

To: Mayor, Board of Trustees and Village Manager
From: Ad-Hoc Committee on LED Streetlights (“Committee”)
Re: Update on LED Streetlight Program – Residential Roads
Date: November 21, 2018

Summary of Recommended Actions

- Replace 1,510 streetlights on Residential Roads with LED streetlights
- On a subset of roads (430 lights) slightly increase brightness of LED fixture to be used
- Continue research for decorative style streetlights for downtown area

Executive Summary

The LED Streetlight Committee has been piloting fixtures on Residential Roads for the past month. The Committee recommends replacing all streetlights on Residential Roads with LEDs, with the fixture used during the pilot. On a subset of roads, representing 430 of the 1,510 lights, the Committee recommends using a slightly brighter version of the fixture. The LED lights will reduce energy use, lower the Village electrical and maintenance expense, improve lighting, reduce the occurrence of burnt out lights and provide an attractive financial return.

“Residential Roads” include all residential roads that have not already been converted to LED Streetlights¹. The decorative fixtures in the downtown area, post-top lights at the Five Corners and post-top lights in the village hall parking lot are not part of this project phase will be addressed when the appropriate fixtures are available at a reasonable price. There are 1,510 streetlights on Residential Roads. These streetlights, together with the 308 previously converted streetlights represent 93% of the 1,965 streetlights in Scarsdale.

The Committee will also continue to research streetlights for the fixtures in the downtown area, Five Corners and village hall parking lot. Fixtures that are well-suited for these locations are available, but the current pricing does not provide an attractive financial payback.

History to Date of the LED Streetlight Committee and Pilot Program

On April 28, 2015, the Board of Trustees established an Ad-Hoc Committee to research Light Emitting Diode (LED) streetlights in order to improve lighting, reduce Village costs for electricity and maintenance, and conserve energy. To that end, the Committee was asked to develop a pilot program and make a recommendation on how best to move forward. The Committee conducted extensive research on LED streetlighting, met with vendors, examined LED streetlights installed in neighboring communities and tested various fixtures to determine the proper lights and locations to pilot in Scarsdale.

Based on the Committee’s research and given Scarsdale’s largely residential setting, we believed it was important to test a variety of lights including some with warmer colors and less brightness than had been installed elsewhere. In the fall of 2015 the Committee installed lights of varying color and

¹ Roads that have already been converted to LEDs include White Plains (Post) Road, Heathcote Road from Post to Five Corners, Mamaroneck Road, Weaver Street (together referred to as “High Traffic Roads”), and roads with Town and Country post-top fixtures.

brightness on three streets in Scarsdale: Fox Meadow Road, Madison Road and Heathcote Road. Based on the results of this sample and resident feedback, the Committee's proposal was to focus on two types of areas in Scarsdale as a first phase: higher traffic roads and locations with Town & Country style post-top fixtures.

In July 2016 a pilot program on High Traffic Roads and locations with Town & County post-top fixtures was launched. During this pilot one of the manufacturers of the Pilot LED Streetlights informed the Committee that an updated version of their fixture would be released in early 2017 with material improvements. This pilot was extended to include these updated fixtures in the pilot and ran for three months from July to October 2017. At the conclusion of this pilot, the Committee recommended 308² fixtures on High Traffic Roads and locations with Town & Country fixtures be converted to LEDs. These 308 fixtures were converted to LEDs in May 2018.

The Committee continued researching appropriate fixtures for Residential Roads and prepared for a pilot on Residential Roads during the Summer of 2018 ("Residential Pilot"). The Residential Pilot was launch in October 2018 and ran for one month.

Residential Pilot Program Findings

The main goal of the Residential Pilot was to provide the community and Committee with an opportunity to evaluate LED fixtures in a live setting on Residential Roads. The following are key takeaways and an overview of community feedback from the Residential Pilot:

The Committee setup 11 pilot locations throughout the Village: two locations in each neighborhood and an 11th location on Fenimore Road. Multiple lights at each location were installed. The lights tested were slightly warmer in color and less bright than the fixtures used on High Traffic Roads to be better suited for Residential Roads. The lights provided a comparable level of light to the existing fixtures with less energy consumption, a more focused distribution of the light on the road and a clearer light which shows colors more accurately when under the lights. These fixtures also reduced the amount of glare, which had been a concern for the Committee, as compared to other LED fixtures.

Prior to launching the Residential Pilot, the Committee tested various fixtures. Although the fixtures had materially similar specifications, we found that depending on the technology used the overall aesthetics of the light output differed. The fixture used in the Residential Pilot, which has a lens over the LEDs, had less glare than other fixtures tested. Therefore the Committee recommends requiring this fixture or a materially similar fixture which reduces glare. The recommended fixtures are 2700K in color.

Community Feedback: The Committee received feedback from 14 residents during the Residential Pilot. 6 liked the LED lights, 5 requested brighter lights at specific locations, 1 found the lights too bright at a specific location and 2 comments represented a question or comment but did not indicate a preference either way for the LED lights.

Installation: All Residential Pilot lights were installed by Village employees. Based on the relative ease of installation and cost savings associated with using Village personnel, the Committee recommends the full installation be done in-house. The Village installed the 308 streetlights on High Traffic Roads and

² The recommendation to the Board, dated November 13, 2017, referenced 301 fixtures. An additional 7 fixtures were identified to be replaced during the installation.

