



The New York Power Authority

In Cooperation with the

Village of Trumansburg

Village of Freeville

Town of Ithaca

Town of Newfield

Town of Caroline

Town of Ulysses

NYPA's Energy Efficiency

Program for Tompkins County

LED Street Lighting Upgrade

ES-ESN-0786

ES-ESN-0805

ES-ESN-0845

ES-ESN-0848

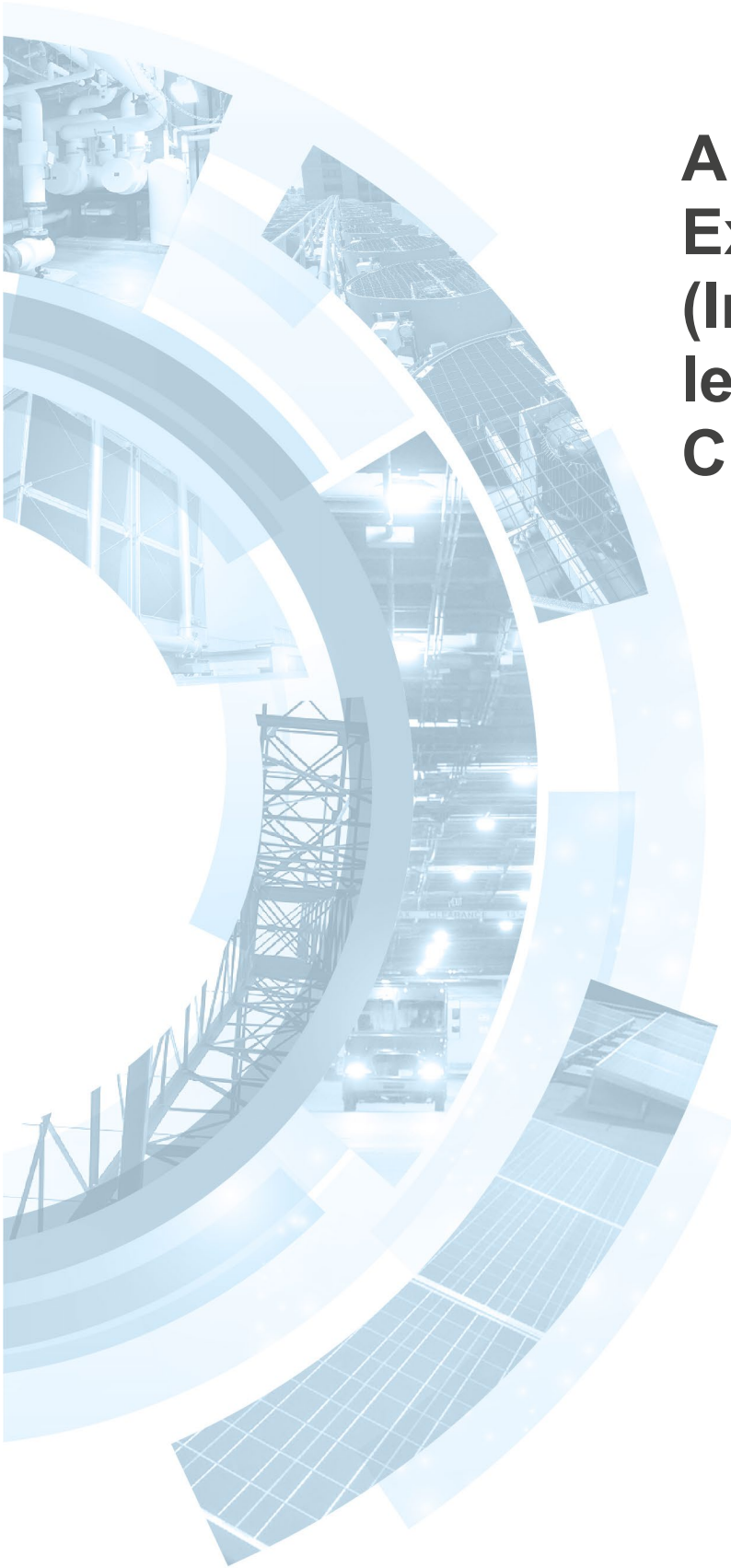
ES-ESN-0869

ES-ESN-0870

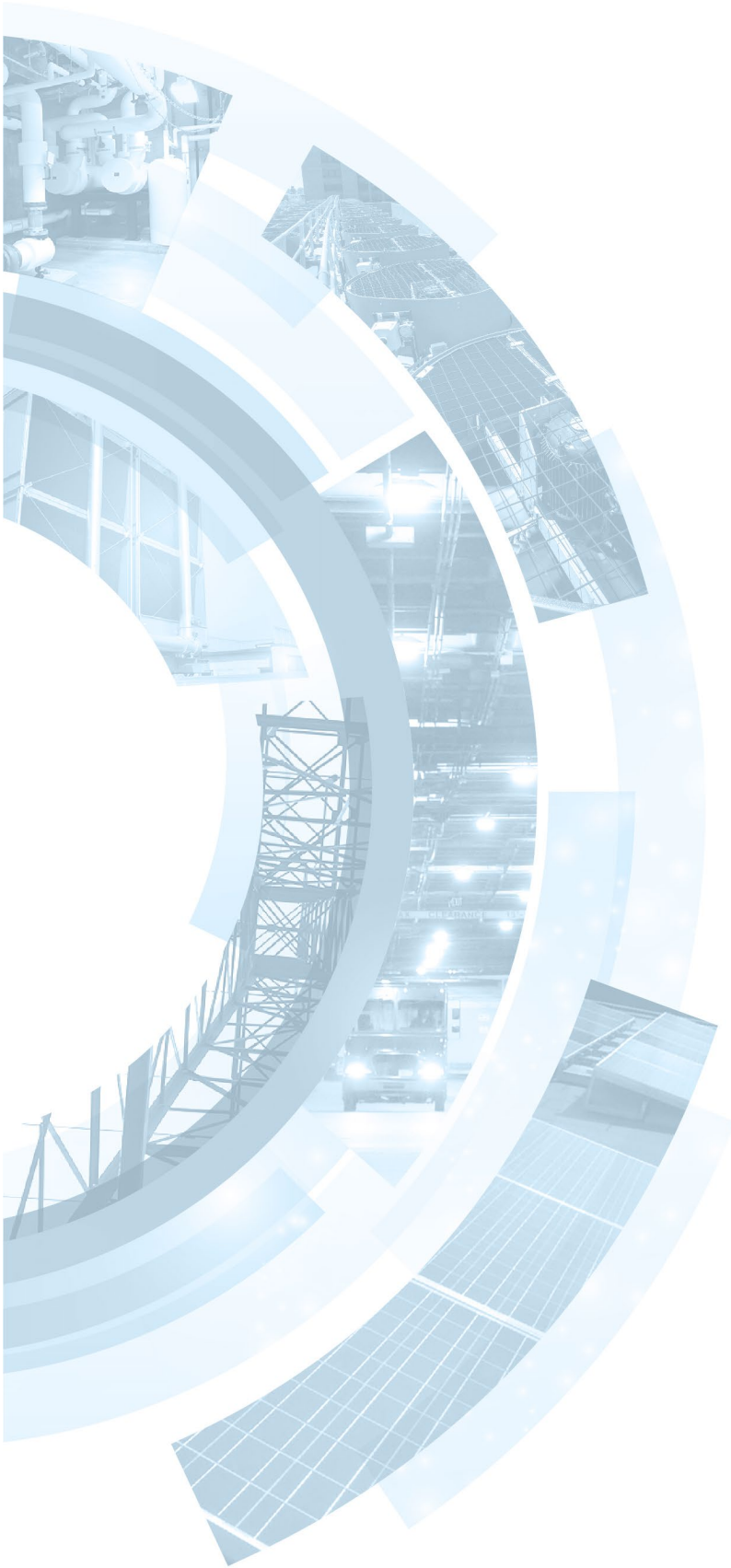
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A – CPC Executables (Intentionally left blank for CPC)



B – Executive Summary



B. EXECUTIVE SUMMARY

The New York Power Authority (NYPA) contracted with Guth DeConzo Consulting Engineers, PC (Guth DeConzo) to perform design services for the implementation of the Street Lighting Upgrades in Tompkins County. The first part of this design included the Village of Cayuga Heights and the Village of Dryden. The Town of Dryden was originally included in the second design, however due to some missing pertinent documentation, it will be considered the third design in the Tompkins Aggregation LED Lighting Project. This second design will include the following municipalities in Tompkins County:

- Village of Trumansburg (ES-ESN-0786)
- Village of Freeville (ES-ESN-0805)
- Town of Ithaca (ES-ESN-0845)
- Town of Newfield (ES-ESN-0848)
- Town of Caroline (ES-ESN-0869)
- Town of Ulysses (ES-ESN-0870)

The executive summaries and project estimates are separated out for each municipality mentioned above and then totaled into one executive summary and one project estimate to show the economics combined for Tompkins County. The rest of this aggregate will be under one common report.

This design milestone is the 90% submission. This submission defines the opinion of probable cost, the means of implementation, projected annual and maintenance savings which are related to the upgrade of the respective village street lighting system.

Project meetings have been periodically held since the July 2019. Tompkins County representatives, as well as staff from NYPA and Guth DeConzo, attended these meetings. All field work for this phase of design was completed as of February 2020.

This 90% submission includes the following:

- Design narrative, stating design intent, assumptions, and findings.
- Point by point analysis, providing a basis of design for each representative roadway type.
- Final project economics, executive summaries and project costs.
- Detailed utility bill analysis.

Finalize project scope, performing photometric analysis to inform design selections.

ENERGY EFFICIENCY MEASURES (EEMS) OVERVIEW

There is one main energy conservation measure for this project. This measure is:

- EEM 1 - LED Street Lighting Upgrade

DESIGN NARRATIVE

The intent of this narrative is to provide the design criteria used for the LED Street Lighting upgrade for the County of Tompkins. The scope includes a one for one fixture replacement of the existing high intensity discharge (HID) street lights to an equivalent LED roadway fixture. As outlined below, there are several roadways where fixtures are sporadically spaced and/or under illuminated per IES RP-8-18 “Roadway Lighting” standards. Additional fixtures are not being added to the scope to provide a more consistent and acceptable level of roadway lighting. The criteria from IES RP-8-18 “Roadway Lighting” is utilized as the defining standard.

It was established that there are approximately four different roadway types and six different intersection types throughout the seven municipalities within this project scope. The representative locations were surveyed to define existing conditions. The survey included identification of existing luminaires, height of fixtures, length of arm, spacing between fixtures, width of road, and distance of pole from the roadway. Once the survey was complete, a point by point photometric analysis using AGI32 and Visual software was completed to determine the appropriate LED roadway fixture required to meet the RP-8-18 standards.

Roadways are typically, individually classified as a major (highway/thruway), collector (connecting road that allows traffic to move from local roads to major roads (highway/thruway), or local (residential roads). Each of these roads are then evaluated and assigned a pedestrian conflict class of high, medium, or low. These two important factors set a foundation for the design parameters that are used in this report. Explained in further detail on the following page is how roadway class and pedestrian conflict is incorporated into the design parameter. Please see the roadways that were used for this evaluation below:

- Westhaven Road - (Town of Ithaca)
- Winner Circle - (Town of Ithaca)
- Main Street - (Town of Newfield)
- Main Street (Rte. 366) - (Village of Freeville)
- Slaterville Road (Rt. 76) - (Town of Caroline)

- E. Main Street (NY-96) - Decorative Fixtures - (Village of Trumansburg)
- Elm Street & Whig Street - (Village of Trumansburg)
- Main Street & Shaffer Road - (Town of Newfield)
- Trumansburg Road & Colgrove Road (Rt. 96) - (Town of Ulysses)
- Valley Road & Elm Street - (Town of Caroline)
- Railroad Street (Rt. 38) & Fall Creek Road (Rt. 105) - (Village of Freeville)
- State Highway 96 & Hector Street - (Village of Trumansburg)

Using the Luminance method, the IES RP-8-18, has four main design criteria parameters for evaluating street lighting:

- Avg. Luminance (L_{avg}); (cd/m^2)
- Avg. Uniformity Ratio (L_{avg}/L_{min})
- Max. Uniformity Ratio (L_{max}/L_{min})
- Max. Veiling Luminance Ratio (LV_{max}/L_{avg})

Each design parameter is based on the Street Classification and Pedestrian Area Classification. Below is Table 3 from IES RP-8-18, which provides the parameter values:

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (L_{avg})	Average Uniformity Ratio (L_{avg}/L_{min})	Maximum Uniformity Ratio (L_{max}/L_{min})	Max. Veiling Luminance Ratio (LV_{max}/L_{avg})
Major	High	1.2	3.0	5.0	0.3
	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
Collector	High	0.8	3.0	5.0	0.4
	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
Local	High	0.6	6.0	10.0	0.4
	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

The following variables are used to develop the photometric model:

1. Lumen output of fixture (Wattage of fixture)
2. Spacing between fixtures
3. Mounting height of fixtures
4. Road type (Reflection)
5. Set back of fixture from road
6. Arm length
7. Fixture optics (Light Distribution)
8. Color Temperature of Fixture

Of these variables mentioned above, the red variables are already defined variables that can't be changed without significant scope or cost impact. The green variables can be easily changed through equipment selection.

As described in Section C, the existing light fixture layout has spacing of over 200' which prevents that roadways to conform to all IES guidelines. Appendix J.2 shows the photometric analysis would conform if fixtures were added. At this time no fixtures are suggested to be added and the calculations are utilized to verify that the (L_{avg}) and (LV_{max}/L_{avg}) values to conform to IES guidelines in the areas of illumination.

Appendix J.2 shows each design scenario and describes the existing conditions, assumptions and the results that were achieved. These results were dictated to conform to (L_{avg}) and (LV_{max}/L_{avg}) values from IES.

TOTAL PROJECT SUMMARIES

The following are the economics for the six municipalities within this project scope and one for Tompkins County, including all six of the municipalities. The economic summaries are shown below:

Total Project Summary				
New York Power Authority - Energy Efficiency Program				
Village of Trumansburg LED Street Lighting Upgrade				
ES-ESN-0786			September 8, 2020	
Project Cost: Initial CPC				
Fixture Count				
Cobra head:	156	Construction Costs:	\$132,553.37	
Post top:	43	Allowances:	\$0.00	
Flood Light:	1	Smart Cities Technology:	\$0.00	
Total:	200	Bonds by Electrical Contractor:	\$782.62	
		Subtotal:	\$133,335.99	
		Contingency 10%:	\$13,333.60	
		Subtotal:	\$146,669.59	
		Abatement Design & Monitoring:	\$0.00	
		Hazardous Waste Disposal Cost:	\$800.00	
		Environmental Subtotal:	\$800.00	
		Audit, Design, & Construction Mgt:	\$20,478.96	(See Note #1)-Excludes Bonds by Electrical Contractor
		NYPA Project Mgt. & Administrative:	\$25,192.28	(See Note #2)
		Project Management Subtotal:	\$45,671.24	
		Utility Asset Buyout Cost:	\$71,100.00	(See Note #5)
		Utility Device Disconnect Deposit Bond:	\$2,133.00	(See Note #6)
		Utility Subtotal:	\$73,233.00	
		Project Subtotal:	\$266,373.83	
		Interest During Construction (IDC):	\$10,654.95	(See Note #3)
		Total Project Cost:	\$277,028.78	
Estimated Energy Savings		Environmental Benefits: 50.1 Metric Tons		
Estimated Electrical Savings:		Estimated Fuel Savings:		MMBtu Savings: Cost Savings:
kWh Savings:	89,541	Natural Gas:	0 Therm	0.0 \$0.00
kWh Cost Savings:	\$4,159.10	Oil Savings:	0 gal	0.0 \$0.00
Monthly kW Savings:	21.7	Steam (150 psi):	0.0 MLbs	0.0 \$0.00
kW Cost Savings:	\$0.00	Water:	0.0 Kgal	0.0 \$0.00
Total Electrical Savings:	\$4,159.10	Total Fuel Savings:	0.0	\$0.00
Total Energy Savings:	\$4,159.10	Ownership Savings:	\$14,541.00	Est. Total Savings: \$18,700.10
Simple Payback				
		Total Project Cost With IDC:	\$277,028.78	
		Total NYPA Grants:	\$0.00	
		Total Estimated Rebates:	(\$35,816.45) (See Note #7)	
		Net Project Cost:	\$241,212.34	
		Total Est. Annual Savings:	\$18,700.10	
		Estimated Annual Utility Fees:	(\$3,090.48)	
		Estimated Annual Service Contract:	(\$3,980.00) (See Note #4)	
		Net Est. Annual Savings:	\$11,629.62	
		Simple Payback:	20.74	
Project Financing				
		TOTAL AMOUNT FINANCED:	\$277,028.78 (Utility Rebates & Incentives Not Included)	
		Interest Rate:	4.00% (See Note #8)	
		Years Financed:	20.0	
		Number of Payments:	240	
		Annual Debt Service to NYPA:	\$20,144.88	
		Monthly Debt Service to NYPA:	\$1,678.74	
		Total Project Cost after Financing:	\$402,897.58	
		Total Annual Savings:	\$11,629.62	
		Payback With Financing:	34.64	
		Annual Cash Flow:	(\$8,515.26)	
Notes:				
1. Audit, Design, & Construction Mgt represents a cost of 14.0% of the direct Construction and Asbestos Abatement cost and are applied to contingency to provide budget estimates. Final costs will exclude unused contingency and will be calculated at end of project based on final material and labor costs and applicable abatement costs.				
2. NYPA Project Mgt. & Administrative represents a fee of 15.0% of all project costs except IDC.				
3. Interest During Construction (IDC) is estimated based on a 4% of the total project cost. See Section B.				
4. Yearly Service Contract includes estimated contract value of \$20 per fixture per year.				
5. Utility Asset Buyout Cost is taken from the conceptual design PSP.				
6. The Utility requires a certificate of deposit for fusing, the cost of this deposit is estimated at 3% the purchase price.				
7. Estimated Utility Rebates and Incentives are coordinated between the Customer and the Utility. Customer's financial obligation to NYPA excludes this credit.				
8. Interest rate is estimated at 4.00% long-term conservative estimate. The actual interest rate is variable and is adjusted on January 1 annually.				

Village of Trumansburg - Village of Trumansburg LED Street Lighting Upgrade
Incremental Payback Calculation
ES-ESN-0786

Project Phase: Initial Customer Project Commitment (CPC)

EEM #	EEM Description	Project Cost			Annual Cost Savings			Simple Payback	
		Total	Base Case	Net Incremental	Total	Base Case	Incremental	Total	Incr
1	LED Lighting Upgrade	\$ 277,029	\$ 71,100	\$ 205,929	\$ 11,630	\$ -	\$ 11,630	23.82	1.00
	Totals	\$ 277,029	\$ 71,100	\$ 205,929	\$ 11,630	\$ -	\$ 11,630	23.82	17.71

9/8/2020

Total Project Summary					
New York Power Authority - Energy Efficiency Program					
Village of Freeville LED Street Lighting Upgrade					
ES-ESN-0805			September 8, 2020		
Project Cost: Initial CPC					
Fixture Count		Construction Costs:	\$28,846.22		
		Allowances:	\$0.00		
Cobra head:	61	Smart Cities Technology:	\$20,000.00		
Post top:	0	Bonds by Electrical Contractor:	\$253.88		
Flood Light:	1	Subtotal:	\$49,100.10		
Total:	62				
		Contingency 10%:	\$4,910.01		
		Subtotal:	\$54,010.11		
		Abatement Design & Monitoring:	\$0.00		
		Hazardous Waste Disposal Cost:	\$248.00		
		Environmental Subtotal:	\$248.00		
		Audit, Design, & Construction Mgt:	\$7,543.64	(See Note #1)- Excludes Bonds by Electrical Contractor	
		NYPA Project Mgt. & Administrative:	\$9,270.26	(See Note #2)	
		Project Management Subtotal:	\$16,813.91		
		Utility Asset Buyout Cost:	\$4,293.00	(See Note #5)	
		Utility Device Disconnect Deposit Bond:	\$128.79	(See Note #6)	
		Utility Subtotal:	\$4,421.79		
		Project Subtotal:	\$75,493.81		
		Interest During Construction (IDC):	\$3,019.75	(See Note #3)	
		Total Project Cost:	\$78,513.56		
Estimated Energy Savings		Environmental Benefits: 9.4 Metric Tons			
Estimated Electrical Savings:		Estimated Fuel Savings:		MMBtu Savings:	Cost Savings:
kWh Savings:	16,755	Natural Gas:	0 Therm	0.0	\$0.00
kWh Cost Savings:	\$1,539.00	Oil Savings:	0 gal	0.0	\$0.00
Monthly kW Savings:	4.1	Steam (150 psi):	0.0 MLbs	0.0	\$0.00
kW Cost Savings:	\$0.00	Water:	0.0 Kgal	0.0	\$0.00
Total Electrical Savings:	\$1,539.00	Total Fuel Savings:	0.0	0.0	\$0.00
Total Energy Savings:	\$1,539.00	Ownership Savings:	\$6,544.45	Est. Total Savings:	\$8,083.45
Simple Payback					
		Total Project Cost With IDC:	\$78,513.56		
		Total NYPA Grants:	(\$20,000.00)		
		Total Estimated Rebates:	(\$6,702.02)	(See Note #7)	
		Net Project Cost:	\$51,811.54		
		Total Est. Annual Savings:	\$8,083.45		
		Estimated Annual Utility Fees:	(\$1,212.72)		
		Estimated Annual Service Contract:	(\$1,240.00)	(See Note #4)	
		Net Est. Annual Savings:	\$5,630.73		
		Simple Payback:	9.20		
Project Financing					
		TOTAL AMOUNT FINANCED:	\$58,513.56	(Utility Rebates & Incentives Not Included)	
		Interest Rate:	4.00%	(See Note #8)	
		Years Financed:	14.0		
		Number of Payments:	168		
		Annual Debt Service to NYPA:	\$5,465.25		
		Monthly Debt Service to NYPA:	\$455.44		
		Total Project Cost after Financing:	\$76,513.54		
		Total Annual Savings:	\$5,630.73		
		Payback With Financing:	13.59		
		Annual Cash Flow:	\$165.48		
Notes:					
1. Audit, Design, & Construction Mgt represents a cost of 14.0% of the direct Construction and Asbestos Abatement cost and are applied to contingency to provide budget estimates. Final costs will exclude unused contingency and will be calculated at end of project based on final material and labor costs and applicable abatement costs.					
2. NYPA Project Mgt. & Administrative represents a fee of 15.0% of all project costs except IDC.					
3. Interest During Construction (IDC) is estimated based on a 4% of the total project cost. See Section B.					
4. Yearly Service Contract includes estimated contract value of \$20 per fixture per year.					
5. Utility Asset Buyout Cost is taken from the NYSEG Streetlighting Facilities Sales Proposal dated August 27, 2020.					
6. The Utility requires a certificate of deposit for fusing, the cost of this deposit is estimated at 3% the purchase price.					
7. Estimated Utility Rebates and Incentives are coordinated between the Customer and the Utility. Customer's financial obligation to NYPA excludes this credit.					
8. Interest rate is estimated at 4.00% long-term conservative estimate. The actual interest rate is variable and is adjusted on January 1 annually.					

Village of Freeville - Village of Freeville LED Street Lighting Upgrade
Incremental Payback Calculation
ES-ESN-0805

Project Phase: Initial Customer Project Commitment (CPC)

EEM #	EEM Description	Project Cost			Annual Cost Savings			Simple Payback	
		Total	Base Case	Net Incremental	Total	Base Case	Incremental	Total	Incr
1	LED Lighting Upgrade	\$ 58,514	\$ 4,293	\$ 54,221	\$ 5,631	\$ -	\$ 5,631	10.39	1.00
	Totals	\$ 58,514	\$ 4,293	\$ 54,221	\$ 5,631	\$ -	\$ 5,631	10.39	9.63

9/8/2020

Total Project Summary				
New York Power Authority - Energy Efficiency Program				
Town of Ithaca LED Street Lighting Upgrade				
ES-ESN-0845			September 8, 2020	
Project Cost: Initial CPC				
Fixture Count		Construction Costs:	\$116,570.38	
		Allowances:	\$0.00	
Cobra head:	266	Smart Cities Technology:	\$20,000.00	
Post top:	3	Bonds by Electrical Contractor:	\$950.10	
Flood Light:	3	Subtotal:	\$137,520.48	
Total:	272			
		Contingency 10%:	\$13,752.05	
		Subtotal:	\$151,272.53	
		Abatement Design & Monitoring:	\$0.00	
		Hazardous Waste Disposal Cost:	\$1,088.00	
		Environmental Subtotal:	\$1,088.00	
		Audit, Design, & Construction Mgt:	\$21,111.65	(See Note #1)-Excludes Bonds by Electrical Contractor
		NYPA Project Mgt. & Administrative:	\$26,020.83	(See Note #2)
		Project Management Subtotal:	\$47,132.47	
		Utility Asset Buyout Cost:	\$88,489.00	(See Note #5)
		Utility Device Disconnect Deposit Bond:	\$2,654.67	(See Note #6)
		Utility Subtotal:	\$91,143.67	
		Project Subtotal:	\$290,636.67	
		Interest During Construction (IDC):	\$8,085.91	(See Note #3)
		Total Project Cost:	\$298,722.58	
Estimated Energy Savings				
Environmental Benefits: 99.8 Metric Tons				
Estimated Electrical Savings:		Estimated Fuel Savings:		MMBtu Savings: Cost Savings:
kWh Savings:	178,271	Natural Gas:	0 Therm	0.0 \$0.00
kWh Cost Savings:	\$13,260.59	Oil Savings:	0 gal	0.0 \$0.00
Monthly kW Savings:	43.3	Steam (150 psi):	0.0 MLbs	0.0 \$0.00
kW Cost Savings:	\$0.00	Water:	0.0 Kgal	0.0 \$0.00
Total Electrical Savings:	\$13,260.59	Total Fuel Savings:	0.0	\$0.00
Total Energy Savings:		\$13,260.59	Ownership Savings:	\$28,601.14
			Est. Total Savings:	\$41,861.73
Simple Payback				
		Total Project Cost With IDC:	\$298,722.58	
		Total NYPA Grants:	(\$20,000.00)	
		Total Estimated Rebates:	(\$71,308.57)	
		Net Project Cost:	\$207,414.01	
		Total Est. Annual Savings:	\$41,861.73	
		Estimated Annual Utility Fees:	(\$5,261.64)	
		Estimated Annual Service Contract:	(\$5,440.00)	
		Net Est. Annual Savings:	\$31,160.09	
		Simple Payback:	6.66	
Project Financing				
		TOTAL AMOUNT FINANCED:	\$190,233.58	
		Interest Rate:	4.00%	
		Years Financed:	8.0	
		Number of Payments:	96	
		Annual Debt Service to NYPA:	\$27,825.71	
		Monthly Debt Service to NYPA:	\$2,318.81	
		Total Project Cost after Financing:	\$222,605.71	
		Total Annual Savings:	\$31,160.09	
		Payback With Financing:	7.14	
		Annual Cash Flow:	\$3,334.38	
Notes:				
1. Audit, Design, & Construction Mgt represents a cost of 14.0% of the direct Construction and Asbestos Abatement cost and are applied to contingency to provide budget estimates. Final costs will exclude unused contingency and will be calculated at end of project based on final material and labor costs and applicable abatement costs.				
2. NYPA Project Mgt. & Administrative represents a fee of 15.0% of all project costs except IDC.				
3. Interest During Construction (IDC) is estimated based on a 4% of the total project cost. See Section B.				
4. Yearly Service Contract includes estimated contract value of \$20 per fixture per year.				
5. Utility Asset Buyout Cost is taken from the conceptual design PSP.				
6. The Utility requires a certificate of deposit for fusing, the cost of this deposit is estimated at 3% the purchase price.				
7. Estimated Utility Rebates and Incentives are coordinated between the Customer and the Utility. Customer's financial obligation to NYPA excludes this credit.				
8. Interest rate is estimated at 4.00% long-term conservative estimate. The actual interest rate is variable and is adjusted on January 1 annually.				

Town of Ithaca - Town of Ithaca LED Street Lighting Upgrade
Incremental Payback Calculation
ES-ESN-0845

Project Phase: Initial Customer Project Commitment (CPC)

EEM #	EEM Description	Project Cost			Annual Cost Savings			Simple Payback	
		Total	Base Case	Net Incremental	Total	Base Case	Incremental	Total	Incr
1	LED Lighting Upgrade	\$ 278,723	\$ 88,489	\$ 190,234	\$ 31,160	\$ -	\$ 31,160	8.94	1.00
	Totals	\$ 278,723	\$ 88,489	\$ 190,234	\$ 31,160	\$ -	\$ 31,160	8.94	6.11

9/8/2020

Total Project Summary					
New York Power Authority - Energy Efficiency Program					
Town of Newfield LED Street Lighting Upgrade					
ES-ESN-0848			September 8, 2020		
Project Cost: Initial CPC					
Fixture Count					
Cobra head:	118	Construction Costs:	\$71,079.32		
Post top:	17	Allowances:	\$0.00		
Flood Light:	1	Smart Cities Technology:	\$0.00		
Total:	136	Bonds by Electrical Contractor:	\$528.62		
		Subtotal:	\$71,607.94		
		Contingency 10%:	\$7,160.79		
		Subtotal:	\$78,768.73		
		Abatement Design & Monitoring:	\$0.00		
		Hazardous Waste Disposal Cost:	\$544.00		
		Environmental Subtotal:	\$544.00		
		Audit, Design, & Construction Mgt:	\$10,990.62		(See Note #1)-Excludes Bonds by Electrical Contractor
		NYPA Project Mgt. & Administrative:	\$13,545.50		(See Note #2)
		Project Management Subtotal:	\$24,536.12		
		Utility Asset Buyout Cost:	\$89,706.00		(See Note #5)
		Utility Device Disconnect Deposit Bond:	\$2,691.18		(See Note #6)
		Utility Subtotal:	\$92,397.18		
		Project Subtotal:	\$196,246.04		
		Interest During Construction (IDC):	\$7,849.84		(See Note #3)
		Total Project Cost:	\$204,095.88		
Estimated Energy Savings		Environmental Benefits: 26.8 Metric Tons			
Estimated Electrical Savings:		Estimated Fuel Savings:		MMBtu Savings:	Cost Savings:
kWh Savings:	47,978	Natural Gas:	0 Therm	0.0	\$0.00
kWh Cost Savings: \$	3,085.99	Oil Savings:	0 gal	0.0	\$0.00
Monthly kW Savings:	11.7	Steam (150 psi):	0.0 MLbs	0.0	\$0.00
kW Cost Savings:	\$0.00	Water:	0.0 Kgal	0.0	\$0.00
Total Electrical Savings:	\$3,085.99	Total Fuel Savings:	0.0	0.0	\$0.00
Total Energy Savings: \$3,085.99		Ownership Savings:	\$16,779.73	Est. Total Savings:	\$19,865.72
Simple Payback					
Total Project Cost With IDC:		\$204,095.88			
Total NYPA Grants:		\$0.00			
Total Estimated Rebates:		(\$19,191.33)		(See Note #7)	
Net Project Cost:		\$184,904.54			
Total Est. Annual Savings:		\$19,865.72			
Estimated Annual Utility Fees:		(\$2,249.40)			
Estimated Annual Service Contract:		(\$2,720.00)		(See Note #4)	
Net Est. Annual Savings:		\$14,896.32			
Simple Payback:		12.41			
Project Financing					
TOTAL AMOUNT FINANCED:		\$204,095.88		(Utility Rebates & Incentives Not Included)	
Interest Rate:		4.00%		(See Note #8)	
Years Financed:		20.0			
Number of Payments:		240			
Annual Debt Service to NYPA:		\$14,841.37			
Monthly Debt Service to NYPA:		\$1,236.78			
Total Project Cost after Financing:		\$296,827.41			
Total Annual Savings:		\$14,896.32			
Payback With Financing:		19.93			
Annual Cash Flow:		\$54.95			
Notes:					
1. Audit, Design, & Construction Mgt represents a cost of 14.0% of the direct Construction and Asbestos Abatement cost and are applied to contingency to provide budget estimates. Final costs will exclude unused contingency and will be calculated at end of project based on final material and labor costs and applicable abatement costs.					
2. NYPA Project Mgt. & Administrative represents a fee of 15.0% of all project costs except IDC.					
3. Interest During Construction (IDC) is estimated based on a 4% of the total project cost. See Section B.					
4. Yearly Service Contract includes estimated contract value of \$20 per fixture per year.					
5. Utility Asset Buyout Cost is taken from the conceptual design PSP.					
6. The Utility requires a certificate of deposit for fusing, the cost of this deposit is estimated at 3% the purchase price.					
7. Estimated Utility Rebates and Incentives are coordinated between the Customer and the Utility. Customer's financial obligation to NYPA excludes this credit.					
8. Interest rate is estimated at 4.00% long-term conservative estimate. The actual interest rate is variable and is adjusted on January 1 annually.					

Town of Newfield - Town of Newfield LED Street Lighting Upgrade
Incremental Payback Calculation
ES-ESN-0848

Project Phase: Initial Customer Project Commitment (CPC)

EEM #	EEM Description	Project Cost			Annual Cost Savings			Simple Payback	
		Total	Base Case	Net Incremental	Total	Base Case	Incremental	Total	Incr
1	LED Lighting Upgrade	\$ 204,096	\$ 89,706	\$ 114,390	\$ 14,896	\$ -	\$ 14,896	13.70	1.00
	Totals	\$ 204,096	\$ 89,706	\$ 114,390	\$ 14,896	\$ -	\$ 14,896	13.70	7.68

9/8/2020

Newfield- PSP & Incremental Payback Table with Town View Post Top Decorative Option

Total Project Summary					
New York Power Authority - Energy Efficiency Program					
Town of Newfield LED Street Lighting Upgrade					
ES-ESN-0848			September 23, 2020		
Project Cost: Initial CPC					
Fixture Count					
Cobra head:	118	Construction Costs:	\$61,729.32		
Post top:	17	Allowances:	\$0.00		
Flood Light:	1	Smart Cities Technology:	\$0.00		
Total:	136	Bonds by Electrical Contractor:	\$528.62		
		Subtotal:	\$62,257.94		
		Contingency 10%:	\$6,225.79		
		Subtotal:	\$68,483.73		
		Abatement Design & Monitoring:	\$0.00		
		Hazardous Waste Disposal Cost:	\$544.00		
		Environmental Subtotal:	\$544.00		
		Audit, Design, & Construction Mgt:	\$9,550.72	(See Note #1)-Excludes Bonds by Electrical Contractor	
		NYPA Project Mgt. & Administrative:	\$11,786.77	(See Note #2)	
		Project Management Subtotal:	\$21,337.49		
		Utility Asset Buyout Cost:	\$89,706.00	(See Note #5)	
		Utility Device Disconnect Deposit Bond:	\$2,691.18	(See Note #6)	
		Utility Subtotal:	\$92,397.18		
		Project Subtotal:	\$182,762.40		
		Interest During Construction (IDC):	\$7,310.50	(See Note #3)	
		Total Project Cost:	\$190,072.90		
Estimated Energy Savings		Environmental Benefits: 26.8 Metric Tons			
Estimated Electrical Savings:		Estimated Fuel Savings:		MMBtu Savings: Cost Savings:	
kWh Savings:	47,978	Natural Gas:	0 Therm	0.0	\$0.00
kWh Cost Savings: \$	3,085.99	Oil Savings:	0 gal	0.0	\$0.00
Monthly kW Savings:	11.7	Steam (150 psi):	0.0 MLbs	0.0	\$0.00
kW Cost Savings:	\$0.00	Water:	0.0 Kgal	0.0	\$0.00
Total Electrical Savings:	\$3,085.99	Total Fuel Savings:	0.0	\$0.00	
Total Energy Savings:	\$3,085.99	Ownership Savings:	\$16,779.73	Est. Total Savings:	\$19,865.72
Simple Payback					
Total Project Cost With IDC:		\$190,072.90			
Total NYPA Grants:		\$0.00			
Total Estimated Rebates:		(\$19,191.33) (See Note #7)			
Net Project Cost:		\$170,881.56			
Total Est. Annual Savings:		\$19,865.72			
Estimated Annual Utility Fees:		(\$2,249.40)			
Estimated Annual Service Contract:		(\$2,720.00) (See Note #4)			
Net Est. Annual Savings:		\$14,896.32			
Simple Payback:		11.47			
Project Financing					
TOTAL AMOUNT FINANCED:		\$190,072.90		(Utility Rebates & Incentives Not Included)	
Interest Rate:		4.00%		(See Note #8)	
Years Financed:		18.0			
Number of Payments:		216			
Annual Debt Service to NYPA:		\$14,830.20			
Monthly Debt Service to NYPA:		\$1,235.85			
Total Project Cost after Financing:		\$266,943.51			
Total Annual Savings:		\$14,896.32			
Payback With Financing:		17.92			
Annual Cash Flow:		\$66.12			
Notes:					
1. Audit, Design, & Construction Mgt represents a cost of 14.0% of the direct Construction and Asbestos Abatement cost and are applied to contingency to provide budget estimates. Final costs will exclude unused contingency and will be calculated at end of project based on final material and labor costs and applicable abatement costs.					
2. NYPA Project Mgt. & Administrative represents a fee of 15.0% of all project costs except IDC.					
3. Interest During Construction (IDC) is estimated based on a 4% of the total project cost. See Section B.					
4. Yearly Service Contract includes estimated contract value of \$20 per fixture per year.					
5. Utility Asset Buyout Cost is taken from the conceptual design PSP.					
6. The Utility requires a certificate of deposit for fusing, the cost of this deposit is estimated at 3% the purchase price.					
7. Estimated Utility Rebates and Incentives are coordinated between the Customer and the Utility. Customer's financial obligation to NYPA excludes this credit.					
8. Interest rate is estimated at 4.00% long-term conservative estimate. The actual interest rate is variable and is adjusted on January 1 annually.					

Town of Newfield - Town of Newfield LED Street Lighting Upgrade
Incremental Payback Calculation
ES-ESN-0848

Project Phase: Initial Customer Project Commitment (CPC)

EEM #	EEM Description	Project Cost			Annual Cost Savings			Simple Payback	
		Total	Base Case	Net Incremental	Total	Base Case	Incremental	Total	Incr
1	LED Lighting Upgrade	\$ 190,073	\$ 89,706	\$ 100,367	\$ 14,896	\$ -	\$ 14,896	12.76	1.00
	Totals	\$ 190,073	\$ 89,706	\$ 100,367	\$ 14,896	\$ -	\$ 14,896	12.76	6.74

9/23/2020

Total Project Summary					
New York Power Authority - Energy Efficiency Program					
Town of Caroline LED Street Lighting Upgrade					
ES-ESN-0869			September 8, 2020		
Project Cost: Initial CPC					
Fixture Count					
Cobra head:	76	Construction Costs:	\$37,703.33		
Post top:	0	Allowances:	\$0.00		
Flood Light:	3	Smart Cities Technology:	\$0.00		
Total:	79	Bonds by Electrical Contractor:	\$309.61		
		Subtotal:	\$38,012.94		
		Contingency 10%:	\$3,801.29		
		Subtotal:	\$41,814.23		
		Abatement Design & Monitoring:	\$0.00		
		Hazardous Waste Disposal Cost:	\$316.00		
		Environmental Subtotal:	\$316.00		
		Audit, Design, & Construction Mgt:	\$5,832.32	(See Note #1)-Excludes Bonds by Electrical Contractor	
		NYPA Project Mgt. & Administrative:	\$7,194.38	(See Note #2)	
		Project Management Subtotal:	\$13,026.70		
		Utility Asset Buyout Cost:	\$43,378.00	(See Note #5)	
		Utility Device Disconnect Deposit Bond:	\$1,301.34	(See Note #6)	
		Utility Subtotal:	\$44,679.34		
		Project Subtotal:	\$99,836.28		
		Interest During Construction (IDC):	\$3,993.45	(See Note #3)	
		Total Project Cost:	\$103,829.73		
Estimated Energy Savings		Environmental Benefits: 12.2 Metric Tons			
Estimated Electrical Savings:		Estimated Fuel Savings:		MMBtu Savings:	Cost Savings:
kWh Savings:	21,779	Natural Gas:	0 Therm	0.0	\$0.00
kWh Cost Savings:	\$1,922.88	Oil Savings:	0 gal	0.0	\$0.00
Monthly kW Savings:	5.3	Steam (150 psi):	0.0 MLbs	0.0	\$0.00
kW Cost Savings:	\$0.00	Water:	0.0 Kgal	0.0	\$0.00
Total Electrical Savings:	\$1,922.88	Total Fuel Savings:	0.0	0.0	\$0.00
Total Energy Savings:	\$1,922.88	Ownership Savings:	\$8,657.40	Est. Total Savings:	\$10,580.28
Simple Payback					
		Total Project Cost With IDC:	\$103,829.73		
		Total NYPA Grants:	\$0.00		
		Total Estimated Rebates:	(\$8,711.72)	(See Note #7)	
		Net Project Cost:	\$95,118.01		
		Total Est. Annual Savings:	\$10,580.28		
		Estimated Annual Utility Fees:	(\$1,545.24)		
		Estimated Annual Service Contract:	(\$1,580.00)	(See Note #4)	
		Net Est. Annual Savings:	\$7,455.04		
		Simple Payback:	12.76		
Project Financing					
		TOTAL AMOUNT FINANCED:	\$103,829.73	(Utility Rebates & Incentives Not Included)	
		Interest Rate:	4.00%	(See Note #8)	
		Years Financed:	20.0		
		Number of Payments:	240		
		Annual Debt Service to NYPA:	\$7,550.25		
		Monthly Debt Service to NYPA:	\$629.19		
		Total Project Cost after Financing:	\$151,005.06		
		Total Annual Savings:	\$7,455.04		
		Payback With Financing:	20.26		
		Annual Cash Flow:	(\$95.21)		
Notes:					
1. Audit, Design, & Construction Mgt represents a cost of 14.0% of the direct Construction and Asbestos Abatement cost and are applied to contingency to provide budget estimates. Final costs will exclude unused contingency and will be calculated at end of project based on final material and labor costs and applicable abatement costs.					
2. NYPA Project Mgt. & Administrative represents a fee of 15.0% of all project costs except IDC.					
3. Interest During Construction (IDC) is estimated based on a 4% of the total project cost. See Section B.					
4. Yearly Service Contract includes estimated contract value of \$20 per fixture per year.					
5. Utility Asset Buyout Cost is taken from the conceptual design PSP.					
6. The Utility requires a certificate of deposit for fusing, the cost of this deposit is estimated at 3% the purchase price.					
7. Estimated Utility Rebates and Incentives are coordinated between the Customer and the Utility. Customer's financial obligation to NYPA excludes this credit.					
8. Interest rate is estimated at 4.00% long-term conservative estimate. The actual interest rate is variable and is adjusted on January 1 annually.					

Town of Caroline - Town of Caroline LED Street Lighting Upgrade
Incremental Payback Calculation
ES-ESN-0869

Project Phase: Initial Customer Project Commitment (CPC)

EEM #	EEM Description	Project Cost			Annual Cost Savings			Simple Payback	
		Total	Base Case	Net Incremental	Total	Base Case	Incremental	Total	Incr
1	LED Lighting Upgrade	\$ 103,830	\$ 43,378	\$ 60,452	\$ 7,455	\$ -	\$ 7,455	13.93	1.00
	Totals	\$ 103,830	\$ 43,378	\$ 60,452	\$ 7,455	\$ -	\$ 7,455	13.93	8.11

9/8/2020

Total Project Summary					
New York Power Authority - Energy Efficiency Program					
Town of Ulysses LED Street Lighting Upgrade					
ES-ESN-0870			September 8, 2020		
Project Cost: Initial CPC					
Fixture Count					
Cobra head:	9	Construction Costs:	\$5,413.74		
Post top:	0	Allowances:	\$0.00		
Flood Light:	1	Smart Cities Technology:	\$0.00		
Total:	10	Bonds by Electrical Contractor:	\$32.80		
		Subtotal:	\$5,446.54		
		Contingency 10%:	\$544.65		
		Subtotal:	\$5,991.19		
		Abatement Design & Monitoring:	\$0.00		
		Hazardous Waste Disposal Cost:	\$40.00		
		Environmental Subtotal:	\$40.00		
		Audit, Design, & Construction Mgt:	\$836.47		(See Note #1)-Excludes Bonds by Electrical Contractor
		NYPA Project Mgt. & Administrative:	\$1,030.15		(See Note #2)
		Project Management Subtotal:	\$1,866.62		
		Utility Asset Buyout Cost:	\$7,242.00		(See Note #5)
		Utility Device Disconnect Deposit Bond:	\$217.26		(See Note #6)
		Utility Subtotal:	\$7,459.26		
		Project Subtotal:	\$15,357.07		
		Interest During Construction (IDC):	\$614.28		(See Note #3)
		Total Project Cost:	\$15,971.36		
Estimated Energy Savings					
Environmental Benefits: 4.5 Metric Tons					
Estimated Electrical Savings:		Estimated Fuel Savings:		MMBtu Savings:	Cost Savings:
kWh Savings:	8,127	Natural Gas:	0 Therm	0.0	\$0.00
kWh Cost Savings:	\$588.77	Oil Savings:	0 gal	0.0	\$0.00
Monthly kW Savings:	2.0	Steam (150 psi):	0.0 MLbs	0.0	\$0.00
kW Cost Savings:	\$0.00	Water:	0.0 Kgal	0.0	\$0.00
Total Electrical Savings:	\$588.77	Total Fuel Savings:	0.0	0.0	\$0.00
Total Energy Savings:		Ownership Savings:	\$1,194.48	Est. Total Savings:	\$1,783.25
Simple Payback					
Total Project Cost With IDC:		\$15,971.36			
Total NYPA Grants:		\$0.00			
Total Estimated Rebates:		(\$3,250.80)		(See Note #7)	
Net Project Cost:		\$12,720.56			
Total Est. Annual Savings:		\$1,783.25			
Estimated Annual Utility Fees:		(\$195.60)			
Estimated Annual Service Contract:		(\$200.00)		(See Note #4)	
Net Est. Annual Savings:		\$1,387.65			
Simple Payback:		9.17			
Project Financing					
TOTAL AMOUNT FINANCED:		\$15,971.36		(Utility Rebates & Incentives Not Included)	
Interest Rate:		4.00%		(See Note #8)	
Years Financed:		16.0			
Number of Payments:		192			
Annual Debt Service to NYPA:		\$1,353.09			
Monthly Debt Service to NYPA:		\$112.76			
Total Project Cost after Financing:		\$21,649.38			
Total Annual Savings:		\$1,387.65			
Payback With Financing:		15.60			
Annual Cash Flow:		\$34.57			
Notes:					
1. Audit, Design, & Construction Mgt represents a cost of 14.0% of the direct Construction and Asbestos Abatement cost and are applied to contingency to provide budget estimates. Final costs will exclude unused contingency and will be calculated at end of project based on final material and labor costs and applicable abatement costs.					
2. NYPA Project Mgt. & Administrative represents a fee of 15.0% of all project costs except IDC.					
3. Interest During Construction (IDC) is estimated based on a 4% of the total project cost. See Section B.					
4. Yearly Service Contract includes estimated contract value of \$20 per fixture per year.					
5. Utility Asset Buyout Cost is taken from the NYSEG Streetlighting Facilities Sales Proposal dated September 8, 2020.					
6. The Utility requires a certificate of deposit for fusing, the cost of this deposit is estimated at 3% the purchase price.					
7. Estimated Utility Rebates and Incentives are coordinated between the Customer and the Utility. Customer's financial obligation to NYPA excludes this credit.					
8. Interest rate is estimated at 4.00% long-term conservative estimate. The actual interest rate is variable and is adjusted on January 1 annually.					

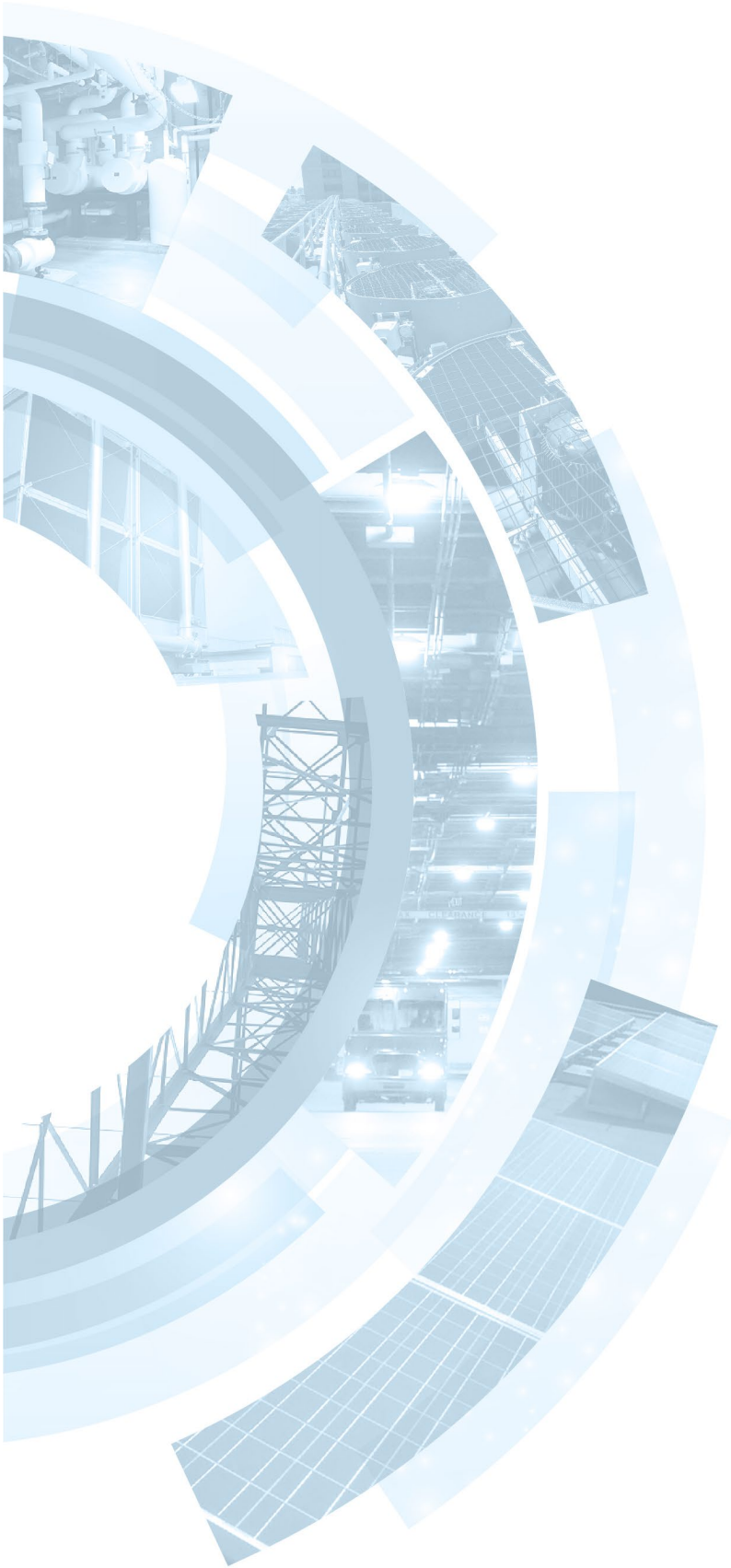
Town of Ulysses - Town of Ulysses LED Street Lighting Upgrade
Incremental Payback Calculation
ES-ESN-0870

Project Phase: Initial Customer Project Commitment (CPC)

EEM #	EEM Description	Project Cost			Annual Cost Savings			Simple Payback	
		Total	Base Case	Net Incremental	Total	Base Case	Incremental	Total	Incr
1	LED Lighting Upgrade	\$ 15,971	\$ 7,242	\$ 8,729	\$ 1,388	\$ -	\$ 1,388	11.51	1.00
	Totals	\$ 15,971	\$ 7,242	\$ 8,729	\$ 1,388	\$ -	\$ 1,388	11.51	6.29

9/8/2020

C – Facility Description



C. Facility Description

Existing Street Lighting

The County of Tompkins is in the west central part of New York State and is made up of 16 villages and towns. In this project scope, the design for the Tompkins County aggregation will include 9 of the 16 towns and villages. These 9 municipalities have been broken down into subgroups based on the progression and completion of their purchase agreements. The first group included the Village of Cayuga Heights and the Village of Dryden. The remaining 7 municipalities in the second group originally included the Town of Dryden, however the town will be broken off into its own design. All the information and analysis throughout this design report will be based on the remaining 6 municipalities. The table below provides a brief overview of the street light fixture total and the utility company used for each of the town's and village's:

Municipality	Number of Fixtures	Local Utility
Village of Trumansburg	201	New York State Electric & Gas (NYSEG)
Village of Freeville	62	New York State Electric & Gas (NYSEG)
Town of Ithaca	272	New York State Electric & Gas (NYSEG)
Town of Newfield	135	New York State Electric & Gas (NYSEG)
Town of Caroline	79	New York State Electric & Gas (NYSEG)
Town of Ulysses	10	New York State Electric & Gas (NYSEG)

In general, the existing street lighting consists of utility pole-mounted cobra head and flood light luminaires with overhead power feeds. As well, decorative pole-mounted post top and pendant luminaires with underground power feeds. The lamps are made up of High-Pressure Sodium (HPS), Mercury Vapor (MV) and Metal Halide (MHL). All the towns and villages street lighting fixtures are energized from NYSEG or from another ESCO supplier. All the street lighting fixtures within this project scope are transmitted across NYSEG's infrastructure. Each of these towns and villages have their own electricity billing accounts. This is explained in further detail in Section I. The following sections below provide detailed explanations of the existing conditions for each municipality.

Village of Trumansburg

The village has 201 existing fixtures on their utility registry. Of the 201 street light fixtures, there are 157 Cobra Head fixtures, 1 Flood Light fixture and 43 Pendant Mounted decorative fixtures. NYSEG currently owns the Cobra Head and Flood Light fixtures. The village owns the Pendant Mounted decorative fixtures. The village has their electricity delivered through NYSEG and supplied by Constellation New Energy. Provided below is a chart showing the existing fixtures, fixture wattages and the quantities of each fixture.

Village of Trumansburg		
Fixture Code	Fixture Description	Baseline Qty
CH/HPS100W	100W High Pressure Sodium Cobra Head	102
CH/HPS150W	150W High Pressure Sodium Cobra Head	6
CH/MRC175W	175W Mercury Vapor Cobra Head	21
CH/HPS250W	250W High Pressure Sodium Cobra Head	21
CH/MRC250W	250W Mercury Vapor Cobra Head	4
CH/HPS400W	400W High Pressure Sodium Cobra Head	1
CH/MRC400W	400W Mercury Vapor Cobra Head	1
CH/HPS100W	No Fixture in Service/ Fixture on different road	1
FL/HPS100W	100W High Pressure Sodium Flood Light	1
PMD/HPS150W	150W High Pressure Sodium Pendant Mounted Decorative	43
Grand Total:		201

The images below are of the different types of fixtures found throughout the village along with their respective locations.



E. Main Street



Camp Street & South Street



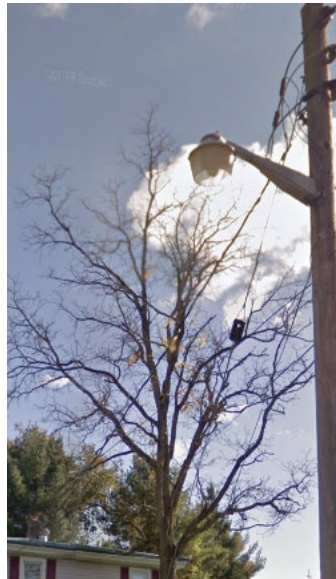
E. Main Street

Village of Freeville

The village has 62 existing fixtures on their utility registry. Of the 62 street light fixtures, there are 61 Cobra Head fixtures and 1 Flood Light fixture. NYSEG currently owns the Cobra Head and Flood Light fixtures. The village has their electricity delivered and supplied through NYSEG. Provided below is a chart showing the existing fixtures, fixture wattages and the quantities of each fixture.

Village of Freeville		
Fixture Code	Fixture Description	Baseline Qty
CH/HPS70W	70W High Pressure Sodium Cobra Head	27
CH/HPS100W	100W High Pressure Sodium Cobra Head	29
CH/HPS150W	150W High Pressure Sodium Cobra Head	3
CH/HPS250W	250W High Pressure Sodium Cobra Head	1
CH/MRC400W	400W Mercury Vapor Cobra Head	1
FL/HPS250W	250W High Pressure Sodium Flood Light	1
Grand Total:		62

The images below are of the different types of fixtures found throughout the village along with their respective locations.



Health Place



Railroad Street (Rte.38)

Town of Ithaca

The town has 272 existing fixtures on their utility registry. Of the 272 street light fixtures, there are 266 Cobra Head fixtures, 3 Flood Light fixtures and 3 Post Top decorative fixtures. NYSEG currently owns the Cobra Head, Flood Light and Post Top decorative fixtures. The town has their electricity delivered through NYSEG and supplied by Constellation New Energy. Provided below is a chart showing the existing fixtures, fixture wattages and the quantities of each fixture.

Town of Ithaca		
Fixture Code	Fixture Description	Baseline Qty
CH/HPS70W	70W High Pressure Sodium Cobra Head	11
CH/HPS100W	100W High Pressure Sodium Cobra Head	61
CH/HPS100W	100W Mercury Vapor Cobra Head	25
CH/HPS150W	150W High Pressure Sodium Cobra Head	58
CH/MRC175W	175W Mercury Vapor Cobra Head	50
CH/HPS250W	250W High Pressure Sodium Cobra Head	30
CH/MRC250W	250W Mercury Vapor Cobra Head	2
CH/HPS400W	400W High Pressure Sodium Cobra Head	1
CH/MRC400W	400W Mercury Vapor Cobra Head	27
CH/MHL400W	400W Metal Halide Cobra Head	1
FL/MRC250W	250W Mercury Vapor Flood Light	3
PTD/HPS100W	100W High Pressure Sodium Post Top Decorative	3
Grand Total:		272

The images below are of the different types of fixtures found throughout the town along with their respective locations.



Five Mile Road



Winners Circle



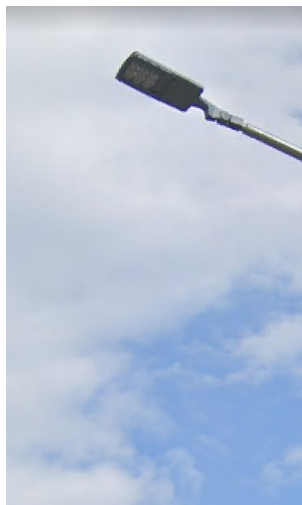
Trumansburg Road (RTE.110)

Town of Newfield

The town has 135 existing fixtures on their utility registry. Of the 135 street light fixtures, there are 118 Cobra Head fixtures, 1 Flood Light fixture and 16 Post Top decorative fixtures. NYSEG currently owns the Cobra Head, Flood Light and decorative fixtures. The village owns the Pendant Mounted decorative fixtures. The town has their electricity delivered through NYSEG and supplied by Constellation New Energy. Provided below is a chart showing the existing fixtures, fixture wattages and the quantities of each fixture.

Town of Newfield		
Fixture Code	Fixture Description	Baseline Qty
CH/HPS70W	70W High Pressure Sodium Cobra Head	57
CH/HPS100W	100W High Pressure Sodium Cobra Head	12
CH/HPS100W	100W Mercury Vapor Cobra Head	12
CH/HPS150W	150W High Pressure Sodium Cobra Head	18
CH/MRC175W	175W Mercury Vapor Cobra Head	4
CH/HPS250W	250W High Pressure Sodium Cobra Head	9
CH/MRC250W	250W Mercury Vapor Cobra Head	3
CH/HPS400W	400W High Pressure Sodium Cobra Head	1
CH/MHL400W	400W Metal Halide Cobra Head	2
FL/HPS400W	400W High Pressure Sodium Flood Light	1
PTD/HPS70W	70W High Pressure Sodium Post Top Decorative	3
PTD/HPS100W	100W High Pressure Sodium Post Top Decorative	13
Grand Total:		135

The images below are of the different types of fixtures found throughout the town along with their locations.



RTE.13 (Elmira Road)



Hidden Pines Drive



Main Street

Town of Caroline

The town has 79 existing fixtures on their utility registry. Of the 79 street light fixtures, there are 76 Cobra Head fixtures and 3 Flood Light fixtures. NYSEG currently owns the Cobra Head and Flood Light fixtures. The town has their electricity delivered through NYSEG and supplied by Constellation New Energy. Provided below is a chart showing the existing fixtures, fixture wattages and the quantities of each fixture.

Town of Caroline		
Fixture Code	Fixture Description	Baseline Qty
CH/HPS100W	100W High Pressure Sodium Cobra Head	64
CH/HPS150W	150W High Pressure Sodium Cobra Head	9
CH/HPS250W	250W High Pressure Sodium Cobra Head	3
FL/HPS100W	100W High Pressure Sodium Flood Light	3
Grand Total:		79

The images below are of the different types of fixtures found throughout the town along with their respective locations.



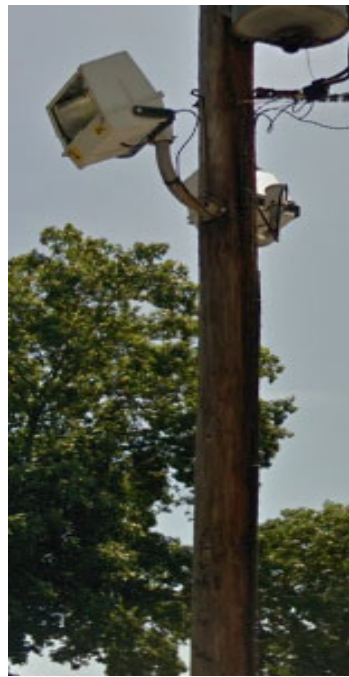
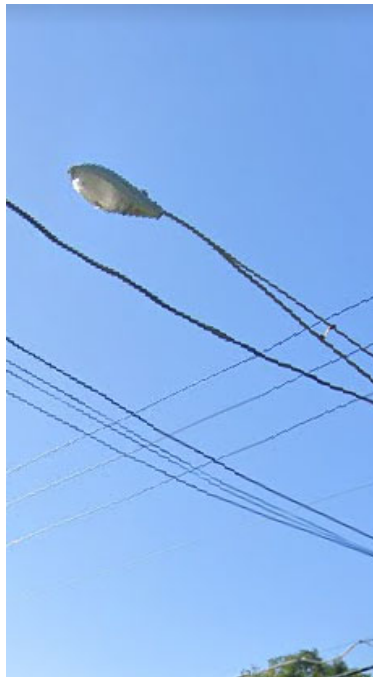
Slaterville Road (RTE.79)

Town of Ulysses

The town has 10 existing fixtures on their utility registry. Of the 10 street light fixtures, there are 9 Cobra Head fixtures and 1 Flood Light fixture. NYSEG currently owns the Cobra Head and Flood Light fixtures. The town has their electricity delivered through NYSEG and supplied by Energy Cooperative of America. Provided below is a chart showing the existing fixtures, fixture wattages and the quantities of each fixture.

Town of Ulysses		
Fixture Code	Fixture Description	Baseline Qty
CH/HPS150W	150W High Pressure Sodium Cobra Head	5
CH/HPS250W	250W High Pressure Sodium Cobra Head	3
CH/HPS400W	400W High Pressure Sodium Cobra Head	1
FL/HPS250W	250W High Pressure Sodium Flood Light	1
Grand Total:		10

The images below are of the different types of fixtures found throughout the town along with their locations.



Trumansburg Road (RTE.96)

Overall Existing Controls

Cobra Head luminaires are controlled with individual, fixture-mounted photo sensors. The vast majority of luminaires were found to be in good working condition, with a portion of lamps at their end of life. A small percentage of the Cobra Head luminaires that were determined to be beyond their useful life.

Overall Seasonal Concerns

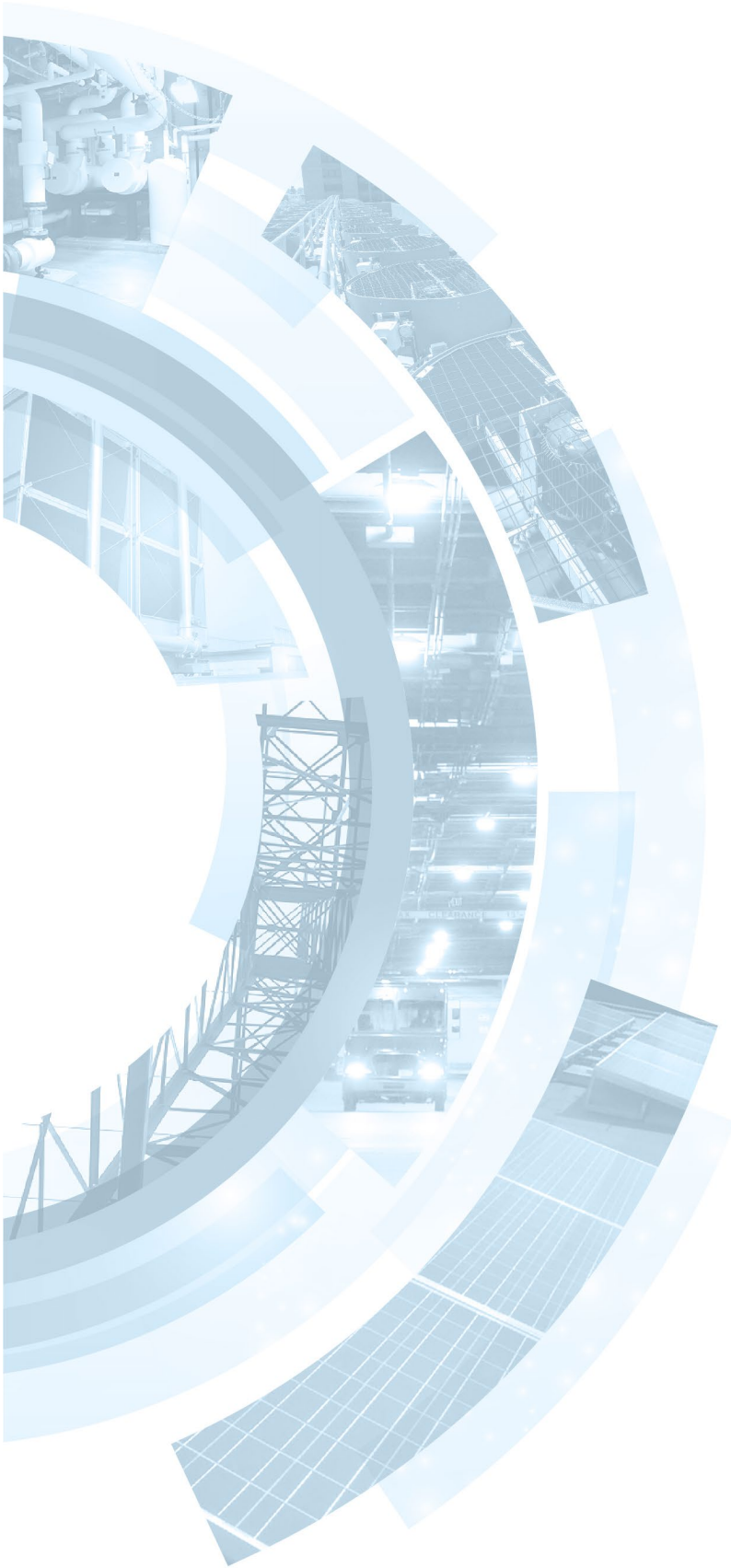
Roadway luminance with LED fixtures, as with any other light source, will increase with snowfall due to the high reflectivity of snow in relation to the low reflectivity of the asphalt. In terms of fixture operation, LED street lights, unlike LED stop lights, operate at the higher end of the LED wattage range, therefore have a higher operating temperature (at the diode) that is dissipated through the device's heat sink. Per Phillips Lighting literature directly addressing this topic, their heat sink is designed to prevent snow accumulation on the fixture in strong storms.

Overall Operating and Maintenance (O&M) Concerns

In general, our visual inspection revealed that the existing fixtures are well maintained. Approximately 10% of arms and some of the decorative fixtures were broken and are at the end of their life and should be replaced. There are also locations that need to have foliage trimmed back to prevent obstruction of the luminaire. There has been an allotted amount for tree trimming included for all the municipalities. The pictures below represent some examples throughout the towns and villages within this project scope of the concerns mentioned above.



D – Energy Conservation Measures & Project Economics



D. Recommended EEMs

EEM – 1: Street LED Lighting Upgrade

Existing Conditions

There are significant opportunities to improve the street lighting performance throughout the County of Tompkins. In particular, the existing main source of illumination for most streets, parking areas and public spaces are HID. HID lamps consume more electricity and have lower efficacies compared to modern LED lighting technologies.

Proposed Scope of Work

It is recommended that all HID-sourced street lights, regardless of type, be replaced with LED-sourced lighting that is similar in fixture design and function. Additionally, all mounting arms and associated power wiring that is approaching the end of useful life should be replaced. Appendix J.2 conveys the full range of typical street types, lighting, pedestrian classes and intersection types throughout the entire county. IES RP-8-18 is the design criteria for this project. These photometrics were used for determining the design of LED street light replacement.

Photometrics performed for the decorative fixtures did not pass all the design criteria due to low mounting heights and spacing. Appendix J.2a provides the full analysis and design for these proposed decorative fixtures.

Energy savings will be realized through fixture wattage reduction with LED conversion and reduced energy consumption of the LED fixture compared to the existing fixtures. During the installation process, required lighting levels for the various spaces should be considered. As part of this 90% submission, we indicated recommended luminance (cd/m^2) and illuminance (fc) values. See Appendix J.5 for IESNA guidelines and analysis used to inform this design.

There was a fixture discrepancy with the Town of Newfield in which an additional Post Top decorative fixture was found. The utility registry provided by the client stated that there were 16, however in the verification process there were 17 decorative fixtures found. This additional fixture is reflected in the proposed table for the town. The following tables illustrate the proposed registry for each town and village once the upgrade is complete:

Village of Trumansburg		
Fixture Code	Fixture Description	Proposed Qty
NCH35W/LED16/3kt3-Philips RFS	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	99
NCH54W/LED16/3kt3-Philips RFS	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	1
NCH65W/LED40/3kt3-Philips RFS	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	3
NCH50W/LED32/3kt3-Philips RFM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	14
NCH55W/LED48/3kt3-Philips RFM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	24
NCH75W/LED60/3kt3-Philips RFM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	1
NCH80W/LED48/3kt3-Philips RFM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	13
NCH100W/LED60/3kt3-Philips RFM	B5 - Philips - RFM-100W60LED3K-G2-R3M-UNV-DMG-RCD7	1
NDS30W/LED40/3kt3-Spring Columb	D1 - Spring City - ALMCLU-LE080C-VX-X2-30-CR3-YLC3	43
NFL/LED51-Lithonia RSFX1	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	1
Grand Total:		200

Village of Freeville		
Fixture Code	Fixture Description	Proposed Qty
NCH35W/LED16/3kt3-Philips RFS	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	30
NCH55W/LED48/3kt3-Philips RFM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	30
NCH75W/LED60/3kt3-Philips RFM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	1
NFL/LED71-Lithonia RSFX2	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	1
Grand Total:		62

Town of Ithaca		
Fixture Code	Fixture Description	Proposed Qty
NCH35W/LED16/3kt3-Philips RFS	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	174
NCH54W/LED16/3kt3-Philips RFS	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	2
NCH65W/LED40/3kt3-Philips RFS	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	1
NCH50W/LED32/3kt3-Philips RFM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	6
NCH55W/LED48/3kt3-Philips RFM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	80
NCH75W/LED60/3kt3-Philips RFM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	3
NDPT55W/LED55/3kt3-Hubbell TRA	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	3
NFL/LED71-Lithonia RSFX2	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	3
Grand Total:		272

Town of Newfield		
Fixture Code	Fixture Description	Proposed Qty
NCH35W/LED16/3kt3-Philips RFS	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	44
NCH54W/LED16/3kt3-Philips RFS	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	8
NCH50W/LED32/3kt3-Philips RFM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	29
NCH55W/LED48/3kt3-Philips RFM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	37
NDPT55W/LED55/3kt3-Hubbell TRA	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	17
NFL/LED71-Lithonia RSFX2	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	1
Grand Total:		136

Town of Caroline		
Fixture Code	Fixture Description	Proposed Qty
NCH35W/LED16/3kT3-Philips RFS	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	15
NCH65W/LED40/3kT3-Philips RFS	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	2
NCH50W/LED32/3kT3-Philips RFM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	1
NCH55W/LED48/3kT3-Philips RFM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	29
NCH80W/LED48/3kT3-Philips RFM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	29
NFL/LED51-Lithonia RSFX1	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	3
Grand Total:		79

Town of Ulysses		
Fixture Code	Fixture Description	Proposed Qty
NCH55W/LED48/3kT3-Philips RFM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	9
NFL/LED71-Lithonia RSFX2	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	1
Grand Total:		10




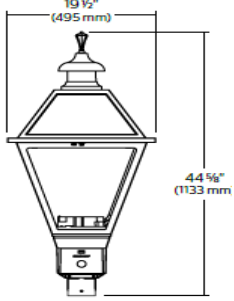




In addition to the LED fixtures, we recommend incorporating a Smart Lighting Control System in municipalities where the advanced functionalities are relevant. A budget of \$90 per fixture node has been incorporated into the design to cover Smart Lighting Controls. Smart Lighting Controls have the ability to further lower energy costs, expedite maintenance and provide authorities with additional tools in the event of an emergency.

Smart Lighting Controls

Due to modern advances in both lighting and telecommunication technologies, street lights are now able to offer additional services to a community besides general street and pedestrian illumination. In their most basic form, these technologies allow fixtures to be mapped upon install so that a municipality or utility can more accurately locate and characterize a prescribed area's lighting grid. After completion of mapping, the fixture can then transmit operational characteristics to gateways through a mesh network. The gateway then can transmit all of the information to the municipality's network via cellular data connection, Wi-Fi connection or hard wire LAN connection, allowing the owner of the system to immediately locate defective fixtures as well as provide energy data analysis through the use of its software. This network also allows for total dimming control of the lighting grid which can override individual fixture photo sensors if the need arises. Total control of the lighting grid can yield certain features, such as law enforcement override, and condition-specific lighting for situations such as festivals, civil unrest and emergency evacuation. Between the 100% reports and CPC, Guth DeConzo will determine what the municipality's needs are for Smart Lighting Controls. At the CPC, Guth DeConzo will

vet Smart City companies prior to the 100% submission and provide a company comparison for the client.

For the purposes of this measure, we have specified fixtures which will effectively replace existing fixtures found throughout the villages and towns. The fixture selections are as follows:

Existing HID Lighting Fixtures	Proposed LED Lighting Fixtures
Cobra Head Fixtures	
	
Post Top Decorative Fixtures	
	
Pendant Mount Decorative Fixtures	
	
Flood Light Fixtures	
	

Rebates

NYSEG is providing rebates for all streetlights that are upgraded by each municipality. The amount is determined based on the wattage reduction of fixtures. The proposed fixtures qualify for the \$0.40/watt reduced. The NYSEG rebate details for the streetlights are given below:

Estimated Village Trumansburg Rebates		
Watts Reduced	Rebate per Reduced Watt	Total Rebate
89,541	\$ 0.40	\$ 35,816.45
		\$ 35,816.45
Estimated Village Freeville Rebates		
Watts Reduced	Rebate per Reduced Watt	Total Rebate
16,755	\$ 0.40	\$ 6,702.02
		\$ 6,702.02
Estimated Town of Ithaca Rebates		
Watts Reduced	Rebate per Reduced Watt	Total Rebate
178,271	\$ 0.40	\$ 71,308.57
		\$ 71,308.57
Estimated Town of Newfield Rebates		
Watts Reduced	Rebate per Reduced Watt	Total Rebate
47,978	\$ 0.40	\$ 19,191.33
		\$ 19,191.33
Estimated Town of Caroline Rebates		
Watts Reduced	Rebate per Reduced Watt	Total Rebate
21,779	\$ 0.40	\$ 8,711.72
		\$ 8,711.72
Estimated Town of Ulysses Rebates		
Watts Reduced	Rebate per Reduced Watt	Total Rebate
8,127	\$ 0.40	\$ 3,250.80
		\$ 3,250.80

Constructability Review

There are a number of significant constructability issues that may impact the overall project economics. In this section, we will review each of these issues and discuss the economic impact to the project.

- **Dedicated and Secure Storage/Staging Areas** – Given the geographic size of the County of Tompkins it is expected this project will require two (2) dedicated and secure storage/staging areas for fixtures, disposal items and contractor boom-truck overnight parking. Additional space for overnight parking of contractor bucket-trucks should be factored as well. We believe a space requirement of 250' x 250' will be adequate for the contractors' use.
- **Use/Need for Police Escorts** – A significant portion of this project will occur in business/commercial areas and on multi-lane roadways. The contractor will be required to comply with all Maintenance and Protection of Traffic (MPT) as required under the Manual on Uniform Traffic Control Devices (MUTCD). The contractor will also be required to submit and follow a detailed MPT plan for all road types with the contract limits.
- **Installation Production Schedule** – In our experience, contractors should be expected to achieve daily production rates of 20 – 25 fixtures per crew, per day (typical crew size is two men and a bucket truck). This is assuming the existing conditions (arms, wiring, etc.) are in good working order.
- **Existing Conditions** – The existing conditions of poles, bases, wiring, fuse holders and fixtures in general will have the greatest impact to the project economics. Logically, the more work a contractor is required to do at each pole, the higher the overall project cost will be.

