

Colonial Villages II Board of Directors
1903 N. Key Boulevard
Arlington, VA 22210



RE: Colonial Villages II Lighting Study

February 11, 2014

Dear Board of Directors:

This is the lighting study that I was contracted to provide.

Below is a discussion of lighting at Colonial Villages II, divided by light fixture type and location:

Bollards

Many of the bollards along the walkways have been damaged by abuse, and this is an issue that I understand has been an ongoing concern. Not only have certain bollards been knocked over in the past, but their plastic lenses have been damaged in many cases; apparently, the lenses are not able to be re-ordered, resulting in an ongoing damaged appearance to the bollards.

To permanently prevent this from recurring in the future, concrete bollards that do not have transparent lenses that can be damaged could be considered. One image of such bollards is as follows:



Using LED technology as the lighting source in the bollards would reduce electricity use by approximately 50% and extend longevity by approximately 4 times to 50,000 hours; this means no maintenance for approximately ten years. A total of sixteen bollards were counted on site.

If this type of bollard would be of interest, I can provide pricing for various specific models.

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Parking Lot/Walkway Pole Lighting

The parking lot and walkway areas of Colonial Villages II are downward facing “shoebox” style fixtures running 150 watt and 250 watt high pressure sodium bulbs. These fixtures are the biggest money wasters in the community and represent the largest area for efficiency gains.

The actual energy usage of the current 150 watt and 250 watt fixtures at Colonial Villages II is actually approximately 173 watts and 288 watts, taking account for the power used by the ballast in each fixture. The technology being used in the fixtures, high pressure sodium, has a useful life of approximately 20,000 hours; this technology generally requires bulb replacement approximately every four years at standard usage rates, along with periodic ballast replacement.

Replacing the shoebox fixtures with similarly styled fixtures running Induction lighting technology would cut power consumption in half and extend lifetime by approximately five fold to 100,000 hours. This means no bulb or ballast replacement for approximately 21 years at standard usage rates, with half the power consumption during this entire period.

Importantly, Colonial Villages II requires its maintenance person to use a ladder to perform lighting maintenance. Under OSHA regulations, ladders are to be used only for purposes for which they are designed. It is highly arguable whether ladders were designed to access and perform maintenance on light fixtures high above the ground, especially considering the detailed work needed to replace bulbs and ballasts. A slip and fall accident of a maintenance person while performing lighting maintenance could put Colonial Villages II at potential risk of significant legal liability. Green Light Energy, LLC does not render legal advice, but suggests that your HOA consult with its legal counsel regarding this subject.

Given the above considerations, it is recommended that the Board consider replacement of its existing shoebox fixtures with induction shoebox fixtures. An ROI calculation is included herewith as Exhibit A, showing return on investment of approximately \$192,000 versus an outlay of approximately \$32,000. Financing is available.

The style of the current shoebox fixtures is likely appropriate, as their downward facing positioning prevents light trespass into many of the living units in close proximity. However, it could be argued that a traditional colonial style might be desirable. Such a style is as follows:

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Sconce Lighting

Each building on the property is outfitted with sconce lighting at its entrance (total quantity: approximately 29). Each sconce runs two 40-watt incandescent bulbs, and each bulb has a useful life of approximately 2,000 hours. While LED lights would run at 80% less power and last 25 times as long, the expense of the LED lights and their ability to be easily stolen means that the current solution is likely the most efficient from a cost perspective in practical terms.

Colonial Fixtures in Courtyard of Troy St. Residential Area

The colonial fixture represented in the above fixture can serve as a direct replacement for the five colonial fixtures in the courtyard of the Troy Street residential area; the 150-watt mercury vapor system could be replaced with a 70-watt induction fixtures, increasing longevity by approximately 7 times, reducing electricity by approximately 50%, and eliminating lighting maintenance for approximately 21 years.

Exterior Flood Lighting

Some of the exterior flood lighting has recently been replaced.

The buildings on the property use approximately three “par 38” 90-watt halogen and ten additional 150-watt high pressure sodium flood lights to illuminate some exterior areas.

The halogen bulbs have a useful life of approximately 2,000 hours, at which point they need to be replaced. Replacing these lights with 25-watt Induction flood lights would extend longevity by approximately 50 times to 100,000 hours; this means no maintenance for approximately 21 years at standard usage rates. Energy use versus halogen would also be reduced by approximately 72% for the entire period.

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The high pressure sodium bulbs have a useful life of approximately 20,000 hours. Replacing the 150-watt high pressure sodium lights with 70 watt Induction flood lights would extend longevity by approximately 5 times to 100,000 hours; this means no maintenance for approximately 21 years at standard usage rates. Energy use versus the current system would also be reduced by approximately 70% for the entire period.

The concerns noted above with respect to performance of lighting maintenance on ladders would also apply to these lights.

Inside Hallway Lighting

Each inside hallway light fixtures runs three 13-watt compact fluorescent lamps. These compact fluorescent bulbs require replacement approximately every 11 months. In absence of any expressed desire to increase the lighting levels, the current solution is likely most efficient. However, it was observed that a number of the ceiling fixtures are in disrepair. In these instances, replacing the fixtures with similarly styled LED fixtures would improve aesthetics and reduce energy consumption by approximately 20%.

Inside Storage/Laundry Area Lighting

The Storage/Laundry Area is lit by 40-watt fluorescent bulbs paired with magnetic ballasts. Magnetic ballasts used to be standard in the 1980s and have largely been replaced over the past 20 years with electronic ballasts. It is recommended that the magnetic ballasts be replaced with electronic ones; this will increase fixture efficiency by approximately 20 – 30%.

Potential Next Steps

The above sections outline numerous opportunities for improvement. Electricity and lighting maintenance costs typically represent the third largest line item of Home Owner Associations, falling only behind insurance and trash removal. Considering the potential legal liability involved with how lighting maintenance is performed at Colonial Villages II, the cost of your lighting could easily become its single greatest cost if left on its current path.

Planning for long term lighting solutions that will permanently reduce electricity and component (bulb and ballast) costs while eliminating lighting maintenance would seemingly be a prudent path.

About Green Light Energy, LLC

There are highly significant differences in quality, performance and price between the manufacturers of all lighting technologies. This is particularly true with respect to manufacturers of LED and Induction lighting technologies; these technologies have been widely adopted by corporate and government customers over the past ten years as a result of their extreme efficiency, but have gone essentially wholly unevaluated by home owner associations to date.

This study enables the Board to solicit bids for products from any supplier. Green Light Energy, LLC is not beholden to any manufacturer or lighting technology; as detailed on our website, we perform very significant

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due diligence on lighting manufacturers (including onsite manufacturer due diligence) and sell only products about which we have come to a positive reasoned conclusion with respect to quality and performance; our prices are highly competitive and our warranty support is strong.

Conclusion

Please let me know if additional clarifications are needed.

Thank you for the opportunity to perform this study and for the potential future opportunity to supply reliable, cost competitive products to Colonial Villages II.

Best Regards,



Ryan R. Riley
Managing Member

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