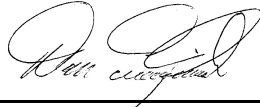



**Halifax Regional Council  
January 26, 2010**

**TO:** Mayor Kelly and Members of Halifax Regional Council

**SUBMITTED BY:**



Dan English, Chief Administrative Officer



Wayne Anstey, Deputy Chief Administrative Officer - Operations

Officer

**DATE:** January 8, 2010

**SUBJECT:** LED Street Light Replacement Project

**ORIGIN**

The Halifax Regional Municipality is committed to maintaining clean air, land, water and energy use within the region. Through the Federation of Municipalities 20% club, HRM is committed to reducing greenhouse gases (GHGs) by 20% by 2012. The HRM Regional Plan provides for an Emissions Reduction Functional Plan which identifies programs and methods to reduce the level of GHGs. The GHG Local Action Plan identifies LED street lights as a potential measure for consideration.

A recently completed UNSM study on energy efficient technologies titled "Energy Efficient Street Lighting Strategies for Nova Scotia Municipalities" has recommended considering LED street lights as replacement fixtures, particularly if suppliers are willing to mitigate risks associated with developing technologies by offering extended warranties.

**RECOMMENDATION**

It is recommended that Halifax Regional Council:

1. Approve a capital expenditure of \$1,740,000 from capital account CRU00792 with a net cost to HRM of \$670,000, in order to fund an LED street light replacement project for the installation of approximately 2000 existing HRM owned high pressure sodium light fixtures within the 2010 calendar year;

Recommendations Continued

2. Increase the budget in capital account CRU00792 by \$1,070,000 to account for external cost sharing associated with this project as outlined in the budget implications section of this report;
3. Approve the withdrawal of \$156,000 from the Service Improvement Reserve Q310 to capital account CRU00792 which is to be paid back through a transfer of \$156,000 from operating account R825 in fiscal year 2010/11;
4. Preapprove a budget allotment of \$200,000 from the 2010/11 capital budget for capital project CRU00792.
5. Approve the staff application on January 31, 2010 to the Provincial Eco Trust Program for funding of \$870,000.

## **BACKGROUND**

The Halifax Regional Municipality has been active in developing a street light guideline that reflects:

- consistent application of recommended lighting design standards;
- recognition of impacts resulting from obtrusive lighting;
- improvement of urban design through uniform lighting installations;
- reduction of energy consumption through utilization of energy efficient technologies.

Through participation in a UNSM coordinated study focussing on lighting standards best practice and energy efficient lighting technologies, HRM has had exposure to available technology options that could assist with energy reduction goals and light pollution concerns. The Municipality is participating in two (2) energy efficient street light pilot projects, including:

- installation of 285 LED street lights;
- installation of 10 street light fixtures capable of energy/light level adjustment.

Both projects have provided first hand exposure to potential alternatives to the existing high pressure sodium street lights. Because the LED option is recent to market, operating history is limited, and replacement costs are relatively high, making it difficult to economically justify wholesale replacement. By utilizing available funding sources, and shifting reliability risk to the fixture manufacturer, through extended warranty provisions, HRM could reasonably consider a street light replacement project.

## **DISCUSSION**

HRM is in the process of evaluating LED street lights that have been installed in the municipality as part of a pilot project that includes more than 1100 light fixtures installed across the province. While the exposure to this technology is limited, initial reaction is positive. Light levels have been maintained with a reduction to energy consumption exceeding 50%. In addition, the full cut-off design provides significant reductions to light pollution. This technology is attractive to HRM for economic, environmental, and aesthetic reasons. Concerns about moving to such a technology relate, in large part, to light quality, capital investment, long life projections, and reduced maintenance expectations. As with all new technologies, it is difficult to evaluate performance expectations with limited quantities and in-service experience.

The Province has established, through ecoNova Scotia, a municipal program which supports “municipal, or community-based projects to reduce greenhouse gas (GHG) and air pollutant emissions.”

The Federal Government provided \$7.5 million to encourage municipalities to invest in energy efficient projects. This funding was established in 2007, and is scheduled to wind up March 31, 2010. Municipalities are required to commit to at least 20% of the total cost of defined projects. The ecoNova Scotia fund is able to contribute up to 50% of the total cost of approved projects.