Included in the project cost, the following allowance for each town and village has been carried to cover the aging infrastructure:

Village of Trumansburg			
Description	Unit Cost	Quantity	Cost
Replace/Install Fuseholder (100% of decoratives)	\$ 28.50	0	\$ -
Replace Wiring (20% of Underground)	\$ 125.00	0	\$ -
Replace Wiring (50% of CH)	\$ 23.00	78	\$ 1,794.00
Arm Replacement (5% of CH)	\$ 350.00	8	\$ 2,800.00
Grand Total:			\$ 4,594.00

Village of Freeville			
Description	Unit Cost	Quantity	Cost
Replace Wiring (50% of CH)	\$ 23.00	31	\$ 713.00
Arm Replacement (5% of CH)	\$ 350.00	3	\$ 1,050.00
Grand Total:			\$ 1,763.00

Town of Ithaca			
Description	Unit Cost	Quantity	Cost
Replace/Install Fuseholder (100% of decoratives)	\$ 28.50	0	\$ -
Replace Wiring (20% of Underground)	\$ 125.00	0	\$ -
Replace Wiring (50% of CH)	\$ 23.00	133	\$ 3,059.00
Arm Replacement (5% of CH)	\$ 350.00	13	\$ 4,655.00
Grand Total:			\$ 7,714.00

Town of Newfield			
Description	Unit Cost	Quantity	Cost
Replace/Install Fuseholder (100% of decoratives)	\$ 28.50	0	\$ -
Replace Wiring (20% of Underground)	\$ 125.00	0	\$ -
Replace Wiring (50% of CH)	\$ 23.00	59	\$ 1,357.00
Arm Replacement (5% of CH)	\$ 350.00	6	\$ 2,065.00
Grand Total:			\$ 3,422.00

Town of Caroline			
Description	Unit Cost	Quantity	Cost
Replace Wiring (50% of CH)	\$ 23.00	38	\$ 874.00
Arm Replacement (5% of CH)	\$ 350.00	4	\$ 1,330.00
Grand Total:			\$ 2,204.00

Town of Ulysses			
Description	Unit Cost	Quantity	Cost
Replace Wiring (50% of CH)	\$ 23.00	5	\$ 103.50
Arm Replacement (5% of CH)	\$ 350.00	1	\$ 350.00
Grand Total:			\$ 453.50

- **Weather** – It is expected contractors will be able to work without major weather issues (other than rain) from April 1 until December 1. The County of Tompkins should define a policy which will control contractor work restrictions for weather considerations during winter months.

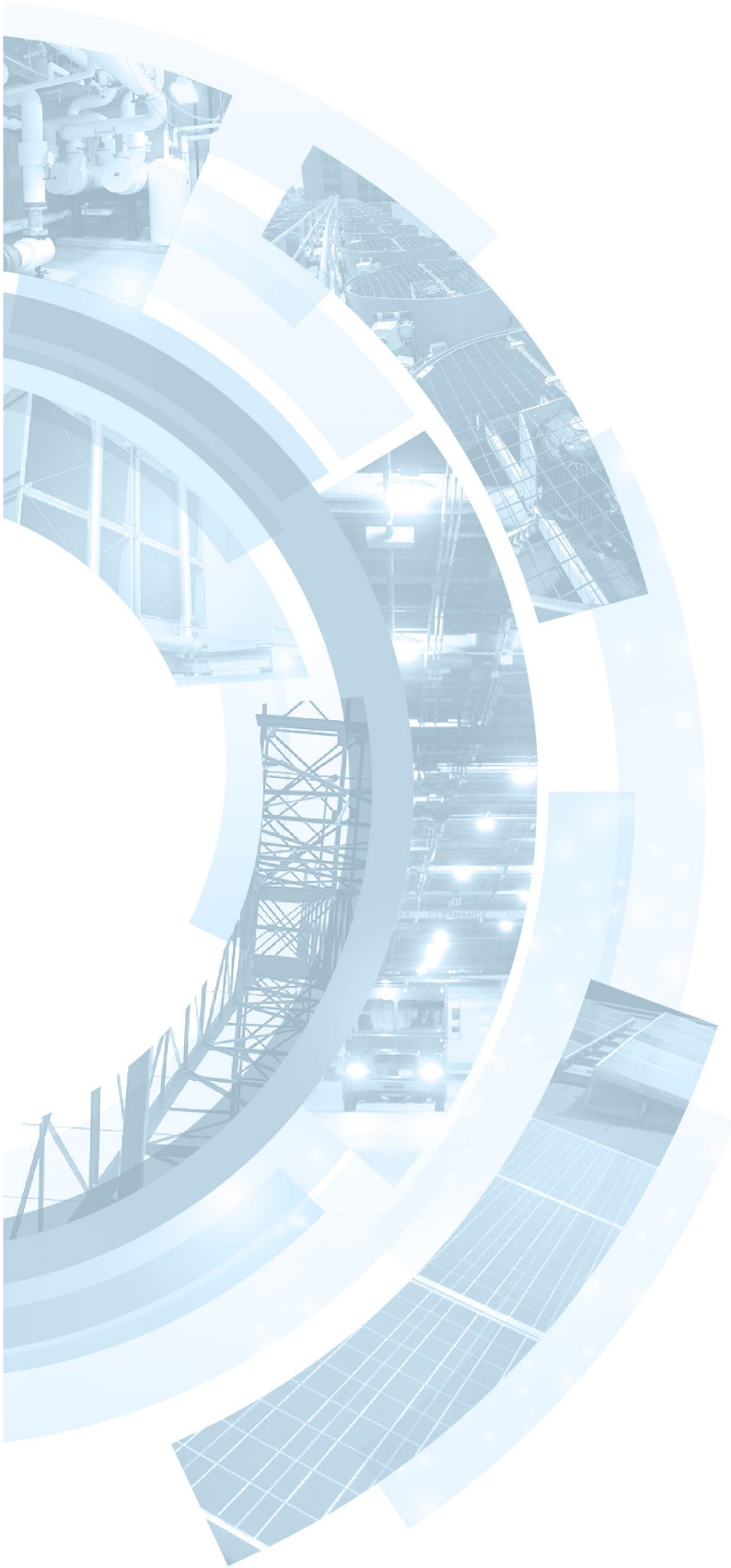
NYPA Smart Cities Grant

NYPA is providing qualifying municipalities with an opportunity to take advantage of the Smart City Technology Grant Program as an enhancement to the Smart Street Lighting NY Program. All communities that convert their streetlights to LED using the NYPA program qualifies for the base grants as described below. This is to implement innovative technologies to enhance their respective communities Public Safety, Environments, Transportation and Connectivity. For Tompkins County the base grant is \$40K, which can be increased up to \$120K with a matching municipal contribution of \$80K, which may be financed as part of this project.

Grant Allocation			
Number of Street Lights	Base Grant Amount (No customer match)	Matching Amount (up to 50% match)	Total Amount (Base + Matching)
0 to 500	Up to \$20,000	Up to \$40,000	Up to \$60,000
501 to 1,000	Up to \$40,000	Up to \$80,000	Up to \$120,000
1,001 to 5,000	Up to \$75,000	Up to \$150,000	Up to \$225,000
>5,000	Up to \$100,000	Up to \$200,000	Up to \$300,000

Example Project	
Number of Street Lights	3,500
Base project cost for LED conversion	\$5,000,000
NYPA Base Grant Amount	\$75,000
NYPA Matching Funds	\$100,000
City's Contribution	\$100,000
Total Grant Amount	\$175,000
Net Project Cost	\$5,000,000
Gross Project Cost (LED + Smart City)	\$5,275,000

E – Schedule & Timeline



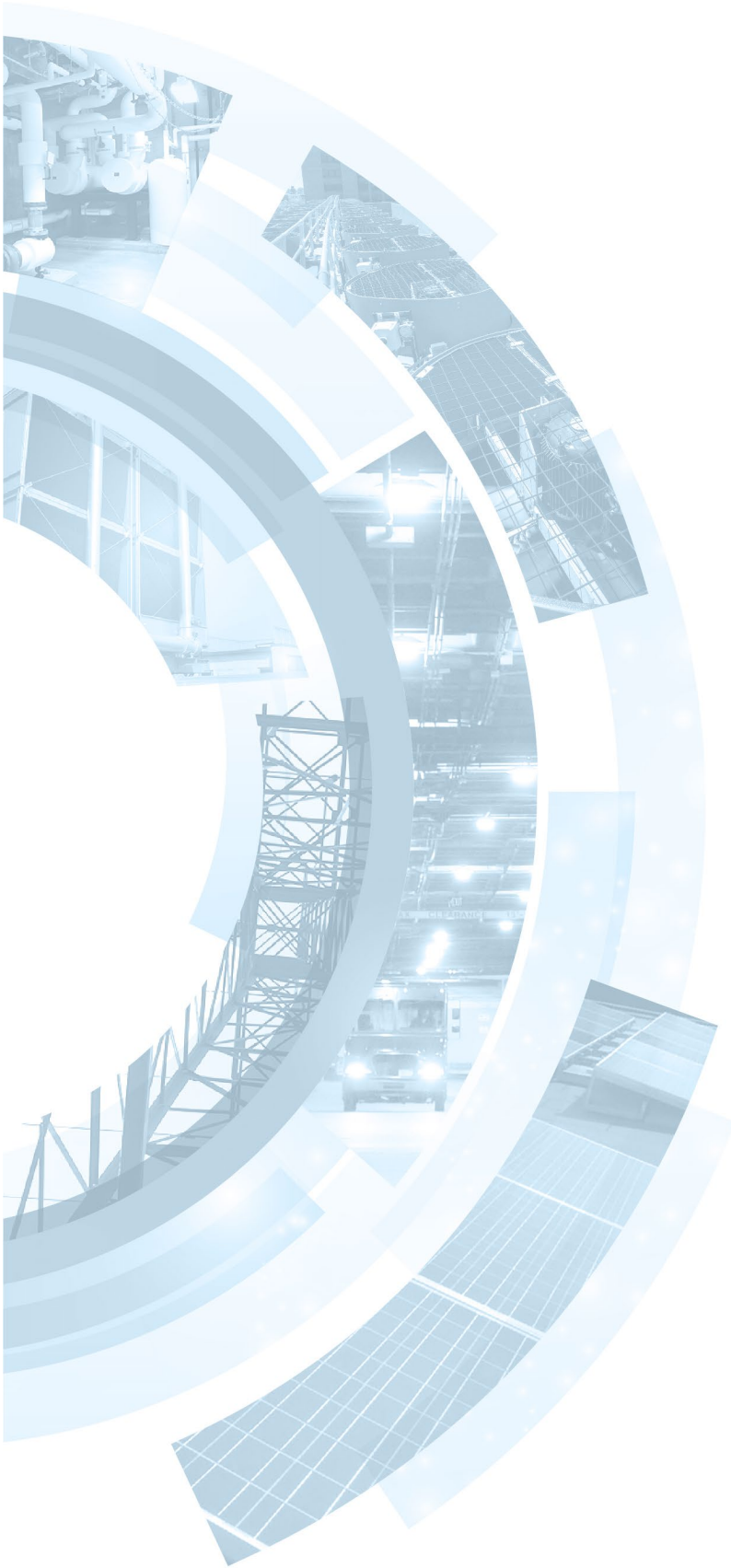
SECTION E - PROJECT SCHEDULE

Below is the project schedule. The schedule will be updated as the project progresses.

Milestone	Completion
90% Design Submission	7/8/2020
Bid Phase Complete	4 Weeks
CIC Completed	4 Weeks
NYPA CIC Approval	4 Weeks
Customer CIC Approval	4 Weeks
Construction Completed	12 Months
Punch List	1 Month
Final Inspection	1 Month
Project Close Out	1 Month

There are no major concerns with regards to the project at this time. Any delays with reviews or approvals could push completion of construction into Summer 2020.

F – Material & Labor



Summary of Construction Costs					
Village of Trumansburg - LED Street Lighting Project					
EEM 1 Street Lighting					
Fixture Count					
Cobra Head Fixtures:	156			Material:	Labor:
Decorative Fixtures:	43	Cobra Head Street Lighting Fixtures:	\$ 17,948	\$	23,556
Flood Light Fixtures:	1	Decorative Street Lighting Fixtures:	\$ 51,600	\$	10,664
Total:	200	Flood Street Lighting Fixtures:	\$ 500	\$	151
		Smart Street Lighting Controls (Cobra Head):	\$ 14,040	\$	-
		Smart Street Lighting Controls (Decorative):	\$ 3,870	\$	-
		Smart Street Lighting Controls (Flood):	\$ 90	\$	-
Qty	1	SLC LTE Gateway fixture arm install:	\$ -	\$	2,500
		<i>Allowance</i> Utility GIS and Registry Updates:	\$ -	\$	700
		<i>Allowance</i> Maintenance During Construction:	\$ 780	\$	780
		<i>Allowance</i> Tree Trimming:		\$	780
		<i>Allowance</i> Infrastructure Replacement:	\$ 4,594	\$	-
Totals:			\$ 93,422	\$	39,131

Summary of Construction Costs

Village of Freeville - LED Street Lighting Project

EEM 1 Street Lighting

Fixture Count					
Cobra Head Fixtures:	61			Material:	Labor:
Decorative Fixtures:	0	Cobra Head Street Lighting Fixtures:	\$ 7,999	\$	9,211
Flood Light Fixtures:	1	Decorative Street Lighting Fixtures:	\$ -	\$	-
Total:	62	Flood Street Lighting Fixtures:	\$ 500	\$	151
		Smart Street Lighting Controls (Cobra Head):	\$ 5,490	\$	-
		Smart Street Lighting Controls (Decorative):	\$ -	\$	-
		Smart Street Lighting Controls (Flood):	\$ 90	\$	-
Qty	1	SLC LTE Gateway fixture arm install:	\$ -	\$	2,500
		<i>Allowance</i> Utility GIS and Registry Updates:	\$ -	\$	217
		<i>Allowance</i> Maintenance During Construction:	\$ 310	\$	310
		<i>Allowance</i> Tree Trimming:	\$ -	\$	305
		<i>Allowance</i> Infrastructure Replacement:	\$ 1,763	\$	-
Totals:			\$ 16,152	\$	12,694

Summary of Construction Costs

Town of Ithaca - LED Street Lighting Project

EEM 1 Street Lighting

Fixture Count					
Cobra Head Fixtures:	266			Material:	Labor:
Decorative Fixtures:	3	Cobra Head Street Lighting Fixtures:	\$ 31,611	\$	40,166
Flood Light Fixtures:	3	Decorative Street Lighting Fixtures:	\$ 2,400	\$	744
Total:	272	Flood Street Lighting Fixtures:	\$ 1,500	\$	453
		Smart Street Lighting Controls (Cobra Head):	\$ 23,940	\$	-
		Smart Street Lighting Controls (Decorative):	\$ 270	\$	-
		Smart Street Lighting Controls (Flood):	\$ 270	\$	-
Qty	1	SLC LTE Gateway on wood pole install:	\$ -	\$	2,500
		<i>Allowance</i> Utility GIS and Registry Updates:	\$ -	\$	952
		<i>Allowance</i> Maintenance During Construction:	\$ 1,360	\$	1,360
		<i>Allowance</i> Tree Trimming:	\$ -	\$	1,330
		<i>Allowance</i> Infrastructure Replacement:	\$ 7,714	\$	-
Totals:			\$ 69,065	\$	47,505

Summary of Construction Costs

Town of Newfield - LED Street Lighting Project

EEM 1 Street Lighting

Fixture Count					
Cobra Head Fixtures:	118			Material:	Labor:
Decorative Fixtures:	17	Cobra Head Street Lighting Fixtures:	\$ 14,206	\$	17,818
Flood Light Fixtures:	1	Decorative Street Lighting Fixtures:	\$ 13,600	\$	4,216
Total:	136	Flood Street Lighting Fixtures:	\$ 500	\$	151
		Smart Street Lighting Controls (Cobra Head):	\$ 10,620	\$	-
		Smart Street Lighting Controls (Decorative):	\$ 1,530	\$	-
		Smart Street Lighting Controls (Flood):	\$ 90	\$	-
Qty	1	SLC LTE Gateway on wood pole install:	\$ -	\$	2,500
		<i>Allowance</i> Utility GIS and Registry Updates:	\$ -	\$	476
		<i>Allowance</i> Maintenance During Construction:	\$ 680	\$	680
		<i>Allowance</i> Tree Trimming:	\$ -	\$	590
		<i>Allowance</i> Infrastructure Replacement:	\$ 3,422	\$	-
Totals:			\$ 44,648	\$	26,431

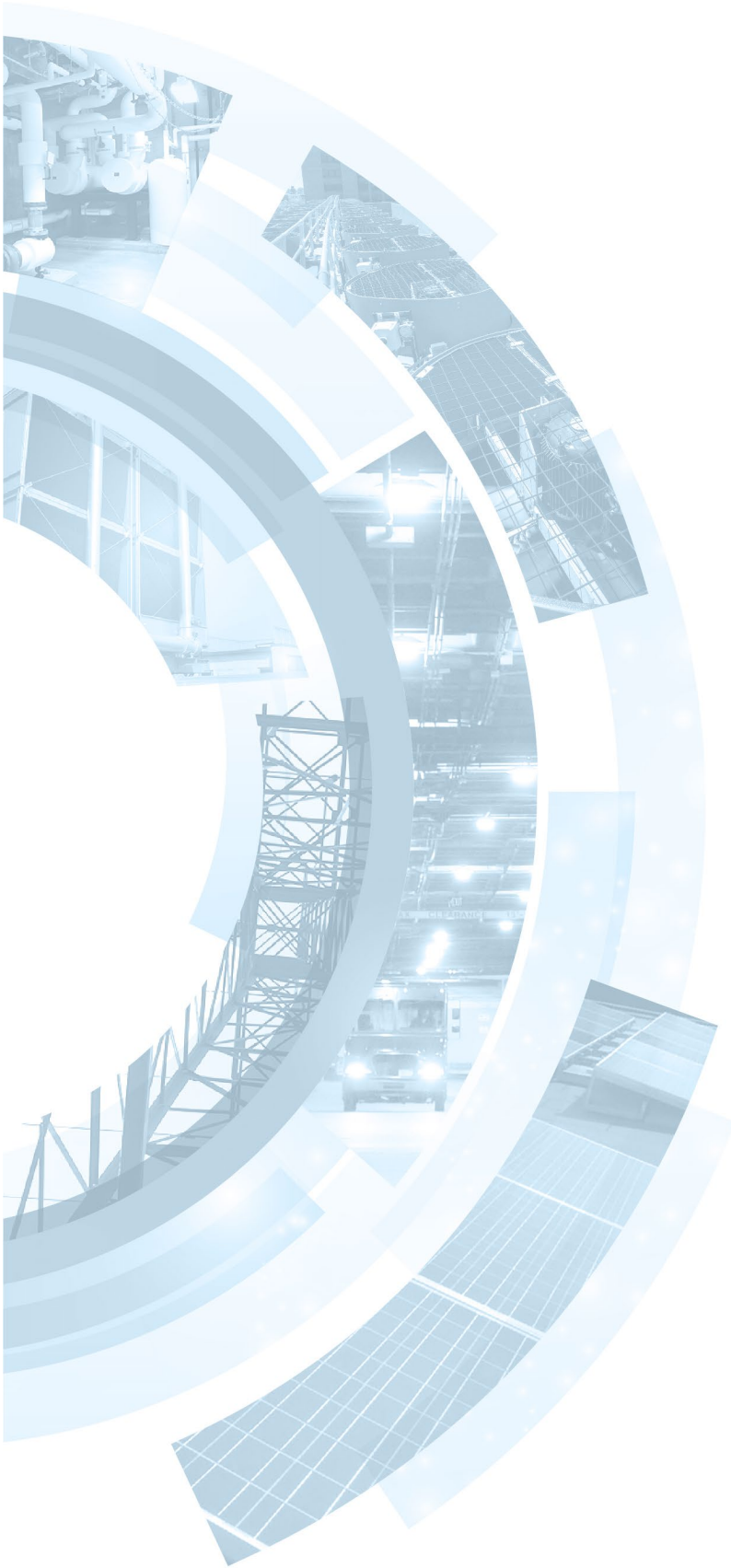
Option with Town View Decorative

Summary of Construction Costs					
Town of Newfield - LED Street Lighting Project					
EEM 1 Street Lighting					
Fixture Count					
Cobra Head Fixtures:	118			Material:	Labor:
Decorative Fixtures:	17	Cobra Head Street Lighting Fixtures:	\$ 14,206	\$	17,818
Flood Light Fixtures:	1	Decorative Street Lighting Fixtures (Town View Option):	\$ 4,250	\$	4,216
Total:	136	Flood Street Lighting Fixtures:	\$ 500	\$	151
		Smart Street Lighting Controls (Cobra Head):	\$ 10,620	\$	-
		Smart Street Lighting Controls (Decorative):	\$ 1,530	\$	-
		Smart Street Lighting Controls (Flood):	\$ 90	\$	-
Qty	1	SLC LTE Gateway on wood pole install:	\$ -	\$	2,500
		<i>Allowance</i> Utility GIS and Registry Updates:	\$ -	\$	476
		<i>Allowance</i> Maintenance During Construction:	\$ 680	\$	680
		<i>Allowance</i> Tree Trimming:	\$ -	\$	590
		<i>Allowance</i> Infrastructure Replacement:	\$ 3,422	\$	-
Totals:			\$ 35,298	\$	26,431

Summary of Construction Costs					
Town of Caroline - LED Street Lighting Project					
EEM 1 Street Lighting					
Fixture Count					
Cobra Head Fixtures:	76			Material:	Labor:
Decorative Fixtures:	0	Cobra Head Street Lighting Fixtures:	\$ 11,014	\$	11,476
Flood Light Fixtures:	3	Decorative Street Lighting Fixtures:	\$ -	\$	-
Total:	79	Flood Street Lighting Fixtures:	\$ 1,500	\$	453
		Smart Street Lighting Controls (Cobra Head):	\$ 6,840	\$	-
		Smart Street Lighting Controls (Decorative):	\$ -	\$	-
		Smart Street Lighting Controls (Flood):	\$ 270	\$	-
Qty	1	SLC LTE Gateway on wood pole install:	\$ -	\$	2,500
		<i>Allowance</i> Utility GIS and Registry Updates:	\$ -	\$	277
		<i>Allowance</i> Maintenance During Construction:	\$ 395	\$	395
		<i>Allowance</i> Tree Trimming:	\$ -	\$	380
		<i>Allowance</i> Infrastructure Replacement:	\$ 2,204	\$	-
Totals:			\$ 22,223	\$	15,481

Summary of Construction Costs					
Town of Ulysses - LED Street Lighting Project					
EEM 1 Street Lighting					
Fixture Count					
Cobra Head Fixtures:	9			Material:	Labor:
Decorative Fixtures:	0	Cobra Head Street Lighting Fixtures:	\$ 1,470	\$	1,359
Flood Light Fixtures:	1	Decorative Street Lighting Fixtures:	\$ -	\$	-
Total:	10	Flood Street Lighting Fixtures:	\$ 500	\$	151
		Smart Street Lighting Controls LTE (Cobra Head):	\$ 1,170	\$	-
		Smart Street Lighting Controls (Decorative):	\$ -	\$	-
		Smart Street Lighting Controls LTE (Flood):	\$ 130	\$	-
Qty	0	SLC LTE Gateway on wood pole install:	\$ -	\$	-
		<i>Allowance</i> Utility GIS and Registry Updates:	\$ -	\$	35
		<i>Allowance</i> Maintenance During Construction:	\$ 50	\$	50
		<i>Allowance</i> Tree Trimming:	\$ -	\$	45
		<i>Allowance</i> Infrastructure Replacement:	\$ 454	\$	-
Totals:			\$ 3,774	\$	1,640

G – Drawings & Specifications



ELECTRICAL SPECIFICATIONS INDEX

DIVISION 26 – ELECTRICAL

<u>Section Number and Title</u>	<u># of Pages</u>
260000 ELECTRICAL SCOPE OF WORK.....	1
260100 BASIC ELECTRICAL REQUIREMENTS.....	6
265600 EXTERIOR LIGHTING	8

SECTION 260000

ELECTRICAL SCOPE OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

All work under this title, on drawings or specified, is subject to the architectural general and special contract conditions for the entire project, and the contractor for this portion of the work is required to refer especially thereto, and to the architectural drawings.

1.2 SCOPE OF WORK

- A. The following is a general listing of work items to be provided under this Contract. Work indicated is not necessarily all inclusive, nor shall it limit the extent of the work or exclude any work shown or specified and not listed.
- B. This Contractor shall refer to Division 1 for additional scope items required by Contract including but not limited to the section listed as "Summary of Work".
- C. Contractor shall Provide (furnish all materials, equipment and labor unless otherwise noted) to make the following complete installations:
 - 1. All electrical removal work as indicated on lighting registry and as specified including but not limited to the complete removal and proper disposal of material and equipment from the site.
 - 2. Electrical identification as required by the specifications including but not limited to light poles, light fixtures, etc.
 - 3. Cutting and patching required to accomplish the work indicated including painting and finish work.
 - 4. Exterior light fixtures, light poles, arm extensions, controls and wiring devices as shown.
 - 5. Update registry and submit to utility for updated billing.
 - 6. Operationally test and check all installed equipment.
 - 7. Servicing electrical equipment installed as required during guarantee period for a minimum of one (1) year after Owner's acceptance.
 - 8. Preparation and submission of coordination drawings to include coordination with all trades involved in the renovated and new work areas.

END OF SECTION 260000

SECTION 260100

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 REGISTER AND SPECIFICATIONS

- A. All work under this title, on lighting register or specifications, is subject to the general and special contract conditions for the entire project, and the contractor for this portion of the work is required to refer especially thereto.
- B. Register line by line is diagrammatic and specifications are complementary and must be so interpreted to determine the full scope of work under this heading. Wherever any material, article, operation or method is either specified or shown on the register, this contractor is required to provide each item and perform each prescribed operation according to the designate quality, qualification or condition, furnishing all necessary labor, equipment or incidentals.

1.3 DIMENSIONS, LAYOUT AND OBSTACLE

- A. Contractor shall verify existing dimensions and elevations from actual field measurements.
- B. Assume full and final responsibility for the accuracy of any or all work performed under this Division and make repairs and corrections as required or directed at no extra cost to the Owner.
- C. Contractor shall field verify all existing conditions prior to fabrication and installation of material. The contractor verifies all existing conditions prior to submitting a bid and shall include all additional cost associated with field conditions in their bid. Lack of field verification does not constitute a basis for additional monies during construction. Contractor assumes full responsibility for completeness of installation including coordination of work with other trades.
- D. Make actual installations in accord with said layouts, but with necessary deviations as directed or required by job conditions and field measurements to produce a thoroughly integrated and practical job upon completing but make deviations only with specific approval of the Engineer/Architect.

- E. Take care to coordinate all piping under this Division to prevent conflict and remove and relocate work as may be made necessary by such conflict at no extra cost to the Owner.
- F. Unless expressly permitted by the Engineer/Construction Manager, all piping, ducts and similar items shall be installed so that they are concealed except as permitted by the Engineer/Construction Manager.
- G. The Owner or Owner's Representative reserves the right to relocate equipment six (6) feet in any direction from locations indicated on plans, before roughing-in, with no change in contract price.

1.4 CONFLICTS

- A. If, in the interpretation of contract documents, it appears that the register line by line and specifications are not in agreement, the Contractor is to contact the Engineer. The Engineer shall be the final authority. Addenda supersede the provisions which they amend.
- B. In the absence of a written clarification by the engineer, the Contractor must install his work in accordance with the more stringent and/or costly condition. Contractor assumes full responsibility for all items furnished and installed without the written approval by the Construction Manager or Engineer. Under no circumstances will a change order be accepted for work installed that was not approved by the Construction Manager or Engineer.

1.5 MATERIALS REVIEW

- A. Items specified have been selected by the Engineer for performance and space limitations.
- B. For an Engineer to consider "equal" products / procedures, the contractor must certify by letter that he has checked the product for conformance to specifications and space limitations and assumes full responsibility thereafter.
- C. The Engineer, not Contractor or Vendor, shall be the final judge of equal materials.
- D. Requests for substitutions must be made in writing ten (14) days prior to bid date so that an addendum may reach all contractors. Substitutions are defined as any manufacturer and/or model not indicated in drawings or specifications.
- E. Substitutions without engineer review shall not be carried in the bid. Substitutions which are proposed after the bids are received, the Contractor shall state amount of credit to the Owner for substitution. The Engineer and/or Owner shall not be made liable or responsible for losses incurred by the Contractor, due to the rejection of said items for installation.
- F. Where equipment requiring different arrangement or connections other than as indicated is acceptable, it shall be the responsibility of this Contractor to furnish revised

layouts and install the equipment to operate properly and in harmony with the intent of the drawings and specifications. All changes in the work required by the different arrangement shall be done at no additional cost to the Owner, including but not limited to; shipping, rigging, structural steel modifications, control and/or power wiring modifications and additional costs to other trades, shall be the responsibility of this Contractor.

- G. Upon review of equipment list by Engineer, copies of submittal prints shall be forwarded to Engineer within 30 days.

1.6 PROJECT COORDINATION

- A. Anticipate and avoid interferences with other trades.
- B. Take care to coordinate all piping, ductwork, plumbing and major electrical components, to prevent conflicts with one another and other building components. Remove and relocate work as may be made necessary by such conflict, at no extra cost to the Owner. The use of coordination drawings is recommended but may not be required (refer to Division 1 for additional requirements). Lack of coordination drawings assumes contractor has verified and coordinated all work associated with installation.
- C. The Contractor to coordinate with, receive and install, Owner furnished equipment where indicated.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Make provisions for delivery and safe storage of all materials. Check and properly receipt material to be "furnished by others" to contractor and assume full responsibility for all materials while in storage with full visible identification and information.

1.8 PROJECT CONDITIONS

- A. Existing facility when occupied and functioning during the entire duration of construction. Care shall be taken when working in or around occupied spaces. There will be no interruption in Electrical systems or utilities without written approval from the Owner.
- B. Existing Conditions: Field verify existing conditions that will determine exact locations, distances, levels, dimensions, elevations, etc. Review all drawings of other trades and report any conflicts to the Architect/Engineer which will affect the project cost. Lack of field verification does not constitute a basis for additional monies during construction. Contractor assumes full responsibility for completeness of installation including coordination of work with other trades.

1.9 PERMITS, CODES AND ORDINANCES

- A. The Electrical Contractor shall arrange and pay for all permits, inspections, etc., as required by local utilities or applicable agencies.

All work and material shall be in complete accordance with the ordinances, regulations, codes, etc., of all political entities exercising jurisdictions, specifically including the NYS Energy Code.

- B. All work to be done in accordance with NEC. All materials to be UL L/L or other national listing and labeling organization.

1.10 SUBMITTALS

- A. Shop Drawings and Product Data: Submit shop drawings, wiring diagrams and/or equipment list for all equipment and material.

- B. Submit a list of all sub-contractors to be utilized.

- C. Required Shop Drawings:

- 1. Provide shop drawing on all products being furnishing and providing by this contract.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Submittal process shall not be utilized for substitution proposals. Change to the design intent of the project, alternative methods, means and materials may only be processed, proposed through submission as a substitution request in accordance with the provisions of these specifications. If the contractor changes specified materials, colors, finishes, assemblies, warranties, details, procedures or any other aspect of the project design, through a submittal other than a substitution request, regardless of action on that submittal for general conformance with the design intent', such change is not valid and will not be accepted unless expressly done so by separate written authorization from the Engineer.

- B. Compliance with specified characteristics is the Contractor's and Subcontractor's responsibility.

2.2 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other work of the Contract and for compliance with the Contract Documents. Do not forward any submittals until

the contractor has determined that the submittal conforms to the requirements of the contract and is appropriate. Contractor shall include their review stamp on each submittal, (signed and dated) with comments of product compliance and non-compliance items.

2.3 ENGINEER'S ACTION

- A. Action Submittals: The Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Submittals for record (where action is not required), shall be reviewed, recorded, but not returned to as indicated in this specification:

<input type="checkbox"/> NO EXCEPTION TAKEN	<input type="checkbox"/> MAKE CORRECTIONS NOTED
<input type="checkbox"/> REJECTED	<input type="checkbox"/> REVISE AND RESUBMIT
<p>REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ENGINEER'S CORRECTIONS OR COMMENTS SHOWN ON THE SHOP DRAWINGS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE DESIGN DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR: DIMENSIONS WHICH SHALL BE CONFIRMED AND CORRELATED ON THE JOB SITE; FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATION OF HIS WORK WITH THAT OF ALL OTHER TRADES AND THE SATISFACTORY PERFORMANCE OF THIS WORK.</p>	
BY: _____	DATE: _____

1. Action upon Submittals shall be indicated as follows:
 - a. NO EXCEPTION TAKEN: Contractor may proceed.
 - b. MAKE CORRECTIONS NOTED: Contractor shall comply with corrections and may proceed.
 - c. REJECTED: Contractor shall resubmit and may not proceed.
 - d. REVISE AND RESUBMIT: Contractor shall make corrections and resubmit for review.
- B. Do not permit product / procedures of submittal marked "Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
- C. Partial submittals are not acceptable, will be considered incomplete, and will be returned without review.

PART 3 - EXECUTION

3.1 MISCELLANEOUS SUPPORT

- A. This Contractor is responsible for providing all miscellaneous support components necessary for properly supporting equipment provided; including hangers, rods, anchors, steel, etc.

3.2 REQUIREMENTS BEFORE FINAL PAYMENT

- A. Operational Booklets (Maintenance Manuals)

- 1. Provide the Owner with two Operation Booklets which contain the following:

- a. Acceptable shop drawings and submittals
 - b. Wiring diagrams
 - c. Installation & Maintenance Instructions
 - d. List of suppliers for all equipment provided including name, address and telephone numbers.
 - e. Test data
 - f. Operational instructions
 - g. Lubrication instructions
 - h. Start-up reports

- B. AS-Built Drawings

- 1. Provide as-built report in accordance with the contract documents.
 - 2. Document all installations, modifications, changes which deviate from the contract documents, notations / sketches on a clean set of contract drawings.

- C. Identification

- 1. Provide all equipment with identification labels

- D. Spare Parts

- 1. Provide spare parts (attic stock) as specified for equipment provided. To include but not limited to; lighting fixtures, electrical breakers, etc.
 - 2. All materials must be provided in clean and legibly marked boxes. Owner signed receipt(s) (itemized list) must be submitted to Engineer for review.

- E. Certification

- 1. Submit to Engineer/Construction Manager certificates of approval from electrical inspector or authority having jurisdiction over codes pertaining to work in this Division.

- F. Owner Training: Instruct Owner's representatives in complete operation of all components, to the satisfaction of the Owner and receive signed statement from Owner's representative certifying knowledge and understanding of all equipment and systems.

- G. Guarantees: Provide all guarantees as required by the Contract Documents with a minimum of one year from the date of Substantial Completion on all labor and materials.
- H. Start-up Report
 - 1. Provide start-up report for each piece of equipment including date, electrical characteristics, etc.

END OF SECTION 260100

SECTION 265600

EXTERIOR LIGHTING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section provides general requirements for a complete and fully operational Exterior Lighting System including:
 - 1. Exterior Luminaires
 - 2. LED Arrays
 - 3. Fixture mounted photo sensors
 - 4. Accessories
 - 5. Luminaire supports

1.3 SYSTEM DESCRIPTION

- A. Catalog numbers indicated in the Luminaire Schedule are a design series reference and do not necessarily represent the exact catalog number, size, voltage, wattage, finish trim, ceiling type, mounting hardware or special requirements as Specified or as required by the particular installations. Provide complete luminaire to correspond with the features, accessories, wattage and/or size Specified in the text description of each luminaire type. Additional features, accessories and options Specified shall be included.
- B. Luminaire voltage shall match the voltage of the circuit serving same.

1.4 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color-rendering index.
- C. LER: Luminaire efficacy rating.
- D. Luminaire: Complete lighting fixture, including ballast housing if provided.
- E. Pole: Luminaire support structure, including tower used for large area illumination.
- F. Standard: Same definition as "Pole" above.

1.5 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.
- B. Live Load: Single load of 500 lbf, distributed as stated in AASHTO LTS-4-M.
- C. Ice Load: Load of 3 lbf/sq. ft., applied as stated in AASHTO LTS-4-M Ice Load Map.
- D. Wind Load: Pressure of wind on pole and luminaire and banners and banner arms, calculated and applied as stated in AASHTO LTS-4-M.
 - 1. Basic wind speed of calculating wind load for poles 50 feet (15 M) high or less is 126 mph.
 - 1. Wind Importance Factor: 1.0.
 - 2. Minimum Design Life: 25 years.
 - 3. Wind induced vibration.

1.6 SUBMITTALS

- A. The authorized manufacturer's representative for the Project area shall prepare Submittals for each luminaire type. In addition to the luminaire Submittals, a list shall be provided identifying the manufacturer representative for each luminaire type. Provide manufacturers' names, addresses, and telephone numbers. Requests for prior approval shall also include this information. The fixtures listed in the schedule located in "Part 2 – Products" has been vetted as the basis of design. All other substitutions, that are not otherwise noted, require vetting and pre-approval by the engineer prior to bid date and may require samples to be provided upon request. No extension to the bid will be permitted in order to facilitate additional time for sample review. All requests for product review must be received by the engineer 2 weeks prior to the bid with samples furnished 1 week prior to allow for proper review.
- B. Product Data shall indicate that luminaire, lamps, ballasts and drivers fully comply with Contract Documents. Data shall be submitted for each type of luminaire indicated, arranged in order of luminaire designation. For standard catalog luminaires provide original product catalog sheets indicating data on features, accessories, finishes, and the following:
 - 1. Physical description of lighting fixture including dimensions
 - 2. Emergency lighting units including battery and charger
 - 3. Ballast or driver, including BF
 - 4. Energy-efficiency data
 - 5. Life, output (lumens, CCT, and CRI) and energy-efficiency data for lamps or boards
 - 6. Photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type. The adjustment factors shall be for lamps, ballasts and accessories identical to those indicated for the lighting fixture as applied in this project.
 - a. Testing Agency Certified Data: For indicated fixtures, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining fixtures shall be certified by manufacturer.

- b. Manufacturer Certified Data: Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
- C. Shop Drawings shall:
 - 1. Show details of nonstandard or custom luminaires.
 - 2. Indicate dimensions, weights, method of field assembly, components, features, and accessories.
 - 3. This Contractor shall provide the manufacturer with accurate field dimensions where required.
 - 4. Include wiring diagrams, power and control wiring.
- D. Wiring Diagrams shall detail wiring for luminaires and differentiate between manufacturer- installed and field-installed wiring.
- E. Product Certificates shall be signed by manufacturers of luminaires certifying that products comply with requirements.
- F. Maintenance Data shall be provided for luminaires and equipment to include in emergency, operation, and maintenance manuals Specified in Specifications Section describing Operations and Maintenance Data.
- G. Field quality control test reports.
- H. Special Warranties Specified in this Section.
- I. Review of luminaire submittals which indicate voltage, mounting condition, or quantities shall not be considered to be approval of said voltage, mounting condition, or quantities. This Contractor shall field verify voltage and actual mounting condition and method.
- J. Product samples complete with housing, trim, specified lamp, and 8' cord with plug shall be submitted if requested.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For lighting equipment and luminaires to include in emergency, operation, and maintenance manuals.
 - 1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.8 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in

NFPA 70, Article 100, by a testing agency acceptable to Authorities Having Jurisdiction, and marked for intended use.

- C. Comply with NFPA 70.
- D. All luminaires shall bear a UL label.
- E. Comply with IEEE C2, "National Electrical Safety Code."
- F. Designated manufacturers are listed to define the requirements for quality and function of the specified product.
- G. Comply with Owner's Design Standards.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 - 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
 - 2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
 - 3. Warranty Period for Color Retention: Five years from date of Substantial Completion.
 - 4. Warranty Period for LED arrays/drivers: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products:
 - 1. Fixture – Basis of Design are as followed:
 - a) Street Lighting - Phillips Lumec RoadFocus series
 - b) Decorative Tear Drop Lighting – Spring City ALMCLU Series
 - 2. Photocell – Smart City node

2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

- A. Provide Fixtures, Poles and any misc. accessories for a fully functional system as specified in the lighting registry sheet attached and the following Fixture Schedule:

5551 County of Tompkins LED Street Lighting Fixture Schedule		
Type	Manuf/Model #	Qty
A1	Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	362
A2	Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	11
A3	Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	6
B1	Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	50
B2	Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	211
B3	Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	6
B4	Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	42
B5	Philips - RFM-100W60LED3K-G2-R3M-UNV-DMG-RCD7	1
C1	Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	20
-	Hadco - TVLN-32-G1-7-2S-730 (Town View Option-Newfield)	-
D1	Lumec - RNS20 30W16LED T ACDR LE3 120 DMG SMB RCD N BKTX DE1	43
E1	Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	7
E2	Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	3
	Total:	762
Note: Quantities are based on line by line. Any discrepancy between drawing, specification and/or line by line, the largest quantity is the responsibility of the contractor without additional cost to the owner.		

- B. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to Authorities Having Jurisdiction.
- C. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- D. Comply with IESNA TM-15-07 Luminaire Classification System for Outdoor Luminaires.
- E. Metal Parts: Free of burrs and sharp corners and edges.
- F. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- G. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit access without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during servicing and when secured in operating position. Doors shall be removable for cleaning or replacing lenses.
- H. Exposed Hardware Material: Stainless steel.
- I. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

- J. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- K. Optical assemblies: full cutoff with zero up light, "dark sky" compliant. LED assemblies shall comply with BUG rating system.
- L. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- M. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- N. Factory-Applied Finish for Aluminum luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 - 2. Finish: premium 5 stage TGIC polyester powder coat paint.
 - a) Color: See Luminaire Schedule.

2.3 LED DRIVERS AND ARRAYS

- A. UL 1598 listing.
- B. LED arrays shall have LED's that produce minimum 100 lumens/watt.
 - 1. Lumen Depreciation Data: At 40 deg C ambient, the L70 hours shall be greater than 50,000 at 520 mA driver.
 - 2. LED color: neutral white, 4000 deg K & 3000 deg K, CRI of 75.
- C. Drivers shall accept 120 through 480 volts, 50/60 Hz.
- D. The housing shall have an integral thermal management system with extruded aluminum radiation fins and lateral airways.
- E. Comply with IES LM-79-08 and LM-90-08 Approved Methods.
- F. Comply with In-Situ testing for more reliable results.
- G. LED's shall be Restriction of Hazardous Substances Directive (RoHS) compliant.

2.4 EXTENDED LIFE LUMINAIRE-MOUNTED PHOTOELECTRIC RELAYS

- A. Comply with UL 773 or UL 773A. ANSI C136.10 including color designations. EEI NEMA standards.
- B. Housing: UV stabilized, ANSI color-coded, high impact polypropylene dome. Cross-linked polypropylene gasket. High impact ABS base. High impact, UV stabilized acrylic window.

- C. On/Off: Turn ON is 1.5 foot candle +/- 0.2 OFF/ON ratio is 1.5:1 average.
- D. Time Delay: Instant ON/3-5 second OFF.
- E. Cell: Silicon photosensor assures drift-free operation, turning on and off at the same light level consistently throughout the life of the unit.
- F. Contacts: DC relay has positive snap action switching, reducing bounce and prolonging contact life. Fail ON for safety.
- G. Surge Arrestor: 920 joule MOV (metal oxide varistor) exceeds ANSI and NEMA requirements.
- H. Locking Prongs: Solid brass for maximum corrosion resistance and electrical conductivity.
- I. Power Consumption: 1.0 watt average @ 120V. TEMPERATURE RANGE: -40° to +158°F (-40° to +70°C). FAIL MODE: ON.
- J. Minimum Warranty: 5 years.

2.5 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4-M.
 - 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in "Structural Analysis Criteria for Pole Selection" Article, with a gust factor of 1.3.
 - 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

2.6 POLE ACCESSORIES

- A. Fusing: One in each ungrounded power supply conductor. Voltage and current ratings as recommended by ballast/driver manufacturer.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

- A. Fasten luminaire to indicate structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

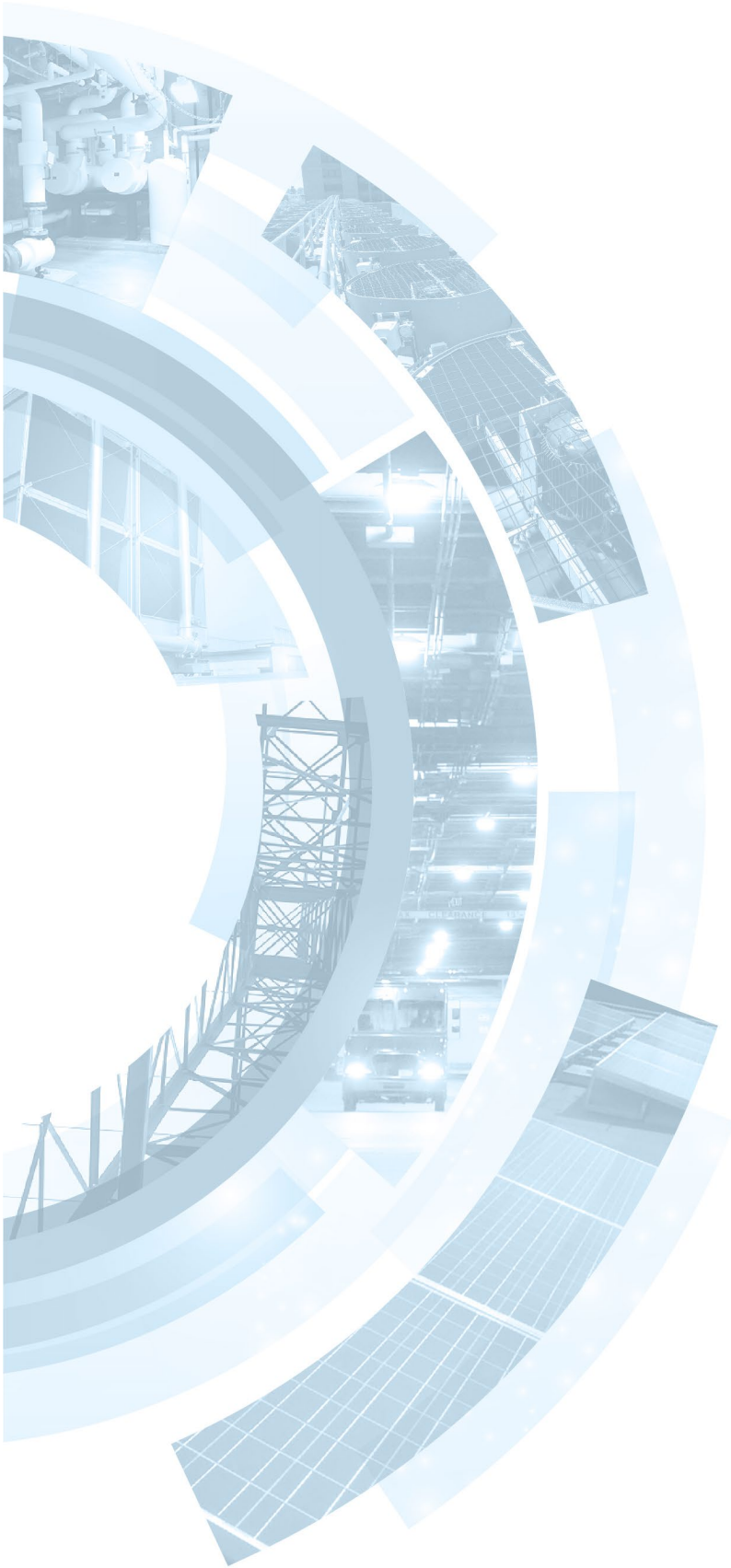
- B. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources, favoring a north orientation.

3.2 FIELD QUALITY CONTROL

- A. Inspect each installed luminaire for damage. Replace damaged luminaires and components.
- B. Replace all inoperative fixtures prior to substantial completion of street lighting upgrade.
- C. Advance Notice: Give dates and times for field tests.
- D. Provide instruments to make and record test results.
- E. Test as follows:
 - 1. Verify proper operation, switching and phasing of each luminaire after installation.
 - 2. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to the lighting system, retest to demonstrate compliance with standards.
- F. Malfunctioning Luminaires and Components: Replace or repair, then retest. Repeat procedure until units operate properly.
- G. Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
 - 1. Verify operation of photoelectric controls.
- H. Illumination Tests:
 - 1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
 - 1. IESNA LM-64, "Photometric Measurements of Parking Areas."
 - 2. IESNA LM-72, "Directional Positioning of Photometric Data."
- I. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 265600

H – Environment & Safety

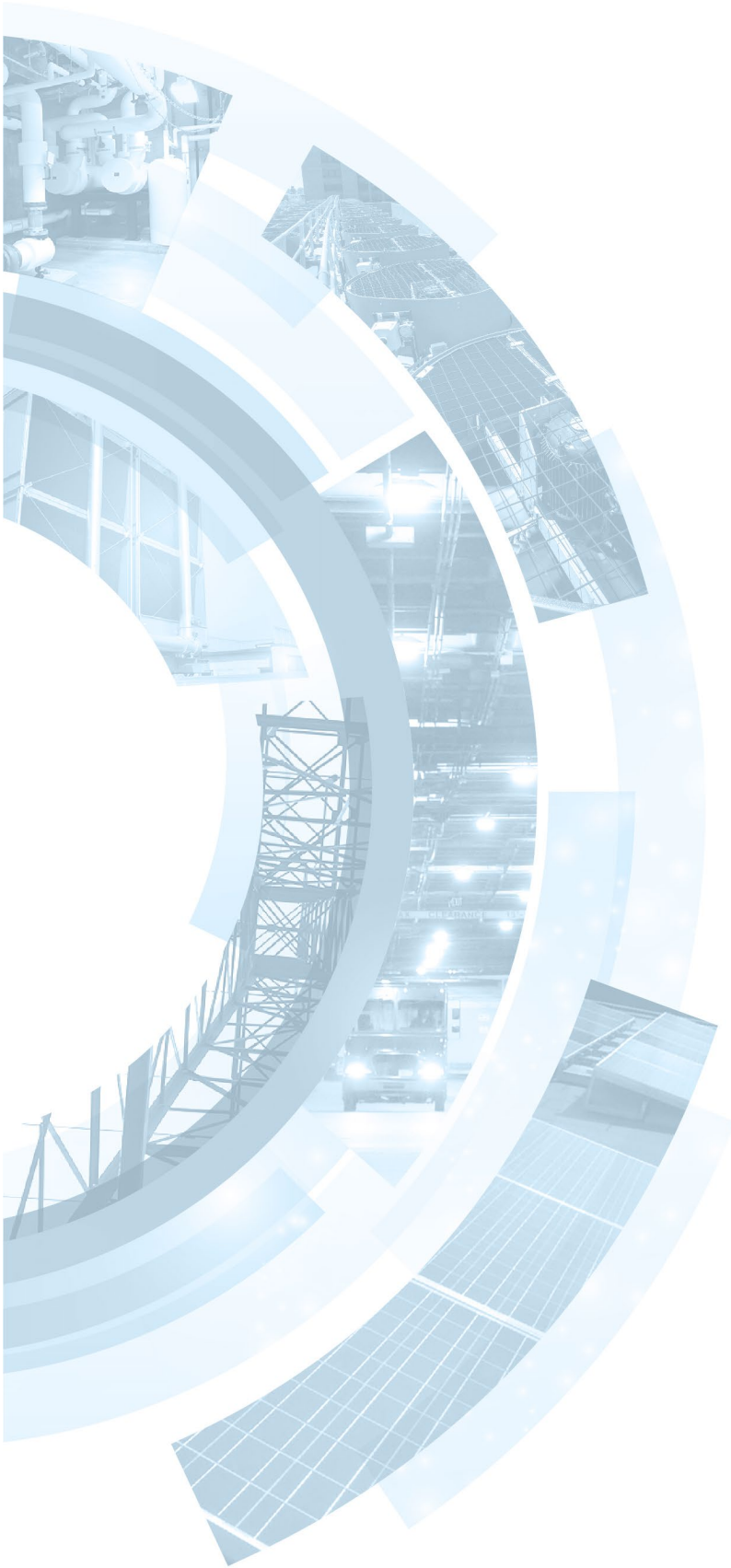


H. Environmental Health and Safety

At this time there are no concerns for asbestos, if asbestos is thought to be in the existing material then the contractor shall stop work at that location and notify the construction manager for testing.

All workers will comply with OSHA standards. Workers shall also comply with any Federal, State, Local, New York Power Authority (NYPA), Customer and Owner's safety requirements, any of which may be more stringent than OSHA. Prior to mobilization, each installation contractor shall submit a site-specific Health and Safety Plan (HASP) for this project for NYPA Review and Approval. No work may commence until NYPA approves the HASP.

I – Customer Information & Billing



I. CUSTOMER INFORMATION & BILLING

Street Lighting Billing

The municipalities within the County of Tompkins have most of their electricity supplied for the street lighting by several different secondary utility companies. Some of the municipalities have several accounts for their electricity, which in that case the supply of electricity comes from both a different supplier and NYSEG. The electricity for the municipalities in Tompkins County has their electricity delivered by New York State and Electric (NYSEG).

All the existing street light fixtures under NYSEG street lighting systems are billed under Public Service Commission (PSC) No. 121 "Electricity". The utility owned fixtures fall under Service Classification No. 2 and 3 "Street Lighting – Unmetered Company Owned/Company Maintained".

The municipalities for the street lighting owned by NYSEG are charged monthly facility fees for rental of the fixtures. As well any system components of these fixtures including wiring, fuses, arms, and fuse holders. Other charges include both delivery and supply, as well miscellaneous charges which are mentioned below under the Supporting Utility Charges section.

The chart below shows the account numbers associated with each location as well as service classification and supplier.

Location	Utility Company	Electric Supplier	Account #	Service Classification	Billing Addresss
Village of Trumansburg	NYSEG	Constellation	1001-3629-463	PSC.121 (SC3) - Street Lighting	Village of Trumansburg 56 E Main St Trumansburg NY 14886

Location	Utility Company	Electric Supplier	Account #	Service Classification	Billing Addresss
Village of Freeville	NYSEG	ESCO Supply Service	1004-3629-547	PSC.121 (SC3) - Street Lighting	Village of Freeville Freeville, NY, 13068

Location	Utility Company	Electric Supplier	Account # (s)	Service Classification	Billing Address
Town of Ithaca	NYSEG	Constellation	1001-3629-695 1001-3629-703 1001-3629-711 1001-3629-729 1001-3629-737 1001-3629-752 1001-3629-760 1001-3629-778 1001-3629-786 1001-3629-836	PSC.121 (SC3) - Street Lighting	Town of Ithaca Ithaca, NY, 14850

Location	Utility Company	Electric Supplier	Account # (s)	Service Classification	Billing Address
Town of Newfield	NYSEG	Constellation	1001-1855-433 1001-1855-425	PSC.121 (SC3) - Street Lighting	Town of Newfield Newfield, NY, 14867

Location	Utility Company	Electric Supplier	Account # (s)	Service Classification	Billing Address
Town of Caroline	NYSEG	Constellation	1001-3629-653 1001-3629-604 1001-3629-612 1001-3629-661	PSC.121 (SC3) - Street Lighting	Town of Caroline Ithaca, NY, 14850

Location	Utility Company	Electric Supplier	Account # (s)	Service Classification	Billing Address
Town of Ulysses	NYSEG	Energy Cooperative of America	1001-3629-489 1001-3629-471	PSC.121 (SC3) - Street Lighting	Town of Ulysses Trumansburg, NY, 14886

Street Lighting Billings for Village of Trumansburg

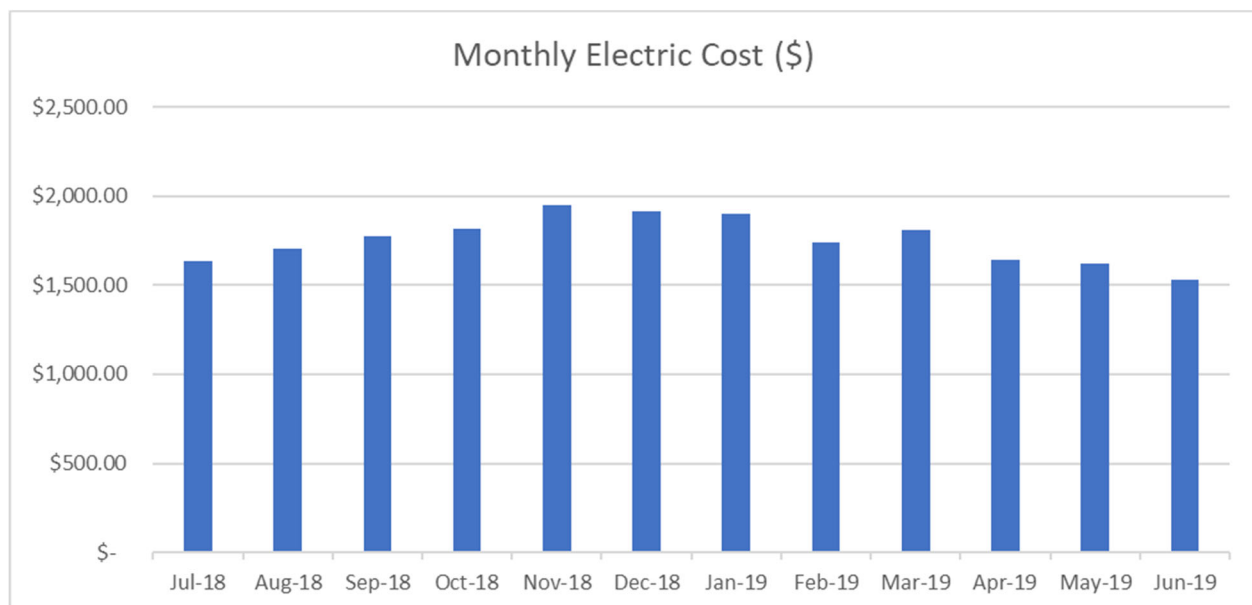
The Village of Trumansburg street lighting has electricity supplied by Constellation and delivered by NYSEG. The existing street lighting falls under Public Service Commission (PSC) No. 121 "Electricity" under Service Classification No. 3 and Service Classification No. 2.

NYSEG currently owns all the existing street lighting and the village pays a monthly luminaire charge for each fixture on top of delivery and supply charges.

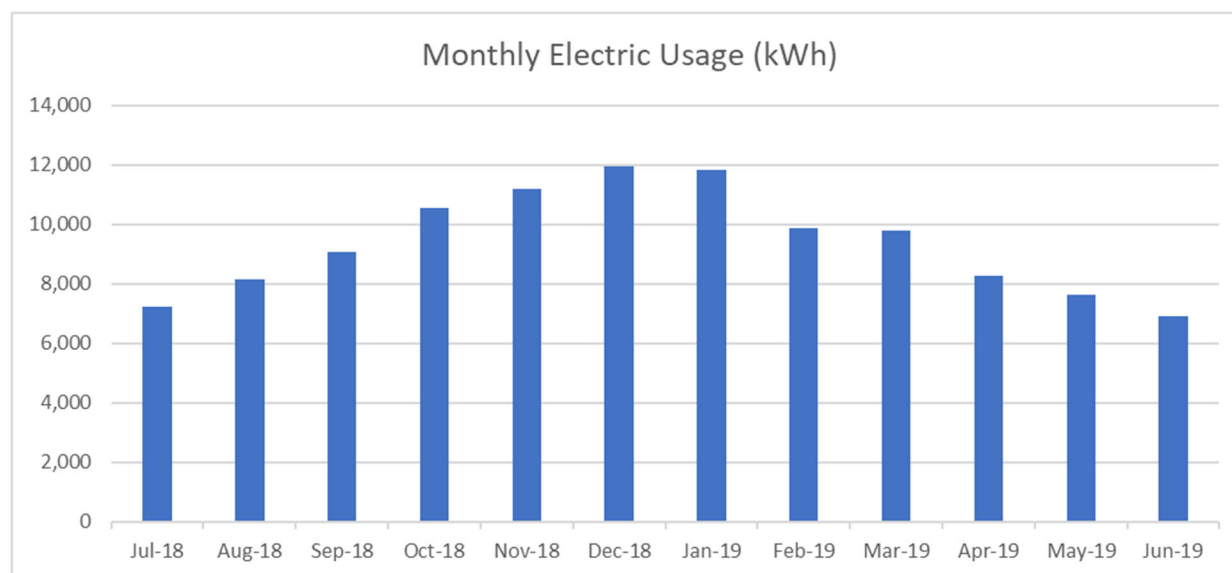
The following table below provides the 12-month billing history for the village's street lighting account. The totals for all months are provided in bold at the bottom of the table.

Utility Bill Analysis							
Account 1001-3629-463 - PSC 121, (SC3)							
Billing Month	Total Electric Usage (kWh)	Delivery Rate (\$/kWh)	Delivery Charge (\$)	Facility Charge (\$)	Supply Charge (\$)	Supply Rate (\$/kWh)	Total Energy Cost (\$)
Jul-18	7,227	\$ 0.02342	\$ 169.26	\$ 1,194.51	\$ 198.31	\$ 0.02744	\$ 1,632.09
Aug-18	8,161	\$ 0.02342	\$ 191.13	\$ 1,211.75	\$ 238.54	\$ 0.02923	\$ 1,705.26
Sep-18	9,067	\$ 0.02342	\$ 212.35	\$ 1,210.75	\$ 270.73	\$ 0.02986	\$ 1,773.91
Oct-18	10,535	\$ 0.02342	\$ 246.73	\$ 1,211.75	\$ 284.86	\$ 0.02704	\$ 1,816.52
Nov-18	11,201	\$ 0.02342	\$ 262.33	\$ 1,211.75	\$ 408.11	\$ 0.03644	\$ 1,948.73
Dec-18	11,944	\$ 0.02342	\$ 279.73	\$ 1,211.75	\$ 375.29	\$ 0.03142	\$ 1,912.72
Jan-19	11,812	\$ 0.02342	\$ 276.64	\$ 1,211.75	\$ 351.45	\$ 0.02975	\$ 1,899.12
Feb-19	9,889	\$ 0.02342	\$ 231.60	\$ 1,211.75	\$ 274.86	\$ 0.02779	\$ 1,736.32
Mar-19	9,808	\$ 0.02342	\$ 229.70	\$ 1,211.75	\$ 285.65	\$ 0.02912	\$ 1,809.60
Apr-19	8,258	\$ 0.02342	\$ 193.40	\$ 1,211.75	\$ 171.78	\$ 0.02080	\$ 1,641.00
May-19	7,616	\$ 0.02342	\$ 178.37	\$ 1,211.75	\$ 122.27	\$ 0.01605	\$ 1,622.01
Jun-19	6,896	\$ 0.02342	\$ 161.50	\$ 1,211.75	\$ 92.58	\$ 0.01343	\$ 1,529.60
Jul 18 - Jun 19:	112,414	\$ 0.02342	\$ 2,632.74	\$ 14,522.76	\$ 3,074.43	\$ 0.02735	\$ 21,026.88

The summary of the monthly electrical usage (kWh) for the village is shown in the graph below:



The summary of the monthly electrical cost (\$) for the village is shown in the graph below:



Street Lighting Billings for Village of Freeville

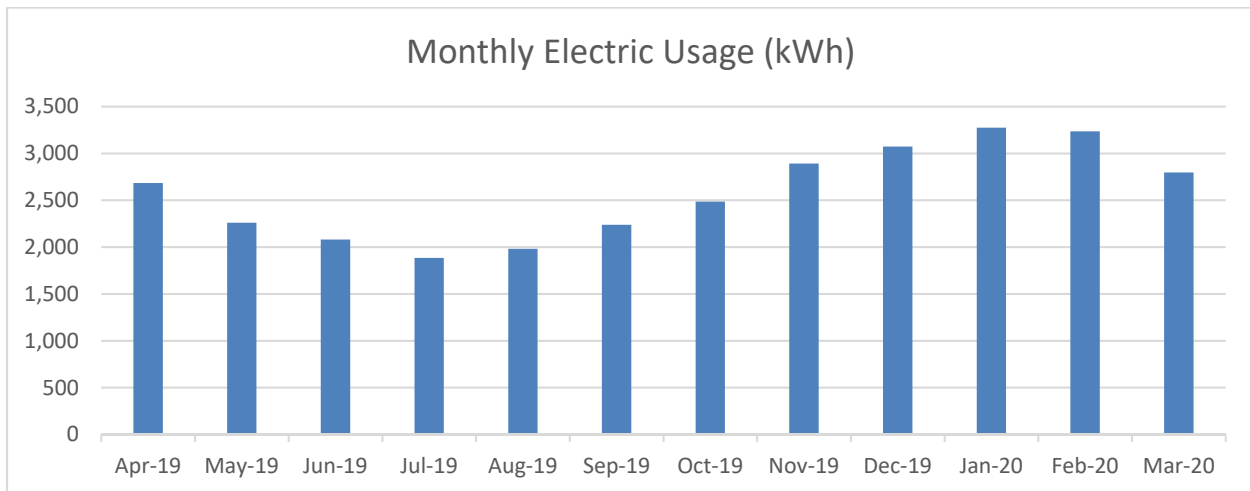
The Village of Freeville street lighting has electricity delivered by NYSEG and supplied by an ESCO Supply Service supplier. Guth DeConzo was not able to obtain the supply bills by the Village of Freeville to represent their supply charges and rates. To correspond to the missing supply charges and rates, Guth DeConzo utilized NYSEG's latest tariff supply rate at **0.07350 \$/kWh**. A copy of this rate is provided below in the Supporting Utility Statement Section under NYSEG Supply Charge. The existing street lighting falls under Public Service Commission (PSC) No. 121 "Electricity" under Service Classification No.3.

NYSEG currently owns all the existing street lighting and the village pays a monthly luminaire charge for each fixture on top of delivery and supply charges.

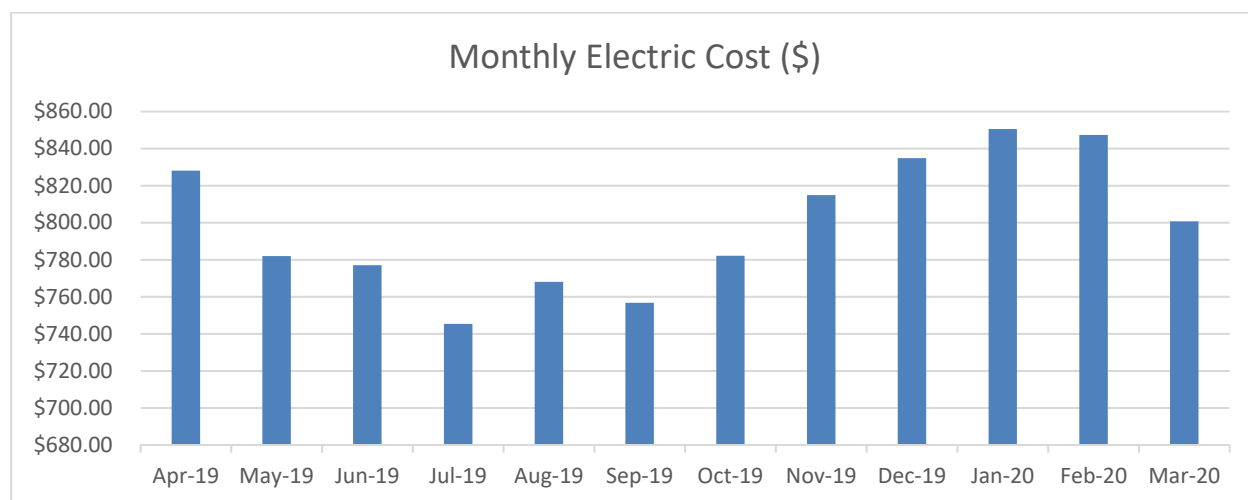
The following table on the next page provides the 12-month billing history for the village's street lighting account. The totals for all months are provided in bold at the bottom of the table.

Utility Bill Analysis								
Account # 1001-3629-547 (SC3)								
Billing Month	Total Electric Usage (kWh)	Delivery Charge (\$)	Delivery Rate (\$/kWh)	Facility Charge (\$)	Total Delivery Charges (\$)	Supply Charge (\$)	Supply Rate (\$/kWh)	Total Energy Cost (including Supply Charge) (\$)
Apr-19	2,684	\$ 62.86	\$ 0.02342	\$ 545.37	\$ 630.80	\$ 197.27	\$ 0.07350	\$ 828.07
May-19	2,260	\$ 52.93	\$ 0.02342	\$ 545.37	\$ 615.84	\$ 166.11	\$ 0.07350	\$ 781.95
Jun-19	2,081	\$ 48.74	\$ 0.02342	\$ 545.37	\$ 624.06	\$ 152.95	\$ 0.07350	\$ 777.01
Jul-19	1,884	\$ 44.12	\$ 0.02342	\$ 545.37	\$ 606.92	\$ 138.47	\$ 0.07350	\$ 745.39
Aug-19	1,982	\$ 46.42	\$ 0.02342	\$ 545.37	\$ 622.41	\$ 145.68	\$ 0.07350	\$ 768.09
Sep-19	2,237	\$ 52.39	\$ 0.02342	\$ 545.37	\$ 592.31	\$ 164.42	\$ 0.07350	\$ 756.73
Oct-19	2,485	\$ 58.20	\$ 0.02342	\$ 545.37	\$ 599.46	\$ 182.65	\$ 0.07350	\$ 782.11
Nov-19	2,891	\$ 67.71	\$ 0.02342	\$ 545.37	\$ 602.39	\$ 212.49	\$ 0.07350	\$ 814.88
Dec-19	3,073	\$ 71.97	\$ 0.02342	\$ 545.37	\$ 608.91	\$ 225.87	\$ 0.07350	\$ 834.78
Jan-20	3,275	\$ 76.70	\$ 0.02342	\$ 545.37	\$ 609.82	\$ 240.71	\$ 0.07350	\$ 850.53
Feb-20	3,235	\$ 75.76	\$ 0.02342	\$ 545.37	\$ 609.56	\$ 237.77	\$ 0.07350	\$ 847.33
Mar-20	2,796	\$ 65.48	\$ 0.02342	\$ 545.37	\$ 595.21	\$ 205.51	\$ 0.07350	\$ 800.72
Apr 19 - Mar 20:	30,883	\$ 723.28	\$ 0.02342	\$ 6,544.44	\$ 7,317.69	\$ 2,269.90	\$ 0.07350	\$ 9,587.59

The summary of the monthly electrical usage (kWh) for the village is shown in the graph below:



The summary of the monthly electrical cost (\$) for the village is shown in the graph below:



Street Lighting Billings for Town of Ithaca

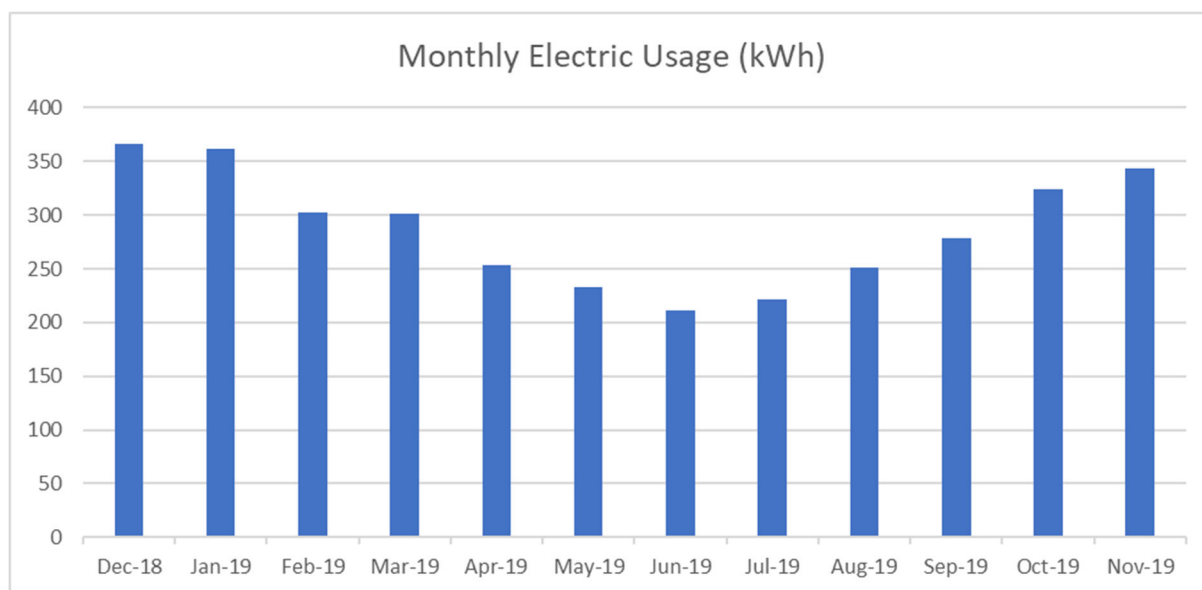
The Town of Ithaca street lighting has electricity delivered by NYSEG and supplied by Constellation New Energy. The existing street lighting falls under Public Service Commission (PSC) No. 121 “Electricity” under Service Classification No.3.

NYSEG currently owns all the existing street lighting and the town pays a monthly luminaire charge for each fixture on top of delivery and supply charges.

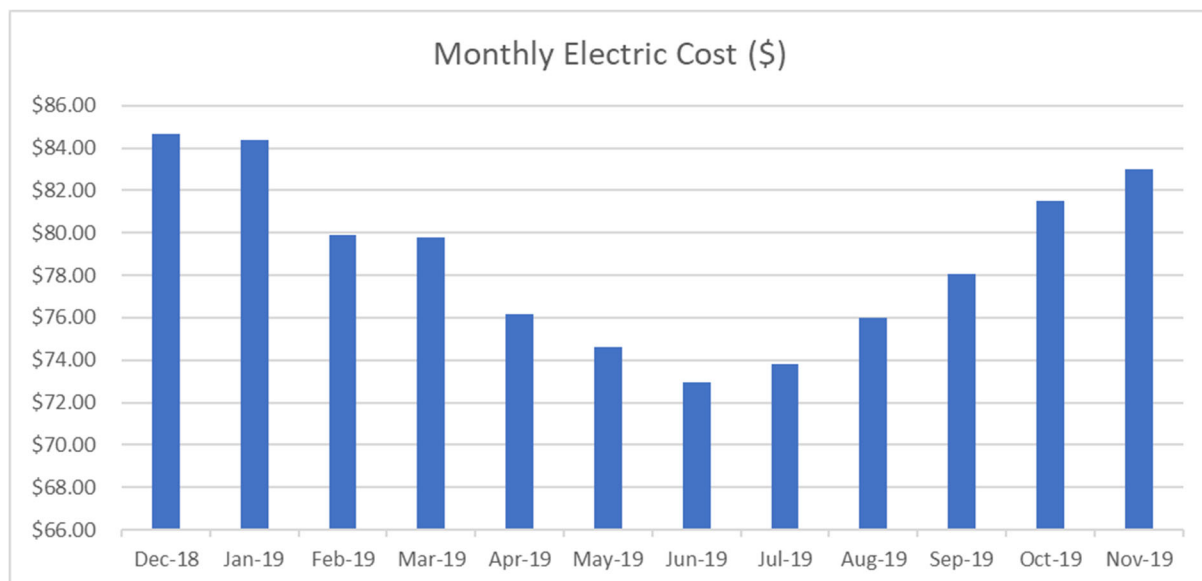
The following table below provides the 12-month billing history for the town’s street lighting account. The totals for all months are provided in bold at the bottom of the table.

Utility Bill Analysis							
Includes all accounts							
Billing Month	Total Electric Usage (kWh)	Delivery Charge (\$)	Delivery Rate (\$/kWh)	Facility Charge (\$)	Supply Rate (\$/kWh)	Supply Charge (\$)	Total Energy Cost (\$)
Dec-18	25,244	\$ 591.21	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 1,314.51	\$ 4,289.15
Jan-19	25,099	\$ 587.82	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 1,306.96	\$ 4,278.20
Feb-19	20,922	\$ 489.99	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 1,089.45	\$ 3,962.87
Mar-19	20,753	\$ 486.04	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 1,080.65	\$ 3,950.12
Apr-19	17,472	\$ 409.19	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 909.80	\$ 3,702.43
May-19	16,118	\$ 377.48	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 839.30	\$ 3,600.21
Jun-19	14,587	\$ 341.63	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 759.57	\$ 3,484.63
Jul-19	15,324	\$ 358.89	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 797.95	\$ 3,540.27
Aug-19	17,306	\$ 405.31	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 901.16	\$ 3,689.89
Sep-19	19,224	\$ 450.23	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 1,001.03	\$ 3,834.69
Oct-19	22,347	\$ 523.37	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 1,163.65	\$ 4,070.45
Nov-19	23,746	\$ 556.13	\$ 0.02342	\$ 2,383.43	\$ 0.05207	\$ 1,236.50	\$ 4,176.06
Dec 18 - Nov 19	238,142	\$ 5,577.29	\$ 0.02342	\$ 28,601.16	\$ 0.05207	\$ 12,400.53	\$ 46,578.98

The summary of the monthly electrical usage (kWh) for the town is shown in the graph below:



The summary of the monthly electrical cost (\$) for the town is shown in the graph below:



Street Lighting Billings for Town of Newfield

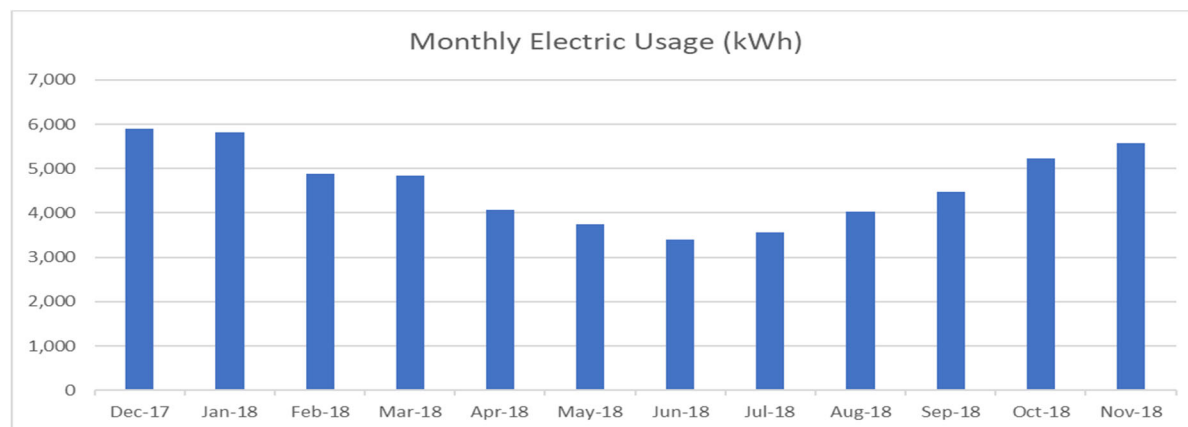
The Town of Newfield street lighting has electricity delivered by NYSEG and supplied by Constellation New Energy. The existing street lighting falls under Public Service Commission (PSC) No. 121 "Electricity" under Service Classification No.3.

