

LED Street Lighting Update

The City of Minneapolis Public Works Department is continuing to convert existing city street lights to an LED system. In general, city-owned and maintained lights are attached to metal poles.

Some of the visual and efficiency improvements include:

- Reducing glare by providing better directional lighting on streets and sidewalks
- Improving color rendition on streets and sidewalks
- Reducing maintenance cost through longer lamp life
- Reducing energy usage by approximately 60% thus reducing utility costs and carbon footprint

Frequently Asked Questions

Where is the work being done?

In order to achieve the most immediate cost savings and efficiency, LED replacement will initially focus on areas of the city with the highest density of street lights. The replacement plan will concentrate on a different zone each year. Also, all new street light construction projects will use LED fixtures.

Why is there a mixture of LED lights in certain areas of the city?

Certain street lights are skipped over until a service cabinet with a utility meter can be installed. This is required for all LED upgrades and for Xcel Energy rebates.

Why is the city skipping the low level street lights?

The results of calculations on cost effectiveness have directed the city to only convert high level street lights at this time. The low level pedestrian street lights will be converted when the benefit/cost time is reduced.

Will the city convert the wood pole lighting system?

Street and alley lights attached to wood poles are owned and maintained by Xcel Energy. We are discussing options with Xcel for wood pole light conversions.

Why are the LED lights a different color?

Research shows this white light provides improved visibility and a better color rendition on the streets and sidewalks.

Why do the LED lights look brighter than the old type of street light?

In most cases, the LED street lights are an equal replacement of the previous street lights in terms of light measurement. The difference in color and more uniform distribution can give the illusion of a brighter light.

How do we know this new technology will work into the future?

The city has field tested new LED fixtures and observed the results. The current industry standard provides a 10 year warranty on the street light fixtures purchased by the city. LED street lighting technology is also the standard in many cities such as Los Angeles, Portland, and Boston.

Are LED lights a form of Green Technology?

LED street lights reduce energy consumption and therefore carbon dioxide (CO₂), which is a byproduct of electric power plants. LED street lights are also environmentally responsible and can be disposed of with standard garbage collection.

City of Minneapolis Street Light Conversion Plan to Light Emitting Diode (LED)

Why Convert Street Lights to LED?

Light Emitting Diodes (LEDs) are a technology that has recently become competitive for outdoor application with commonly used high intensity discharge light sources, such as high-pressure sodium (HPS) fixtures. In other cities that have implemented LED pilots or conversions, the technology has been demonstrated to provide more efficient light distribution and increased uniformity, along with the benefits of reduced energy consumption and maintenance costs.

Public Works recently completed evaluating street lighting pilot projects that include LEDs as a lighting source. The primary purpose for the LED Pilot Projects is to evaluate LED lighting for energy cost savings, maintenance cost savings, light output and light quality. The pilot projects resulted in reduced energy usage of 50-80 percent and high levels of resident satisfaction with light color, light level and perceived safety.

Where Will Public Works Convert Lighting to LED?

The attached map shows six areas where city-owned and operated fixtures are most concentrated. Public Works proposes a plan to convert existing high-level fixtures (attached to 30 foot poles) starting in the central portion of the city. Areas outside of the six zones shown on the map will be evaluated for conversion once all the central zones have been completed. Table 1 shows how many high-level type fixtures exist in each zone.

TABLE 1: NUMBER OF EXISTING HIGH-LEVEL (30') FIXTURES BY ZONE

Zone 1 (Near North)	Zone 2 (Downtown)	Zone 3 (Northeast/ Southeast)	Zone 4 (Cedar-Riverside, Seward, East Lake)	Zone 5 (Midtown)	Zone 6 (Uptown/Kenwood)
519	1,860	380	359	413	186

