

To: Mayor, Board of Trustees and Village Manager
From: Ad-Hoc Committee on LED Streetlights (“Committee”)
Re: Update on LED Streetlight Program
Date: November 13, 2017

Summary of Recommended Actions

- Replace 214 streetlights on High Traffic Roads with LED streetlights
- Replace 87 Town and Country streetlights with LED streetlights
- Continue research for streetlights on residential roads in preparation for a residential road pilot planned for summer 2018

Executive Summary

The LED Streetlight Committee has been piloting fixtures on High Traffic Roads and locations with Town and Country Fixtures for the past 3 months. The Committee recommends moving forward with replacing the streetlights at these 301 locations with LED streetlights. 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.

High Traffic Roads include White Plains (Post) Road, Mamaroneck Road, Weaver Street and Heathcote Road between White Plains Road and 5 Corners. There are 214 streetlights on these roads. Town and Country Fixtures are mostly located on residential roads in Crane-Berkeley and part of Secor Farms with additional fixtures on various roads throughout the Village¹. There are 87 Town and Country streetlights on residential roads. Together these 301 streetlights represent 15% of 1,976 streetlights in Scarsdale.

The Committee will also continue to research streetlights for our more residential roads. A number of new fixture offerings are coming to market that may be well-suited for these roads. The Committee is actively working with manufacturers to find appropriate lights and plans to recommend a pilot for residential roads in the summer of 2018.

These recommendations will allow the community to start realizing the benefits of LED streetlights while the Committee continues to work on finding lights that will best suit our residential streets.

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) street lights 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 street lighting, 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.

¹ Residential roads with Town and Country Fixtures include: Axtell Road (6 fixtures), Barker Lane (3), Benedict Ave (3), Bethel Road (1), Boulder Brook Road (9), Brookfield Lane (3), Church Lane South (3), Deerfield Lane (5), Hathaway Road (3), Lockwood Road (5), Mohican Trail (4), Murray Hill Road (7), Myrtledale Road (2), Springdale Road (8), Sycamore Road (5), Taunton Road (7), Taunton Road East (2), Tisdale Road (9) and Windsor Lane (2).

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 have been installed elsewhere. In the fall of 2015 the Committee installed lights of varying color and 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 streets and locations with Town & Country style post-top fixtures.

In July 2016 a pilot program ("Pilot") was launched with fixtures installed on sections of White Plains (Post) Road, Mamaroneck Road, Heathcote Road, Tisdale Road and Springdale Road. 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. The Pilot was extended to include these updated fixtures in the Pilot. This Pilot ran for three months from July to October 2017.

Pilot Program Findings

The main goal of the Pilot was to provide the community and Committee with an opportunity to evaluate various LED fixtures in a live setting. The Pilot also provided the Committee with an opportunity to gauge the feasibility of installing the LED fixtures in-house by the Village electrician. The following are key takeaways and an overview of community feedback from the Pilot:

High Traffic Roads: The Committee piloted six locations on High Traffic Roads: two locations on Mamaroneck Road, one location on Heathcote Road and three locations on White Plains (Post) Road. Multiple lights at each location were installed. All of the lights provided more light 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. One set of lights, which uses a lens over the LEDs, reduced glare which had been a concern of the Committee. This fixture is also the most efficient of all the lights being piloted, providing more light using less electricity.

Although the fixtures had materially similar specifications, we found that depending on the technology used the overall aesthetics of the light output differed. As mentioned above, the fixture that used 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 fixtures referenced are located on Mamaroneck Road between Myrtledale and Saxon Woods Road and White Plains Road between Crane Road and Wayside Lane. The recommended fixtures are 3000K in color.

Town and Country Fixtures Locations: The Committee piloted two locations with Town and Country streetlights: Tisdale Road and Springdale Road. Multiple lights at each location were installed. Based on prior testing of lights, the Committee installed LED bulbs within the existing fixture. Using LED bulbs rather than replacing the entire fixture was advantageous for two reasons: the bulbs are significantly lower in cost and the existing fixture housing could be reused rather than having to be recycled or thrown out. The downside to the LED bulbs is that they have an expected life of 5 years vs. a full replacement fixture with an expected life of 20 years. However the cost of a full replacement fixture is currently too high to justify using them. Therefore the LED bulbs provide a short term solution until costs come down for a full fixture replacement.