NYSEG currently owns all the existing street lighting and the town pays a monthly luminaire charge for each fixture on top of delivery and supply charges.

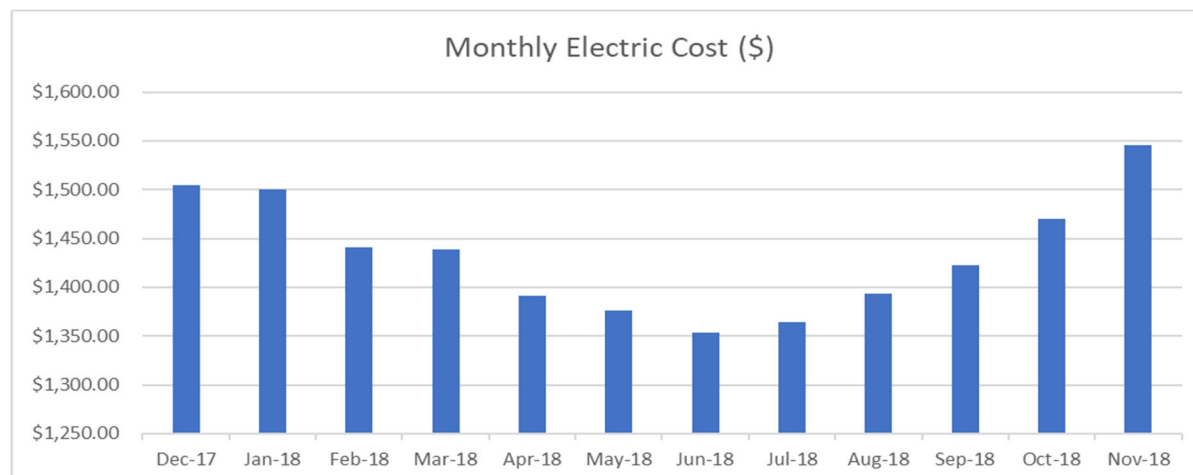
The following table below provides the 12-month billing history for the town's street lighting account. The totals for all months are provided in bold at the bottom of the table.

Utility Bill Analysis							
Includes all accounts							
Billing Month	Total Electric Usage (kWh)	Delivery Rate (\$/kWh)	Delivery Rate (\$)	Facility Charge (\$)	Supply Rate (\$/kWh)	Supply Charge (\$)	Total Energy Cost (\$)
Dec-17	8,660	\$ 0.02854	\$ 247.16	\$ 1,351.08	\$ 0.03399	\$ 294.37	\$ 1,892.60
Jan-18	8,564	\$ 0.02854	\$ 244.42	\$ 1,351.08	\$ 0.03399	\$ 291.10	\$ 1,886.60
Feb-18	7,170	\$ 0.02854	\$ 204.63	\$ 1,351.08	\$ 0.03399	\$ 243.72	\$ 1,799.43
Mar-18	7,110	\$ 0.02854	\$ 202.92	\$ 1,351.08	\$ 0.03399	\$ 241.68	\$ 1,795.68
Apr-18	5,986	\$ 0.02854	\$ 170.84	\$ 1,351.08	\$ 0.03399	\$ 203.47	\$ 1,725.39
May-18	5,521	\$ 0.02987	\$ 164.91	\$ 1,351.08	\$ 0.03399	\$ 187.67	\$ 1,703.66
Jun-18	4,887	\$ 0.02987	\$ 145.97	\$ 1,351.08	\$ 0.03399	\$ 166.12	\$ 1,663.17
Jul-18	5,251	\$ 0.02987	\$ 156.85	\$ 1,351.08	\$ 0.03399	\$ 178.49	\$ 1,686.42
Aug-18	5,795	\$ 0.02987	\$ 173.10	\$ 1,351.08	\$ 0.03399	\$ 196.98	\$ 1,721.16
Sep-18	6,587	\$ 0.02987	\$ 196.75	\$ 1,351.08	\$ 0.03399	\$ 223.90	\$ 1,771.74
Oct-18	7,678	\$ 0.02987	\$ 229.34	\$ 1,351.08	\$ 0.03399	\$ 260.99	\$ 1,841.41
Nov-18	7,921	\$ 0.02987	\$ 236.60	\$ 1,404.03	\$ 0.03399	\$ 269.25	\$ 1,909.88
Dec 17 - Nov 18:	81,130	\$ 0.02926	\$ 2,373.49	\$ 16,265.91	\$ 0.03399	\$ 2,757.75	\$ 21,397.15

The summary of the monthly electrical usage (kWh) for the town is shown in the graph below:



The summary of the monthly electrical cost (\$) for the town is shown in the graph below:



Street Lighting Billings for Town of Caroline

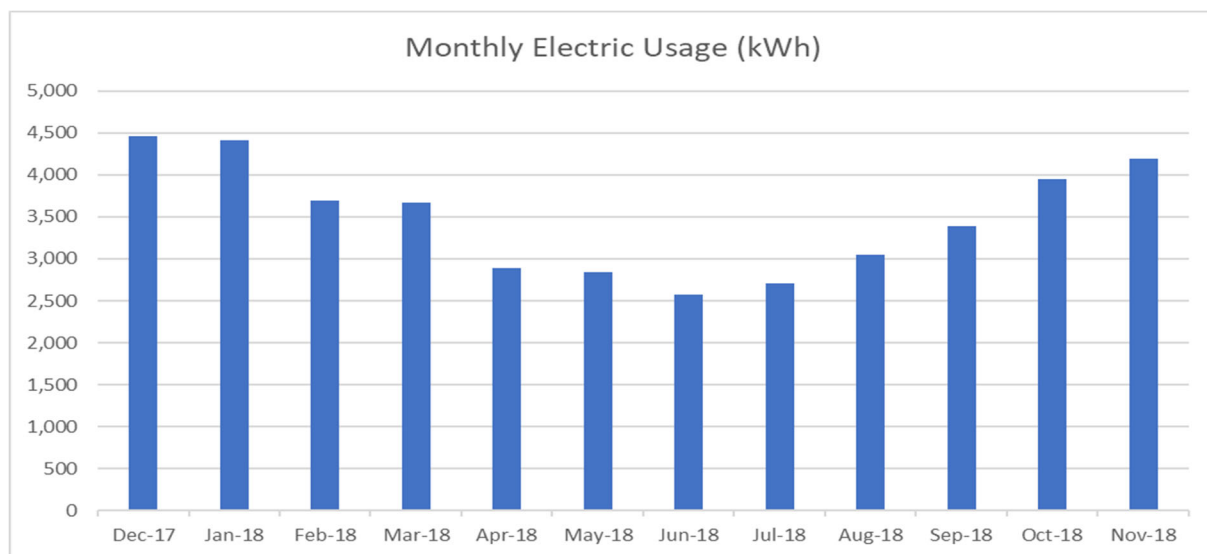
The Town of Caroline street lighting has electricity delivered by NYSEG and supplied by Constellation New Energy. The existing street lighting falls under Public Service Commission (PSC) No. 121 "Electricity" under Service Classification No.3.

NYSEG currently owns all the existing street lighting and the town pays a monthly luminaire charge for each fixture on top of delivery and supply charges.

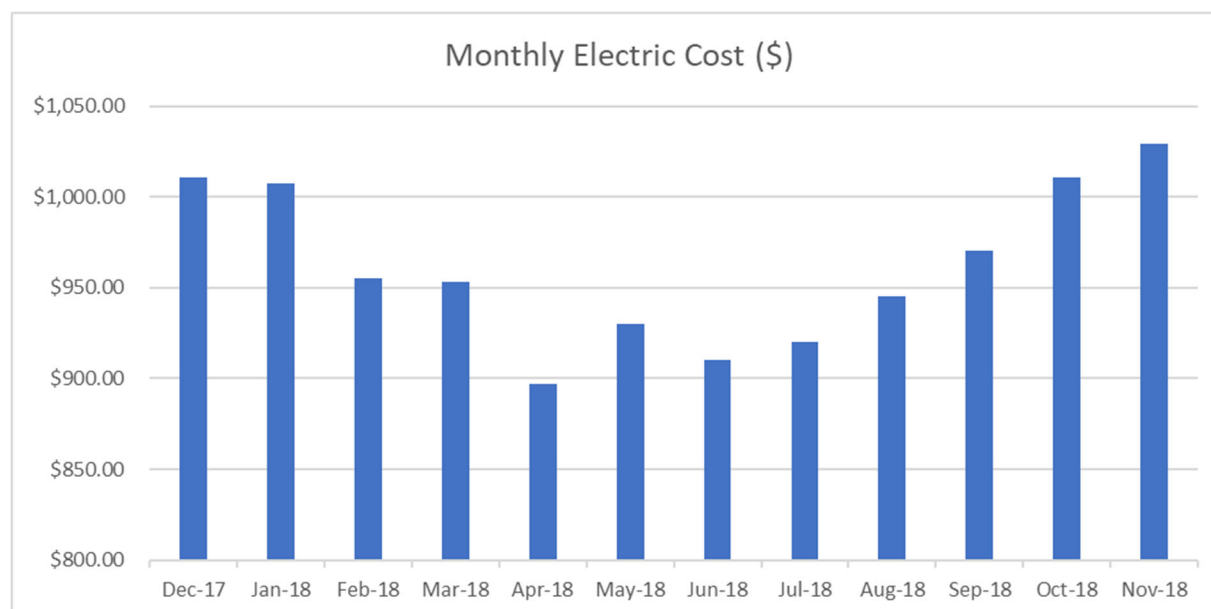
The following table below provides the 12-month billing history for the town's street lighting account. The totals for all months are provided in bold at the bottom of the table.

Utility Bill Analysis							
Includes all accounts							
Billing Month	Total Electric Usage (kWh)	Delivery Charge (\$)	Delivery Rate (\$/kWh)	Facility Charge (\$)	Supply Rate (\$/kWh)	Supply Charge (\$)	Total Energy Cost (\$)
Dec-17	4,460	\$ 127.29	\$ 0.02854	\$ 689.22	\$ 0.04353	\$ 194.14	\$ 582.20
Jan-18	4,411	\$ 125.89	\$ 0.02854	\$ 689.22	\$ 0.04353	\$ 192.01	\$ 578.67
Feb-18	3,693	\$ 105.40	\$ 0.02854	\$ 689.22	\$ 0.04353	\$ 160.75	\$ 526.92
Mar-18	3,662	\$ 104.51	\$ 0.02854	\$ 689.22	\$ 0.04353	\$ 159.40	\$ 524.69
Apr-18	2,884	\$ 82.31	\$ 0.02854	\$ 689.22	\$ 0.04353	\$ 125.54	\$ 468.62
May-18	2,843	\$ 84.92	\$ 0.02987	\$ 721.45	\$ 0.04353	\$ 123.75	\$ 930.12
Jun-18	2,575	\$ 76.92	\$ 0.02987	\$ 721.45	\$ 0.04353	\$ 112.09	\$ 910.45
Jul-18	2,704	\$ 80.77	\$ 0.02987	\$ 721.45	\$ 0.04353	\$ 117.70	\$ 919.92
Aug-18	3,053	\$ 91.19	\$ 0.02987	\$ 721.45	\$ 0.04353	\$ 132.89	\$ 945.54
Sep-18	3,392	\$ 101.32	\$ 0.02987	\$ 721.45	\$ 0.04353	\$ 147.65	\$ 970.42
Oct-18	3,943	\$ 117.78	\$ 0.02987	\$ 721.45	\$ 0.04353	\$ 171.63	\$ 1,010.86
Nov-18	4,192	\$ 125.22	\$ 0.02987	\$ 721.45	\$ 0.04353	\$ 182.47	\$ 1,029.14
Dec 17 - Nov 18:	41,812	\$ 1,223.51	\$ 0.02926	\$ 14,928.75	\$ 0.04353	\$ 1,820.02	\$ 9,397.53

The summary of the monthly electrical usage (kWh) for the town is shown in the graph below:



The summary of the monthly electrical cost (\$) for the town is shown in the graph below:



Street Lighting Billings for Town of Ulysses

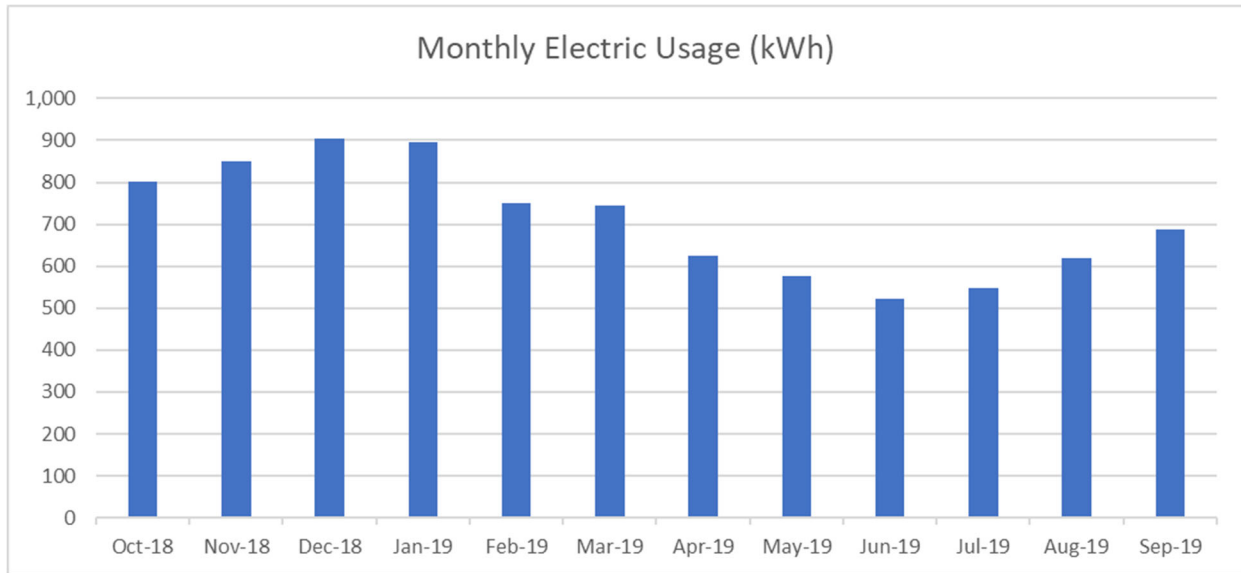
The Town of Ulysses street lighting has electricity delivered by NYSEG and supplied by Energy Cooperative of America. The existing street lighting falls under Public Service Commission (PSC) No. 121 “Electricity” under Service Classification No.3.

NYSEG currently owns all the existing street lighting and the town pays a monthly luminaire charge for each fixture on top of delivery and supply charges.

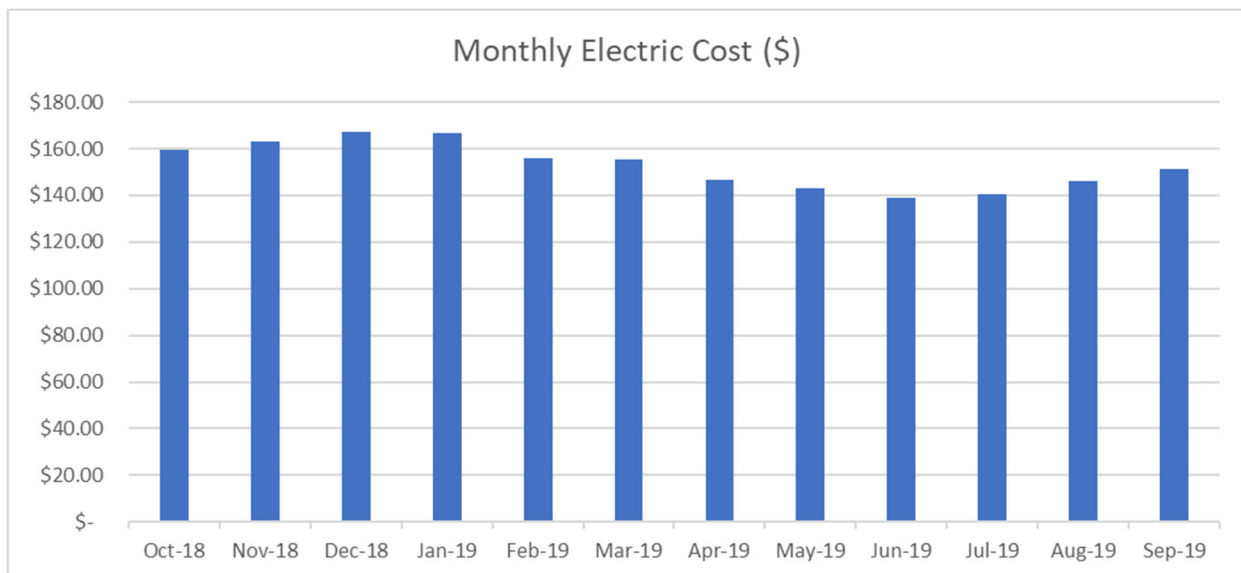
The following table below provides the 12-month billing history for the town’s street lighting account. The totals for all months are provided in bold at the bottom of the table.

Utility Bill Analysis							
Account# 1001-3629-471 PSC.121 (SC3)							
Billing Month	Total Electric Usage (kWh)	Delivery Charge (\$)	Delivery Rate (\$/kWh)	Facility Charge (\$)	Supply Rate (\$/kWh)	Supply Charge (\$)	Total Energy Cost (\$)
Oct-18	800	\$ 18.74	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 41.18	\$ 159.46
Nov-18	851	\$ 19.93	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 43.79	\$ 163.26
Dec-18	906	\$ 21.21	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 46.60	\$ 167.35
Jan-19	895	\$ 20.97	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 46.08	\$ 166.59
Feb-19	750	\$ 17.56	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 38.58	\$ 155.67
Mar-19	744	\$ 17.41	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 38.26	\$ 155.22
Apr-19	626	\$ 14.66	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 32.22	\$ 146.42
May-19	577	\$ 13.52	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 29.71	\$ 142.78
Jun-19	523	\$ 12.24	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 26.90	\$ 138.68
Jul-19	549	\$ 12.86	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 28.25	\$ 140.65
Aug-19	620	\$ 14.52	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 31.90	\$ 145.96
Sep-19	689	\$ 16.13	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 35.45	\$ 151.12
Oct-19	901	\$ 21.10	\$ 0.02342	\$ 99.54	\$ 0.05146	\$ 46.37	\$ 167.01
Nov 18 - Nov 19:	8,529	\$ 199.76	\$ 0.02342	\$ 1,194.48	\$ 0.05146	\$ 438.93	\$ 1,833.17

The summary of the monthly electrical usage (kWh) for the town is shown in the graph below:



The summary of the monthly electrical cost (\$) for the town is shown in the graph below:



Existing Street Lighting – NYSEG Service Classification No. 3

The Service Classification No. 2 open charge has been renamed as Service Classification No. 3. The tariff defines a delivery charge on a per unit base for all wiring, fixtures, poles and lamps. The chart below shows the terms of this service and the allowable monthly charges per the tariff.

APPLICABLE TO THE USE OF SERVICE FOR:

Street, highway, roadway or other outdoor lighting for duly constituted public agencies, public authorities and public corporations.

The following rates and charges, indicated with an asterisk (*), are applicable only to non-standard equipment installed or contracted for prior to the date of the tariff. Such facilities are no longer available for installation except for limited contiguous expansion of existing facilities upon Corporation approval. Luminaires and other street lighting equipment denoted with a plus sign (+) are not available for new installations or replacements. Upon failure, luminaires will not be replaced in kind. Customers may select an alternative luminaire from the tariff.

CHARACTER OF SERVICE:

Limited Period-Unmetered service; controlled from dusk (one-half hour after sunset) to dawn (one-half hour before sunrise), for approximately 4213 hours per year, on average.

The customer may designate the following types of service:

- A. Overhead Service, on poles which are a part of the Corporation's general distribution system or the Corporation's poles installed specifically for street lighting. The street lighting equipment is owned and maintained by the Corporation. Such service is available only in those areas where an overhead distribution system is maintained by the Corporation.
- B. Underground Service, supplied from an existing underground circuit or installation of new underground circuit. The street lighting equipment is owned and maintained by the Corporation. Such installations should be in accordance with Section 9 of the General Information section of this tariff.

Note: The rating of lamps in lumens is for identification purposes only and shall approximate the manufacturers standard rating.

The monthly delivery rate and facility charges of the fixtures are shown in the following table on the next page:

Delivery Service (Per Month):

Energy Charges and Operation and Maintenance Charges:

Delivery Charges	Effective Date		
	07/01/16	05/01/17	05/01/18
Energy Charge (All kWh, per kWh)	\$0.02724	\$0.02854	\$0.02987
Rate Adjustment Mechanism (All kWh, per kWh)	See RAM Statement		
Transition Charge (All kWh, per kWh)	See Transition Charge Statement		

	Monthly Luminaire Charge		
	Effective Date		
	07/01/16	05/01/17	05/01/18
High Pressure Sodium Cobra			
50 Watts+ - 3,300 Lumen	\$7.43	\$7.79	\$8.15
70 Watts - 5,200 Lumen	\$7.43	\$7.79	\$8.15
100 Watts - 8,500 Lumen	\$7.43	\$7.79	\$8.15
150 Watts - 14,400 Lumen	\$7.43	\$7.79	\$8.15
250 Watts - 24,700 Lumen	\$7.43	\$7.79	\$8.15
400 Watts - 45,000 Lumen	\$7.86	\$8.23	\$8.62
1000 Watts - 126,000 Lumen	\$11.65	\$12.21	\$12.77
High Pressure Sodium Post Top			
50 Watts - 3,300 Lumen	\$8.59	\$9.00	\$9.42
70 Watts - 5,200 Lumen	\$8.59	\$9.00	\$9.42
100 Watts - 8,500 Lumen	\$9.75	\$10.22	\$10.70
150 Watts - 14,400 Lumen	\$10.90	\$11.42	\$11.95
250 Watts+ - 24,700 Lumen	\$10.90	\$11.42	\$11.95
400 Watts+ - 45,000 Lumen	\$11.32	\$11.86	\$12.42
1000 Watts+ - 126,000 Lumen	\$15.12	\$15.85	\$16.59
High Pressure Sodium Cut Off ("Shoebox")			
70 Watts+ - 5,200 Lumen	\$15.07	\$15.79	\$16.53
100 Watts+ - 8,500 Lumen	\$15.07	\$15.79	\$16.53
150 Watts+ - 14,400 Lumen	\$15.07	\$15.79	\$16.53
250 Watts - 24,700 Lumen	\$13.29	\$13.93	\$14.58
400 Watts - 45,000 Lumen	\$16.07	\$16.84	\$17.63
Metal Halide Cobra			
70 Watts - 4,000 Lumen	\$4.54	\$4.76	\$4.98
100 Watts - 5,800 Lumen	\$4.54	\$4.76	\$4.98
175 Watts - 12,000 Lumen	\$4.47	\$4.68	\$4.90
250 Watts - 16,000 Lumen	\$14.47	\$15.16	\$15.87
400 Watts - 28,000 Lumen	\$14.47	\$15.16	\$15.87
Metal Halide Cut-Off ("Shoebox")			
175 Watts - 12,000 Lumen	\$6.17	\$6.46	\$6.76
250 Watts - 16,000 Lumen	\$17.75	\$18.60	\$19.47
400 Watts - 28,000 Lumen	\$18.64	\$19.54	\$20.45
Metal Halide Post Top			
70 Watts - 4,000 Lumen	\$5.13	\$5.38	\$5.63
100 Watts - 5,800 Lumen	\$5.22	\$5.47	\$5.72
175 Watts - 12,000 Lumen	\$5.33	\$5.58	\$5.84

	Monthly Luminaire Charge		
	Effective Date		
	07/01/16	05/01/17	05/01/18
Mercury Vapor Cobra			
100 Watts+ - 3,200 Lumen	\$4.05	\$4.25	\$4.45
175 Watts+ - 7,000 Lumen	\$4.05	\$4.25	\$4.45
250 Watts+ - 9,400 Lumen	\$4.24	\$4.44	\$4.65
400 Watts+ - 17,200 Lumen	\$4.30	\$4.51	\$4.72
1000 Watts+ - 48,000 Lumen	\$6.32	\$6.62	\$6.93
Mercury Vapor Post Top			
100 Watts+ - 3,200 Lumen	\$5.25	\$5.50	\$5.76
175 Watts+ - 7,000 Lumen	\$5.30	\$5.55	\$5.81
250 Watts+ - 9,400 Lumen	\$5.35	\$5.61	\$5.87
400 Watts+ - 17,200 Lumen	\$5.44	\$5.70	\$5.96
1000 Watts+ - 48,000 Lumen	\$7.42	\$7.78	\$8.14
Incandescent Cobra			
130 Watts+ - 1,000 Lumen	\$5.73	\$6.01	\$6.29
Incandescent Post Top			
130 Watts+ - 1,000 Lumen	\$6.47	\$6.78	\$7.10
Fluorescent			
95 Watts+ - 5,000 Lumen	\$7.54	\$7.90	\$8.27
235 Watts+ - 10,000 Lumen (2 Lamp)	\$7.69	\$8.06	\$8.44
380 Watts+ - 20,000 Lumen (2 Lamp)	\$8.54	\$8.95	\$9.37

Proposed Street Lighting – NYSEG Service Classification No. 4

At the duration of this project the existing street lighting accounts under Service Classification No. 3 for all six municipalities mentioned above will fall under Public Service Commission (PSC) No. 121 Electricity, Service Classification No. 4 “Street Lighting – Unmetered Customer Owned/Customer Maintained”. This open billing rate is available to both utility owned street lighting fixtures and customers who already own their street lighting fixtures. The electricity is going to continue to be supplied through the ESCO suppliers for the towns and villages using which are Constellation New Energy and Energy Cooperative of America. The tariff defines a delivery charge on a per unit base for all wiring, fixtures, poles and lamps. The chart below shows the allowable monthly charges for delivery per the tariff. The pole rental fee, for each fixture on a utility pole is also included on the following page. The municipalities within this project scope will be charged this fee annually once they own the fixtures.

APPLICABLE TO THE USE OF SERVICE FOR:

Street, highway, roadway or other outdoor lighting for duly constituted public agencies, public authorities and public corporations. The Company shall provide energy only. The street lighting equipment including wire, bracket, luminaire and street lighting standard, is owned and maintained by the customer. Service depends upon available circuits.

The Company reserves the right to reject all or any part of such street lighting systems that do not meet general Company specifications, or are not compatible with the type and nature of existing Company facilities.

CHARACTER OF SERVICE:

Limited Period-Unmetered Electric Energy; Alternating current - 60 cycle 120/240, 120/208 or 480 volts, single phase. The customer shall install controls for operating from dusk (one-half hour after sunset) to dawn (one-half hour before sunrise), approximating 4,213 hours per year.

Delivery Service (Per Month):

Energy Charges and Operation and Maintenance Charges:

Delivery Charges	Effective Date		
	07/01/16	05/01/17	05/01/18
Energy Charge (All kWh, per kWh)	\$0.02724	\$0.02854	\$0.02987
Rate Adjustment Mechanism (All kWh, per kWh)	See RAM Statement		
Transition Charge (All kWh, per kWh)	See Transition Charge Statement		

PSC No: 119 - Electricity

New York State Electric & Gas Corporation

Initial Effective Date: November 29, 2019

Issued in compliance with Order in Case 16-M-0330, dated November 18, 2019.

Statement Type: POLE

Statement No. 3

Wireline and Wireless Pole Attachment Rental Rate (per year)

Wireline (CATV/CLEC) Rental Rate –
per Pole Attachment \$19.55

Wireless Rental Rate –
per Pole Attachment \$19.55 per foot of occupied space per attachment.

Calculations and Assumptions

The NYSEG utility rates are based off Service Classification No. 3 “Street Lighting Service - Company Owned, Company Maintained” and No. 4 “Street Lighting Service Customer - Owned, Customer Maintained”. The supply rate for each municipality will stay the same for the duration of the project.

The supply rate was calculated as a weighted average to more accurately represent the yearly cost. The formula used to calculate the supply rate is given below.

$$\text{Supply Rate} \left(\frac{\$}{\text{kWh}} \right) = \left(\frac{1}{12} \right) \sum_{i=1}^{12} \left(\frac{\text{Monthly Supply Charge}}{\text{Monthly Usage}} \right)$$

The delivery rates are specified in the tariff and will change once the project is completed. The tables below provide the rates used for each municipalities cost savings analysis. Please see the tables on the following page for the existing and proposed tariff rates.

Trumansburg

Existing Tariff Rates

Existing Tariff Rates (SC3)		
SBC Charge (\$/kWh)	\$	0.00593
RDM Charge (\$/kWh)	\$	(0.01390)
Transition Charge (\$/kWh)	\$	0.00342
Electrical Supply (\$/kWh)	\$	0.02735
Mechant Function Charge (\$/kWh)	\$	0.00299
Electrical Delivery (\$/kWh)	\$	0.02342
"All In" Delivery (\$/kWh)	\$	0.01887
Total Energy Cost (\$/kWh)	\$	0.04921

Proposed Tariff Rates

Proposed Tariff Rates (SC4)		
SBC Charge (\$/kWh)	\$	0.00578
RDM Charge (\$/kWh)	\$	(0.01390)
Transition Charge (\$/kWh)	\$	0.00342
Dynamic Load Management Charge (\$/kWh)	\$	0.000018
Mechant Function Charge (\$/kWh)	\$	0.002989
Electrical Supply (\$/kWh)	\$	0.02735
Electrical Delivery (\$/kWh)	\$	0.02987
"All-In" - Delivery (\$/kWh)	\$	0.02519
Total Energy Cost (\$/kWh)	\$	0.05553

Freeville

Existing Tariff Rates

Existing Tariff Rates (SC3)	
SBC Charge (\$/kWh)	\$ 0.00578
RDM Charge (\$/kWh)	\$ (0.01390)
Transition Charge (\$/kWh)	\$ 0.00454
Electrical Supply (\$/kWh)	\$ 0.07350
Electrical Delivery (\$/kWh)	\$ 0.02342
"All-In" - Delivery (\$/kWh)	\$ 0.01985
Total Energy Cost (\$/kWh)	\$ 0.09335

Proposed Tariff Rates

Proposed Tariff Rates (SC4)	
SBC Charge (\$/kWh)	\$ 0.00578
RDM Charge (\$/kWh)	\$ (0.01390)
Dynamic Load Management Charge (\$/kWh)	\$ 0.000018
Electrical Supply (\$/kWh)	\$ 0.07350
Electrical Delivery (\$/kWh)	\$ 0.02987
"All-In" - Delivery (\$/kWh)	\$ 0.02177
Total Energy Cost (\$/kWh)	\$ 0.09527

Ithaca

Existing Tariff Rates

Existing Tariff Rates (SC3)		
SBC Charge (\$/kWh)	\$	0.00593
RDM Charge (\$/kWh)	\$	(0.01390)
Transition Charge (\$/kWh)	\$	0.00522
Mechant Function Charge (\$/kWh)	\$	0.00299
Electrical Supply (\$/kWh)	\$	0.05207
Electrical Delivery (\$/kWh)	\$	0.02342
"All-In" - Delivery (\$/kWh)	\$	0.02068
Total Energy Cost (\$/kWh)	\$	0.07574

Proposed Tariff Rates

Proposed Tariff Rates (SC4)		
SBC Charge (\$/kWh)	\$	0.00578
RDM Charge (\$/kWh)	\$	(0.01390)
Transition Charge (\$/kWh)	\$	0.00342
Dynamic Load Management Charge (\$/kWh)	\$	0.000018
Mechant Function Charge (\$/kWh)	\$	0.00299
Electrical Supply (\$/kWh)	\$	0.05207
Electrical Delivery (\$/kWh)	\$	0.02987
"All-In" - Delivery (\$/kWh)	\$	0.02519
Total Energy Cost (\$/kWh)	\$	0.08025

Newfield

Existing Tariff Rates

Existing Tariff Rates (SC3)	
SBC Charge (\$/kWh)	\$ 0.00593
RDM Charge (\$/kWh)	\$ (0.01390)
Transition Charge (\$/kWh)	\$ 0.00522
Mechant Function Charge (\$/kWh)	\$ 0.00299
Electrical Supply (\$/kWh)	\$ 0.03399
Electrical Delivery (\$/kWh)	\$ 0.02926
"All-In" - Delivery (\$/kWh)	\$ 0.02651
Total Energy Cost (\$/kWh)	\$ 0.06349

Proposed Tariff Rates

Proposed Tariff Rates (SC4)	
SBC Charge (\$/kWh)	\$ 0.00578
RDM Charge (\$/kWh)	\$ (0.01390)
Transition Charge (\$/kWh)	\$ 0.00342
Dynamic Load Management Charge (\$/kWh)	\$ 0.000018
Mechant Function Charge (\$/kWh)	\$ 0.00299
Electrical Supply (\$/kWh)	\$ 0.03399
Electrical Delivery (\$/kWh)	\$ 0.02987
"All-In" - Delivery (\$/kWh)	\$ 0.02519
Total Energy Cost (\$/kWh)	\$ 0.06217

Caroline

Existing Tariff Rates

Existing Tariff Rates (SC3)	
SBC Charge (\$/kWh)	\$ 0.00633
RDM Charge (\$/kWh)	\$ (0.000103)
Transition Charge (\$/kWh)	\$ (0.000288)
Mechant Function Charge (\$/kWh)	\$ 0.00299
Electrical Supply (\$/kWh)	\$ 0.04353
Electrical Delivery (\$/kWh)	\$ 0.02926
"All-In" - Delivery (\$/kWh)	\$ 0.03520
Total Energy Cost (\$/kWh)	\$ 0.08172

Proposed Tariff Rates

Proposed Tariff Rates (SC4)	
SBC Charge (\$/kWh)	\$ 0.00578
RDM Charge (\$/kWh)	\$ (0.013900)
Transition Charge (\$/kWh)	\$ 0.00342
Dynamic Load Management Charge (\$/kWh)	\$ 0.00002
Mechant Function Charge (\$/kWh)	\$ 0.00299
Electrical Supply (\$/kWh)	\$ 0.04353
Electrical Delivery (\$/kWh)	\$ 0.02987
"All-In" - Delivery (\$/kWh)	\$ 0.02519
Total Energy Cost (\$/kWh)	\$ 0.07171

Ulysses

Existing Tariff Rates

Existing Tariff Rates (SC3)		
SBC Charge (\$/kWh)	\$	0.00593
RDM Charge (\$/kWh)	\$	(0.01390)
Transition Charge (\$/kWh)	\$	0.00427
Mechant Function Charge (\$/kWh)	\$	0.00299
Electrical Supply (\$/kWh)	\$	0.05146
Electrical Delivery (\$/kWh)	\$	0.02342
"All-In" - Delivery (\$/kWh)	\$	0.01972
Total Energy Cost (\$/kWh)	\$	0.07417

Proposed Tariff Rates

Proposed Tariff Rates (SC4)		
SBC Charge (\$/kWh)	\$	0.00578
RDM Charge (\$/kWh)	\$	(0.01390)
Transition Charge (\$/kWh)	\$	0.00342
Dynamic Load Management Charge (\$/kWh)	\$	0.000018
Mechant Function Charge (\$/kWh)	\$	0.00299
Electrical Supply (\$/kWh)	\$	0.05146
Electrical Delivery (\$/kWh)	\$	0.02987
"All-In" - Delivery (\$/kWh)	\$	0.02519
Total Energy Cost (\$/kWh)	\$	0.07964

Supporting Utility Statements

The energy rates for each municipality also include miscellaneous charges including a System Benefits Charge (SBC) and Revenue Decoupling Mechanism (RDM). The rate may also include either a Transmission Revenue Adjustment Statement (TRAS) or a Transition Charge Statement (TCS) depending on the utility. This transmission charge can also include or be called a Dynamic Load Management Surcharge (this charge is shown below). The utility statements for the miscellaneous charges incorporated into the energy rate are provided below from this most current tariff.

NYSEG Additional Charges:

PSC NO: 121 – Electricity
New York State Electric & Gas Corporation
Initial Effective Date: August 1, 2019
Issued in compliance with order in Case 15-E-0283 dated June 15, 2016.

Statement Type: RDM
Statement Number: 03

Statement of Revenue Decoupling Mechanism

Pursuant to Revenue Decoupling Mechanism (RDM), General Information Section 14 of Schedule PSC No. 121 – Electric, the following RDM is applicable to all kWh delivered under the service classifications listed below.

Service Classification Nos.	Annual	Annual
	Charge per kWh, All kWhs	Charge per kW, All kW's
1,2, 3, and 4	(\$0.013900)	Not Applicable

PSC No: 121 – Electricity
New York State Electric & Gas Corporation
Initial Effective Date: January 1, 2019
Issued in compliance with Order in Case Nos. 14-M-0094, 10-M-0457, 07-M-0548, 03-E-0188, 13-M-0412, and 15-M-0252 dated January 21, 2016, January 22, 2016 and August 3, 2016 and Case No. 15-E-0302, dated February 22, 2017.

Statement Type: SBC
Statement Number: 18

System Benefits Charge Statement

Pursuant to Surcharge to Collect System Benefits Charge ("SBC"), General Information Rule 16 of Schedule PSC No. 121 – Electricity, the following SBC, which is comprised of three components, is applicable to all energy delivered [all kilowatt-hours (kWhs)] under the service classifications listed below:

Service Classification Nos. 1, 2, 3, and 4	Charge All kWh, per kWh
a. System Benefits Charge (Clean Energy Fund)	\$0.004773
b. System Benefits Charge (EE Tracker)	\$0.001159
c. CES Tier 2 Maintenance and Backstop Charges	\$0.000000

Received: 04/23/2019

Status: EFFECTIVE
Effective Date: 05/01/2019

PSC NO: 121 – Electricity
New York State Electric & Gas Corporation
Initial Effective Date: May 1, 2019
Issued in Compliance with Order 15-E-0188, dated April 19, 2018.

Statement Type: DLM
Statement Number: 2

Dynamic Load Management (DLM) Statement

The following charges are applicable to all kilowatthours (kWh) delivered under each of the service classifications below. The Company shall collect the Dynamic Load Management surcharge through the Transition Charge (Non-Bypassable Charge ["NBC"]).

Service Classification Nos.	Charge per kWh, All kWhs
Street Lighting Service Classifications 1, 2, 3, and 4	\$0.000232

PSC NO: 121 – Electricity
New York State Electric & Gas Corporation
Initial Effective Date: November 1, 2019
Issued in compliance with order in Case No. 15-E-0283 dated 6/15/16.

Statement Type: TCS
Statement Number: 181

Transition Charge Statement

Pursuant to NYSEG's Supply Service Options, General Information Section 25 of Schedule PSC No. 120 - Electricity, the following Transition Charge (also known as the Non-Bypassable Charge or "NBC") is applicable to energy deliveries [all kilowatt-hours (kWhs)] under the service classifications listed below, other than as specified below.

For customers taking service under the ESCO Supply Service (ESS) rate, the NYSEG Supply Service (NSS) rate, or Hourly Pricing:

PSC No. 120 - Electricity; Service Classification Nos.	Charge per kWh
1, 8, 12	(\$0.000385)
2, 3, 5, 6, 7, 9	\$0.000210
PSC No. 121 - Electricity; Service Classification Nos.	
1, 2, 3	\$0.000210

NYSEG Supply Charge:

Received: 11/20/2008

Status: EFFECTIVE
Effective Date: 01/01/2009

PSC NO: 121 ELECTRICITY
NEW YORK STATE ELECTRIC & GAS CORPORATION
Initial Effective Date: 01/01/09

Statement Type: SC
Statement Number: 03

Supply Charge Statement

For customers taking service under the NYSEG Fixed Price Option (FPO) rate, pursuant to NYSEG's Supply Service Options, General Information Section 25 of Schedule PSC No. 120 - Electricity, the following charge is applicable to energy supplied [all kilowatt-hours (kWhs)] under the service classifications listed below. See General Information Section 25.I.C., Calculation of the Commodity Charge, of Schedule PSC No. 120 – Electricity, for further details regarding supply charges.

Service Classification Nos.	Charge per kWh
Street Lighting Service Classifications 1, 2, and 3	\$0.07350

Summary of Ownership Savings

The following tables summarizes the savings each municipality will receive because of their purchase of the utility assets.

Village of Trumansburg

Village of Trumansburg - Ownership Savings				
Equipment Type	Quantity	Monthly Equipment Charge per Quantity	Total Monthly Charge	Total Yearly Charge
NYSEG Account #: 1001-3629-463 - Tarrif 121 - SC03				
175W MRC light	20	\$ 4.45	\$ 89.00	\$ 1,068.00
250W MRC light	3	\$ 4.65	\$ 13.95	\$ 167.40
400W MRC light	1	\$ 4.72	\$ 4.72	\$ 56.64
100W HPS cobra head light	102	\$ 8.15	\$ 831.30	\$ 9,975.60
150W HPS cobra head light	10	\$ 8.15	\$ 81.50	\$ 978.00
250W HPS cobra head light	21	\$ 8.15	\$ 171.15	\$ 2,053.80
400W HPS cobra head light	2	\$ 8.62	\$ 17.24	\$ 206.88
Standard bracket 16' and over	1	\$ 2.89	\$ 2.89	\$ 34.68
NYSEG Account #: 1001-4191-794 - Tarrif 121 - SC06				
150W HPS PTD	43	\$ -		\$ -
Sub Total:			\$ 1,211.75	\$ 14,541.00
Estimated Pole Attachment Fee:			\$ (257.54)	\$ (3,090.48)
Grand Total:			\$ 954.21	\$ 11,450.52
Estimated Pole Attachment Calculation				
Fixtures on metal/decorative poles (Customer owned) - 43				
Fixtures on wood poles (Utility Owned under Service Classification 3) - 158 Street Lighting Fixtures				
Total Street Lighting Fixtures = 201 (includes all accounts)				
Annual Tariff Pole Charge- = \$19.55				
Total Cost per month for one pole (\$19.55/12months) = (\$1.63)				
Total Cost per month (all street light fixtures) - (\$19.55/12months) = (\$1.63) x (158)= \$257.54				
Total Annual Pole Fee (\$257.54 monthly cost x 12months) = (\$3,090.48)				

Village of Freeville

Village of Freeville - Ownership Savings				
Equipment Type	Quantity	Monthly Equipment Charge per Quantity	Total Monthly Charge	Total Yearly Charge
NYSEG Account #: 1001-3629-547 - Tarrif 121 - SC03				
400W MRC light	1	\$ 4.72	\$ 4.72	\$ 56.64
70W HPS cobra head light	28	\$ 8.15	\$ 228.20	\$ 2,738.40
100W HPS cobra head light	29	\$ 8.15	\$ 236.35	\$ 2,836.20
150W HPS cobra head light	3	\$ 8.15	\$ 24.45	\$ 293.40
250W HPS cobra head light-feb	1	\$ 4.50	\$ 4.50	\$ 54.00
250W HPS cobra head light-feb	1	\$ 3.65	\$ 3.65	\$ 43.80
250W HPS Flood light	1	\$ 15.67	\$ 15.67	\$ 188.04
Aluminum Pole-over 16 feet	1	\$ 19.61	\$ 19.61	\$ 235.32
Direct buried cable	100ft	\$ 0.08221	\$ 8.22	\$ 98.65
Sub Total:			\$ 545.37	\$ 6,544.45
Estimated Pole Attachment Fee:			\$ (101.06)	\$ (1,212.72)
Grand Total:			\$ 444.31	\$ 5,331.73
Estimated Pole Attachment Calculation				
Fixtures on metal/decorative poles (Customer owned) - 0				
Fixtures on wood poles (Utility Owned under Service Classification 3) - 62 Street Lighting Fixtures				
Total Street Lighting Fixtures = 62 (includes all accounts)				
Annual Tariff Pole Charge- = \$19.55				
Total Cost per month for one pole (\$19.55/12months) = (\$1.63)				
Total Cost per month (all street light fixtures) - (\$19.55/12months) = (\$1.63) x (62)= \$101.06				
Total Annual Pole Fee (\$101.06 monthly cost x 12months) = (\$1,212.72)				

Town of Ithaca

Town of Ithaca - Ownership Savings				
Equipment Type	Quantity	Monthly Equipment Charge per Quantity	Total Monthly Charge	Total Yearly Charge
NYSEG Account #: 1001-3629-695 - Tarrif 121 - SC03				
100W HPS cobra head light	7	\$ 8.15	\$ 57.05	\$ 684.60
NYSEG Account #: 1004-3629-703 - Tarrif 121 - SC03				
100W MRC light	1	\$ 4.45	\$ 4.45	\$ 4.45
175W MRC light	42	\$ 4.45	\$ 186.90	\$ 186.90
250W MRC light	5	\$ 4.65	\$ 23.25	\$ 23.25
400W MRC light	27	\$ 4.72	\$ 127.44	\$ 127.44
100W HPS cobra head light	45	\$ 8.15	\$ 366.75	\$ 366.75
150W HPS cobra head light	28	\$ 8.15	\$ 228.20	\$ 228.20
250W HPS cobra head light	29	\$ 8.15	\$ 236.35	\$ 236.35
400W HPS cobra head light	1	\$ 8.62	\$ 8.62	\$ 8.62
400W MHL cobra head light	1	\$ 15.87	\$ 15.87	\$ 15.87
250W HPS flood light	1	\$ 15.67	\$ 15.67	\$ 15.67
150W HPS Turnpike Light	1	\$ 18.67	\$ 18.67	\$ 18.67
250W HPS Turnpike Light	1	\$ 23.25	\$ 23.25	\$ 23.25
Standard pole	19	\$ 12.26	\$ 232.94	\$ 232.94
Center-bored wood pole	5	\$ 11.09	\$ 55.45	\$ 55.45
Standard bracket, 16' and over	4	\$ 2.89	\$ 11.56	\$ 11.56
Cable and conduit (ft)	115	\$ 0.10	\$ 11.05	\$ 11.05
Direct buried cable (ft)	212	\$ 0.08	\$ 17.43	\$ 17.43
Underground circuits (ft)	450	\$ 0.06	\$ 26.29	\$ 26.29
NYSEG Account #: 1001-3629-711 - Tarrif 121 - SC03				
100W HPS post top light	3	\$ 10.70	\$ 32.10	\$ 385.20
Fiberglass pole - 18' and under	3	\$ 6.90	\$ 20.70	\$ 248.40
Direct burial cable (ft)	120	\$ 0.08221	\$ 9.87	\$ 118.38
NYSEG Account #: 1001-3629-729 - Tarrif 121 - SC03				
100W MRC light	2	\$ 4.45	\$ 8.90	\$ 106.80
70W HPS cobra head light	6	\$ 8.15	\$ 48.90	\$ 586.80
NYSEG Account #: 1001-3629-737 - Tarrif 121 - SC03				
100W HPS cobra head light	3	\$ 8.15	\$ 24.45	\$ 293.40
150W HPS cobra head light	9	\$ 8.15	\$ 73.35	\$ 880.20
NYSEG Account #: 1001-3629-752 - Tarrif 121 - SC03				
100W MRC light	15	\$ 4.45	\$ 66.75	\$ 801.00
175W MRC light	1	\$ 4.45	\$ 4.45	\$ 53.40
70W HPS cobra head light	2	\$ 8.15	\$ 16.30	\$ 195.60
100W HPS cobra head light	2	\$ 8.15	\$ 16.30	\$ 195.60
NYSEG Account #: 1001-3629-760 - Tarrif 121 - SC03				
100W MRC light	7	\$ 4.45	\$ 31.15	\$ 373.80
70W HPS cobra head light	3	\$ 8.15	\$ 24.45	\$ 293.40
100W HPS cobra head light	1	\$ 8.15	\$ 8.15	\$ 97.80
NYSEG Account #: 1001-3629-778 - Tarrif 121 - SC03				
175W MRC light	7	\$ 4.45	\$ 31.15	\$ 373.80
100W HPS cobra head light	1	\$ 8.15	\$ 8.15	\$ 97.80
150W HPS cobra head light	1	\$ 8.15	\$ 8.15	\$ 97.80
Standard pole	1	\$ 12.26	\$ 12.26	\$ 147.12
Center-bored wood pole	6	\$ 11.09	\$ 66.54	\$ 798.48
Direct burial cable (ft)	110	\$ 0.08221	\$ 9.04	\$ 108.52
Cable only (conduit by cust.) (ft)	350	\$ 0.04374	\$ 15.31	\$ 183.71
NYSEG Account #: 1001-3629-786 - Tarrif 121 - SC03				
150W HPS cobra head light	19	\$ 8.15	\$ 154.85	\$ 1,858.20
Standard bracket, 16' and over	3	\$ 2.89	\$ 8.67	\$ 104.04
NYSEG Account #: 1001-3629-836 - Tarrif 121 - SC03				
100W HPS cobra head light	2	\$ 8.15	\$ 16.30	\$ 195.60
Sub Total:			\$ 2,383.43	\$ 10,889.59
Estimated Pole Attachment Fee:			\$ (438.47)	\$ (5,261.64)
Grand Total:			\$ 1,944.96	\$ 5,627.95
Estimated Pole Attachment Calculation				
Fixtures on metal/decorative poles - 3				
Fixtures on wood poles (Utility Owned under Service Classification 3) - 269 Street Lighting Fixtures				
Total Street Lighting Fixtures = 272 (includes all accounts)				
Annual Tariff Pole Charge- = \$19.55				
Total Cost per month for one pole (\$19.55/12months) = (\$1.63)				
Total Cost per month (all street light fixtures) - (\$19.55/12months) = (\$1.63) x (269)=\$438.47				
Total Annual Pole Fee (\$438.47 monthly cost x 12months) = (\$5,261.64)				

Town of Newfield

Town of Newfield - Ownership Savings				
Equipment Type	Quantity	Monthly Equipment Charge per Quantity	Total Monthly Charge	Total Yearly Charge
NYSEG Account #: 1001-1855-359 - Tarrif 121 - SC03				
400W MRC light	1	\$ 4.72	\$ 4.72	\$ 56.64
100W HPS cobra head light	1	\$ 8.15	\$ 8.15	\$ 97.80
150W HPS cobra head light	8	\$ 8.15	\$ 65.20	\$ 782.40
250W HPS cobra head light	7	\$ 8.15	\$ 57.05	\$ 684.60
400W HPS cobra head light	1	\$ 8.62	\$ 8.62	\$ 103.44
400W MHL cobra head light	2	\$ 15.87	\$ 31.74	\$ 380.88
High mount use pole	1	\$ 33.54	\$ 33.54	\$ 402.48
NYSEG Account #: 1004-0426-776 - Tarrif 121 - SC04				
100W MRC light	12	\$ 4.45	\$ 53.40	\$ 640.80
175W MRC light	4	\$ 4.45	\$ 17.80	\$ 213.60
250W MRC light	2	\$ 4.65	\$ 9.30	\$ 111.60
70W HPS cobra head light	58	\$ 8.15	\$ 472.70	\$ 5,672.40
100W HPS cobra head light	9	\$ 4.08	\$ 36.72	\$ 440.64
100W HPS cobra head light	9	\$ 3.26	\$ 29.34	\$ 352.08
100W HPS cobra head light	9	\$ 0.82	\$ 7.38	\$ 88.56
150W HPS cobra head light	11	\$ 8.15	\$ 89.65	\$ 1,075.80
250W HPS cobra head light	1	\$ 8.15	\$ 8.15	\$ 97.80
70W HPS post top light	3	\$ 9.42	\$ 28.26	\$ 339.12
100W HPS post top light	13	\$ 10.70	\$ 139.10	\$ 1,669.20
400W HPS flood light	1	\$ 15.67	\$ 15.67	\$ 188.04
Standard pole	1	\$ 12.26	\$ 12.26	\$ 147.12
Fiberglass pole 18'-22'	16	\$ 9.37	\$ 149.92	\$ 1,799.04
Standard bracket, 16' and over	2	\$ 2.89	\$ 5.78	\$ 69.36
Direct burial cable (ft)	1,385	\$ 0.08221	\$ 113.86	\$ 1,366.33
Sub Total:			\$ 1,398.31	\$ 16,779.73
Estimated Pole Attachment Fee:			\$ (187.45)	\$ (2,249.40)
Grand Total:			\$ 1,210.86	\$ 14,530.33
Estimated Pole Attachment Calculation				
Fixtures on metal/decorative poles (Customer owned) - 21				
Fixtures on wood poles (Utility Owned under Service Classification 3) - 115 Street Lighting Fixtures				
Total Street Lighting Fixtures = 136 (includes all accounts)				
Annual Tariff Pole Charge- = \$19.55				
Total Cost per month for one pole (\$19.55/12months) = (\$1.63)				
Total Cost per month (all street light fixtures) - (\$19.55/12months) = (\$1.63) x (136)=\$187.45				
Total Annual Pole Fee (\$187.45 monthly cost x 12months) = (\$2,249.40)				

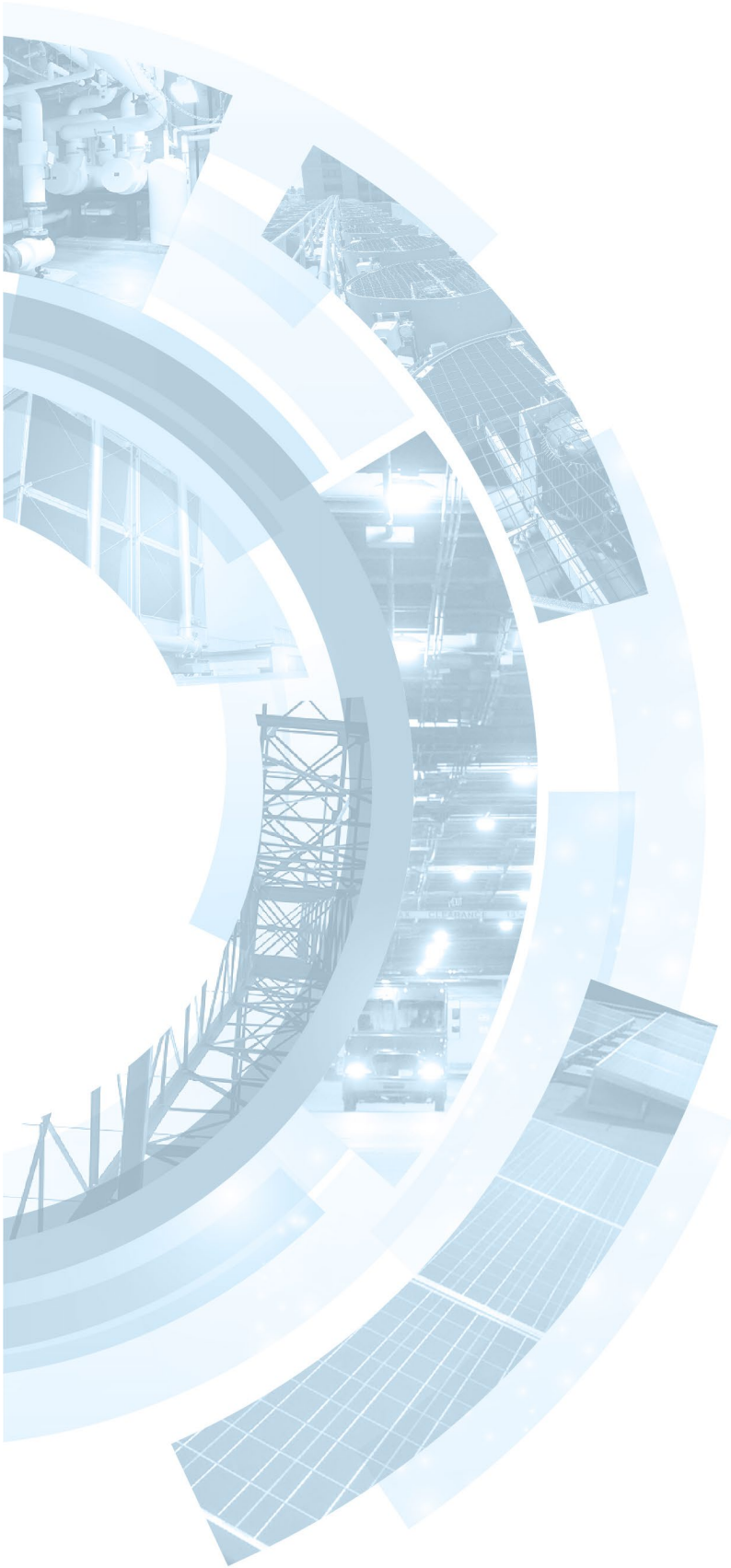
Town of Caroline

Town of Caroline - Ownership Savings				
Equipment Type	Quantity	Monthly Equipment Charge per Quantity	Total Monthly Charge	Total Yearly Charge
NYSEG Account #: 1001-3629-653 - Tarrif 121 - SC03				
100W HPS cobra head light	18	\$ 8.15	\$ 146.70	\$ 1,760.40
150W HPS cobra head light	2	\$ 8.15	\$ 16.30	\$ 195.60
NYSEG Account #: 1001-3629-604 - Tarrif 121 - SC03				
100W HPS cobra head light	26	\$ 8.15	\$ 211.90	\$ 2,542.80
NYSEG Account #: 1001-3629-612 - Tarrif 121 - SC03				
100W HPS cobra head light	9	\$ 8.15	\$ 73.35	\$ 880.20
NYSEG Account #: 1001-3629-661 - Tarrif 121 - SC03				
100W HPS cobra head light	15	\$ 8.15	\$ 122.25	\$ 1,467.00
150W HPS cobra head light	7	\$ 8.15	\$ 57.05	\$ 684.60
250W HPS cobra head light	1	\$ 8.15	\$ 8.15	\$ 97.80
150W HPS Turnpike light	1	\$ 18.67	\$ 18.67	\$ 224.04
Standard pole	5	\$ 12.26	\$ 61.30	\$ 735.60
Standard bracket 16' and over	2	\$ 2.89	\$ 5.78	\$ 69.36
Sub Total:			\$ 721.45	\$ 8,657.40
Estimated Pole Attachment Fee:			\$ (128.77)	\$ (1,545.24)
Grand Total:			\$ 592.68	\$ 7,112.16
Estimated Pole Attachment Calculation				
Fixtures on metal/decorative poles - 0				
Fixtures on wood poles (Utility Owned under Service Classification 3) - 79 Street Lighting Fixtures				
Total Street Lighting Fixtures = 79 (includes all accounts)				
Annual Tariff Pole Charge- = \$19.55				
Total Cost per month for one pole (\$19.55/12months) = (\$1.63)				
Total Cost per month (all street light fixtures) - (\$19.55/12months) = (\$1.63) x (79)=\$128.77				
Total Annual Pole Fee (\$128.77 monthly cost x 12months) = (\$1,545.24)				

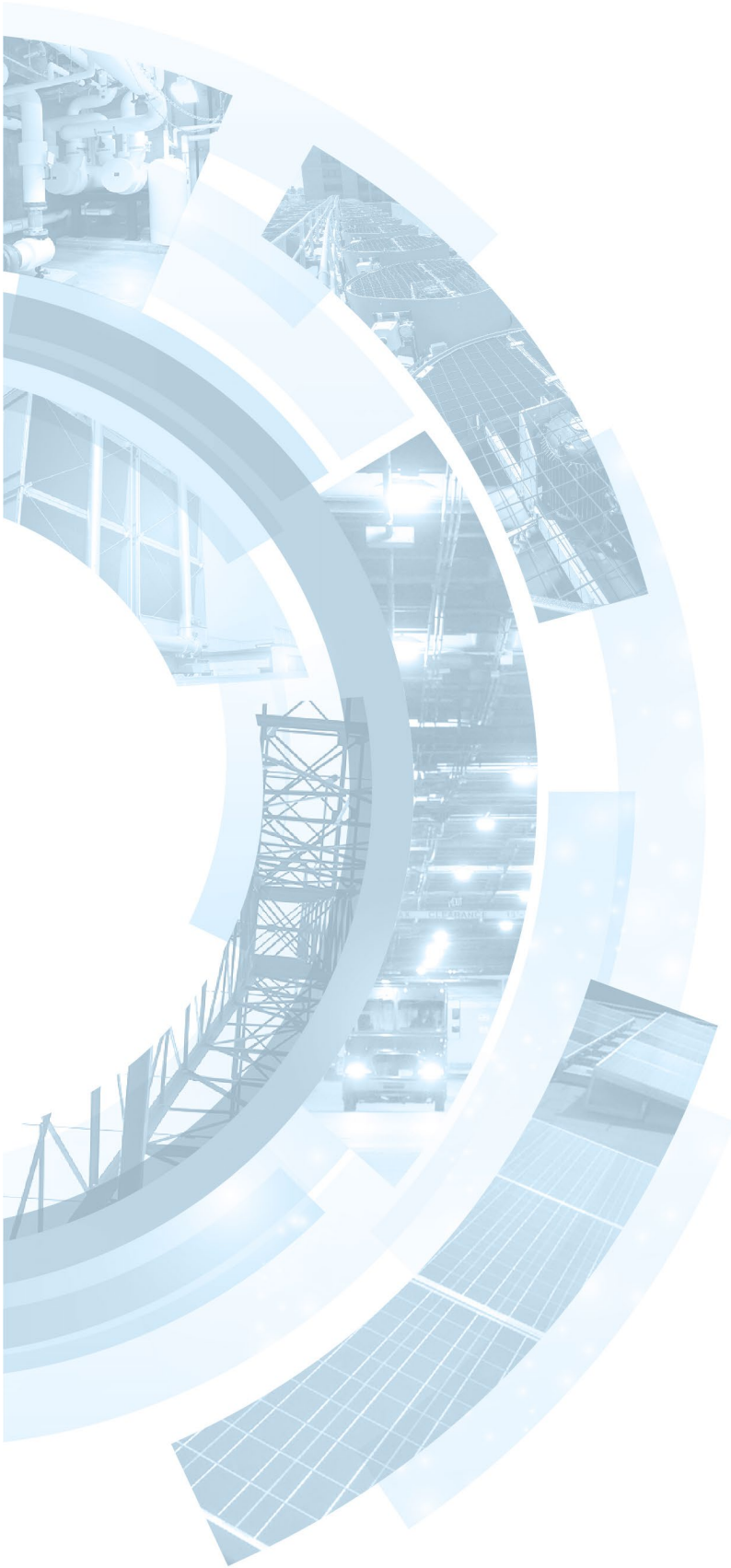
Town of Ulysses

Town of Ulysses - Ownership Savings				
Equipment Type	Quantity	Monthly Equipment Charge per Quantity	Total Monthly Charge	Total Yearly Charge
NYSEG Account #: 1001-3629-489 - Tarrif 121 - SC03				
150W HPS cobra head light	1	\$ 8.15	\$ 8.15	\$ 97.80
NYSEG Account #: 1001-3629-471 - Tarrif 121 - SC03				
150W HPS cobra head light	5	\$ 8.15	\$ 40.75	\$ 489.00
250W HPS cobra head light	4	\$ 8.15	\$ 32.60	\$ 391.20
Standard pole	1	\$ 12.26	\$ 12.26	\$ 147.12
Standard bracket 16' and over	2	\$ 2.89	\$ 5.78	\$ 69.36
Sub Total:			\$ 99.54	\$ 1,194.48
Estimated Pole Attachment Fee:			\$ (286.88)	\$ (3,442.56)
Grand Total:			\$ (187.34)	\$ (2,248.08)
Estimated Pole Attachment Calculation				
Fixtures on metal/decorative poles - 0				
Fixtures on wood poles (Utility Owned under Service Classification 3) - 10 Street Lighting Fixtures				
Total Street Lighting Fixtures = 10 (includes all accounts)				
Annual Tariff Pole Charge- = \$19.55				
Total Cost per month for one pole (\$19.55/12months) = (\$1.63)				
Total Cost per month (all street light fixtures) - (\$19.55/12months) = (\$1.63) x (10)= \$16.30				
Total Annual Pole Fee (\$16.30 monthly cost x 12months) = (\$195.60)				

J – Appendix



J.1 – Energy Measurement Calculations



Energy Savings Calculation

The following tables below are a summary of the existing and proposed energy baselines used to calculate the savings for this project scope. These tables are referenced from the values in Section C and D's fixture tables. The first table shows the existing and proposed energy usage, the energy reduction when converting to LED in both kW and kWh. The second table shows the energy cost for the year for both the existing and proposed and the total savings per year when converting to LED. The tables on the following two pages represent a more in depth detail of the tables from Section C and D and included a detailed break down of the energy usage in kW and kWh s using the billable wattages and yearly burn hours per fixture.

Municipality - Tariff Rate Class	Existing System Energy Cost (\$)	Proposed System Energy Cost (\$)	Demand Savings (\$)	Energy Savings (\$)
Trumansburg - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	\$ 6,331.27	\$ 2,172.17	\$ -	\$ 4,159.10
Freeville - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	\$ 2,783.85	\$ 1,244.85	\$ -	\$ 1,539.00
Ithaca - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	\$ 17,561.15	\$ 4,300.57	\$ -	\$ 13,260.59
Newfield - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	\$ 4,962.62	\$ 1,876.63	\$ -	\$ 3,085.99
Caroline - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	\$ 3,348.94	\$ 1,426.05	\$ -	\$ 1,922.88
Ulysses - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	\$ 792.95	\$ 204.17	\$ -	\$ 588.77
Grand Total:	\$ 35,780.78	\$ 11,224.45	\$ -	\$ 24,556.33

Energy Savings Calculation

The following tables below are a summary of the existing and proposed energy baselines used to calculate the savings for this project scope. These tables are referenced from the values in Section C and D's fixture tables. The first table shows the existing and proposed energy usage, the energy reduction when converting to LED in both kW and kWh. The second table shows the energy cost for the year for both the existing and proposed and the total savings per year when converting to LED. The tables on the following two pages represent a more in depth detail of the tables from Section C and D and included a detailed break down of the energy usage in kW and kWh s using the billable wattages and yearly burn hours per fixture.

Municipality - Tariff Rate Class	Existing System Energy Usage (kWh)	Proposed System Energy Usage (kWh)	Power Reduction (kW)	Energy Saved (kWh)
Trumansburg - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	128,658	39,117	21.75	89,541
Freeville - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	29,822	13,067	4.07	16,755
Ithaca - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	231,861	53,590	43.28	178,271
Newfield - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	78,164	30,186	11.66	47,978
Caroline - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	42,537	20,758	5.30	21,779
Ulysses - PSC No.121 SC3 Existing/SC4 Proposed Tariff Rates	10,691	2,564	1.97	8,127
Grand Total:	158,480	52,184	25.82	106,296

Village of Trumansburg

The table below references the table in Section C for each individual existing street lighting fixture found within the village.

Existing Street Light Fixture Inventory Village of Trumansburg					
Lamp Description and Fixture Type	NYSEG Tariff LED Billable Wattages (W)	Baseline Fixture Qty	Pre kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Baseline Energy Use kWh
100W High Pressure Sodium Cobra Head	117	102	11.93	4,123	49,204
150W High Pressure Sodium Cobra Head	171	6	1.03	4,123	4,230
175W Mercury Vapor Cobra Head	210	21	4.41	4,123	18,182
250W High Pressure Sodium Cobra Head	313	21	6.57	4,123	27,100
250W Mercury Vapor Cobra Head	292	4	1.17	4,123	4,816
400W High Pressure Sodium Cobra Head	486	1	0.49	4,123	2,004
400W Mercury Vapor Cobra Head	460	1	0.46	4,123	1,897
100W High Pressure Sodium Flood Light	117	1	0.12	4,123	482
100W High Pressure Sodium Pendant Mounted Deco	117	43	5.03	4,123	20,743
Grand Total:		200			128,658

The table below references the table in Section D for each individual proposed street lighting fixture within this project scope. The table below reflects a different burn hour total for the proposed due to the burn hour total accounting for 2020 being a leap year.

Proposed Street Light Fixture Registry Village of Trumansburg					
Lamp Description, Fixture Type & Fixture Wattage	NYSEG Tariff LED Billable Wattages (W)	Proposed Fixture Qty	Post kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Proposed Energy Use kWh
A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	99	3.96	4,135	16,375
A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	1	0.06	4,135	248
A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60	3	0.18	4,135	744
B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	14	0.84	4,135	3,473
B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	24	1.44	4,135	5,954
B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	1	0.08	4,135	331
B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	13	1.04	4,135	4,300
B5 - Philips - RFM-100W60LED3K-G2-R3M-UNV-DMG-RCD7	80	1	0.08	4,135	331
D1 - Spring City - ALMCLU-LE080C-VX-X2-30-CR3-YLC3	40	43	1.72	4,135	7,112
E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	60	1	0.06	4,135	248
Grand Total:		200			39,117

Village of Freeville

The table below references the table in Section C for each individual existing street lighting fixture found within the village.

Existing Street Light Fixture Inventory Village of Freeville					
Lamp Description and Fixture Type	NYSEG Tariff LED Billable Wattages (W)	Baseline Fixture Qty	Pre kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Baseline Energy Use kWh
70W High Pressure Sodium Cobra Head	83	27	2.24	4,123	9,240
100W High Pressure Sodium Cobra Head	117	29	3.39	4,123	13,989
150W High Pressure Sodium Cobra Head	171	3	0.51	4,123	2,115
250W High Pressure Sodium Cobra Head	313	1	0.31	4,123	1,290
400W Mercury Vapor Cobra Head	460	1	0.46	4,123	1,897
250W High Pressure Sodium Flood Light	313	1	0.31	4,123	1,290
Grand Total:		62			29,822

The table below references the table in Section D for each individual proposed street lighting fixture within this project scope. The table below reflects a different burn hour total for the proposed due to the burn hour total accounting for 2020 being a leap year.

Proposed Street Light Fixture Registry Village of Freeville					
Lamp Description, Fixture Type & Fixture Wattage	NYSEG Tariff LED Billable Wattages (W)	Proposed Fixture Qty	Post kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Proposed Energy Use kWh
A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	30	1.20	4,135	4,962
B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	30	1.80	4,135	7,443
B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	1	0.08	4,135	331
E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80	1	0.08	4,135	331
Grand Total:		62			13,067

Town of Ithaca

The table below references the table in Section C for each individual existing street lighting fixture found within the town.

Existing Street Light Fixture Inventory Town of Ithaca					
Lamp Description and Fixture Type	NYSEG Tariff LED Billable Wattages (W)	Baseline Fixture Qty	Pre kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Baseline Energy Use kWh
70W High Pressure Sodium Cobra Head	83	11	0.91	4,123	3,764
100W High Pressure Sodium Cobra Head	117	64	7.49	4,123	30,873
100W Mercury Vapor Cobra Head	127	25	3.18	4,123	13,091
150W High Pressure Sodium Cobra Head	171	55	9.41	4,123	38,777
175W Mercury Vapor Cobra Head	210	50	10.50	4,123	43,292
250W High Pressure Sodium Cobra Head	313	29	9.08	4,123	37,424
250W Mercury Vapor Cobra Head	292	3	0.88	4,123	3,612
400W High Pressure Sodium Cobra Head	486	1	0.49	4,123	2,004
400W Mercury Vapor Cobra Head	460	27	12.42	4,123	51,208
400W Metal Halide Cobra Head	486	1	0.49	4,123	2,004
250W High Pressure Sodium Flood Light	313	1	0.31	4,123	1,290
250W Mercury Vapor Flood Light	292	2	0.58	4,123	2,408
150W High Pressure Sodium Post Top Deco	171	3	0.51	4,123	2,115
Grand Total:		272			231,861

The table below references the table in Section D for each individual proposed street lighting fixture within this project scope. The table below reflects a different burn hour total for the proposed due to the burn hour total accounting for 2020 being a leap year.

Proposed Street Light Fixture Registry Town of Ithaca					
Lamp Description, Fixture Type & Fixture Wattage	NYSEG Tariff LED Billable Wattages (W)	Proposed Fixture Qty	Post kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Proposed Energy Use kWh
A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	174	6.96	4,135	28,780
A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	2	0.12	4,135	496
A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60	1	0.06	4,135	248
B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	6	0.36	4,135	1,489
B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	80	4.80	4,135	19,848
B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	3	0.24	4,135	992
C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	3	0.18	4,135	744
E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80	3	0.24	4,135	992
Grand Total:		272			53,590

Town of Newfield

The table below references the table in Section C for each individual existing street lighting fixture found within the town.

Existing Street Light Fixture Inventory Town of Newfield					
Lamp Description and Fixture Type	NYSEG Tariff LED Billable Wattages (W)	Baseline Fixture Qty	Pre kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Baseline Energy Use kWh
70W High Pressure Sodium Cobra Head	83	57	4.73	4,123	19,506
100W High Pressure Sodium Cobra Head	117	12	1.40	4,123	5,789
100W Mercury Vapor Cobra Head	127	12	1.52	4,123	6,283
150W High Pressure Sodium Cobra Head	171	18	3.08	4,123	12,691
175W Mercury Vapor Cobra Head	210	4	0.84	4,123	3,463
250W High Pressure Sodium Cobra Head	313	9	2.82	4,123	11,614
250W Mercury Vapor Cobra Head	292	3	0.88	4,123	3,612
400W Mercury Vapor Cobra Head	460	1	0.46	4,123	1,897
400W Metal Halide Cobra Head	486	2	0.97	4,123	4,008
400W High Pressure Sodium Flood Light	486	1	0.49	4,123	2,004
70W High Pressure Sodium Post Top Deco	83	3	0.25	4,123	1,027
100W High Pressure Sodium Post Top Deco	117	13	1.52	4,123	6,271
Grand Total:		135			78,164

The table below references the table in Section D for each individual proposed street lighting fixture within this project scope. The table below reflects a different burn hour total for the proposed due to the burn hour total accounting for 2020 being a leap year.

Proposed Street Light Fixture Registry Town of Newfield					
Lamp Description, Fixture Type & Fixture Wattage	NYSEG Tariff LED Billable Wattages (W)	Proposed Fixture Qty	Post kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Proposed Energy Use kWh
A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	44	1.76	4,135	7,278
A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	8	0.48	4,135	1,985
B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	29	1.74	4,135	7,195
B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	37	2.22	4,135	9,180
C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	17	1.02	4,135	4,218
E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80	1	0.08	4,135	331
Grand Total:		136			30,186

Town of Caroline

The table below references the table in Section C for each individual existing street lighting fixture found within the town.

Existing Street Light Fixture Inventory Town of Caroline					
Lamp Description and Fixture Type	NYSEG Tariff LED Billable Wattages (W)	Baseline Fixture Qty	Pre kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Baseline Energy Use kWh
100W High Pressure Sodium Cobra Head	117	64	7.49	4,123	30,873
150W High Pressure Sodium Cobra Head	171	9	1.54	4,123	6,345
250W High Pressure Sodium Cobra Head	313	3	0.94	4,123	3,871
100W High Pressure Sodium Flood Light	117	3	0.35	4,123	1,447
Grand Total:		79			42,537

The table below references the table in Section D for each individual proposed street lighting fixture within this project scope. The table below reflects a different burn hour total for the proposed due to the burn hour total accounting for 2020 being a leap year.

