

CARMEL ENGINEERING DEPARTMENT

Street Light Study

Carmel, Indiana

Dawson S. Allen

Summer 2018

This document outlines a street light study of the City of Carmel, IN that was performed in order to assess the current situation and consider alternative undertakings of the City to better understand street lighting provided to the community.

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1.0 Study Description

1.1 City of Carmel

The City of Carmel is located in Hamilton County, Indiana which is north of Indianapolis; bordered to the north by 146th street, the south by 96th street, the east by the White River, and the west by the county line (City of Carmel). The population of Carmel was recorded at 90,065 (2016) but is growing at a comparatively high rate: 3.4% (Kinghorn). Though a fast-growing city, Carmel is currently home to over 490 subdivisions and continually strives to implement innovative ideas within the infrastructure of the community to achieve goals of improving the functionality, social well-being, and economy of the City. As a continued effort of the city government to improve the quality of life for the community, proper response to infrastructure development is addressed with consideration to the safety, property, and environment of the community.

Street lighting is a fundamental element to the safety and economy of the community. Proper street lighting on roadways and at intersections have been shown to reduce accidents and increase awareness of drivers. Proper street lighting in residential areas has been known to increase the safety of the area as well as accent architectural features and improve aesthetics. Proper street lighting in commercial areas has been shown to increase revenues of well-lit venues and attract customers in the evening hours.

1.2 Problem Description

In the city of Carmel, the system regulating and defining street lighting responsibilities, maintenance, and continued development is being considered for reconfiguration. The current system consists of both public street lights and privately owned street lights. Public street lights are developed and maintained using city resources. Privately owned street lights are developed and maintained using independent, private resources. Privately owned street lights are often leased to individuals or home owners associations (HOA) by a third party firm or energy utility in which case a fee and agreement regarding maintenance are established between the two entities.

Privately owned street lights are providing a large amount of street lighting for the City's residential areas. The issue with this is that deficiencies are susceptible to being created due to the lack of requirements for lighting maintenance. The issue originally brought to the attention of the City was this exactly: lighting deficiencies in residential areas, especially those in which there was, at one point, proper lighting, but is now reaching the end of its lifespan.

Upon basic research of the street lighting system in the City of Carmel, more issues were found. Generally, there have been inconsistent methods to providing street lighting to the City. All major thoroughfares, if illuminated, are done so through public lighting. This could have been done by the City directly through their own street lights or through a third party such as Duke or IPL who has provided equipment, maintenance, and energy with compensation from the City. Now, nearly all new public

lighting installed is done directly by the City which owns and maintains the lights and poles themselves. This most often occurs as part of a new infrastructure improvement project such as a round-a-bout installation or streetscape project.

Residential areas have not been as consistent with their street lighting system. In the past, there was no regulation or requirements in regards to street lighting in residential areas. This resulted in some neighborhoods lacking street lighting altogether as well as inconsistent types of fixtures and poles in those neighborhoods which did have lighting. The city then began to provide some public lighting in residential areas by the request of that respective neighborhood. The initial cost was a joint effort between the HOA and the city but the city has typically provided the maintenance and energy costs to these neighborhoods. This process was enacted under the Barrett Law process. Most neighborhoods were provided this public lighting through Duke Energy; however, a few neighborhoods were given lighting owned and maintained by the City of Carmel itself. This process was only enacted with neighborhoods that petitioned for these services and came to an agreement with the City on design and payment. Now, new developments have requirements set forth by the Unified Development Ordinance (UDO) regarding specifics on street lighting that should be installed in residential areas. These new regulations should ensure proper lighting for future developments; however, lighting maintenance has not been enforced and therefore has the potential to create deficiencies in the existent and potential future lighting network.

In addition to these issues, there has been a lack of communication with Duke Energy, the main provider in Carmel, regarding the energy used on the streets of Carmel by street lights, traffic signals, and other equipment. There has been concern that the City is either overpaying or not paying enough for the energy it is using due to the possible disorganization of Duke Energy, specifically their billing department.

Problems existent:

- Lack of proper lighting in residential areas throughout Carmel
- Inefficient maintenance of lighting in the community
- Aesthetic differences in types of light fixtures and poles existent in Carmel
- Lack of street lighting maintenance requirements in the UDO
- Lack of communication and organization with Duke Energy's billing department

2.0 Study Scope

The following are efforts and technologies explored:

- Public Street Lighting
 - Collect Existing Conditions Information
 - Consolidate Billing with Duke Energy
 - Orchestrate an Audit of Street Light Billing
 - Wireless Control Systems
 - Solar Energy
 - Past Barrett Law Cases and Procedures
 - Additional Ideas for Improvements
- Private Street Lighting
 - Collect Existing Conditions Information
 - Possible Maintenance Regulation Requirements
- Gather Quotes from Suppliers for Street Lighting Development

3.0 Twenty Year Outlook

This is the shared goal of the street lighting conditions for the future of The City of Carmel

- Proper amount of street lighting is present for both public and residential areas in the City of Carmel
- Maintenance of all street lighting is performed and done so in a timely manner that street lighting does not become deficient where it has already once been existent
- Energy usage and costs for lighting are reduced by maximizing lifespan, quality of light (Color Rendering Index), and efficiency
- All light poles, fixtures, and designs match the standards and aesthetics of Carmel
- New light developments are regulated and recorded
- Billing with energy utility is clear, detailed, and accurately reflecting the current existing conditions as well as systematized for future lighting installations
- Quality communication with energy utility is established and maintained

4.0 Existing Conditions

City of Carmel Street Lighting			
Type of Light		Maintainee	
		Carmel	Duke
	LED	1,642	59
	HPS	0	1,515
	Metal Halide	0	192
	Mercury Vapor	0	188
	Other/Unknown	0	7

Figure 1. Basic Duke Energy and City of Carmel Street Light Statistics

4.1 Public Lighting

Public street lighting consists of lighting either owned or maintained by the City of Carmel or a third-party provider who is compensated by the City to own and maintain lighting for it.

There are an estimated 1,642 street lights in Carmel owned and maintained by the City. This includes all of the street lights recorded by the street department during the summer of 2017 as well as an estimated number of street lights that have been installed on various infrastructure development projects (mostly round-a-bouts) since the summer of 2017.

Similarly, Duke Energy has provided current street lighting data from their GIS department which should be current to early July 2018, but has been discovered to not be completely accurate. This data has been used to create maps and be of use throughout this study. Along with the location information Duke provided with their recorded 1,961 street lights throughout the city, they also provided information as to specific types of poles, types of luminaires, wattages, and other detailed specifications. This specific information was incorporated into the City of Carmel's Engineering GIS dataset.

An in-depth analysis of five residential neighborhoods has also been completed. This analysis has provided details regarding an accurate, on-site inspection of lights existing as well as different options for replacement costs in these specific neighborhoods based on quotes provided by suppliers. These five reports are provided in Appendix B.

4.2 Private Lighting

There has not been extensive research or data recorded on the private street lighting existing in the City of Carmel. This has not been the explicit focus of the study for a few reasons. Collection of only location of lights is a time intensive process that requires driving through every neighborhood in the City of Carmel. Additional information such as types of luminaires, age of poles, quality of poles, contracts with third party providers or maintenance companies, cost of poles both initially and annually, will not be provided through this already time intensive processes. Conversations with every HOA need to be held in order to determine this information, assuming each association has this information. Finally, once all of this information has been compiled and the data is complete, a thorough analysis of the entire compilation of data can be made.

Actions from here could include but are not limited to: installing additional public lighting in residential areas which are deficient, making changes to zoning requirements in order to ensure individuals are maintaining sufficient street lighting in their existent neighborhoods, working with HOAs to provide additional lighting via Barrett Law, or making no changes.

The City of Carmel's street lighting conditions in residential areas are so drastically diverse throughout the City that a case-by-case analysis of each neighborhood should be done if the residents of that neighborhood have agreed a street lighting issue is existent.

5.0 Local Energy Utilities

Duke Energy is the main electric utility for the City of Carmel. Indiana Power and Light (IPL) is also a common electric utility in the southern portion of the City. Duke Energy has been cooperative throughout this light study and has provided helpful information as it has been specifically requested, including their GIS dataset for street lights within City limits. This data source has provided specific location and asset data for individual light structures that Duke Energy maintains. This data should be current to early July, 2018; however, it has been discovered that this data is not completely accurate.

The other main involvement Duke Energy has been a part of throughout this study is with the orchestration of an audit on the City of Carmel's billing with Duke. Duke has offered to perform a "hard audit" of the City's street lighting accounts with themselves in order to ensure and adjust discrepancies that have been inaccurately reflected in the billing. The City has agreed to have Duke perform this audit free of any direct cost to the City.

6.0 Wireless Control Systems

Commercial wireless control systems consist of “nodes” placed on either each street light or their power source which have the ability to relay desired lighting output to the street lights via “gateways” which are wirelessly connected to centralized software controlled by a designated city department, most likely the Communications Department. This creates a network of street lights whose energy usages can be monitored, lighting output can be controlled, locations can be tracked via GPS, and whose maintenance needs can be assessed with ease using the asset management software.

