



HISTORIC
FRANKLIN
TENNESSEE

ITEM #8
CIC
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MEMORANDUM

September 8, 2011

TO: Franklin Board of Mayor and Aldermen

FROM: Eric J. Gardner, P.E., Director of Engineering
David Parker, P.E., City Engineer
Eric S. Stuckey, City Administrator
William G. Banks, Staff Engineer I

SUBJECT: Franklin Corridor & Connector Streets/Streetscape - LED Lighting Discussion

Purpose

The purpose of this memo is to determine direction regarding the switch to LED lighting along Hillsboro Road and for other upcoming Corridor and Connector Street projects.

Background

The Streetscape Steering Committee and BOMA previously decided to design all Corridor and Connector projects with street lighting that would be perceived as true white. The switch to metal halide lighting provided the desired visual aesthetics. The LED lighting can reproduce this same "white" effect, which allows us to follow previous direction for streetscape design.

On April 28, 2009, BOMA approved switching all upcoming street lighting to LED. At that time, Streetscape style street lights did not have an equivalent LED fixture that matched our approved style. The City proceeded with the Columbia Avenue Streetscape Project as is, with the already designed Metal Halide street light system.

In July of this year, City staff asked our Streetscape consultant, EG&G, to once again investigate the possibility of swapping to LED lighting. They came back to us in August with a summarization of the financial impacts. Their main findings are as follows:

- The lighting system on Hillsboro Road is already designed for Metal Halide lights. A redesign of the system for optimal LED street light spacing and photometrics could be performed at an additional cost of \$28,000.00.
- The manufacturer of the Streetscape style light, Holophane, has released an LED type fixture that is identical to the ones recently installed along Columbia Avenue. The change to this LED fixture includes a more uniform light output, but will have a decreased lumen output as compared to Metal Halide. This could require additional street lights to be installed to cover the same area as Metal Halide.
- The City may see yearly energy savings of \$5,295 by swapping to an LED system.
- The City would save an average of \$2,148 in yearly bulb replacement costs, since LED lights last longer than Metal Halide.



- The new LED fixtures cost around \$1,000 more per unit than Metal Halide, causing an additional \$118,000.00 in fixture costs alone (118 light fixtures from SR96W to Mack Hatcher Pkwy).
- Additional LED street lights and poles are suggested by AASHTO to meet the same photometrics that Metal Halide produce. Additional 4-6 street light poles may be needed, at a cost of \$10,000 to \$12,000 a piece (estimated at \$60,000 in additional costs).

The main conclusions to derive from this information is that there is a hefty cost increase to the project in order to follow through with the LED lighting system. There is a yearly savings of \$7,450, but the payback time to recoup the additional costs is:

- 16 years for just the new LED fixtures, with no engineering redesign or extra light poles.
- 20 years if we perform the redesign as well, without any additional street light poles.
- 28 years if we include 6 new street light poles that allow minimal AASHTO suggested lighting photometrics.

Options / Financial Impact

1. Keep current design, utilizing Metal Halide street lights. Replacement LED inserts will be looked at in the future, which should give the technology time to catch up and decrease in cost. (No Additional cost)
2. Swap over to LED fixtures, utilizing existing design but with less overall luminosity. (Additional cost of \$118,000.00 with a 16-year payback)
3. Swap over to LED fixtures, while performing the redesign. (Additional cost of \$146,000.00 with a 20-year payback)
4. Swap over to LED fixtures and redesigned per AASHTO standards. This would include the addition of 4-6 street lights to meet the suggested AASHTO target illumination. (Additional cost of \$206,000.00 with a 28-year payback)

Recommendation

No recommendation at this time. Staff would like to get a better understanding of the direction the Board would like to pursue. We will come back at a later date with any possible amendments or change orders that would result from a change in direction by the Board regarding street light designs and installations.