Proposed Street Light Fixture Registry Town of Caroline					
Lamp Description, Fixture Type & Fixture Wattage	NYSEG Tariff LED Billable Wattages (W)	Proposed Fixture Qty	Post kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Proposed Energy Use kWh
A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	15	0.60	4,135	2,481
A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60	2	0.12	4,135	496
B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	1	0.06	4,135	248
B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	29	1.74	4,135	7,195
B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	29	2.32	4,135	9,593
E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	60	3	0.18	4,135	744
Grand Total:		79			20,758

Town of Ulysses

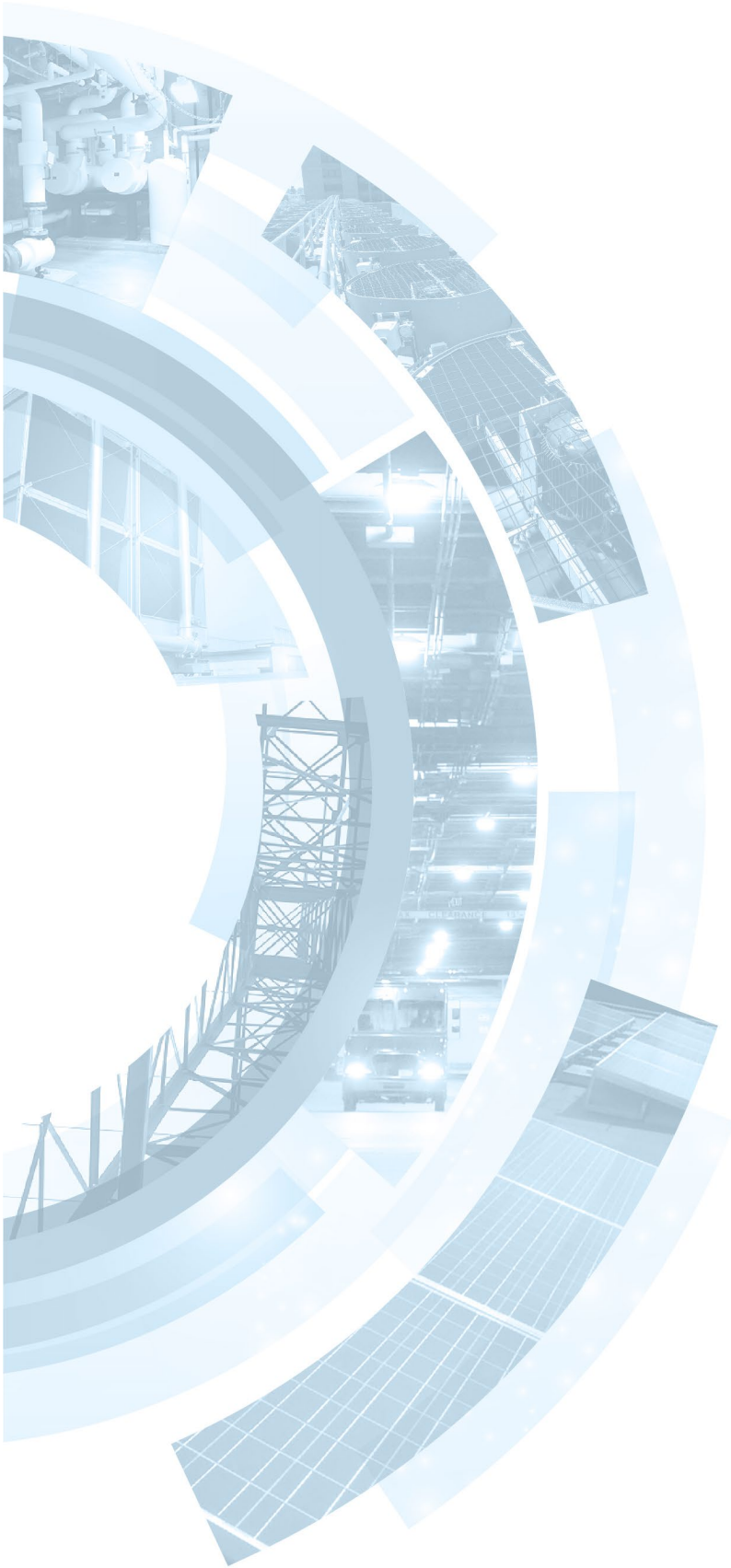
The table below references the table in Section C for each individual existing street lighting fixture found within the town.

Existing Street Light Fixture Inventory Town of Ulysses					
Lamp Description and Fixture Type	NYSEG Tariff LED Billable Wattages (W)	Baseline Fixture Qty	Pre kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Baseline Energy Use kWh
150W High Pressure Sodium Cobra Head	171	5	0.86	4,123	3,525
250W High Pressure Sodium Cobra Head	313	3	0.94	4,123	3,871
400W High Pressure Sodium Cobra Head	486	1	0.49	4,123	2,004
250W High Pressure Sodium Flood Light	313	1	0.31	4,123	1,290
Grand Total:		10			10,691

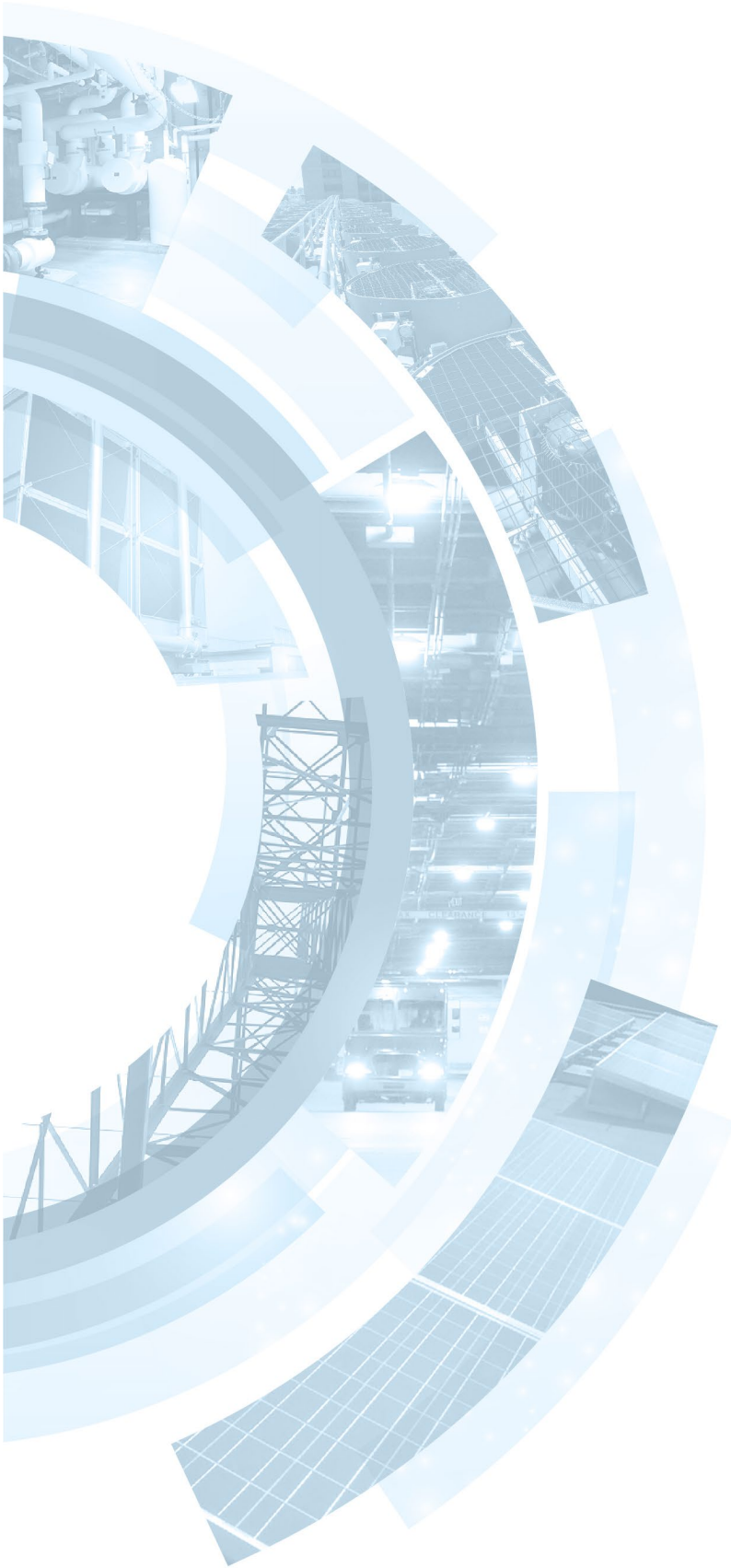
The table below references the table in Section D for each individual proposed street lighting fixture within this project scope. The table below reflects a different burn hour total for the proposed due to the burn hour total accounting for 2020 being a leap year.

Proposed Street Light Fixture Registry Town of Ulysses					
Lamp Description, Fixture Type & Fixture Wattage	NYSEG Tariff LED Billable Wattages (W)	Proposed Fixture Qty	Post kW (Billable Wattages) x (Baseline Fixture Qty)/1,000	Annual Burn Hrs	Proposed Energy Use kWh
B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	9	0.54	4,135	2,233
E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80	1	0.08	4,135	331
Grand Total:		10			2,564

J.2 – Photometric Analysis



J.2a – Proposed Photometrics



Section J.2a - 2b. (Winners Circle - Town of Ithaca)

Calculation Summary

Project	County of Tompkins Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	06/28/2020
Calculation Technician	LD
Calculation Scope	Winner Circle (Town of Ithaca)

Introduction:

Below is the basis of design document and photometric analysis utilizing AGI 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- TRA30-AC-24NB-55-3K-UNV-DIR3

Roadway Conditions – Winners Circle:

- ~26' curb to curb distance.
- Existing fixtures are 150W HPS HID.
- Roadway classification is a local with low pedestrian conflict.
- Fixtures are Post Top Decorative mounted on existing metal posts ~16' above roadway surface.
- There is no parking on either side of the roadway.
- There are two 13' drive lanes (opposite directions).
- Traffic lanes have no separation.
- Poles setback are 2' from the curb.
- There are no sidewalks on either side of the roadway.
- Fixtures are on one side of the street and spaced approximately 200' apart.

Assumptions:

- All fixtures in this calculation have a type 3M distribution.
- Calculation considers a light loss factor (LLF) value of .92.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

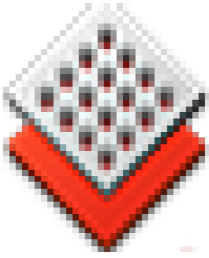
Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 55W LED Post Top Decorative for Winners Circle with spacing of 100' that reflect spacing that would provide the correct amount of luminance, the L avg meets the 0.3 required with values of 0.99/0.35 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was within the value to 6.0 required with values of 1.74/3.18; The Max Uniformity Ratio (L max/L min) passed the 10.0 threshold with values of 3.56/7.00; The Max. Veiling Luminance Ratio (LV max/L avg) was failed exceeding the threshold to 0.4 with values calculated at 0.74/0.54. The Veiling Luminance Ratio are affected by the following three variables:
 - Fixture vertical illuminance – Decreasing lumens decreases LV. Current fixture lumens package can't decrease as values of other design criteria are at minimum levels.
 - Mounting Height – Increasing mounting height decreases LV. This project is a head for head replacement on existing poles; project economics cannot support pole replacement.
 - Spacing between poles – Increasing spacing decreases LV. This project is a head for head replacement on existing poles; poles spacing can't be changed.

Although the fixture doesn't pass the Max. Veiling Luminance Ratio, the ratio is below 1 therefore the maximum veiling luminance directed at the drivers is less than the average luminance of the roadway. Guth DeConzo recommends proceeding with the installation, noting the failure and informing the municipality that mild glare could be an issue. All passing values are highlighted green on the layout comparison sheet and all failing values are highlighted red on the layout comparison sheet.



Roadway Optimizer - Layout 1

General:

Winner Circle (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 13 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

TRA30-AC-24NB-55-3K-UNV-DIR3

Description: TRA30-AC-24NB-55-3K-UNV-DIR3

File Name: TRA30-AC-24NB-55-3K-UNV-DIR3 (1).ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 4800

Luminaire Watts: 57

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.920

Luminaire Arrangement: SINGLE

Arm Length: 0 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 100

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
TRA30-AC-24NB-55-3K...	-200	30	16	270	0	0
TRA30-AC-24NB-55-3K...	-100	30	16	270	0	0
TRA30-AC-24NB-55-3K...	0	30	16	270	0	0
TRA30-AC-24NB-55-3K...	100	30	16	270	0	0
TRA30-AC-24NB-55-3K...	200	30	16	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

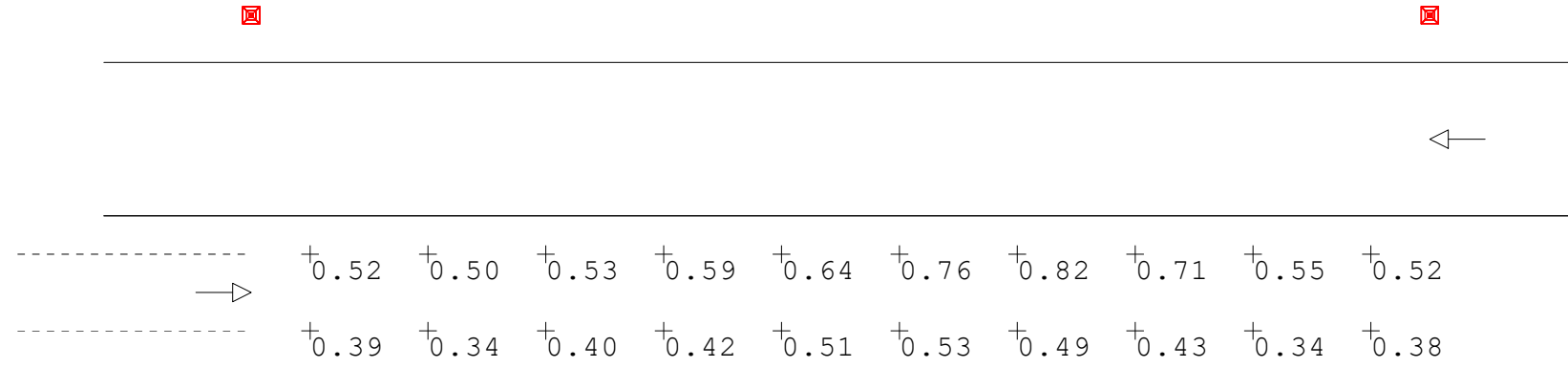
Coordinates in ft

TRA30-AC-24NB-55-3K...	300	30	16	270	0	0
TRA30-AC-24NB-55-3K...	400	30	16	270	0	0

Total Number of locations: 7

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.52

Maximum = 0.82

Minimum = 0.34

Avg/Min Ratio = 1.53

$$\text{Max/Min Ratio} = 2.41$$
$$\text{Max/Avg Ratio} = 1.58$$

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.9

Maximum = 1.51

Minimum = 0.63

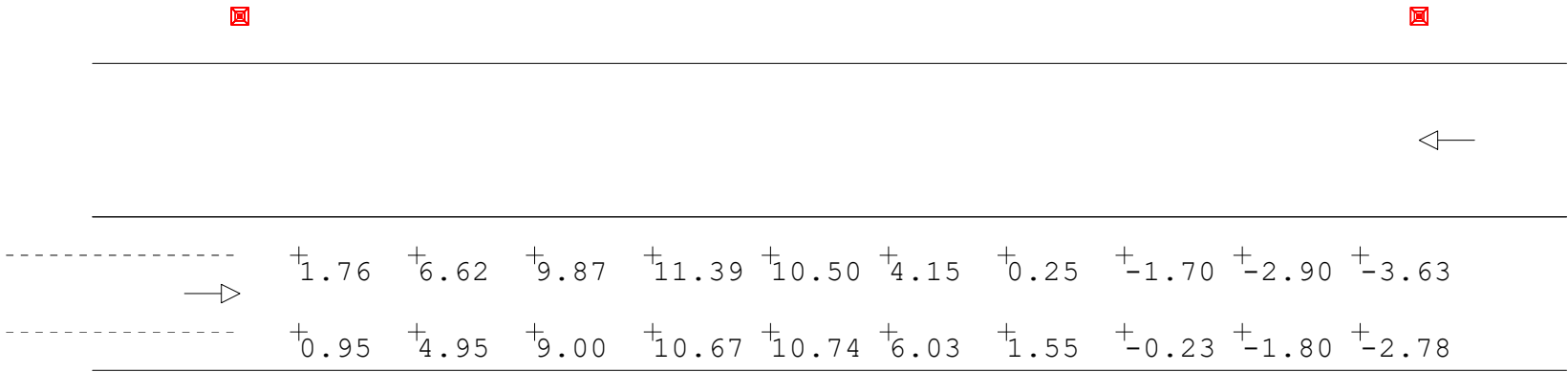
Avg/Min Ratio = 1.43

Max/Min Ratio = 2.4

Max/Avg Ratio = 1.68

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

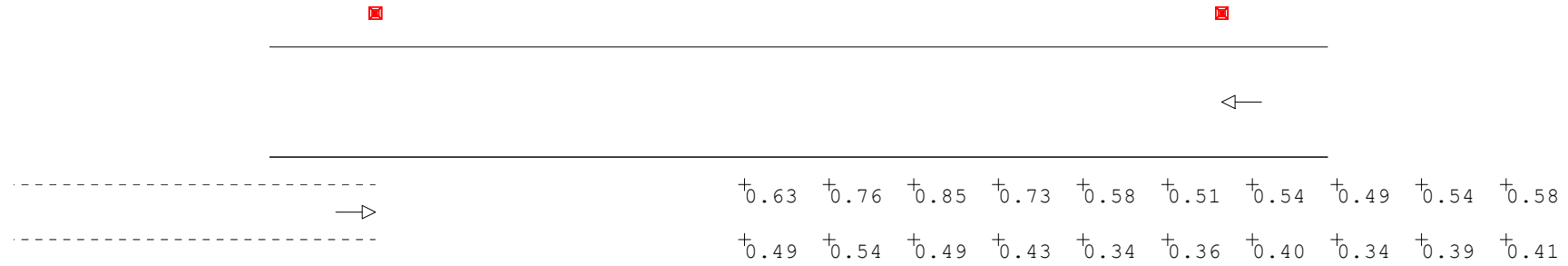


Visibility Level

STV = 3.661134

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.52

Maximum = 0.85

Minimum = 0.34

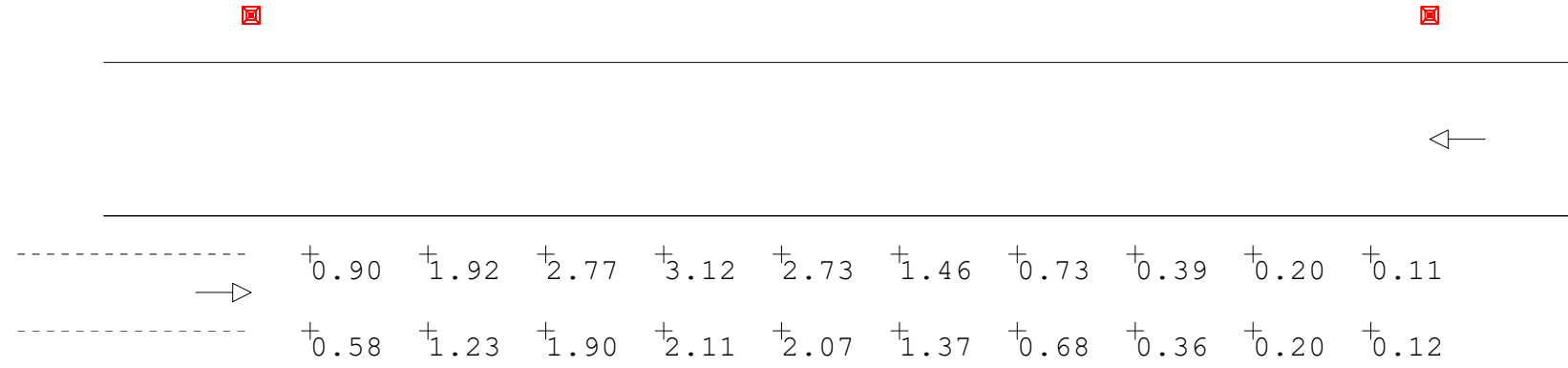
Avg/Min Ratio = 1.53

Max/Min Ratio = 2.5

Max/Avg Ratio = 1.63

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 1.25

Maximum = 3.12

Minimum = 0.11

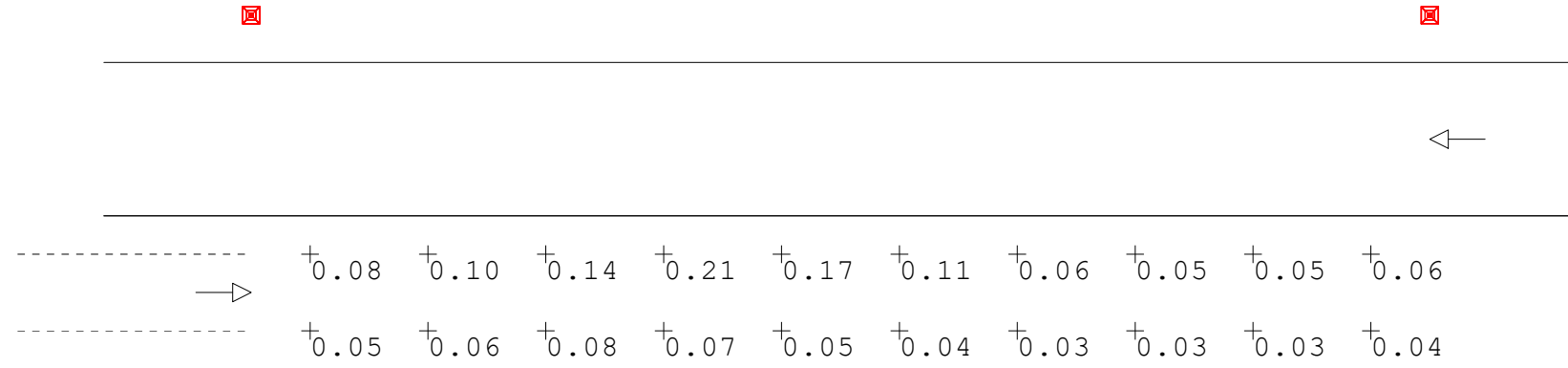
Avg/Min Ratio = 11.36

Max/Min Ratio = 28.36

Max/Avg Ratio = 2.5

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

```
Average = 0.08
Maximum = 0.21
Minimum = 0.03
Avg/Min Ratio = 2.67
Max/Min Ratio = 7
Max/Avg Ratio = 2.63
MaxLv Ratio = 0.40
Threshold Increment (TI) = 23.03
```




Roadway Optimizer - Layout 2

General:

Winner Circle (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 13 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

TRA30-AC-24NB-55-3K-UNV-DIR3

Description: TRA30-AC-24NB-55-3K-UNV-DIR3

File Name: TRA30-AC-24NB-55-3K-UNV-DIR3 (1).ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 4800

Luminaire Watts: 57

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.920

Luminaire Arrangement: SINGLE

Arm Length: 0 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 150

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
TRA30-AC-24NB-55-3K...	450	30	16	270	0	0
TRA30-AC-24NB-55-3K...	300	30	16	270	0	0
TRA30-AC-24NB-55-3K...	150	30	16	270	0	0
TRA30-AC-24NB-55-3K...	0	30	16	270	0	0
TRA30-AC-24NB-55-3K...	-150	30	16	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

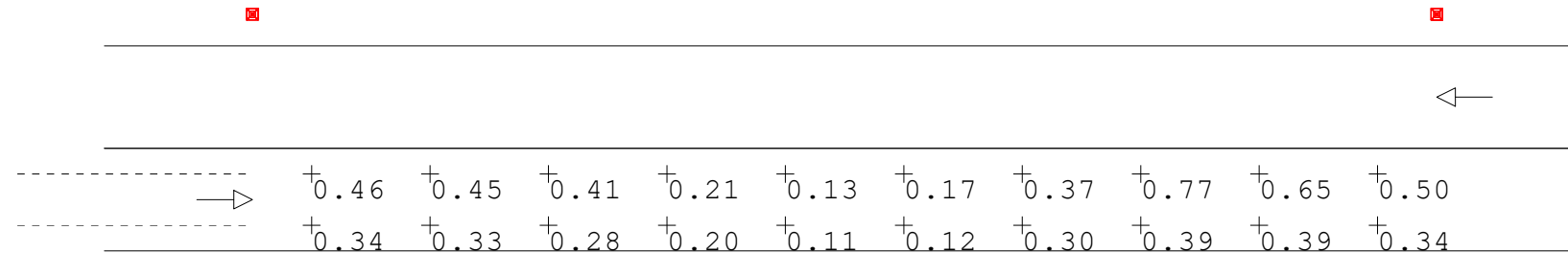
Coordinates in ft

TRA30-AC-24NB-55-3K...	-300	30	16	270	0	0
------------------------	------	----	----	-----	---	---

Total Number of locations: 6

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.35

Maximum = 0.77

Minimum = 0.11

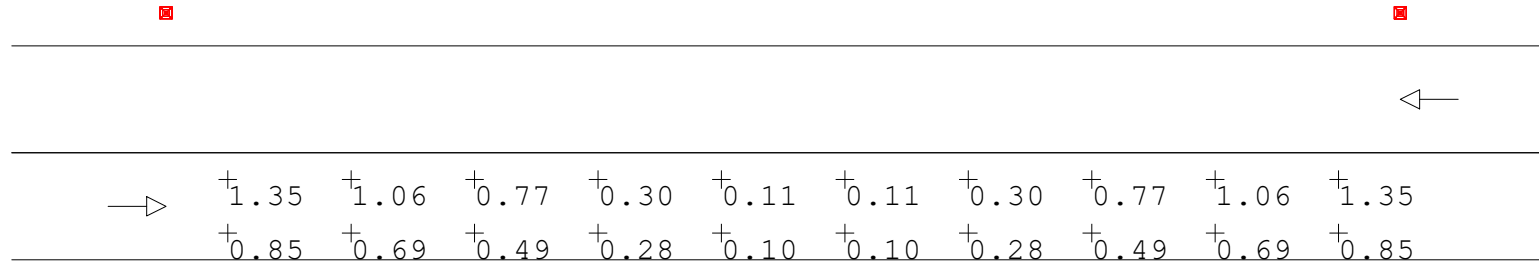
Avg/Min Ratio = 3.18

Max/Min Ratio = 7

Max/Avg Ratio = 2.2

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.6

Maximum = 1.35

Minimum = 0.10

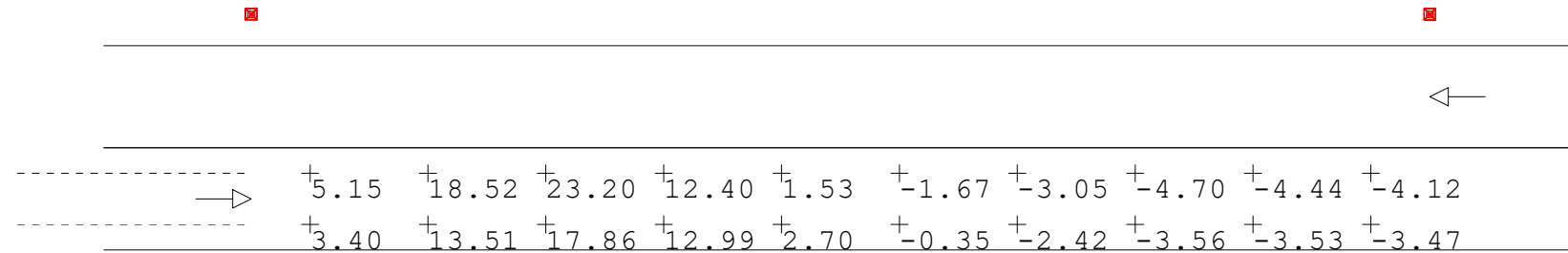
Avg/Min Ratio = 6

Max/Min Ratio = 13.5

Max/Avg Ratio = 2.25

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

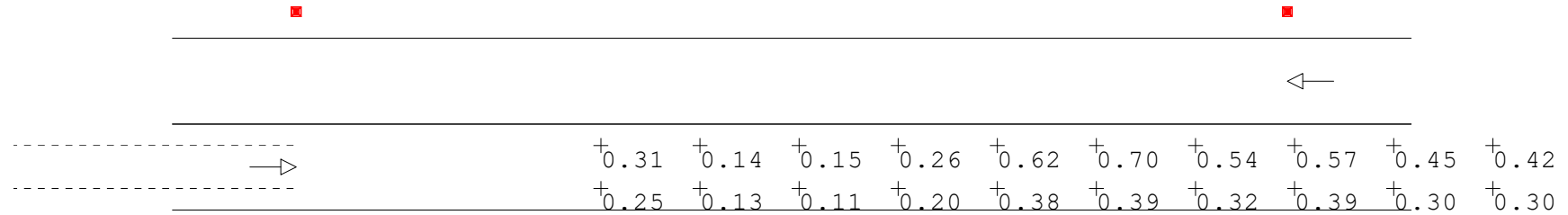


Visibility Level

STV = 4.38772

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.35

Maximum = 0.70

Minimum = 0.11

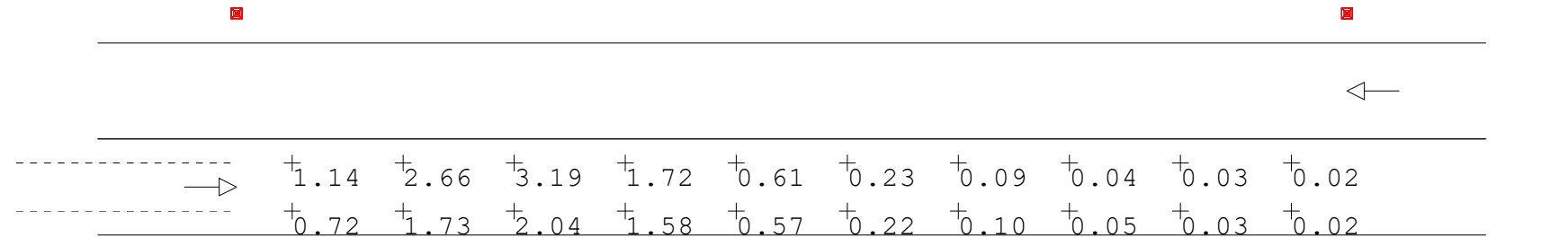
Avg/Min Ratio = 3.18

Max/Min Ratio = 6.36

Max/Avg Ratio = 2

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum

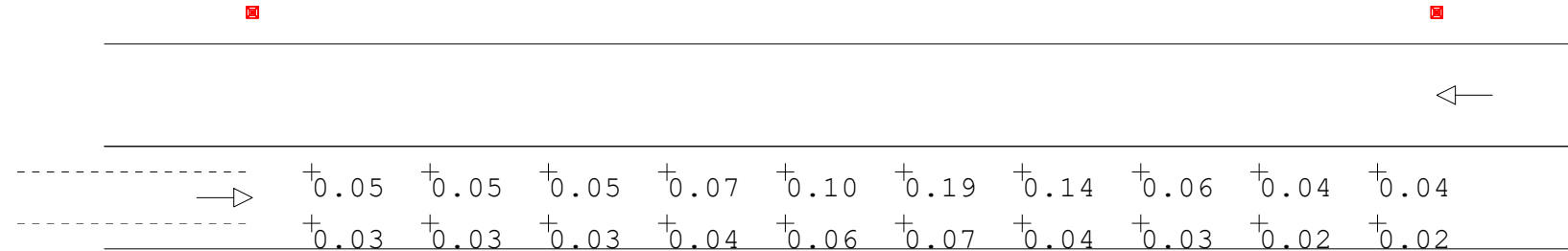


Target Luminance (Cd/SqM)

Average = 0.84
Maximum = 3.19
Minimum = 0.02
Avg/Min Ratio = 42
Max/Min Ratio = 159.5
Max/Avg Ratio = 3.8

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.06

Maximum = 0.19

Minimum = 0.02

Avg/Min Ratio = 3

Max/Min Ratio = 9.5

Max/Avg Ratio = 3.17

MaxLv Ratio = 0.54

Threshold Increment (TI) = 28.60

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	Winner Circle (Top)	Winner Circle (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	13	13
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Bottom	Bottom
Label - Row 1	TRA30-AC-24NB -55-3K-UNV-DIR3	TRA30-AC-24NB -55-3K-UNV-DIR3
S/P Ratio 1	1	1
MH - Row 1	16	16
Setback - Row 1	4	4
+Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	100	150
1_Luminance (Cd/SqM)		
Average	0.99	0.35
Maximum	2.03	0.77
Minimum	0.57	0.11
Avg/Min Ratio	1.74	3.18
Max/Min Ratio	3.56	7.00
Max/Avg Ratio	2.05	2.20
1_Illum (Fc)		
Average	1.29	0.60
Maximum	2.18	1.35
Minimum	0.74	0.10
Avg/Min Ratio	1.74	6.00

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Min Ratio	2.95	13.50
Max/Avg Ratio	1.69	2.25
1_Vis_Level		
STV	3.79	4.39
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	0.99	0.35
Maximum	2.03	0.70
Minimum	0.59	0.11
Avg/Min Ratio	1.68	3.18
Max/Min Ratio	3.44	6.36
Max/Avg Ratio	2.05	2.00
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	1.58	0.84
Maximum	3.57	3.19
Minimum	0.07	0.02
Avg/Min Ratio	22.57	42.00
Max/Min Ratio	51.00	159.50
Max/Avg Ratio	2.26	3.80
1_Veil_Lum (Cd/SqM)		
Average	0.26	0.06
Maximum	0.73	0.19
Minimum	0.08	0.02
Avg/Min Ratio	3.25	3.00
Max/Min Ratio	9.13	9.50
Max/Avg Ratio	2.81	3.17
MaxLV Ratio	0.74	0.54
Threshold Incr. (TI)	47.83	28.6

Section J.2a - 3c. (Main St -Town of Newfield)

Calculation Summary

Project	County of Tompkins Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	06/28/2020
Calculation Technician	LD
Calculation Scope	Main Street (Town of Newfield)

Introduction:

Below is the basis of design document and photometric analysis utilizing AGi 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- Philips RFM-50W60LED3K-G2-R3M-UNIV

Roadway Conditions – Main Street:

- ~40' - 45' curb to curb distance.
- Existing fixtures are 70W, 100W, 150W HPS & 250W MRC HID.
- Roadway classification is a local with medium pedestrian conflict.
- Fixtures are Cobra Heads mounted on existing metal poles ~25' above roadway surface.
- Fixtures are mounted to 8'-12' arms.
- There are 8' parking shoulders on both sides of the roadway.
- There are two 12' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are 1.5' from the curb.
- There are sidewalks that run along both sides of the roadway.
- Fixtures are on one side of the roadway and spaced approximately 130'-150' apart.

Assumptions:

- All fixtures in this calculation have a type 3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .88* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .836 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-14. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 50W RFM LED Cobra Head for Main Street with spacing of approximately 140', the L avg meets the 0.5 required with values of 0.83/0.50 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was within the value to 6.0 required with values of 1.80/1.47; The Max Uniformity Ratio (L max/L min) passed the 10.0 threshold with values of 2.80/2.18; The Max. Veiling Luminance Ratio (LV max/L avg) was passed staying below 0.4 with values calculated at 0.25/0.34. All passing values are highlighted green on the layout comparison sheet and all failing values are highlighted red on the layout comparison sheet.
- The arm length was evaluated using a 12' arm which matches the existing.



Roadway Optimizer - Layout 1

General:

Main St. (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 20 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

rfm-50w60led3k-g2-r3m

Description: RFM-50W60LED3K-G2-R3M

File Name: rfm-50w60led3k-g2-r3m.ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 7684

Luminaire Watts: 52.3

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.836

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 140

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
rfm-50w60led3k-g2-r3m	420	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	280	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	140	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	0	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	-140	41.5	25	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

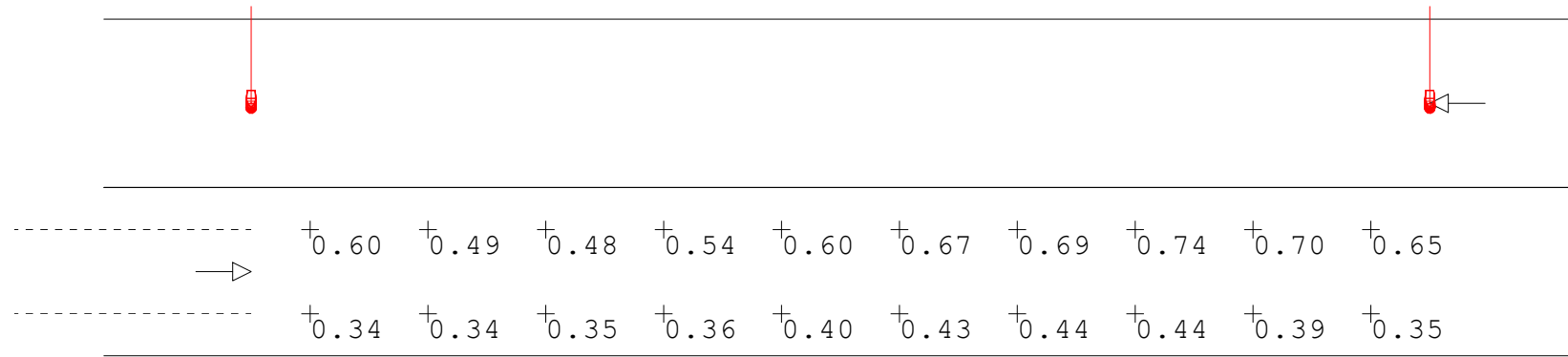
Coordinates in ft

rfm-50w60led3k-g2-r3m	-280	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	-420	41.5	25	270	0	0

Total Number of locations: 7

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance

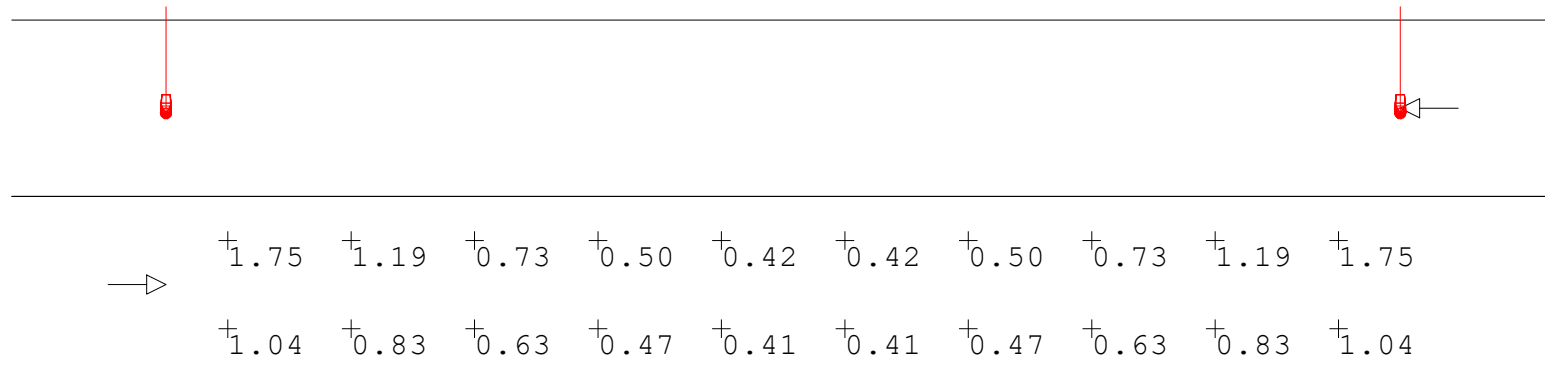


Luminance (Cd/SqM)

Average = 0.5
Maximum = 0.74
Minimum = 0.34
Avg/Min Ratio = 1.47
Max/Min Ratio = 2.18
Max/Avg Ratio = 1.48

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.8

Maximum = 1.75

Minimum = 0.41

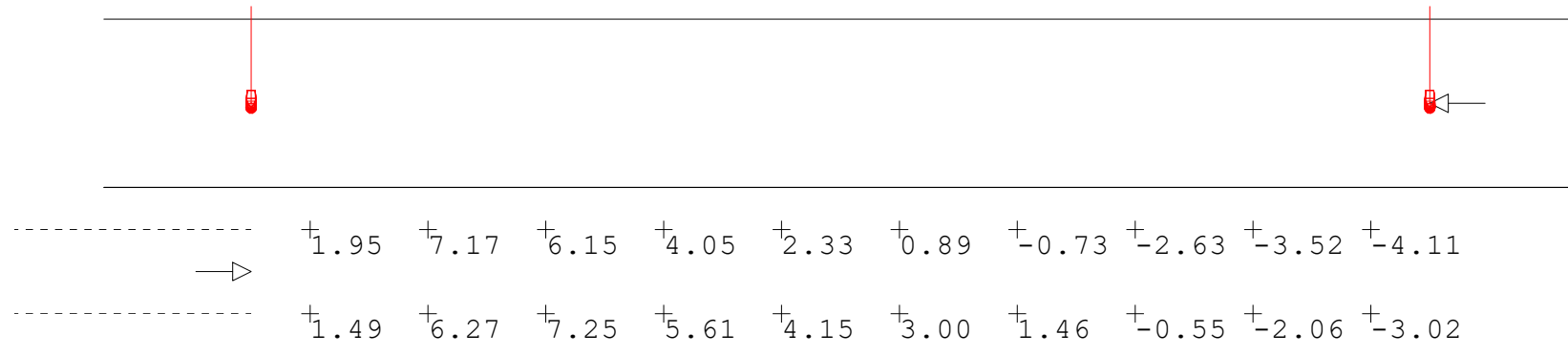
Avg/Min Ratio = 1.95

Max/Min Ratio = 4.27

Max/Avg Ratio = 2.19

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

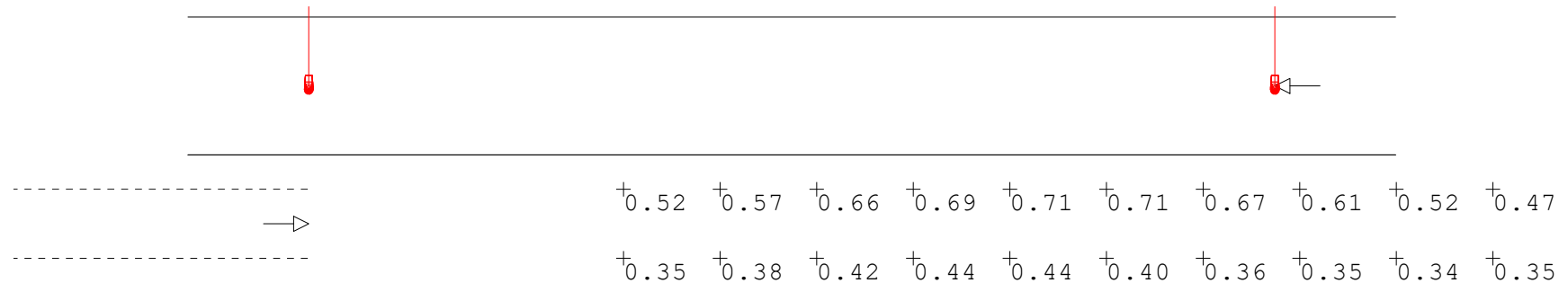


Visibility Level

STV = 2.966218

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.5

Maximum = 0.71

Minimum = 0.34

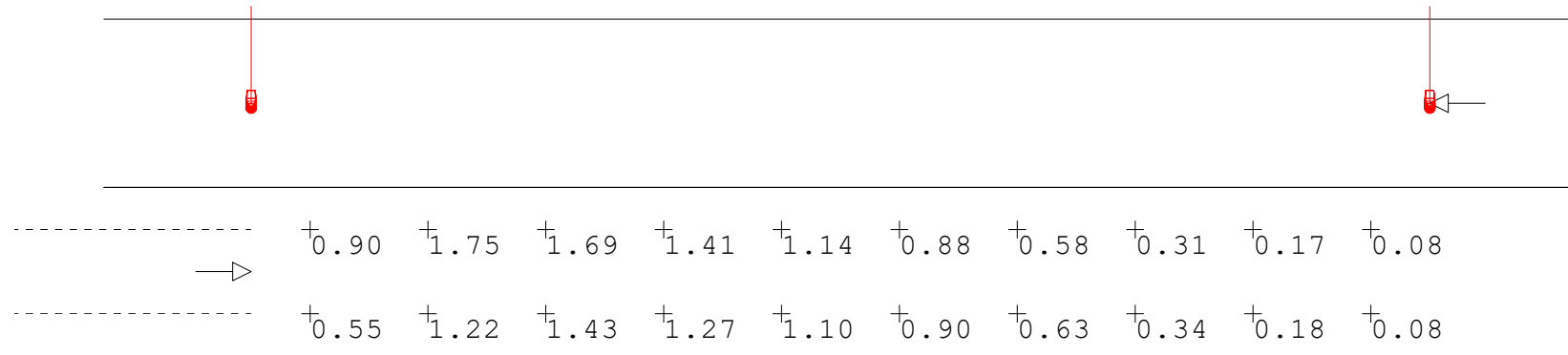
Avg/Min Ratio = 1.47

Max/Min Ratio = 2.09

Max/Avg Ratio = 1.42

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.83

Maximum = 1.75

Minimum = 0.08

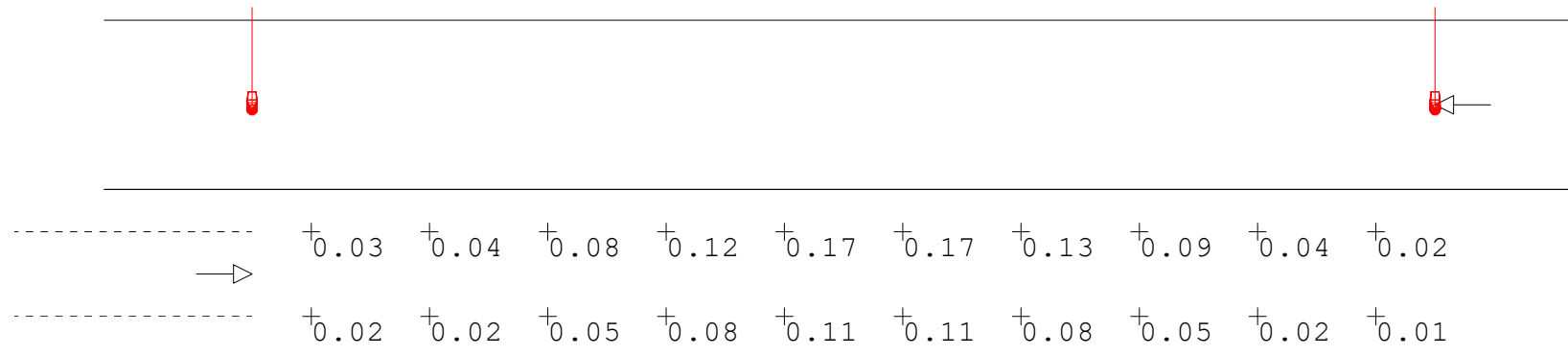
Avg/Min Ratio = 10.38

Max/Min Ratio = 21.88

Max/Avg Ratio = 2.11

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.07

Maximum = 0.17

Minimum = 0.01

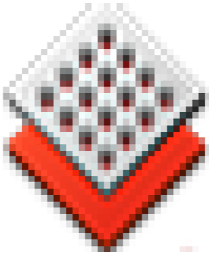
Avg/Min Ratio = 7

Max/Min Ratio = 17

Max/Avg Ratio = 2.43

MaxLv Ratio = 0.34

Threshold Increment (TI) = 19.24



Roadway Optimizer - Layout 2

General:

Main St. (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 20 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

rfm-50w60led3k-g2-r3m

Description: RFM-50W60LED3K-G2-R3M

File Name: rfm-50w60led3k-g2-r3m.ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 7684

Luminaire Watts: 52.3

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.836

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 140

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
rfm-50w60led3k-g2-r3m	-280	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	-140	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	0	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	140	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	280	41.5	25	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

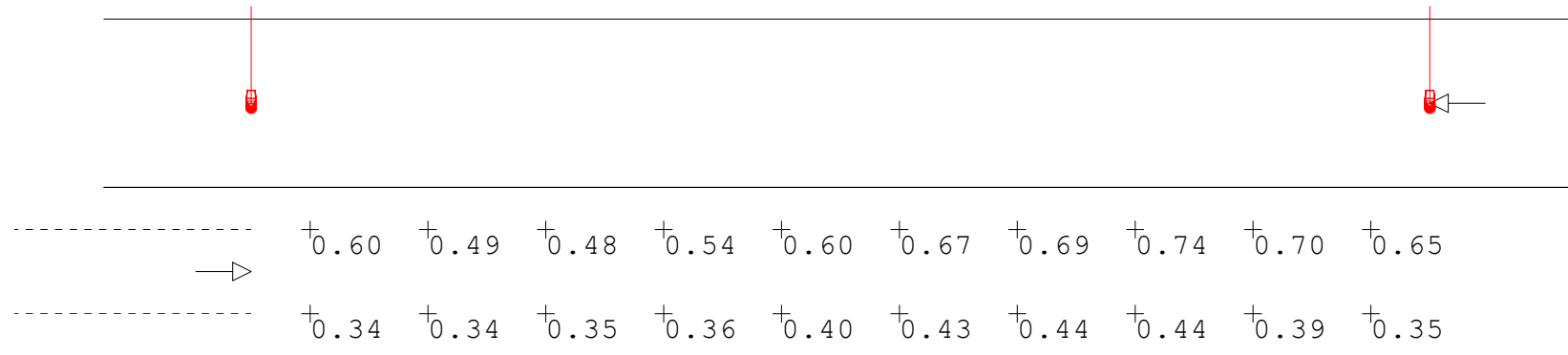
Coordinates in ft

rfm-50w60led3k-g2-r3m	420	41.5	25	270	0	0
rfm-50w60led3k-g2-r3m	560	41.5	25	270	0	0

Total Number of locations: 7

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance

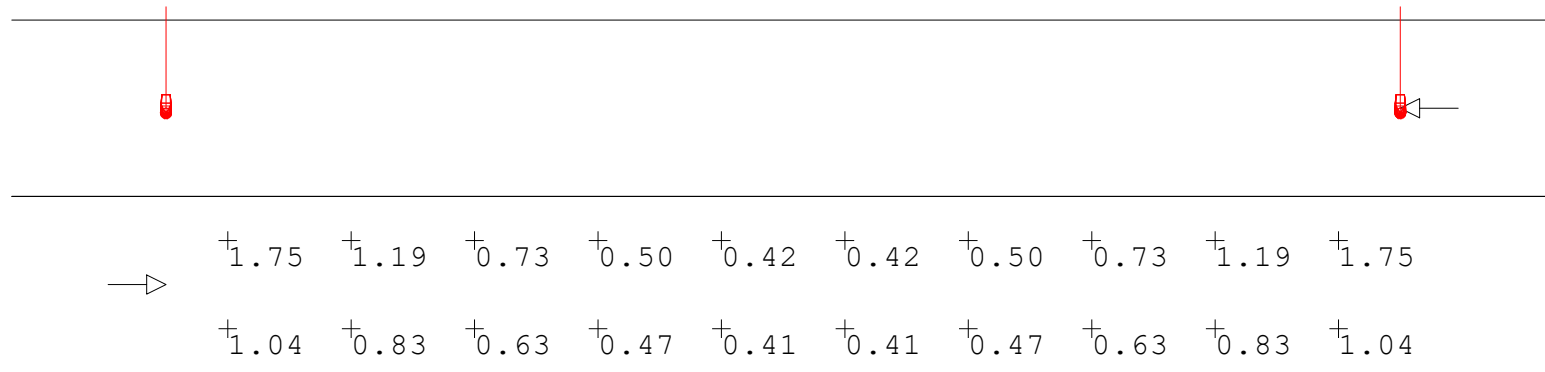


Luminance (Cd/SqM)

Average = 0.5
Maximum = 0.74
Minimum = 0.34
Avg/Min Ratio = 1.47
Max/Min Ratio = 2.18
Max/Avg Ratio = 1.48

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.8

Maximum = 1.75

Minimum = 0.41

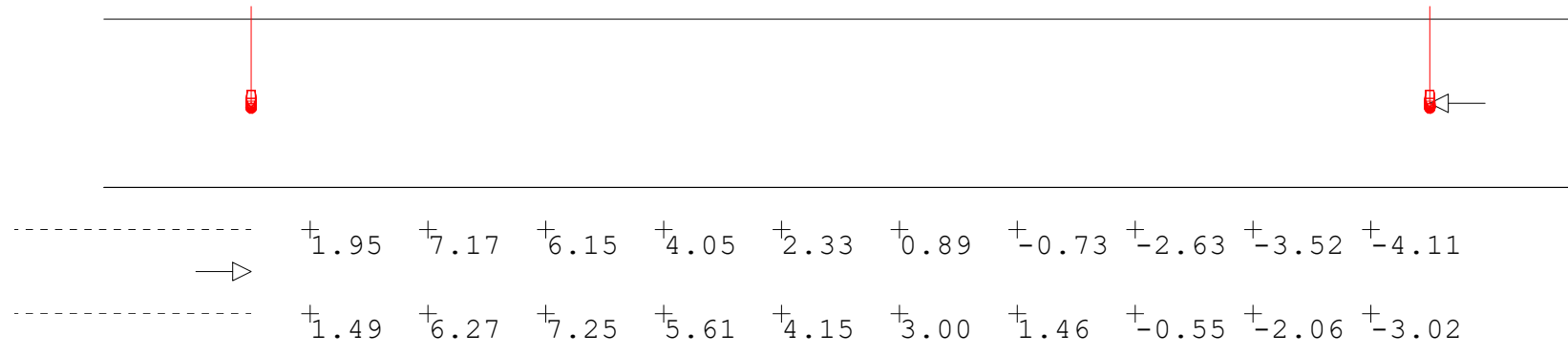
Avg/Min Ratio = 1.95

Max/Min Ratio = 4.27

Max/Avg Ratio = 2.19

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

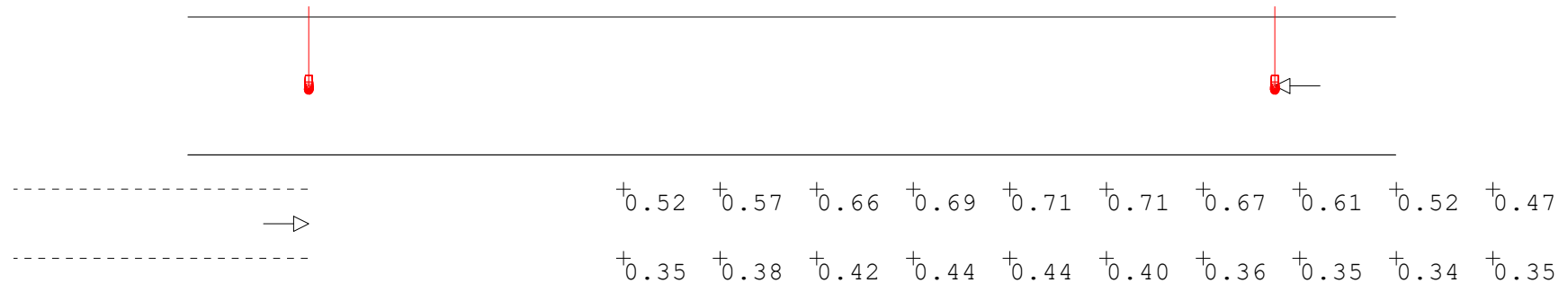


Visibility Level

STV = 2.966218

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum

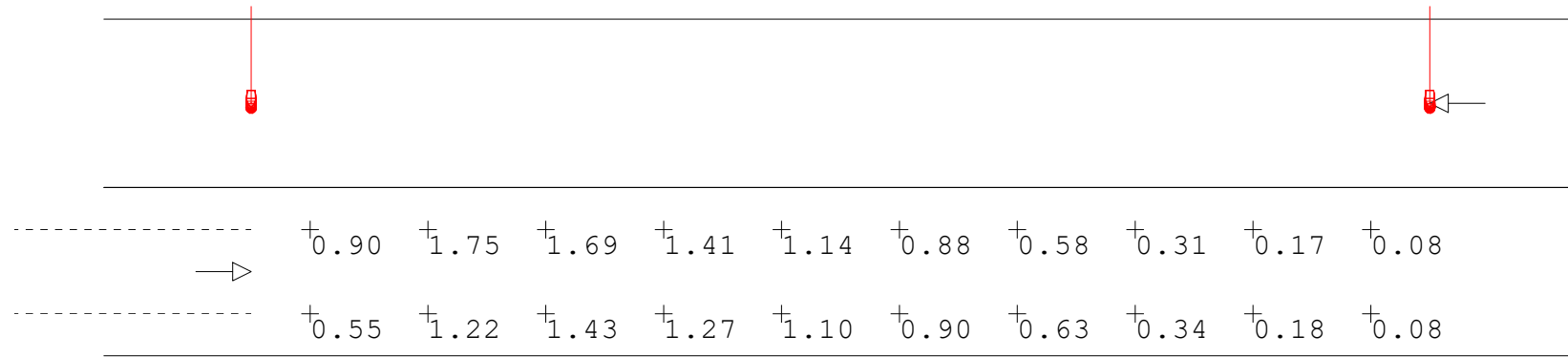


Background Luminance (Cd/SqM)

Average = 0.5
Maximum = 0.71
Minimum = 0.34
Avg/Min Ratio = 1.47
Max/Min Ratio = 2.09
Max/Avg Ratio = 1.42

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum

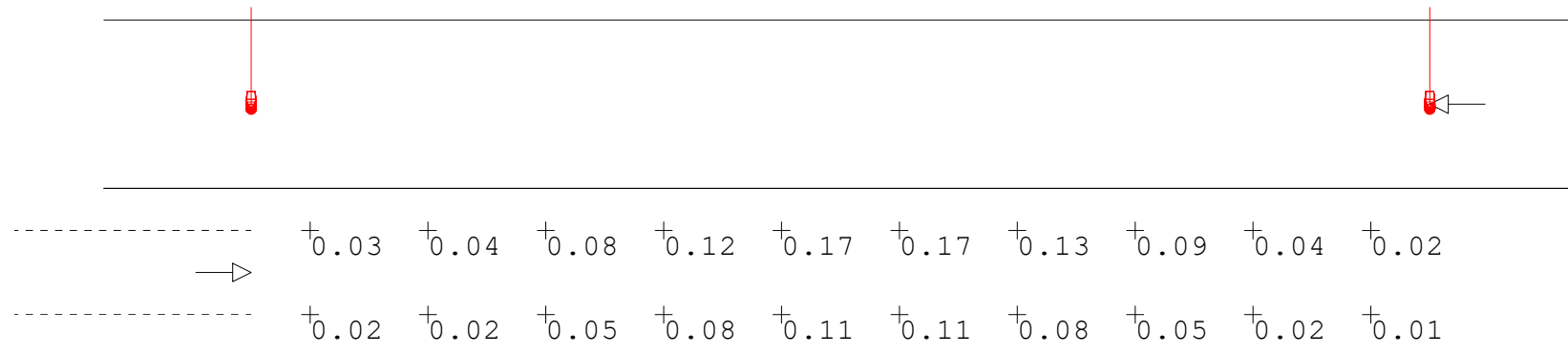


Target Luminance (Cd/SqM)

Average = 0.83
Maximum = 1.75
Minimum = 0.08
Avg/Min Ratio = 10.38
Max/Min Ratio = 21.88
Max/Avg Ratio = 2.11

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.07

Maximum = 0.17

Minimum = 0.01

Avg/Min Ratio = 7

Max/Min Ratio = 17

Max/Avg Ratio = 2.43

MaxLv Ratio = 0.34

Threshold Increment (TI) = 19.24

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	Main St. (Top)	Main St. (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	20	20
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Bottom	Bottom
Label - Row 1	rfm-50w60led3k-g 2-r3m	rfm-50w60led3k-g 2-r3m
S/P Ratio 1	1	1
MH - Row 1	25	25
Setback - Row 1	1.5	1.5
+Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	140	140
1 Luminance (Cd/SqM)		
Average	0.83	0.50
Maximum	1.29	0.74
Minimum	0.46	0.34
Avg/Min Ratio	1.80	1.47
Max/Min Ratio	2.80	2.18
Max/Avg Ratio	1.55	1.48
1 Illum (Fc)		
Average	0.88	0.80
Maximum	2.43	1.75
Minimum	0.22	0.41
Avg/Min Ratio	4.00	1.95

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Min Ratio	11.05	4.27
Max/Avg Ratio	2.76	2.19
1_Vis_Level		
STV	2.67	2.97
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	0.83	0.50
Maximum	1.28	0.71
Minimum	0.46	0.34
Avg/Min Ratio	1.80	1.47
Max/Min Ratio	2.78	2.09
Max/Avg Ratio	1.54	1.42
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	0.74	0.83
Maximum	2.03	1.75
Minimum	0.07	0.08
Avg/Min Ratio	10.57	10.38
Max/Min Ratio	29.00	21.88
Max/Avg Ratio	2.74	2.11
1_Veil_Lum (Cd/SqM)		
Average	0.10	0.07
Maximum	0.21	0.17
Minimum	0.02	0.01
Avg/Min Ratio	5.00	7.00
Max/Min Ratio	10.50	17.00
Max/Avg Ratio	2.10	2.43
MaxLV Ratio	0.25	0.34
Threshold Incr. (TI)	15.84	19.24

Section J.2a - 4d. Main Street (Village of Freeville)

Calculation Summary

Project	County of Tompkins Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	06/28/2020
Calculation Technician	LD
Calculation Scope	Main Street (Village of Freeville)

Introduction:

Below is the basis of design document and photometric analysis utilizing AGI 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- Philips RFS-55W32LED3K-G2-R3M-UNIV

Roadway Conditions – Main Street:

- ~32' curb to curb distance.
- Existing fixtures are 100W HPS HID.
- Roadway classification is a collector with low pedestrian conflict.
- Fixtures are Cobra Heads mounted on existing utility poles ~25' above roadway surface.
- Fixtures are mounted to 12' arms.
- There are no parking shoulders on either side of the roadway.
- Two 11' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are 2' from the curb.
- There are sidewalks on both sides of the roadway.
- Fixtures are on one side of the street and spaced approximately 130'-150' apart.

Assumptions:

- All fixtures in this calculation have a type 3M distribution.
- The Light Loss factor calculation considers a lamp lumen depreciation (LLD) value of .88* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .836 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 55W RFM LED Cobra Head for Main Street with spacing of 140', the L avg meets the 0.4 required with values of 0.78/0.57 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was within the value to 4.0 required with values of 1.53/1.46; The Max Uniformity Ratio (L max/L min) passed the 8.0 threshold with values of 2.02/2.05; The Max. Veiling Luminance Ratio (LV max/L avg) was passed staying below 0.4 with values calculated at 0.21/0.28. All passing values are highlighted green on the layout comparison sheet and all failing values are highlighted red on the layout comparison sheet.
- The arm length was evaluated using an 8' arm which matches the existing.



Roadway Optimizer - Layout 1

General:

Main St (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

RFM-55W32LED3K-G2-R3M

Description: RFM-55W32LED3K-G2-R3M

File Name: RFM-55W32LED3K-G2-R3M.ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 6345

Luminaire Watts: 53.98

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.836

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 140

Label	X-Coord	Y-Coord	Z-Coord	Orient	Tilt	Spin
RFM-55W32LED3K-G2-R3M	420	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	280	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	140	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	0	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	-140	30	25	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

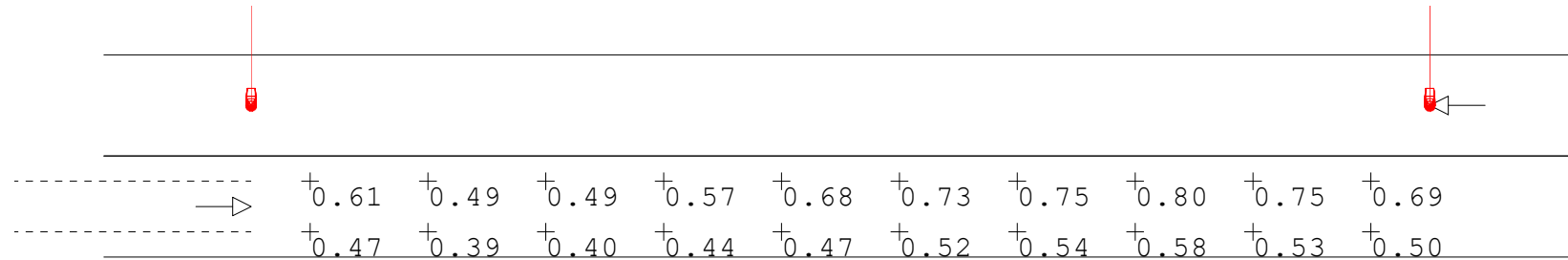
Coordinates in ft

RFM-55W32LED3K-G2-R3M	-280	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	-420	30	25	270	0	0

Total Number of locations: 7

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance

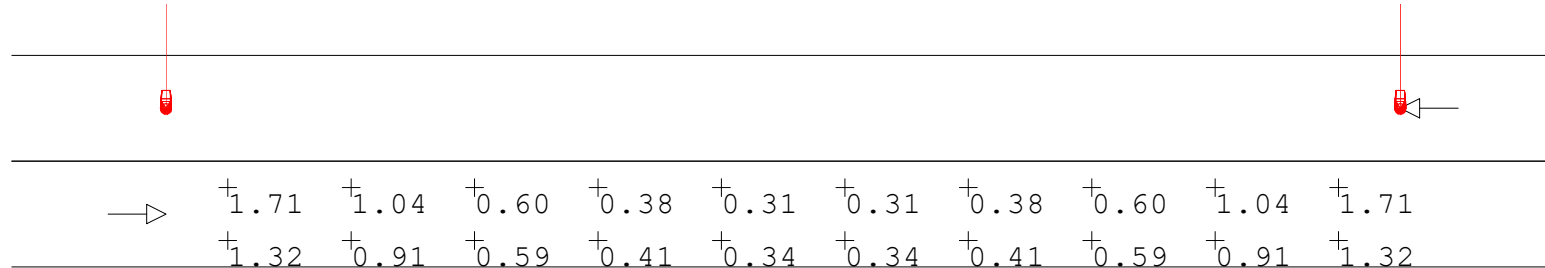


Luminance (Cd/SqM)

Average = 0.57
Maximum = 0.80
Minimum = 0.39
Avg/Min Ratio = 1.46
Max/Min Ratio = 2.05
Max/Avg Ratio = 1.4

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.76

Maximum = 1.71

Minimum = 0.31

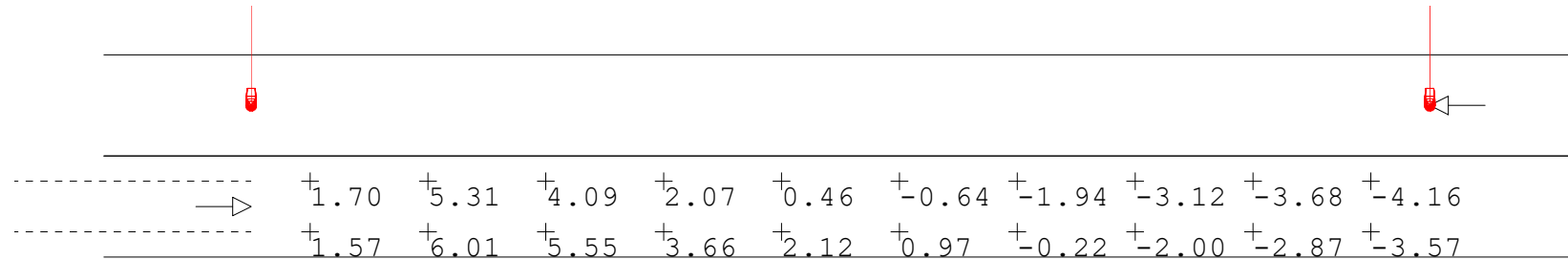
Avg/Min Ratio = 2.45

Max/Min Ratio = 5.52

Max/Avg Ratio = 2.25

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

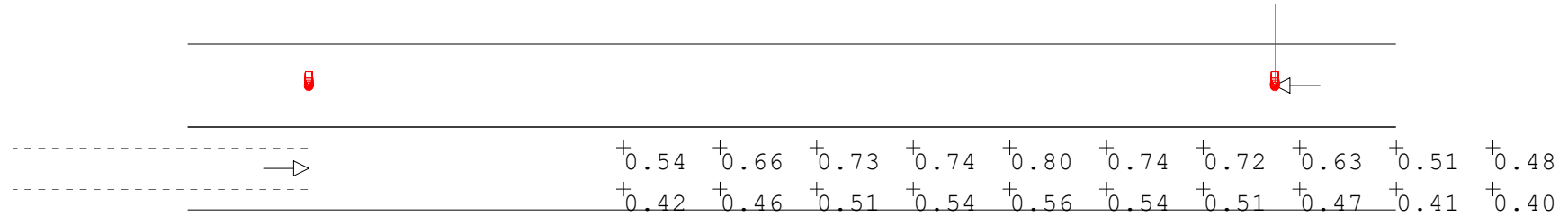


Visibility Level

STV = 2.482263

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum

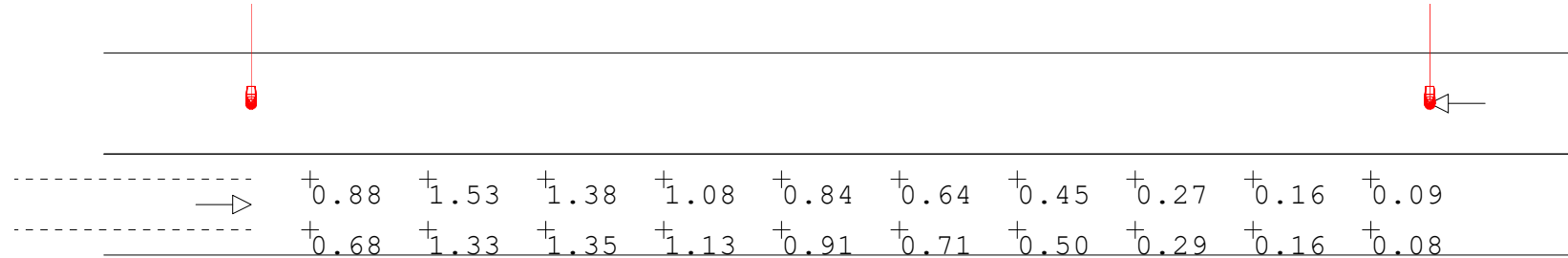


Background Luminance (Cd/SqM)

Average = 0.57
Maximum = 0.80
Minimum = 0.40
Avg/Min Ratio = 1.43
Max/Min Ratio = 2
Max/Avg Ratio = 1.4

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.72

Maximum = 1.53

Minimum = 0.08

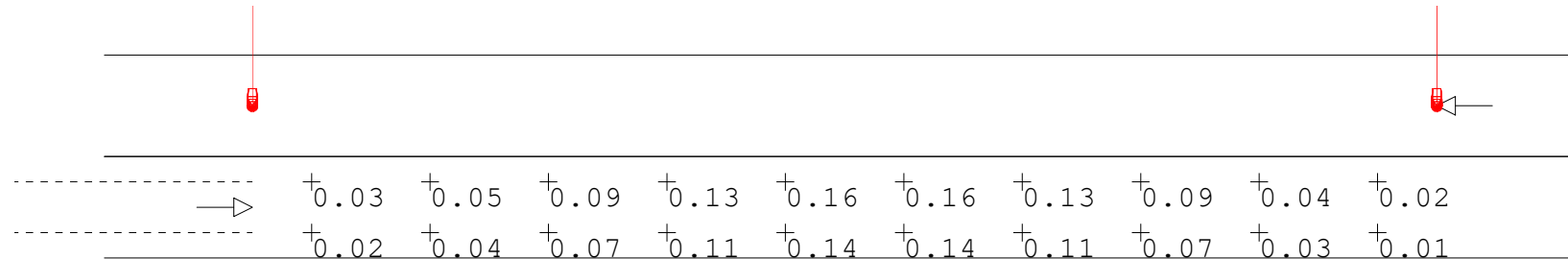
Avg/Min Ratio = 9

Max/Min Ratio = 19.13

Max/Avg Ratio = 2.13

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.08

Maximum = 0.16

Minimum = 0.01

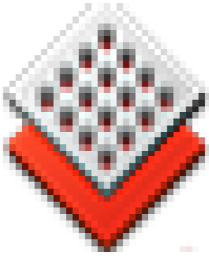
Avg/Min Ratio = 8

Max/Min Ratio = 16

Max/Avg Ratio = 2

MaxLv Ratio = 0.28

Threshold Increment (TI) = 16.31



Roadway Optimizer - Layout 2

General:

Main St (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

RFM-55W32LED3K-G2-R3M

Description: RFM-55W32LED3K-G2-R3M

File Name: RFM-55W32LED3K-G2-R3M.ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 6345

Luminaire Watts: 53.98

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.836

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 140

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
RFM-55W32LED3K-G2-R3M	-280	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	-140	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	0	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	140	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	280	30	25	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

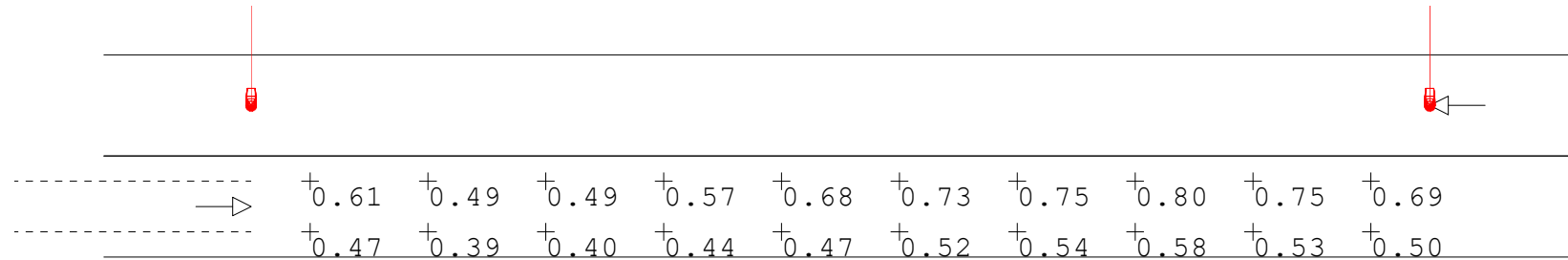
Coordinates in ft

RFM-55W32LED3K-G2-R3M	420	30	25	270	0	0
RFM-55W32LED3K-G2-R3M	560	30	25	270	0	0

Total Number of locations: 7

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance

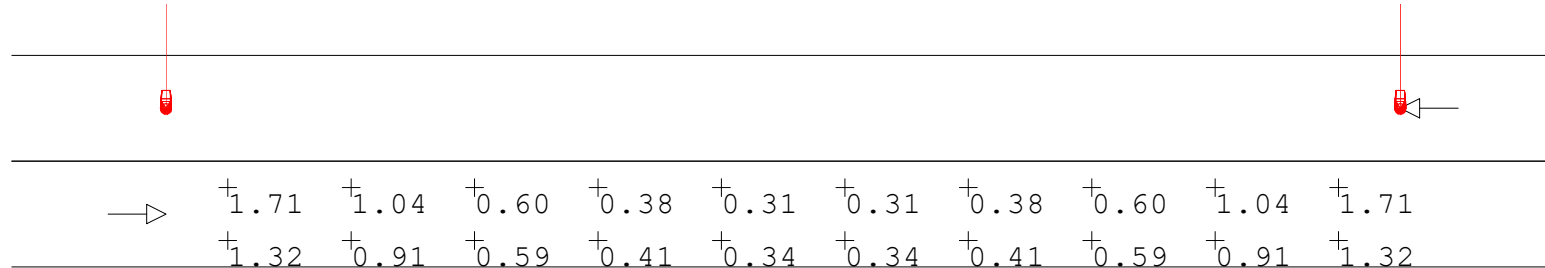


Luminance (Cd/SqM)

Average = 0.57
Maximum = 0.80
Minimum = 0.39
Avg/Min Ratio = 1.46
Max/Min Ratio = 2.05
Max/Avg Ratio = 1.4

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.76

Maximum = 1.71

Minimum = 0.31

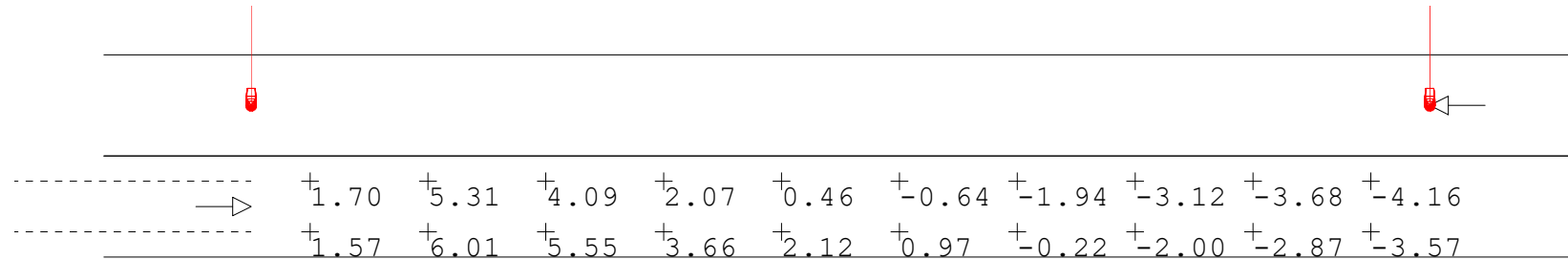
Avg/Min Ratio = 2.45

Max/Min Ratio = 5.52

Max/Avg Ratio = 2.25

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

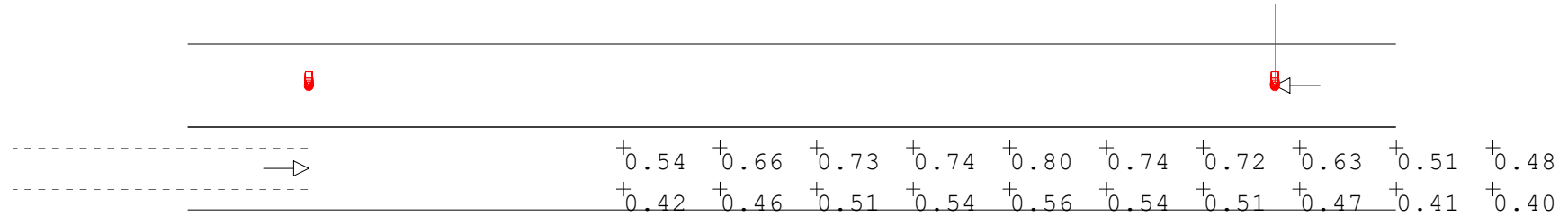


Visibility Level

STV = 2.482263

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum

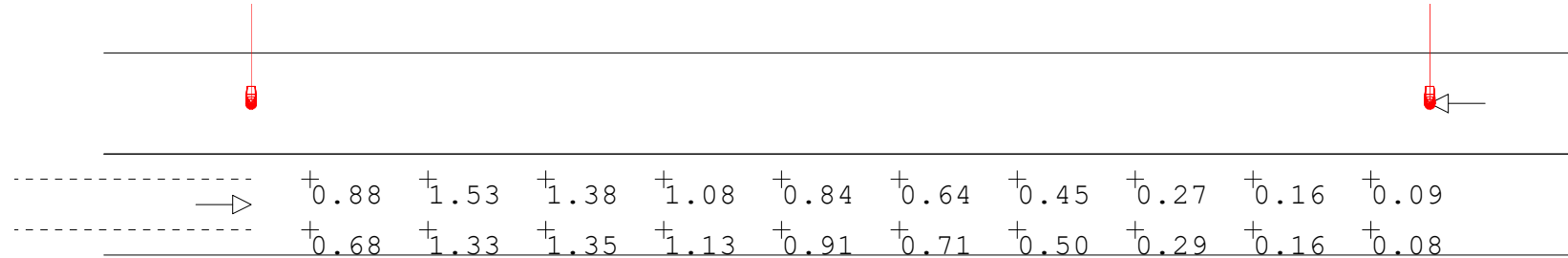


Background Luminance (Cd/SqM)

Average = 0.57
Maximum = 0.80
Minimum = 0.40
Avg/Min Ratio = 1.43
Max/Min Ratio = 2
Max/Avg Ratio = 1.4

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum

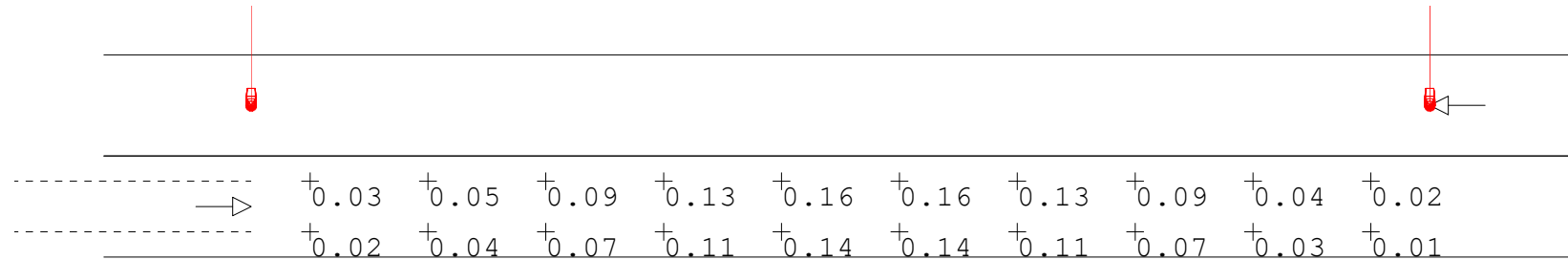


Target Luminance (Cd/SqM)

Average = 0.72
Maximum = 1.53
Minimum = 0.08
Avg/Min Ratio = 9
Max/Min Ratio = 19.13
Max/Avg Ratio = 2.13

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.08

Maximum = 0.16

Minimum = 0.01

Avg/Min Ratio = 8

Max/Min Ratio = 16

Max/Avg Ratio = 2

MaxLv Ratio = 0.28

Threshold Increment (TI) = 16.31

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	Main St (Top)	Main St (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	12	12
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Bottom	Bottom
Label - Row 1	RFM-55W32LED3K-G	RFM-55W32LED3K-G
	2-R3M	2-R3M
S/P Ratio 1	1	1
MH - Row 1	25	25
Setback - Row 1	6	6
+Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	140	140
1 Luminance (Cd/SqM)		
Average	0.78	0.57
Maximum	1.03	0.80
Minimum	0.51	0.39
Avg/Min Ratio	1.53	1.46
Max/Min Ratio	2.02	2.05
Max/Avg Ratio	1.32	1.40
1 Illum (Fc)		
Average	0.79	0.76
Maximum	1.99	1.71
Minimum	0.21	0.31
Avg/Min Ratio	3.76	2.45
Max/Min Ratio	9.48	5.52

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Avg Ratio	2.52	2.25
1_Vis_Level		
STV	2.59	2.48
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	0.78	0.57
Maximum	1.03	0.80
Minimum	0.51	0.40
Avg/Min Ratio	1.53	1.43
Max/Min Ratio	2.02	2.00
Max/Avg Ratio	1.32	1.40
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	0.64	0.72
Maximum	1.57	1.53
Minimum	0.08	0.08
Avg/Min Ratio	8.00	9.00
Max/Min Ratio	19.63	19.13
Max/Avg Ratio	2.45	2.13
1_Veil_Lum (Cd/SqM)		
Average	0.09	0.08
Maximum	0.16	0.16
Minimum	0.02	0.01
Avg/Min Ratio	4.50	8.00
Max/Min Ratio	8.00	16.00
Max/Avg Ratio	1.78	2.00
MaxLV Ratio	0.21	0.28
Threshold Incr. (TI)	12.69	16.31

**Section J.2a - 5e. (E. Main Street-
Village of Trumansburg)**

Calculation Summary

Project	County of Tompkins Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	06/28/2020
Calculation Technician	LD
Calculation Scope	E. Main Street (Village of Trumansburg)

Introduction:

Below is the basis of design document and photometric analysis utilizing AGI 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- Spring City - ALMCLU-LE030C-VX-X2-30-CR3-YLC3

Roadway Conditions – E. Main Street:

- ~42' curb to curb distance.
- Existing fixtures are 100W HID.
- Roadway classification is a collector with medium pedestrian conflict.
- Fixtures are Post Top Decorative mounted on existing metal poles ~16' above roadway surface.
- There are 8' parking shoulders on both side of the roadway.
- There are two 12' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are 2' from the curb.
- Sidewalks on two sides.
- Fixtures are on one two sides of the street and spaced approximately 75'-80' apart.