Capital can be saved with the elimination of street department employees being required to scan the city’s street lighting maintenance needs at night, twice per month. The cost of this service has traditionally cost about \$56,448 per year.

Wireless control systems and asset management software provided by a third party such as General Electric was explored and the cost estimated around \$275,000 to \$300,000. This option provides a return on investment of an estimated 5.3 years. This quote is provided in Appendix C.

In meeting with the Communications Department and discussing the fiber ring project that is scheduled to begin soon, “smart technologies” such as wireless control systems are on the horizon with a bigger picture in mind. More open source “smart” systems, such as round-a-bout irrigation and lighting or trash dumpster monitoring systems, in addition to wireless control systems, can be managed via software operated by the city itself. Open source software managed by the city itself provides independent relief from private firms and providers, a beneficial component for the city. While all of the details and specific technology to be used by the communications department have not been organized, this is a future endeavor that would be best implemented in cohesion with other smart technologies managed by the city itself.

Wireless control systems will provide great benefits to the City of Carmel; however, in my opinion, this technology should be provided and managed by the city itself as a sub-component to the fiber ring project being implemented by the Communications Department.

7.0 Solar Energy

The City of Carmel is interested in exploring options for solar powered lighting. The benefits desired are both economic savings as well as the use of a more environmentally sustainable energy source. In research of methods utilizing solar energy as a power source for street lighting, there seem to be two viable options: directly solar powered street lights and net metering.

Directly solar powered street lights would be street lights which are very independent assets, separated from the energy grid and powered by their individual solar panels and batteries. Costs for the street light and poles themselves would be the same, so long as the structural integrity of the pole can uphold the solar equipment. A quote received from LiteTech for solar equipment which wraps around the pole in contrast to affixed above it, for aesthetic benefits, was \$4,800 per light. This quote is just for the solar equipment, not the pole, fixture, or luminaire and is provided in Appendix C.

Net metering is when the already existent energy grid is charged using solar panels placed at various locations in the city. Net metering has not been explored in detail and no quotes from suppliers were gathered. This was just presented as an option to further explore in the future if the City Council shared interest in this alternative.

The upfront savings with directly solar powered lights resides in the eradicated need for electric conduit, wiring, and trenching traditionally required with the installation of street lights. This cost saved could be as much as \$1,000 to \$3,000 per light (estimated based on previous bids from INDOT projects within Carmel). There are of course additional energy cost savings; however, with the use of LED technology, energy costs have already been reduced to such a level that this savings does not reasonably justify the expenditures required to convert to solar lighting. This savings brings the conclusion that solar lighting is most cost effective when lights are being installed in a location distant from the existing energy grid or any scenario in which costs for trenching, wiring, and conduit would traditionally be high.

8.0 Barrett Law

The City of Carmel's Engineering Department has documents regarding past attempts to use Barrett Law process for installation of street lighting in residential areas. See Appendix D for Barrett Law Processes historically used for the installation of street lighting in some residential areas. See Appendix E for the Indiana code Title 36, Article 9, Chapters 9 and 10 regarding municipal street lighting.

9.0 Future Lighting

Quotes from various suppliers have been gathered and attached in Appendix C for reference on costs of future lighting installations, especially in residential neighborhoods if Barrett Law procedures continue in a similar process as years previous. LiteTech has provided quotes on our standard lights, like those already existent on major thoroughfares (C-1) and those for possible residential lights which hold similar characteristics and quality but at a more appropriate level for a residential neighborhood (C-2).

As street lighting continues to be installed on infrastructure improvement projects throughout the city, the electronic 'as-built' documents from contractors need to be collected and supplied to the

City to be included in the GIS dataset to ensure it remains accurate and current to date. This is in regards to the street lighting owned and maintained by the City of Carmel.

10.0 Proposed Objectives

Following the investigation of the street lighting conditions in the City of Carmel, these are the recommended actions I propose the City of Carmel should take:

- Continue to have Duke perform their audit free of charge. Consider having a third party audit/consulting firm ensure the audit is done accurately and organized in such a way that future billing will be accurate and communicated efficiently to the City.
- Take measures to ensure that electronic 'as-built' documents are being collected from contractors on public infrastructure improvement projects. This will continue to keep City data sources accurate and up to date for future use.
- Consider solar powered street lighting for future projects requiring street lighting. Weigh the cost between traditional street lighting with solar lighting. Consider aesthetic and environmental sustainability benefits as well. Assess the situation and determine if solar lighting would be the best option for each specific project.
- Implement Wireless Control Systems under the guidance of the Communications Department following the completion of the Fiber Ring Project. In pursuit of independence from private firms and compatibility with other smart technologies proposed to be used throughout the City, open source hardware should be selected if possible.
- Choose one of the processes suggested or determine an alternate method to collect data of private lighting in residential areas. Consider new zoning requirements for street lighting to ensure proper street lighting is maintained in the City of Carmel.
- Review and discuss Barrett Law Procedures historically used by the City for street lighting in residential areas. Determine if the City wants to encourage the use of Barrett Law as a means for the installation and maintenance of street lighting in residential areas.

11.0 Appendices

Appendix A: References Cited

Kinghorn, Matt. (2016) "Carmel, Indianapolis and Fort Wayne Show Biggest 2016 Population Gains."

Indiana Business Research Center Indiana University Kelley School of Business,
<http://www.incontext.indiana.edu/2017/july-aug/article1.asp> (June 18, 2018)

"City of Carmel." *Document Central / City of Carmel*, <carmel.in.gov/about-carmel>

Appendix B: Individual Residential Lighting Reports

B-1: Brookshire North

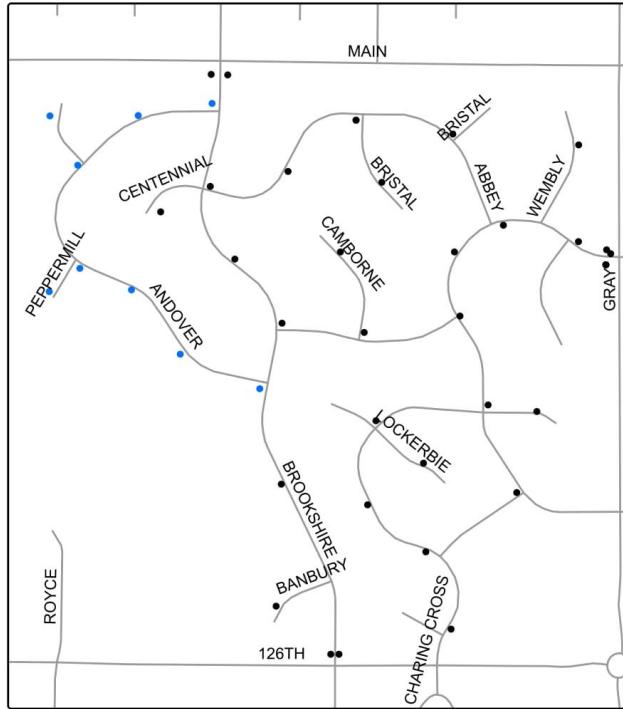


Figure 1. Existing Conditions

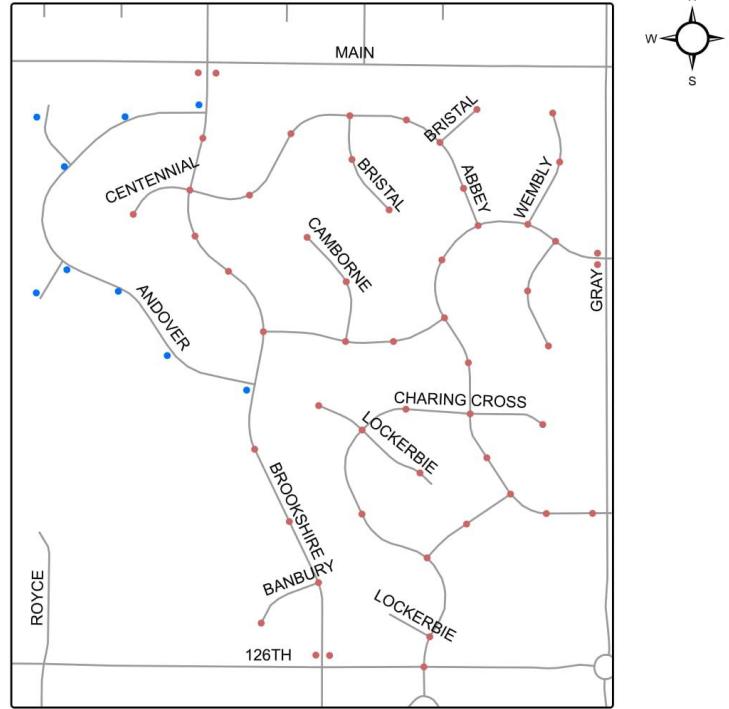


Figure 2. Proposed Conditions



Street Light Density

Existing	13.79 SL/mi
Proposed	20.68 SL/mi

Brookshire North Street Lighting



Brookshire North Street Lighting Cost Estimate

Residential 12' Light by TechLight			Replace and Add		Replace		
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount	
Light Pole, Luminaire & Lamp Installed	EACH	\$ 4,450.00	39	\$ 173,550.00	23	\$ 102,350.00	
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	39	\$ 33,150.00	23	\$ 19,550.00	
Handhole, Lighting	EACH	\$ 800.00	13	\$ 10,400.00	7.666667	\$ 6,133.33	
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	468	\$ 7,488.00	276	\$ 4,416.00	
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	234	\$ 3,276.00	138	\$ 1,932.00	
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	468	\$ 3,744.00	276	\$ 2,208.00	
Height of Light (feet)			Total	12	\$ 231,608.00	12	\$ 136,589.33
Standard 12' Light by TechLight							
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount	
Light Pole, Luminaire & Lamp Installed	EACH	\$ 5,600.00	39	\$ 218,400.00	23	\$ 128,800.00	
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	39	\$ 33,150.00	23	\$ 19,550.00	
Handhole, Lighting	EACH	\$ 800.00	13	\$ 10,400.00	7.666667	\$ 6,133.33	
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	468	\$ 7,488.00	276	\$ 4,416.00	
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	234	\$ 3,276.00	138	\$ 1,932.00	
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	468	\$ 3,744.00	276	\$ 2,208.00	
			Total	12	\$ 276,458.00	12	\$ 163,039.33

