

Staff Report 2022-0136

Meeting Date: April 19, 2022

Subject: 2022 Energy Revolving Fund Projects

Submitted By: Katelyn Tozer, Manager, Energy and Environment, Corporate Strategy and Innovation

RECOMMENDATION

That a new 2022 capital project be established in the amount of \$53,845, funded from the Corporate Energy reserve, for projects outlined in Table 1 of Staff Report 2022-0136; and

That the funding for Capital Project 21-127 Energy Revolving Fund 2021 project be increased by \$50,238 funded from the Corporate Energy Reserve to enable a more comprehensive facility LED lighting retrofit at the Caledon East Community Complex.

REPORT HIGHLIGHTS

- In 2015, Council approved the establishment of a Corporate Energy Revolving Fund (CER Fund) to support projects, selected by the Corporate Energy Team, that reduce the Town's energy usage and associated greenhouse gas emissions.
- The CER Fund is self-sustaining, where funds used to pay for energy retrofit projects and initiatives at Town facilities are repaid with the energy savings realized on applicable utility operating budgets.
- The Corporate Energy Team is recommending that \$53,845 from the CER Fund be used to install two drain water heat recovery systems at Mayfield Recreation Complex and Caledon Centre for Recreation and Wellness.
- The Corporate Energy Team is also recommending to increase 2021 CER Fund Capital Project 21-127 by \$50,238 in order to expand the LED lighting retrofit project at the Caledon East Community Complex.

DISCUSSION

Council approved the Town's Corporate Greenhouse Gas (GHG) Reduction Framework to align with the *Electricity Act* requirements of having a five-year energy conservation and demand management plan. The objective of the Framework is to reduce the Town's corporate GHG emissions by 24% below 2017 levels by 2024. To achieve the Town's energy conservation targets, staff established the CER Fund in 2015.

The Corporate Energy Team recommends to Council projects that reduce facility energy use and have a 10 year or less payback. Once approved, funds are released from the CER Fund to implement the energy projects by the end of the calendar year. When the

projects are completed, the resulting utility (electricity, natural gas, water) cost savings are diverted back to the fund.

2022 Proposed CER Fund Projects

Staff recommend that the following retrofit projects described in Table 1, be funded by the CER Fund. It is estimated that these projects will save 138,257 equivalent kilowatt-hours (ekWh) of energy, \$13,543 annual in utility costs, and result in 24.92 tonnes of avoided carbon dioxide equivalent (CO₂e).

Table 1: 2022 Recommended Energy Revolving Fund Projects and CER Fund Repayment

Site & Project	Recommended 2022 Fund Disbursement with non-recoverable HST	Energy Savings (ekWh)	Water Savings (m ³)	GHG Emissions Savings (tCO ₂ e)	Annual Energy Cost Savings & CER Fund Repayments	Simple Payback (years)	Estimated Incentive
MRC DWHR	\$30,984	*70,292	2,100	12.67	\$7,534	4.11	\$661
CCRW DWHR	\$22,861	*67,965	1,575	12.25	\$6,009	3.80	\$639
Total:	\$53,845	138,257	3,675	24.92	\$13,543	3.98	\$1,300

*Savings converted into equivalent kWh is as follows: 1m³ natural gas = 10.6278ekWh

(1) Mayfield Recreation Complex: Drain Water Heat Recovery

This project involves the installation of a device that captures heat from outgoing pool water that is drained daily, to preheat the incoming replacement water. The current system uses cold tap water to replace the drained water which reduces pool water temperature. This results in the boiler working more to increase the temperature of the pool to the desired setpoint. The proposed system will preheat the incoming makeup water without the use of electricity or natural gas and limit the need for the pool boiler to heat up the water. In addition, this pool does not have an automated system to control the amount of water that is drained daily. The drain water heat recovery system will automate water drainage resulting in water savings.

This project is estimated to save 6,614 cubic meters (m³) of natural gas, 2,100 m³ of water and \$7,534 in operating costs annually, as described in Table 1. The savings estimates were provided in 2021 through an assessment study and reviewed by an engineering consultant currently completing a pool boiler design for the Mayfield pool. In order to further verify the results once the unit has been installed, this project will also include a measurement and verification study completed by a 3rd party engineering firm.

(2) Caledon Centre for Recreation and Wellness: Drain Water Heat Recovery

This project, similar to the Mayfield Recreation Complex's Drain Water Heat Recovery project, also includes the installation of an automated heat recovery system that will harness heat from the pool's drain water and pre-heat the incoming make-up water. This installation is expected to also save water that would otherwise be drained due to less accurate manual draining methods currently applied.

