mechanical and building automation system upgrades at the Catholic Education Center. The project cost is shared between the Board Administrative grant (82%) and the School Renewal grant (18%). It is recommended that the cost for this project be transferred from the Board Administrative and the School Renewal grants to the GGRF to alleviate pressures especially on the Board Administrative grant to fund other priorities.

D. EVIDENCE/RESEARCH/ANALYSIS

1. Projects were selected based on two main criteria:
 - e) Energy consumption
 - f) Age of equipment
2. Energy data compiled from utility bills was analysed and projects were assigned to buildings that were on the top tier as highest energy consumers. Typically, targeting projects in buildings that consume the highest energy will result in the quickest payback period on capital spending.
3. Project scopes were selected based on information provided in TCPS/VFA Facility (through the Ministry of Education's School Condition Assessment program).
4. In reviewing energy data obtained from previous similar projects, the following has been observed:
 - a) Lighting and mechanical upgrades to buildings has yielded between 5% to 15% reduction in energy consumption.
 - b) Power harmonizers have shown a reduction of 8% in energy consumption.

- c) Photovoltaic solar projects have shown a 20% decrease in energy by offsetting hydro costs.
5. For the Catholic Education Center, the proposed projects are estimated to reduce energy consumption by 23% which would amount to \$140,628.00 per year savings at the current utility rates, which will be channelled back to the School Operations and Maintenance budgets.
6. The proposed projects are eligible for rebates through the “Save on Energy” program offered by Toronto Hydro and Independent Electricity System Operator (IESO).

E. VISION

VISION	PRINCIPLES	GOALS
To provide stewardship of Board resources and ensure fiscal responsibility.	Align investment in the Board’s capital assets to reduce energy consumption resulting in a better environment. Undertake critical building upgrades identified through the school inspections and the Ministry’s Asset Management Database.	To maintain the value of the Board’s capital assets and provide a safe and healthy learning environment for students and staff.

F. METRICS AND ACCOUNTABILITY

1. The goal is to complete the projects listed in Appendix A by March 31, 2018.
2. The proposed work listed in Appendix A must follow the Board’s Purchasing Policy, under the 2011 Broader Public Sector (BPS) Procurement Directive, in terms of acquiring goods and services, including receiving competitive bids for engineering and design services as well as construction contracts. The Procurement process is to be open, transparent and competitive.
3. Work is issued to pre-qualified vendors in an open and competitive bidding environment, as detailed in the Board’s Purchasing Policy. Regular reports providing budget and status updates are provided to the Director and Associate Directors.
4. The Ministry’s facility database will be updated upon completion of projects to align with the Board’s financial accountability submissions as overseen by the Board’s Finance department.
5. Consultant and contractor evaluation forms will be completed by staff at the end of each project and reviewed by Purchasing/Materials Evaluation and

Approval Committee (PMEAC) to determine future eligibility on the Board's list of approved vendors. Principals will also have the opportunity to complete the evaluation forms as well.

6. The energy consumption data for every TCDSB facility is provided annually to the Ministry of Energy, as required by the Green Energy Act of Ontario, Reg. 397/1 2009. The Ministry of Energy uses this information to provide school boards with the Greenhouse Gas Emissions (GGE) data for each building. This information is updated annually on the Board's web site, under the Environment/Energy Management link and will assist staff to analyse the rate-of-return benefits of various energy-saving initiatives.
7. Staff will apply for incentive grants for any eligible projects and the funding received from these grants will be used for other school renewal work.

G. IMPLEMENTATION, STRATEGIC COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT PLAN

1. Upon approval of the recommended GGR funded projects as detailed in Appendix A, the project scopes and budgets will be entered into VFA facility asset management software and EFIS before June 3, 2017.
2. The GGRF project list will be sent to Principals, Superintendents and other relevant staff to inform them of the work to be undertaken.
3. Projects will be assigned to Renewal staff and thereafter Request for Quotation (RFQ) for engineering services will be issued to pre-qualified vendors, as per the Board's Purchasing Policy. The consultant, along with a Renewal project supervisor will meet with each school principal and/or building administrator to review the scope and timelines for the project.
4. School community consultation will occur for applicable projects. Project status will be available through the Board's Web site.
5. The recent GGR funding is for existing buildings – staff continue to pursue similar funding opportunities for new construction, with the Ministry of the Environment and Climate Change, as well as the Ministry of Education.

H. STAFF RECOMMENDATION

That the Renewal projects as listed in Appendix A be approved for a total estimated budget of \$7,092,190.00, funded through the Greenhouse Gas Reduction Fund.