The Town and Country fixtures throughout the Village have various types of lights; some are a brighter, whiter light and some are a softer, less bright light. The Committee chose to use an LED bulb similar to

the softer and less bright light given that these fixtures are located on residential roads. The Committee recommends moving forward with these softer LED bulbs. The fixtures references are located on both Tisdale Road and Springdale Road. The recommended fixtures are 3000K in color.

Community Feedback: The Committee received feedback from 41 residents during the Pilot. 25 liked the LED lights, 8 did not like the LED lights and 8 comments represented a question or comment but did not indicate a preference either way for the LED lights.

Installation: All Pilot lights were installed by the Village electrician. Based on the relative ease of installation and cost savings associated with using Village personnel, the Committee recommends the broader installation be done in-house. Installing the 301 streetlights during this phase will also provide the Committee with insight into whether it is feasible to install of the remaining streetlights in-house when the Village is ready to move forward on residential roads.

Financial Metrics

The financial return and short payback period for both the High Traffic Roads and Town and County 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 return² for the 301 fixtures in this phase is 30% with a payback of 2.8 years. These metrics include allocating a labor charge for installation even though this phase will be done in-house with the Village electrician. 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 301 fixtures is approximately \$60,000. An additional \$14,000 has been allocated for the labor time to install the fixtures³. The expected savings are approximately \$25,000 per year. The total expense budgeted for street light electricity for this fiscal year is \$200,000.

Return Analysis (HT and T&C)	Number	Upfront Costs			Annual Savings			Payback (years)		IRR	
		Fixture	Installation	Total Cost	Utility Costs	Maintenance	Total	Electricity only	Inc. Maintenance	5/10 year	20 year
High Traffic Locations	214	\$53,500	\$10,288	\$63,788	\$14,456	\$0	\$14,456	4.4	4.4	19%	22%
Town & Country Post-Top (Residential)	87	\$6,525	\$4,183	\$10,708	\$11,956	\$0	\$11,956	0.9	0.9	109%	-
Total - High Traffic and Town & Country	301	\$60,025	\$14,471	\$74,496	\$26,412	\$0	\$26,412	2.8	2.8	30%	31%

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 for the High Traffic roads is a new technology. It is currently only available from one manufacturer and has only recently been released. Moreover, the first version of the fixture was recalled (and replaced) by the manufacturer due to a manufacturing defect. That being the case, any such issue would be covered by a warranty, and to mitigate labor expenses associated with replacing a significant number of fixtures once they are installed, the Committee will seek to include a reimbursement clause for the expense of removing streetlights removed under warranty in the purchase contract.

² 10 year IRR (Internal Rate of Return) for cobra head fixtures and 5 year IRR for Town and Country fixtures. The return time period was based on matching the expected warranty length of the fixtures.

³ Since the installation is being done in-house with Village staff, the \$14,000 labor charge is only used for calculating the return. The Village electrician salary is already included in the Village budget.

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 Pilot streetlights however, the Committee is confident that the installation of 301 fixtures can be successfully handled in-house.

Plan for Additional Lights / Next Steps

The Committee will continue exploring options and working with manufacturers to find appropriate lights for our residential roads. Although at this time the Committee does not have an appropriate fixture to pilot on our residential roads, the Committee is actively researching and working with manufacturers to find appropriate pilot lights for this next phase of the LED streetlight program. A number of new fixture offerings are coming to market that may be more suitable for our residential roads. The Committee plans to recommend a pilot for residential roads for summer 2018.

The Committee will also continue to monitor pricing for Decorative fixtures that would be used in our downtown area. While decorative fixtures are available for the downtown area that meet our requirements, pricing of these fixtures remains too high to provide an attractive payback.

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:

The Committee strongly believes that the future of Scarsdale's streetlights lies with LED fixtures. The financial, light quality and environmental benefits are compelling along with lowered maintenance requirements. The Committee's recommendation below allows the community to start realizing the benefits of LED streetlights while the Committee continues to work on finding lights that will best suit our residential streets.

Based on the above findings, the Committee recommends that the Board:

1. Approve the purchase and installation of LED streetlights for High Traffic Road Locations, funding for which has already been approved and allocated in the capital budget.
2. Approve the purchase and installation of LED bulbs for Town and Country Locations, 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

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November 13, 2017

Appendix: Types of Streetlights in Scarsdale



Cobra Head
(Count: 1,744 residential)



Town and Country Post-Top
87 residential
15 downtown



Decorative Post-Top
(130 downtown)