

Report FR-TAPS-31-15

To: Chair Barfoot and Members of the Transportation and Public Safety Committee

From: Kevin Wepler, Director of Finance

Meeting Date: September 17, 2015

Subject: **LAS/RealTerm Energy LED Street Light Proposal**

Status: Recommendation adopted by Committee as **amended** based on an updated report received from LAS per Resolution TAPS118-15; Endorsed by County Council October 6, 2015 per Resolution CC139-15;

Recommendation(s)

WHEREAS the Association of Municipalities of Ontario's Local Authority Services has partnered with RealTerm Energy and Cree Canada to offer a complete streetlight upgrade turn-key service;

NOW THEREFORE BE IT RESOLVED THAT Report FR-TAPS-31-15 regarding the LAS/RealTerm Energy LED Street Light Proposal be received;

AND THAT Council accept the procurement process undertaken by the Association of Municipalities of Ontario's Local Authority Services for the selection of a light emitting diode (LED) streetlight upgrade turn-key service, noting that RealTerm Energy and Cree Canada are the vendors selected by the Association of Municipalities of Ontario and Local Authority Services, and service and equipment pricing are being extended to member municipalities;

AND THAT staff be authorized to proceed with the purchase and installation of LED illumination lights through Local Authority Services and RealTerm Energy as detailed in the County of Grey's Investment Grade Audit dated September 8, 2015;

AND THAT the Warden and Clerk be authorized to enter into and execute the CCDC-14 Design-Build Stipulated Price Contract on behalf of the County of Grey to proceed with the LED upgrade;

AND THAT the estimated LED upgrade net project cost of \$237,908 be funded utilizing Federal Gas Tax reserve funds.

Background

Local Authority Services (LAS), a wholly subsidiary company of the Association of Municipalities of Ontario (AMO) offers a turn-key light emitting diode (LED) streetlight program to the municipal market.

After a request for proposals process in the fall of 2014, LAS selected Cree Canada to be its manufacturing partner in offering this streetlight solution to Ontario municipalities. LAS's competitive process identified both RealTerm Energy and Cree as offering the best value and the highest quality of services available, in order to offer its members an alternative to engaging in a lengthy request for proposal process.

Since the program's inception, more than 130 Ontario Municipalities have chosen the LAS/RealTerm Energy/Cree partnership to upgrade their streetlight networks.

While the County of Grey does not have a significant inventory of streetlights, the County does own and maintain a number of intersection illumination lights that could be converted to LED technology in order to reduce energy and maintenance costs. In March 2015, County staff completed a Street Lighting Questionnaire in order that LAS could assess the benefits for Grey County of this street light conversion project.

County of Grey – Investment Grade Audit – September 8, 2015

On September 10, 2015, RealTerm Energy provided an Investment Grade Audit to the County of Grey. This audit provided RealTerm Energy's findings on the lighting inventory, obtaining a GIS/GPS audit of 256 fixtures using up to date utility rates to calculate the current and projected electricity costs. The savings achieved following the LED upgrade will be significant and will benefit the entire County.

Based on the information contained in this audit in regards to the County's streetlight and lighting costs, LAS and RealTerm Energy have estimated that by upgrading the County's existing inventory of intersection illumination lights and other facility decorative lights to LED technology, the County would be able to reduce related energy consumption by 51% and reduce maintenance costs by 80%. The combination of LED luminaires will result in energy consumption savings of 100,920 kWh per year over the existing fixtures. The County should expect a payback period of 8.4 years with an IESO incentive of \$23,850*.

*Note: IESO incentive is an estimate at this point and may change due to program changes effective January 1, 2016.

