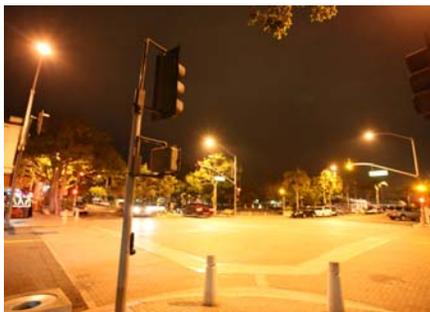


Potential 40 Year LED Street Lighting Program for the City of St. Cloud

Ever wished you could make yourself an easy million dollars by going out and buying a product? That is the opportunity and challenge for the City of St. Cloud over the next 40 years related to street lighting costs. Not only would the city see a great return on its investment with LED street lighting, the city would experience a much better quality of roadway and residential lighting as well.

Back in the 1980's, high pressure sodium street lighting (the orange light) became very prevalent because it was reasonably energy efficient compared to other light sources. However, high pressure sodium provides a poor quality of light with a color



rendering index (CRI) in the 22-23 range. Automobile colors appear differently under this light and surveillance cameras do not provide good color renderings for clothing. Also a great deal of this poor quality light has become a nuisance to many residents.

LED Lighting. Let's jump into our current reality of street lighting. During the last five years a much better and more efficient lighting technology has emerged that will both improve lighting quality for St. Cloud residents and reduce electrical and maintenance costs as well.

The latest generation of LED street lights use high



quality, high output LED's that provide excellent light levels and high color rendering indexes (most are greater than 70 on a scale from 1 to 100) One of the best parts of LED street lighting is how the fixtures are designed to direct the light with extreme accuracy which greatly reduces light pollution and light trespass. LED street lights have many advantages over other lighting sources such as the ability to be instantly "on" rather than taking several minutes to come up to full brightness. LED street lights require no recycle time in the event of a power outage and will instantly come back on after an outage event. LED street lights are also dimmable which allows street lights to be dimmed based on traffic volumes, time of day, special events, or emergencies. LED street lights are not only more efficient when they are operating at full output but become extremely efficient when running at reduced output levels. LED lighting can also be controlled by a central control system which notifies the city if there is a malfunctioning street light anywhere on the system.



The Plan. The City of St. Cloud's Traffic Systems Services has been studying, testing and analyzing LED street lighting for several years. A plan has been developed that would change out all of the city's 5,000 street lights over a five year period of time. A five year plan allows for better replacement planning, utilizing the latest technologies, and better



fixture pricing. Because of the nature of solid state devices including LED street lights, the units have a rated life and at this time we are estimating it to be approximately 20 years. Even with the 20 year life cycle of an LED light fixture,

the payback becomes significant due to the reduced maintenance and electrical costs. While benefitting from these primary positives, the residents also receive a better quality lighting with less light being flooded onto residential properties and providing better security for pedestrians and home owners as well. The motorist also benefits with reduced glare. There is also less light pollution making the star gazers happier. **This plan has the potential of providing up to an \$18.5 million dollar savings over a 40 year period of time.** LED street lighting is a win, win, win!!!

Traffic Systems Services

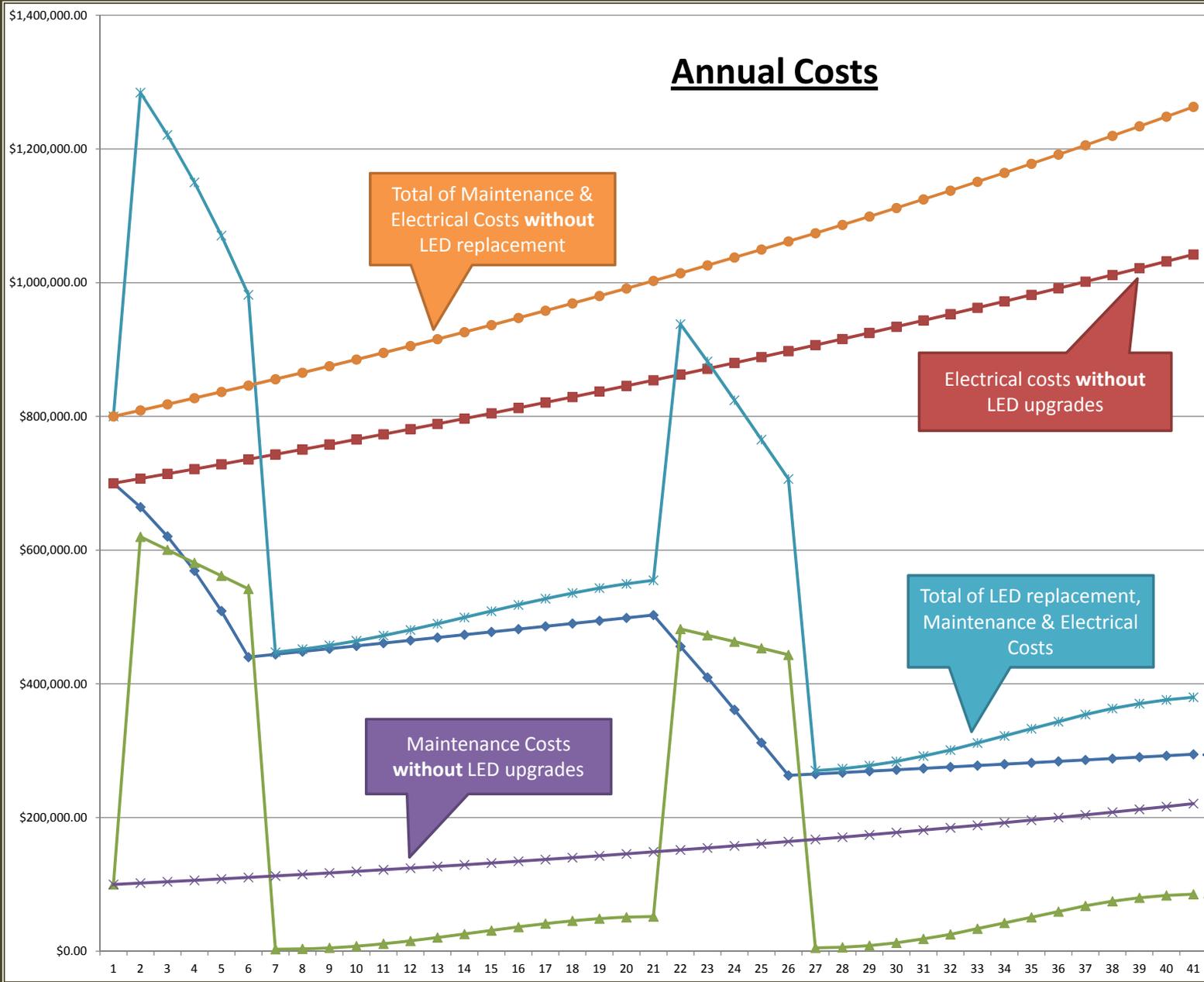
A Division of City of St. Cloud Engineering
320-650-2900



Annual Costs

Street LED Lighting Program
City of St. Cloud
Period of 40 years

Total Projected Savings in 40 Years with Proposed LED Upgrades: \$18.5 Million



Total of Maintenance & Electrical Costs without LED replacement

Electrical costs without LED upgrades

Maintenance Costs without LED upgrades

Total of LED replacement, Maintenance & Electrical Costs

Electrical costs with proposed LED program

Maintenance and installation costs with LED replacement