



CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Corporate Assets and Strategic Planning Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	June 13, 2016
SUBJECT/REPORT NO:	Energy Efficient LED Lighting Upgrades – Lodges (PW16056) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Debbie Achatz Senior Project Manager, Office of Energy Initiatives 905-546-2424 Extension 6240 Frank Gazzola Superintendent, Office of Energy Initiatives 905-546-2424 Extension 7518 Tom Chessman Manager, Office of Energy Initiatives 905-546-2424 Extension 2494
SUBMITTED BY:	Geoff Lupton Director, Energy, Fleet & Facilities Public Works
SIGNATURE:	

RECOMMENDATION

- (a) That the City of Hamilton proceeds with the implementation of the Energy Efficient LED Lighting improvements outlined in this report, at an estimated capital cost of \$562,000;
- (b) That the estimated project costs of \$562,000 be funded from the Enterprise Fund Reserve (112243);
- (c) That the energy savings from these projects be used to repay the funds borrowed from the Enterprise Fund Reserve, over a term of 10 years at the effective interest rate at the time of borrowing.

EXECUTIVE SUMMARY

In October 2014, the Ministry of Health and Long Term Care (MOHLTC) conducted an inspection of Macassa Lodge and found deficiencies in lodge lighting levels. Remedial action was mandated to be completed by December 2016 through a control order. This has resulted in a long-term care facility project representing a significant lighting upgrade composed of both a compliance lighting component (Phase 1) as ordered by the MOHLTC, and an energy saving lighting retrofit opportunity (Phase 2). The lighting

remediation work is required to ensure that resident spaces meet with minimum light levels as defined in Ontario Regulations 79/10. The project presents the opportunity to comply with these requirements, while also reducing energy use through an efficiency upgrade of all lodge lighting. As a proactive measure, a similar lighting upgrade project is planned for Wentworth Lodge. The lodges have received funding, in the amount of \$720,000, to meet the legislative requirements for Phase 1 lighting at both lodges as per council report (CES15042) (Ward 6) Nurse Call System and Lighting Levels – Macassa Lodge.

The purpose of this report is to request Council's approval to borrow \$562,000 in capital funds from the Enterprise Fund Reserve (112243) to implement the Phase 2 energy efficient LED lighting upgrades. This is complementary to the Phase 1 lighting compliance upgrades. Implementing Phase 2 provides for incremental energy savings and cost reductions and further greenhouse gas (GHG) emission reductions. The combined annual savings for Phase 1 and Phase 2 of this project are estimated at \$102,717 (see Appendix A). The incremental energy savings from Phase 2 would be used to repay the \$562,000 borrowed from the Enterprise Fund Reserve (112243) according to the schedule found in Appendix B.

Implementation of both Phase 1 and 2 at the same time provides less disruption to residents, better overall project management and cost reduction from a single procurement process.

The projects are eligible for incentive funding through the Horizon Utilities SaveOnEnergy program. Incentives will be directed to the Energy Conservation Initiative Reserve (112272) as per the City's Corporate Energy Policy.

LED lamp technology has progressed significantly over the last few years with proven energy savings, excellent lighting quality, and longer lamp life reducing maintenance costs. The use of motion controls in selected areas allows for further energy savings and is another proven technology.

All of these projects are in line with the goals and objectives of the City of Hamilton's Corporate Energy Policy and Vision 2020 in terms of contributing to achieving the City's goals of 60% energy intensity and 80% GHG emission reductions by 2050. As per the Corporate Energy Policy, all incentives will be deposited in the Energy Conservation Initiative Reserve.

Alternatives for Consideration – See page 5

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial:

The energy efficient improvements will be financed from the Enterprise Fund Reserve (112243). Energy savings from Phase 2 would be used to pay back the borrowed capital over 10 years plus interest. Appendix B outlines the recommended repayment schedule.

SaveOnEnergy Incentives for Phase 1 and Phase 2 are estimated at \$58,402. These funds would be directed to the Energy Conservation Initiative Reserve (112272) as per the City's Corporate Energy Policy. See Appendix A for the lodge breakdown.

Staffing:

There are no staffing revisions required to implement the listed projects.

Legal:

There are no legal implications as a result of the recommendations in the report being approved.

HISTORICAL BACKGROUND

In October 2014, the Ministry of Health and Long Term Care (MOHLTC) conducted an inspection of Macassa Lodge and found deficiencies in lodge lighting levels. Remedial action was mandated to be completed by December 2016 through a control order requiring resident spaces to meet minimum light levels as defined in Ontario Regulations 79/10.

As a result of the MOHLTC inspection, a consultant was retained by the City to conduct a detailed lighting audit to confirm the lighting deficiencies identified in the inspection as well as identifying other deficient areas not specifically cited in the inspection.