INSTRUCTIONS: fill in green cells by configuring quantities of new proposed installations

*These are estimates based on quotes from various project bids and supplier's quotes, each job should be specifically bid for accurate cost

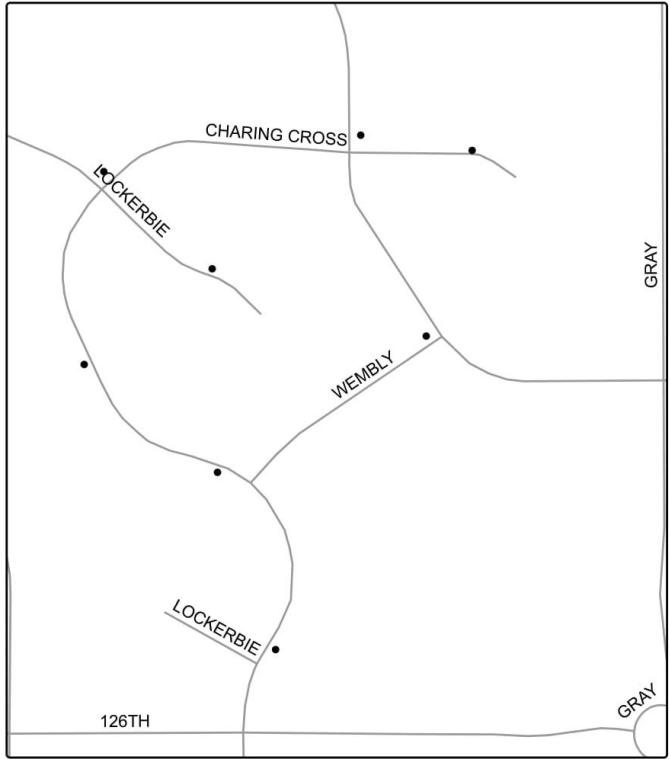


Figure 1. Existing Conditions

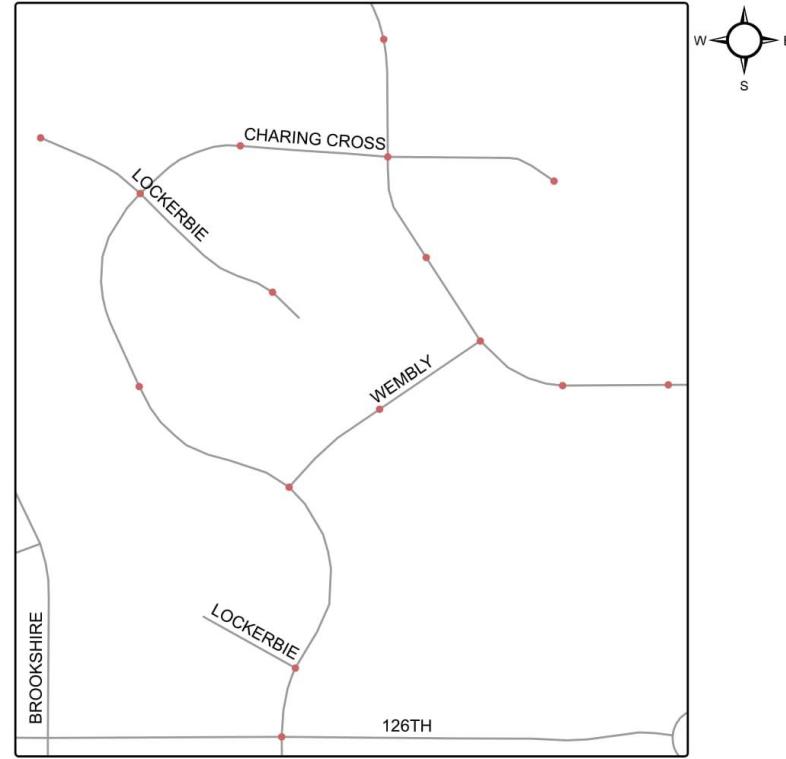


Figure 2. Proposed Conditions



Street Light Density

Existing	8.56 SL/mi
Proposed	18.35 SL/mi

Brookshire Pines Street Lighting

Legend

- Existing Duke Lights
- Existing City Lights
- Proposed New Lighting
- Roads

Brookshire Pines Street Lighting Cost Estimate

Residential 12' Light by TechLight			Replace and Add		Replace		
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount	
Light Pole, Luminaire & Lamp Installed	EACH	\$ 4,450.00	15	\$ 66,750.00	8	\$ 35,600.00	
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	15	\$ 12,750.00	8	\$ 6,800.00	
Handhole, Lighting	EACH	\$ 800.00	5	\$ 4,000.00	2.666667	\$ 2,133.33	
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	180	\$ 2,880.00	96	\$ 1,536.00	
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	90	\$ 1,260.00	48	\$ 672.00	
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	180	\$ 1,440.00	96	\$ 768.00	
Height of Light (feet)			Total	12	\$ 89,080.00	12	\$ 47,509.33
Standard 12' Light by TechLight							
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount	
Light Pole, Luminaire & Lamp Installed	EACH	\$ 5,600.00	15	\$ 84,000.00	8	\$ 44,800.00	
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	15	\$ 12,750.00	8	\$ 6,800.00	
Handhole, Lighting	EACH	\$ 800.00	5	\$ 4,000.00	2.666667	\$ 2,133.33	
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	180	\$ 2,880.00	96	\$ 1,536.00	
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	90	\$ 1,260.00	48	\$ 672.00	
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	180	\$ 1,440.00	96	\$ 768.00	
			Total	12	\$ 106,330.00	12	\$ 56,709.33

INSTRUCTIONS: fill in green cells by configuring quantities of new proposed installations

*These are estimates based on quotes from various project bids and supplier's quotes, each job should be specifically bid for accurate cost