Assumptions:

- All fixtures in this calculation have a CR3 distribution.
- Calculation considers a light loss factor (LLF) value of .90.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 30W LED Pendant Mounted Decorative for E. Main Street with approximate spacing of 75'-80', the L avg meets the 0.6 required with values of 1.21/1.24 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was within the value to 3.5 required with values of 1.49/1.57; The Max Uniformity Ratio (L max/L min) passed the 6.0 threshold with values of 2.16/2.33; The Max. Veiling Luminance Ratio (LV max/L avg) was failed exceeding the threshold to 0.4 with values calculated at 0.48/0.51. The Veiling Luminance Ratio are affected by the following three variables:
 - Fixture vertical illuminance – Decreasing lumens decreases LV. Current fixture lumens package can't decrease as values of other design criteria are at minimum levels.
 - Mounting Height – Increasing mounting height decreases LV. This project is a head for head replacement on existing poles; project economics cannot support pole replacement.
 - Spacing between poles – Increasing spacing decreases LV. This project is a head for head replacement on existing poles; poles spacing can't be changed.

Although the fixture doesn't pass the Max. Veiling Luminance Ratio, Guth DeConzo recommends proceeding with the installation, noting the failure and informing the municipality that mild glare could be an issue. All passing values are highlighted green on the layout comparison sheet and all failing values are highlighted red on the layout comparison sheet.



Roadway Optimizer - Layout 1

General:

E. Main St (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: Two Rows, Staggered, With Median; 2R_STG_w/M

Roadway Width: 20 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

CLU-LE030-X2-30-CR3-PLC3

Description: CLU-LE030_EVX_X2-30-CR3-PLC3

File Name: CLU-LE040-X2-30-CR3-PLC3.ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 3749

Luminaire Watts: 30

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.900

Luminaire Arrangement: SINGLE

Arm Length: 3 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 75

Spacing - Row 2: 80

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
CLU-LE030-X2-30-CR3...	305	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	-145	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	-70	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	5	-2	16	90	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

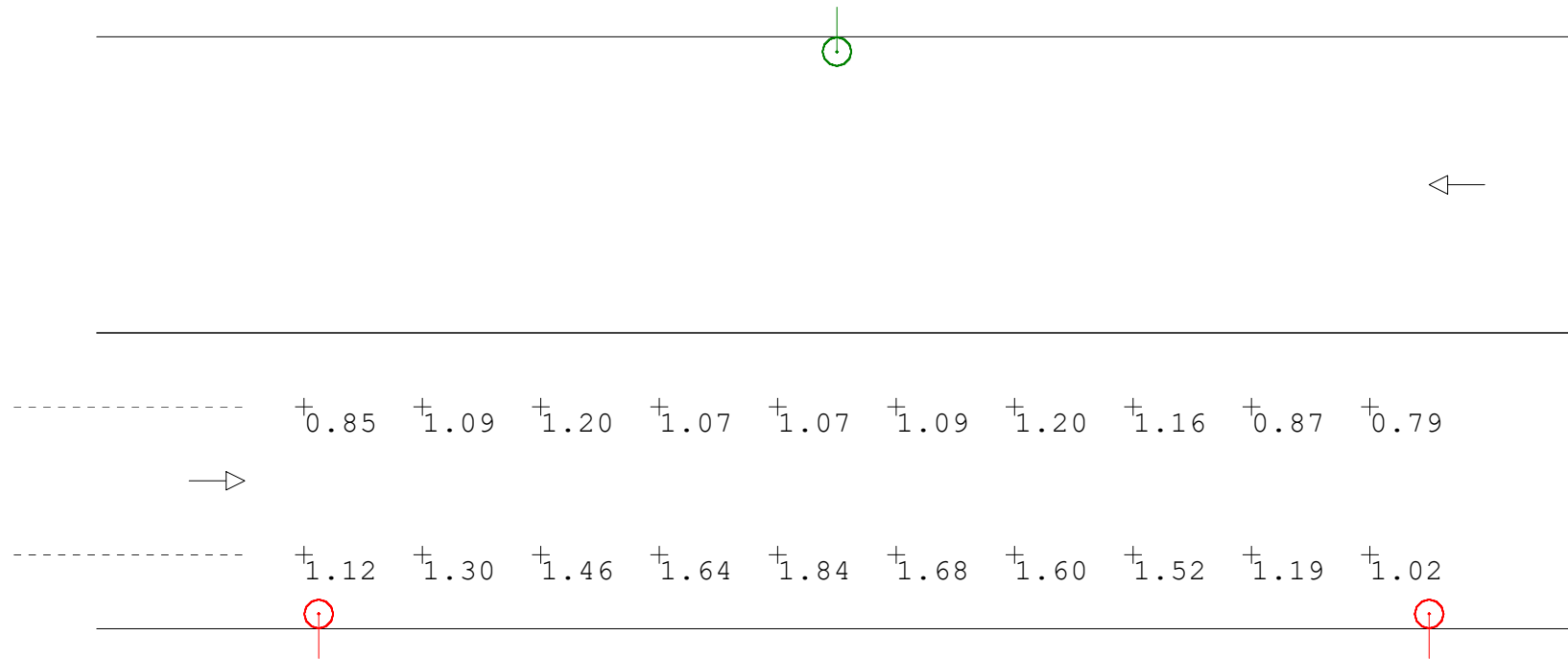
Coordinates in ft

CLU-LE030-X2-30-CR3...	80	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	155	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	230	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	380	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	-220	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	360	42	16	270	0	0
CLU-LE030-X2-30-CR3...	-120	42	16	270	0	0
CLU-LE030-X2-30-CR3...	-40	42	16	270	0	0
CLU-LE030-X2-30-CR3...	40	42	16	270	0	0
CLU-LE030-X2-30-CR3...	120	42	16	270	0	0
CLU-LE030-X2-30-CR3...	200	42	16	270	0	0
CLU-LE030-X2-30-CR3...	280	42	16	270	0	0
CLU-LE030-X2-30-CR3...	-200	42	16	270	0	0

Total Number of locations: 17

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 1.24

Maximum = 1.84

Minimum = 0.79

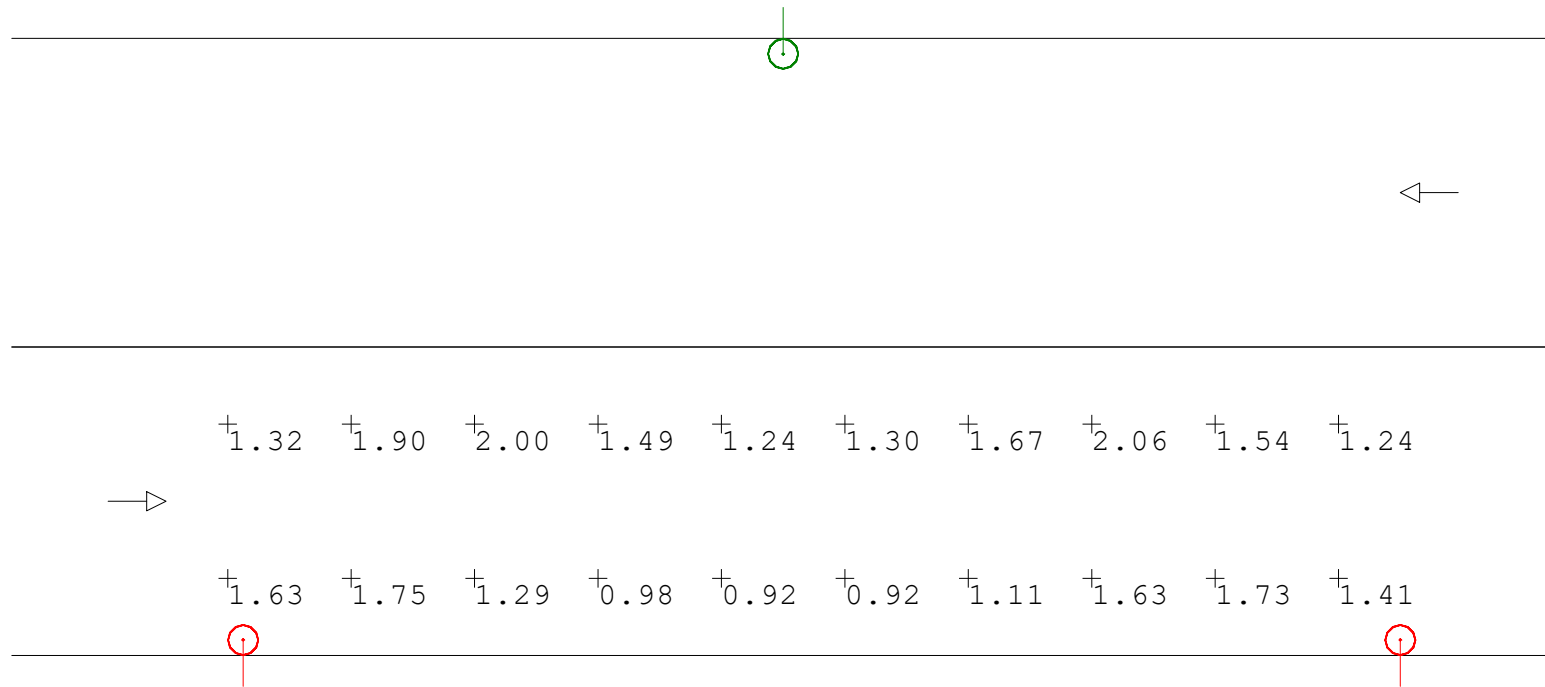
Avg/Min Ratio = 1.57

Max/Min Ratio = 2.33

Max/Avg Ratio = 1.48

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 1.46

Maximum = 2.06

Minimum = 0.92

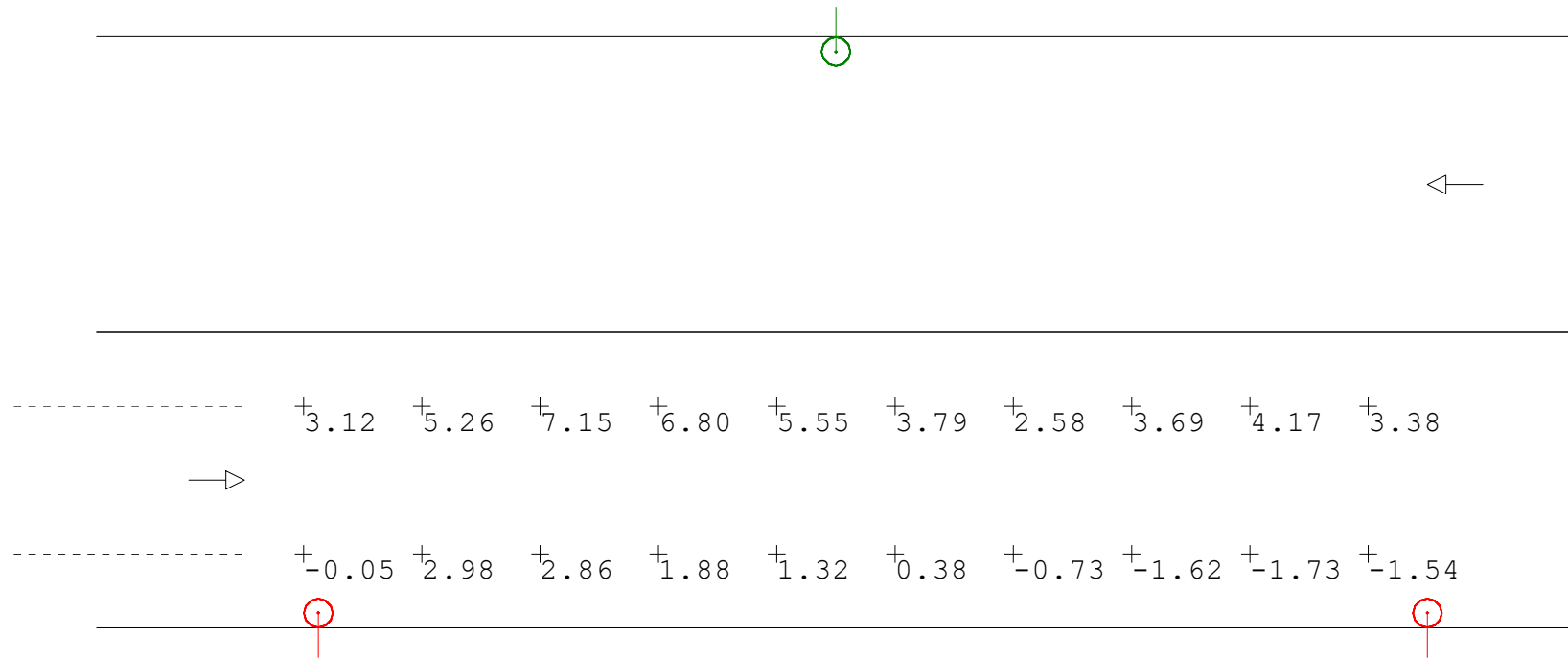
Avg/Min Ratio = 1.59

Max/Min Ratio = 2.24

Max/Avg Ratio = 1.41

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

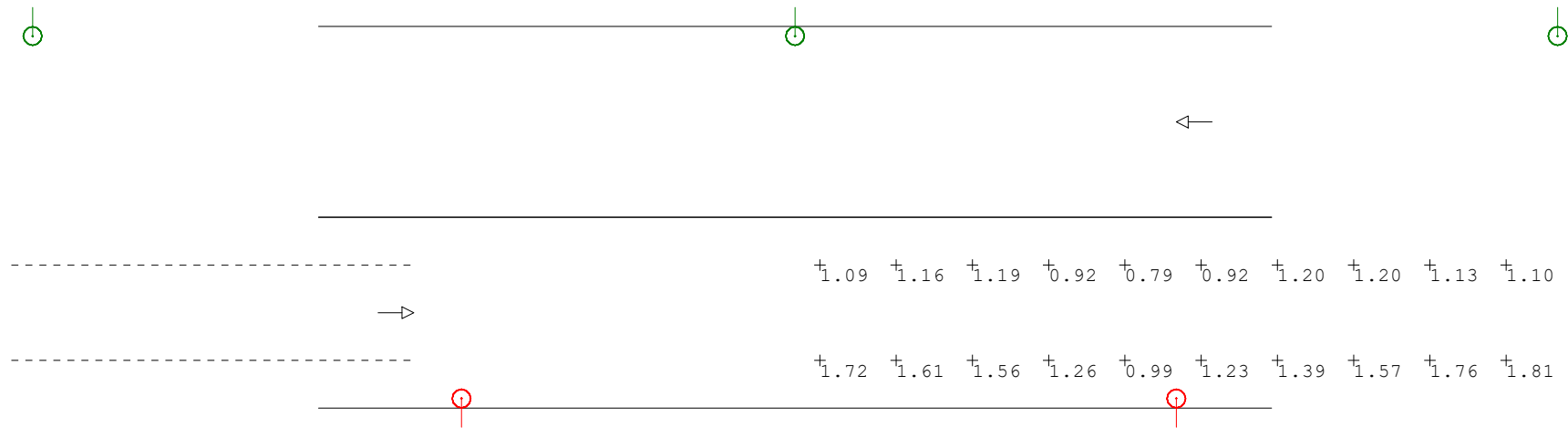


Visibility Level

STV = 2.626477

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 1.28

Maximum = 1.81

Minimum = 0.79

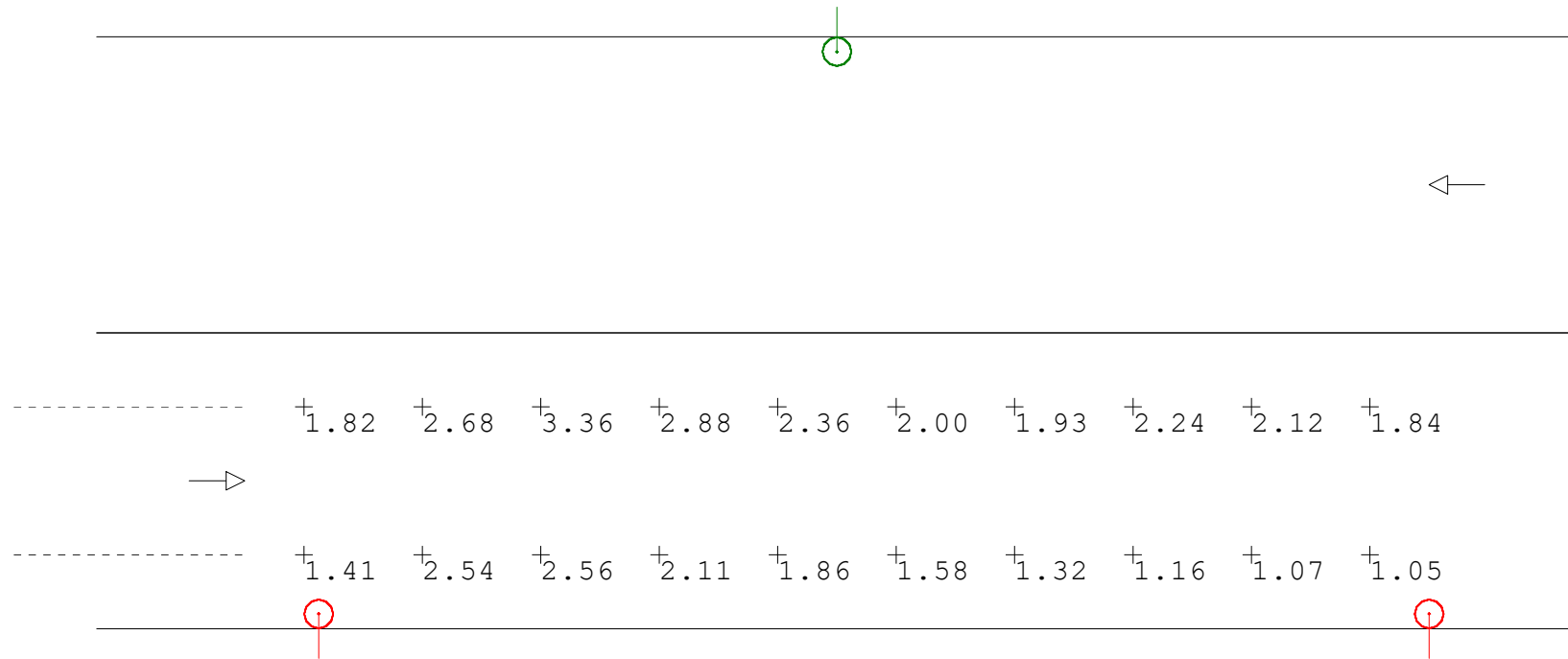
Avg/Min Ratio = 1.62

Max/Min Ratio = 2.29

Max/Avg Ratio = 1.41

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 1.99

Maximum = 3.36

Minimum = 1.05

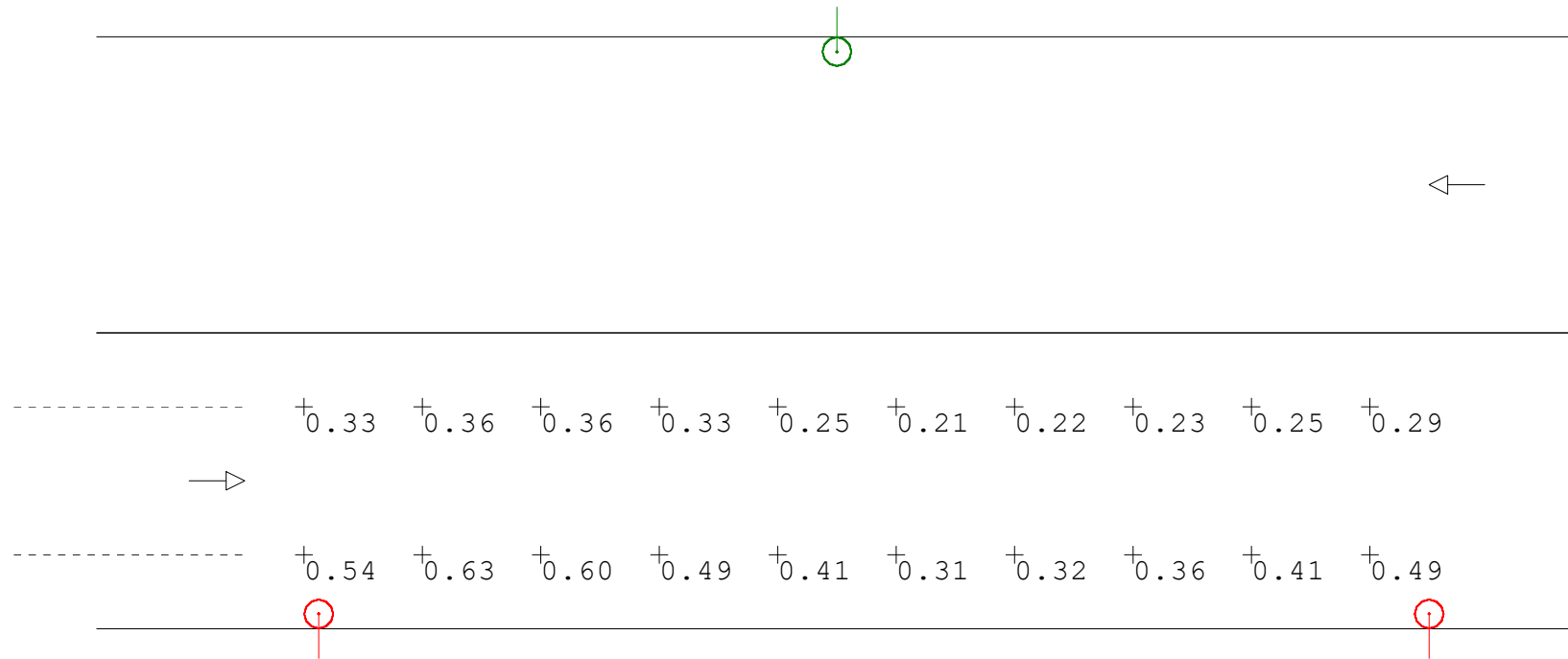
Avg/Min Ratio = 1.9

Max/Min Ratio = 3.2

Max/Avg Ratio = 1.69

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.37

Maximum = 0.63

Minimum = 0.21

Avg/Min Ratio = 1.76

$$\text{Max/Min Ratio} = 3$$
$$\text{Max/Avg Ratio} = 1.7$$

MaxLv Ratio = 0.51

Threshold Increment (TI) = 34.48



Roadway Optimizer - Layout 2

General:

E. Main St (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: Two Rows, Staggered, With Median; 2R_STG_w/M

Roadway Width: 20 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

CLU-LE030-X2-30-CR3-PLC3

Description: CLU-LE030_EVX_X2-30-CR3-PLC3

File Name: CLU-LE040-X2-30-CR3-PLC3.ies

Lumens Per Lamp: N.A.

Number Of Lamps: 1

Total Lamp Lumens: N.A.

Luminaire Lumens: 3749

Luminaire Watts: 30

Efficiency (%): N.A.

S/P Ratio: 1.00

Total Light Loss Factor: 0.900

Luminaire Arrangement: SINGLE

Arm Length: 3 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 75

Spacing - Row 2: 80

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
CLU-LE030-X2-30-CR3...	225	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	-225	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	-150	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	-75	-2	16	90	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

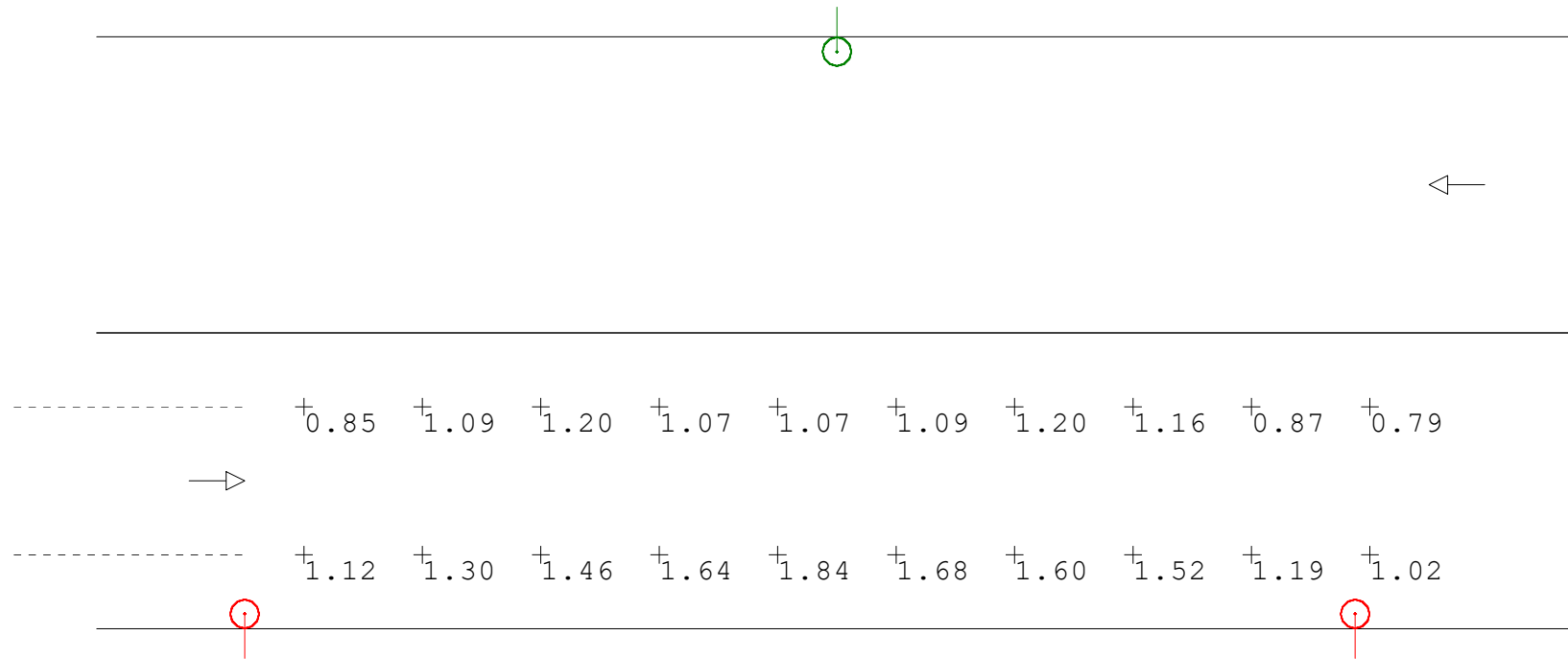
Coordinates in ft

CLU-LE030-X2-30-CR3...	0	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	75	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	150	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	300	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	-300	-2	16	90	0	0
CLU-LE030-X2-30-CR3...	280	42	16	270	0	0
CLU-LE030-X2-30-CR3...	-200	42	16	270	0	0
CLU-LE030-X2-30-CR3...	-120	42	16	270	0	0
CLU-LE030-X2-30-CR3...	-40	42	16	270	0	0
CLU-LE030-X2-30-CR3...	40	42	16	270	0	0
CLU-LE030-X2-30-CR3...	120	42	16	270	0	0
CLU-LE030-X2-30-CR3...	200	42	16	270	0	0
CLU-LE030-X2-30-CR3...	-280	42	16	270	0	0

Total Number of locations: 17

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 1.24

Maximum = 1.84

Minimum = 0.79

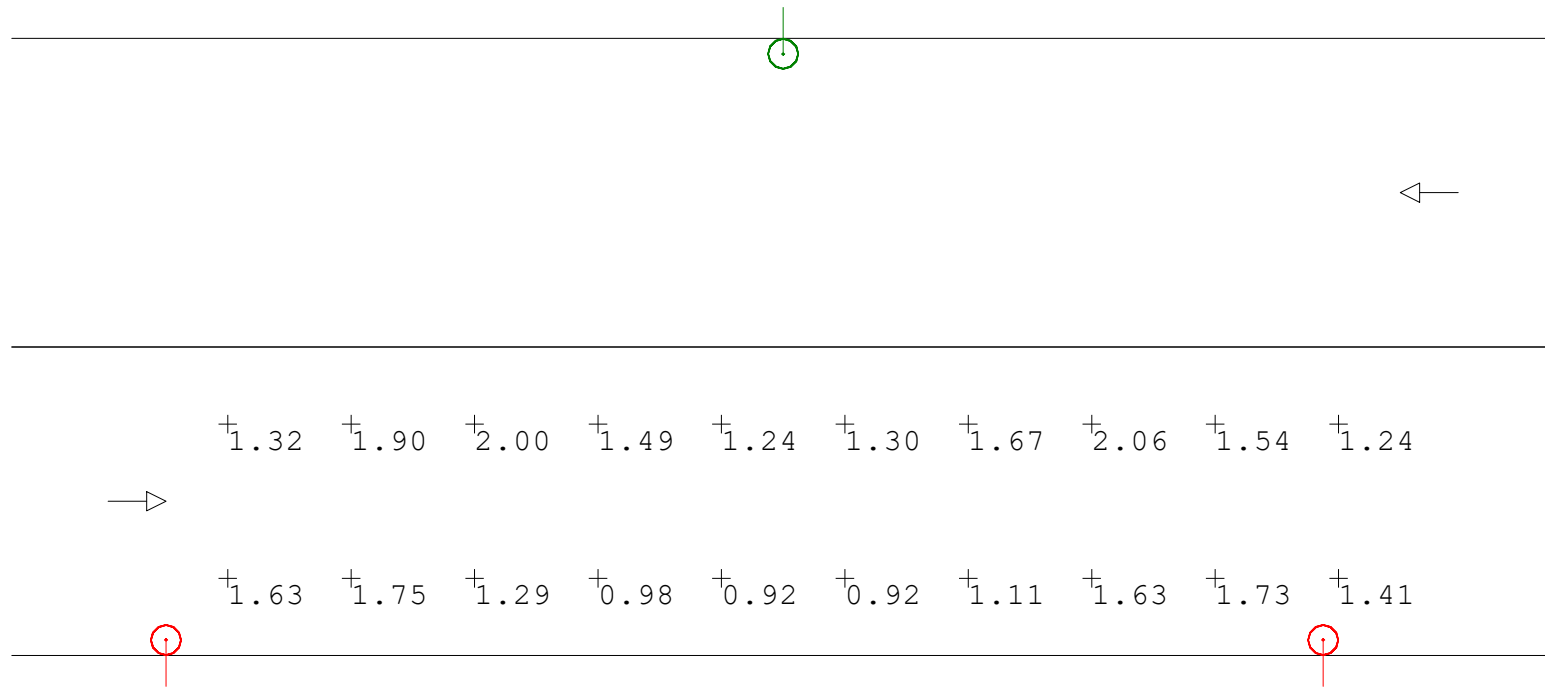
Avg/Min Ratio = 1.57

Max/Min Ratio = 2.33

Max/Avg Ratio = 1.48

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 1.46

Maximum = 2.06

Minimum = 0.92

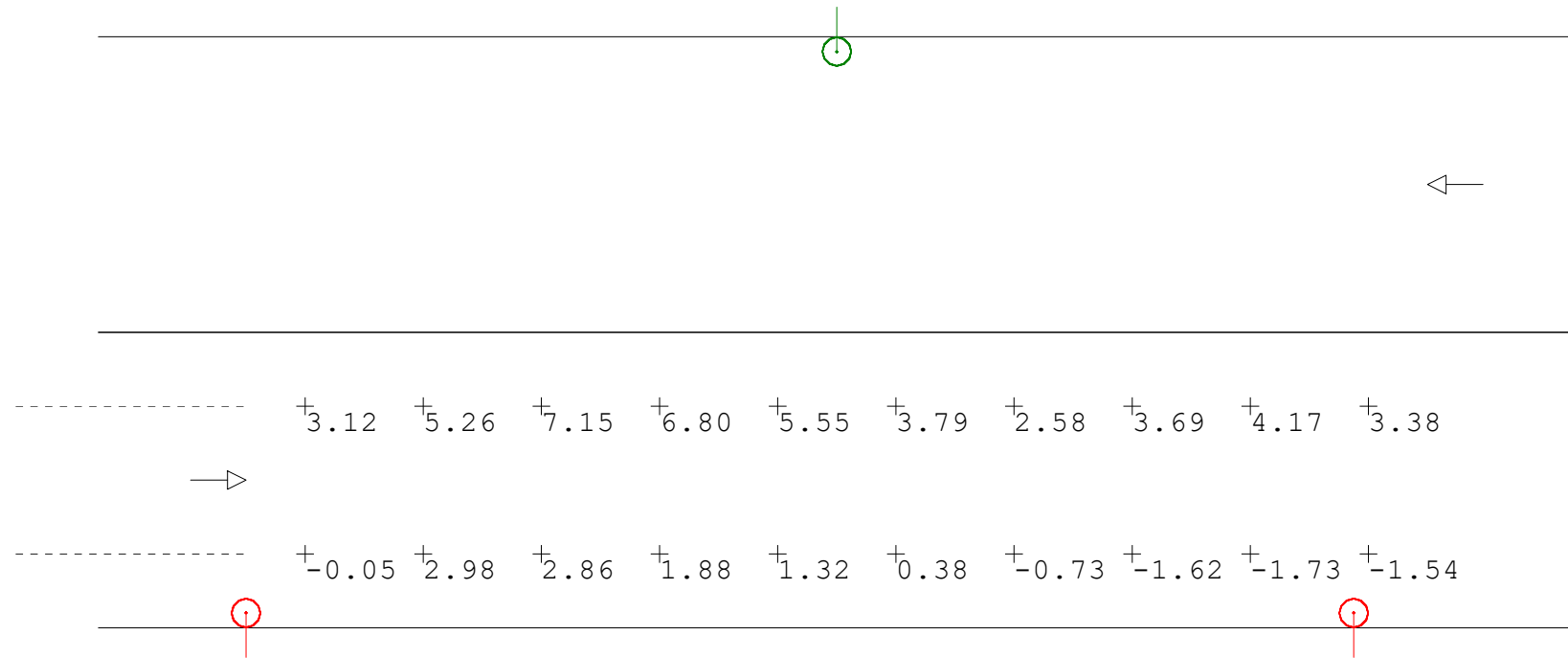
Avg/Min Ratio = 1.59

Max/Min Ratio = 2.24

Max/Avg Ratio = 1.41

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

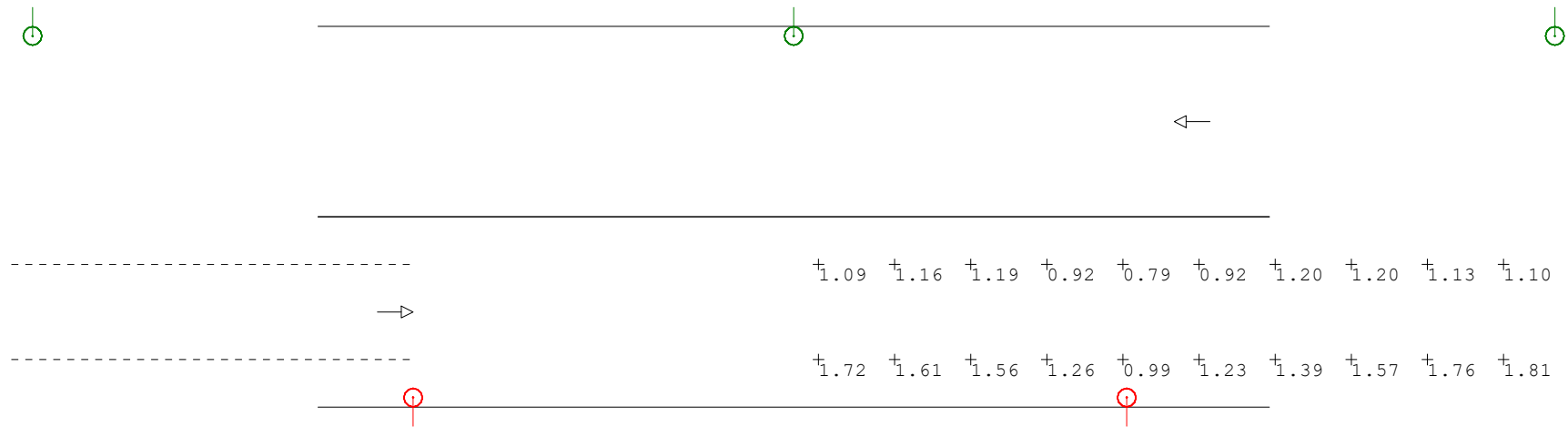


Visibility Level

STV = 2.626477

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 1.28

Maximum = 1.81

Minimum = 0.79

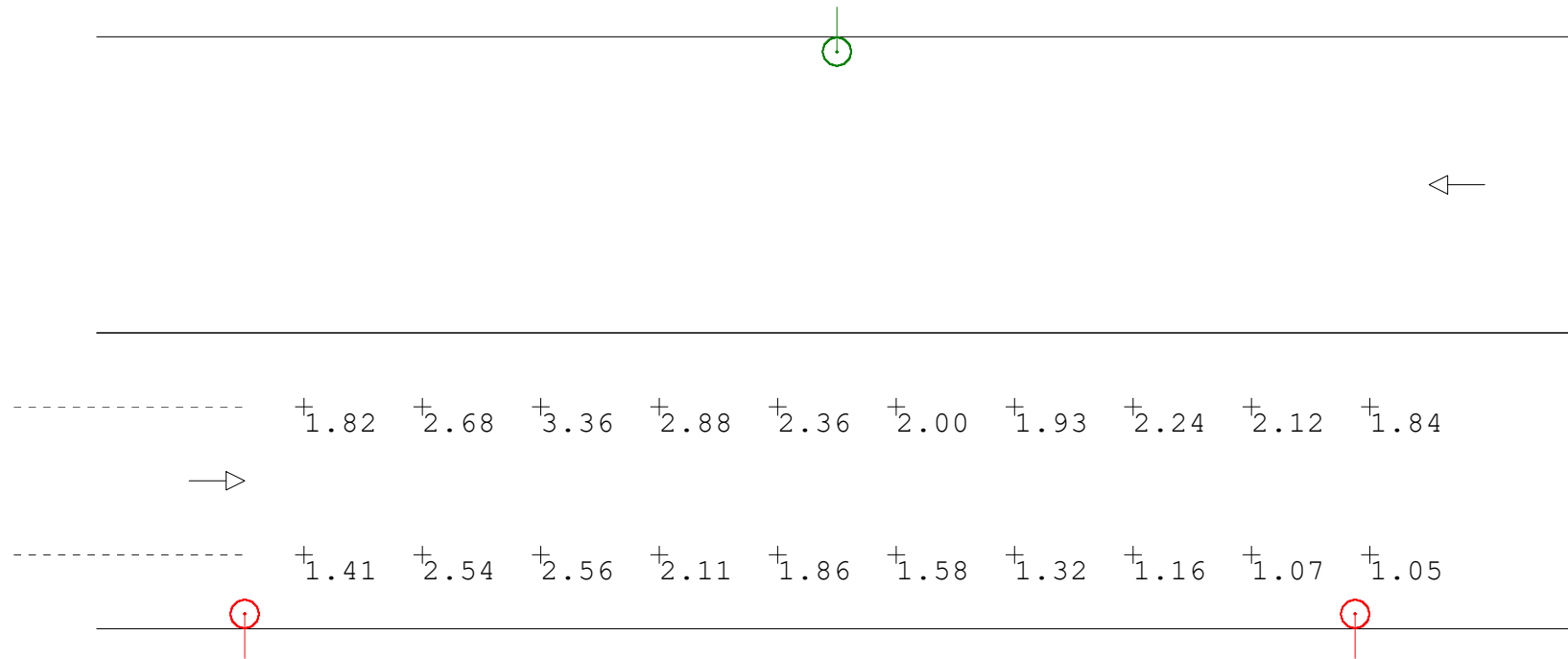
Avg/Min Ratio = 1.62

Max/Min Ratio = 2.29

Max/Avg Ratio = 1.41

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 1.99

Maximum = 3.36

Minimum = 1.05

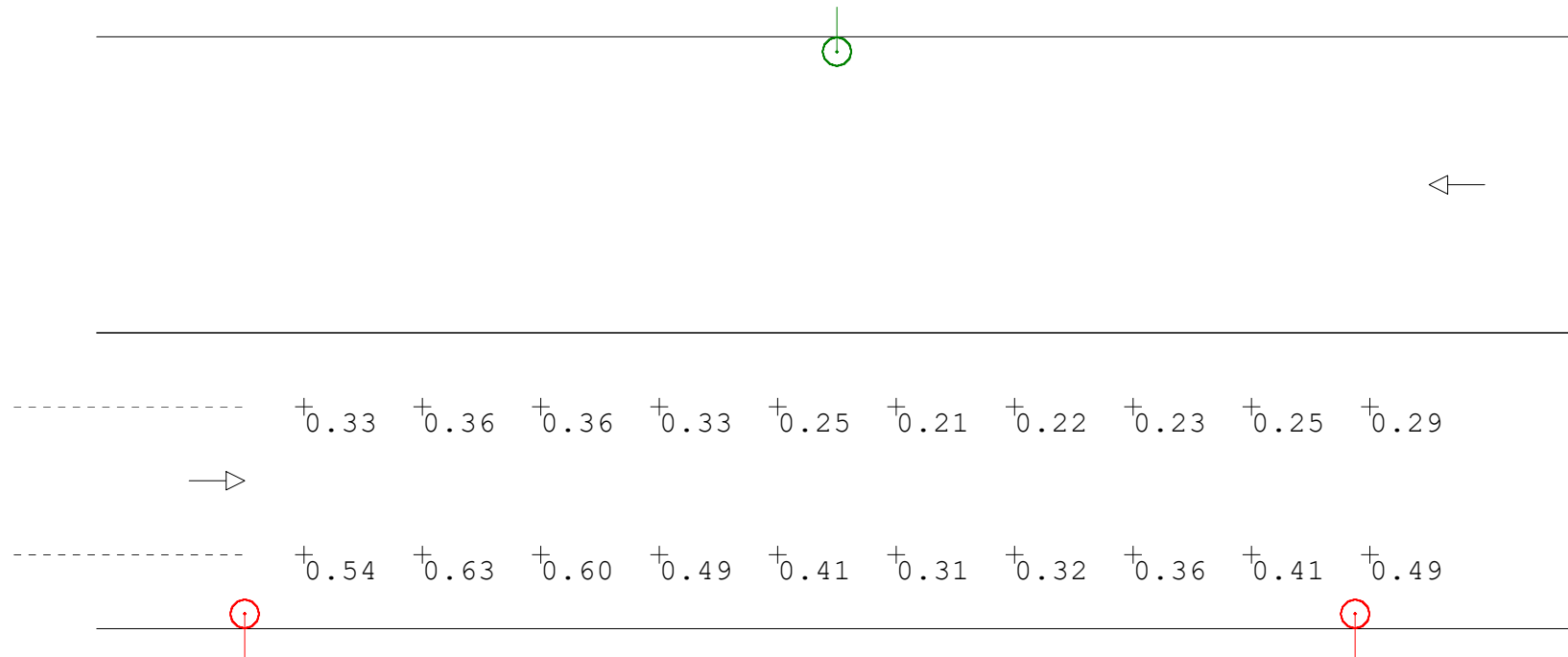
Avg/Min Ratio = 1.9

Max/Min Ratio = 3.2

Max/Avg Ratio = 1.69

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.37

Maximum = 0.63

Minimum = 0.21

Avg/Min Ratio = 1.76

Max/Min Ratio = 3

Max/Avg Ratio = 1.7

MaxLv Ratio = 0.51

Threshold Increment (TI) = 34.48

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	E. Main St (Top)	E. Main St (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	2R_STG_w/M	2R_STG_w/M
Road Width	20	20
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Bottom	Bottom
Label - Row 1	CLU-LE030-X2-3 0-CR3-PLC3	CLU-LE030-X2-3 0-CR3-PLC3
S/P Ratio 1	1	1
MH - Row 1	16	16
Setback - Row 1	2	2
+Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	75	75
Label - Row 2	CLU-LE030-X2-3 0-CR3-PLC3	CLU-LE030-X2-3 0-CR3-PLC3
S/P Ratio 2	1	1
MH - Row 2	16	16
Setback - Row 2	2	2
+Orient - Row 2	0	0
Tilt - Row 2	0	0
Spin - Row 2	0	0
Spacing - Row 2	80	80
1 Luminance (Cd/SqM)		
Average	1.21	1.24
Maximum	1.75	1.84

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Minimum	0.81	0.79
Avg/Min Ratio	1.49	1.57
Max/Min Ratio	2.16	2.33
Max/Avg Ratio	1.45	1.48
1_Illum (Fc)		
Average	1.42	1.46
Maximum	1.98	2.06
Minimum	0.85	0.92
Avg/Min Ratio	1.67	1.59
Max/Min Ratio	2.33	2.24
Max/Avg Ratio	1.39	1.41
1_Vis_Level		
STV	2.66	2.63
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	1.22	1.28
Maximum	1.77	1.81
Minimum	0.81	0.79
Avg/Min Ratio	1.51	1.62
Max/Min Ratio	2.19	2.29
Max/Avg Ratio	1.45	1.41
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	1.99	1.99
Maximum	3.34	3.36
Minimum	0.94	1.05
Avg/Min Ratio	2.12	1.90
Max/Min Ratio	3.55	3.20
Max/Avg Ratio	1.68	1.69
1_Veil_Lum (Cd/SqM)		
Average	0.35	0.37
Maximum	0.58	0.63
Minimum	0.20	0.21
Avg/Min Ratio	1.75	1.76

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Min Ratio	2.90	3.00
Max/Avg Ratio	1.66	1.70
MaxLV Ratio	0.48	0.51
Threshold Incr. (TI)	32.37	34.48

Section J.2a - 7g. (Elm Street & Whig Street)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Illuminance (fc)
Calculation Date	06/30/2020
Calculation Technician	LD
Calculation Scope	Elm Street & Whig Street – (Village of Trumansburg)

Introduction:

Below is the basis of design document and photometric analysis utilizing Visual software for each case and fixture catalog listed. The analysis includes illuminance (IL), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- Philips RFS-35W16LED3K-G2-R3M-UNV

Roadway Conditions – Elm Street & Whig Street:

- ~24' & 25' curb to curb distance.
- Roadway classification intersection is a local/local with low pedestrian conflict.
- The fixture is mounted on an existing utility pole ~25' above roadway surface. This fixture is mounted to an 8' arm and is located on the corner of the intersection with the arm mounted at 45-degree angle.
- There are no parking shoulders on either roadway, (Elm St. & Whig St.).
- There are two 12' drive lanes, going in opposite directions for both Elm St. & Whig St.
- Traffic lanes have no separation (Elm St. & Whig St.).
- Poles setback is predominately 1' from curb.

Assumptions:

- All fixtures in this calculation have a type 3M distribution.
- The Light Loss Factor considers a lamp lumen depreciation (LLD) value of .84* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .798 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-8-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Illumination for Intersections				
Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in Lux/ft			E_{avg}/E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Collector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.0/1.8	14.0/1.4	8.0/0.8	6.0

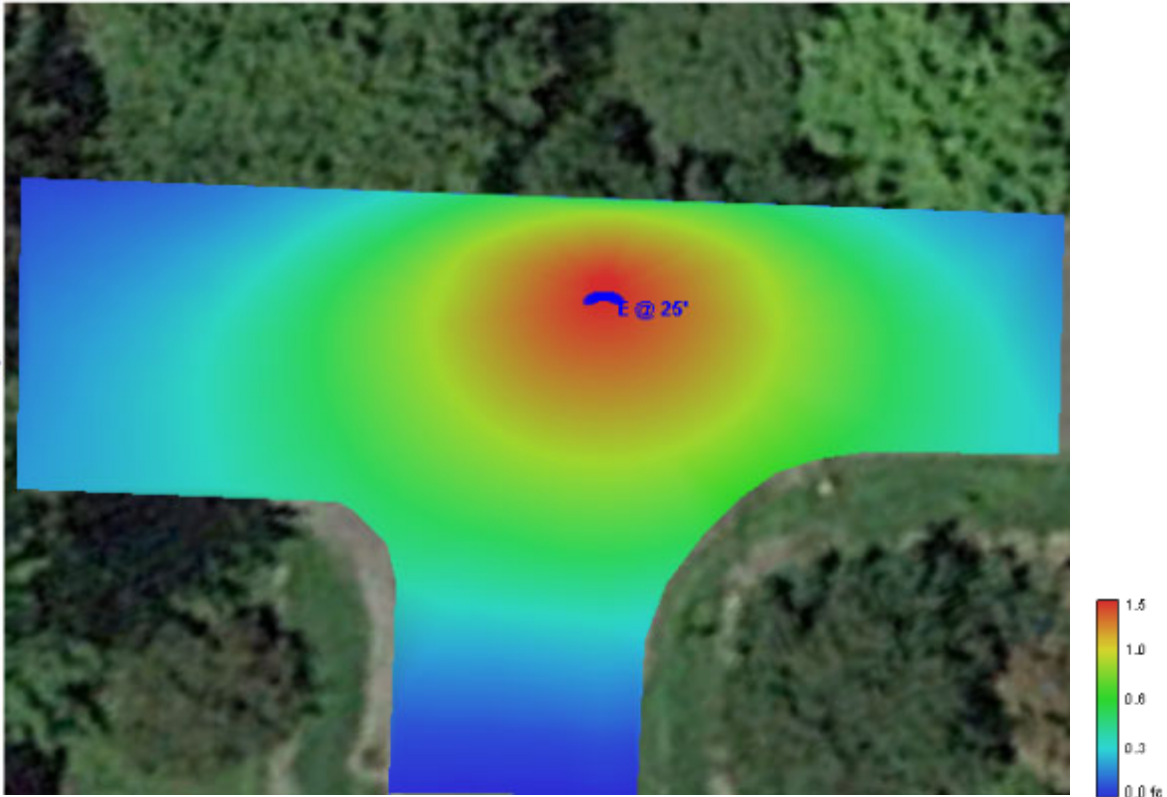
Conclusion:

- Using the 35W RFS LED Cobra Head for Elm St. & Whig St. intersection, the illuminance Average meets the 0.8 fc required with value of 0.8 fc; the Average Uniformity Ratio (E_{avg}/E_{min}) was within the value to 6.0 required with value of 2.7; All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using a 8' arm which matches the existing.

Intersection of Elm Street & Whig Street
Local to Local "T" Intersection with Low Pedestrian Classification

Elm St.
24' Width Roadway

Whig St.
25' Width Roadway



Schedule						
Symbol	Label	QTY	Manufacturer	Catalog Number	Lumens per Lamp	Wattage
	E	1	PHILIPS LUMEC	RFS-35W16LED3K-G2-R3M	4244	38

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #2	+	0.8 fc	1.4 fc	0.3 fc	4.7:1	2.7:1

Intersection of Elm St. & Whig St.

Designer
LD
Date
06/30/2020
Scale
Not to Scale
Drawing No.

Summary

Section J.2a - 8h. (Main Street & Shaffer Road)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Illuminance (fc)
Calculation Date	06/29/2020
Calculation Technician	LD
Calculation Scope	Shaffer Road & Main Street (Town of Newfield)

Introduction:

Below is the basis of design document and photometric analysis utilizing Visual software for each case and fixture catalog listed. The analysis includes illuminance (IL), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- Philips RFS-54W16LED3K-G2-R3M-UNV

Roadway Conditions – Shaffer Road & Main Street:

- ~32' & 50' curb to curb distance.
- Roadway classification intersection is a local/local with medium pedestrian conflict.
- Fixture is mounted on existing utility poles ~25' above roadway surface. Fixtures is mounted to a 12' arm. Fixture is located on corner of intersection with arm mounted at 45-degree angle.
- There are parking shoulders on both sides of the roadway on Main St. and no parking shoulders on either side of the roadway on Shaffer Rd.
- There are 12' drives lanes, going in opposite directions for both Shaffer Rd. & Main St.
- The traffic lanes have separation for both (Shaffer Rd. & Main St.).
- Poles setback are predominately 3' from curb.

Assumptions:

- All fixtures in this calculation have a type 3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .84* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula. which is $LLD \times LDD = LLF$, an LLF value of .798 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-8-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

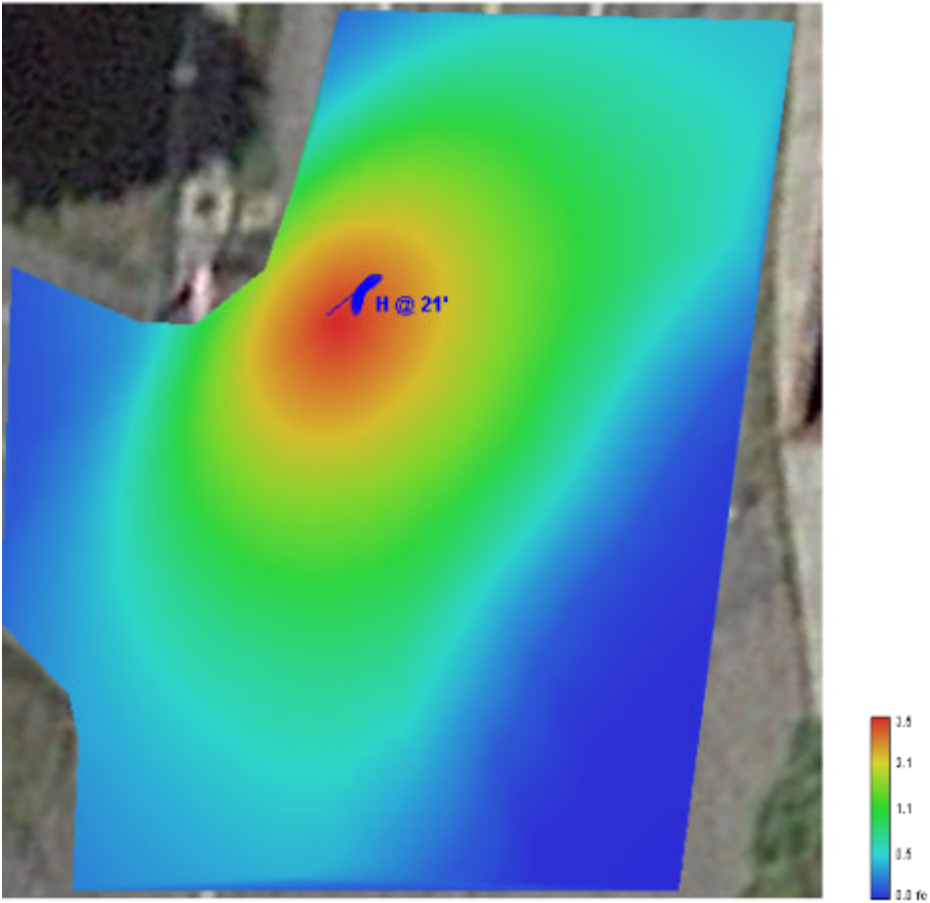
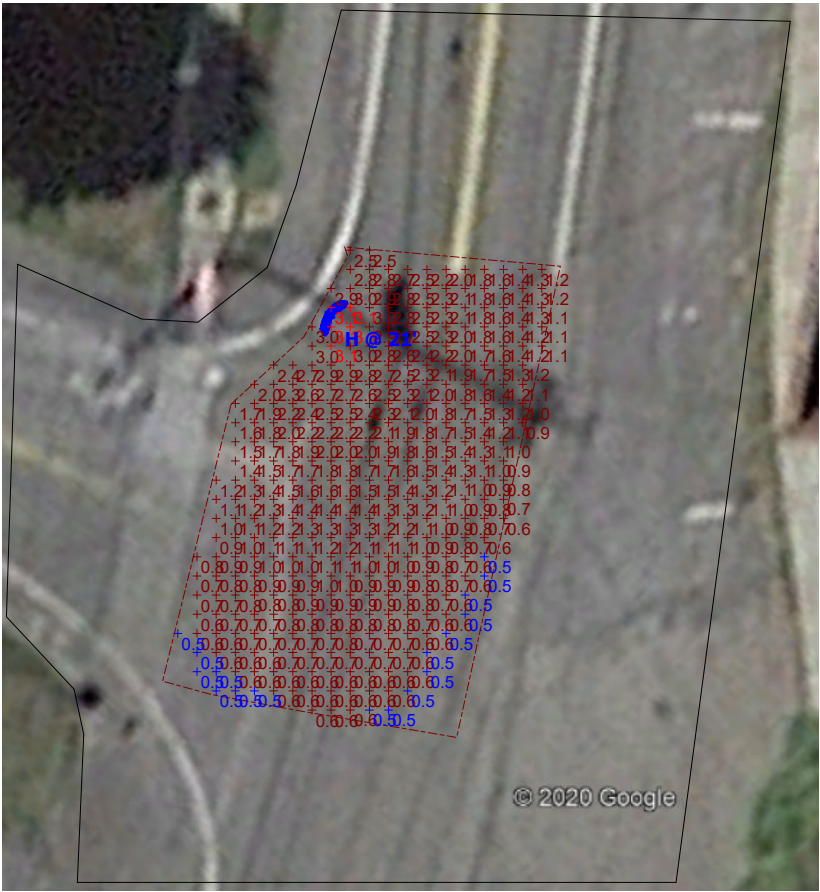
ANSI/IES RP-8-18: Illumination for Intersections				
Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in Lux/ft			E_{avg}/E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Collector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.0/1.8	14.0/1.4	8.0/0.8	6.0

Conclusion:


- Using the 54W RFS LED Cobra Head for Shaffer Rd. & Main St. intersection, the illuminance Average meets the 1.4 fc required with value of 1.4 fc; the Average Uniformity Ratio (E_{avg}/E_{min}) was within the value to 6.0 required with value of 2.8; All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using a 12' arm which matches the existing.


Intersection of Shaffer Rd. & Main St.
Loc to Loc "T" Intersection with Med Pedestrian Classification

Shaffer Rd.
32' Width Roadway



Main St.
50' Width Roadway

Schedule							
Symbol	Label	Manufacturer	Catalog Number	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
	B	PHILIPS LUMEC	RFS-54W16LED3K-G2-R3M	1	5587	0.84	53

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1		1.4 fc	3.1 fc	0.5 fc	6.2:1	2.8:1

Intersection of Shaffer Rd. & Main St.

Designer
LD
Date
06/29/2020
Scale
Not to Scale
Drawing No.

Summary

Section J.2a - 9i. (Trumansburg Road & Colegrove Road)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Illuminance (fc)
Calculation Date	06/29/2020
Calculation Technician	LD
Calculation Scope	Trumansburg Road & Colegrove Road (Town of Ulysses)

Introduction:

Below is the basis of design document and photometric analysis utilizing Visual software for each case and fixture catalog listed. The analysis includes illuminance (IL), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- Philips RFS-55W32LED3K-G2-R3M-UNV

Roadway Conditions – Trumansburg Road & Colegrove Road:

- ~32' & 26' curb to curb distance
- Roadway classification intersection is a collector/local with low pedestrian conflict.
- Fixture is mounted on existing utility poles ~25' above roadway surface. Fixtures is mounted to a 12' arm. Fixture is mounted with the mounting arm at a 45 – degree angle.
- There are no parking shoulders on either side of the roadway (Trumansburg Rd. & Colegrove Rd.).
- There are two 12' drive lanes, going in opposite directions for both (Trumansburg Rd. & Colegrove Rd.).
- Traffic lanes have separation on Trumansburg Rd. and no separation on Colegrove Rd.
- Poles setback are predominately 1' from curb.

Assumptions:

- All fixtures in this calculation have a type 3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .88* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .836 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-8-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

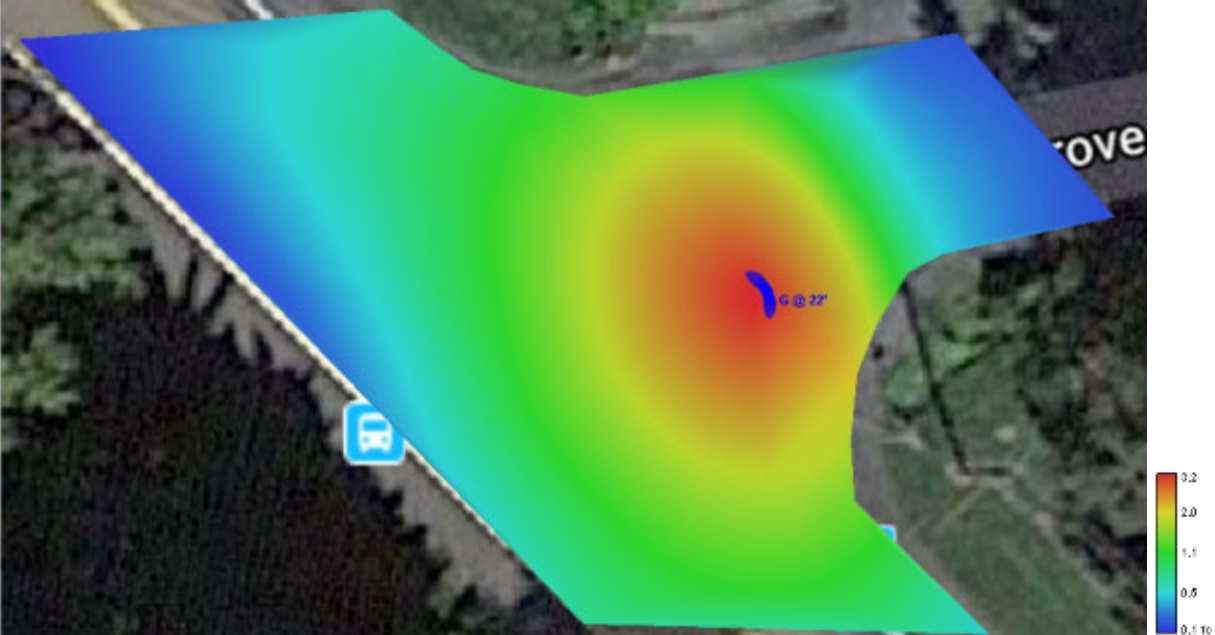
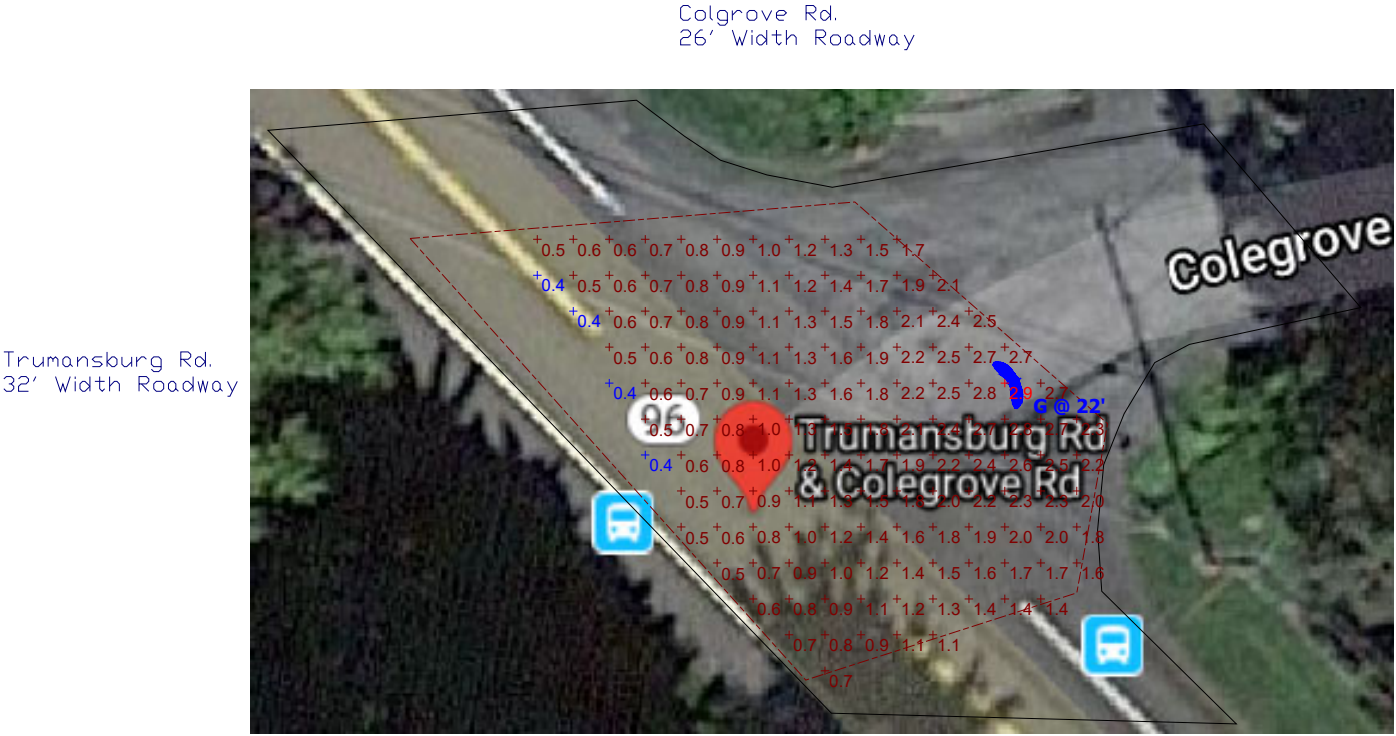
Calculation Support Tables

ANSI/IES RP-8-18: Illumination for Intersections				
Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in Lux/ft			E_{avg}/E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Collector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.0/1.8	14.0/1.4	8.0/0.8	6.0

Conclusion:

- Using the 55W RFM LED Cobra Head for Trumansburg Rd. & Colegrove Rd. intersection, the illuminance Average meets the 1.0 fc required with value of 1.4 fc; the Average Uniformity Ratio (E_{avg}/E_{min}) was within the value to 4.0 required with value of 3.5; All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using a 12' arm which matches the existing.

Intersection of Trumansburg Road & Colgrove Road
Collector to Local "T" Intersection with Low Pedestrian Classification



Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Lumens per Lamp	LLF	Wattage
	G	1	PHILIPS LUMEC	RFM-55W32LED3K-G2-R3M	6344	0.836	53.98

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #2	+	1.4 fc	2.9 fc	0.4 fc	7.3:1	3.5:1

Intersection of Trumansburg Rd. & Colgrove Rd.

Designer
LD
Date
06/29/2020
Scale
Not to Scale
Drawing No.

Summary

Section J.2a - 10j. (Valley Road & Elm Street)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Illuminance (fc)
Calculation Date	06/29/2020
Calculation Technician	LD
Calculation Scope	Valley Road & Elm Street (Town of Caroline)

Introduction:

Below is the basis of design document and photometric analysis utilizing Visual software for each case and fixture catalog listed. The analysis includes illuminance (IL), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Passing Evaluation:

- Philips RFS-65W40LED4K-G2-R3M-UNV

Roadway Conditions – Valley Road & Elm Street:

- ~32' & 24' curb to curb distance
- Roadway classification intersection is a collector/local with medium pedestrian conflict.
- The existing mounting arm is 12'.
- Fixture is mounted on existing utility poles ~25' above roadway surface. Fixtures is mounted to a 12' arm. Fixture is mounted with the mounting arm at a 45 – degree angle.
- There are no parking shoulders on either side of the roadway (Valley Rd. & Elm St.).
- There are two 12' drive lanes, going in opposite directions for both (Valley Rd. & Elm St.).
- Traffic lanes have separation on Valley Rd. and no separation on Elm St.
- Poles setback are predominately 1' from curb.

Assumptions:

- All fixtures in this calculation have a type 3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .84* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .798 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-8-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Illumination for Intersections				
Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in Lux/ft			E_{avg}/E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Collector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.0/1.8	14.0/1.4	8.0/0.8	6.0

Conclusion:

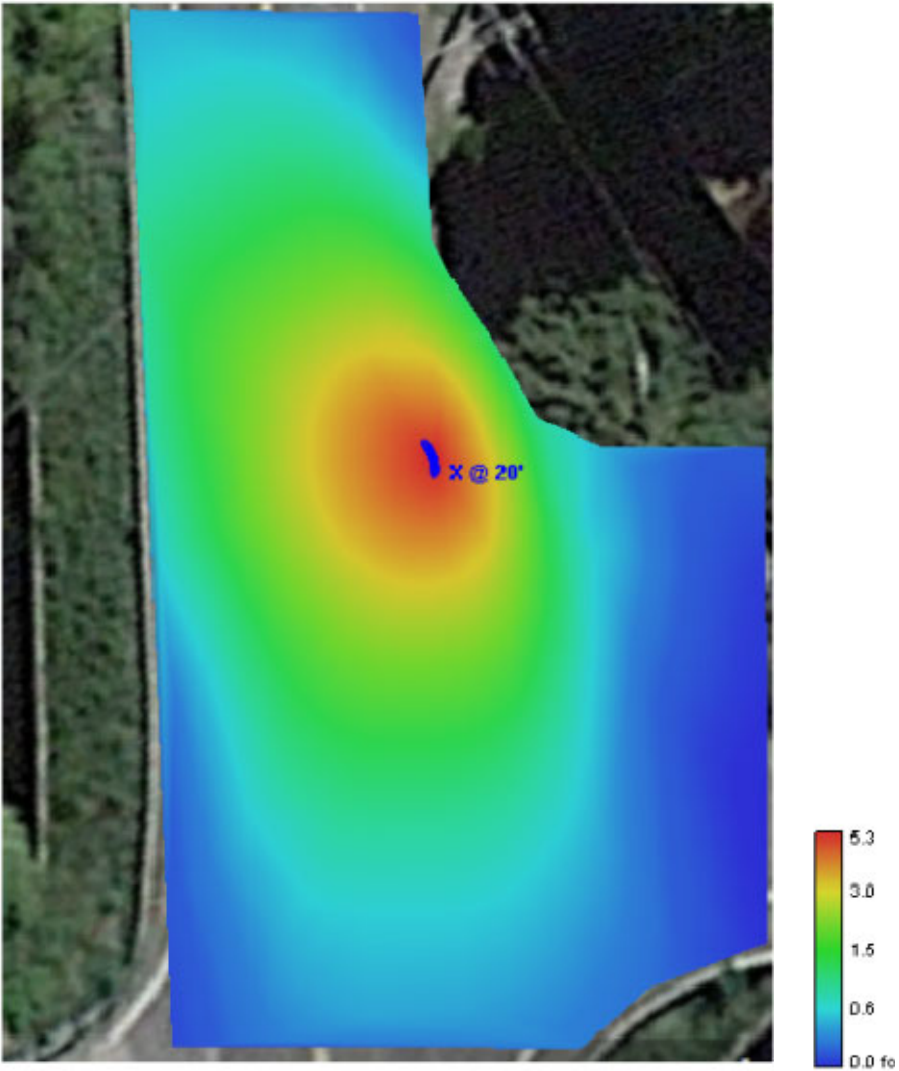
- Using the 65W RFS LED Cobra Head for Valley Rd. & Elm St. intersection. The illuminance Average meets the 1.6 fc required with value of 1.6 fc; the Average Uniformity Ratio (E_{avg}/E_{min}) is within the value to 4.0 required with value of 4.0. All passing values are highlighted green on the layout comparison sheet. The existing arm matches the 12' arm used for this analysis.


Intersection of Valley Road & Elm Street
Collector to Local "T" Intersection with Medium Pedestrian Classification

Valley Road
32' Roadway Width



Elm Street
24' Roadway Width



Schedule							
Symbol	Label	Quantity	Manufacturer	Catalog Number	Lumens Per Lamp	Light Loss Factor	Wattage
	X	1	SIGNIFY	RFS-65W40LED4K-G2-R3M	9072	0.798	66

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #2	+	1.6 fc	4.8 fc	0.4 fc	12.0:1	4.0:1

Intersection of Valley Rd. & Elm St.

Designer
LD
Date
6/29/2020
Scale
Not to Scale
Drawing No.

Summary

Section J.2a - 11k. (Railroad Street & Fall Creek Rd.)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Illuminance (fc)
Calculation Date	06/29/2020
Calculation Technician	LD
Calculation Scope	Railroad Street & Fall Creek Road (Village of Freeville)

Introduction:

Below is the basis of design document and photometric analysis utilizing AGI 32 software for each case and fixture catalog listed. The analysis includes illuminance (IL), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Under Evaluation:

- Philips - RFM-75W60LED3K-G2-R3M

Roadway Conditions – Railroad Street & Fall Creek Road:

- ~32' & 30' curb to curb distance.
- The roadway classification intersection is a collector/collector with low pedestrian conflict.
- Fixture is mounted on an existing utility pole ~25' above roadway surface. Fixtures is mounted to 16' arm. Fixture is located on corner of intersection with arm mounted at 90-degree angle.
- There are no parking shoulders on either side of the roadway for both Railroad St. & Fall Creek Rd.
- There are two 12' drive lanes going in opposite directions for both Railroad St. & Fall Creek Rd.
- Traffic lanes have separation for both (Railroad St. & Fall Creek Rd.).
- Poles setback are predominately 3' from curb.

