Public Works Department
Tuesday, December 14, 2021

Subject: Options for Implementing an LED Streetlight Conversion Program in the Town of Pelham

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-0206 for information;

AND THAT Council approve a capital project in the amount of $250,000 as part of the 2022 Capital Budget to fund the first phase of the LED Streetlight Conversion Project;

AND THAT Council approve the proposed capital project identified as RD13-22 (Reconstruction of Effingham Street from Hwy 20 to Tice Road) have the capital budget request reduced from $1,075,000 to $825,000 in order to fund the first phase of the LED Streetlight Conversion program;

AND THAT Council approve the award of the first phase of the LED Streetlight Conversion Program to RealTerm Energy to an upset amount of $250,000.

Background:

On November 29th staff presented the 2022 Capital Budget to Council.
At its Committee of the Whole meeting held on November 29th regarding the 2022 Capital Budget Council directed staff to investigate the opportunity to include an LED Streetlight conversion program as part of the 2022 Capital Budget without an increase in the capital spend.

Analysis:

The annual operating budget provides for the operation and ongoing maintenance of the Town's street lighting inventory.

Based on the most recent information the Town has a total of 1322 streetlights of which 1260 are a standard cobra head style and 62 are decorative. With all of

these light fixtures the fixture type uses High Pressure Sodium (HPS) luminaries.

Based on the initial assessment by staff and RealTerm Energy the current street lighting network uses on average 708,326 kWh of electricity. (See Appendix A – LED Streetlight Conversion Proposal, dated September 2nd, 2021). This equates to approximately $164,000 in annual hydro costs. In addition, the Town currently incurs annual maintenance costs in the amount of $60,000. The current streetlight network is not efficient and requires a significant amount of maintenance. The Town currently expends approximately $223,000 per year on the network with the average annual cost per fixture being $169. The proposed 2022 operating budget for the operation and maintenance of streetlights is $260,000.

Based on the proposal submitted by RealTerm Energy the annual electricity usage following the LED conversion is estimated at 184,132 kWh equating to an annual operating cost of $45,107. In addition, the annual maintenance costs will be approximately $11,975. The total estimated operating and maintenance cost for the street lighting network following the LED conversion is estimated at $60,000 with the average annual cost per fixture being $43 per fixture. This represents an annual operation and maintenance cost reduction of approximately $160,000 or 74%.

In addition to the financial benefits of the LED streetlight conversion there are also environmental benefits that will be realized following the completion of the conversion program. It is estimated that the annual savings in energy usage is approximately 524,194 kWh. This represents an annual Green House Gas (GHG) reduction of approximately 16 metric tonnes. Based on an estimated life of 100,000 hours for a luminaire this represents a reduction of approximately 372 metric tonnes over the lifetime of the network.

Council approved the Town's Climate Change Adaption Plan at its meeting of June 21st, 2021. One of the six strategic priorities defined in the Town of Pelham's Strategic Plan 2019-2022 includes a commitment to grow revenue by promoting cultural assets while protecting environmental assets. To accomplish this priority, actions listed in the plan indicate that the Town will "introduce best practices related to climate change and for the protection and preservation of environmental assets" as well as "educate and create community awareness in regards to [the] importance of environmental assets and climate change impacts". The Town is committed to mitigation practices to reduce GHG emissions through the Conservation and Demand management Plan. Under the plan the Town commits to: 1) Reductions in energy consumption and greenhouse gas emissions, and 2) Continuous improvement in energy-efficient equipment installations, both of which are addressed in converting to LED streetlights.

Based on the proposal submitted by RealTerm Energy the estimated cost to replace the entire streetlight network with new LED fixtures is $621,810 (plus HST). The conversion program includes the following:

- Refusing of each new LED fixture including a new fuse
- Fuse Holder Replacement of 25% of inventory
- Rewiring of 25% of inventory
- Disposal of existing fixtures
- Storage and inventory control of new LED fixtures
- High Voltage Luminaires (20% of luminaires estimated in HV areas)
- Arm Replacement (1% of the davit arms included)
- Secondary Connection Refresh (20% of overhead wires to require connection refresh)
- Payment and Performance labour and material payment bond in the amount of 50% of contract.