The following tables have been provided to illustrate the savings as provided in the LED Investment Grade Audit (attached):

CURRENT STATUS	BEFORE UPGRADE	POST UPGRADE	VARIANCE	PERCENT
Number of Fixtures	256	256		
Annual Electricity Consumption (kWh)	202,803	101,883	100,920	50% ↓
Annual Electricity Costs	\$42,632	\$21,082	\$21,550	51% ↓
Annual Maintenance Cost (5 yr. avg.)	\$4,890	\$978	\$3,912	80% ↓
Total Street Lights Expenditures	\$47,521	\$22,060	\$25,461	54% ↓
Average Annual Cost per Fixture	\$186	\$86	\$99	54% ↓

ENERGY CONSUMPTION	Desktop Review	%	IGA Results	%
Current Annual Energy Consumption (kWh)	104,112		202,803	
Projected LED Annual Energy Consumption (kWh)	36,029		101,883	
Annual Savings (kWh)	68,083	65%	100,920	50%

Energy & Maintenance Total Savings

	Before	After	Savings
Energy	\$42,632	\$21,082	\$21,550
Maintenance	\$4,890	\$978	\$3,912
Total	\$47,521	\$22,060	\$25,461

This Investment Grade Audit has also provided the County of Grey with the following:

- GIS/GPS to map every illumination light in the County
- Clarify light ownership
- Obtain exact technical data from each light, used in photometric analysis
- Analysis of energy and maintenance costs to identify anomalies
- Conduct photometric analysis (lighting design) to determine optimum lighting solutions that maximize roadway and pedestrian safety, maximize savings and minimize project costs
- Generate the data sets required to perform detailed ongoing asset management

As well, RealTerm Energy has identified in the audit that the intersection lighting design suggested for the most part meets RP-8 lighting levels (RP-8 is a recommended, though not required, practice for roadway illumination).

Those portions of the County's lights that do not meet RP-8 could be for a number of reasons, including:

- Inadequate Pole Spacing (poles are spaced too far apart),
- Insufficient Mounting Height, or
- Missing Light Fixtures

RealTerm Energy concluded that to comply fully with RP-8 guidelines, the high costs of the required pole additions, replacements, rewiring and retrenching would render the project uneconomical.

RealTerm Energy's analysis concludes that in all instances where RP-8 cannot be achieved with a new LED fixture, photometric design has been utilized to select an LED luminaire in which the wattage and distribution pattern combine to meet or exceed the lighting levels of the currently installed fixtures.

In addition to the intersection illumination lighting, staff also provided illumination light inventories from other various County facilities to be included in the investment grade audit in order to provide additional energy and maintenance savings to the County.

Included in these inventories of other County facilities is the County's Administration and Provincial Offences Buildings portfolio. Before authorizing RealTerm Energy to upgrade these illumination lights, County staff will consult with The Ventin Group who is preparing construction drawings for the proposed addition and renovation of the County's Administration Building, for its professional opinion on whether this renovation and build will have an impact on these illumination lights.

LAS Purchasing Process

The County's Purchasing Procedures allows for Cooperative Purchasing as stated in Section 4.3 Other Processes:

- e) Cooperative Purchasing
 - i) Grey County supports membership in the Bruce-Grey Cooperative Purchasing Group and also supports any other cooperative initiatives that the Purchasing and Materials Manager deems beneficial to the County. The Purchasing and Materials Manager has the authority to participate with other units of government (such as Vendors of Record provided by the Ministry of Government Services or legislated cooperatives) in their initiatives for cooperative purchasing and bulk buying of goods. The policies of the public authorities calling the cooperative Bid solicitation are to be the accepted Procedure for that particular purchase unless additional terms specific to the County are negotiated with the successful bidder. Approval authority shall be in compliance with Schedule "A".