This project is estimated to save 6,395 m³ of natural gas, 1,575 m³ of water and \$6,009 in operating costs annually, as described in Table 1.

2021 Caledon East Community Complex CER Fund Scope Enhancement

The approved 2021 CER Fund project for retrofitting 208 less efficient lights above both ice pads with high efficiency LEDs was not completed within the year due to Peel Region vaccination clinic using the arena space. In discussion with the facility team, an opportunity was identified to enhance the scope of the project to replace an additional 203 inefficient fixtures with LEDs in the changeroom, stairwells, storage and mechanical rooms and safety lights. Staff are proposing to increase the 2021 capital budget by \$50,238 to expand the LED conversion, resulting in 100% of the facility lighting being converted to LED. The benefits of LEDs include improved lighting levels, occupancy comfort, reduces energy consumption, and result in operating and maintenance cost savings (LED lighting lasts longer than fluorescent lighting).

The additional 203 LEDs for this project will result in an estimated annual electricity savings of 68,012 kWh and \$9,522 in operating cost as outlined in Table 2. Coupled with the original 208 LEDs approved in 2021, the total estimated annual electricity savings is 172,043 kWh and \$24,086 in operating costs with a simple payback of 5.5 years as outlined in Table 2.

Table 2: Caledon East Community Complex 2021 and 2022 Additional LED Retrofit Project

Site & Project	Recommended total Fund Disbursement with non-recoverable HST	Total Energy Savings (kWh)	Total GHG Emissions Savings (tCO₂e)	Total Annual Energy Cost Savings & CER Fund Repayments	Total Simple Payback (years)	Total Estimated Incentive
Original Retrofit	\$82,328	104,031	3.12	\$14,564	5.65	\$9,540
Expanded Scope	\$50,238	68,012	2.04	\$9,522	5.28	\$5,236
Total	\$132,566	172,043	5.16	\$24,086	5.50	\$14,776

FINANCIAL IMPLICATIONS

Funded by the CER Fund, # 08-00-900-35012-000-25000, Staff recommend:

- That a new 2022 capital project, in the amount of \$53,845 be established for the drain water heat recovery projects at Mayfield Recreation Complex and Caledon Centre for Recreation and Wellness;
- That Capital project 21-127 be increased by \$50,238 to support an enhanced scope for a lighting retrofit project at the Caledon East Community Complex.

Subject to Council approval of this report, it is anticipated that all CER Fund projects outlined in Table 3 will be completed in 2022. The projected annual energy savings will be reduced from the utility budget line for each respective facility and will be shown as a contribution to the Corporate Energy Reserve in 2023 as outlined in Table 3 below.

Due to the delay in the 2021 CECC lighting retrofit project, cost savings will not be reallocated from the electric utility line back to the CER Fund. Alternatively, this repayment will be deferred until 2023 upon project completion.

Table 3: Energy Reserve Repayment Terms

Site & Project	GL Accounts of Projected Utility Savings	Recommended 2022 Fund Disbursement	Annual Energy Cost Savings & CER Fund Repayments	Fund Repayment Terms in years (Simple Payback)
MRC DWHR (Natural Gas)	01-08-465-73020-460-62215	\$30,984	\$1,654	4.11
MRC DWHR (Water)	01-08-465-73020-460-62217		\$5,880	
CCRW DWHR (Natural Gas)	01-08-465-73020-420-62215	\$22,861	\$1,599	3.8
CCRW DWHR (Water)	01-08-465-73020-420-62217		\$4,410	
CECC Arena Revised Business Case* (electricity)	01-08-465-73020-430-62216	\$132,556	\$24,086	5.50
Total:	N/A	\$186,401	\$37,629	4.95

* The revised business case accounts for both the 2021 and 2022 CER Fund disbursements

After the capital cost of the projects are repaid in full to the reserve, 75% of the projected utility savings will be used to reduce the Town’s future operating budget as a budget efficiency. The remaining 25% will continue as a contribution to the Corporate Energy Reserve to grow the fund to ensure sustainability.

Staff Report 2022-0136

The current uncommitted balance in the Corporate Energy Reserve is \$191,853.52. With the 2022 disbursement from the CER Fund, the new balance will be \$87,770.52.

COUNCIL WORK PLAN

Connected Community – Develop a five-year Corporate Greenhouse Gas Reduction Framework including energy consumption in facilities, corporate fleet and fuel use, water conservation strategies in facilities and parks and waste diversion strategies.

ATTACHMENTS

None.