Assumptions:

- All fixtures in this calculation have an R3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .88* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula. which is $LLD \times LDD = LLF$, an LLF value of .836 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-8-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Illumination for Intersections				
Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in Lux/ft			E_{avg}/E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Collector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.0/1.8	14.0/1.4	8.0/0.8	6.0

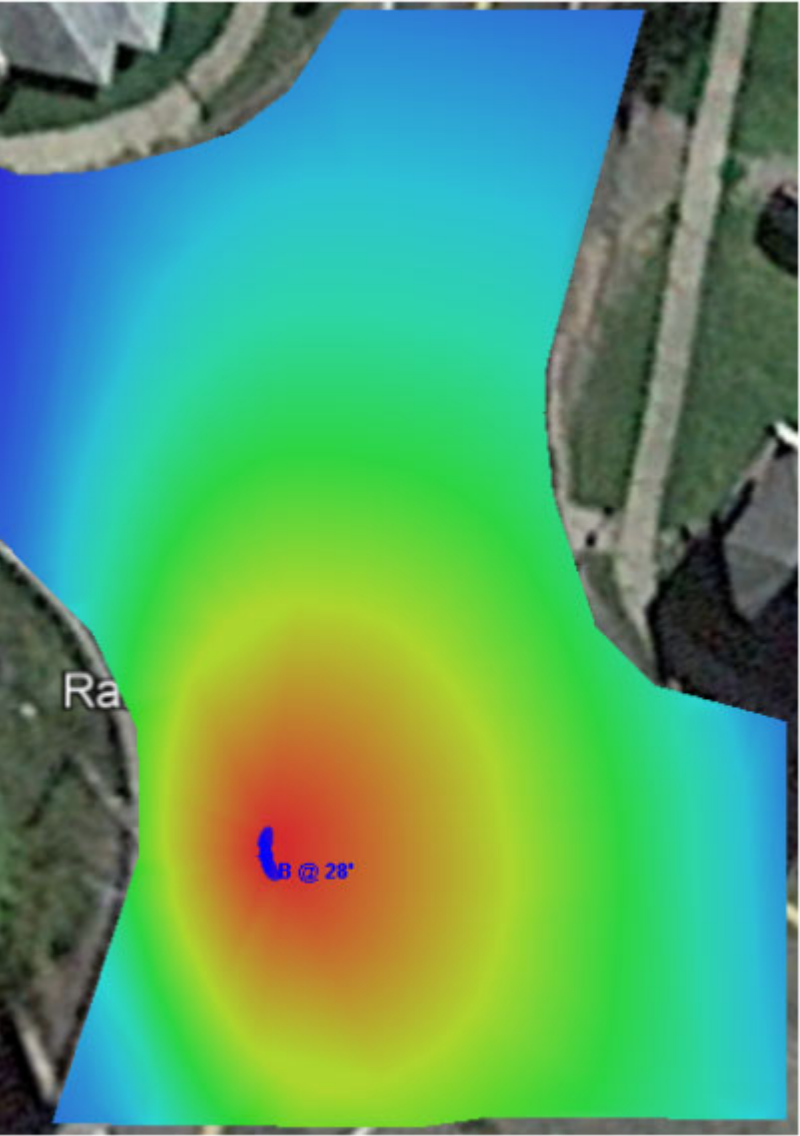
Conclusion:

- Using the 75W RFM LED Cobra Head for Railroad St. & Fall Creek Rd. intersection, the illuminance Average meets the 1.2 fc required with value of 1.5 fc; the Average Uniformity Ratio (E_{avg}/E_{min}) was within the value to 4.0 required with value of 3.0; All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using a 16' arm which matches the existing.

Intersection of Railroad Street & Fall Creek Road
Collector to Collector "X" Intersection with Low Pedestrian Classification

Railroad Street
32' Width Roadway

Fall Creek Road
30' Width Roadway



Schedule								
Symbol	Label	Image	Quantity	Manufacturer	Catalog Number	Lumens Per Lamp	Light Loss Factor	Wattage
	B		1	SIGNIFY	RFM-75W60LED3K-G2-R3M	10493	0.836	77

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #2	+	1.5 fc	3.0 fc	0.5 fc	6.0:1	3.0:1

Intersection of Railroad St. & Fall Creek Rd.

Designer
LD
Date
06/29/2020
Scale
Not to Scale
Drawing No.

Summary

**Section J.2a - 12l. (State Hwy. 96 (Trumansburg Road &
Hector Street)**

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Illuminance (fc)
Calculation Date	06/29/2020
Calculation Technician	LD
Calculation Scope	State Hwy. 96 (Trumansburg Road) & Hector Street (Village of Trumansburg)

Introduction:

Below is the basis of design document and photometric analysis utilizing AGi 32 software for each case and fixture catalog listed. The analysis includes illuminance (IL), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Under Evaluation:

- Philips - RFM-100W60LED3K-G2-R3M

Roadway Conditions – State Hwy. 96 (Trumansburg Road) & Hector Street:

- ~44' & 32' curb to curb distance.
- The roadway classification intersection is a collector/collector with med pedestrian conflict.
- The fixture is mounted on an existing utility pole ~28' above roadway surface. Fixtures are mounted to a 12' arm. Fixture is located on corner of intersection with arm mounted at 90-degree angle.
- There are no parking shoulders on either side of the roadway for both State Hwy 96. & Hector St.
- There are two 12' drive lanes going in opposite directions with a turn lane on both State Hwy 96. & Hector St.
- The traffic lanes have separation on both State Hwy. 96 & Hector St.
- Poles setback are predominately 3' from the curb.

Assumptions:

- All fixtures in this calculation have a R3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .88* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .836 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-8-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

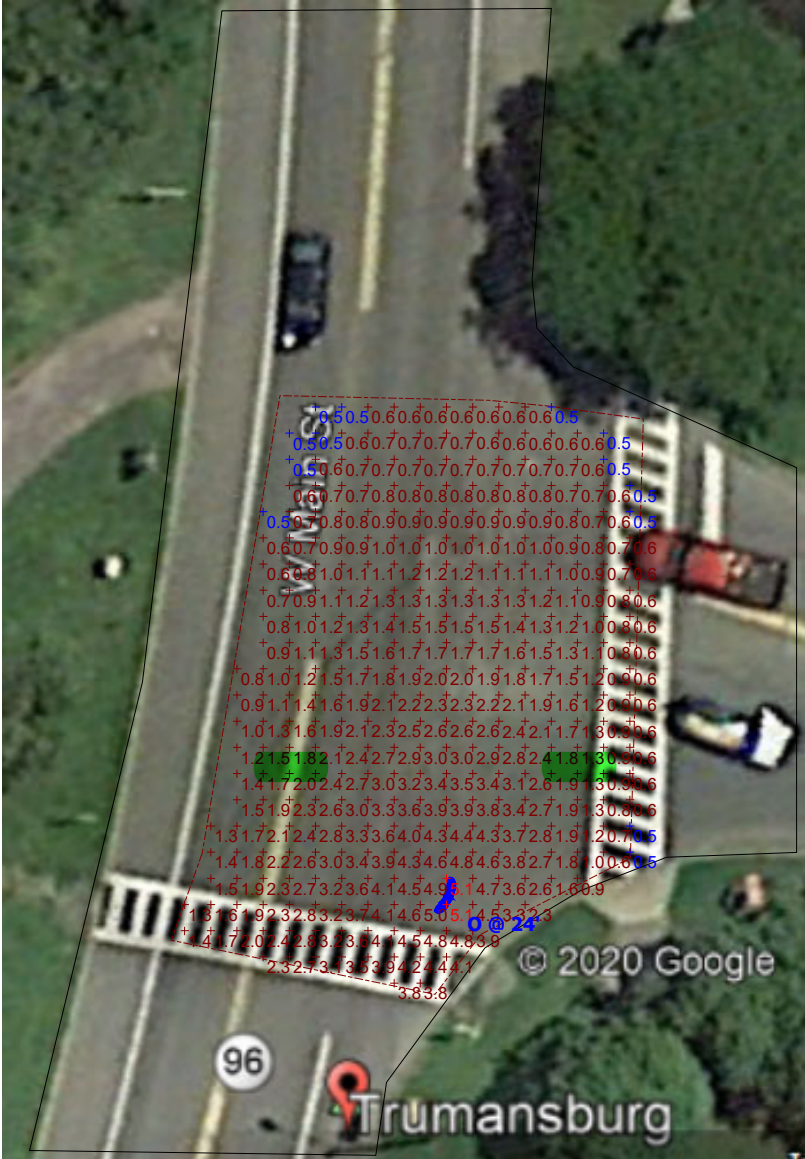
ANSI/IES RP-8-18: Illumination for Intersections				
Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in Lux/ft			E_{avg}/E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Collector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.0/1.8	14.0/1.4	8.0/0.8	6.0

Conclusion:

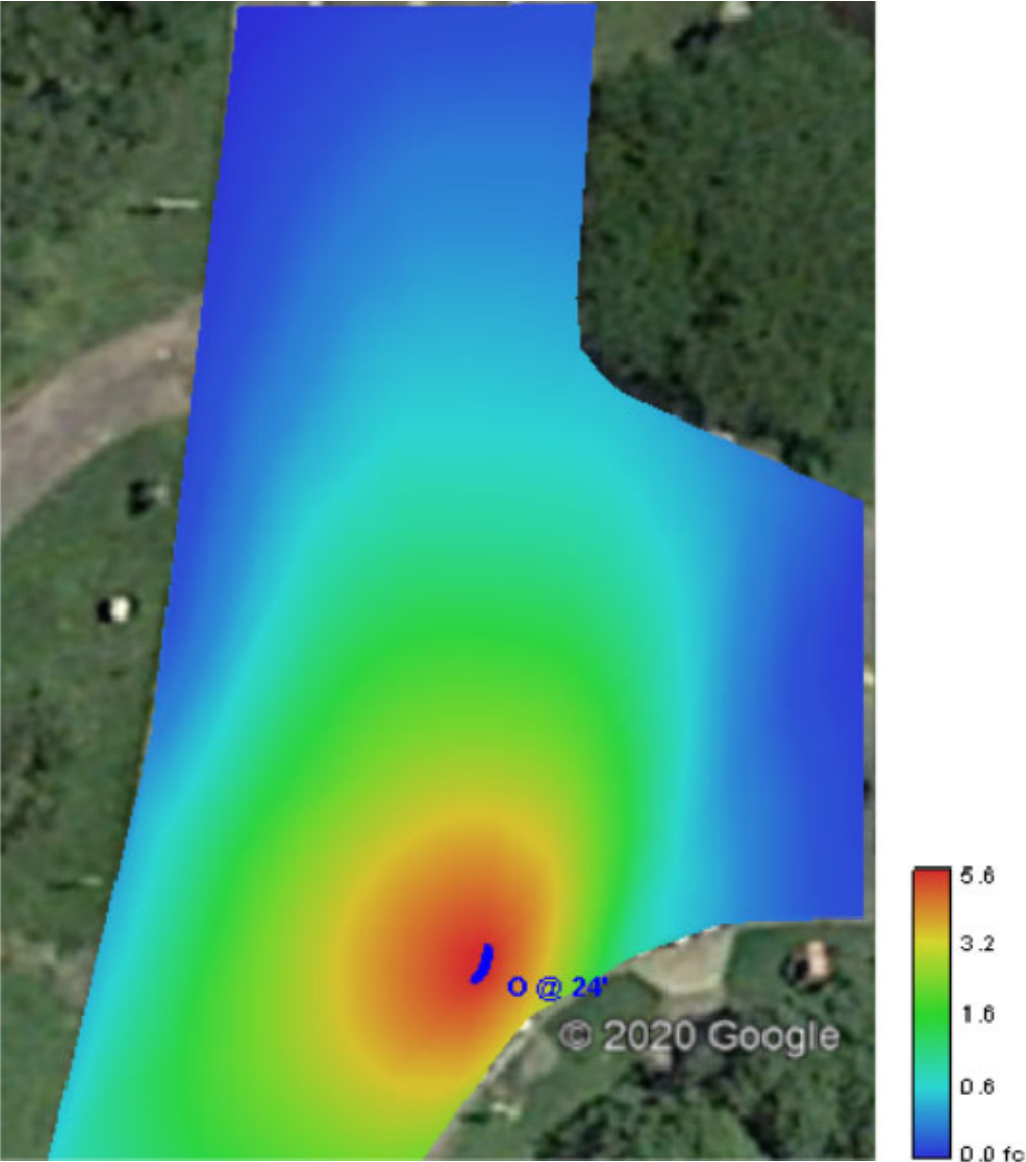
- Using the 100W RFM LED Cobra Head for State Hwy. 96 (Trumansburg Road) and Hector Street intersection, the illuminance Average meets the 1.8 fc required with value of 1.8 fc; the Average Uniformity Ratio (E_{avg}/E_{min}) was within the value to 4.0 required with a value of 3.6; All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using an 12' arm which matches the existing.

State Hwy. 96 (Trumansburg Rd.) & Hector Street
Collector to Collector "T" Intersection with Med Pedestrian Classification

State Hwy. 96. (Trumansburg Rd.)
42' Width Roadway



Hector Street
32' Width Roadway



Current View

Schedule						
Quantity	Manufacturer	Catalog Number	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
1	SIGNIFY	RFM-100W60LED3K-G2-R3M	1	13013	0.836	99

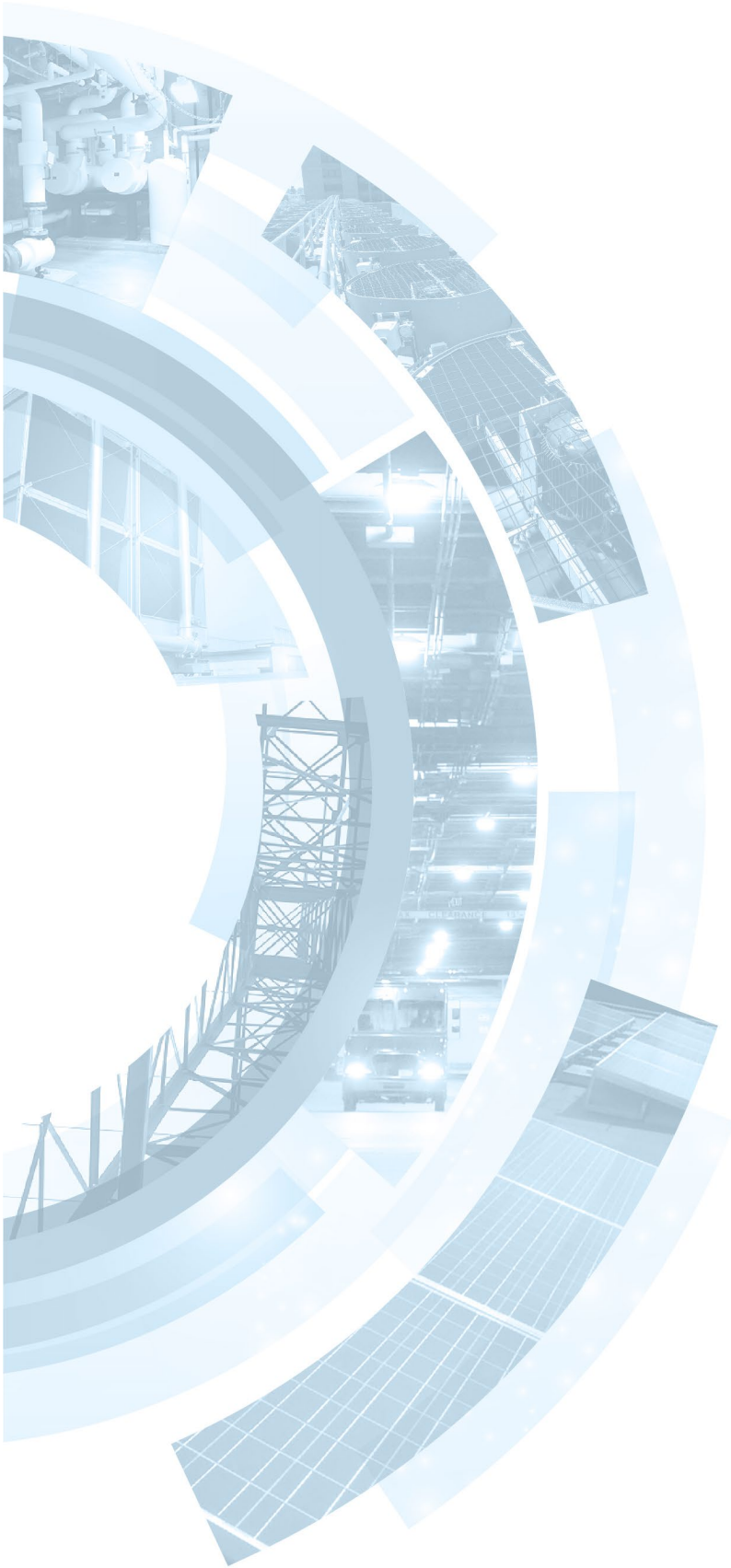
Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #3	+	1.8 fc	5.1 fc	0.5 fc	10.2:1	3.6:1

Intersection of State Hwy. 96 (Trumansburg Rd.) & Hector St.

Designer
LD
Date
06/30/2020
Scale
Not to Scale
Drawing No.

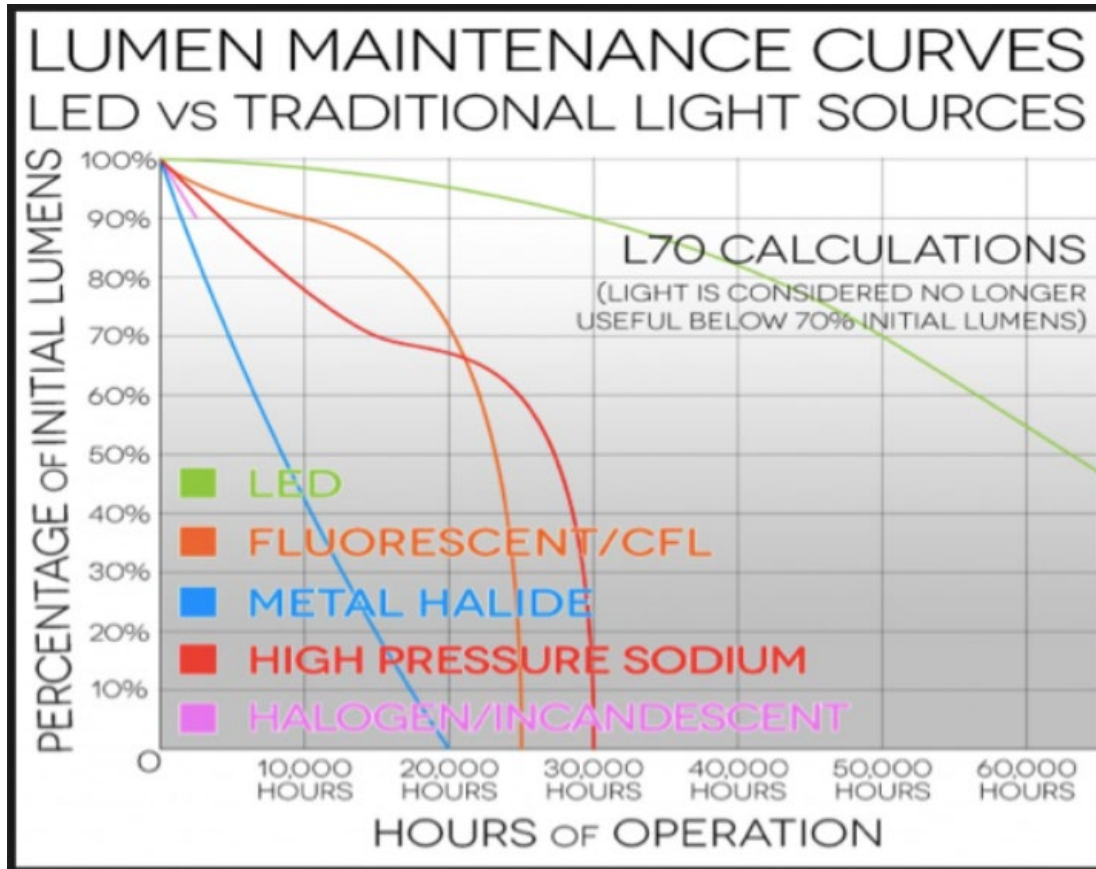
Summary

J.2b – Existing Photometrics



Existing Photometric Assumptions:

Approximately 4,123 hours of street lighting operation per year. After 5 years the fixture will have been in operation for 20,615 Hours.



Typical Lumen Maintenance Curve gives LLF value of approximately .68 after the 5 years.

The results below, show the modeling of the existing roadway conditions show that all of the current roadways do not meet the recommended values, weather average or uniformity.

Designation	Location	Existing Lamp (W)	Existing Lamp Type	Existing Fixture Type	Existing Photometric Result
1a.	Westhaven Road	150	HPS	Cobra Head	Passed Avg, Avg/Min, Max/Min. Failed Max LV.
2b.	Five Mile Drive	175	MV	Cobra Head	Failed Avg, Avg/Min, Max/Min. Passed Max LV.
3c.	Main Street	150	HPS	Cobra Head	Passed Avg/Min and Max/Min. Failed Avg and Max LV.
4d.	Main Street	100	HPS	Cobra Head	Passed Avg, Avg/Min, Max/Min. Failed Max LV.
5e.	State Hwy. 96	250	HPS	Cobra Head	Passed Avg. Failed Avg/Min, Max/Min, Max LV.

Section J.2b - 1a. (Westhaven Road - Town of Ithaca)

Calculation Summary

Project	Town of Ithaca
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	07/07/2020
Calculation Technician	DN/LD
Calculation Scope	Westhaven Road (Ithaca)

Introduction:

Below is the basis of design document and photometric analysis utilizing AGi 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Under Evaluation:

- 150W High Pressure Sodium Cobra Head

Roadway Conditions –Westhaven Rd:

- ~30' curb to curb distance.
- The roadway classification is a local with low pedestrian conflict.
- Fixtures are Cobra Heads mounted on existing utility poles ~25' above roadway surface.
- Fixtures are mounted to 16' arms.
- There is no parking shoulder on either side of the roadway.
- There are two 12' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are predominately ~3' from curb.
- There are no sidewalks on the roadway.
- Fixtures are on one side of the street and spaced approximately 150' apart.

Assumptions:

- All fixtures in this calculation have an R3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .63* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of 0.60 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 150W HPS Cobra Head for Westhaven Rd with spacing of 150', the L avg does not meet the 0.3 required with values of 1.11/0.74 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was not within the value to 6.0 required with values of 1.91/1.85; The Max Uniformity Ratio (L max/L min) did not pass the 10.0 threshold with values of 3.17/3.28; The Max. Veiling Luminance Ratio (LV max/L avg) did not pass staying below 0.4 with values calculated at 0.32/0.46. All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using a 16' arm which matches the existing.



Roadway Optimizer - Layout 1

General:

Westhaven Rd (Top)

Roadway Standard: IES RP-8-14

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

150W HPS Cobra Head (Roadway)

Description: 315 15S R2 DP

File Name: 150W HPS Cobra Head (Roadway) R2M.ies

Lumens Per Lamp: 16000

Number Of Lamps: 1

Total Lamp Lumens: 16000

Luminaire Lumens: 11147

Luminaire Watts: 193

Efficiency (%): 70

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 16 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 150

Label	X-Coord	Y-Coord	Z-Coord	Orient	Tilt	Spin
150W HPS Cobra Head...	450	37	25	270	0	0
150W HPS Cobra Head...	300	37	25	270	0	0
150W HPS Cobra Head...	150	37	25	270	0	0
150W HPS Cobra Head...	0	37	25	270	0	0
150W HPS Cobra Head...	-150	37	25	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

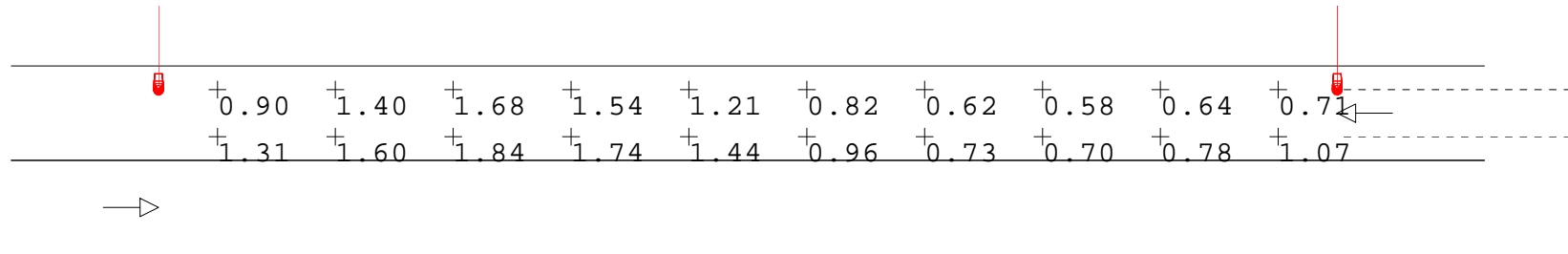
Coordinates in ft

150W HPS Cobra Head...	-300	37	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance

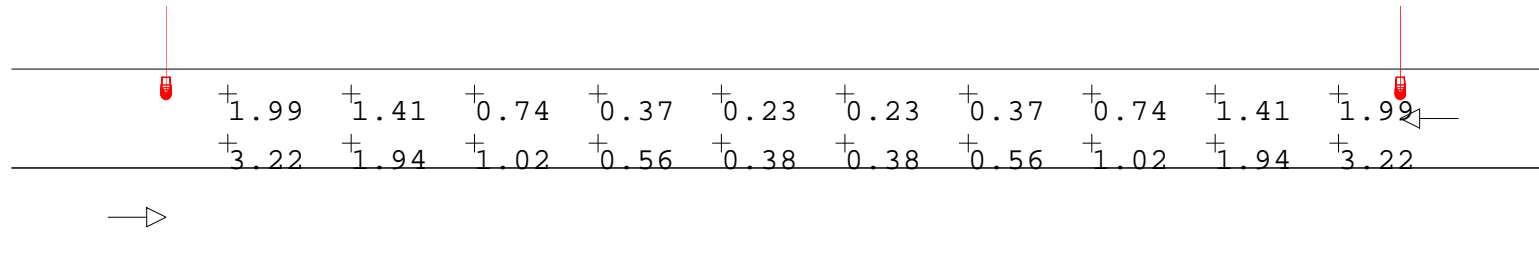


Luminance (Cd/SqM)

Average = 1.11
Maximum = 1.84
Minimum = 0.58
Avg/Min Ratio = 1.91
Max/Min Ratio = 3.17
Max/Avg Ratio = 1.66

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 1.19

Maximum = 3.22

Minimum = 0.23

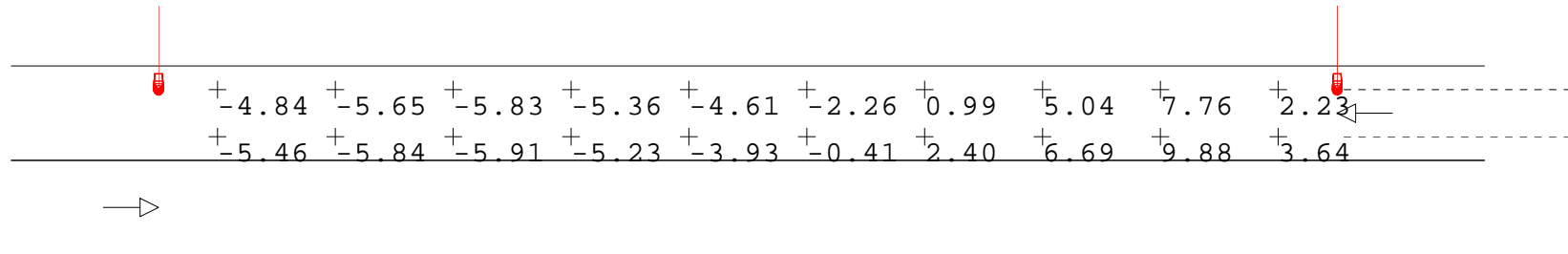
Avg/Min Ratio = 5.17

Max/Min Ratio = 14

Max/Avg Ratio = 2.71

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

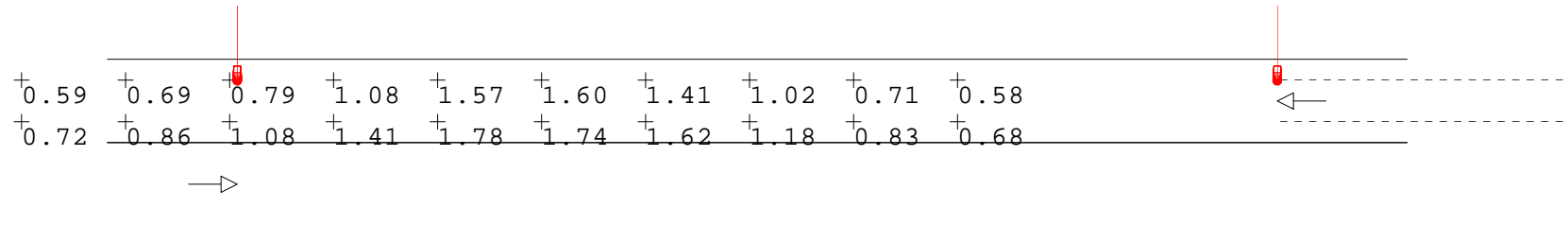


Visibility Level

STV = 4.139747

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum

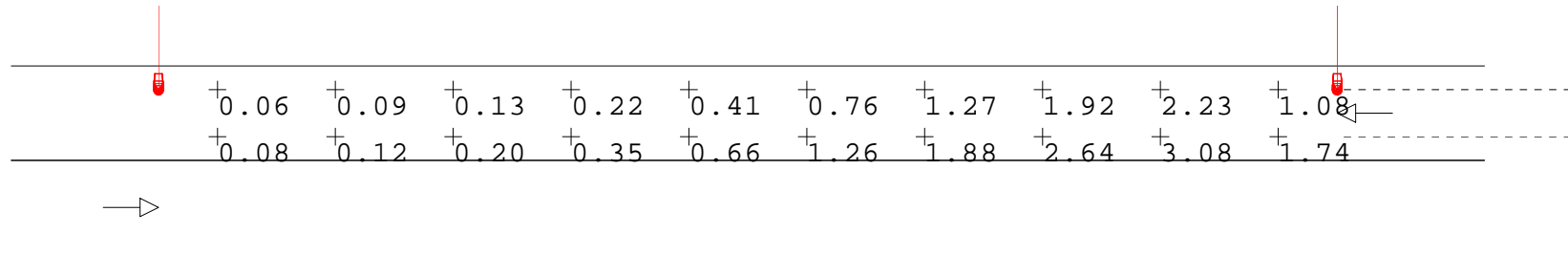


Background Luminance (Cd/SqM)

Average = 1.1
Maximum = 1.78
Minimum = 0.58
Avg/Min Ratio = 1.9
Max/Min Ratio = 3.07
Max/Avg Ratio = 1.62

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 1.01

Maximum = 3.08

Minimum = 0.06

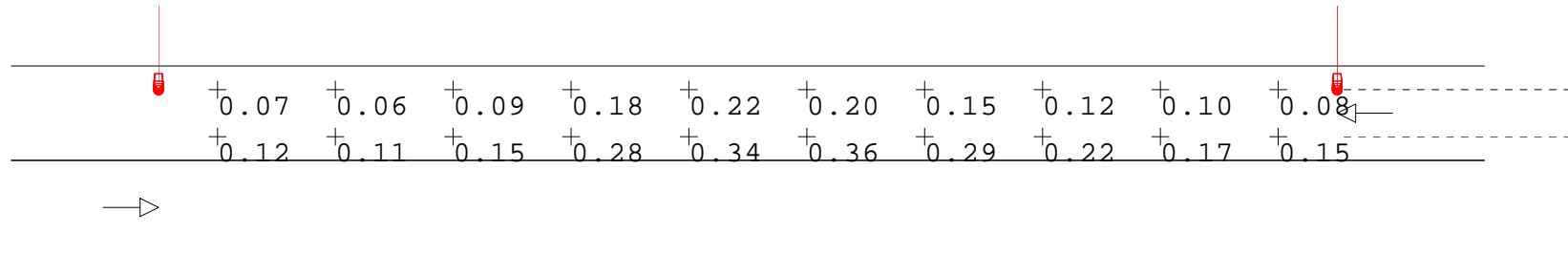
Avg/Min Ratio = 16.83

Max/Min Ratio = 51.33

Max/Avg Ratio = 3.05

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.17

Maximum = 0.36

Minimum = 0.06

Avg/Min Ratio = 2.83

Max/Min Ratio = 6

Max/Avg Ratio = 2.12

MaxLv Ratio = 0.32

Threshold Increment (TI) = 21.53



Roadway Optimizer - Layout 2

General:

Westhaven Rd (Bottom)

Roadway Standard: IES RP-8-14

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

150W HPS Cobra Head (Roadway)

Description: 315 15S R2 DP

File Name: 150W HPS Cobra Head (Roadway) R2M.ies

Lumens Per Lamp: 16000

Number Of Lamps: 1

Total Lamp Lumens: 16000

Luminaire Lumens: 11147

Luminaire Watts: 193

Efficiency (%): 70

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 16 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 150

Label	X-Coord	Y-Coord	Z-Coord	Orient	Tilt	Spin
150W HPS Cobra Head...	450	37	25	270	0	0
150W HPS Cobra Head...	300	37	25	270	0	0
150W HPS Cobra Head...	150	37	25	270	0	0
150W HPS Cobra Head...	0	37	25	270	0	0
150W HPS Cobra Head...	-150	37	25	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

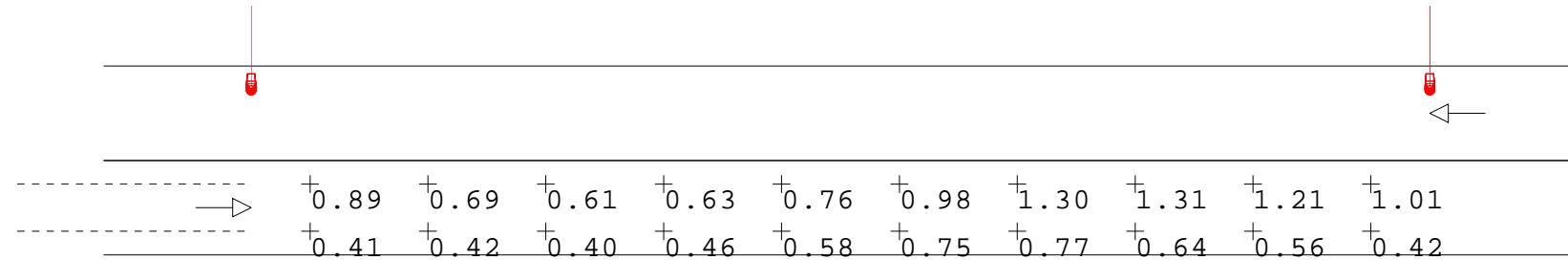
Coordinates in ft

150W HPS Cobra Head...	-300	37	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.74

Maximum = 1.31

Minimum = 0.40

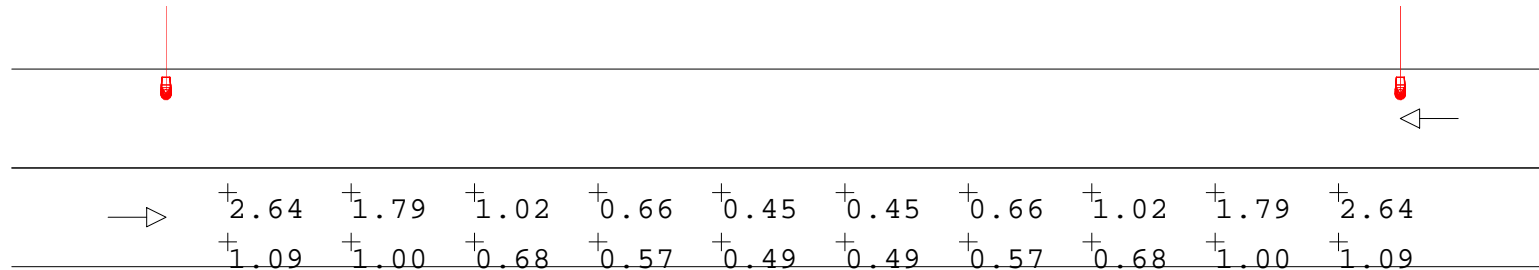
Avg/Min Ratio = 1.85

Max/Min Ratio = 3.28

Max/Avg Ratio = 1.77

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 1.04

Maximum = 2.64

Minimum = 0.45

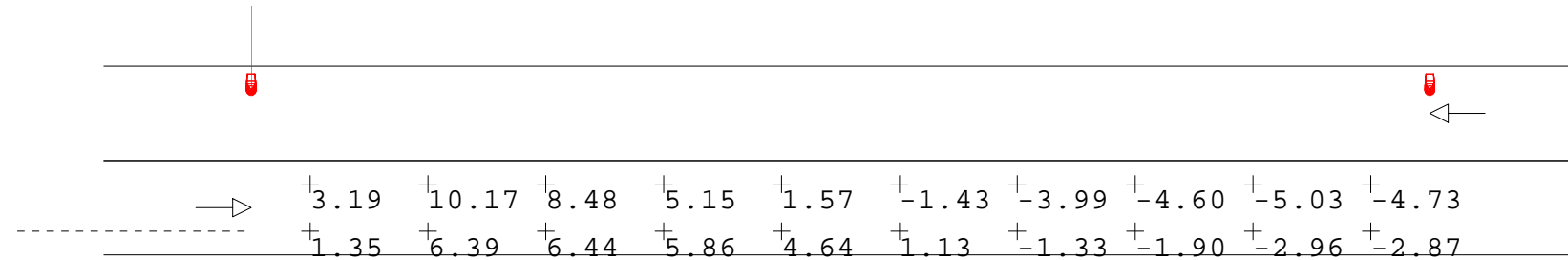
Avg/Min Ratio = 2.31

Max/Min Ratio = 5.87

Max/Avg Ratio = 2.54

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

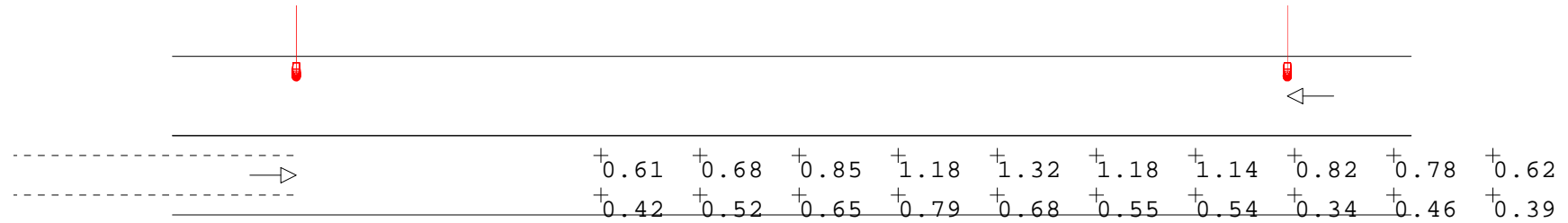


Visibility Level

STV = 3.564983

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.73

Maximum = 1.32

Minimum = 0.34

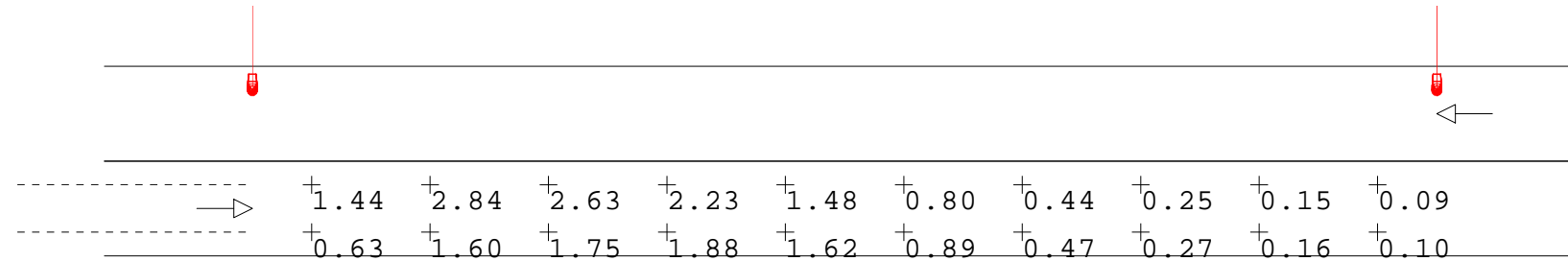
Avg/Min Ratio = 2.15

Max/Min Ratio = 3.88

Max/Avg Ratio = 1.81

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 1.09

Maximum = 2.84

Minimum = 0.09

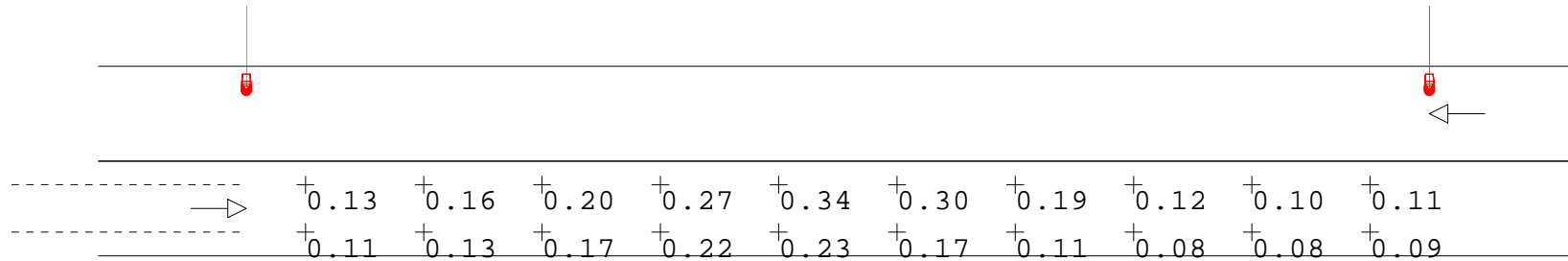
Avg/Min Ratio = 12.11

Max/Min Ratio = 31.56

Max/Avg Ratio = 2.61

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.17

Maximum = 0.34

Minimum = 0.08

Avg/Min Ratio = 2.13

Max/Min Ratio = 4.25

Max/Avg Ratio = 2

MaxLv Ratio = 0.46

Threshold Increment (TI) = 28.12

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	Westhaven Rd (Top)	Westhaven Rd (Bottom)
Roadway Standard	IES RP-8-14	IES RP-8-14
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	12	12
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Top	Bottom
Label - Row 1	150W HPS Cobra Head (Roadway)	150W HPS Cobra Head (Roadway)
S/P Ratio 1	1	1
MH - Row 1	25	25
Setback - Row 1	13	13
+ -Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	150	150
1_Luminance (Cd/SqM)		
Average	1.11	0.74
Maximum	1.84	1.31
Minimum	0.58	0.40
Avg/Min Ratio	1.91	1.85
Max/Min Ratio	3.17	3.28
Max/Avg Ratio	1.66	1.77
1_Illum (Fc)		
Average	1.19	1.04
Maximum	3.22	2.64
Minimum	0.23	0.45
Avg/Min Ratio	5.17	2.31

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Min Ratio	14.00	5.87
Max/Avg Ratio	2.71	2.54
1_Vis_Level		
STV	4.14	3.56
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	1.10	0.73
Maximum	1.78	1.32
Minimum	0.58	0.34
Avg/Min Ratio	1.90	2.15
Max/Min Ratio	3.07	3.88
Max/Avg Ratio	1.62	1.81
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	1.01	1.09
Maximum	3.08	2.84
Minimum	0.06	0.09
Avg/Min Ratio	16.83	12.11
Max/Min Ratio	51.33	31.56
Max/Avg Ratio	3.05	2.61
1_Veil_Lum (Cd/SqM)		
Average	0.17	0.17
Maximum	0.36	0.34
Minimum	0.06	0.08
Avg/Min Ratio	2.83	2.13
Max/Min Ratio	6.00	4.25
Max/Avg Ratio	2.12	2.00
MaxLV Ratio	0.32	0.46
Threshold Incr. (TI)	21.53	28.12

Section J.2b - 2b. (Five Mile Road - Town of Ithaca)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	07/06/2020
Calculation Technician	LD
Calculation Scope	Five Mile Drive – Town of Ithaca

Introduction:

Below is the basis of design document and photometric analysis utilizing AGI 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Under Evaluation:

- 250W HPS Cobra Head

Roadway Conditions – Five Mile Drive:

- ~32' curb to curb distance.
- The roadway classification is a collector with low pedestrian conflict.
- Fixtures are Cobra Heads mounted on existing utility poles ~25' above roadway surface.
- Fixtures are mounted to 8' arms.
- There no shoulders parking shoulders on either side of the roadway.
- There are two 12' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are predominately ~6' from curb.
- There are no sidewalks on one either side of the roadway.
- Fixtures are on one side of the roadway and spaced approximately 200' apart.

Assumptions:

- All fixtures in this calculation have an R3M distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .63* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .60 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

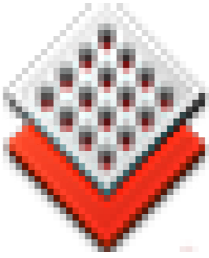
**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 250W HPS Cobra Head with spacing of 200', the L avg does not meet the 0.5 required with values of 0.39/0.28 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was not within the value to 6.0 required with values of 6.50/7.00; The Max Uniformity Ratio (L max/L min) did not pass, exceeding the 10.0 threshold with values of 17.50/19.75; The Max. Veiling Luminance Ratio (LV max/L avg) did pass staying below 0.4 with values calculated at 0.28/0.36. All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using an 12' arm which matches the existing.



Roadway Optimizer - Layout 1

General:

Five Mile Dr (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

CH 175W MV

Description: 115 17M R2 FG LD

File Name: CH 175W MV.ies

Lumens Per Lamp: 12900

Number Of Lamps: 1

Total Lamp Lumens: 12900

Luminaire Lumens: 8210

Luminaire Watts: 214

Efficiency (%): 64

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 200

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
CH 175W MV	600	30	25	270	0	0
CH 175W MV	400	30	25	270	0	0
CH 175W MV	200	30	25	270	0	0
CH 175W MV	0	30	25	270	0	0
CH 175W MV	-200	30	25	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

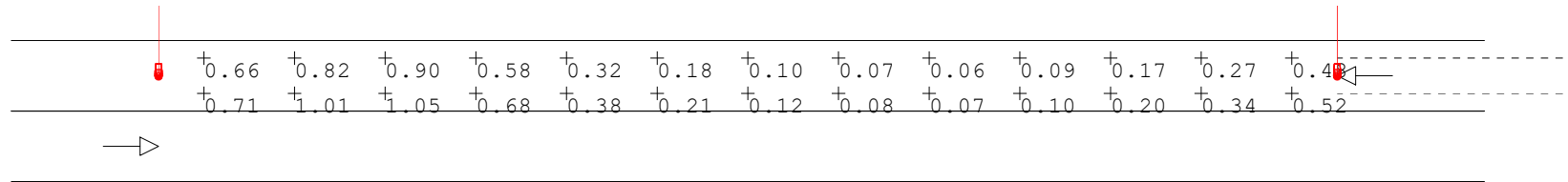
Coordinates in ft

CH 175W MV	-400	30	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.39

Maximum = 1.05

Minimum = 0.06

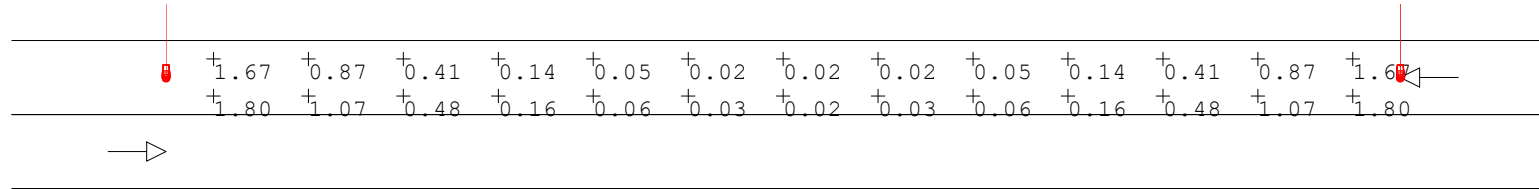
Avg/Min Ratio = 6.5

Max/Min Ratio = 17.5

Max/Avg Ratio = 2.69

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.52

Maximum = 1.80

Minimum = 0.02

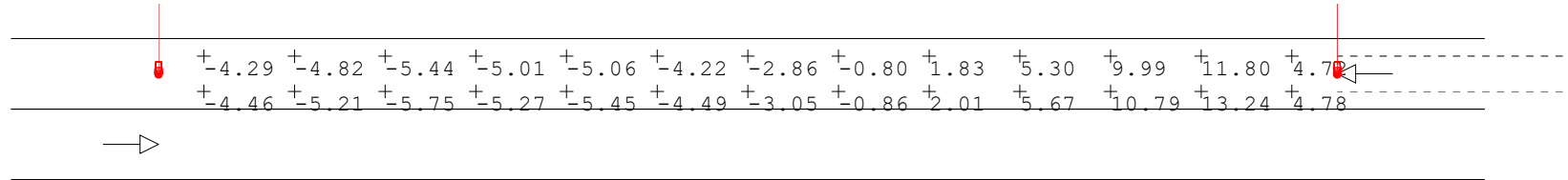
Avg/Min Ratio = 26

Max/Min Ratio = 90

Max/Avg Ratio = 3.46

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

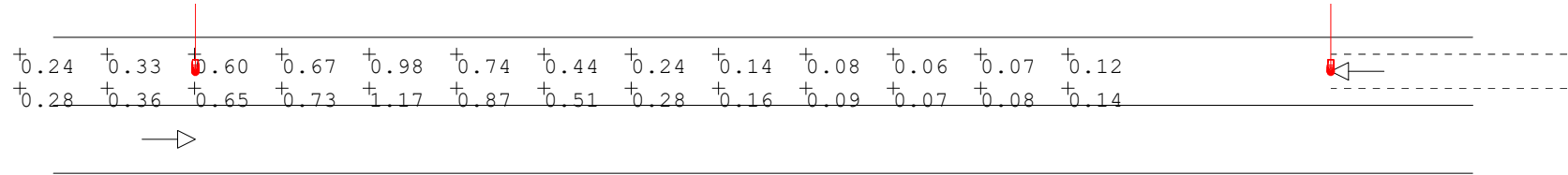


Visibility Level

STV = 4.447145

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.39

Maximum = 1.17

Minimum = 0.06

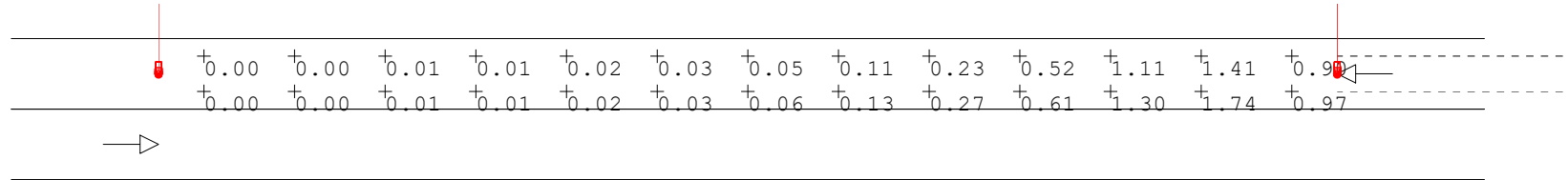
Avg/Min Ratio = 6.5

Max/Min Ratio = 19.5

Max/Avg Ratio = 3

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.37

Maximum = 1.74

Minimum = 0.00

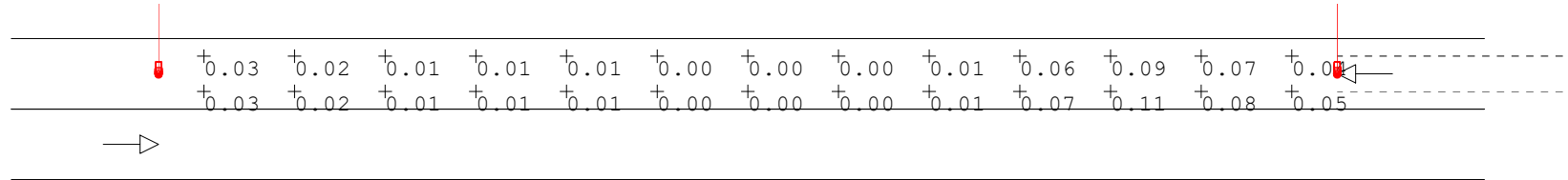
Avg/Min Ratio = N.A.

Max/Min Ratio = N.A.

Max/Avg Ratio = 4.7

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.03

Maximum = 0.11

Minimum = 0.00

Avg/Min Ratio = N.A.

Max/Min Ratio = N.A.

Max/Avg Ratio = 3.67

MaxLv Ratio = 0.28

Threshold Increment (TI) = 15.19



Roadway Optimizer - Layout 2

General:

Five Mile Dr (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

CH 175W MV

Description: 115 17M R2 FG LD

File Name: CH 175W MV.ies

Lumens Per Lamp: 12900

Number Of Lamps: 1

Total Lamp Lumens: 12900

Luminaire Lumens: 8210

Luminaire Watts: 214

Efficiency (%): 64

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 200

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
CH 175W MV	600	30	25	270	0	0
CH 175W MV	400	30	25	270	0	0
CH 175W MV	200	30	25	270	0	0
CH 175W MV	0	30	25	270	0	0
CH 175W MV	-200	30	25	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

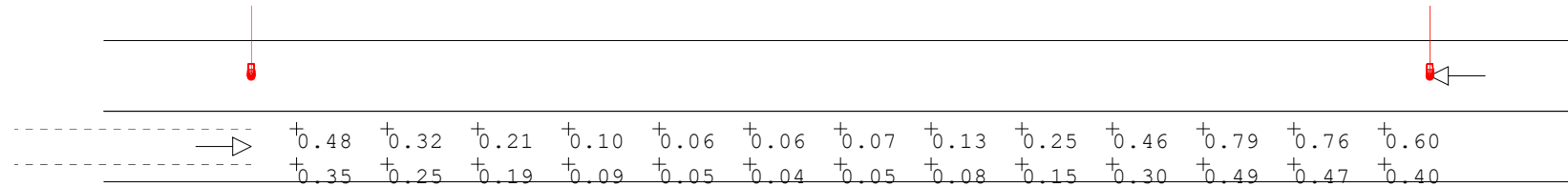
Coordinates in ft

CH 175W MV	-400	30	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance

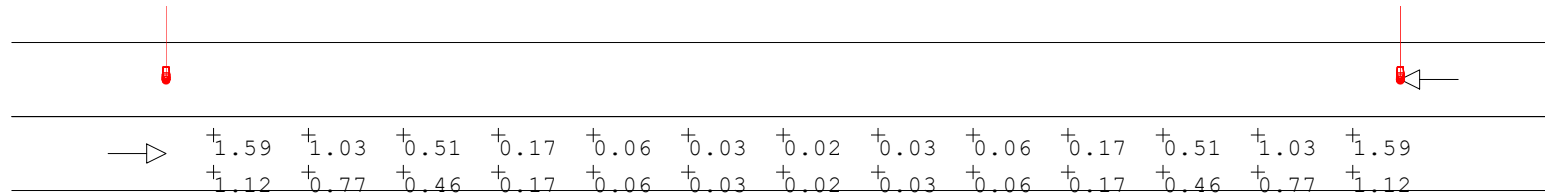


Luminance (Cd/SqM)

Average = 0.28
Maximum = 0.79
Minimum = 0.04
Avg/Min Ratio = 7
Max/Min Ratio = 19.75
Max/Avg Ratio = 2.82

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.46

Maximum = 1.59

Minimum = 0.02

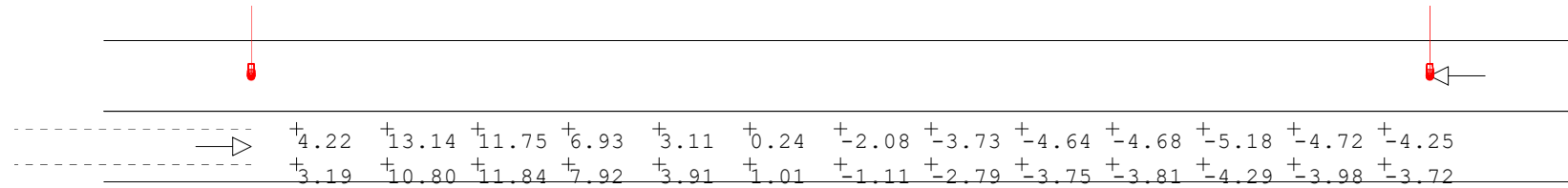
Avg/Min Ratio = 23

Max/Min Ratio = 79.5

Max/Avg Ratio = 3.46

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

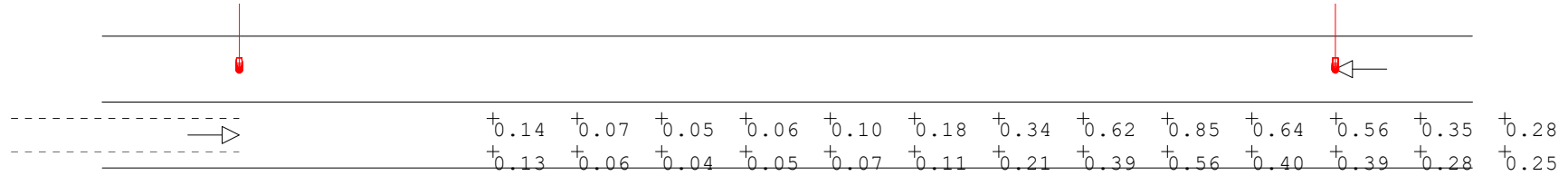


Visibility Level

STV = 4.063711

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.28

Maximum = 0.85

Minimum = 0.04

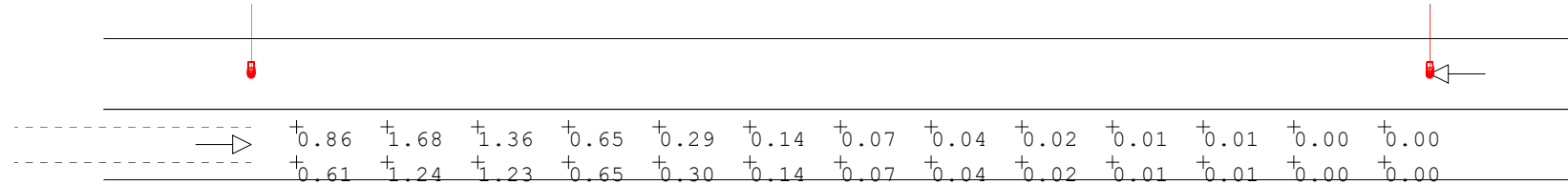
Avg/Min Ratio = 7

Max/Min Ratio = 21.25

Max/Avg Ratio = 3.04

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.36

Maximum = 1.68

Minimum = 0.00

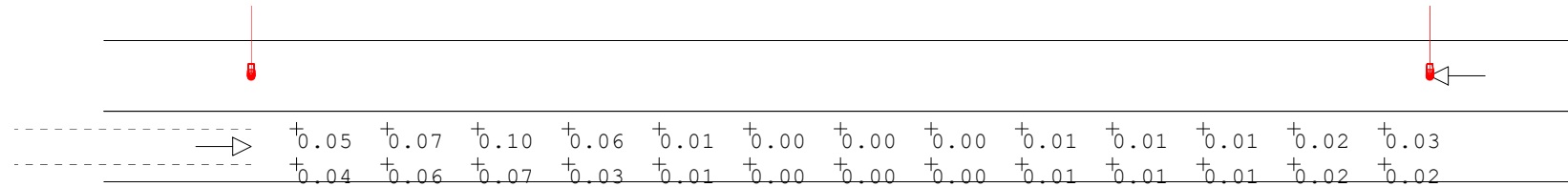
Avg/Min Ratio = N.A.

Max/Min Ratio = N.A.

Max/Avg Ratio = 4.67

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.03

Maximum = 0.10

Minimum = 0.00

Avg/Min Ratio = N.A.

Max/Min Ratio = N.A.

Max/Avg Ratio = 3.33

MaxLv Ratio = 0.36

Threshold Increment (TI) = 18.00

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	Five Mile Dr (Top)	Five Mile Dr (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	12	12
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Top	Bottom
Label - Row 1	CH 175W MV	CH 175W MV
S/P Ratio 1	1	1
MH - Row 1	25	25
Setback - Row 1	6	6
+Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	200	200
1_Luminance (Cd/SqM)		
Average	0.39	0.28
Maximum	1.05	0.79
Minimum	0.06	0.04
Avg/Min Ratio	6.50	7.00
Max/Min Ratio	17.50	19.75
Max/Avg Ratio	2.69	2.82
1_Illum (Fc)		
Average	0.52	0.46
Maximum	1.80	1.59
Minimum	0.02	0.02
Avg/Min Ratio	26.00	23.00
Max/Min Ratio	90.00	79.50

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Avg Ratio	3.46	3.46
1_Vis_Level		
STV	4.45	4.06
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	0.39	0.28
Maximum	1.17	0.85
Minimum	0.06	0.04
Avg/Min Ratio	6.50	7.00
Max/Min Ratio	19.50	21.25
Max/Avg Ratio	3.00	3.04
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	0.37	0.36
Maximum	1.74	1.68
Minimum	0.00	0.00
Avg/Min Ratio	N.A.	N.A.
Max/Min Ratio	N.A.	N.A.
Max/Avg Ratio	4.70	4.67
1_Veil_Lum (Cd/SqM)		
Average	0.03	0.03
Maximum	0.11	0.10
Minimum	0.00	0.00
Avg/Min Ratio	N.A.	N.A.
Max/Min Ratio	N.A.	N.A.
Max/Avg Ratio	3.67	3.33
MaxLV Ratio	0.28	0.36
Threshold Incr. (TI)	15.19	18

Section J.2b -3c. (Main St-Town of Newfield)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	07/07/2020
Calculation Technician	DN/LD
Calculation Scope	Main Street – Town of Newfield

Introduction:

Below is the basis of design document and photometric analysis utilizing AGI 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Under Evaluation:

- 150W HPS Cobra Head

Roadway Conditions – Main Street:

- ~50' curb to curb distance.
- The roadway classification is a local with medium pedestrian conflict.
- Fixtures are Cobra Heads mounted on existing utility poles ~25' above roadway surface.
- Fixtures are mounted to 8' arms.
- There are parking shoulders on both sides of the roadway.
- There are two 12' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are predominately ~2' from curb.
- There is a sidewalk on both sides of the roadway.
- Fixtures are on one side of the roadway and spaced approximately 175' apart.

Assumptions:

- All fixtures in this calculation have an omni directional distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .63* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .60 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 150W HPS Cobra Head with spacing of 175', the L avg did not meet the 0.5 requirement with values of 0.58/0.39 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was within the threshold of 6.0 required with values of 3.63/1.95; The Max Uniformity Ratio (L max/L min) passed, staying under the 10.0 threshold with values of 7.06/3.65; The Max. Veiling Luminance Ratio (LV max/L avg) did not pass staying above 0.4 with values calculated at 0.33/0.51. All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using an 8' arm which matches the existing.



Roadway Optimizer - Layout 1

General:

Main St (Newfield) (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

150W HPS Cobra Head (Roadway)

Description: 315 15S R3 DA

File Name: 150W HPS Cobra Head (Roadway) R3M.ies

Lumens Per Lamp: 16000

Number Of Lamps: 1

Total Lamp Lumens: 16000

Luminaire Lumens: 13178

Luminaire Watts: 193

Efficiency (%): 82

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 8 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 175

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
150W HPS Cobra Head...	525	39	25	270	0	0
150W HPS Cobra Head...	350	39	25	270	0	0
150W HPS Cobra Head...	175	39	25	270	0	0
150W HPS Cobra Head...	0	39	25	270	0	0
150W HPS Cobra Head...	-175	39	25	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

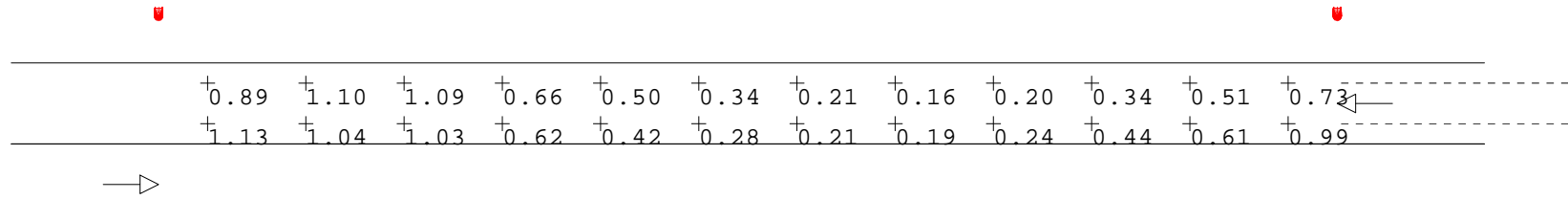
Coordinates in ft

150W HPS Cobra Head...	-350	39	25	270	0	0
------------------------	------	----	----	-----	---	---

Total Number of locations: 6

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.58

Maximum = 1.13

Minimum = 0.16

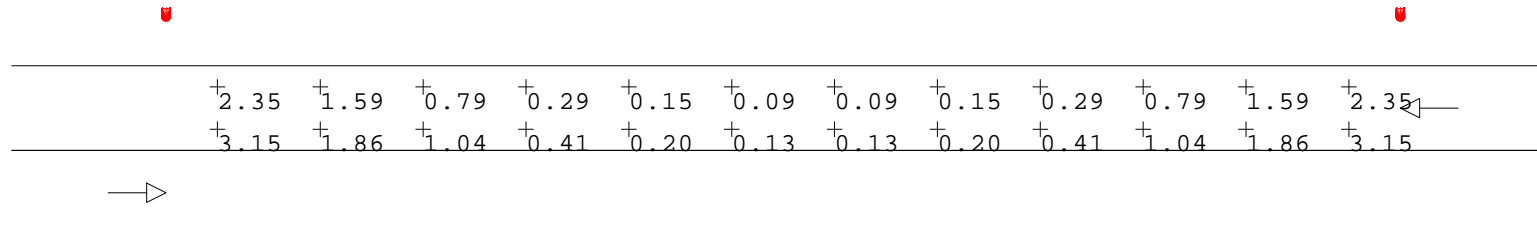
Avg/Min Ratio = 3.63

Max/Min Ratio = 7.06

Max/Avg Ratio = 1.95

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 1

Maximum = 3.15

Minimum = 0.09

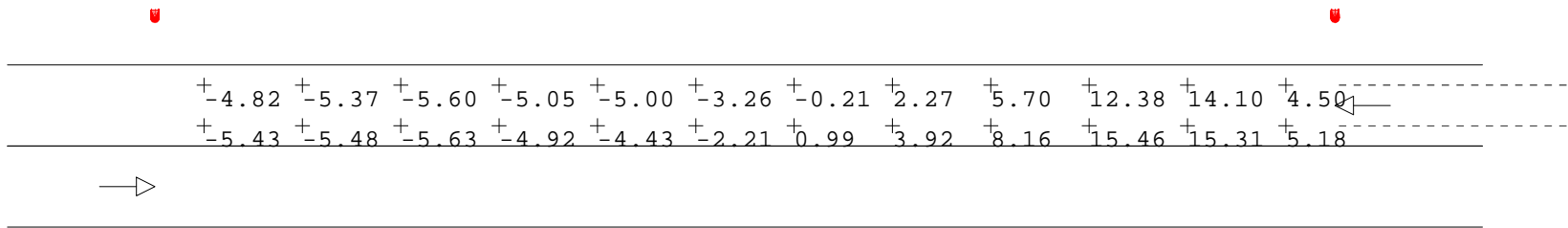
Avg/Min Ratio = 11.11

Max/Min Ratio = 35

Max/Avg Ratio = 3.15

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level



Visibility Level

STV = 4.715115

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum

0.43 0.55 0.74 0.89 1.16 0.84 0.58 0.44 0.28 0.18 0.16 0.21
0.55 0.67 0.83 0.92 1.08 0.78 0.52 0.36 0.25 0.19 0.19 0.27

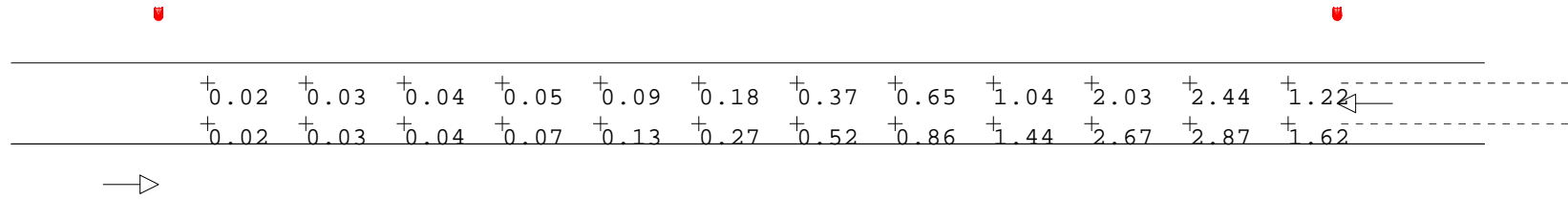


Background Luminance (Cd/SqM)

Average = 0.54
Maximum = 1.16
Minimum = 0.16
Avg/Min Ratio = 3.38
Max/Min Ratio = 7.25
Max/Avg Ratio = 2.15

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.78

Maximum = 2.87

Minimum = 0.02

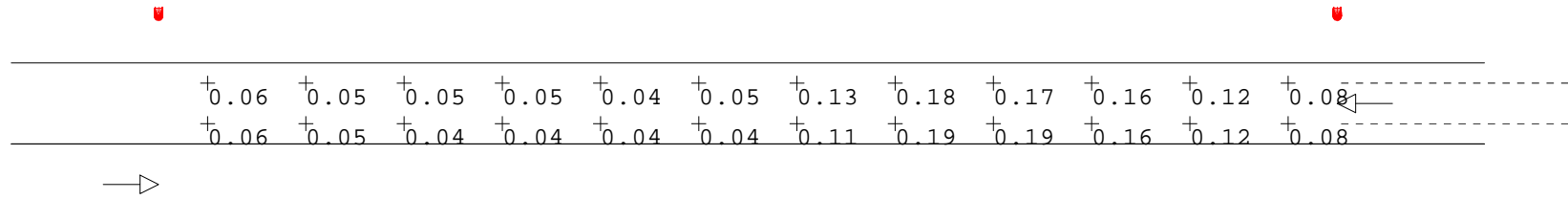
Avg/Min Ratio = 39

Max/Min Ratio = 143.5

Max/Avg Ratio = 3.68

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.09

Maximum = 0.19

Minimum = 0.04

Avg/Min Ratio = 2.25

Max/Min Ratio = 4.75

Max/Avg Ratio = 2.11

MaxLv Ratio = 0.33

Threshold Increment (TI) = 19.10



Roadway Optimizer - Layout 2

General:

Main St (Newfield) (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

150W HPS Cobra Head (Roadway)

Description: 315 15S R3 DA

File Name: 150W HPS Cobra Head (Roadway) R3M.ies

Lumens Per Lamp: 16000

Number Of Lamps: 1

Total Lamp Lumens: 16000

Luminaire Lumens: 13178

Luminaire Watts: 193

Efficiency (%): 82

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 8 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 175

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
150W HPS Cobra Head...	525	39	25	270	0	0
150W HPS Cobra Head...	350	39	25	270	0	0
150W HPS Cobra Head...	175	39	25	270	0	0
150W HPS Cobra Head...	0	39	25	270	0	0
150W HPS Cobra Head...	-175	39	25	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

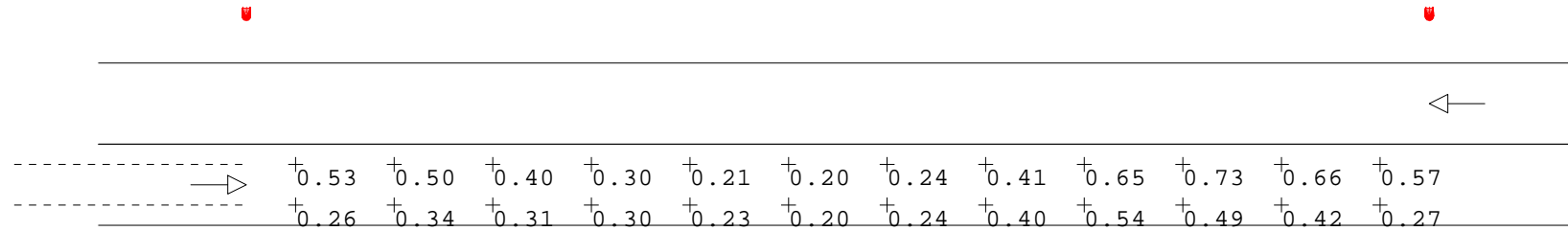
Coordinates in ft

150W HPS Cobra Head...	-350	39	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.39

Maximum = 0.73

Minimum = 0.20

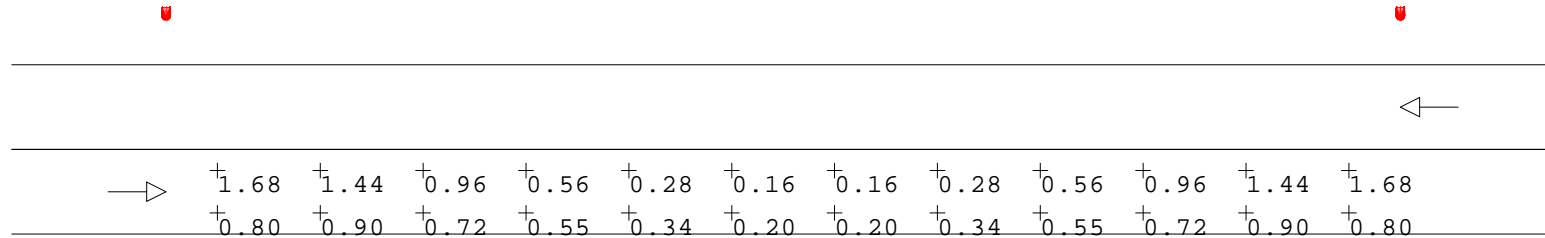
Avg/Min Ratio = 1.95

Max/Min Ratio = 3.65

Max/Avg Ratio = 1.87

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.72

Maximum = 1.68

Minimum = 0.16

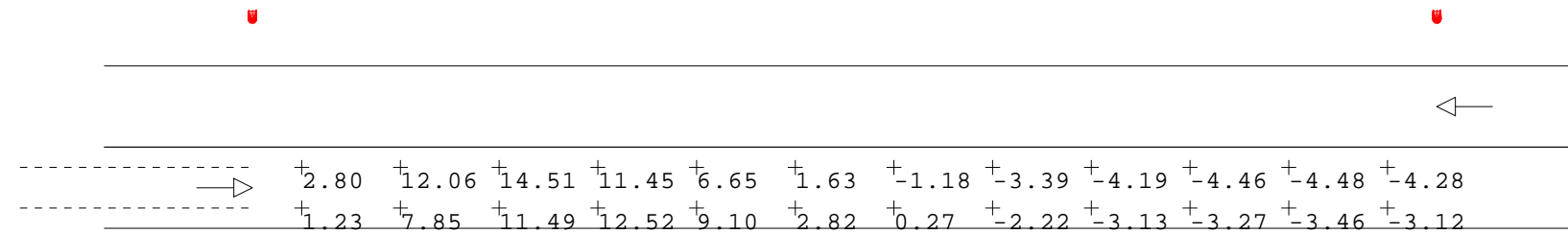
Avg/Min Ratio = 4.5

Max/Min Ratio = 10.5

Max/Avg Ratio = 2.33

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

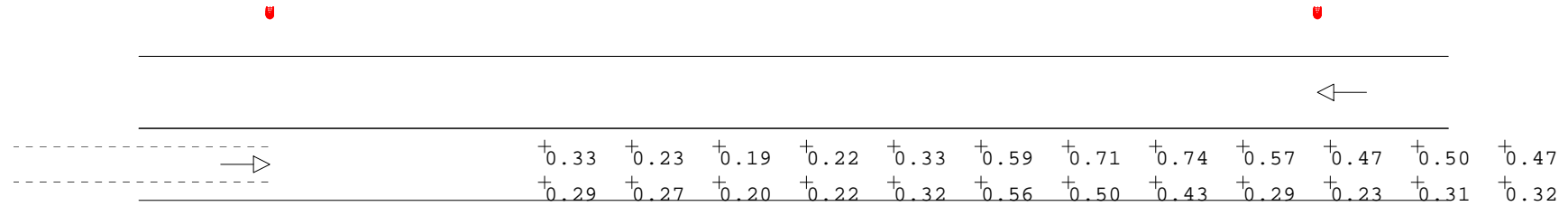


Visibility Level

STV = 4.064546

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.39

Maximum = 0.74

Minimum = 0.19

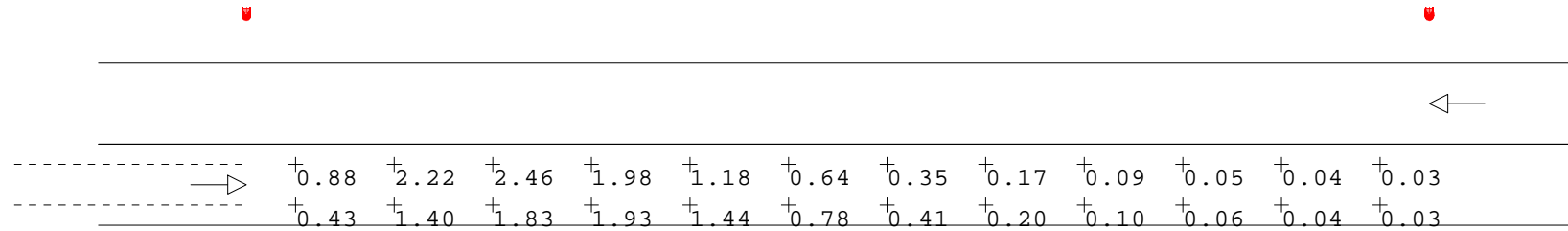
Avg/Min Ratio = 2.05

Max/Min Ratio = 3.89

Max/Avg Ratio = 1.9

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.78

Maximum = 2.46

Minimum = 0.03

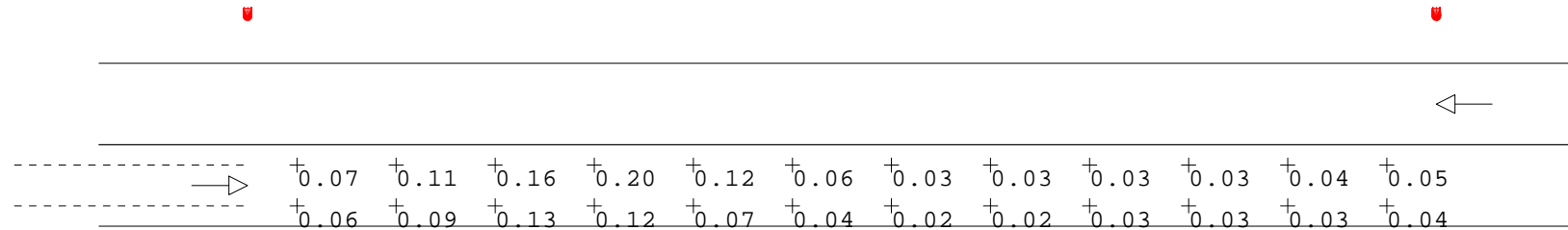
Avg/Min Ratio = 26

Max/Min Ratio = 82

Max/Avg Ratio = 3.15

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.07

Maximum = 0.20

Minimum = 0.02

Avg/Min Ratio = 3.5

Max/Min Ratio = 10

Max/Avg Ratio = 2.86

MaxLv Ratio = 0.51

Threshold Increment (TI) = 27.61

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	Main St (Newfield) (Top)	Main St (Newfield) (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	12	12
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Top	Bottom
Label - Row 1	150W HPS Cobra Head (Roadway)	150W HPS Cobra Head (Roadway)
S/P Ratio 1	1	1
MH - Row 1	25	25
Setback - Row 1	15	15
+ -Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	175	175
1_Luminance (Cd/SqM)		
Average	0.58	0.39
Maximum	1.13	0.73
Minimum	0.16	0.20
Avg/Min Ratio	3.63	1.95
Max/Min Ratio	7.06	3.65
Max/Avg Ratio	1.95	1.87
1_Illum (Fc)		
Average	1.00	0.72
Maximum	3.15	1.68
Minimum	0.09	0.16

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Avg/Min Ratio	11.11	4.50
Max/Min Ratio	35.00	10.50
Max/Avg Ratio	3.15	2.33
1_Vis_Level		
STV	4.72	4.06
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	0.54	0.39
Maximum	1.16	0.74
Minimum	0.16	0.19
Avg/Min Ratio	3.38	2.05
Max/Min Ratio	7.25	3.89
Max/Avg Ratio	2.15	1.90
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	0.78	0.78
Maximum	2.87	2.46
Minimum	0.02	0.03
Avg/Min Ratio	39.00	26.00
Max/Min Ratio	143.50	82.00
Max/Avg Ratio	3.68	3.15
1_Veil_Lum (Cd/SqM)		
Average	0.09	0.07
Maximum	0.19	0.20
Minimum	0.04	0.02
Avg/Min Ratio	2.25	3.50
Max/Min Ratio	4.75	10.00
Max/Avg Ratio	2.11	2.86
MaxLV Ratio	0.33	0.51
Threshold Incr. (TI)	19.1	27.61

Section J.2b - 4d. (Main Street -Village of Freeville)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	07/07/2020
Calculation Technician	DN/LD
Calculation Scope	Main Street (Rt. 366) – Village of Freeville

Introduction:

Below is the basis of design document and photometric analysis utilizing AGi 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Under Evaluation:

- 100W HPS Cobra Head

Roadway Conditions – Main Street:

- ~34' curb to curb distance.
- The roadway classification is a local with medium pedestrian conflict.
- Fixtures are Cobra Heads mounted on existing utility poles ~25' above roadway surface.
- Fixtures are mounted to 8' arms.
- There no shoulders parking shoulders on either side of the roadway.
- There are two 12' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are predominately ~2' from curb.
- There is a sidewalk on one side of the roadway.
- Fixtures are on one side of the roadway and spaced approximately 150' apart.