The project cost does not include the following (if required):

- Modification of fixture mounting.
- Relocation of fixture
- Replacement of the fixtures near high voltage situations located in the restricted zone (Note: the HV luminaires included above are outside of the utility restricted zone).

The first project task will include an Investment Grade Audit (IGA). The IGA will provide the Town with:

1) a complete analysis of the current streetlight infrastructure's performance and

2) a comparison of the status quo energy consumption with the post-conversion LED system, using highly accurate data from the custom photometric design.

The IGA will form the basis of a more detailed estimate to complete the LED conversion program. Once this task is complete the Town will be able to more accurately estimate the full cost of the LED streetlight conversion project. Until the IGA is completed and due to the uncertainty of scope until a detailed audit is completed staff is recommending a 20% contingency for the project. As a result, the total estimated project cost for budgeting purposes is $760,000 (including non-recoverable HST of 1.76% and a 20% project contingency).

The LED Streetlight conversion project is in the 20 year capital forecast in the amount of $1,200,000 over two consecutive years (2023 and 2024). Due to the uncertainty around scope and schedule of when the project would be completed a conservative estimate was made. Based on the proposal received from RealTerm

Energy staff now estimate that the like-for-like replacement of the existing lighting infrastructure can be replaced for an estimated cost of $760,000. It is staff's recommendation that the program be completed over a two to three year period with the initial phase starting in 2023 with a proposed budget of $250,000. The remaining amount of $500,000 can be completed in 2024 or can be spread over two years at $250,000 each year. Obviously the sooner all of the exiting fixtures are converted the sooner the Town will realize the full operational and maintenance cost savings.

Based on the RealTerm Energy report the estimated cost savings based on a full LED conversion is approximately $160,000 per year. This represents a simple payback period of 5 years.

Capital project RD 13-22 (Construction of Effingham Street from Hwy 20 to Tice Road) was included in the 2022 capital budget having a project value of $1,075,000. The scope of work for this project considered the full reconstruction of the roadway including full depth excavation and disposal of existing road base materials and replacement with a new pavement structure. In addition, the project involved drainage improvements as well as intersection lighting improvements at the Effingham Road and Tice Road intersection. New Provincial Regulations (O. REG 406/19 (On-Site and Excess Soil Management made under the Environmental Protection Act, R.S.O. 1990, c. E.19 (EPA)) with respect to the disposal and use of excess fills from construction sites is having significant impacts on costs of full reconstruction projects. As a result, staff are looking at innovative ways to reduce excess material disposal during reconstruction and rehabilitation projects. One way of completing this is to recycle materials into the work using methods such as cold-in-place recycling and full depth pulverizing and stabilizing techniques.

The design for Effingham Road Reconstruction was awarded to Kerry T Howe Engineering under capital project RD 18-21. The design is still in the early phases; however, direction has now been provided by Town staff to look at options for recycling the materials on-site and reducing the overall scope of the works. In doing so, staff believe that the cost savings for the Effingham Road Reconstruction project could be in the order of $250,000.

It is staff's recommendation that the anticipated cost savings from Effingham Road project would fund the first phase of the LED Streetlight conversion program to the amount of $250,000.

RealTerm Energy is a North American leader in smart lighting, smart city and smart building solutions, having completed over 300 successful projects across Canada and the US since 2013. RealTerm Energy's vision is to connect communities and help save the environment through technology.