This LAS LED streetlight program will provide the County with a turn-key approach that will relieve County staff from preparing and reviewing RFP's for design, supply and installation of new fixtures. LAS will also act as the County's Applicant Representative to participate in the Independent Electricity System Operator's saveONenergy Retrofit Incentive Program. This incentive funding in the proposal estimates to provide \$23,850 in funding*. (See note on Page 2)

Advantages of LEDs

LED lamps do not contain a gas-filled bulb or filament but use charged electrons that jump through a semi-conductor chip and then emit photons (light) when they land on the other side. A single LED lamp may have many chips. This construction makes LEDs highly resilient and efficient. As a result, LEDs offer a number of advantages over High Pressure Sodium or Metal Halide lights including:

- Much lower power consumption ranging from 40-70% energy savings.
- Long, predictable lifetime. LED lights do not burn out. Instead, they lose brightness over time, while generally lasting many times longer than a conventional fluorescent or incandescent light – up to 100,000 hours. The much less frequent need to service or replace LEDs means low maintenance cost.
- Quick turn on and off. LEDs come on with full brightness instantly. Unlike mercury vapor, metal halide and sodium vapor lamps (commonly used in street lighting), LEDs do not have a problem restarting immediately (hot ignition) following a brief power failure or inadvertent turn off.
- Environmentally Positive. LEDs don't contain mercury or lead, and don't release poisonous gases if damaged.
- Less attractive to nocturnal insects. Nocturnal insects are attracted to ultraviolet, blue and green light emitted by conventional light sources.
- Higher light output even at low temperatures. While fluorescent lights are comparably energy efficient, on average they tend to have lesser light output at winter temperatures.
- Less wasted light. Light from LEDs is very directional and they do not require diffusers or reflectors that reduce lighting efficiency. As a result, light does not shine where it is not wanted, such as into street-side bedroom windows.
- Enhanced Safety via longer life and fact they will never leave an area in complete darkness as well as enhanced colour rendering which makes areas appear better lit with same or less actual foot candles than HPS or metal halide.

Installation Estimates

Based on RealTerm Energy's experience in other Ontario municipalities, the parameters used in the audit for installation cost and activities are as follows:

- Refusing – Each new LED fixture to include a new fuse

- Rewiring – 35% of inventory to require rewiring
- Disposal – Included at no additional cost
- Arm Replacement – 2% of fixtures
- Supervision – RealTerm Energy will supervise local contractors performing the installation
- Asset Management – RealTerm Energy will collect GPS information on the entire installation for the County’s asset management

Design and Installation Costs

Total Project Cost*	\$261,758
IESO Incentive	(\$23,850)
Net Project Cost	\$237,908
Payback Period (Years)	8.4

The proposal provides two financing options:

- 1) Design, Upgrade and Transfer (Self-financed)
- 2) Energy Performance Contract (RealTerm Energy Financing – Municipality and RealTerm Energy jointly share in the energy and maintenance savings for a period of ten years)

Staff is recommending that the net project cost be funded from the unbudgeted allocation of Federal Gas Tax funding to fund this project.

LAS/RealTerm Energy have assumed the saveONenergy Program will continue to be in effect as estimated in the proposal, and have used the current published rates, and that there will be no unexpected delays on the part of its partners which would prevent them from meeting the deadline for the County to receive this incentive.

LAS has communicated to County staff that they are unsure as to whether these incentives will continue at their current amounts in 2016 and therefore recommending to municipalities to try and move forward with these projects in 2015 in order to try and reduce the risk of receiving less incentive funding.

Financial / Staffing / Legal / Information Technology Considerations

The estimated net project cost for this LED illumination light retrofit is \$237,908. This project was not included in the 2015 budget and therefore staff is recommending that this project be funded from the Federal Gas Tax funding.

Based on the estimates in the audit annual illumination lighting costs will be reduced \$25,461 once these lights are converted to LED.

Link to Strategic Goals / Priorities

By retrofitting the County's illumination lighting this will support Goal 6.8 of the County's Corporate Strategic Plan by demonstrating leadership in responsible environmental management practices and energy use through all county departments.

Attachments

[Investment Grade Audit - Grey County - Sept-8-15](#)

Respectfully submitted by,

Kevin Weppler
Director of Finance