Assumptions:

- All fixtures in this calculation have an omni directional distribution.
- The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .63* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .60 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 100W HPS Cobra Head with spacing of 150', the L avg meets the 0.4 requirement with values of 0.80/0.44 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was within the threshold of 4.0 with values of 1.74/2.32; The Max Uniformity Ratio (L max/L min) passed, staying under the 8.0 threshold with values of 2.72/3.84; The Max. Veiling Luminance Ratio (LV max/L avg) did not pass staying above 0.4 with values calculated to be 0.33/0.50. All passing values are highlighted green on the layout comparison sheet.
- The arm length was evaluated using an 8' arm which matches the existing.



Roadway Optimizer - Layout 1

General:

Main St (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

100W HPS Cobra Head (Roadway)

Description: 115 10S R2 DA

File Name: 100W HPS Cobra Head (Roadway).ies

Lumens Per Lamp: 9500

Number Of Lamps: 1

Total Lamp Lumens: 9500

Luminaire Lumens: 8158

Luminaire Watts: 133

Efficiency (%): 86

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 8 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 150

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
100W HPS Cobra Head...	450	31	25	270	0	0
100W HPS Cobra Head...	300	31	25	270	0	0
100W HPS Cobra Head...	150	31	25	270	0	0
100W HPS Cobra Head...	0	31	25	270	0	0
100W HPS Cobra Head...	-150	31	25	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

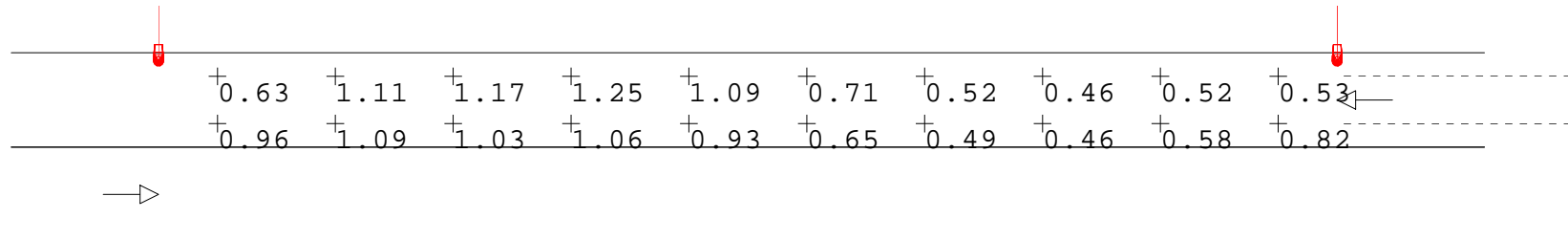
Coordinates in ft

100W HPS Cobra Head...	-300	31	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.8