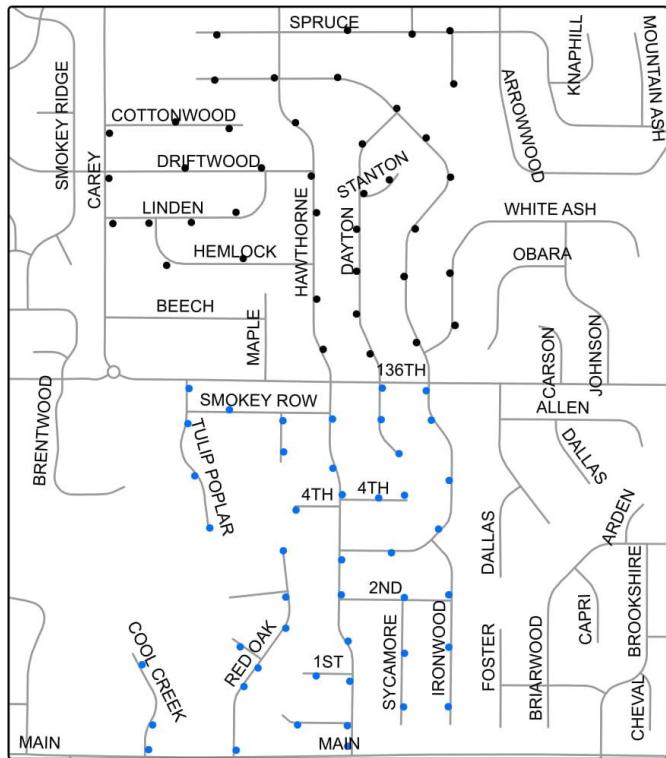


Figure 1. Existing Conditions

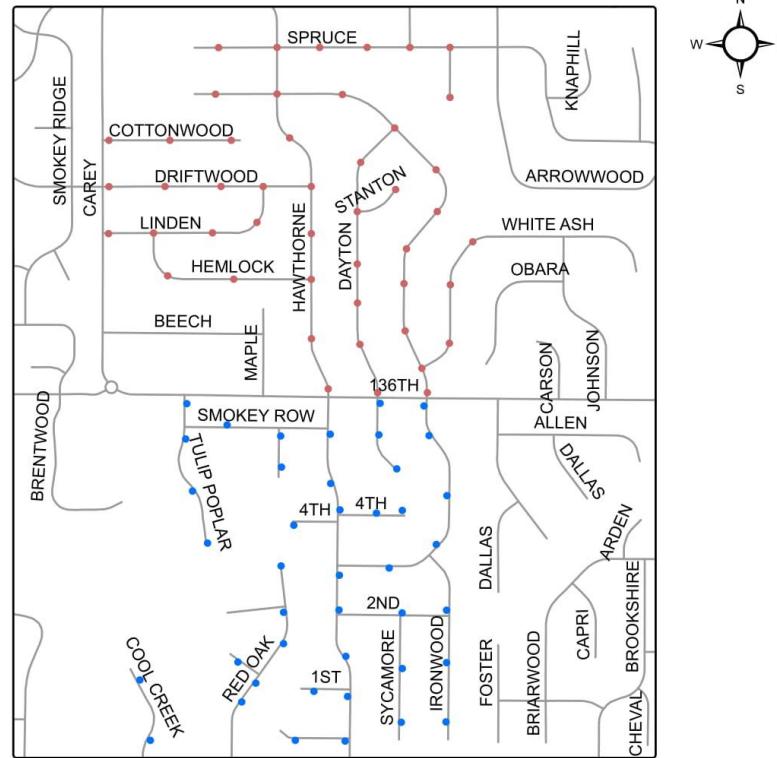
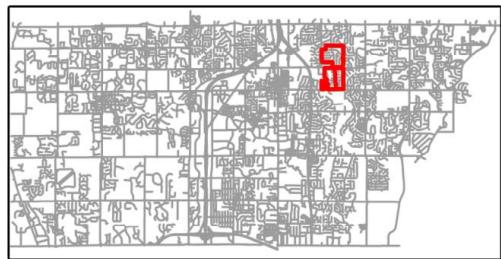


Figure 2. Proposed Conditions



Street Light Density

Existing	13.93 SL/mi
Proposed	15.26 SL/mi

Legend

- Existing Duke Lights
- Existing City Lights
- Proposed New Lighting
- Roads

Cool Creek North Street Lighting

Cool Creek North Street Lighting Cost Estimate

Residential 12' Light by TechLight			Replace and Add		Replace		
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount	
Light Pole, Luminaire & Lamp Installed	EACH	\$ 4,450.00	47	\$ 209,150.00	39	\$ 173,550.00	
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	47	\$ 39,950.00	39	\$ 33,150.00	
Handhole, Lighting	EACH	\$ 800.00	15.666667	\$ 12,533.33	13	\$ 10,400.00	
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	564	\$ 9,024.00	468	\$ 7,488.00	
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	282	\$ 3,948.00	234	\$ 3,276.00	
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	564	\$ 4,512.00	468	\$ 3,744.00	
Height of Light (feet)			Total	12	\$ 279,117.33	12	\$ 231,608.00
Standard 12' Light by TechLight							
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount	
Light Pole, Luminaire & Lamp Installed	EACH	\$ 5,600.00	47	\$ 263,200.00	39	\$ 218,400.00	
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	47	\$ 39,950.00	39	\$ 33,150.00	
Handhole, Lighting	EACH	\$ 800.00	15.666667	\$ 12,533.33	13	\$ 10,400.00	
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	564	\$ 9,024.00	468	\$ 7,488.00	
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	282	\$ 3,948.00	234	\$ 3,276.00	
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	564	\$ 4,512.00	468	\$ 3,744.00	
			Total	12	\$ 333,167.33	12	\$ 276,458.00

INSTRUCTIONS: fill in green cells by configuring quantities of new proposed installations

*These are estimates based on quotes from various project bids and supplier's quotes, each job should be specifically bid for accurate cost

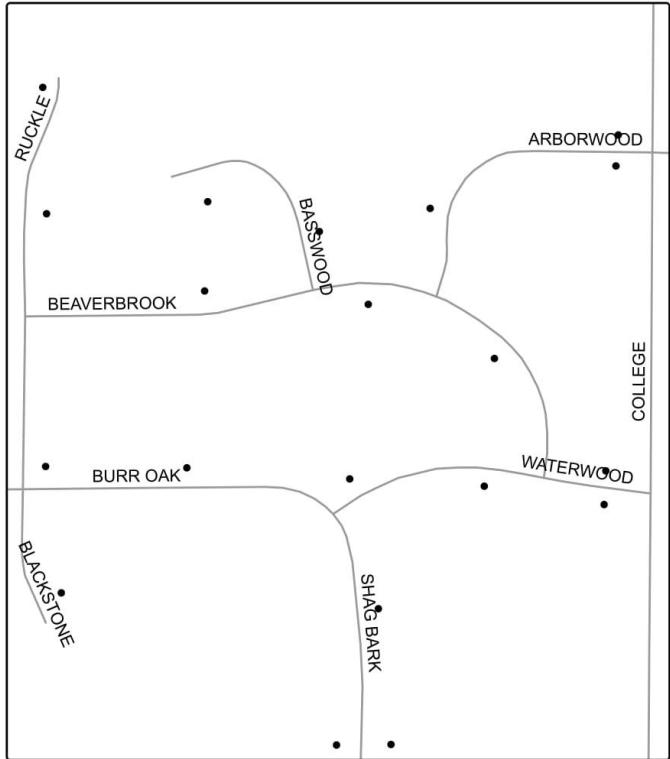


Figure 1. Existing Conditions



Waterwood Street Lighting

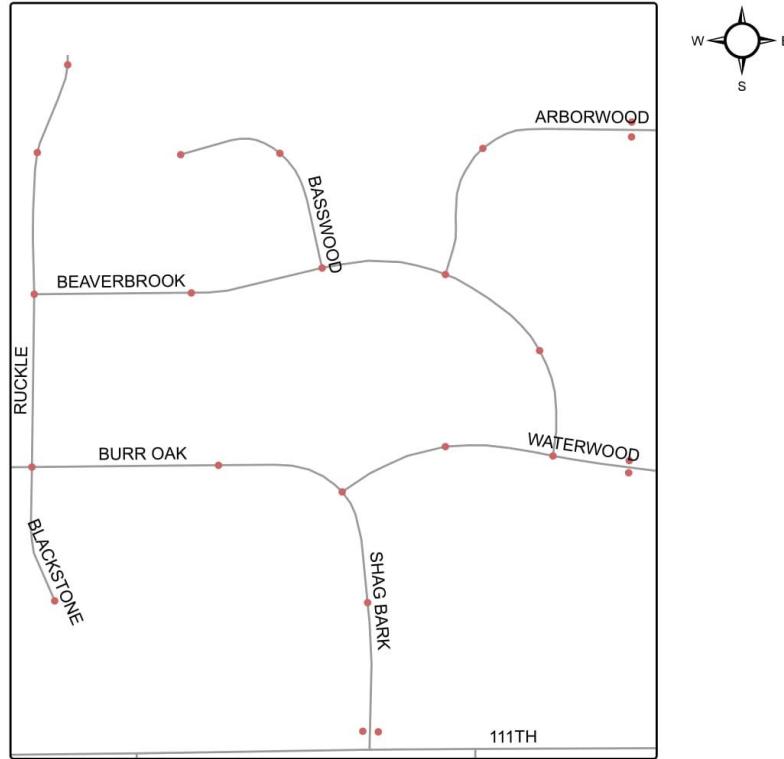


Figure 2. Proposed Conditions

Street Light Density

Existing	21.91 SL/mi
Proposed	24.00 SL/mi

Legend

- Existing Duke Lights
- Existing City Lights
- Proposed New Lighting
- Roads

Waterwood Street Lighting Cost Estimate

Residential 12' Light by TechLight			Replace and Add		Replace	
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount
Light Pole, Luminaire & Lamp Installed	EACH	\$ 4,450.00	23	\$ 102,350.00	21	\$ 93,450.00
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	23	\$ 19,550.00	21	\$ 17,850.00
Handhole, Lighting	EACH	\$ 800.00	7.66666667	\$ 6,133.33	7	\$ 5,600.00
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	276	\$ 4,416.00	252	\$ 4,032.00
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	138	\$ 1,932.00	126	\$ 1,764.00
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	276	\$ 2,208.00	252	\$ 2,016.00
Height of Light (feet)		Total	12	\$ 136,589.33	12	\$ 124,712.00

Standard 12' Light by TechLight			Quantity		Amount	
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount
Light Pole, Luminaire & Lamp Installed	EACH	\$ 5,600.00	23	\$ 128,800.00	21	\$ 117,600.00
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	23	\$ 19,550.00	21	\$ 17,850.00
Handhole, Lighting	EACH	\$ 800.00	7.66666667	\$ 6,133.33	7	\$ 5,600.00
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	276	\$ 4,416.00	252	\$ 4,032.00
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	138	\$ 1,932.00	126	\$ 1,764.00
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	276	\$ 2,208.00	252	\$ 2,016.00
		Total	12	\$ 163,039.33	12	\$ 148,862.00