Because HRM has been exposed to LED street lighting technology over the past three months, and is encouraged by the robustness of the fixtures, the light quality and distribution, the favourable feedback, and energy savings, an investment in LED street lights is being considered. The last opportunity to apply for funding through the ecoNova Scotia program is January 31, 2010. As a result, a project to replace all HRM owned 150 watt street lights (2008 fixtures) is being proposed for consideration. This project would have a capital cost of about \$1,740,000. If it qualifies, it could potentially receive \$870,000 from the provincial municipal program. In addition, NSPI consider, as a Demand Side Management Program, the project would be eligible for an additional approximate \$200,000. This would, therefore, require an investment of approximately \$670,000 from the Municipality. With this level of capital support, a simple payback of approximately 5.4 years can be realized, with annual energy and operating savings of \$125,000.

As a technology, LEDs are considered mature. However, as applied to street lights, the application is very new. It is critical, therefore, for manufacturers to provide warranties which cover the payback period. By shifting the operational risk liability to the manufacturer, the Municipality is more easily able to invest in a street light that has not been fully evaluated. It also enables the Municipality to become more familiar with the lights, having exposure to a much larger sample than the pilot project presently underway. In addition, it provides the manufacturer with operating product, and valuable manufacturing experience.

**BUDGET IMPLICATIONS**

It is anticipated that ecoNova Scotia will contribute \$870,000 toward the project cost. NS Power, through its Commercial and Industrial Custom DSM program, has confirmed \$200,000 of assistance. The remaining \$670,000 will be provided as follows. The budget availability has been confirmed by Financial Services.

**Budget Summary:      Capital Account No. CRU00792 - Street Lighting**

Cumulative Unspent Budget	\$ 314,642
Add: External Cost Sharing	\$1,070,000
Add: Reserve Q310	\$ 156,000
Add: Budget Allotment (2010/11)	<u>\$ 200,000</u>
Balance	\$1,740,642

A requirement from ecoNova Scotia to access its funding (\$870,000), is a formal application package consisting of documented Council approval of the project. If subsequent to Councils endorsement of the initiative funding is not approved through ecoNova Scotia, staff will inform Council and assess the viability of the project at that time.

**FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN**

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation. If approved, there will be an increase to the gross capital budget but not the net and an increase to reserve withdrawals.

**ALTERNATIVES**

1. Because the pilot project has provided limited exposure to LED street lights, it could be argued that it is premature to invest about \$700,000 in a developing technology. However, the opportunity to access provincial funding to support this environmentally friendly project would be lost. The simple payback for this project without government support is almost 14 years.
2. HRM is participating in a second street light pilot project, which involves modifying existing street lights with monitoring and dimming capability. This pilot project is more limited in scope, but has provided exposure to this adaptive technology. Because it is a completely new concept, it is difficult to commit to it within the short time frame attached to funding options. In addition, these two technologies are not mutually exclusive.

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**ATTACHMENTS**

**1. HPS/LED Light Illustration**

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/agenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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## LED Roadway Lighting Limited demonstrates the world most advanced LED street light in Halifax, Canada and delivers 60 percent energy savings

### **Project Description:**

The Halifax Regional Municipality (HRM) has undertaken a pilot installation of 285 street light with LED Roadway Lighting Ltd's Satellite Series™ LED street light. LED Roadway Lighting conducted street lighting layouts and fixture selection for the city to ensure the new LED lights continued to maintain the city's street lighting guidelines for public safety (Illuminating Engineering Society Recommended Practice—IES RP-8-00).



Satellite Series 96-280

High Pressure Sodium (150W)

### **Results**

- The Satellite Series™ LED street lights provide an average of **60 percent** energy savings.
- In the majority of installations the LED lights increased light levels on the roadways.
- IES RP-8 was maintained in all installations.

***Robie Street, Halifax, Nova Scotia, Canada (side by side comparison)***



LED - 88 Watts (**57% Savings**)

1.0 foot candle average



HPS - 196 Watts (150W Bulb)

0.8 foot candle average

Toll Free Phone: (877) 533-5755, Email: [info@ledroadwaylighting.com](mailto:info@ledroadwaylighting.com)

**LED ROADWAY LIGHTING**