The City's other long-term care facility, Wentworth Lodge, was also included in the detailed lighting audit. Wentworth Lodge was not part of the MOHLTC inspection, but it was deemed prudent to include it in this scope of work in order to identify and proactively correct potential lighting deficiencies.

This project presents the opportunity to comply with MOHLTC requirements while also reducing energy consumption through a lodges wide lighting improvement with energy efficient LED's and lighting controls.

The lighting retrofit recommendations in the detailed lighting audit were based on a careful evaluation of the existing lighting system. Every lighting fixture was assessed for compliance and energy savings potential. All new interior lighting will utilize high colour rendering and flicker free light sources within a specified lighting colour. LED technologies have been recommended for most applications as they offer the greatest energy savings potential. LED fixtures are rated for very long service life and require only occasional cleaning over their life cycle. The proposed new lighting system also includes a number of motion sensing controls to further increase energy savings by switching off light fixtures when areas are vacant for a set amount of time. The potential energy reduction from this program with the application of all the lighting upgrades and sensors is estimated at over 50% from current levels.

Specific project components have been organized into two phases: Phase 1 (compliance work) as identified in the Ministry's Order and in deficient areas as measured in the detailed lighting audit; and Phase 2 (energy efficiency) for additional energy savings through a complementary energy efficiency LED lighting upgrade. Total

combined project costs are estimated at \$1,278,754 for labour and material to complete all work at both sites. This combined project would result in annual energy cost savings estimated at \$102,717. The savings estimate does not include any escalation in electricity rates. Appendix A provides a summary of:

- Table 1 - Project Performance by Site and Phase Detail (1&2);
- Table 2 - Project Performance - Sites Combined.

There is a project cost benefit in having work for Phase 1 and Phase 2 conducted at the same time. The combined project will help to mitigate rising electricity costs, by reducing electricity consumption resulting in lower GHG emissions, as well as lessening future maintenance requirements due to the long life of LED lighting. An important benefit to also consider is the improvement of light levels and lighting quality which create a safe and comfortable environment for the senior residents for which the lodge is a home. The aesthetics of a consistent look with similar lighting characteristics is also very important in creating a residential atmosphere.

The Lodges have received funding in the amount of \$720,000 to meet the compliance requirements for lighting at both lodges as per council report (CES15042) (Ward 6) Nurse Call System and Lighting Levels – Macassa Lodge.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

Corporate Energy Policy.

Ministry of Long Term Health Ontario Regulation 79/10.

RELEVANT CONSULTATION

The Divisions impacted by these projects have been consulted, including front line staff where appropriate. These include:

- Corporate Finance – Financial Planning and Policy; Finance, Administration and Revenue Generation;
- Macassa and Wentworth Lodge Staff – Senior Administration, Administration and Building Services.

ANALYSIS AND RATIONAL FOR RECOMMENDATION

Funding is required to install energy efficient LED lighting systems and controls which will reduce energy consumption and GHG emissions. Combining the previously approved Phase 1 compliance part of the project with the incremental energy efficiency project (Phase 2) leads to better cost control and less resident disruption. A single tender process and project implementation should also deliver economies of scale. This report calls for \$562,000 in capital to be drawn from the Enterprise Fund Reserve (112243) that will be paid back from savings as identified in Appendix A and B.

ALTERNATIVES FOR CONSIDERATION

It is mandatory for Macassa Lodge to conduct the lighting compliance upgrades (Phase 1) by December 31, 2016 as per the Ministry of Long Term Health Control Order issued on October 22, 2014.

If funding is not received for the energy efficiency upgrades (Phase 2) to coordinate with the compliance upgrades, the lodges will not benefit from additional energy savings.

The lodges are a home to the residents, combining the two phases would minimize disruption and improve the overall lighting quality of the Lodges.

By combining the two projects, the City avoids the expense of having to go back at a later date for energy efficiency upgrades.

ALIGNMENT TO THE 2012 – 2015 STRATEGIC PLAN

Strategic Priority #1

A Prosperous & Healthy Community

WE enhance our image, economy and well-being by demonstrating that Hamilton is a great place to live, work, play and learn.

Strategic Objective

- 1.2 Continue to prioritize capital infrastructure projects to support managed growth and optimize community benefit.
- 1.6 Enhance Overall Sustainability (financial, economic, social and environmental).

Strategic Priority #2

Valued & Sustainable Services

WE deliver high quality services that meet citizen needs and expectations, in a cost effective and responsible manner.

Strategic Objective

- 2.1 Implement processes to improve services, leverage technology and validate cost effectiveness and efficiencies across the Corporation.
- 2.3 Enhance customer service satisfaction.

APPENDICES AND SCHEDULES ATTACHED

Appendix A:

- Table 1 - Project Performance by Site and Phase Detail (1&2).
- Table 2 - Project Performance - Sites Combined.

Appendix B: Lodges Lighting Upgrade Repayment Schedule