INSTRUCTIONS: fill in green cells by configuring quantities of new proposed installations

*These are estimates based on quotes from various project bids and supplier's quotes, each job should be specifically bid for accurate cost

B-5: Woodland Springs

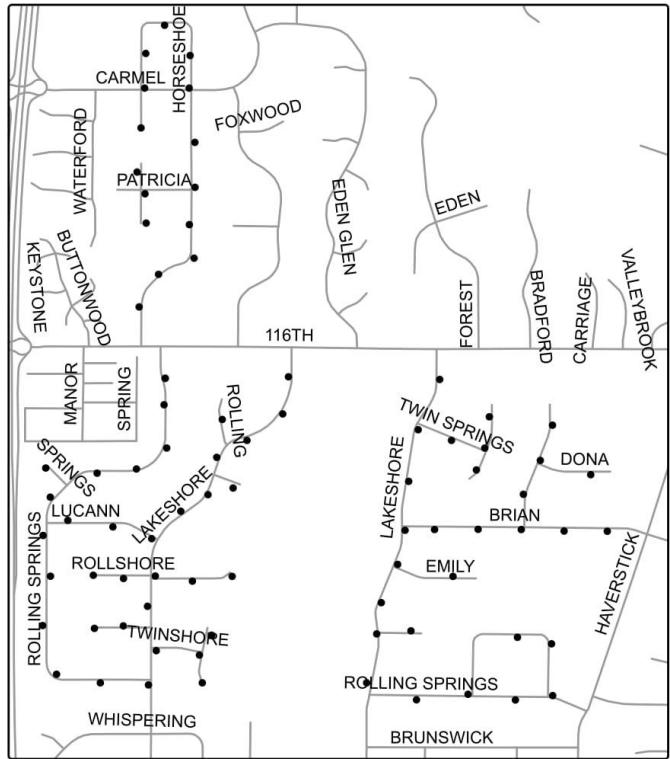


Figure 1. Existing Conditions

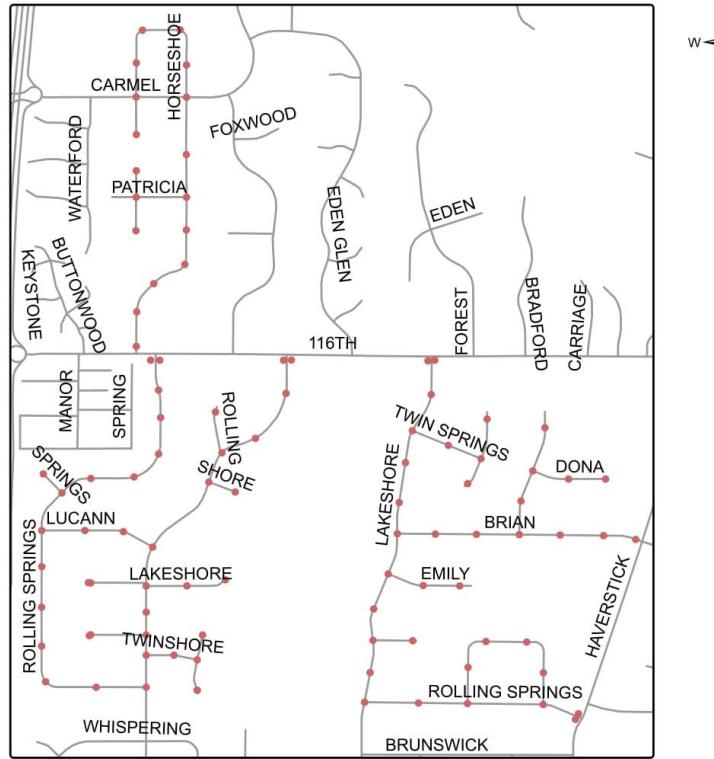
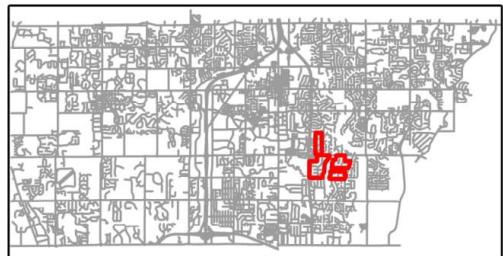


Figure 2. Proposed Conditions



Street Light Density

Existing	15.99 SL/mi
Proposed	19.59 SL/mi

Legend

- Existing Duke Lights
 - Existing City Lights
 - Proposed New Lighting
- Roads

Woodland Springs Street Lighting

Woodland Springs Street Lighting Cost Estimate

Residential 12' Light by TechLight			Replace and Add		Replace	
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount
Light Pole, Luminaire & Lamp Installed	EACH	\$ 4,450.00	98	\$ 436,100.00	80	\$ 356,000.00
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	98	\$ 83,300.00	80	\$ 68,000.00
Handhole, Lighting	EACH	\$ 800.00	32.666667	\$ 26,133.33	26.666667	\$ 21,333.33
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	1176	\$ 18,816.00	960	\$ 15,360.00
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	588	\$ 8,232.00	480	\$ 6,720.00
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	1176	\$ 9,408.00	960	\$ 7,680.00
Height of Light (feet)		Total	12	\$ 581,989.33	12	\$ 475,093.33
Standard 12' Light by TechLight						
Description	Unit of Measurement	Unit Cost	Quantity	Amount	Quantity	Amount
Light Pole, Luminaire & Lamp Installed	EACH	\$ 5,600.00	98	\$ 548,800.00	80	\$ 448,000.00
Lighting Foundation, 18" Diameter, Concrete, with Ground	EACH	\$ 850.00	98	\$ 83,300.00	80	\$ 68,000.00
Handhole, Lighting	EACH	\$ 800.00	32.666667	\$ 26,133.33	26.666667	\$ 21,333.33
Conduit, Steel, Galvanized, 2"	Linear Ft.	\$ 16.00	1176	\$ 18,816.00	960	\$ 15,360.00
Wire, #4 Copper in Plastic Duct in Trench, 4 1/C	Linear Ft.	\$ 14.00	588	\$ 8,232.00	480	\$ 6,720.00
Wire, #4 Copper in Plastic Duct, 4 1/C	Linear Ft.	\$ 8.00	1176	\$ 9,408.00	960	\$ 7,680.00
		Total	12	\$ 694,689.33	12	\$ 567,093.33

INSTRUCTIONS: fill in green cells by configuring quantities of new proposed installations

*These are estimates based on quotes from various project bids and supplier's quotes, each job should be specifically bid for accurate cost

Appendix C: Quotes from Suppliers

C-1: Carmel Standard Street Lights

Quote # TLCH990162 LIGHT POLE BREAKDOWNS Date: 5/30/2017 Page 1



Techlite Corporation
7718 Loma Court
Fishers, IN 46038
317.578.2626 P
317.578.2727 F
www.techlitecorp.com

To: MATT HIGGINBOTHAM CITY OF CARMEL			Job/Project Name: LIGHT POLE BREAKDOWNS
Qty	Type	Mfg	Description
			12FT ASSEMBLY
1	SPRI	12FT POLE INCLUDES EYEBOLTS	\$1,310.00
1	SPRI	LED LUMINAIRE	\$960.00
1	SPRI	CAST IRON BASE	\$1,200.00
1	SPRI	CLAMP ON BRACKETS FOR FLOWER POTS	\$275.00
1	SPRI	GFI	\$55.00
			30FT ASSEMBLY
1	SPRI	30FT POLE WITH 8' ARM INCLUDES EYEBOLTS	\$3,000.00
1	SPRI	LED LUMINAIRE	\$1,400.00
1	SPRI	CAST IRON BASE	\$1,400.00
1	SPRI	CLAMP ON BRACKETS FLOWER POTS	\$275.00
1	SPRI	GFI	\$55.00
			15FT ASSEMBLY
1	SPRI	15FT POLE INCLUDES EYEBOLTS	\$1,610.00
1	SPRI	LED LUMINAIRE	\$960.00
1	SPRI	CAST IRON BASE	\$1,200.00
1	SPRI	CLAMP ON BRACKETS FLOWER POTS	\$275.00
1	SPRI	GFI	\$55.00
MFG Code F.O.B			TERMS
Prices firm for entry by: 30 Days			Shipment by:
Quotation is based on the above listed bill of material and counts. Any changes would make quotation void and require a requote. Given lead times are strictly estimates and are subject to change once order is entered. PLEASE NOTIFY US OF ANY REQUIRED DATES.			
ORDERS ARE SUBJECT TO MANUFACTURERS TERMS AND CONDITIONS.			
SALES TAX IS NOT INCLUDED UNLESS OTHERWISE NOTED.			
Printed - NS: 05/30/17 11:09:41 Per: STEVE BATES Email: steveb@techlitecorp.com			

Quote # TLCC0002 RESIDENTIAL STREET LIGHTING Date: 7/17/2018

Page 1



Techlite Corporation
7718 Loma Court
Fishers, IN 46038
317.578.2626 P
317.578.2727 F
www.techlitecorp.com

