



## REPORT TO

# CORPORATE SERVICES, STRATEGIC PLANNING AND PROPERTY COMMITTEE

## GREENHOUSE GAS REDUCTION FUND – ENERGY RETROFIT PROJECTS 2018-2019 (ALL WARDS)

*“I can do all things through Him who strengthens me.”  
Philippians 4:13 (NRSVCE)*

Created, Draft	First Tabling	Review
May 29, 2018	June 6, 2018	
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### 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.*



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Executive Superintendent  
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## **A. EXECUTIVE SUMMARY**

***This report recommends the approval of Renewal projects for a total estimated budget of \$3,833,680.00 as detailed in Appendix A, columns 5 and 6 funded through the Greenhouse Gas Reduction Fund.***

In April 2018, the Ministry of Education announced that the Greenhouse Gas Reduction Fund (GGRF) program would continue for the 2018-2019 school year with an additional \$100 million available to all school boards. The fund can be utilized for prescriptive Renewal projects for existing buildings that are initiated after April 2018 and that must be completed by March 2019. The investment share allocated for the Toronto Catholic District School Board (TCDSB) totals \$3,833,680.00.

**The cumulative staff time dedicated to developing this report was 20 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 and required project selection criteria.
2. It is of benefit to the Board to maintain and repair its buildings, to ensure 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. As the cost impacts of carbon pricing and hydro rate increases continue to place pressure on the Operations and Maintenance budget, staff are proposing to ease the burden by undertaking projects meeting Ministry of Education project selection criteria, 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 thereby decreasing power loss through heat while increasing the life of building components such as lighting, pumps and variable frequency drives (VFD's).
  - Installing energy efficient LED lighting technology.
  - Installing building automation systems.
4. On April 12, 2017, arising from the Government of Ontario's Climate Change Action Plan introduced in 2016, the Ministry announced a \$200 million initiative to help school boards reduce greenhouse gas emissions in existing facilities. The TCDSB received \$7,092,190.00, which was fully expended by the March 31, 2018 deadline. An overview of GGRF-funded projects completed in 2017-18 is provided in Appendix A, column 4.
5. On April 27, 2018, the Ministry announced in Memorandum 2018:B11 that an additional \$100 million would be available to school boards under the Greenhouse Gas Reduction Fund for the 2018-2019 school year. TCDSB's portion under this program is \$3,833,680.00 to complete projects under the following conditions and project selection criteria:
- a) Funds be utilized for projects initiated after April 1, 2018 and completed by March 31, 2019 (unspent funds cannot be carried over to the following year);
  - b) Projects estimates are submitted via VFA facility asset management software and Education Finance Information System "EFIS" by June 29, 2018;
  - c) Funds are to be used to repair, replace or install building components that are proven in the reduction of greenhouse gas emissions.
  - d) Ministry guidelines for building components that can be upgraded and/or installed and be eligible for Greenhouse Gas Reduction funding are shown in the table below:

<b>Category</b>	<b>Eligible Components</b>
Lighting	High Efficiency Lighting Systems (e.g. LED)
	Controls and Sensors
HVAC & Controls	Air Source Heat Pump
	Building Automation Systems – New or Upgrades
	Controls for Entrance Heaters
	De-Stratification Fans

	Demand Ventilation
	Economizers
	Energy Efficient Ventilation Units
	Ground Source Heat Pump (Geothermal)
	Heat Recovery/Enthalpy Wheels for Ventilation
	High Efficiency Boilers & Furnaces
	High Efficiency Boiler Burners
	High Efficiency Chillers
	High Efficiency HVAC Systems
	High Efficiency Rooftop and MUA units
	High Efficiency Domestic Hot Water
	High Efficiency Motors
	Real-time Energy Monitoring
	Solar Air and Water
	Variable Frequency Drives
	Voltage Harmonizer
Building Envelope	Energy Efficient Windows/Doors/Skylights (e.g. lower thermal conductivity fenestration)
	Increased Wall & Roof Insulation (with increased air tightness) Note: for 2018-19 roof repair/replacement is no longer an eligible expenditure under this program
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 2018: B11 memorandum*

6. As per the conditions and guidelines stipulated by the Ministry of Education, Facilities staff analysed the energy data for TCDSB-owned schools, administrative facilities and shortlisted **buildings that have the highest energy consumption**. It's important to note that our top 55 energy intensive buildings consume 80% of the Board's annual energy requirements, with the Catholic Education Centre being the top consumer at approximately 3%.
7. Greenhouse Gas Reduction funding can be used for projects to improve the energy efficiency of administration buildings, which are not eligible under regular School Renewal or SCI funding. The GGR-funded projects at the CEC for example, are estimated to reduce energy consumption by 23%, which amounts to approximately \$140,628.00 per year in savings at the current

utility rates. Furthermore, it has provided the opportunity to replace 40 year old HVAC equipment in administration buildings with new high efficiency equipment. The energy dollars saved can be put back into the School Operations and Maintenance budgets to offset increased utilities costing.

8. Refer to Appendix A, column 5 and 6 for projects that were selected, meeting Ministry of Education criteria, to be funded through the GGR envelope. Column 5 represents costs that were carried forward from the 2017-2018 GGR projects and column 6 represents the implementation portion of 2017-2018 projects or new proposed projects.

## **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.

## **E. METRICS AND ACCOUNTABILITY**

1. The goal is to complete the projects listed in Appendix A by March 31, 2019.
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. 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.
4. 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.
5. Where eligible, staff will apply for rebates through the "Save on Energy" program offered by Toronto Hydro and Independent Electricity System Operator (IESO).

## **F. IMPLEMENTATION, STRATEGIC COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT PLAN**

1. The approved GGRF project information will be sent to Principals, Superintendents and other relevant staff to inform them of the work to be undertaken.
2. 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.
3. School communities will be informed about projects as per the Good Neighbour Policy.
4. The recent Greenhouse Gas Reduction 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.

## **G. STAFF RECOMMENDATION**

That the Renewal projects as listed in Appendix A, columns 5 and 6, be approved for a total estimated budget of \$3,833,680.00 funded through the Greenhouse Gas Reduction Fund.