BUDGET COMMITTEE – FEBRUARY 20, 2007

LIGHT EMITTING DIODE (LED) PROPOSED TRAFFIC SIGNAL LAMP REPLACEMENT

Recommendation

The Commissioner of Engineering and Public Works in consultation with the Commissioner of Finance and Corporate Services recommends:

1. That the replacement of the existing incandescent lamps in the City's traffic and pedestrian signals with the light emitting diode (LED) type be approved;

2. That the conversion be completed through a three year program to replace 16 intersections per year at a cost of approximately $124,000.00.

Economic Impact

Funding in the amount of $124,000 for the first year of a 3-year replacement program has been included in the Draft 2007 Capital Budget. Future phases of the program would be considered in budget deliberations in subsequent years. Implementation of the program will result in a reduction in the City's traffic and pedestrian signal operating and maintenance costs.

Purpose

Engineering staff is providing a review of the feasibility of replacing the existing traffic signal lamps from the standard incandescent lamp to the light emitting diode (LED) lamp, due to the overall economic, environmental and hydro use savings for the City.

Background - Analysis and Options

The majority of municipalities are converting their existing traffic signal lamps from the standard incandescent to the light emitting diode (LED) lamps, in an attempt to provide cost savings for the municipality, reduce the environmental impact and hydro use. Some municipalities did a complete conversion at one time and others have adopted completion through a multi year program.

Since 2002, Engineering staff has included light emitting diodes (LED) in the City's traffic signal installation contracts. This work was also included in any traffic signal installation required through the development process. In total, there are 13 traffic signals and 3 pedestrian signals utilizing LED lamps in Vaughan.

The advantages of the use of a LED lamp are:

- Use between 80 and 90% less hydro consumption than the standard incandescent lamp.
- Last up to 10 times longer which results in fewer maintenance calls and repair costs.
- LED's provide brighter illumination for the motorist and pedestrian.
- No breakable glass as the lamp is a cluster of individual lights mounted in a single unit.
- More resistant to vibration and climate change.

- Since traffic signal and pedestrian signals operate 24 hours a day, the city will achieve savings in hydro costs which will offset the initial capital costs.

The typical power demand for the various traffic signal luminaire types is as follows:

	Standard Incandescent	LED
Red	135 watts	10 watts
Amber	60 watts	14 watts
Green	60 watts	9 watts
Pedestrian	90 watts	6 watts

Note: Incandescent bulbs need different wattage to maintain the intensity of light with different colour filters. LED lights need different wattage to produce a particular colour of light.

Within the City there are 46 traffic signals and 4 pedestrian signals currently utilizing incandescent lands and which could be changed to the LED head. The average cost (based on our traffic signal contract for 2006) for a traffic signal (red, amber, green) is $610.00 per signal head and for a pedestrian signal (walk, don't walk) is $330.00.

A typical intersection would have 8 traffic signal heads and 8 pedestrian heads which relates to an approximate cost of $7,500.00 per installation. A pedestrian signal has 4 traffic signal heads and 2 pedestrian heads which relates to an approximate cost of $3,100.00 per installation. Therefore, to replace the remaining 46 traffic signals and 4 pedestrian signals the approximate cost, including the associated engineering fee would be approximately $371,000.

The average cost saving for the signal maintenance contractor to attend a site due to an incandescent lamp out is $650.00. This cost includes required staff, vehicles and material. In 2006, the City's contractor was dispatched 38 times to replace a lamp that was out. With LED heads, these call-outs would virtually be eliminated. This would produce a savings of over $20,000.00 per year on call-outs alone. The average cost saving for hydro use is approximately $400.00 per intersection or pedestrian signal with the LED traffic signal head. This would relate to a total yearly savings based on the remaining 50 locations of approximately $20,000.00.

Yearly maintenance for cleaning of each signal head would still be required.

It is suggested that this work be completed on a 3 year program for the remaining 46 traffic signals and 4 pedestrian signals. This would involve the replacement of 16 or 17 intersections per year at a cost of approximately $124,000.00.

Funding for year 1 of a conversion program has been included in the Draft 2007 Capital Budget for consideration. Funding for future phases of the program would be included in future budgets for consideration.

Relationship to Vaughan Vision 2007

This traffic study is consistent with Vaughan Vision 2007 so as to A, Serve our Citizens, B, Manage our Resources and D, Run our City.

This report is consistent with the priorities previously set by Council.

Conclusion

It would be beneficial to replace the remaining existing standard incandescent lamps to the light emitting diode (LED) lamps for economical, environmental and hydro use savings for the City.

Attachments

None.

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Respectfully submitted,

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