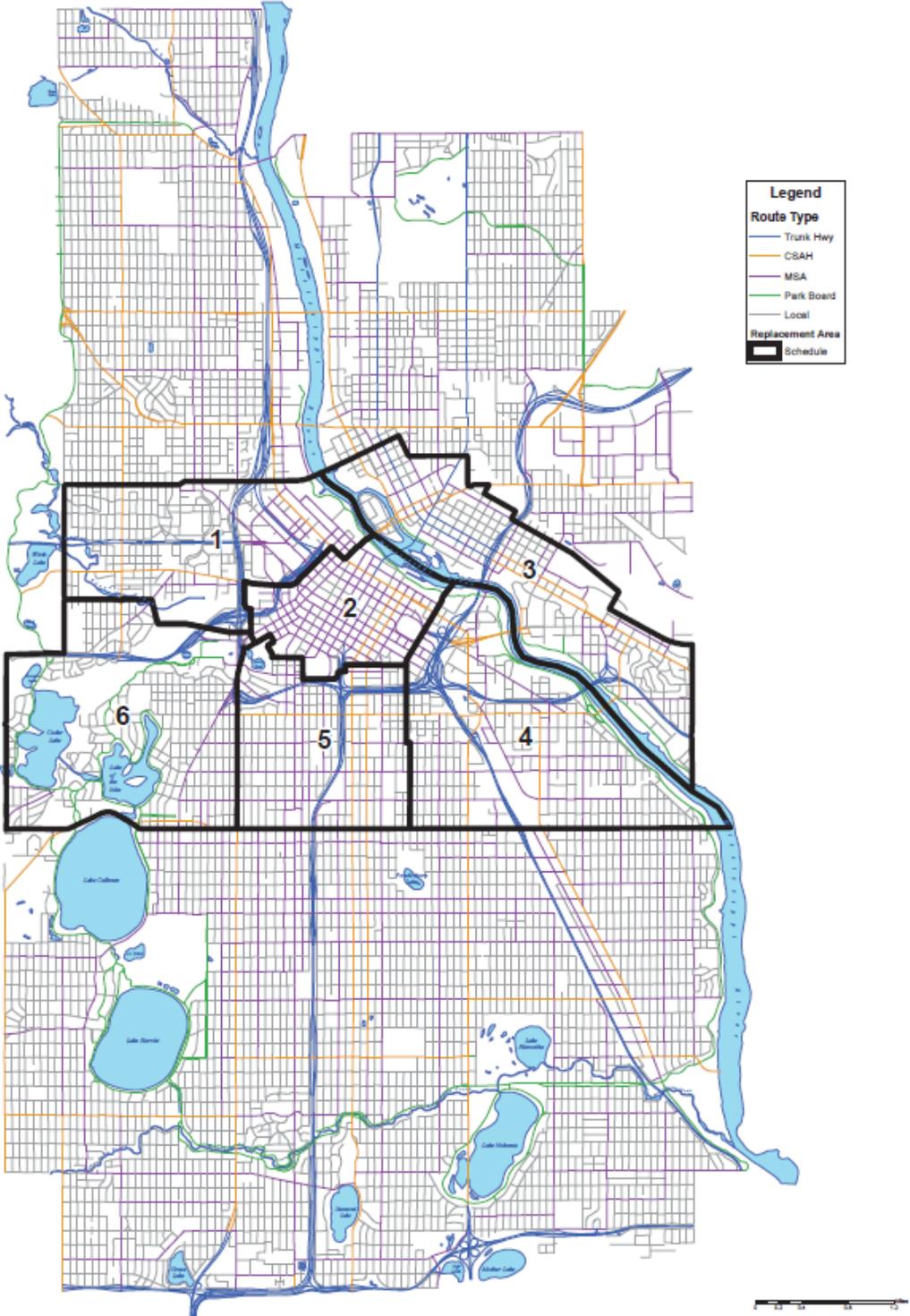
Replacement of fixtures will be on a corridor-by-corridor basis, and the City will endeavor to maintain light quality and color uniformity throughout a corridor by not inter-mixing LED lights with other fixture types whenever possible. Public Works is currently evaluating corridors within Zones 1 and 2.

Other Fixture Types

Minneapolis Public Works operates and maintains more than 20,000 street lights throughout the city. LED-type fixtures for high-level lights offer the best rate-of-return on investment, because they replace much higher wattage fixtures, and the current price for this style of LED fixture is also quite low (see Table 2). Minneapolis also operates a large number of low-level lights. LED fixtures for these lights are significantly more expensive than for high-level fixtures, and the energy savings as compared with the existing high pressure sodium fixtures is far less. The other main type of street lights – mid-level fixtures along Lake Street and Minneapolis Parkways – are similarly less cost-effective at present. As the price for other fixture types continues to fall, Public Works will begin converting these light styles, as well. In the meantime, all new street light installations will include LED fixtures, to forego the need for future conversion.

TABLE 2: ESTIMATED RATE-OF-RETURN BY FIXTURE TYPE

LED Fixture Type	Furnish/Install Cost	Energy & Maintenance Savings/Year	Rate of Return (Years)
High Level	\$445	\$165	2.7
Low-Level	\$1,135	\$89	12.8
Mid-Level	\$1,400	\$130	10.8



LED Retrofit Phasing

2/6/2015