To: DAWSON ALLEN CITY OF CARMEL				Job Name: RESIDENTIAL STREET LIGHTING Project Name: CARMEL CARMEL RESIDENTIAL							
Qty	Type	Mfg	Description	Unit Price	Extd.Price						
1		GE	ERL2016C340DGRAY COBRA HEAD	\$295.00	\$295.00						
1		GE	EPTT01005BN40DPBLCK LANTERN	\$285.01	\$285.01						
1		USA	-LAE1-YE-CP-APA-V-64LED-NW/WW/CW-350MA-MT- PT-STD FINISH-OF ACORN	\$800.00	\$800.00						
1		WHAT	WHATLY FIBER GLASS 12FT ABOVE GROUND	\$700.00	\$700.00						
1		VALA	12' WASHINGTON BASE LIGHT POLE	\$850.00	\$850.00						
1		VALA	12FT HUNTINGTON BASE POLE	\$850.00	\$850.00						
1		WHAT	WHATLEY FIBERGLASS 12FT WASHINGTON POLE	\$610.00	\$610.00						
1		GE	LIGHTING CONTROL GATEWAY	\$1,900.00	\$1,900.00						
1		GE	LIGHTING CONTROL NODE	\$145.00	\$145.00						
1		GE	MONTHLY SOFTWARE MONITORING IF NEEDED PRICE PER MONTH	\$200.00	\$200.00						
1		CL	CLEAR WORLD SOLAR FLEX/ PRICE INCLUDES SOLAR MATERIAL ONLY	\$4,800.00	\$4,800.00						
MFG Code	F.O.B		TERMS	Lead Time							
Prices firm for entry by: 30 Days				Shipment by:							
Quotation is based on the above listed bill of material and counts. Any changes would make quotation void and require a requote. Given lead times are strictly estimates and are subject to change once order is entered. PLEASE NOTIFY US OF ANY REQUIRED DATES.											
ORDERS ARE SUBJECT TO MANUFACTURERS TERMS AND CONDITIONS.											
SALES TAX IS NOT INCLUDED UNLESS OTHERWISE NOTED.											
Printed - NS: 07/17/18 11:17:32 Per: STEVE BATES Email: steveb@techlitecorp.com											

C-3: SEPCO Quote



Quote # 25364 CH
7/3/18

To:
Carmel, IN
Jarrod Huff

Project:
IN, CARMEL STREETLIGHTING

Terms Standard T & C	Earliest Ship 4 to 8 Weeks	Shipping* Quote Estimated, Prepay & Add	Ship Via Best Way	Project Manager Shawn Tefft
Item No	Qty	Description	Unit Price	Total
1	1	SEPCO-SEPA275-QS-VPR30-MPPT21-SP4-PZ4 Solar Electric Power Assembly 275 Watt 328 Amp Hour Battery Assembly Viper Fixture 30 Watt LED Maximum Power Point Tracker: Dusk to Dawn Operation Side of Pole Bracket 4' 15' Anchor Base Aluminum Pole	\$5,198.00	\$5,198.00
EIN - 65-0472624 Tax Rate - Exempt Quote good for 30 days				Sub Total \$5,198.00 Shipping (Prepay & Add) FOB Stuart, FL Total


Authorized Signature

*NOTE: Lift Gate, Call Ahead, Job Site Deliver, etc. is an extra charge.
Notify SEPCO Prior to Shipping if any of this is required for your project.



Appendix D: Barrett Law Procedures

Barrett Law Procedures (Internal Use):

1. An officer of the Home Owners Association (HOA) contacts and/or meets with the Engineering Department to present request, gather information and gain approval to proceed.
2. The Engineering Department gives the HOA a blank petition as well as a copy of the plat map for the affected area or areas.
3. HOA needs to obtain a copy of the tax duplicates (or tax roll) from the County Auditor's Office. *This will tell us how many parcels there are and what the addresses and tax identification numbers are.*
4. HOA prepares petition and must get it signed by at least 60% of the property owners in the improvement district. ***BOTH property owners (ex: husband & wife) must sign the petition for the signature to be counted towards the 60%. HOA should try to get 65% because it can be a very long process and this may help avoid delays.***
5. HOA submits the petition, along with signature sheets, to the Department of Law for approval. Dept. of Engineering (Dick) prepares resolution for the Making of an Improvement to accompany petition/ signature sheet.
6. Department of Law reviews petition, checks property owners against the tax roll, etc. If approved, resolution/ petition/ signature sheet goes before the Board of Public Works for approval (along with New Agenda Item cover sheet). ***Projects will be assigned priority based on date of City Attorney's approval of petition.***
7. Engineering Department contracts a project design engineer.
8. Plans, specs & cost estimates (Bid documents) are prepared by design engineer (must furnish in less than 60 days) and are approved by City Engineer. These must be "placed on file with the Board" and available for review in the Engineer's office at least 10 days prior to the public hearing date.
9. Invitations to quote bids are faxed to at least 3 contractors.
- 10.** Notice of public hearing is published by the Clerk -Treasurer; written notice of meeting is mailed (21 days in advance) to all affected property owners as per the assessment roll based on tax duplicates.
- 11.** BPW makes sure the benefits of the project are greater than the costs (cost/benefit analysis) and approves it on a conditional basis.

- 12.** City Attorney will obtain two appraisals to make sure the benefits of the proposed project are greater than the costs. If so, there is a second resolution to approve by the BPW.
- 13.** Following the 2nd BPW approval, it is publicly noted and a public hearing is held.
- 14.** There is a 10-day remonstrance period. (51% remonstrating = project abandoned)
- 15.** Dept. of Engineering obtains project bids:

Bid Process:

\$25,000 to \$50,000 projects: 3 invitations to quote (allow 7 days to respond)
Over \$50,000 must go through formal bid process; also if expenditures per individual contractor per year will exceed \$75,000, the project must go through the formal bid process.

Invitations to Quote are faxed, in letter form, by Engineering to any three vendors.
Invitations to Bid (Notice to Bidders) are published by clerk's office. Engineering prepares the document, which is also part of the Project Specifications handbook.

- I.** Project engineer prepares several sets of bid documents (includes plans and project manuals), which are held in Engineering Department.
- II.** Bids are received by Clerk-Treasurers office and opened at BPW meeting.
- III.** Bids are reviewed and tabulated by City Engineer. Engineer selects lowest and most responsive bid & recommends contract award at BPW meeting.
- IV.** Upon BPW approval, notice to proceed is issued by Engineering Department.

- 16.** Bid is accepted; construction begins.
- 17.** Construction inspection & approval occurs.
- 18.** Department of Law obtains 2 appraisals to determine property value increase.
- 19.** City Attorney prepares another resolution to determine the primary tax assessment roll. *Each parcel is assessed to determine what each parcel owes.* Roll is presented to BPW & if adopted, a date is set for a public hearing.
- 20.** Notice of public hearing is published in the newspaper (by Clerk-Treasurer) & written notice of the date & time for hearing on the assessment roll is mailed to each affected property owner (21 days in advance).

- 21.** Public hearing is held to discuss assessment roll.
- 22.** Resolution is prepared by Department of Law “Accepting Barrett Law Project, Approving Assessments and Board Determinations, and Filing Certified Assessment Roll.” With this, BPW accepts project as complete.
- 23.** Assessment is levied; BPW approves assessment roll, sets interest rate (generally 4%-5%), establishes final % of project cost to be paid by the City & the homeowners, and establishes the final assessment amount per property owner.
- 24.** 10-day remonstrance period.
- 25.** Assessment statements are sent to each affected property owner. Property owners have two options for payment: a) Lump sum (100%) up front (interest-free within the first 30 days) **or** b) Annual payments for ten years. (Early payoff is permitted AFTER the first year and will include interest, which would have been due in second year.
 - If the assessment was levied prior to July 1st, payments will be due November 10th. If levied after July 1st, payments will be due May 10th.
 - The assessment represents a lien on the property and is transferable to new owner. Most often, the seller will pay off the lien at time of closing.
- 26.** Money collected goes back into revolving Barrett Law fund for future projects. All Barrett Law projects become City property.

Appendix E: Indiana Code Title 36, Article 9, Chapters 9 & 10

IC 36-9-9	Chapter 9. Municipal Street Lights
36-9-9-1	Application of chapter
36-9-9-2	"City block" defined
36-9-9-3	Petitions for construction of street lights; declaratory resolutions; notice and hearing
36-9-9-4	Repealed
36-9-9-4.1	Hearing on remonstrance; rescission or modification of resolution and plans
36-9-9-5	Construction of street lights; contracts; commission orders
36-9-9-6	Construction of street lights; uniformity of style; supervisory personnel; completion report
36-9-9-7	Payments to utility for service
36-9-9-8	Street lights at intersections
36-9-9-9	Payment of costs of lighting
36-9-9-10	Street light assessments and liens
36-9-9-11	Expiration of contracts; transfers to new utilities
36-9-9-12	Additional lighting facilities; petition; construction; assessment of costs
36-9-9-13	Additional hours of lighting; petitions; assessment of costs

IC 36-9-9-1 Application of chapter

Sec. 1. This chapter applies to all municipalities.

[Pre-Local Government Recodification Citation: 19-5-24-16.]