Town & Country locations in-house as well. Based on these positive experiences the Committee recommends the remaining lights be installed in-house.

Adjustments Recommended on Residential Roads: The Committee believes the fixtures used in the Residential Pilot provides the appropriate light for most Residential Roads. However, on a subset of Residential roads, the Committee recommends using a slightly brighter version of the fixture. All other specs of the fixture would be the same as tested during the Residential Pilot. The Committee recommends the brighter version on roads with double yellow lines that currently have brighter High Pressure Sodium bulbs. There are 430 lights (of the 1,510 total lights on Residential Roads) that meet these criteria and would use the slightly brighter version. Although these fixtures would be slightly brighter, they would not be as bright as the fixtures on High Traffic Roads, and the Committee believes the fixtures still provide an appropriate light for a residential road.

Financial Metrics

The financial return and short payback period for these fixtures support replacing these fixtures with LEDs. The financial return is derived from LED fixtures using significantly less energy than the fixtures currently used at these locations. The expected return³ for the 1,510 fixtures in this phase is 22% per year over a 10 year period. The payback period of the initial investment is 4 years, with an expected life of 20 years and a warranty period of 10 years. These metrics include allocating a labor charge for installation even though this phase will be done in-house by Village employees. Savings are based solely on electricity savings. There may also be savings from reduced maintenance of the lights, but to provide a conservative estimate the return calculations are based solely on the savings from reduced energy usage.

The upfront cost for these 1,510 fixtures is approximately \$244,000. An additional \$72,500 has been allocated for the labor time to install the fixtures⁴. The expected savings are approximately \$80,000 per year. The total expense budgeted for street light electricity for the current fiscal year is \$185,000.

	Number	Upfront Costs			Annual Savings			Payback (years)		IRR (Total Cost)	
		Fixture	Installation	Total Cost	Utility Costs	Maintenance	Total	Total Cost	Fixture Cost Only	10 year	20 year
Phase 2: Residential Roads											
Cobra Heads (Residential Roads)	1,510	\$244,318	\$72,596	\$316,914	\$79,983	\$0	\$79,983	4.0	3.1	22%	25%
Total Phase 2: Residential Roads	1,510	\$244,318	\$72,596	\$316,914	\$79,983	\$0	\$79,983	4.0	3.1	22%	25%

Risk Factors

In addition to typical project risks, there are two risk factors specific to the proposed recommendations. The lens utilized for the LED fixture proposed is a relatively new technology. It is currently only available from one manufacturer and has only been in the market for one year. Moreover, an initial version of the fixture was recalled (and replaced) by the manufacturer due to a manufacturing defect in 2016. That being the case, any such issue would be covered by a 10-year warranty, and the Village has had approximately 200 of these lights installed on High Traffic Roads since May 2018. The lights have performed well with no issues.

³ 10 year IRR (Internal Rate of Return). The return time period was based on matching the expected warranty length of the fixtures (10 years). The expected life of the fixtures is 20 years.

⁴ Since the installation is being done in-house with Village staff, the \$73,000 labor charge is only used for calculating the return. Village employee salaries are already included in the Village budget as well as any overtime that may be used to advance the completion of the overall installation.

The Committee is recommending this phase of the LED installation to be done in-house by Village personnel. Should Village personnel be needed for other more urgent projects, the installation timeframe may need to be extended. Based on the Village's experience to date installing the High Traffic and Town & Country streetlights, the Committee is confident that the installation of the fixtures can be successfully handled in-house. Assuming the fixtures are delivered in January, weather permitting, these new lights can be installed immediately with an estimated overall installation time of 6 months.

Next Steps / Plan for Additional Lights

The Committee will review any feedback during and after the installation of lights on Residential Roads and will work with the Village to make any site-specific adjustments as needed.

The Committee will also continue exploring options and working with manufacturers to find appropriate lights for our decorative fixtures downtown as well as lights in village hall parking lot and Five Corners. While appropriate lights exist for these locations, the price of these fixtures has not provided an attractive financial payback. The Committee will continue monitoring prices for these fixtures or alternatives that are more cost effective while still providing an appropriate light.

The Committee will continue to report back to the Board on updates for the next phase of the LED streetlight program.

Where to Find More Information

The LED Committee has submitted reports and updates to the Board and public throughout the LED project. Copies of the Committee's reports can be found on Scarsdale.com under Government->Boards and Councils->Ad-Hoc Committees->Ad-Hoc Committee on LED Streetlights or by requesting a copy from LED@scarsdale.com.

If residents have any follow up questions about the recommendations in this report or any other aspect of the LED project, please contact us at LED@scarsdale.com

Recommendation:

Based on the above findings, the Committee recommends that the Board approve the purchase and installation of LED streetlights for Residential Roads, funding for which has already been approved and allocated in the capital budget.

Ad-Hoc Committee on LED Streetlights

Ron Schulhof, Chair

Farley Baker

David Raizen

Benedict Salanitro, Scarsdale Superintendent of Public Works*

Michelle Sterling

November 21, 2018

*Assisted by Tyler Seifert, Department of Public Works, who provided valuable assistance with the pilot and coordination of various information for the Committee.