

NO: **R024**

COUNCIL DATE: **FEBRUARY 24, 2014**

REGULAR COUNCIL

TO: **Mayor & Council**

DATE: **February 13, 2014**

FROM: **Acting General Manager, Engineering**

FILE: **1713-008/00**

SUBJECT: **Updating Street Light System with Alloy Wire**

RECOMMENDATION

The Engineering Department recommends that Council receive this report as information.

INTENT

The purpose of this report is to update Council on the status of copper wire theft in the City's street light systems and the wire replacement review staff completed that lead to recommending replacing the copper wire with an alloy wire. Furthermore, staff prequalified a list of contractors to be invited to bid on the upcoming Street Light Wire Replacement Program.

BACKGROUND

Metal theft including copper wire is a significant problem not only for the City of Surrey but also for other cities and other organizations in the lower mainland and across North America. Copper wire is the traditional conductor for street light infrastructure and has been a focus of theft in recent years.

Over the past 2 years, the City has spent approximately \$3.5 million in direct repair costs due to copper wire theft. Although the rate of loss has been declining from previous years, copper wire theft appears to be linked to the price of copper as a commodity and thus it is expected that copper wire theft will increase again as copper prices rise.

A portion of the drop in wire theft is also likely due to the efforts of the Wire Theft Task Force lead by City staff but with heavy involvement from the Utility companies, RCMP and the Province. Through the Task Force, many different wire theft mitigation measures were implemented by the City such as installing security devices within the pole making street light wire removal more difficult, installing alloy wire where copper wire theft has occurred, increasing enforcement, and implementing crime reduction communication efforts. Further information regarding wire theft mitigation initiatives undertaken was provided in Corporate Report No. 134; 2012. However it is clear that these measures will not eliminate wire theft, particularly if the price of copper rises.

DISCUSSION

Wire Replacement Study

With a view to determining how best to mitigate the annual losses that the City is suffering due to wire theft, staff undertook a study in 2012 related to replacing all the copper wire in the City's street light system with an alternative alloy wire. Initial concerns regarding its use were the lower conductivity, wire size and difficulty with connections. Through the study, these issues were overcome and staff found the following advantages:

- The chosen alloy has been shown to be a technically viable conductor option to copper wire.
- The alloy wire is a mix of metals and, as such, has a much lower salvage value which deters theft.
- It is difficult for thieves to recycle the alloy wire as the insulation jacket covering the alloy wire cannot be burned off without damaging the alloy. This is a method commonly used by thieves in copper wire theft.
- The metal in the alloy has approximately 10% of the value of copper on a weight basis in relation to selling it through recyclers.
- Where alloy wire has been installed in place of copper wire, the City has not experienced any theft of wire in those areas.
- There is a lower capital cost to install the alloy wire as it is cheaper than copper wire.

Based on the above and the fact that eliminating street light wire theft would eliminate blackouts and exposed electrical conductors, staff believe there to be a significant benefit to the citizens and businesses of Surrey.

Alloy Wire Replacement Pilot

To better understand the implications and costs of such an initiative, as mentioned above, three small-scale pilot projects were initiated within the City in 2013. Each of these pilots was undertaken by a different electrical contractor in a different area with each of these areas being an area where wire theft has been problematic to the City. Several different alloy conductor wire products were used as part of the three pilot projects, to determine the most cost effective and the most manageable product to use. Through this study it was found that single strand (three separate wires) alloy conductors proved more efficient and cost effective to install than conventional braided cabled product.

Staff has concluded that the best solution from a service level and cost perspective is to replace all of the City's copper street light conductor wire with single strand alloy conductor wire.

Program Delivery

Given the magnitude of this undertaking, Staff reviewed the merits of delivering the Program in various components versus a single contract and concluded that due to economies of scale it would be more beneficial for the City to implement the Program under one contract. A single contractor will be retained on a competitive basis to complete the Program which will involve salvage and recycling of all copper wire and supply and installation of single stranded alloy conductor wire in the City's street light system. Replacement of copper wire across the entire street light system with alloy conductor wire would take approximately one year to complete and

would have a net cost of approximately \$9 million after taking into account the recycled/reuse value of the existing copper wire elsewhere by the contractor. Based on current and historical wire theft rates and costs, within 8 years of the wire replacement, this investment will have been offset by the avoided repair costs for wire theft.

Surrey will be the first municipality in North America to implement a complete replacement of its street light system wiring to alloy conductor wire.

Prequalification

Given the extent of this undertaking it is necessary to award this contract to a contractor who has the capacity and experience to deliver the work with good quality in the required time frame. As a result, Staff has undertaken a Request for Statements of Qualification from contractors for the purpose of pre-qualifying contractors to bid on the Program. Advertisements were placed on the City's website and the BC Bid website. A total of 7 contractors submitted Statements of Qualification for consideration by the City.

The submissions were evaluated by staff based on the following criteria:

- Relevant experience in electrical work;
- Availability and suitability of resources;
- Experience and qualifications of personnel; and
- References in relation to similar projects that the contractor has completed.

Based on that evaluation the following 6 respondents were determined to be sufficiently qualified to be involved in the subsequent tender process for the Program:

1. Cobra Electric Ltd.
2. Crown Contracting Ltd.
3. EPCOR Technologies Inc.
4. Trans-Western Electric Ltd.
5. Houle Electric Limited
6. Bay Hill Contracting Ltd.

Each of these respondents is considered to be qualified for the subject work. Each is considered to have satisfactory expertise and experience to conduct the subject work to required standards and has adequate resources to carry out the Program.

Tender invitations for the Program will take place in March 2014 and will be limited to bids from the above noted contractors. The objective is to have the work completed within a one-year time frame.

Funding

Funding for the Program is available within the approved Roads 10 Year Financial Plan.

SUSTAINABILITY CONSIDERATIONS

The Street Light Wire Replacement Program will assist in achieving the objectives of the Sustainability Charter; more particularly, the following action items:

- EC3: Sustainable Infrastructure Maintenance and Replacement Practices;
- EC4: Sustainable Fiscal Management Practices; and
- EN9: Sustainable Engineering Standards and Practices.

CONCLUSION

Staff will be proceeding with tendering the Street Light Wire Replacement Program in March 2014. A report complete with recommendations regarding the award of a contract in relation to the Program will be forwarded to Council for consideration in April 2014 after the completion of the tender submission and evaluation process.

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