As added by Acts 1981, P.L.309, SEC.82.

IC 36-9-9-2 "City block" defined

Sec. 2. As used in this chapter, "city block" means both sides of the part of a public street that lies between two (2) intersecting public streets.

[Pre-Local Government Recodification Citation: 19-5-24-1 part.]

As added by Acts 1981, P.L.309, SEC.82.

IC 36-9-9-3 Petitions for construction of street lights; declaratory resolutions; notice and hearing

Sec. 3. (a) The owner or owners of real property that fronts or abuts upon a public street or thoroughfare may sign and file with the municipal works board their petition requesting that there be constructed, erected, installed, maintained, and operated:

- (1) an electric system of street lights and posts, designating the number of lumens per post and the number of posts along the street curb;
 - (2) a system of ornamental street lights and posts with underground wiring; or
 - (3) additional lights where a system has already been installed;
- in front or on either side of the city block or blocks described in the petition.

(b) When the petition has been filed and signed by the owner or owners of at least sixty percent (60%) of the real property in the city block or blocks described in the petition, the works board shall adopt a declaratory resolution for the making of the improvement as described in the petition and shall then:

- (1) prepare and place on file in its office, or with the municipal clerk if it has no office, a complete set of drawings, plans, and specifications for the lighting system and an estimate of the annual cost of the street lighting, which shall be kept open for inspection by the public and all prospective bidders; and
- (2) publish in accordance with IC 5-3-1 a notice stating that on a day named after the last publication a public hearing shall be held, that interested persons may file remonstrances against the lighting system at the hearing, and that, at the hearing, the works board may sustain or overrule the remonstrances or may modify its original resolution, plans, or proceedings.

[Pre-Local Government Recodification Citations: 19-5-24-1 part; 19-5-24-2.]

As added by Acts 1981, P.L.309, SEC.82. Amended by Acts 1981, P.L.45, SEC.41.

IC 36-9-9-4 Repealed

[Pre-Local Government Recodification Citation: 19-5-24-3.]

As added by Acts 1981, P.L.309, SEC.82. Amended by Acts 1981, P.L.47, SEC.25. Repealed by Acts 1982, P.L.6, SEC.27.

IC 36-9-9-4.1 Hearing on remonstrance; rescission or modification of resolution and plans

Sec. 4.1. At the time specified in the notice under section 3 of this chapter, the municipal works board shall conduct a hearing of any remonstrance on file. If, at the hearing, the works board finds that:

- (1) the lighting system will not be of public benefit; or
- (2) the annual benefits from the lighting system that will accrue to the property liable to be assessed will not equal or exceed the estimated annual cost of the improvement, after deducting the amount of the annual cost to be paid by the municipality;

the works board shall rescind the declaratory resolution for the lighting system and dismiss the petition, or modify the resolution, petition, drawings, plans, specifications, and estimated cost so that the lighting system will be of public benefit and the annual benefits that will accrue to the property liable to be assessed for the lighting system will equal or exceed its estimated annual cost, after deducting the amount of the annual cost to be paid by the municipality. However, the number of lumens per post and the number of posts designated in the petition may not be changed without the written consent of the petitioners.

As added by Acts 1982, P.L.6, SEC.26.

IC 36-9-9-5 Construction of street lights; contracts; commission orders

Sec. 5. (a) When the declaratory resolution, as originally adopted or as modified, has been confirmed, the municipal works board shall notify and negotiate with any utility that operates and supplies electrical current within the municipality. The works board shall attempt to enter into a contract with the utility for the lighting described in the plans and specifications, and may cause the municipality to enter into such a contract, in strict accordance with the plans, drawings and specifications on file.

(b) If more than one (1) utility supplies electricity in the municipality and has the right to serve the electric system petitioned for, the municipal works board shall publish a notice in accordance with IC 5-3-1. The notice must state the nature of the work, state that drawings, plans, and specifications are on file in the office of the works board or the municipal clerk, call for sealed bids for the lighting and the maintenance of the system, and state that the bids must be filed not less than ten (10) days after the last publication and must comply with the manner and form in which bids for public improvements are filed in municipalities. If a satisfactory bid is received by the time fixed in the notice, the works board shall attempt to enter into a contract with the utility that is the lowest responsible bidder for the furnishing of that lighting.

(c) If the municipality owns and operates an electric utility and no other electric utility is authorized to render the service petitioned for, then the electrical lighting system petitioned for may be installed, maintained, and operated by the municipality. An electrical system established under this section shall be maintained, operated, and paid for in the same manner as an electrical system that is established under this chapter by a public utility.

(d) The annual cost of lighting as fixed by the contract may not exceed the estimated cost of lighting on file with the plans and specifications. The contract must require lighting service for a period of not less than five (5) years and not more than fifteen (15) years, and must describe in detail the service to be rendered and the prices to be paid to the utility.

(e) If the municipality is unable to make an agreement with a utility, the municipality may file its petition with the utility regulatory commission. The commission shall conduct a hearing on the petition, in accordance with law and the rules of the commission. The commission may then require a utility supplying electrical current within the municipality to

enter into a contract to construct the electric system of lighting in accordance with the plans and specifications on file with the municipality, and to maintain and operate the system at the prices, on the terms, for the period of time, and upon the conditions that the commission requires. Such an order of the commission is binding upon the municipality and utility:

- (1) in the same manner as other orders of the commission; and
 - (2) as if a contract had been entered into between the municipality and the utility covering the same subject matter;
- subject to all rights of appeal from the commission.

(f) After a contract has been entered into between the municipality and utility and has been approved by the utility regulatory commission, or if the construction, maintenance, and operation of the lighting system has been ordered by the commission, the utility which is a party to the contract or order shall, within a reasonable time, construct the system at its own expense. The utility shall maintain and operate the system in strict accordance with the agreement and order, and at the annual rates, tolls, or charges fixed by contract or by the order of the commission. The commission may investigate the rates, tolls, and charges in the same manner and to the same extent that it may investigate and revise the rates, tolls, and charges for electric current supplied by a public utility under IC 8-1-2.

[Pre-Local Government Recodification Citations: 19-5-24-4; 19-5-24-5; 19-5-24-7; 19-5-24-14.]
As added by Acts 1981, P.L.309, SEC.82. Amended by Acts 1981, P.L.45, SEC.42; P.L.23-1988, SEC.123.

IC 36-9-9-6 Construction of street lights; uniformity of style; supervisory personnel; completion report

Sec. 6. (a) All street lamps or systems of lighting constructed, erected, or installed must be uniform in style and shall be installed under the supervision of:

- (1) the municipal civil engineer; or
- (2) some other competent person;

as determined by the municipal works board. If the person supervising the work is not already under bond, the person shall file a bond for the faithful performance of the person's duties in the sum and the manner directed by the works board.

(b) At the completion of the work, the person supervising the work shall file with the municipality the person's verified report that the work has been completed and complies in all respects with the drawings, plans, and specifications on file. If the report is found to be correct, the works board shall accept it on behalf of the municipality.

[Pre-Local Government Recodification Citation: 19-5-24-6.]
As added by Acts 1981, P.L.309, SEC.82. Amended by P.L.127-2017, SEC.292.

IC 36-9-9-7 Payments to utility for service

Sec. 7. The municipality shall make to the utility operating the lighting system all payments required to be made to the utility for its service, in strict accordance with the terms of the contract or order under which the utility is operating. The municipality shall make the payments from its general fund or from a fund set aside for street lighting purposes, and shall be reimbursed for payments made in behalf of property owners by the collection of the assessments as provided in this chapter.

[Pre-Local Government Recodification Citation: 19-5-24-9.]
As added by Acts 1981, P.L.309, SEC.82.

IC 36-9-9-8 Street lights at intersections

Sec. 8. (a) For purposes of this section, all light posts that are:

- (1) located on the street upon which a lighting system is installed; and
 - (2) within fifty (50) feet of the nearest part of another street intersecting that street; are considered to be at a street intersection.
- (b) A municipality shall install, maintain, and operate at each street intersection lighting

facilities that are at least equal to those in other parts of the lighting system.

[Pre-Local Government Recodification Citation: 19-5-24-8 part.]

As added by Acts 1981, P.L.309, SEC.82.

IC 36-9-9-9 Payment of costs of lighting

Sec. 9. (a) The municipality shall pay from its general fund or from a fund set aside for street lighting purposes:

- (1) the entire annual cost of lighting at street intersections under section 8 of this chapter; and
- (2) not less than thirty-five percent (35%) of the annual cost of lighting of the entire other part of the lighting system, with the exact percentage paid to be fixed by the municipal works board.

The municipal legislative body may, by ordinance, divide the municipality for lighting purposes into business zones, residence zones, or other classes of zones. The percentage of annual cost of the lighting system to be paid by the municipality must be uniform throughout each class of the zones.

(b) The remaining annual cost of the lighting system shall be assessed against each lot or parcel of real property in the city block or blocks in front of which the lighting system is located, in the manner prescribed by section 10 of this chapter.

[Pre-Local Government Recodification Citation: 19-5-24-8 part.]

As added by Acts 1981, P.L.309, SEC.82.