RealTerm Energy was selected by Local Authority Services, the Co-operative Purchasing arm of AMO to develop a full turnkey LED upgrade service for all municipalities in the Province of Ontario. From 2013 through to this year, when the program ended, RealTerm Energy successfully upgraded over 200 Ontario municipalities to LED technology. Their project experience covers very small upgrades of several dozen lights to those of over 45,000 lights (City of Brampton). The LAS/RealTerm Energy partnership allowed any Ontario municipality to forego a formal RFP process by opting for the selected entity under the Co-operative Purchasing provisions of the *Municipal Act, 2001.*

In early 2021, the program was wound down as there were almost no more municipalities in Ontario that were unconverted. Of all of the LAS sponsored programs for Ontario Municipalities, the RealTerm Energy streetlight program was the most successful in LAS's history.

RealTerm Energy continues to service the Ontario market with 15 Energy Performance Contracting clients, by offering maintenance services and scope additions to many of their over 200 Ontario clients on an ongoing basis. They are by far the most experienced LED Streetlight integrators in Ontario. In addition, RealTerm Energy has recently completed LED streetlight conversion projects for the City of Niagara Falls and the Town of Niagara-On-The-Lake. A listing of past customers and clients is provided in Appendix B – RealTerm Energy Qualifications and Experience.

RealTerm Energy will act as an informed but impartial advisor through their vendor agnostic approach. RealTerm Energy will first identify the Town's needs and capacity, and then will competitively select equipment and installation contractors to address those needs. Equipment manufacturers will be financially solid, certified, proven, and supply the highest quality products accompanied by appropriate warranties.

Staff believe that RealTerm Energy has the qualifications and project experience that will allow the firm to efficiently complete the LED streetlight conversion project for the Town in a cost effective manner. As a result, staff are requesting the approval of council to proceed with a direct award to RealTerm Energy to an upset limit of $250,000 to cover the IGA and the first phase of the LED conversion program. Council will be presented with future budget requests for the remaining phases of the project.

Financial Considerations:

Staff received a proposal from RealTerm Energy to complete a full LED streetlight conversion project estimated at $621,810 (plus HST). The total project cost to complete an LED conversion project including non-rebated HST and a 20 percent

contingency is estimated at $760,000. An Investment Grade Audit (IGA) will confirm the budget as a first step in the project.

The Town of Pelham currently has a street light maintenance and operating budget of approximately $260,000. The estimated annual savings in terms of operating and maintenance costs based on a full LED conversion is approximately $160,000 per year resulting in a simple payback period of 5 years.

The 2022 capital budget request included a project involving the reconstruction of Effingham Road between Hwy 20 and Tice Road in the amount of $1,075,000. It is estimated that project cost savings in the amount of $250,000 can be realized by using innovative recycling techniques to complete the reconstruction project for this section of road.

It is staff's recommendation that council consider initiating a new capital project as part of the 2022 capital budget request to commence the LED streetlight conversion in the amount of $250,000 and that the budget amount for capital project RD 13-22 (Construction of Effingham Road between Hwy 20 and Tice Road) be reduced from $1,075,000 to $825,000.

Alternatives Reviewed:

Council may direct staff to develop an RFP for the LED Streetlight Replacement Program in accordance with the Town's procurement policy (P300-03). In the event that this is the preference of Council staff will prepare and issue an RFP to retain a firm to lead and undertake the project. This will add significant time to the project.

Strategic Plan Relationship: Strong Organization

Providing a reliable and efficient street lighting network allows fort the safe and efficient transportation of vehicles and pedestrians within the Town. In addition, an LED Streetlight Conversion program is in alignment with the implementation of the Town's Climate Change Adaption Plan helping to reduce energy usage and reduce green-house gas emissions and also provides an economic benefit to the Town through lower operation and maintenance costs.

Consultation:

Consultation was undertaken with representative from RealTerm Energy, the Town of Pelham's Manager of Engineering and Kerry T Howe Engineering.

Other Pertinent Reports/Attachments:

Appendix A – LED Streetlight Conversion Proposal from RealTerm Energy, dated September 2nd, 2021.

Appendix B – RealTerm Energy Qualifications and Experience.

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