IC 36-9-9-10 Street light assessments and liens

Sec. 10. (a) After an electrical lighting system has been completed and is ready for operation, the municipal works board shall assess the real property in the city block or blocks affected for the proportionate part of the annual lighting cost and, in the case of a system of ornamental lighting, the installation costs, that the property owners are required to pay annually. The works board shall assess each lot or parcel of the property equally per front foot.

(b) The works board shall prepare and file an assessment roll, setting forth the assessments against each lot and parcel of real property to be assessed, based upon:

- (1) the cost of the lighting for the full period of one (1) year and for that part of a year the system may be operated between the time of its completion and the beginning of the next calendar year; and
- (2) in the case of a system of ornamental lighting, the costs of installing the system.

The preparation and filing of the assessment roll and all proceedings for its adoption and confirmation, notices to property owners, certifying the roll to the county treasurer, and all other proceedings in connection with the roll must be according to the statutes regarding public improvements in municipalities.

(c) The first assessment made against each lot or parcel of real property is a lien on that lot or parcel, from the time of the final acceptance of the electrical system by the municipality. The lien covers the cost of lighting for the part of the calendar year following acceptance of the system, the cost of lighting for the next full calendar year, and, in the case of a system of ornamental lighting, the cost of installing the system.

(d) After the first assessment is made, a lien attaches upon the assessment date of each year without further certification to the county treasurer, for the amount of the lighting cost for the succeeding calendar year and in the same proportions per front foot as fixed by the original assessment roll.

(e) Assessments made under this section shall be paid in the same manner as taxes are paid, at the regular tax paying periods following the adoption of the assessment roll. An assessment not paid at the time fixed by statute is subject to and may be collected according to the statutes regarding delinquent taxes, and all property upon which an assessment is a lien is subject to proceedings for the collection of taxes.

(f) The lien of an assessment under this section has equal priority with all other assessment liens and is superior to all other liens except liens for taxes.

[Pre-Local Government Recodification Citations: 19-5-24-8 part; 19-5-24-10.]

As added by Acts 1981, P.L.309, SEC.82. Amended by P.L.245-2015, SEC.29.

IC 36-9-9-11 Expiration of contracts; transfers to new utilities

Sec. 11. (a) Six (6) months before the expiration of a contract or order entered into or made under section 5 of this chapter, the municipal works board may:

- (1) negotiate and enter into a new contract;
- (2) extend the current contract;
- (3) procure an order of the commission; or
- (4) advertise for bids.

The works board shall then proceed in the manner provided by the preceding sections of this chapter.

(b) If a contract or order made under this section provides that an electrical system is to be operated by a utility other than the former utility and owner of the system, the new utility shall pay in cash to the former utility the full value at that time of the system, as determined by the utility regulatory commission. After payment, the former utility shall transfer title in the system to the new utility, which is then fully vested with ownership of the system. The new utility shall maintain and serve the system in accordance with this chapter.

[Pre-Local Government Recodification Citation: 19-5-24-11.]

As added by Acts 1981, P.L.309, SEC.82. Amended by P.L.23-1988, SEC.124.

IC 36-9-9-12 Additional lighting facilities; petition; construction; assessment of costs

Sec. 12. (a) Whenever a lighting system has been established in accordance with this chapter, and an owner of property within any city block or blocks included in the system wants lighting facilities in front of or near the owner's property that:

- (1) are additional to those described in the plans and specifications on file; and
- (2) consist of either lighting posts or lamps of greater candlepower, or both;

the property owner may file the property owner's petition with the municipal works board. The petition must fully describe the additional lighting facilities that are wanted.

(b) The works board shall grant the petition and refer it to the person who supervises the system, who shall prepare and file:

- (1) plans and specifications for the additional lighting; and
- (2) the estimated annual cost of the additional lighting.

(c) When the plans, specifications, and annual cost are approved by the works board and by the property owner, the works board shall notify the utility operating the lighting system. The utility shall immediately proceed to erect, install, construct, and connect the additional lighting at its own expense. The utility shall then operate and maintain the additional lighting facilities as a part of the original system in return for additional compensation that is:

- (1) agreed upon by all the interested parties and approved by the utility regulatory commission; or
- (2) fixed by the commission.

(d) The property owner who petitioned for the additional lighting facilities shall pay to the municipality the additional annual cost of those facilities. The additional annual cost, which shall be added to the original amount assessable against the petitioner's property, is a lien upon the property and is payable in accordance with this chapter.

[Pre-Local Government Recodification Citation: 19-5-24-12.]

As added by Acts 1981, P.L.309, SEC.82. Amended by P.L.23-1988, SEC.125; P.L.127-2017, SEC.293.

IC 36-9-9-13 Additional hours of lighting; petitions; assessment of costs

Sec. 13. (a) Whenever:

- (1) a lighting service has been established in accordance with this chapter or under another contract or arrangement; and
- (2) at least sixty percent (60%) of the property owners upon one (1) side of the street on a city block or blocks lighted by the service file with the municipal works board their petition requesting that the lighting service be maintained on that side of the street in the block or blocks each night for a designated number of hours in addition to the number of hours of service prescribed by the current contract, arrangement, or plans and specifications;

the works board shall grant the petition. The cost of the additional lighting shall be charged to and assessed against all of the lots or parcels of real property on the side of the street and on the city block or blocks on which additional lighting service is maintained.

(b) All proceedings for the establishment of additional service, the payments to the utility for additional service, and the making and collection of assessments and liens for additional service are governed by this chapter in the same manner as other proceedings, payments, assessments and liens.

[Pre-Local Government Recodification Citation: 19-5-24-13.]

As added by Acts 1981, P.L.309, SEC.82.

IC 36-9-10	Chapter 10. County Payment for Municipal Street Lights
36-9-10-1	Application of chapter
36-9-10-2	Obligation of county
36-9-10-3	Installation costs
36-9-10-4	Maintenance costs
36-9-10-5	Approval of payments; appropriations

IC 36-9-10-1 Application of chapter

Sec. 1. This chapter applies to all municipalities and the counties in which they are located.

[Pre-Local Government Recodification Citation: 18-5-16-1 part.]

As added by Acts 1981, P.L.309, SEC.83.

IC 36-9-10-2 Obligation of county

Sec. 2. If:

- (1) a county owns real property in a municipality;
- (2) the municipality installs a lighting system to light the streets, alleys, and other public places in the municipality;
- (3) as a part of that system, street lights are installed along a street abutting on the county property, on the opposite side of the street from the county property; and
- (4) there are no street lights on the side of the street on which the county property is located;

the county shall pay the cost of installing, maintaining, and operating street lights in front of its property, on the side of the street on which the property is located.

[Pre-Local Government Recodification Citations: 18-5-16-1 part; 18-5-16-2 part.]

As added by Acts 1981, P.L.309, SEC.83.

IC 36-9-10-3 Installation costs

Sec. 3. (a) If a county is required to pay for the installation of municipal street lights under this chapter, the amount to be paid by the county shall be determined under this section.

(b) If the contract for the installation of the lighting system calls for payment for the system as a whole, the county shall pay the amount that bears the same ratio to the total contract price as the number of lights to be paid for by the county bears to the total number of lights contracted for. The municipal legislative body shall determine the amount to be paid under this subsection.

(c) If the contract for installation of the lighting system calls for payment at a fixed price per light, the county shall pay the amount determined by multiplying that price by the number of lights to be paid for by the county.

[Pre-Local Government Recodification Citation: 18-5-16-2 part.]

As added by Acts 1981, P.L.309, SEC.83.

IC 36-9-10-4 Maintenance costs

Sec. 4. (a) If a county is required to pay for the maintenance and operation of municipal street lights under this chapter, the amount to be paid by the county shall be determined under this section.

(b) If the contract for the maintenance and operation of the lighting system calls for payment for the system as a whole, the county shall pay the amount that bears the same ratio to the total contract price as the number of lights to be paid for by the county bears to the total number of lights contracted for.

(c) If subsection (b) does not apply, the county shall pay the amount determined by multiplying the price paid by the municipality for the maintenance and operation of each light by the number of lights required to be paid for by the county.

[Pre-Local Government Recodification Citation: 18-5-16-3.]

As added by Acts 1981, P.L.309, SEC.83.

IC 36-9-10-5 Approval of payments; appropriations

Sec. 5. (a) If a county is required to pay for the installation, maintenance, or operation of municipal street lights under this chapter, the municipal clerk shall verify the amount to be paid by the county. The municipal legislative body must approve this amount by resolution, and shall file a certified copy of the resolution with the county auditor in the same manner that other claims against the county are filed.

(b) Within sixty (60) days after the copy of the resolution is filed, the county auditor shall call the county fiscal body into special session for the purpose of making an appropriation to pay the amount claimed in the resolution. The fiscal body shall make an appropriation to pay this amount within sixty (60) days after the copy of the resolution is filed.

(c) The county shall pay the cost of maintaining and operating the lights every three (3) months, upon the filing of a claim under this section.

[Pre-Local Government Recodification Citations: 18-5-16-4; 18-5-16-5.]

As added by Acts 1981, P.L.309, SEC.83.