Maximum = 1.25

Minimum = 0.46

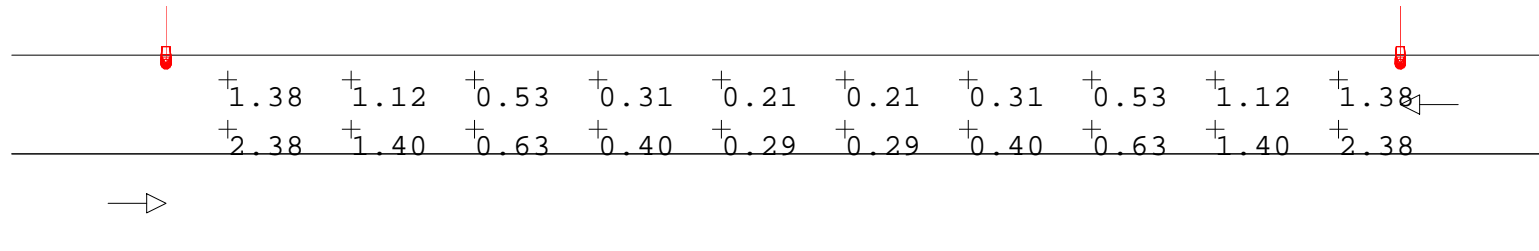
Avg/Min Ratio = 1.74

Max/Min Ratio = 2.72

Max/Avg Ratio = 1.56

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.87

Maximum = 2.38

Minimum = 0.21

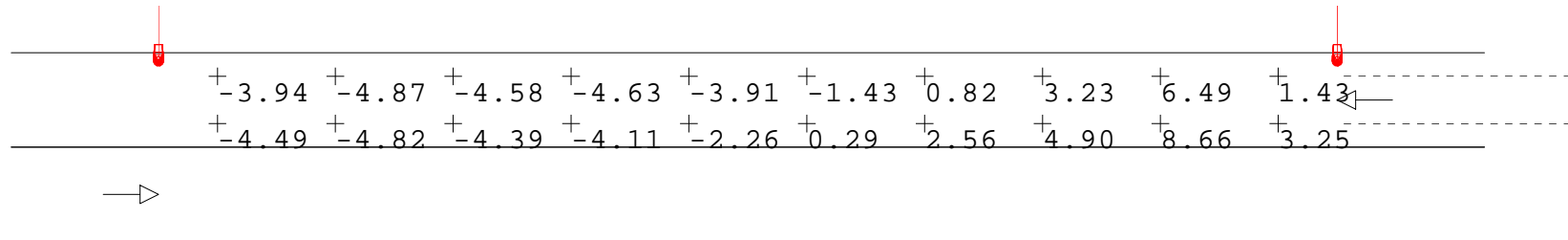
Avg/Min Ratio = 4.14

Max/Min Ratio = 11.33

Max/Avg Ratio = 2.74

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

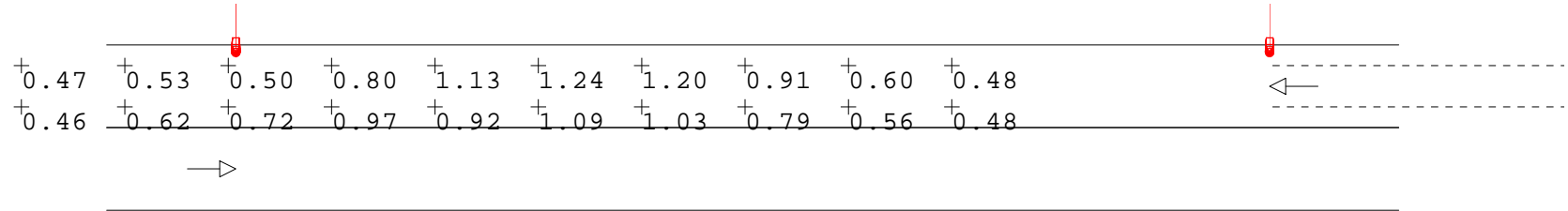


Visibility Level

STV = 3.347838

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.78

Maximum = 1.24

```
Minimum = 0.46
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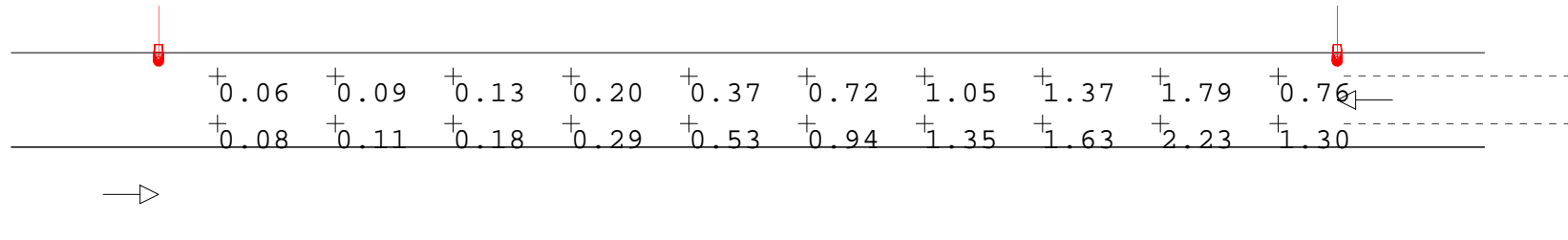
Avg/Min Ratio = 1.7

Max/Min Ratio = 2.7

Max/Avg Ratio = 1.59

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.76

Maximum = 2.23

Minimum = 0.06

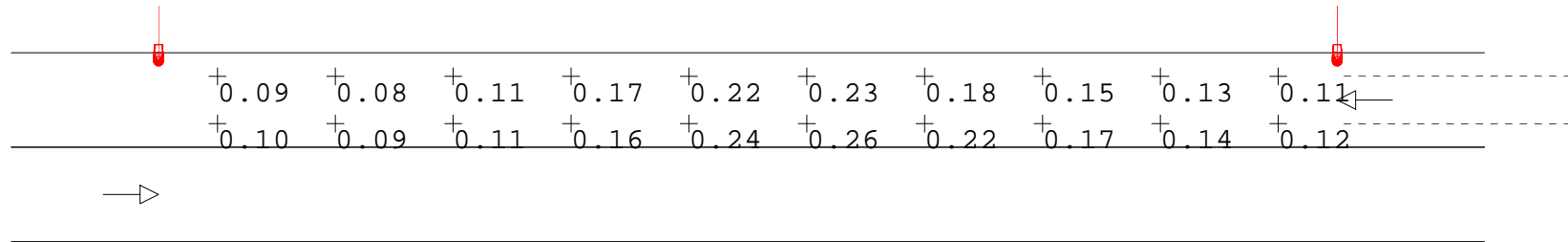
Avg/Min Ratio = 12.67

Max/Min Ratio = 37.17

Max/Avg Ratio = 2.93

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.15

Maximum = 0.26

Minimum = 0.08

Avg/Min Ratio = 1.88

Max/Min Ratio = 3.25

Max/Avg Ratio = 1.73

MaxLv Ratio = 0.33

Threshold Increment (TI) = 20.20



Roadway Optimizer - Layout 2

General:

Main St (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 12 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

100W HPS Cobra Head (Roadway)

Description: 115 10S R2 DA

File Name: 100W HPS Cobra Head (Roadway).ies

Lumens Per Lamp: 9500

Number Of Lamps: 1

Total Lamp Lumens: 9500

Luminaire Lumens: 8158

Luminaire Watts: 133

Efficiency (%): 86

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 8 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 150

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
100W HPS Cobra Head...	450	31	25	270	0	0
100W HPS Cobra Head...	300	31	25	270	0	0
100W HPS Cobra Head...	150	31	25	270	0	0
100W HPS Cobra Head...	0	31	25	270	0	0
100W HPS Cobra Head...	-150	31	25	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

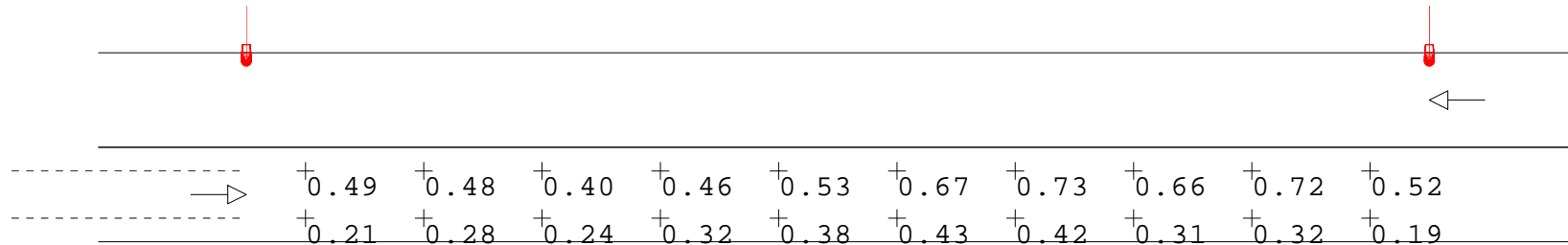
Coordinates in ft

100W HPS Cobra Head...	-300	31	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.44

Maximum = 0.73

Minimum = 0.19

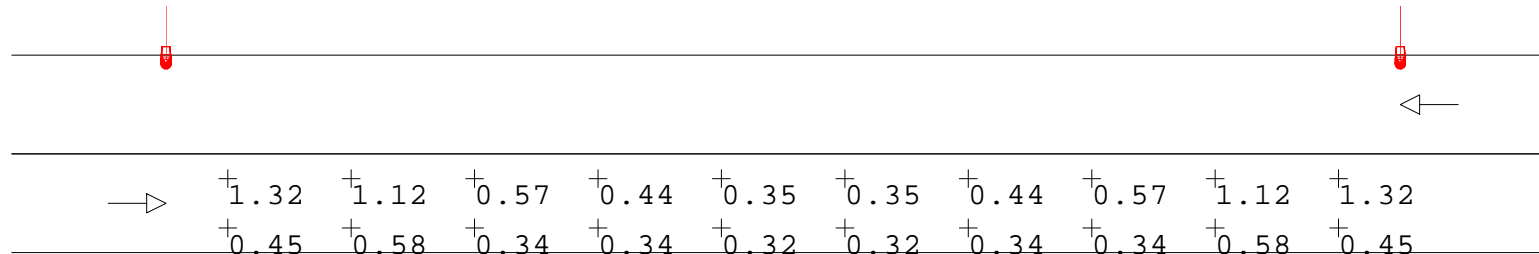
Avg/Min Ratio = 2.32

Max/Min Ratio = 3.84

Max/Avg Ratio = 1.66

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 0.58

Maximum = 1.32

Minimum = 0.32

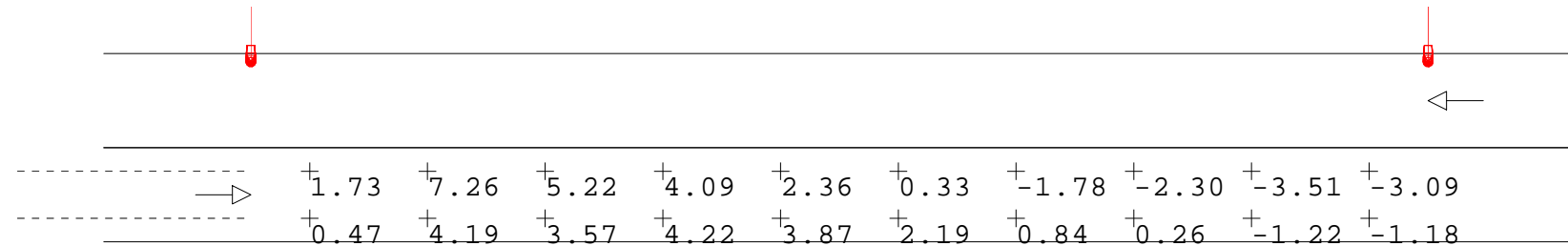
Avg/Min Ratio = 1.81

Max/Min Ratio = 4.13

Max/Avg Ratio = 2.28

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

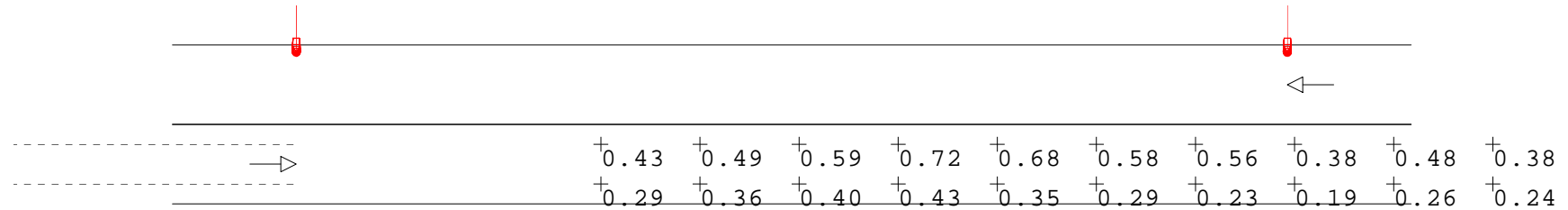


Visibility Level

STV = 2.350893

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.42

Maximum = 0.72

Minimum = 0.19

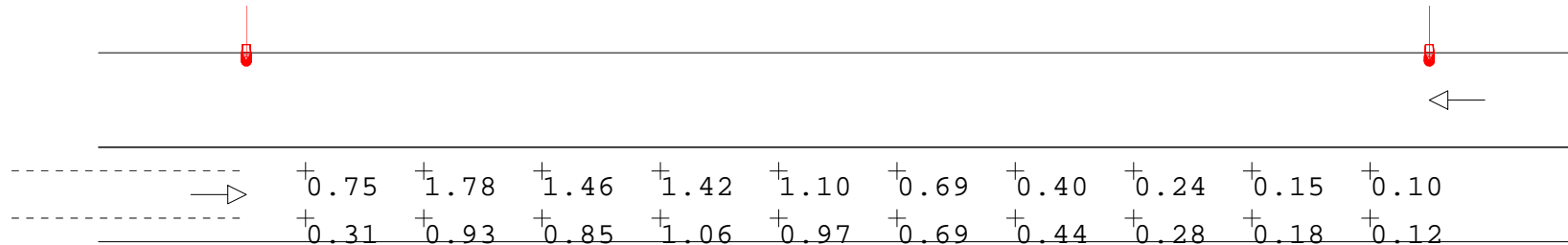
Avg/Min Ratio = 2.21

Max/Min Ratio = 3.79

Max/Avg Ratio = 1.71

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 0.7

Maximum = 1.78

Minimum = 0.10

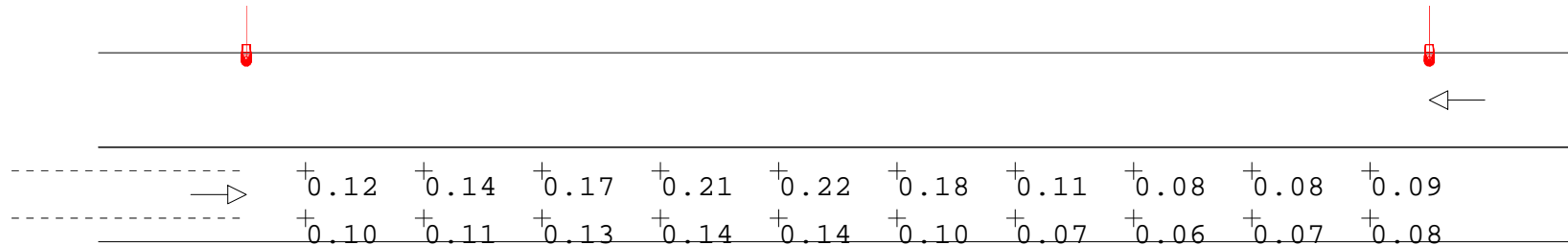
Avg/Min Ratio = 7

Max/Min Ratio = 17.8

Max/Avg Ratio = 2.54

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.12

Maximum = 0.22

Minimum = 0.06

Avg/Min Ratio = 2

Max/Min Ratio = 3.67

Max/Avg Ratio = 1.83

MaxLv Ratio = 0.50

Threshold Increment (TI) = 27.58

Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	Main St (Top)	Main St (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	12	12
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Top	Bottom
Label - Row 1	100W HPS Cobra	100W HPS Cobra
	Head (Roadway)	Head (Roadway)
S/P Ratio 1	1	1
MH - Row 1	25	25
Setback - Row 1	7	7
+ -Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	150	150
1_Luminance (Cd/SqM)		
Average	0.80	0.44
Maximum	1.25	0.73
Minimum	0.46	0.19
Avg/Min Ratio	1.74	2.32
Max/Min Ratio	2.72	3.84
Max/Avg Ratio	1.56	1.66
1_Illum (Fc)		
Average	0.87	0.58
Maximum	2.38	1.32
Minimum	0.21	0.32
Avg/Min Ratio	4.14	1.81
Max/Min Ratio	11.33	4.13

Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Avg Ratio	2.74	2.28
1_Vis_Level		
STV	3.35	2.35
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	0.78	0.42
Maximum	1.24	0.72
Minimum	0.46	0.19
Avg/Min Ratio	1.70	2.21
Max/Min Ratio	2.70	3.79
Max/Avg Ratio	1.59	1.71
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	0.76	0.70
Maximum	2.23	1.78
Minimum	0.06	0.10
Avg/Min Ratio	12.67	7.00
Max/Min Ratio	37.17	17.80
Max/Avg Ratio	2.93	2.54
1_Veil_Lum (Cd/SqM)		
Average	0.15	0.12
Maximum	0.26	0.22
Minimum	0.08	0.06
Avg/Min Ratio	1.88	2.00
Max/Min Ratio	3.25	3.67
Max/Avg Ratio	1.73	1.83
MaxLV Ratio	0.33	0.5
Threshold Incr. (TI)	20.2	27.58

Section J.2b - 5e. (State Hwy. 96 - Village of Trumansburg)

Calculation Summary

Project	Tompkins County Street Lighting LED Upgrade
Project Number	5551
Calculation Type	Luminance (cd/m ²) / Illuminance (fc)
Calculation Date	06/28/2020
Calculation Technician	LD
Calculation Scope	State Hwy. 96 – Village of Trumansburg

Introduction:

Below is the basis of design document and photometric analysis utilizing AGI 32 software for each case and fixture catalog listed. The analysis includes luminance (L), illuminance (IL), veiling luminance (LV), and uniformity ratios, etc. to show compliance to RP-08-18. Fixture lamp lumen depreciation (LLD) values are based on LM-70 test results and the L70 equivalent for each fixture (published TM-21).

Fixtures Under Evaluation:

- 250W HPS Cobra Head

Roadway Conditions – State Hwy. 96:

- ~42' curb to curb distance.
- The roadway classification is a col with med pedestrian conflict.
- Fixtures are Cobra Heads mounted on existing utility poles ~25' above roadway surface.
- Fixtures are mounted to 12' arms.
- There are no parking shoulders on either side of the roadway.
- There are two 12' drive lanes (opposite directions).
- Traffic lanes have separation.
- Poles setback are predominately ~4' from curb.
- There are no sidewalks on either side of the roadway.
- Fixtures are on one side of the street and spaced approximately 200' apart.

Assumptions:

- All fixtures in this calculation have a R3M distribution.
The Light Loss Factor calculation considers a lamp lumen depreciation (LLD) value of .63* and a luminaire (fixture) dirt depreciation (LDD) value of .95. Using the light loss factor (LLF) formula, which is $LLD \times LDD = LLF$, an LLF value of .60 is calculated.
- Calculation references luminance coefficient values for R3 road surfaces published in ANSI/IES RP-08-18. These values roughly correlate to a general reflectance value of 7%.

**Refer to cut sheets for lumen depreciation data*

Calculation Support Tables

ANSI/IES RP-8-18: Lighting Design Criteria for Streets					
Street Classification	Pedestrian Area Classification	Average Luminance (Lavg)	Average Uniformity Ratio (Lavg/Lmin)	Maximum Uniformity Ratio (Lmax/Lmin)	Max. Veiling Luminance Ratio (LVmax/Lavg)
	High	1.2	3.0	5.0	0.3
Major	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
	High	0.8	3.0	5.0	0.4
Collector	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
	High	0.6	6.0	10.0	0.4
Local	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

Conclusion:

- Using the 250W HPS Cobra Head for State Hwy. 96 with spacing of 200', the L avg does meet the 0.6 required with values of 0.86/0.67 for the far and near lanes respectively; the Average Uniformity Ratio (L avg/L min) was not within the value to 3.5 required with values of 5.06/3.72; The Max Uniformity Ratio (L max/L min) did not pass, due to not staying under the 6.0 threshold with values of 12.88/9.72; The Max. Veiling Luminance Ratio (LV max/L avg) did not pass as one of the values were above 0.4 with values calculated at 0.40/0.51
- The arm length was evaluated using an 12' arm which matches the existing.



Roadway Optimizer - Layout 1

General:

State Hwy 96 (Top)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 18 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

250W HPS Cobra Head (Roadway)

Description: 125 25S R2 DG

File Name: 250W HPS Cobra Head (Roadway).ies

Lumens Per Lamp: 29000

Number Of Lamps: 1

Total Lamp Lumens: 29000

Luminaire Lumens: 23246

Luminaire Watts: 292

Efficiency (%): 80

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 200

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
250W HPS Cobra Head...	-400	40	25	270	0	0
250W HPS Cobra Head...	-200	40	25	270	0	0
250W HPS Cobra Head...	0	40	25	270	0	0
250W HPS Cobra Head...	200	40	25	270	0	0
250W HPS Cobra Head...	400	40	25	270	0	0

Roadway Optimizer - Layout 1 - Cont.

Luminaire Location Summary:

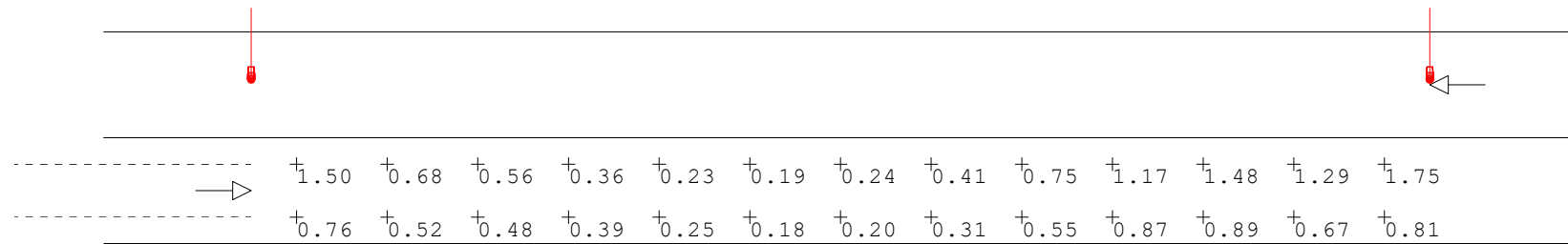
Coordinates in ft

250W HPS Cobra Head...	600	40	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 1

RoadOpt_1_Luminance



Luminance (Cd/SqM)

Average = 0.67

Maximum = 1.75

Minimum = 0.18

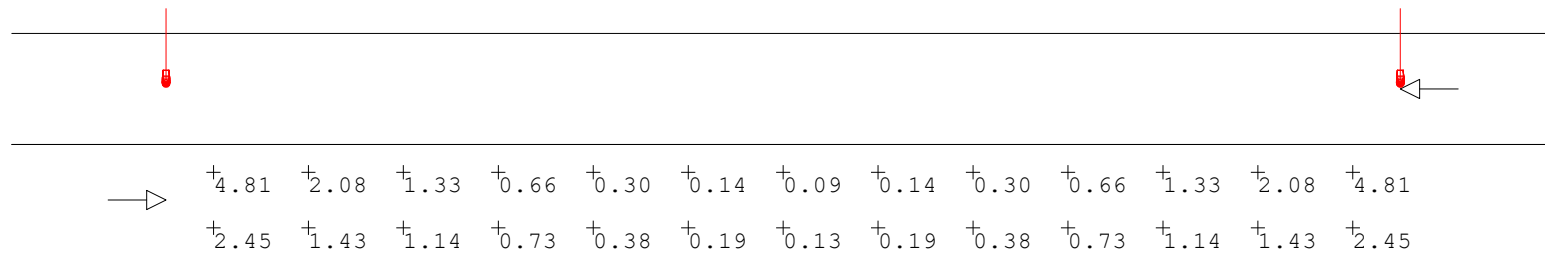
Avg/Min Ratio = 3.72

Max/Min Ratio = 9.72

Max/Avg Ratio = 2.61

Roadway Optimizer - Layout 1

RoadOpt_1_Illum



Illuminance (Fc)

Average = 1.21

Maximum = 4.81

Minimum = 0.09

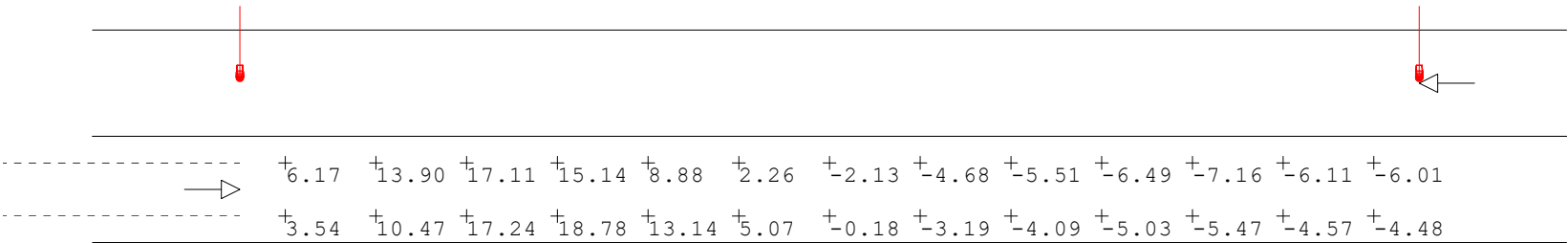
Avg/Min Ratio = 13.44

Max/Min Ratio = 53.44

Max/Avg Ratio = 3.98

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level

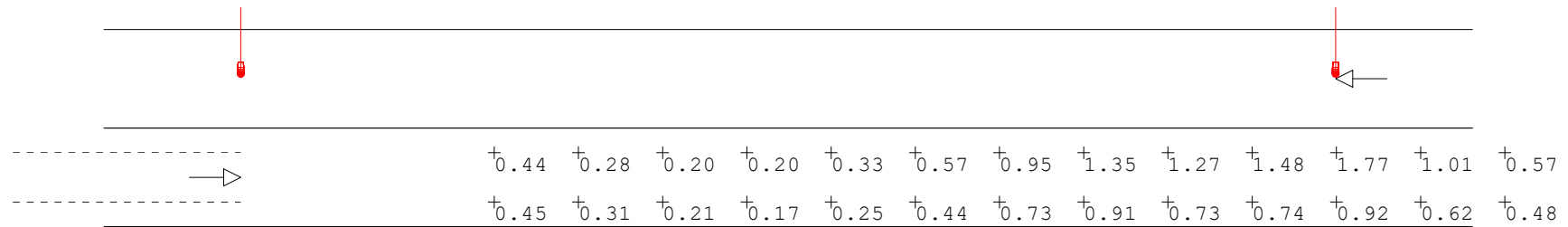


Visibility Level

STV = 5.540509

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.67

Maximum = 1.77

Minimum = 0.17

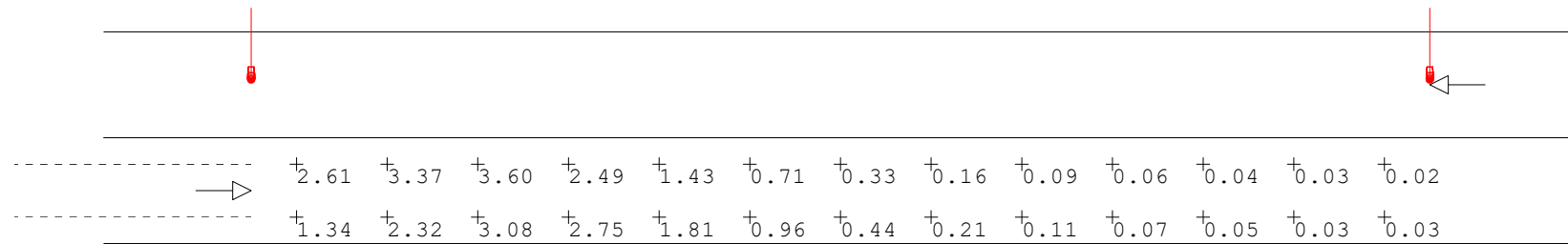
Avg/Min Ratio = 3.94

Max/Min Ratio = 10.41

Max/Avg Ratio = 2.64

Roadway Optimizer - Layout 1

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 1.08

Maximum = 3.60

Minimum = 0.02

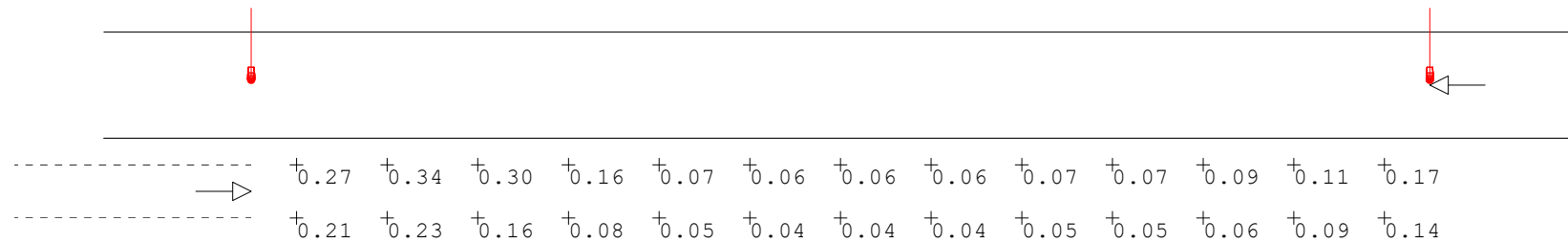
Avg/Min Ratio = 54

Max/Min Ratio = 180

Max/Avg Ratio = 3.33

Roadway Optimizer - Layout 1

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.12

Maximum = 0.34

Minimum = 0.04

Avg/Min Ratio = 3

Max/Min Ratio = 8.5

Max/Avg Ratio = 2.83

MaxLv Ratio = 0.51

Threshold Increment (TI) = 30.45



Roadway Optimizer - Layout 2

General:

State Hwy 96 (Bottom)

Roadway Standard: IES RP-8-18

R-Table: R3 (Slightly Specular), Q0=0.07 Actual Q0 Value: 0.07

Roadway Layout:

Layout Type: One Row, Far Side, With Median; 1RFS_w/M

Roadway Width: 18 ft

Median Width: 0 ft

Lanes In Direction Of Travel: 1

Driver's Side Of Roadway: Right

Luminaire Information:

250W HPS Cobra Head (Roadway)

Description: 125 25S R2 DG

File Name: 250W HPS Cobra Head (Roadway).ies

Lumens Per Lamp: 29000

Number Of Lamps: 1

Total Lamp Lumens: 29000

Luminaire Lumens: 23246

Luminaire Watts: 292

Efficiency (%): 80

S/P Ratio: 1.00

Total Light Loss Factor: 0.600

Luminaire Arrangement: SINGLE

Arm Length: 12 ft

Offset: 0 ft

Luminaire Location Summary:

Coordinates in ft

Spacing - Row 1: 200

<u>Label</u>	<u>X-Coord</u>	<u>Y-Coord</u>	<u>Z-Coord</u>	<u>Orient</u>	<u>Tilt</u>	<u>Spin</u>
250W HPS Cobra Head...	-400	40	25	270	0	0
250W HPS Cobra Head...	-200	40	25	270	0	0
250W HPS Cobra Head...	0	40	25	270	0	0
250W HPS Cobra Head...	200	40	25	270	0	0
250W HPS Cobra Head...	400	40	25	270	0	0

Roadway Optimizer - Layout 2 - Cont.

Luminaire Location Summary:

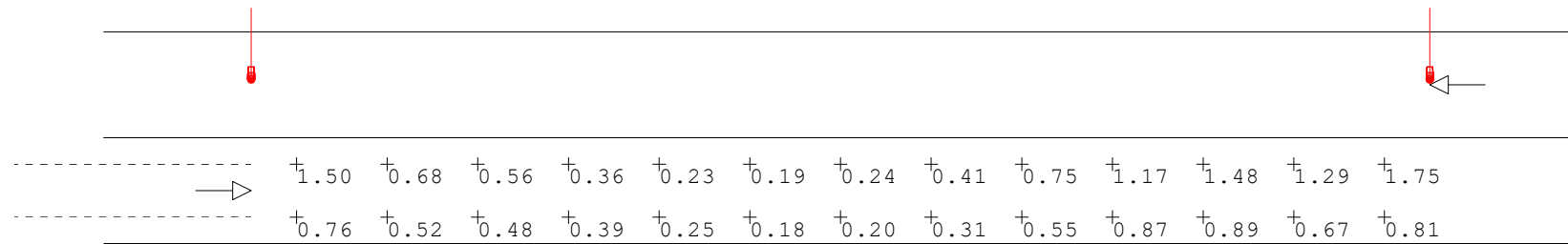
Coordinates in ft

250W HPS Cobra Head...	600	40	25	270	0	0
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Total Number of locations: 6

Roadway Optimizer - Layout 2

RoadOpt_1_Luminance

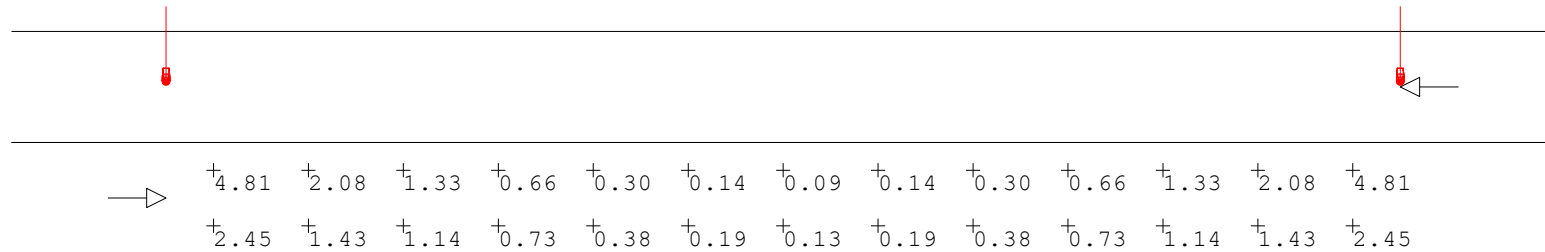


Luminance (Cd/SqM)

Average = 0.67
Maximum = 1.75
Minimum = 0.18
Avg/Min Ratio = 3.72
Max/Min Ratio = 9.72
Max/Avg Ratio = 2.61

Roadway Optimizer - Layout 2

RoadOpt_1_Illum



Illuminance (Fc)

Average = 1.21

Maximum = 4.81

Minimum = 0.09

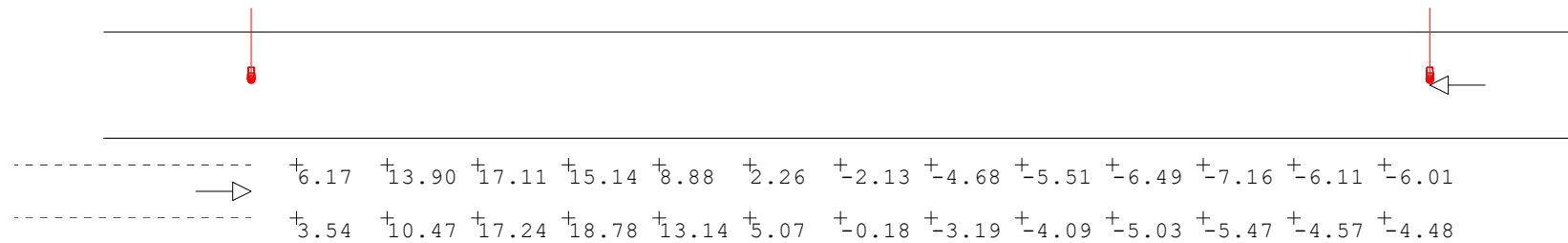
Avg/Min Ratio = 13.44

Max/Min Ratio = 53.44

Max/Avg Ratio = 3.98

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level

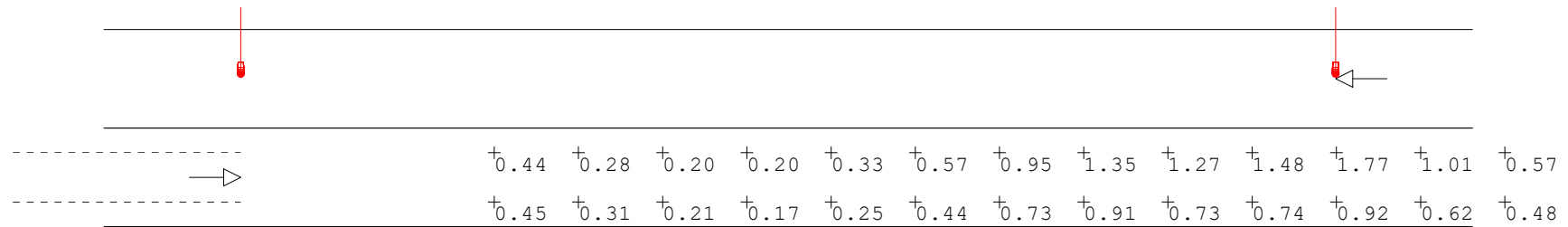


Visibility Level

STV = 5.540509

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Bkgd_Lum



Background Luminance (Cd/SqM)

Average = 0.67

Maximum = 1.77

Minimum = 0.17

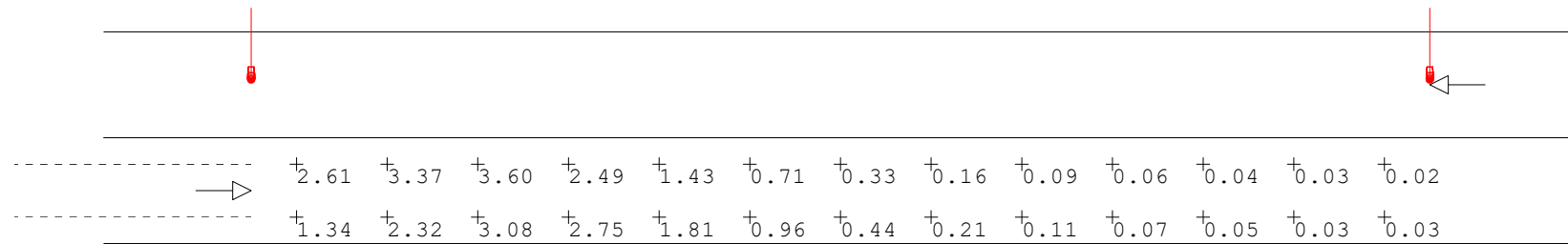
Avg/Min Ratio = 3.94

Max/Min Ratio = 10.41

Max/Avg Ratio = 2.64

Roadway Optimizer - Layout 2

RoadOpt_1_Vis_Level_Target_Lum



Target Luminance (Cd/SqM)

Average = 1.08

Maximum = 3.60

Minimum = 0.02

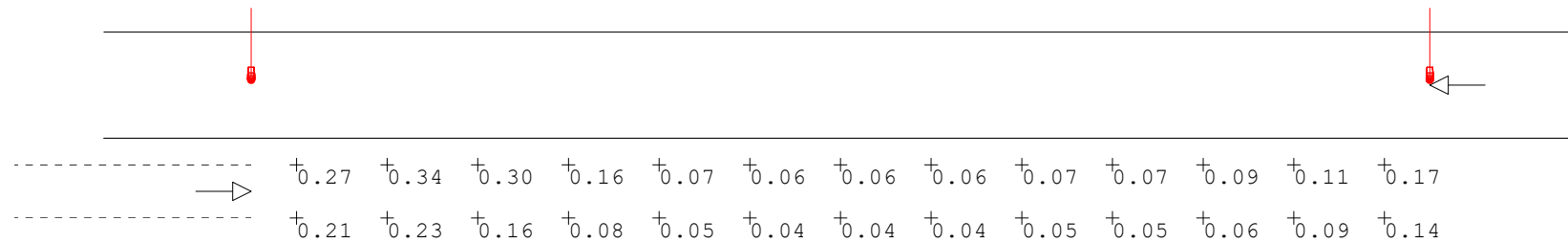
Avg/Min Ratio = 54

Max/Min Ratio = 180

Max/Avg Ratio = 3.33

Roadway Optimizer - Layout 2

RoadOpt_1_Veil_Lum



Veiling Luminance (Cd/SqM)

Average = 0.12

Maximum = 0.34

Minimum = 0.04

Avg/Min Ratio = 3

Max/Min Ratio = 8.5

Max/Avg Ratio = 2.83

MaxLv Ratio = 0.51

Threshold Increment (TI) = 30.45

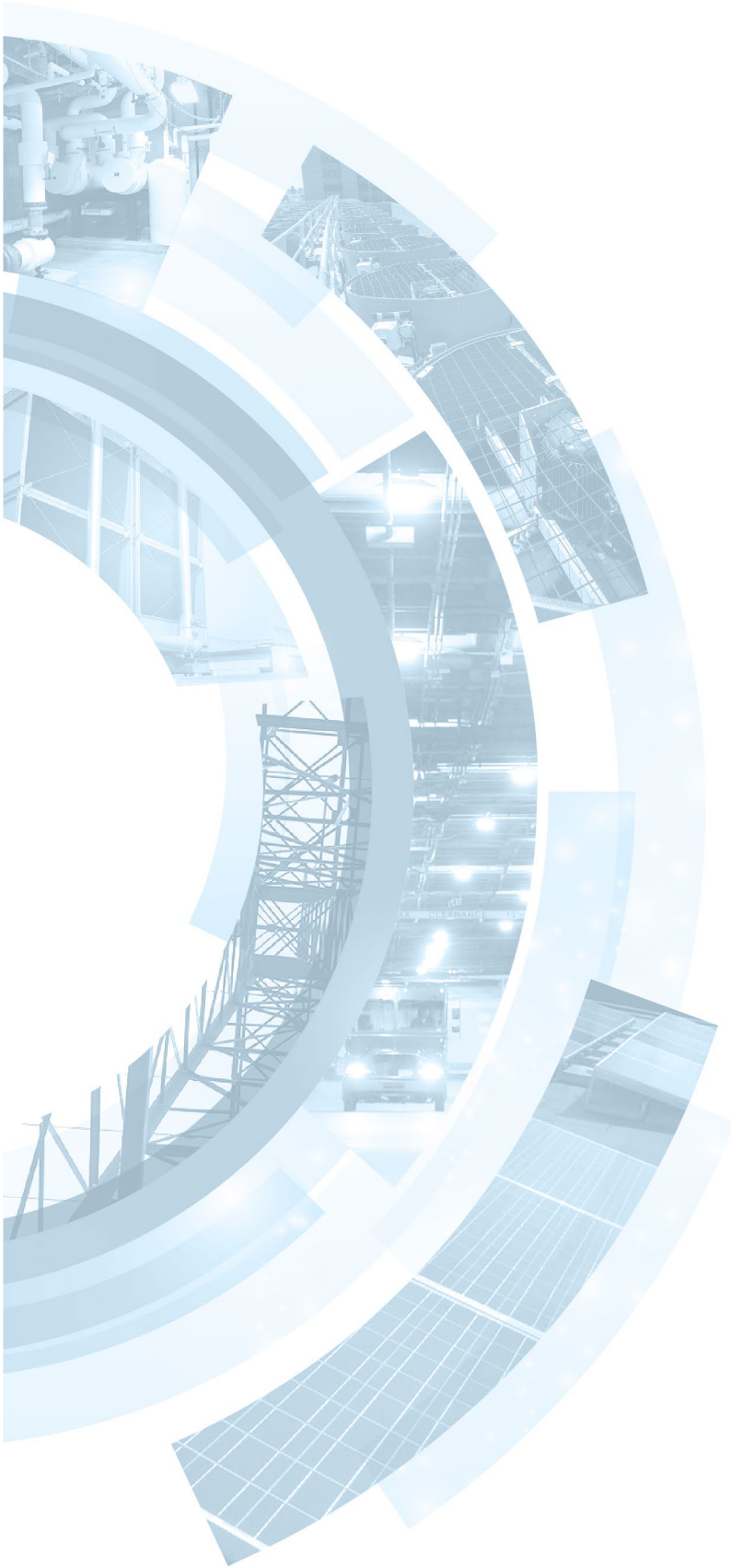
Roadway Optimizer - Layout Comparison

	Layout 1	Layout 2
Description	State Hwy 96 (Top)	State Hwy 96 (Bottom)
Roadway Standard	IES RP-8-18	IES RP-8-18
R-Table	R3	R3
Actual Q0 Value	0.07	0.07
Layout Type	; 1RFS_w/M	; 1RFS_w/M
Road Width	18	18
Median Width	0	0
Number Lanes	1	1
Number Lanes Opposite	0	0
Drivers Side	Right	Right
Calc Area	Bottom	Bottom
Label - Row 1	250W HPS Cobra Head (Roadway)	250W HPS Cobra Head (Roadway)
S/P Ratio 1	1	1
MH - Row 1	25	25
Setback - Row 1	4	4
+Orient - Row 1	0	0
Tilt - Row 1	0	0
Spin - Row 1	0	0
Spacing - Row 1	200	200
1_Luminance (Cd/SqM)		
Average	0.86	0.67
Maximum	2.19	1.75
Minimum	0.17	0.18
Avg/Min Ratio	5.06	3.72
Max/Min Ratio	12.88	9.72
Max/Avg Ratio	2.55	2.61
1_Illum (Fc)		
Average	1.16	1.21
Maximum	5.09	4.81
Minimum	0.04	0.09
Avg/Min Ratio	29.00	13.44

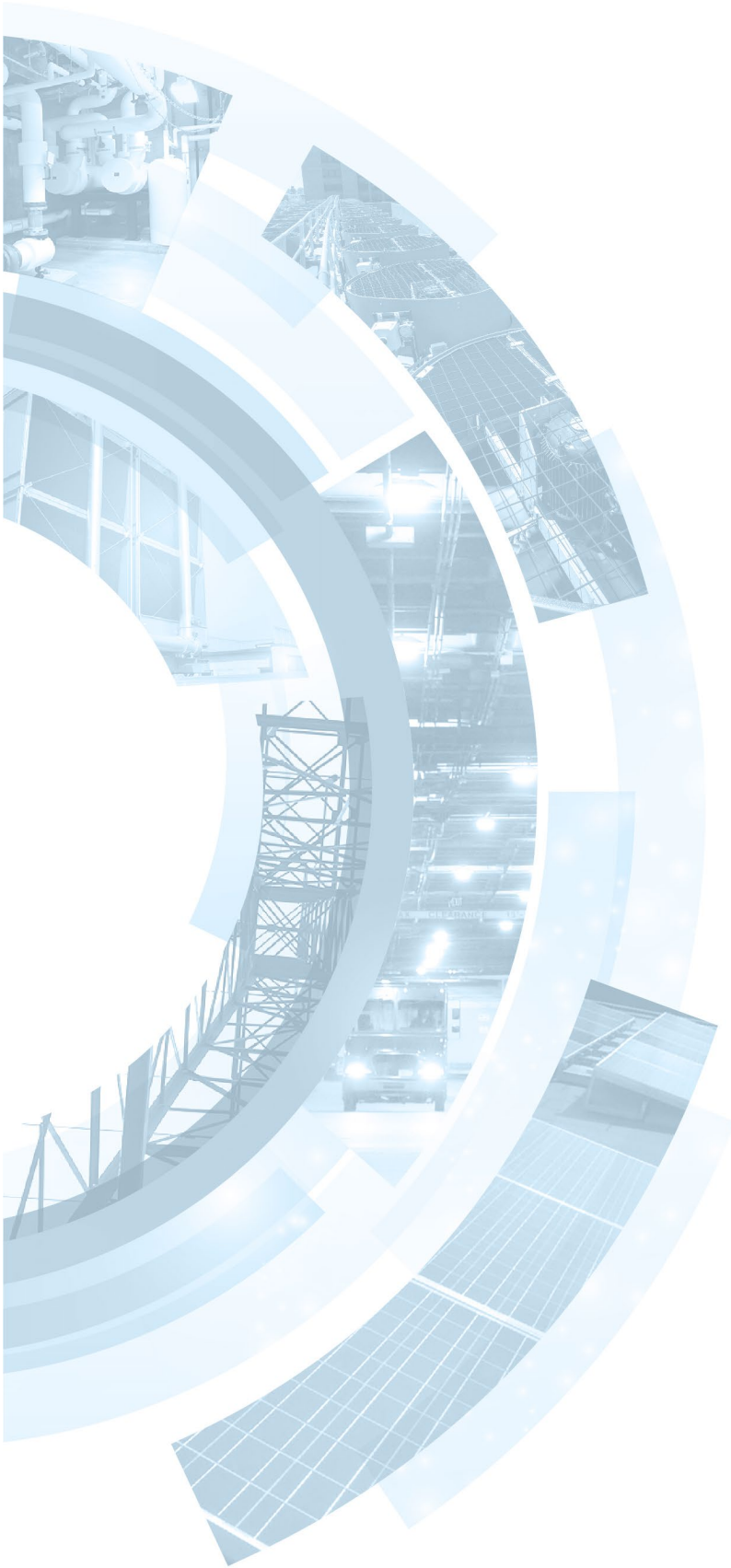
Roadway Optimizer - Layout Comparison - Cont.

	Layout 1	Layout 2
Max/Min Ratio	127.25	53.44
Max/Avg Ratio	4.39	3.98
1_Vis_Level		
STV	5.4	5.54
1_Vis_Level_Bkgd_Lum (Cd/SqM)		
Average	0.86	0.67
Maximum	1.99	1.77
Minimum	0.18	0.17
Avg/Min Ratio	4.78	3.94
Max/Min Ratio	11.06	10.41
Max/Avg Ratio	2.31	2.64
1_Vis_Level_Target_Lum (Cd/SqM)		
Average	0.82	1.08
Maximum	3.05	3.60
Minimum	0.02	0.02
Avg/Min Ratio	41.00	54.00
Max/Min Ratio	152.50	180.00
Max/Avg Ratio	3.72	3.33
1_Veil_Lum (Cd/SqM)		
Average	0.15	0.12
Maximum	0.34	0.34
Minimum	0.09	0.04
Avg/Min Ratio	1.67	3.00
Max/Min Ratio	3.78	8.50
Max/Avg Ratio	2.27	2.83
MaxLV Ratio	0.4	0.51
Threshold Incr. (TI)	24.93	30.45

J.3 – Lighting Line by Line



J.3a - Statement of Scope



Tompkins County Aggregate							Pre- Install (Existing)						Post-Install (Proposed)					
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verified Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage		
1	COL/LOC	LOW	Village of Trumansburg	ACADEMY ST	Hector St	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7.297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60		
2	LOC	LOW	Village of Trumansburg	ACADEMY ST	Gregg St	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
3	LOC	LOW	Village of Trumansburg	BRADLEY ST		6	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	6	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
4	LOC	LOW	Village of Trumansburg	CAMP ST	South St	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
5	LOC	LOW	Village of Trumansburg	CAMP ST	South St	1	HPS	100	Flood Light	100W High Pressure Sodium Flood Light	117	1	NFL/LED71-Lithonia RSFX1	New LED Floodlight 51w, 3k, Dark Bronze, 6.525LM	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DOBXD	60		
6	LOC	LOW	Village of Trumansburg	CAMP ST		3	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	3	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
7	LOC	LOW	Village of Trumansburg	CAYUGA ST	King St	7	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	7	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
8	LOC	LOW	Village of Trumansburg	CAYUGA ST		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
9	LOC	LOW	Village of Trumansburg	CEMETERY ST	Lake St	5	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	5	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
10	LOC	LOW	Village of Trumansburg	CEMETERY ST		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
11	LOC	LOW	Village of Trumansburg	CONGRESS ST	E. Seneca St, Snowbridge St, Union St, Cayuga St	4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
12	LOC	LOW	Village of Trumansburg	CONGRESS ST		2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
13	LOC	LOW	Village of Trumansburg	COREY ST		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
14	LOC	LOW	Village of Trumansburg	E SENECA RD		3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
15	COL/LOC	LOW	Village of Trumansburg	ELDORADO DR	E. Main St	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7.297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60		
16	LOC	LOW	Village of Trumansburg	ELM ST		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
17	LOC/LOC	MED	Village of Trumansburg	ELM ST	Camp St	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH54W/LED16/3KT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey, 5.590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60		
18	LOC	LOW	Village of Trumansburg	ELM ST		2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
19	LOC	MED	Village of Trumansburg	ELM ST		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH50W/LED32/3KT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60		
20	LOC	LOW	Village of Trumansburg	ELM ST	Pease St	1	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
21	LOC	MED	Village of Trumansburg	ELM ST		1	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	1	NCH50W/LED32/3KT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60		
22	LOC	MED	Village of Trumansburg	ELM ST		1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH50W/LED32/3KT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60		
23	LOC	LOW	Village of Trumansburg	FALLS ST	Cementary Rd	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
24	LOC	LOW	Village of Trumansburg	FALLS- JACKSONVILLE RD	Out of town boundary line	0			Cobra Head	No Fixture in Service/ Fixture on different road	0	0	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
25	LOC	LOW	Village of Trumansburg	GOULD ST		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
26	LOC	LOW	Village of Trumansburg	GREGG ST		4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
27	LOC	LOW	Village of Trumansburg	GREGG ST		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
28	LOC	LOW	Village of Trumansburg	HALSEY ST		4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
29	LOC	LOW	Village of Trumansburg	KENTUCKY AVE	Kentucky Ave	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
30	LOC	LOW	Village of Trumansburg	KING ST		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
31	LOC	LOW	Village of Trumansburg	KING ST	Cayuga St	1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
32	LOC	LOW	Village of Trumansburg	LAKE ST		3	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	3	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
33	LOC	LOW	Village of Trumansburg	LAKE ST		1	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
34	LOC	LOW	Village of Trumansburg	MCCLELLEN ST		3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
35	LOC	LOW	Village of Trumansburg	MCCLELLEN ST		2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
36	LOC	MED	Village of Trumansburg	OLD MAIN STREET		3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH50W/LED32/3KT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60		
37	LOC	MED	Village of Trumansburg	OLD MAIN STREET		1	HPS	70	PENDANT MOUNTED DECORATIVE	150W High Pressure Sodium Pendant Mounted Decorative	117	1	NDS37W/LED40/3KT3-Lumec RNS30 Type 3	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20 30W16LED T ACDR LE3 120 DMG SMB RCD N BKTXT DE1	40		
38	LOC	LOW	Village of Trumansburg	PEASE STREET	Gregg St	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
39	LOC	LOW	Village of Trumansburg	PENNSYLVANIA AVE	Pease St, Elm St	4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
40	LOC	LOW	Village of Trumansburg	PENNSYLVANIA AVE		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
41	LOC	LOW	Village of Trumansburg	PROSPECT ST	Cayuga St	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
42	LOC	LOW	Village of Trumansburg	SALO DR		4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
43	LOC	LOW	Village of Trumansburg	SALO DR		2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
44	LOC	MED	Village of Trumansburg	SCHOOLHOUSE LN		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH50W/LED32/3KT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60		
45	LOC	LOW	Village of Trumansburg	SENECA RD EAST	Bradley St	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40		
46	LOC	LOW	Village of Trumansburg	SENECA ST		4	HPS	100										

Lighting Line by Line - Statement of Scope																
Tompkins County Aggregate							Pre- Install (Existing)					Post-Install (Proposed)				
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verfied Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage
54	COL	LOW	Village of Trumansburg	STATE HWY 227 (HECTOR ST)		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH55W/LED48/3kT3-Philps RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
55	COL/LOC	MED	Village of Trumansburg	STATE HWY 96 (E. Main St.)	Elm St	2	HPS	70	PENDANT MOUNTED DECORATIVE	150W High Pressure Sodium Pendant Mounted Decorative	117	2	NDS37W/LED40/3kT3-Lumec RNS30	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20 30W 16LED T ACDR LE3 120 DMG SMB RCD N BKTXT DE1	40
56	COL	MED	Village of Trumansburg	STATE HWY 96 (E. Main St.)		38	HPS	70	PENDANT MOUNTED DECORATIVE	150W High Pressure Sodium Pendant Mounted Decorative	117	38	NDS37W/LED40/3kT3-Lumec RNS30	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20 30W 16LED T ACDR LE3 120 DMG SMB RCD N BKTXT DE1	40
57	COL	MED	Village of Trumansburg	STATE HWY 96 (E. Main St.)		4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH80W/LED48/3kT3-Philps RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
58	COL	MED	Village of Trumansburg	STATE HWY 96 (E. Main St.)		2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH80W/LED48/3kT3-Philps RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
59	COL	MED	Village of Trumansburg	STATE HWY 96 (E. Main St.)		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH80W/LED48/3kT3-Philps RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
60	COL	MED	Village of Trumansburg	STATE HWY 96 (E. Main St.)		3	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	3	NCH80W/LED48/3kT3-Philps RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
61	COL/LOC	MED	Village of Trumansburg	STATE HWY 96 (E. Main St.)	Lake St, Whig St, Elderado Dr	3	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	3	NCH65W/LED40/3kT3-Philps RFS	New LED Cobra Head 65W, 3k, Type 3M, Grey, 8,626LM	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60
62	COL	LOW	Village of Trumansburg	STATE HWY 96 (W. Main St.)		7	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	7	NCH55W/LED48/3kT3-Philps RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
63	COL	MED	Village of Trumansburg	STATE HWY 96 (W. Main St.)		2	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	2	NCH80W/LED48/3kT3-Philps RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
64	COL/COL	MED	Village of Trumansburg	STATE HWY 96 (W. Main St.)	Hector St	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH100W/LED60/3kT3-Philps RFM	New LED Cobra Head 100W, 3k, Type 3M, Grey, 13,051LM	B5 - Philips - RFM-100W60LED3K-G2-R3M-UNV-DMG-RCD7	80
65	COL	MED	Village of Trumansburg	STATE HWY 96 (W. Main St.)		1	HPS	400	Cobra Head	400W High Pressure Sodium Cobra Head	486	1	NCH80W/LED48/3kT3-Philps RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
66	LOC	LOW	Village of Trumansburg	STROWBRIDGE RD.		5	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	5	NCH35W/LED16/3kT3-Philps RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W 16LED3K-G2-R3M-UNV-DMG-RCD7	40
67	LOC	LOW	Village of Trumansburg	STROWBRIDGE RD.		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philps RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W 16LED3K-G2-R3M-UNV-DMG-RCD7	40
68	LOC	LOW	Village of Trumansburg	SUNRISE TERRACE		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philps RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W 16LED3K-G2-R3M-UNV-DMG-RCD7	40
69	LOC	LOW	Village of Trumansburg	TRUMAN ST		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philps RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W 16LED3K-G2-R3M-UNV-DMG-RCD7	40
70	LOC	LOW	Village of Trumansburg	TRUMAN ST		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philps RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W 16LED3K-G2-R3M-UNV-DMG-RCD7	40
71	LOC	MED	Village of Trumansburg	UNION ST		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH50W/LED32/3kT3-Philps RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60
72	LOC	MED	Village of Trumansburg	UNION ST		2	HPS	70	PENDANT MOUNTED DECORATIVE	150W High Pressure Sodium Pendant Mounted Decorative	117	2	NDS37W/LED40/3kT3-Lumec RNS30	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20 30W 16LED T ACDR LE3 120 DMG SMB RCD N BKTXT DE1	40
73	LOC	LOW	Village of Trumansburg	WASHINGTON STREET	Seneca St, E. Seneca St. , Strowbridge St	5	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	5	NCH35W/LED16/3kT3-Philps RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W 16LED3K-G2-R3M-UNV-DMG-RCD7	40
74	LOC	MED	Village of Trumansburg	WHIG ST		3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH50W/LED32/3kT3-Philps RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60
75	LOC	MED	Village of Trumansburg	WHIG ST		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH50W/LED32/3kT3-Philps RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60
76	LOC	MED	Village of Trumansburg	WHIG ST		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH50W/LED32/3kT3-Philps RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60
						200						200				

Lighting Line by Line - Statement of Scope																
Tompkins County Aggregate							Pre- Install (Existing)					Post-Install (Proposed)				
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verfied Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage
77	LOC	LOW	Village of Freeville	BROOKLYN RD		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
78	LOC	LOW	Village of Freeville	BROOKLYN RD		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
79	LOC	LOW	Village of Freeville	BROOKLYN RD		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
80	LOC	LOW	Village of Freeville	CEADER DR		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
81	LOC	LOW	Village of Freeville	COOK ST		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
82	LOC	LOW	Village of Freeville	FACTORY ST	Union St	2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
83	COL	LOW	Village of Freeville	FALL CREEK RD		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
84	COL/LOC	LOW	Village of Freeville	FALL CREEK RD	Cook St, Heath Pl	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
85	COL	LOW	Village of Freeville	FALL CREEK RD		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
86	LOC	LOW	Village of Freeville	FREEVILLE DEPOT		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
87	LOC	LOW	Village of Freeville	FREEVILLE DEPOT		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
88	LOC	LOW	Village of Freeville	GROTON AVE		3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
89	LOC	LOW	Village of Freeville	GROTON AVE		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
90	LOC	LOW	Village of Freeville	HEATH PL		1	HPS	250	Flood Light	250W High Pressure Sodium Flood Light	313	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80
91	LOC	LOW	Village of Freeville	JOHNSONVILLE RD		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
92	LOC	LOW	Village of Freeville	JOHNSONVILLE RD		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
93	LOC	LOW	Village of Freeville	LIBERTY ST		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
94	COL	LOW	Village of Freeville	MAIN ST (RTE. 366)		6	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	6	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
95	COL	LOW	Village of Freeville	MAIN ST (RTE. 366)		3	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
96	COL/LOC	LOW	Village of Freeville	MAIN ST (RTE. 366)	Groton Ave, Mill St	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
97	COL/LOC	LOW	Village of Freeville	MAIN ST (RTE. 366)	Union St, Yates	2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
98	LOC	LOW	Village of Freeville	MILL ST		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
99	LOC	LOW	Village of Freeville	PARKVIEW DR	Arial access only	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
100	COL	LOW	Village of Freeville	RAILROAD ST (RTE.38)		4	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
101	COL	LOW	Village of Freeville	RAILROAD ST (RTE.38)		4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
102	COL/LOC	LOW	Village of Freeville	RAILROAD ST (RTE.38)	Cook St, Brooklyn Rd, DPW Dr, Facotry St	4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
103	COL/COL	LOW	Village of Freeville	RAILROAD ST (RTE.38)	Fall Creek Rd	1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey , 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80
104	LOC	LOW	Village of Freeville	TAMBARK CIRCLE		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
105	LOC	LOW	Village of Freeville	UNION ST		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
106	LOC	LOW	Village of Freeville	UNION ST		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
107	LOC	LOW	Village of Freeville	WILLOW DR		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
108	LOC	LOW	Village of Freeville	YATES ST	Liberty St	1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
						62						62				

Tompkins County Aggregate						Pre- Install (Existing)						Post-Install (Proposed)					
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verified Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	
109	LOC	LOW	Town of Ithaca	BIRCHWOOD DR		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
110	LOC	LOW	Town of Ithaca	BIRCHWOOD DR N		1	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
111	LOC	LOW	Town of Ithaca	BLACKSTONE AVE	ST CATHERINES CIR	3	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
112	LOC	LOW	Town of Ithaca	BRANDYWINE DR		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
113	LOC	LOW	Town of Ithaca	BOSTWICK RD (RTE.137)		1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
114	LOC	LOW	Town of Ithaca	BOSTWICK RD (RTE.137	BY BUS GARAGE, BY NY RTE 13	2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
115	LOC	LOW	Town of Ithaca	BUNDY RD	PERRY LN, HOPKINS RD	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
116	LOC	LOW	Town of Ithaca	BURLEIGH DR		7	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	7	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
117	LOC	LOW	Town of Ithaca	BURNS RD	SLATERVILLE RD (NYS RTE 79)	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
118	LOC	LOW	Town of Ithaca	CALDWELL RD	FOREST HOME DR	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
119	LOC	LOW	Town of Ithaca	CHRISTOPHER LANE	CHRISTOPHER CIRCLE	3	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
120	LOC	LOW	Town of Ithaca	CLOVER LN		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
121	COL	LOW	Town of Ithaca	CODDINGTON RD (RT 119)		3	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
122	COL	LOW	Town of Ithaca	CODDINGTON RD (RT 119)		2	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
123	COL/LOC	LOW	Town of Ithaca	CODDINGTON RD (RT 119)	RICH RD, NORTHVIEW W, UPDIKE RD, E KING RD, TROY RD, BURNS RD, JUNIPER LN	7	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	7	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
124	LOC	LOW	Town of Ithaca	COMPTON RD	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	
125	LOC	LOW	Town of Ithaca	CONIFER DR	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	
126	LOC	LOW	Town of Ithaca	COY GLEN RD	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	
127	LOC	LOW	Town of Ithaca	CREST LN		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
128	LOC	LOW	Town of Ithaca	CULVER RD	BOSTWICK RD	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
129	COL	LOW	Town of Ithaca	DANBY RD (RT 96B)		8	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	8	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
130	COL/LOC	LOW	Town of Ithaca	DANBY RD (RT 96B)	TURNPIKE LIGHT(NEAR CODDINGTON RD)	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
131	COL	LOW	Town of Ithaca	DANBY RD (RT 96B)	TURNPIKE LIGHT(NEAR CODDINGTON RD)	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
132	COL/LOC	LOW	Town of Ithaca	DANBY RD (RT 96B)	COMPTON RD	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
133	COL	LOW	Town of Ithaca	DANBY RD (RT 96B)	W KING RD	1	MHL	400	Cobra Head	400W Metal Halide Cobra Head	486	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
134	LOC	LOW	Town of Ithaca	DOVE DR	PHEASANT LN	2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
135	LOC	LOW	Town of Ithaca	DUBOIS RD		4	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
136	COL	LOW	Town of Ithaca	E. SHORE RD.		1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
137	COL	LOW	Town of Ithaca	E. SHORE RD.		3	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
138	LOC	LOW	Town of Ithaca	EASTERN HEIGHTS RD	LANDMARK DR	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
139	COL	LOW	Town of Ithaca	ELLIS HOLLOW RD (RTE. 110)		3	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
140	LOC	LOW	Town of Ithaca	ELMS ST EXT	WESTHAVEN RD, VALLEY VIEW RD	4	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
141	LOC	LOW	Town of Ithaca	ENFIELD FALLS RD		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
142	LOC	LOW	Town of Ithaca	FAIRWAY DR	WARREN RD (RTE.121)	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
143	COL	LOW	Town of Ithaca	FIVE MILE RD (RT.13)		2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
144	COL/LOC	LOW	Town of Ithaca	FIVE MILE RD (RT.13)	COY GLEN RD, BOSTWICK RD, CALKINS RD, ENFIELD FALLS RD	4	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
145	COL	LOW	Town of Ithaca	FIVE MILE RD (RT.13)		1	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
146	LOC	LOW	Town of Ithaca	FOREST HOME DR	MCINTRYE PL, ONE ON TRAIL AFTER ARBORETUM RD	15	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	15	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
147	LOC	LOW	Town of Ithaca	FOREST HOME DR		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
148	LOC	LOW	Town of Ithaca	FOREST HOME DR		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
149	LOC	LOW	Town of Ithaca	FOREST HOME DR		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
150	COL/LOC	LOW	Town of Ithaca	GAME FARM RD	DRYDEN RD (RTE.366)	1	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
151	LOC	LOW	Town of Ithaca	GLENSIDE RD		6	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	6	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
152	LOC	LOW	Town of Ithaca	GLENSIDE RD		2	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
153	LOC	LOW	Town of Ithaca	HB DATES DR	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	
154	LOC	LOW	Town of Ithaca	HB DATES DR EXT	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	

Lighting Line by Line - Statement of Scope																	
Tompkins County Aggregate						Pre- Install (Existing)						Post-Install (Proposed)					
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verfied Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code		Proposed Wattage
155	LOC	LOW	Town of Ithaca	HALLER BLVD		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
156	COL	LOW	Town of Ithaca	HANSHAW RD (RTE. 109)		3	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
157	COL	LOW	Town of Ithaca	HANSHAW RD (RTE. 109)	BLACKSTONE AVE, ORCHARD ST, KAY ST, MURIEL ST	4	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
158	COL/COL	LOW	Town of Ithaca	HANSHAW RD (RTE. 109)	WARREN RD (RTE.121)	1	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey, 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7		80
159	LOC	LOW	Town of Ithaca	HARTWICK RD	STRAWBERRY HILL CIRCLE	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
160	COL/COL	LOW	Town of Ithaca	HAYTS RD	SHEFFELD RD	1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey, 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7		80
161	LOC	LOW	Town of Ithaca	HELENS WAY	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location		0
162	LOC	LOW	Town of Ithaca	HONNESS LN	WILDFLOWER DR, HARTWICK DR, TERRACEVIEW DR	3	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
163	LOC	LOW	Town of Ithaca	HELENS WAY	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location		0
164	LOC/COL	LOW	Town of Ithaca	HOPKINS PL	TRUMANSBURG RD (RT.96)	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
165	LOC	LOW	Town of Ithaca	HOPKINS RD	HAYTS RD	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
166	LOC	LOW	Town of Ithaca	JOANNE DR		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
167	LOC	LOW	Town of Ithaca	JUDD FALLS RD		2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
168	LOC	MED	Town of Ithaca	JUDD FALLS RD	DOUBLE LAMP SINGLE POLE	2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7		60
169	LOC	MED	Town of Ithaca	JUDD FALLS RD	PLANTATIONS RD	3	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	3	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7		60
170	LOC	LOW	Town of Ithaca	KAY ST		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
171	LOC	LOW	Town of Ithaca	KENDELL AVE	2 FLOOD LIGHTS FOUND	2	MRC	250	Flood Light	250W Mercury Vapor Flood Light	292	2	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD		80
172	LOC	LOW	Town of Ithaca	KING RD W		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
173	LOC	LOW	Town of Ithaca	KING RD E	TROY RD, SAUNDERS	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
174	LOC	LOW	Town of Ithaca	KING RD E		3	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
175	LOC	LOW	Town of Ithaca	LOIS LN	APARTMENT COMPLEX/ NO ROAD ACCESS/2 -100W CH ON SINGLE POLE	3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
176	LOC	LOW	Town of Ithaca	MAXS DR	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location		0
177	LOC	LOW	Town of Ithaca	MCNYTRE PL		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
178	COL	LOW	Town of Ithaca	MECKLENBURG RD		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
179	COL/LOC	LOW	Town of Ithaca	MECKLENBURG RD	CONFIER PL, WARREN PL, WESTHAVEN RD	3	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
180	COL	LOW	Town of Ithaca	MITCHELL ST (RTE.110)		2	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
181	COL/LOC	LOW	Town of Ithaca	MITCHELL ST (RTE.110)	CLOVER LN	1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
182	COL/COL	LOW	Town of Ithaca	MITCHELL ST (RTE.110)	PINE TREE RD(RTE.174)	1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey, 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7		80
183	LOC	LOW	Town of Ithaca	MUREL ST	ROSEHILL RD	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
184	LOC/COL	LOW	Town of Ithaca	PALM RD	DRYDEN RD (RTE.366)	1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
185	LOC	LOW	Town of Ithaca	PARK LN	LANDMARK DR, JOHN ST, TUDOR RD	3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
186	LOC	LOW	Town of Ithaca	PEARSALL LN		3	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
187	LOC	LOW	Town of Ithaca	PENNY LN		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
188	LOC	MED	Town of Ithaca	PINE TREE RD	IN PARKING LOT BY MAPLE AVE	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7		60
189	LOC/LOC	MED	Town of Ithaca	PINE TREE RD	MAPLE AVE, SYNDER HILL RD	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH54W/LED16/3kT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey, 5,590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7		60
190	LOC	LOW	Town of Ithaca	PINE TREE RD	CORNELL UNIVERSITY OFFICES	1	HPS	250	Flood Light	250W High Pressure Sodium Flood Light	313	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD		80
191	LOC/COL	LOW	Town of Ithaca	PINE TREE RD	SLATERVILLE RD (NYS RTE 79)	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
192	LOC	LOW	Town of Ithaca	PINEWOOD PL	SYCAMORE PL	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
193	LOC	LOW	Town of Ithaca	PINEWOOD PL		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
194	LOC	LOW	Town of Ithaca	POOLE RD	WOODGATE LN	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
195	LOC/COL	LOW	Town of Ithaca	RACHEL CASON WAY	MECKLENBURG RD (RT. 79)	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
196	LOC	LOW	Town of Ithaca	REGENCY LN	JOANNE DR	1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
197	LOC	LOW	Town of Ithaca	RENWICK DR		2	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
198	LOC/COL	LOW	Town of Ithaca	RENWICK DR	E. SHORE RD	1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7		60
199	LOC	LOW	Town of Ithaca	RENWICK HEIGHTS	RENWICK RD	1	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40
200	LOC	LOW	Town of Ithaca	RENWICK HEIGHTS		2	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7		40

Lighting Line by Line - Statement of Scope																	
Tompkins County Aggregate							Pre- Install (Existing)					Post-Install (Proposed)					
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verfied Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	
201	LOC	LOW	Town of Ithaca	RENWICK PL		4	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
202	LOC	LOW	Town of Ithaca	ROAT ST	BLACKSTONE	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
203	LOC	LOW	Town of Ithaca	SALEM DR	WINSTON CT, BIRCHWOOD DR, MAPLEWOOD DR	6	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	6	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
204	LOC	LOW	Town of Ithaca	SEASAME ST		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
205	LOC	LOW	Town of Ithaca	SVEEN MILE DR	OFF OF NY STATE 13, ON LT SIDE, IN FRONT OF TOWN OF ITHACA MUNICIPLE BUILDING	1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
206	LOC	LOW	Town of Ithaca	SHARLENE RD	TUDOR RD, EASTERN HEIGHTS DR	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
207	LOC	LOW	Town of Ithaca	SHEFELD RD	POOLE RD, DREW RD, BUNDY RD	3	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
208	LOC/COL	LOW	Town of Ithaca	SHEFELD RD	MECKLENBURG RD (RT. 79)	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
209	LOC	LOW	Town of Ithaca	SIENA DR	CHRISTOPHER LANE	2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
210	LOC	LOW	Town of Ithaca	SIMSBURY DR		3	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
211	LOC	LOW	Town of Ithaca	SKYVUE DR	EASTERN HEIGHTS DR	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
212	COL/LOC	LOW	Town of Ithaca	SLATERVILLE ROAD (RTE. 79)	HONNESS, PARK PL	3	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	3	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
213	LOC	LOW	Town of Ithaca	SYNDER HILL DR	REGENCY LN	1	HPS	400	Cobra Head	400W High Pressure Sodium Cobra Head	486	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
214	LOC	LOW	Town of Ithaca	SYNDER HILL DR	SHARLENE DR, DOVE DR	2	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
215	LOC	LOW	Town of Ithaca	STONE CURRY RD	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	
216	LOC	LOW	Town of Ithaca	STRAWBERRY HILL CIRCLE	WILDFLOWER DR	4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
217	LOC	LOW	Town of Ithaca	STRAWBERRY HILL CIRCLE	HARTWICK RD	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
218	LOC	LOW	Town of Ithaca	TAREYTON DR		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
219	LOC	LOW	Town of Ithaca	TEXAS LN		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
220	LOC/COL	MED	Town of Ithaca	TOWER RD	DRYDEN RD (RTE.366)	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH65W/LED40/3KT3-Philips RFS	New LED Cobra Head 65W, 3k, Type 3M, Grey , 8,626LM	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60	
221	COL	LOW	Town of Ithaca	TRUMANSBURG RD (RTE. 96)	2 IN FRONT OF ITHACA FIRE DEPARTMENT	3	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	3	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
222	COL	LOW	Town of Ithaca	TRUMANSBURG RD (RTE. 96)		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
223	COL	LOW	Town of Ithaca	TRUMANSBURG RD (RTE. 96)	IRADELL RD, HAYTS RD, WEST HILL RD	3	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	3	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
224	COL	LOW	Town of Ithaca	TRUMANSBURG RD (RTE. 96)		3	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	3	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
225	LOC	LOW	Town of Ithaca	VERA CIRCLE	NO ROAD ACCESS					Roadway not in scope/no access	0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	
226	LOC	LOW	Town of Ithaca	VISTA LN		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
227	COL	LOW	Town of Ithaca	WARREN RD (COUNTY, RD 121)		2	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	2	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
228	COL	LOW	Town of Ithaca	WARREN RD (COUNTY, RD 121)		1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
229	COL/LOC	LOW	Town of Ithaca	WARREN RD (COUNTY, RD 121)	CREST LN, ROAT RD, CHRISTOPHER LN, HALCYON HILL RD, WINTHROP RD	5	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	5	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
230	LOC	LOW	Town of Ithaca	WESTHAVEN RD	W HAVEN DR	19	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	19	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
231	LOC	LOW	Town of Ithaca	WHITETAIL DR	TROY RD	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
232	LOC	LOW	Town of Ithaca	WILDFLOWER DR		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
233	LOC	LOW	Town of Ithaca	WINNER CIRCLE		3	HPS	100	POST TOP DECORATIVE 1	100W High Pressure Sodium Post Top Decorative	117	3	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	
234	LOC	LOW	Town of Ithaca	WINSTON DR		3	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
235	LOC	LOW	Town of Ithaca	WINTHROP DR	SANDRA PL, BRANDYWINE RD	2	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
236	LOC	LOW	Town of Ithaca	WOODGATE LN	VERA CIR	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
237	LOC	LOW	Town of Ithaca	WOOLF LN	GROVE RD	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
238	LOC	LOW	Town of Ithaca	WYCOFF RD		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
						272						272					

Lighting Line by Line - Statement of Scope															
Tompkins County Aggregate							Pre- Install (Existing)				Post-Install (Proposed)				
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage
232	LOC	LOW	Town of Ithaca	WILDFLOWER DR		2	HPS	100	100W High Pressure Sodium Cobra Head	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
233	LOC	LOW	Town of Ithaca	WINNER CIRCLE		3	HPS	100	100W High Pressure Sodium Post Top Decorative	117	3	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60
234	LOC	LOW	Town of Ithaca	WINSTON DR		3	MRC	175	175W Mercury Vapor Cobra Head	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
235	LOC	LOW	Town of Ithaca	WINTHROP DR	SANDRA PL, BRANDYWINE RD	2	MRC	175	175W Mercury Vapor Cobra Head	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
236	LOC	LOW	Town of Ithaca	WOODGATE LN	VERA CIR	1	HPS	100	100W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
237	LOC	LOW	Town of Ithaca	WOOLF LN	GROVE RD	1	HPS	150	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
238	LOC	LOW	Town of Ithaca	WYCOFF RD		1	HPS	100	100W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
						272					272				

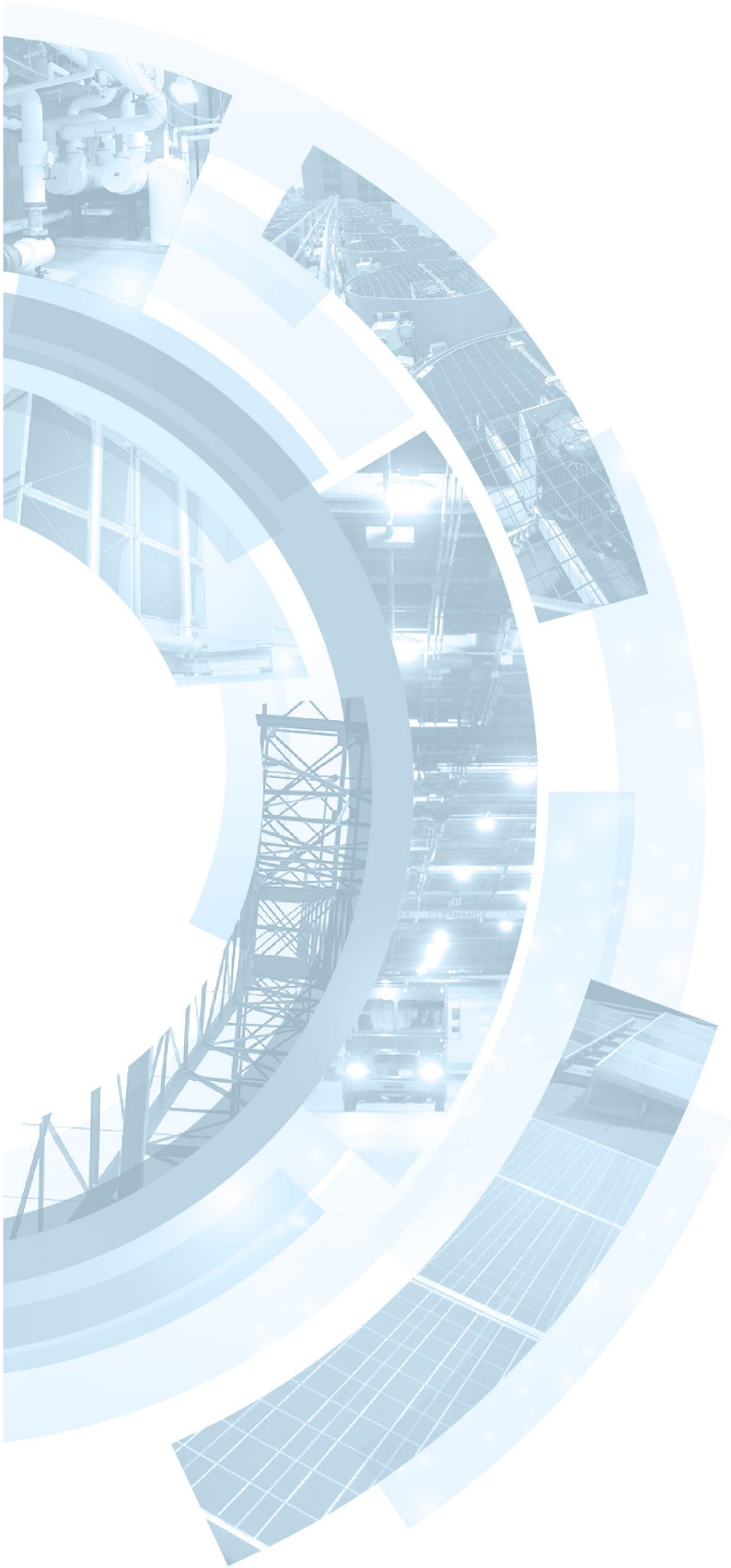
Tompkins County Aggregate						Pre- Install (Existing)						Post-Install (Proposed)					
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verified Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	
239	LOC	LOW	Town of Newfield	BANK ST	BEACH ST, BRIDGE ST, MILL ST	12	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	12	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
240	LOC/COL	LOW	Town of Newfield	BANK ST	MILL ST	1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
241	LOC	LOW	Town of Newfield	BANK ST		1	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
242	LOC	LOW	Town of Newfield	BANK ST		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
243	LOC	LOW	Town of Newfield	BEACH RD		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
244	LOC	LOW	Town of Newfield	BEACH RD		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
245	LOC	LOW	Town of Newfield	BEACH RD		1	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
246	LOC	LOW	Town of Newfield	BENJAMIN HILL RD		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
247	LOC	LOW	Town of Newfield	BRIARWOOD LN		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
248	LOC	LOW	Town of Newfield	BRIARWOOD LN		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
249	LOC	LOW	Town of Newfield	BRIDGE ST		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
250	LOC	LOW	Town of Newfield	BRIDGE ST		1	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
251	LOC	LOW	Town of Newfield	BRIDGE ST		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
252	LOC/COL	LOW	Town of Newfield	COX RD	RTE. 13 (ELMIRA RD)	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
253	LOC	LOW	Town of Newfield	HIDDEN PINES DR	COBRA HEAD FACING INTO LOT AT BEGINNING OF RD. ON LFT SIDE	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
254	LOC	LOW	Town of Newfield	HIDDEN PINES DR		1	HPS	70	POST TOP DECORATIVE 1	70W High Pressure Sodium Post Top Decorative	83	1	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	
255	LOC	LOW	Town of Newfield	HIDDEN PINES DR		10	HPS	100	POST TOP DECORATIVE 1	100W High Pressure Sodium Post Top Decorative	117	10	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	
256	LOC	MED	Town of Newfield	MAIN ST		15	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	15	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	
257	LOC/LOC	MED	Town of Newfield	MAIN ST	MILL ST, NEWFIELD DEPOT RD, PEARL ST, SHAFFER ST, BEACH RD, NIXON LN	6	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	6	NCH54W/LED16/3kT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey , 5,590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	
258	LOC	MED	Town of Newfield	MAIN ST		7	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	7	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	
259	LOC/LOC	MED	Town of Newfield	MAIN ST		2	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	2	NCH54W/LED16/3kT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey , 5,590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	
260	LOC	MED	Town of Newfield	MAIN ST		2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	
261	LOC	MED	Town of Newfield	MAIN ST	HIDDEN PINES DR	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	
262	LOC	MED	Town of Newfield	MAIN ST		2	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	
263	LOC	MED	Town of Newfield	MAIN ST		2	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	
264	LOC	MED	Town of Newfield	MAIN ST	POLE - 578, # 269-3	1	HPS	400	Flood Light	400W High Pressure Sodium Flood Light	486	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-IMVOLT-IS-DDBXD	80	
265	LOC	LOW	Town of Newfield	MILLARD HILL RD		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
266	LOC	LOW	Town of Newfield	NEWFIELD DEPOT RD		3	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
267	LOC	LOW	Town of Newfield	NEWFIELD DEPOT RD		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
268	LOC	LOW	Town of Newfield	PEARL ST		1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
269	LOC	LOW	Town of Newfield	PEARL ST		3	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
270	LOC	LOW	Town of Newfield	PEARL ST		2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
271	LOC	LOW	Town of Newfield	PINE CR		5	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	5	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	
272	LOC/COL	LOW	Town of Newfield	PINE CR	RTE. 13 (ELMIRA RD)	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
273	LOC	LOW	Town of Newfield	PINE WAY	HIDDEN PINES DR	2	HPS	70	POST TOP DECORATIVE 1	70W High Pressure Sodium Post Top Decorative	83	2	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	
274	LOC	LOW	Town of Newfield	PINE WAY		4	HPS	100	POST TOP DECORATIVE 1	100W High Pressure Sodium Post Top Decorative	117	4	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	
275	COL	LOW	Town of Newfield	RTE. 13 (ELMIRA RD)		7	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	7	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
276	COL	LOW	Town of Newfield	RTE. 13 (ELMIRA RD)		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
277	COL	LOW	Town of Newfield	RTE. 13 (ELMIRA RD)		1	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
278	COL	LOW	Town of Newfield	RTE. 13 (ELMIRA RD)	SEBRING RD	2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
279	COL	LOW	Town of Newfield	RTE. 13 (ELMIRA RD)	TRUMBULLS CORS	1	MRC	250	Cobra Head	250W Mercury Vapor Cobra Head	292	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
281	COL	LOW	Town of Newfield	RTE. 13 (ELMIRA RD)	3 CHS ON OUTSIDE OF ROUND- A- BOUT	3	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
282	COL	LOW	Town of Newfield	RTE. 13 (ELMIRA RD)	DOUBLE LAMP SINGLE POLE (IN THE MIDDLE OF ROUND- A- BOUT)	2	MHL	400	Cobra Head	400W Metal Halide Cobra Head	486	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
283	COL	LOW	Town of Newfield	SHAFFER RD(RTE. 113)		8	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	8	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
284	COL/LOC	LOW	Town of Newfield	SHAFFER RD(RTE. 113)	PEARL ST	1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	
285	COL/LOC	LOW	Town of Newfield	SHAFFER RD(RTE. 113)	MEADOWS LN	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	

Lighting Line by Line - Statement of Scope																
Tompkins County Aggregate							Pre- Install (Existing)					Post-Install (Proposed)				
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verfied Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage
286	COL	LOW	Town of Newfield	SHAFFER RD(RTE. 113)		3	MRC	100	Cobra Head	100W Mercury Vapor Cobra Head	127	3	NCH55W/LED48/3kT3-Philps RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
287	LOC	LOW	Town of Newfield	SHELTER VALLEY RD		2	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
288	COL	LOW	Town of Newfield	STATE HWY. 34	NEWFIELD DEPOT RD	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
289	LOC	LOW	Town of Newfield	TEST RD		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
290	COL	LOW	Town of Newfield	TRUMBULL CORNERS RD	MAIN ST	1	HPS	70	Cobra Head	70W High Pressure Sodium Cobra Head	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
291	COL	LOW	Town of Newfield	TRUMBULL CORNERS RD	RTE. 13 (ELMIRA RD)	1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
292	COL	LOW	Town of Newfield	TRUMBULL CORNERS RD		1	MRC	400	Cobra Head	400W Mercury Vapor Cobra Head	460	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
293	LOC	LOW	Town of Newfield	VAN KIRK RD		1	MRC	175	Cobra Head	175W Mercury Vapor Cobra Head	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
						136						136				

Lighting Line by Line - Statement of Scope																
Tompkins County Aggregate							Pre- Install (Existing)					Post-Install (Proposed)				
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verfied Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage
294	LOC	LOW	Town of Caroline	BEAVER CREEK RD		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
295	LOC	LOW	Town of Caroline	BOICEVILLE RD		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
296	COL	LOW	Town of Caroline	BROOKTONDALE RD		16	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	16	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
297	COL	LOW	Town of Caroline	BROOKTONDALE RD		1	HPS	100	Flood Light	100W High Pressure Sodium Flood Light	117	1	NFL/LED71-Lithonia RSFX1	New LED Floodlight 51w, 3k, Dark Bronze, 6,525LM	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	60
298	COL	LOW	Town of Caroline	BROOKTONDALE RD	BEASEMER RD, MIDDAUGH RD	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
299	COL	LOW	Town of Caroline	BROOKTONDALE RD		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
300	LOC	LOW	Town of Caroline	BUFFALO RD	TAFT RD	4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
301	LOC	LOW	Town of Caroline	BUFFALO RD		1	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
302	COL	LOW	Town of Caroline	CODDINGTON ROAD		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
303	LOC	LOW	Town of Caroline	HARFORD RD		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
304	LOC	LOW	Town of Caroline	LONDON RD		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
305	LOC	LOW	Town of Caroline	LEVEL GREEN RD		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
306	COL	LOW	Town of Caroline	LOUNSBURY RD (RT 113)		2	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
307	COL	LOW	Town of Caroline	MIDLINE RD	LUMINAIRE IN FRONT OF FOUNTAIN MANOR (CAROLINE DR)	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
308	LOC	LOW	Town of Caroline	MILL RD		5	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	5	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey, 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40
309	LOC/COL	LOW	Town of Caroline	MILL RD	W CREEK RD	1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
310	COL	LOW	Town of Caroline	OLD 76 RD(RT 115)		2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
311	COL	LOW	Town of Caroline	OLD 76 RD(RT 115)		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
314	COL	MED	Town of Caroline	SLATERVILLE ROAD (RTE. 79)		16	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	16	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
315	COL	MED	Town of Caroline	SLATERVILLE ROAD (RTE. 79)	HARTFORD RD, LEVEL GREEN RD, HAMILTON RD, MIDLINE RD	4	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	4	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
316	COL	MED	Town of Caroline	SLATERVILLE ROAD (RTE. 79)		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
317	COL	MED	Town of Caroline	SLATERVILLE ROAD (RTE. 79)		2	HPS	100	Flood Light	100W High Pressure Sodium Flood Light	117	2	NFL/LED71-Lithonia RSFX1	New LED Floodlight 51w, 3k, Dark Bronze, 6,525LM	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	60
318	LOC	MED	Town of Caroline	SPEEDSVILLE COMMON		1	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60
319	COL/LOC	LOW	Town of Caroline	VALLEY RD	BURNS RD, LOUNSBURY RD	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey, 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
320	COL/LOC	MED	Town of Caroline	VALLEY RD	ELM ST, MILL ST	2	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	2	NCH65W/LED40/3kT3-Philips RFS	New LED Cobra Head 65W, 3k, Type 3M, Grey, 8,626LM	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60
321	COL	MED	Town of Caroline	VALLEY RD		7	HPS	100	Cobra Head	100W High Pressure Sodium Cobra Head	117	7	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
322	COL	MED	Town of Caroline	VALLEY RD		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80
						79						79				

Lighting Line by Line - Statement of Scope																
Tompkins County Aggregate							Pre- Install (Existing)					Post-Install (Proposed)				
Action #	RW Class	Ped Class	Account	Street Name	Location	Adj Reg Qty	Reg Lamp	Reg Watts	Verfied Fixture Type	Luminaire Description	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage
323	COL	LOW	Town of Ulysses	ROUTE 96		3	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
324	COL	LOW	Town of Ulysses	ROUTE 89		1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
325	COL/LOC	LOW	Town of Ulysses	ROUTE 96	CEMETARY RD	1	HPS	150	Cobra Head	150W High Pressure Sodium Cobra Head	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
326	COL/LOC	LOW	Town of Ulysses	ROUTE 96	PARKE RD, COLGROVE RD, JACKSONVILLE RD	3	HPS	250	Cobra Head	250W High Pressure Sodium Cobra Head	313	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
327	COL	LOW	Town of Ulysses	ROUTE 96		1	HPS	250	Flood Light	250W High Pressure Sodium Flood Light	313	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DOBXD	80
328	COL	LOW	Town of Ulysses	S. TRUMANSBURG RD		1	HPS	400	Cobra Head	400W High Pressure Sodium Cobra Head	486	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60
						10						10				

J.3b - Statement of Savings



Lighting Line by Line - Statement of Aggregated Savings and Cost																		
Tompkins County Aggregate					Post-Install (Proposed)						Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost	
1	Village of Trumansburg	ACADEMY ST	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7.297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 49.73	\$ 49.73	\$ 303.36	\$ 151.00	\$ 454.36	
2	Village of Trumansburg	ACADEMY ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
3	Village of Trumansburg	BRADLEY ST	6	117	6	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.46	1,901.95	\$ -	\$ 87.32	\$ 87.32	\$ 1,431.30	\$ 906.00	\$ 2,337.30	
4	Village of Trumansburg	CAMP ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
5	Village of Trumansburg	CAMP ST	1	117	1	NFL/LED71-Lithonia RSFX1	New LED Floodlight 51w, 3k, Dark Bronze, 6.525LM	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DOBXD	60	0.06	234.29	\$ -	\$ 9.96	\$ 9.96	\$ 640.00	\$ 151.00	\$ 791.00	
6	Village of Trumansburg	CAMP ST	3	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.51	2,101.29	\$ -	\$ 100.27	\$ 100.27	\$ 715.65	\$ 453.00	\$ 1,168.65	
7	Village of Trumansburg	CAYUGA ST	7	117	7	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.54	2,218.94	\$ -	\$ 101.88	\$ 101.88	\$ 1,669.85	\$ 1,057.00	\$ 2,726.85	
8	Village of Trumansburg	CAYUGA ST	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 33.42	\$ 33.42	\$ 238.55	\$ 151.00	\$ 389.55	
9	Village of Trumansburg	CEMETERY ST	5	117	5	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.39	1,584.96	\$ -	\$ 72.77	\$ 72.77	\$ 1,192.75	\$ 755.00	\$ 1,947.75	
10	Village of Trumansburg	CEMETERY ST	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 54.32	\$ 54.32	\$ 238.55	\$ 151.00	\$ 389.55	
11	Village of Trumansburg	CONGRESS ST	4	117	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.31	1,267.96	\$ -	\$ 58.22	\$ 58.22	\$ 954.20	\$ 604.00	\$ 1,558.20	
12	Village of Trumansburg	CONGRESS ST	2	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.34	1,400.86	\$ -	\$ 66.85	\$ 66.85	\$ 477.10	\$ 302.00	\$ 779.10	
13	Village of Trumansburg	COREY ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
14	Village of Trumansburg	E SENECA RD	3	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.23	950.97	\$ -	\$ 43.66	\$ 43.66	\$ 715.65	\$ 453.00	\$ 1,168.65	
15	Village of Trumansburg	ELDORADO DR	1	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7.297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 9.96	\$ 9.96	\$ 303.36	\$ 151.00	\$ 454.36	
16	Village of Trumansburg	ELM ST	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 29.11	\$ 29.11	\$ 477.10	\$ 302.00	\$ 779.10	
17	Village of Trumansburg	ELM ST	1	117	1	NCH54W/LED16/3kT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey , 5.590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 9.96	\$ 9.96	\$ 243.40	\$ 151.00	\$ 394.40	
18	Village of Trumansburg	ELM ST	2	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.34	1,400.86	\$ -	\$ 66.85	\$ 66.85	\$ 477.10	\$ 302.00	\$ 779.10	
19	Village of Trumansburg	ELM ST	1	210	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.15	617.73	\$ -	\$ 28.83	\$ 28.83	\$ 243.40	\$ 151.00	\$ 394.40	
20	Village of Trumansburg	ELM ST	1	292	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.25	1,038.52	\$ -	\$ 50.06	\$ 50.06	\$ 238.55	\$ 151.00	\$ 389.55	
21	Village of Trumansburg	ELM ST	1	292	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.23	955.82	\$ -	\$ 45.47	\$ 45.47	\$ 243.40	\$ 151.00	\$ 394.40	
22	Village of Trumansburg	ELM ST	1	460	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.40	1,648.48	\$ -	\$ 79.55	\$ 79.55	\$ 243.40	\$ 151.00	\$ 394.40	
23	Village of Trumansburg	FALLS ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
24	Village of Trumansburg	FALLS- JACKSONVILLE RD	0	0	0	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
25	Village of Trumansburg	GOULD ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
26	Village of Trumansburg	GREGG ST	4	117	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.31	1,267.96	\$ -	\$ 58.22	\$ 58.22	\$ 954.20	\$ 604.00	\$ 1,558.20	
27	Village of Trumansburg	GREGG ST	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 25.51	\$ 25.51	\$ 238.55	\$ 151.00	\$ 389.55	
28	Village of Trumansburg	HALSEY ST	4	117	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.31	1,267.96	\$ -	\$ 58.22	\$ 58.22	\$ 954.20	\$ 604.00	\$ 1,558.20	
29	Village of Trumansburg	KENTUCKY AVE	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
30	Village of Trumansburg	KING ST	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 29.11	\$ 29.11	\$ 477.10	\$ 302.00	\$ 779.10	
31	Village of Trumansburg	KING ST	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 33.42	\$ 33.42	\$ 238.55	\$ 151.00	\$ 389.55	
32	Village of Trumansburg	LAKE ST	3	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.51	2,101.29	\$ -	\$ 100.27	\$ 100.27	\$ 715.65	\$ 453.00	\$ 1,168.65	
33	Village of Trumansburg	LAKE ST	1	292	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.25	1,038.52	\$ -	\$ 50.06	\$ 50.06	\$ 238.55	\$ 151.00	\$ 389.55	
34	Village of Trumansburg	MCCLELLEN ST	3	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.23	950.97	\$ -	\$ 43.66	\$ 43.66	\$ 715.65	\$ 453.00	\$ 1,168.65	
35	Village of Trumansburg	MCCLELLEN ST	2	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4.247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.34	1,400.86	\$ -	\$ 66.85	\$ 66.85	\$ 477.10	\$ 302.00	\$ 779.10	
36	Village of Trumansburg	OLD MAIN STREET	3	117	3	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7.684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.17	702.87	\$ -	\$ 29.88	\$ 29.88	\$ 730.20	\$ 453.00	\$ 1,183.20	
37	Village of Trumansburg	OLD MAIN STREET	1	117	1	NDS37W/LED40/3kT3-Lumec RNS30	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20										

Lighting Line by Line - Statement of Aggregated Savings and Cost																		
Tompkins County Aggregate					Post-Install (Proposed)						Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost	
48	Village of Trumansburg	SOUTH ST (Rt. 136)	2	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 19.92	\$ 19.92	\$ 606.72	\$ 302.00	\$ 908.72	
49	Village of Trumansburg	SOUTH ST (Rt. 136)	2	171	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.22	913.87	\$ -	\$ 41.84	\$ 41.84	\$ 606.72	\$ 302.00	\$ 908.72	
50	Village of Trumansburg	SOUTH ST (Rt. 136)	1	292	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.23	955.82	\$ -	\$ 45.47	\$ 45.47	\$ 303.36	\$ 151.00	\$ 454.36	
51	Village of Trumansburg	STATE HWY 227 (HECTOR ST)	1	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 9.96	\$ 9.96	\$ 303.36	\$ 151.00	\$ 454.36	
52	Village of Trumansburg	STATE HWY 227 (HECTOR ST)	3	117	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.17	702.87	\$ -	\$ 29.88	\$ 29.88	\$ 910.08	\$ 453.00	\$ 1,363.08	
53	Village of Trumansburg	STATE HWY 227 (HECTOR ST)	1	117	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey, 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	0.04	151.59	\$ -	\$ 5.37	\$ 5.37	\$ 281.92	\$ 151.00	\$ 432.92	
54	Village of Trumansburg	STATE HWY 227 (HECTOR ST)	1	210	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.15	617.73	\$ -	\$ 28.83	\$ 28.83	\$ 303.36	\$ 151.00	\$ 454.36	
55	Village of Trumansburg	STATE HWY 96 (E. Main St.)	2	117	2	NDS37W/LED40/3kT3-Lumec RNS30	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20 30W16LED T ACDR LE3 120 DMG SMB RCD N BKTX DE1	40	0.15	633.98	\$ -	\$ 29.11	\$ 29.11	\$ 2,680.00	\$ 496.00	\$ 3,176.00	
56	Village of Trumansburg	STATE HWY 96 (E. Main St.)	38	117	38	NDS37W/LED40/3kT3-Lumec RNS30	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20 30W16LED T ACDR LE3 120 DMG SMB RCD N BKTX DE1	40	2.93	12,045.66	\$ -	\$ 553.04	\$ 553.04	\$ 50,920.00	\$ 9,424.00	\$ 60,344.00	
57	Village of Trumansburg	STATE HWY 96 (E. Main St.)	4	117	4	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.15	606.36	\$ -	\$ 21.48	\$ 21.48	\$ 1,168.40	\$ 604.00	\$ 1,772.40	
58	Village of Trumansburg	STATE HWY 96 (E. Main St.)	2	171	2	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.18	748.47	\$ -	\$ 32.65	\$ 32.65	\$ 584.20	\$ 302.00	\$ 886.20	
59	Village of Trumansburg	STATE HWY 96 (E. Main St.)	1	171	1	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.09	374.23	\$ -	\$ 16.33	\$ 16.33	\$ 292.10	\$ 151.00	\$ 443.10	
60	Village of Trumansburg	STATE HWY 96 (E. Main St.)	3	313	3	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.70	2,879.10	\$ -	\$ 135.41	\$ 135.41	\$ 876.30	\$ 453.00	\$ 1,329.30	
61	Village of Trumansburg	STATE HWY 96 (E. Main St.)	3	313	3	NCH65W/LED40/3kT3-Philips RFS	New LED Cobra Head 65W, 3k, Type 3M, Grey, 8,626LM	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60	0.76	3,127.20	\$ -	\$ 149.19	\$ 149.19	\$ 845.76	\$ 453.00	\$ 1,298.76	
62	Village of Trumansburg	STATE HWY 96 (W. Main St.)	7	313	7	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	1.77	7,296.79	\$ -	\$ 348.10	\$ 348.10	\$ 2,123.52	\$ 1,057.00	\$ 3,180.52	
63	Village of Trumansburg	STATE HWY 96 (W. Main St.)	2	313	2	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.47	1,919.40	\$ -	\$ 90.27	\$ 90.27	\$ 584.20	\$ 302.00	\$ 886.20	
64	Village of Trumansburg	STATE HWY 96 (W. Main St.)	1	313	1	NCH100W/LED60/3kT3-Philips RFM	New LED Cobra Head 100W, 3k, Type 3M, Grey, 13,051LM	B5 - Philips - RFM-100W60LED3K-G2-R3M-UNV-DMG-RCD7	80	0.23	959.70	\$ -	\$ 45.14	\$ 45.14	\$ 315.30	\$ 151.00	\$ 466.30	
65	Village of Trumansburg	STATE HWY 96 (W. Main St.)	1	486	1	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.41	1,672.98	\$ -	\$ 80.24	\$ 80.24	\$ 292.10	\$ 151.00	\$ 443.10	
66	Village of Trumansburg	STROWBRIDGE RD.	5	117	5	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.39	1,584.96	\$ -	\$ 72.77	\$ 72.77	\$ 1,192.75	\$ 755.00	\$ 1,947.75	
67	Village of Trumansburg	STROWBRIDGE RD.	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 33.42	\$ 33.42	\$ 238.55	\$ 151.00	\$ 389.55	
68	Village of Trumansburg	SUNRISE TERRACE	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
69	Village of Trumansburg	TRUMAN ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 14.55	\$ 14.55	\$ 238.55	\$ 151.00	\$ 389.55	
70	Village of Trumansburg	TRUMAN ST	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 54.32	\$ 54.32	\$ 238.55	\$ 151.00	\$ 389.55	
71	Village of Trumansburg	UNION ST	1	313	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 49.73	\$ 49.73	\$ 243.40	\$ 151.00	\$ 394.40	
72	Village of Trumansburg	UNION ST	2	117	2	NDS37W/LED40/3kT3-Lumec RNS30	New LED Decorative Tear Drop, 37w, Type 3	D1 - Lumec - RNS20 30W16LED T ACDR LE3 120 DMG SMB RCD N BKTX DE1	40	0.15	633.98	\$ -	\$ 29.11	\$ 29.11	\$ 2,680.00	\$ 496.00	\$ 3,176.00	
73	Village of Trumansburg	WASHINGTON STREET	5	117	5	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.39	1,584.96	\$ -	\$ 72.77	\$ 72.77	\$ 1,192.75	\$ 755.00	\$ 1,947.75	
74	Village of Trumansburg	WHIG ST	3	117	3	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.17	702.87	\$ -	\$ 29.88	\$ 29.88	\$ 730.20	\$ 453.00	\$ 1,183.20	
75	Village of Trumansburg	WHIG ST	1	210	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.15	617.73	\$ -	\$ 28.83	\$ 28.83	\$ 243.40	\$ 151.00	\$ 394.40	
76	Village of Trumansburg	WHIG ST	1	313	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 49.73	\$ 49.73	\$ 243.40	\$ 151.00	\$ 394.40	
			200		200					21.75	89,541.12	\$ -	\$ 4,159.10	\$ 4,159.10	\$ 98,048.37	\$ 34,371.00	\$ 132,419.37	

Lighting Line by Line - Statement of Aggregated Savings and Cost																		
Tompkins County Aggregate					Post-Install (Proposed)						Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost	
77	Village of Freeville	BROOKLYN RD	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 16.19	\$ 16.19	\$ 238.55	\$ 151.00	\$ 389.55	
78	Village of Freeville	BROOKLYN RD	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 29.27	\$ 29.27	\$ 238.55	\$ 151.00	\$ 389.55	
79	Village of Freeville	BROOKLYN RD	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 104.71	\$ 104.71	\$ 238.55	\$ 151.00	\$ 389.55	
80	Village of Freeville	CEADER DR	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 32.38	\$ 32.38	\$ 477.10	\$ 302.00	\$ 779.10	
81	Village of Freeville	COOK ST	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 32.38	\$ 32.38	\$ 477.10	\$ 302.00	\$ 779.10	
82	Village of Freeville	FACTORY ST	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 32.38	\$ 32.38	\$ 477.10	\$ 302.00	\$ 779.10	
83	Village of Freeville	FALL CREEK RD	1	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 21.39	\$ 21.39	\$ 303.36	\$ 151.00	\$ 454.36	
84	Village of Freeville	FALL CREEK RD	2	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 42.79	\$ 42.79	\$ 606.72	\$ 302.00	\$ 908.72	
85	Village of Freeville	FALL CREEK RD	2	83	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.05	188.22	\$ -	\$ 16.62	\$ 16.62	\$ 606.72	\$ 302.00	\$ 908.72	
86	Village of Freeville	FREEVILLE DEPOT	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 29.27	\$ 29.27	\$ 238.55	\$ 151.00	\$ 389.55	
87	Village of Freeville	FREEVILLE DEPOT	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 16.19	\$ 16.19	\$ 238.55	\$ 151.00	\$ 389.55	
88	Village of Freeville	GROTON AVE	3	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.23	950.97	\$ -	\$ 87.82	\$ 87.82	\$ 715.65	\$ 453.00	\$ 1,168.65	
89	Village of Freeville	GROTON AVE	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 16.19	\$ 16.19	\$ 238.55	\$ 151.00	\$ 389.55	
90	Village of Freeville	HEATH PL	1	313	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80	0.23	959.70	\$ -	\$ 88.95	\$ 88.95	\$ 640.00	\$ 151.00	\$ 791.00	
91	Village of Freeville	JOHNSONVILLE RD	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 58.55	\$ 58.55	\$ 477.10	\$ 302.00	\$ 779.10	
92	Village of Freeville	JOHNSONVILLE RD	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 16.19	\$ 16.19	\$ 238.55	\$ 151.00	\$ 389.55	
93	Village of Freeville	LIBERTY ST	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 16.19	\$ 16.19	\$ 238.55	\$ 151.00	\$ 389.55	
94	Village of Freeville	MAIN ST (RTE. 366)	6	117	6	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.34	1,405.75	\$ -	\$ 128.37	\$ 128.37	\$ 1,820.16	\$ 906.00	\$ 2,726.16	
95	Village of Freeville	MAIN ST (RTE. 366)	3	171	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.33	1,370.80	\$ -	\$ 126.54	\$ 126.54	\$ 910.08	\$ 453.00	\$ 1,363.08	
96	Village of Freeville	MAIN ST (RTE. 366)	2	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 42.79	\$ 42.79	\$ 606.72	\$ 302.00	\$ 908.72	
97	Village of Freeville	MAIN ST (RTE. 366)	2	83	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.05	188.22	\$ -	\$ 16.62	\$ 16.62	\$ 606.72	\$ 302.00	\$ 908.72	
98	Village of Freeville	MILL ST	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 32.38	\$ 32.38	\$ 477.10	\$ 302.00	\$ 779.10	
99	Village of Freeville	PARKVIEW DR	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 58.55	\$ 58.55	\$ 477.10	\$ 302.00	\$ 779.10	
100	Village of Freeville	RAILROAD ST (RTE.38)	4	83	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.09	376.44	\$ -	\$ 33.23	\$ 33.23	\$ 1,213.44	\$ 604.00	\$ 1,817.44	
101	Village of Freeville	RAILROAD ST (RTE.38)	4	117	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.23	937.16	\$ -	\$ 85.58	\$ 85.58	\$ 1,213.44	\$ 604.00	\$ 1,817.44	
102	Village of Freeville	RAILROAD ST (RTE.38)	4	117	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.23	937.16	\$ -	\$ 85.58	\$ 85.58	\$ 1,213.44	\$ 604.00	\$ 1,817.44	
103	Village of Freeville	RAILROAD ST (RTE.38)	1	460	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey , 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	0.38	1,565.78	\$ -	\$ 145.53	\$ 145.53	\$ 281.92	\$ 151.00	\$ 432.92	
104	Village of Freeville	TAMBARK CIRCLE	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 16.19	\$ 16.19	\$ 238.55	\$ 151.00	\$ 389.55	
105	Village of Freeville	UNION ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 29.27	\$ 29.27	\$ 238.55	\$ 151.00	\$ 389.55	
106	Village of Freeville	UNION ST	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 32.38	\$ 32.38	\$ 477.10	\$ 302.00	\$ 779.10	
107	Village of Freeville	WILLOW DR	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 32.38	\$ 32.38	\$ 477.10	\$ 302.00	\$ 779.10	
108	Village of Freeville	YATES ST	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 16.19	\$ 16.19	\$ 238.55	\$ 151.00	\$ 389.55	
			62		62					4.07	16,755.06	\$ -	\$ 1,539.00	\$ 1,539.00	\$ 17,179.22	\$ 9,362.00	\$ 26,541.22	

Lighting Line by Line - Statement of Aggregated Savings and Cost																		
Tompkins County Aggregate					Post-Install (Proposed)						Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost	
109	Town of Ithaca	BIRCHWOOD DR	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55	
110	Town of Ithaca	BIRCHWOOD DR N	1	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	358.22	\$ -	\$ 26.39	\$ 26.39	\$ 238.55	\$ 151.00	\$ 389.55	
111	Town of Ithaca	BLACKSTONE AVE	3	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.51	2,101.29	\$ -	\$ 156.91	\$ 156.91	\$ 715.65	\$ 453.00	\$ 1,168.65	
112	Town of Ithaca	BRANDYWINE DR	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
113	Town of Ithaca	BOSTWICK RD (RTE.137)	1	460	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.42	1,731.18	\$ -	\$ 130.37	\$ 130.37	\$ 238.55	\$ 151.00	\$ 389.55	
114	Town of Ithaca	BOSTWICK RD (RTE.137	2	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.26	1,079.27	\$ -	\$ 80.25	\$ 80.25	\$ 477.10	\$ 302.00	\$ 779.10	
115	Town of Ithaca	BUNDY RD	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
116	Town of Ithaca	BURLEIGH DR	7	117	7	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.54	2,218.94	\$ -	\$ 162.84	\$ 162.84	\$ 1,669.85	\$ 1,057.00	\$ 2,726.85	
117	Town of Ithaca	BURNS RD	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 84.47	\$ 84.47	\$ 238.55	\$ 151.00	\$ 389.55	
118	Town of Ithaca	CALDWELL RD	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
119	Town of Ithaca	CHRISTOPHER LANE	3	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.51	2,101.29	\$ -	\$ 156.91	\$ 156.91	\$ 715.65	\$ 453.00	\$ 1,168.65	
120	Town of Ithaca	CLOVER LN	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
121	Town of Ithaca	CODDINGTON RD (RT 119)	3	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	1.20	4,945.44	\$ -	\$ 371.21	\$ 371.21	\$ 910.08	\$ 453.00	\$ 1,363.08	
122	Town of Ithaca	CODDINGTON RD (RT 119)	2	460	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.80	3,296.96	\$ -	\$ 247.47	\$ 247.47	\$ 606.72	\$ 302.00	\$ 908.72	
123	Town of Ithaca	CODDINGTON RD (RT 119)	7	171	7	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.78	3,198.53	\$ -	\$ 234.42	\$ 234.42	\$ 2,123.52	\$ 1,057.00	\$ 3,180.52	
124	Town of Ithaca	COMPTON RD		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
125	Town of Ithaca	CONIFER DR		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
126	Town of Ithaca	COY GLEN RD		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
127	Town of Ithaca	CREST LN	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
128	Town of Ithaca	CULVER RD	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 84.47	\$ 84.47	\$ 238.55	\$ 151.00	\$ 389.55	
129	Town of Ithaca	DANBY RD (RT 96B)	8	313	8	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	2.02	8,339.19	\$ -	\$ 622.66	\$ 622.66	\$ 2,426.88	\$ 1,208.00	\$ 3,634.88	
130	Town of Ithaca	DANBY RD (RT 96B)	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 77.83	\$ 77.83	\$ 303.36	\$ 151.00	\$ 454.36	
131	Town of Ithaca	DANBY RD (RT 96B)	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 33.49	\$ 33.49	\$ 303.36	\$ 151.00	\$ 454.36	
132	Town of Ithaca	DANBY RD (RT 96B)	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 77.83	\$ 77.83	\$ 303.36	\$ 151.00	\$ 454.36	
133	Town of Ithaca	DANBY RD (RT 96B)	1	486	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.43	1,755.68	\$ -	\$ 131.86	\$ 131.86	\$ 303.36	\$ 151.00	\$ 454.36	
134	Town of Ithaca	DOVE DR	2	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.34	1,400.86	\$ -	\$ 104.61	\$ 104.61	\$ 477.10	\$ 302.00	\$ 779.10	
135	Town of Ithaca	DUBOIS RD	4	171	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.52	2,158.53	\$ -	\$ 160.50	\$ 160.50	\$ 954.20	\$ 604.00	\$ 1,558.20	
136	Town of Ithaca	E. SHORE RD.	1	460	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.40	1,648.48	\$ -	\$ 123.74	\$ 123.74	\$ 303.36	\$ 151.00	\$ 454.36	
137	Town of Ithaca	E. SHORE RD.	3	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	1.20	4,945.44	\$ -	\$ 371.21	\$ 371.21	\$ 910.08	\$ 453.00	\$ 1,363.08	
138	Town of Ithaca	EASTERN HEIGHTS RD	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55	
139	Town of Ithaca	ELLIS HOLLOW RD (RTE. 110)	3	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	1.20	4,945.44	\$ -	\$ 371.21	\$ 371.21	\$ 910.08	\$ 453.00	\$ 1,363.08	
140	Town of Ithaca	ELMS ST EXT	4	210	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.68	2,801.72	\$ -	\$ 209.22	\$ 209.22	\$ 954.20	\$ 604.00	\$ 1,558.20	
141	Town of Ithaca	ENFIELD FALLS RD	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55	
142	Town of Ithaca	FAIRWAY DR	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55	
143	Town of Ithaca	FIVE MILE RD (RT.13)	2	210	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.30	1,235.46	\$ -	\$ 91.34	\$ 91.34	\$ 606.72	\$ 302.00	\$ 908.72	
144	Town of Ithaca	FIVE MILE RD (RT.13)	4	210	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.60	2,470.92	\$ -	\$ 182.67	\$ 182.67	\$ 1,213.44	\$ 604.00	\$ 1,817.44	
145	Town of Ithaca	FIVE MILE RD (RT.13)	1	292	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.23	955.82	\$ -	\$ 71.27	\$ 71.27	\$ 303.36	\$ 151.00	\$ 454.36	
146	Town of Ithaca	FOREST HOME DR	15	127	15	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	1.31	5,373.32	\$ -	\$ 395.79	\$ 395.79	\$ 3,578.25	\$ 2,265.00	\$ 5,843.25	
147	Town of Ithaca	FOREST HOME DR	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55	
148	Town of Ithaca	FOREST HOME DR	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 25.29	\$ 25.29	\$ 477.10	\$ 302.00	\$ 779.10	

Lighting Line by Line - Statement of Aggregated Savings and Cost																		
Tompkins County Aggregate					Post-Install (Proposed)						Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost	
149	Town of Ithaca	FOREST HOME DR	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
150	Town of Ithaca	GAME FARM RD	1	292	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.23	955.82	\$ -	\$ 71.27	\$ 71.27	\$ 303.36	\$ 151.00	\$ 454.36	
151	Town of Ithaca	GLENSIDE RD	6	83	6	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.26	1,060.85	\$ -	\$ 75.87	\$ 75.87	\$ 1,431.30	\$ 906.00	\$ 2,337.30	
152	Town of Ithaca	GLENSIDE RD	2	127	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	716.44	\$ -	\$ 52.77	\$ 52.77	\$ 477.10	\$ 302.00	\$ 779.10	
153	Town of Ithaca	HB DATES DR		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
154	Town of Ithaca	HB DATES DR EXT		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
155	Town of Ithaca	HALLER BLVD	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
156	Town of Ithaca	HANSHAW RD (RTE.109)	3	210	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.45	1,853.19	\$ -	\$ 137.00	\$ 137.00	\$ 910.08	\$ 453.00	\$ 1,363.08	
157	Town of Ithaca	HANSHAW RD (RTE.109)	4	210	4	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.60	2,470.92	\$ -	\$ 182.67	\$ 182.67	\$ 1,213.44	\$ 604.00	\$ 1,817.44	
158	Town of Ithaca	HANSHAW RD (RTE.109)	1	292	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey, 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	0.21	873.12	\$ -	\$ 64.64	\$ 64.64	\$ 281.92	\$ 151.00	\$ 432.92	
159	Town of Ithaca	HARTWICK RD	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55	
160	Town of Ithaca	HAYTS RD	1	460	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey, 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	0.38	1,565.78	\$ -	\$ 117.10	\$ 117.10	\$ 281.92	\$ 151.00	\$ 432.92	
161	Town of Ithaca	HELENS WAY		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
162	Town of Ithaca	HONNESS LN	3	171	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.39	1,618.90	\$ -	\$ 120.38	\$ 120.38	\$ 715.65	\$ 453.00	\$ 1,168.65	
163	Town of Ithaca	HELENS WAY		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
164	Town of Ithaca	HOPKINS PL	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 33.49	\$ 33.49	\$ 303.36	\$ 151.00	\$ 454.36	
165	Town of Ithaca	HOPKINS RD	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55	
166	Town of Ithaca	JOANNE DR	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55	
167	Town of Ithaca	JUDD FALLS RD	2	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.26	1,079.27	\$ -	\$ 80.25	\$ 80.25	\$ 477.10	\$ 302.00	\$ 779.10	
168	Town of Ithaca	JUDD FALLS RD	2	171	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.22	913.87	\$ -	\$ 66.98	\$ 66.98	\$ 486.80	\$ 302.00	\$ 788.80	
169	Town of Ithaca	JUDD FALLS RD	3	313	3	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.76	3,127.20	\$ -	\$ 233.50	\$ 233.50	\$ 730.20	\$ 453.00	\$ 1,183.20	
170	Town of Ithaca	KAY ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55	
171	Town of Ithaca	KENDELL AVE	2	292	2	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80	0.42	1,746.23	\$ -	\$ 129.28	\$ 129.28	\$ 1,280.00	\$ 302.00	\$ 1,582.00	
172	Town of Ithaca	KING RD W	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55	
173	Town of Ithaca	KING RD E	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10	
174	Town of Ithaca	KING RD E	3	171	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.39	1,618.90	\$ -	\$ 120.38	\$ 120.38	\$ 715.65	\$ 453.00	\$ 1,168.65	
175	Town of Ithaca	LOIS LN	3	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.23	950.97	\$ -	\$ 69.79	\$ 69.79	\$ 715.65	\$ 453.00	\$ 1,168.65	
176	Town of Ithaca	MAXS DR		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
177	Town of Ithaca	MCNYTRE PL	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55	
178	Town of Ithaca	MECKLENBURG RD	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 77.83	\$ 77.83	\$ 303.36	\$ 151.00	\$ 454.36	
179	Town of Ithaca	MECKLENBURG RD	3	313	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.76	3,127.20	\$ -	\$ 233.50	\$ 233.50	\$ 910.08	\$ 453.00	\$ 1,363.08	
180	Town of Ithaca	MITCHELL ST (RTE.110)	2	460	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.80	3,296.96	\$ -	\$ 247.47	\$ 247.47	\$ 606.72	\$ 302.00	\$ 908.72	
181	Town of Ithaca	MITCHELL ST (RTE.110)	1	460	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.40	1,648.48	\$ -	\$ 123.74	\$ 123.74	\$ 303.36	\$ 151.00	\$ 454.36	
182	Town of Ithaca	MITCHELL ST (RTE.110)	1	460	1	NCH75W/LED60/3kT3-Philips RFM	New LED Cobra Head 75W, 3k, Type 3M, Grey, 10,495LM	B3 - Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	80	0.38	1,565.78	\$ -	\$ 117.10	\$ 117.10	\$ 281.92	\$ 151.00	\$ 432.92	
183	Town of Ithaca	MUREL ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55	
184	Town of Ithaca	PALM RD	1	210	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.15	617.73	\$ -	\$ 45.67	\$ 45.67	\$ 303.36	\$ 151.00	\$ 454.36	
185	Town of Ithaca	PARK LN	3	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.23	950.97	\$ -	\$ 69.79	\$ 69.79	\$ 715.65	\$ 453.00	\$ 1,168.65	
186	Town of Ithaca	PEARSALL LN	3	117	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.23	950.97	\$ -	\$ 69.79	\$ 69.79	\$ 715.65	\$ 453.00	\$ 1,168.65	
187	Town of Ithaca	PENNY LN	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55	
188	Town of Ithaca	PINE TREE RD	1	117	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey, 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 16.63	\$ 16.63	\$ 243.40	\$ 151.00	\$ 394.40	

Tompkins County Aggregate					Post-Install (Proposed)					Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost
189	Town of Ithaca	PINE TREE RD	2	117	2	NCH54W/LED16/3kT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey , 5,590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 33.25	\$ 33.25	\$ 486.80	\$ 302.00	\$ 788.80
190	Town of Ithaca	PINE TREE RD	1	313	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DOBXD	80	0.23	959.70	\$ -	\$ 71.20	\$ 71.20	\$ 640.00	\$ 151.00	\$ 791.00
191	Town of Ithaca	PINE TREE RD	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 77.83	\$ 77.83	\$ 303.36	\$ 151.00	\$ 454.36
192	Town of Ithaca	PINEWOOD PL	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 84.47	\$ 84.47	\$ 238.55	\$ 151.00	\$ 389.55
193	Town of Ithaca	PINEWOOD PL	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55
194	Town of Ithaca	POOLE RD	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55
195	Town of Ithaca	RACHEL CASON WAY	1	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 16.63	\$ 16.63	\$ 303.36	\$ 151.00	\$ 454.36
196	Town of Ithaca	REGENCY LN	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55
197	Town of Ithaca	RENWICK DR	2	127	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	716.44	\$ -	\$ 52.77	\$ 52.77	\$ 477.10	\$ 302.00	\$ 779.10
198	Town of Ithaca	RENWICK DR	1	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.02	94.11	\$ -	\$ 6.01	\$ 6.01	\$ 303.36	\$ 151.00	\$ 454.36
199	Town of Ithaca	RENWICK HEIGHTS	1	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	358.22	\$ -	\$ 26.39	\$ 26.39	\$ 238.55	\$ 151.00	\$ 389.55
200	Town of Ithaca	RENWICK HEIGHTS	2	83	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	353.62	\$ -	\$ 25.29	\$ 25.29	\$ 477.10	\$ 302.00	\$ 779.10
201	Town of Ithaca	RENWICK PL	4	127	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.35	1,432.88	\$ -	\$ 105.54	\$ 105.54	\$ 954.20	\$ 604.00	\$ 1,558.20
202	Town of Ithaca	ROAT ST	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55
203	Town of Ithaca	SALEM DR	6	210	6	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	1.02	4,202.58	\$ -	\$ 313.83	\$ 313.83	\$ 1,431.30	\$ 906.00	\$ 2,337.30
204	Town of Ithaca	SEASAME ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55
205	Town of Ithaca	SVEEN MILE DR	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55
206	Town of Ithaca	SHARLENE RD	2	117	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10
207	Town of Ithaca	SHEFELD RD	3	210	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.51	2,101.29	\$ -	\$ 156.91	\$ 156.91	\$ 715.65	\$ 453.00	\$ 1,168.65
208	Town of Ithaca	SHEFELD RD	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 77.83	\$ 77.83	\$ 303.36	\$ 151.00	\$ 454.36
209	Town of Ithaca	SIENA DR	2	210	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.34	1,400.86	\$ -	\$ 104.61	\$ 104.61	\$ 477.10	\$ 302.00	\$ 779.10
210	Town of Ithaca	SIMSBURY DR	3	171	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.39	1,618.90	\$ -	\$ 120.38	\$ 120.38	\$ 715.65	\$ 453.00	\$ 1,168.65
211	Town of Ithaca	SKYVUE DR	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55
212	Town of Ithaca	SLATERVILLE ROAD (RTE. 79)	3	171	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.33	1,370.80	\$ -	\$ 100.47	\$ 100.47	\$ 910.08	\$ 453.00	\$ 1,363.08
213	Town of Ithaca	SYNDER HILL DR	1	486	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.45	1,838.38	\$ -	\$ 138.49	\$ 138.49	\$ 238.55	\$ 151.00	\$ 389.55
214	Town of Ithaca	SYNDER HILL DR	2	313	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.55	2,250.20	\$ -	\$ 168.94	\$ 168.94	\$ 477.10	\$ 302.00	\$ 779.10
215	Town of Ithaca	STONE CURRY RD		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
216	Town of Ithaca	STRAWBERRY HILL CIRCLE	4	117	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.31	1,267.96	\$ -	\$ 93.05	\$ 93.05	\$ 954.20	\$ 604.00	\$ 1,558.20
217	Town of Ithaca	STRAWBERRY HILL CIRCLE	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55
218	Town of Ithaca	TAREYTON DR	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55
219	Town of Ithaca	TEXAS LN	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 52.30	\$ 52.30	\$ 238.55	\$ 151.00	\$ 389.55
220	Town of Ithaca	TOWER RD	1	313	1	NCH65W/LED40/3kT3-Philips RFS	New LED Cobra Head 65W, 3k, Type 3M, Grey, 8,626LM	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 77.83	\$ 77.83	\$ 281.92	\$ 151.00	\$ 432.92
221	Town of Ithaca	TRUMANSBURG RD (RTE. 96)	3	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	1.20	4,945.44	\$ -	\$ 371.21	\$ 371.21	\$ 910.08	\$ 453.00	\$ 1,363.08
222	Town of Ithaca	TRUMANSBURG RD (RTE. 96)	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 77.83	\$ 77.83	\$ 303.36	\$ 151.00	\$ 454.36
223	Town of Ithaca	TRUMANSBURG RD (RTE. 96)	3	313	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.76	3,127.20	\$ -	\$ 233.50	\$ 233.50	\$ 910.08	\$ 453.00	\$ 1,363.08
224	Town of Ithaca	TRUMANSBURG RD (RTE. 96)	3	460	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	1.20	4,945.44	\$ -	\$ 371.21	\$ 371.21	\$ 910.08	\$ 453.00	\$ 1,363.08
225	Town of Ithaca	VERA CIRCLE		0	0	Remove from Reg	Fixture removed from registry - unknown location	Fixture removed from registry - unknown location	0	0.00	0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
226	Town of Ithaca	VISTA LN	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55
227	Town of Ithaca	WARREN RD (COUNTY. RD 121)	2	460	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.80	3,296.96	\$ -	\$ 247.47	\$ 247.47	\$ 606.72	\$ 302.00	\$ 908.72
228	Town of Ithaca	WARREN RD (COUNTY. RD 121)	1	460	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.40	1,648.48	\$ -	\$ 123.74	\$ 123.74	\$ 303.36	\$ 151.00	\$ 454.36

Lighting Line by Line - Statement of Aggregated Savings and Cost																	
Tompkins County Aggregate					Post-Install (Proposed)					Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost
229	Town of Ithaca	WARREN RD (COUNTY. RD 121)	5	117	5	NCH55W/LED48/3KT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.29	1,171.46	\$ -	\$ 83.13	\$ 83.13	\$ 1,516.80	\$ 755.00	\$ 2,271.80
230	Town of Ithaca	WESTHAVEN RD	19	171	19	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	2.49	10,253.03	\$ -	\$ 762.39	\$ 762.39	\$ 4,532.45	\$ 2,869.00	\$ 7,401.45
231	Town of Ithaca	WHITETAIL DR	1	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55
232	Town of Ithaca	WILDFLOWER DR	2	117	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.15	633.98	\$ -	\$ 46.53	\$ 46.53	\$ 477.10	\$ 302.00	\$ 779.10
233	Town of Ithaca	WINNER CIRCLE	3	117	3	NDPT55W/LED55/3KT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	0.17	702.87	\$ -	\$ 49.88	\$ 49.88	\$ 2,820.00	\$ 744.00	\$ 3,564.00
234	Town of Ithaca	WINSTON DR	3	210	3	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.51	2,101.29	\$ -	\$ 156.91	\$ 156.91	\$ 715.65	\$ 453.00	\$ 1,168.65
235	Town of Ithaca	WINTHROP DR	2	210	2	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.34	1,400.86	\$ -	\$ 104.61	\$ 104.61	\$ 477.10	\$ 302.00	\$ 779.10
236	Town of Ithaca	WOODGATE LN	1	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55
237	Town of Ithaca	WOOLF LN	1	171	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 40.13	\$ 40.13	\$ 238.55	\$ 151.00	\$ 389.55
238	Town of Ithaca	WYCOFF RD	1	117	1	NCH35W/LED16/3KT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 23.26	\$ 23.26	\$ 238.55	\$ 151.00	\$ 389.55
			272		272					43.28	178,271.43	\$ -	\$ 13,260.59	\$ 13,260.59	\$ 73,591.38	\$ 41,363.00	\$ 114,954.38

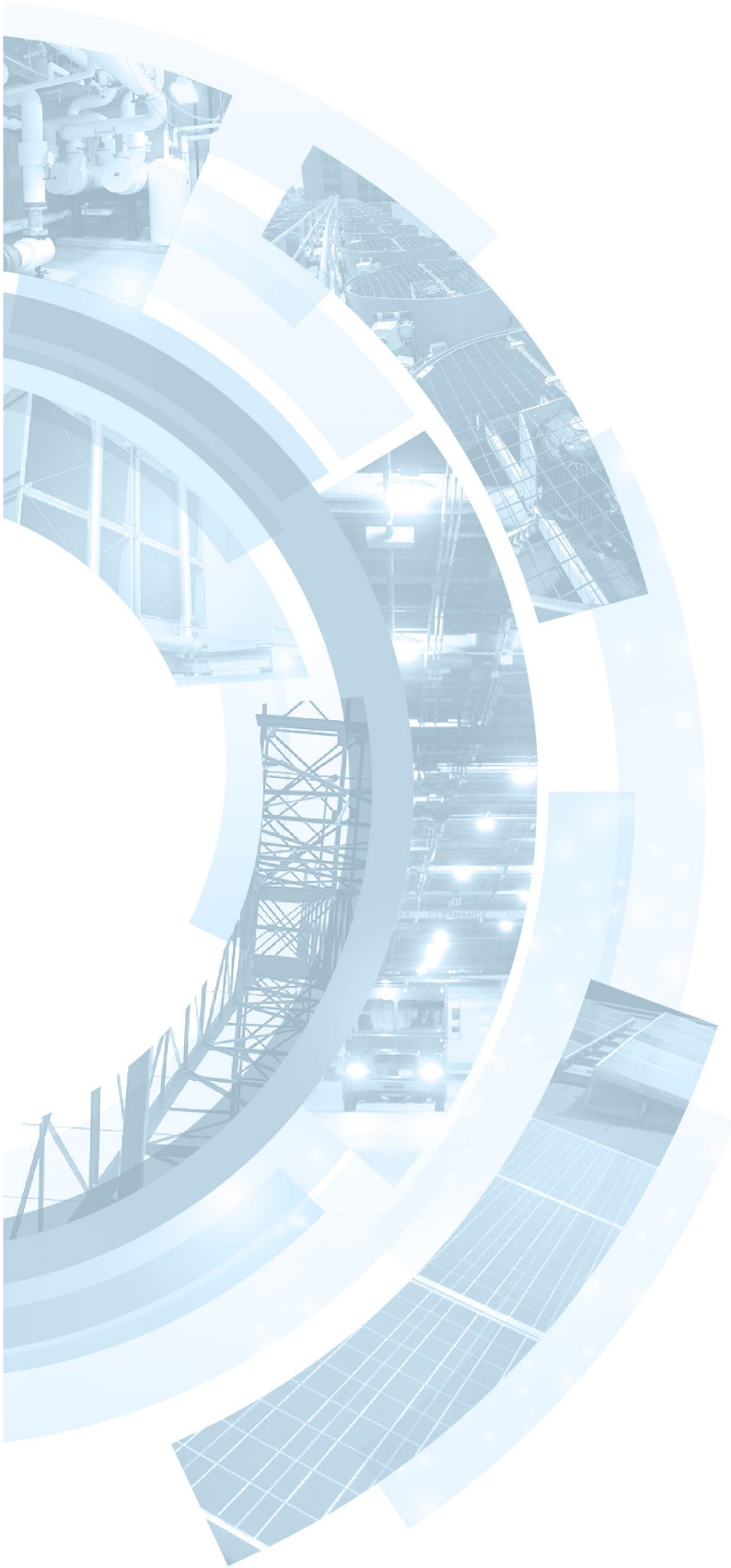
Lighting Line by Line - Statement of Aggregated Savings and Cost																		
Tompkins County Aggregate					Post-Install (Proposed)						Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost	
239	Town of Newfield	BANK ST	12	83	12	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.52	2,121.71	\$ -	\$ 137.33	\$ 137.33	\$ 2,862.60	\$ 1,812.00	\$ 4,674.60	
240	Town of Newfield	BANK ST	1	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.02	94.11	\$ -	\$ 6.30	\$ 6.30	\$ 303.36	\$ 151.00	\$ 454.36	
241	Town of Newfield	BANK ST	1	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	358.22	\$ -	\$ 22.96	\$ 22.96	\$ 238.55	\$ 151.00	\$ 389.55	
242	Town of Newfield	BANK ST	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 34.48	\$ 34.48	\$ 238.55	\$ 151.00	\$ 389.55	
243	Town of Newfield	BEACH RD	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 11.44	\$ 11.44	\$ 238.55	\$ 151.00	\$ 389.55	
244	Town of Newfield	BEACH RD	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 44.69	\$ 44.69	\$ 238.55	\$ 151.00	\$ 389.55	
245	Town of Newfield	BEACH RD	1	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	358.22	\$ -	\$ 22.96	\$ 22.96	\$ 238.55	\$ 151.00	\$ 389.55	
246	Town of Newfield	BENJAMIN HILL RD	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 11.44	\$ 11.44	\$ 238.55	\$ 151.00	\$ 389.55	
247	Town of Newfield	BRIARWOOD LN	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 20.34	\$ 20.34	\$ 238.55	\$ 151.00	\$ 389.55	
248	Town of Newfield	BRIARWOOD LN	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 44.69	\$ 44.69	\$ 238.55	\$ 151.00	\$ 389.55	
249	Town of Newfield	BRIDGE ST	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 20.34	\$ 20.34	\$ 238.55	\$ 151.00	\$ 389.55	
250	Town of Newfield	BRIDGE ST	1	127	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.09	358.22	\$ -	\$ 22.96	\$ 22.96	\$ 238.55	\$ 151.00	\$ 389.55	
251	Town of Newfield	BRIDGE ST	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 44.69	\$ 44.69	\$ 238.55	\$ 151.00	\$ 389.55	
252	Town of Newfield	COX RD	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 66.51	\$ 66.51	\$ 303.36	\$ 151.00	\$ 454.36	
253	Town of Newfield	HIDDEN PINES DR	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 20.34	\$ 20.34	\$ 238.55	\$ 151.00	\$ 389.55	
254	Town of Newfield	HIDDEN PINES DR	1	83	1	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	0.02	94.11	\$ -	\$ 6.30	\$ 6.30	\$ 940.00	\$ 248.00	\$ 1,188.00	
255	Town of Newfield	HIDDEN PINES DR	10	117	10	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	0.45	1,860.52	\$ -	\$ 121.40	\$ 121.40	\$ 9,400.00	\$ 2,480.00	\$ 11,880.00	
256	Town of Newfield	MAIN ST	15	83	15	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey , 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.35	1,411.64	\$ -	\$ 94.54	\$ 94.54	\$ 3,651.00	\$ 2,265.00	\$ 5,916.00	
257	Town of Newfield	MAIN ST	6	83	6	NCH54W/LED16/3kT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey , 5,590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	0.14	564.65	\$ -	\$ 37.81	\$ 37.81	\$ 1,460.40	\$ 906.00	\$ 2,366.40	
258	Town of Newfield	MAIN ST	7	117	7	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey , 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.40	1,640.04	\$ -	\$ 106.42	\$ 106.42	\$ 1,703.80	\$ 1,057.00	\$ 2,760.80	
259	Town of Newfield	MAIN ST	2	127	2	NCH54W/LED16/3kT3-Philips RFS	New LED Cobra Head 54W, 3k, Type 3M, Grey , 5,590LM	A2 - Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	60	0.13	551.04	\$ -	\$ 35.64	\$ 35.64	\$ 486.80	\$ 302.00	\$ 788.80	
260	Town of Newfield	MAIN ST	2	171	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey , 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.22	913.87	\$ -	\$ 58.68	\$ 58.68	\$ 486.80	\$ 302.00	\$ 788.80	
261	Town of Newfield	MAIN ST	1	171	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey , 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 29.34	\$ 29.34	\$ 243.40	\$ 151.00	\$ 394.40	
262	Town of Newfield	MAIN ST	2	313	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey , 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.51	2,084.80	\$ -	\$ 133.02	\$ 133.02	\$ 486.80	\$ 302.00	\$ 788.80	
263	Town of Newfield	MAIN ST	2	292	2	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey , 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.46	1,911.63	\$ -	\$ 122.02	\$ 122.02	\$ 486.80	\$ 302.00	\$ 788.80	
264	Town of Newfield	MAIN ST	1	486	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DBBXD	80	0.41	1,672.98	\$ -	\$ 106.65	\$ 106.65	\$ 640.00	\$ 151.00	\$ 791.00	
265	Town of Newfield	MILLARD HILL RD	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 34.48	\$ 34.48	\$ 238.55	\$ 151.00	\$ 389.55	
266	Town of Newfield	NEWFIELD DEPOT RD	3	83	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	530.43	\$ -	\$ 34.33	\$ 34.33	\$ 715.65	\$ 453.00	\$ 1,168.65	
267	Town of Newfield	NEWFIELD DEPOT RD	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 71.65	\$ 71.65	\$ 238.55	\$ 151.00	\$ 389.55	
268	Town of Newfield	PEARL ST	1	83	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.04	176.81	\$ -	\$ 11.44	\$ 11.44	\$ 238.55	\$ 151.00	\$ 389.55	
269	Town of Newfield	PEARL ST	3	127	3	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.26	1,074.66	\$ -	\$ 68.89	\$ 68.89	\$ 715.65	\$ 453.00	\$ 1,168.65	
270	Town of Newfield	PEARL ST	2	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.26	1,079.27	\$ -	\$ 68.96	\$ 68.96	\$ 477.10	\$ 302.00	\$ 779.10	
271	Town of Newfield	PINE CR	5	171	5	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.66	2,698.17	\$ -	\$ 172.40	\$ 172.40	\$ 1,192.75	\$ 755.00	\$ 1,947.75	
272	Town of Newfield	PINE CR	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 29.34	\$ 29.34	\$ 303.36	\$ 151.00	\$ 454.36	
273	Town of Newfield	PINE WAY	2	83	2	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	0.05	188.22	\$ -	\$ 12.60	\$ 12.60	\$ 1,880.00	\$ 496.00	\$ 2,376.00	
274	Town of Newfield	PINE WAY	4	117	4	NDPT55W/LED55/3kT3-Hubbell TRA 30	New LED Decorative Post Top, 55w, Type 3	C1 - Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	60	0.23	937.16	\$ -	\$ 60.81	\$ 60.81	\$ 3,760.00	\$ 992.00	\$ 4,752.00	
275	Town of Newfield	RTE. 13 (ELMIRA RD)	7	83	7	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.16	658.76	\$ -	\$ 44.12	\$ 44.12	\$ 2,123.52	\$ 1,057.00	\$ 3,180.52	
276	Town of Newfield	RTE. 13 (ELMIRA RD)	1	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 15.20	\$ 15.20	\$ 303.36	\$ 151.00	\$ 454.36	
277	Town of Newfield	RTE. 13 (ELMIRA RD)	1	127	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.07	275.52	\$ -	\$ 17.82	\$ 17.82	\$ 303.36	\$ 151.00	\$ 454.36	
278	Town of Newfield	RTE. 13 (ELMIRA RD)	2	171	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.22	913.87	\$ -	\$ 58.68	\$ 58.68	\$ 606.72	\$ 302.00	\$ 908.72	

Lighting Line by Line - Statement of Aggregated Savings and Cost																	
Tompkins County Aggregate					Post-Install (Proposed)					Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost
279	Town of Newfield	RTE. 13 (ELMIRA RD)	1	292	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.23	955.82	\$ -	\$ 61.01	\$ 61.01	\$ 303.36	\$ 151.00	\$ 454.36
281	Town of Newfield	RTE. 13 (ELMIRA RD)	3	313	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.76	3,127.20	\$ -	\$ 199.53	\$ 199.53	\$ 910.08	\$ 453.00	\$ 1,363.08
282	Town of Newfield	RTE. 13 (ELMIRA RD)	2	486	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.85	3,511.36	\$ -	\$ 223.59	\$ 223.59	\$ 606.72	\$ 302.00	\$ 908.72
283	Town of Newfield	SHAFFER RD(RTE. 113)	8	83	8	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.18	752.87	\$ -	\$ 50.42	\$ 50.42	\$ 2,426.88	\$ 1,208.00	\$ 3,634.88
284	Town of Newfield	SHAFFER RD(RTE. 113)	1	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.02	94.11	\$ -	\$ 6.30	\$ 6.30	\$ 303.36	\$ 151.00	\$ 454.36
285	Town of Newfield	SHAFFER RD(RTE. 113)	1	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 15.20	\$ 15.20	\$ 303.36	\$ 151.00	\$ 454.36
286	Town of Newfield	SHAFFER RD(RTE. 113)	3	127	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.20	826.56	\$ -	\$ 53.46	\$ 53.46	\$ 910.08	\$ 453.00	\$ 1,363.08
287	Town of Newfield	SHELTER VALLEY RD	2	171	2	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.26	1,079.27	\$ -	\$ 68.96	\$ 68.96	\$ 477.10	\$ 302.00	\$ 779.10
288	Town of Newfield	STATE HWY. 34	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 29.34	\$ 29.34	\$ 303.36	\$ 151.00	\$ 454.36
289	Town of Newfield	TEST RD	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 71.65	\$ 71.65	\$ 238.55	\$ 151.00	\$ 389.55
290	Town of Newfield	TRUMBULL CORNERS RD	1	83	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.02	94.11	\$ -	\$ 6.30	\$ 6.30	\$ 303.36	\$ 151.00	\$ 454.36
291	Town of Newfield	TRUMBULL CORNERS RD	1	313	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.25	1,042.40	\$ -	\$ 66.51	\$ 66.51	\$ 303.36	\$ 151.00	\$ 454.36
292	Town of Newfield	TRUMBULL CORNERS RD	1	460	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.40	1,648.48	\$ -	\$ 104.99	\$ 104.99	\$ 303.36	\$ 151.00	\$ 454.36
293	Town of Newfield	VAN KIRK RD	1	210	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.17	700.43	\$ -	\$ 44.69	\$ 44.69	\$ 238.55	\$ 151.00	\$ 389.55
			136		136					11.66	47,978.33	\$ -	\$ 3,085.99	\$ 3,085.99	\$ 47,346.32	\$ 22,185.00	\$ 69,531.32

Lighting Line by Line - Statement of Aggregated Savings and Cost																	
Tompkins County Aggregate					Post-Install (Proposed)					Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost
294	Town of Caroline	BEAVER CREEK RD	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 27.56	\$ 27.56	\$ 238.55	\$ 151.00	\$ 389.55
295	Town of Caroline	BOICEVILLE RD	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 45.75	\$ 45.75	\$ 238.55	\$ 151.00	\$ 389.55
296	Town of Caroline	BROOKTONDALE RD	16	117	16	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.91	3,748.66	\$ -	\$ 346.08	\$ 346.08	\$ 4,853.76	\$ 2,416.00	\$ 7,269.76
297	Town of Caroline	BROOKTONDALE RD	1	117	1	NFL/LED71-Lithonia RSFX1	New LED Floodlight 51w, 3k, Dark Bronze, 6,525LM	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	60	0.06	234.29	\$ -	\$ 21.63	\$ 21.63	\$ 640.00	\$ 151.00	\$ 791.00
298	Town of Caroline	BROOKTONDALE RD	2	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 43.26	\$ 43.26	\$ 606.72	\$ 302.00	\$ 908.72
299	Town of Caroline	BROOKTONDALE RD	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 39.82	\$ 39.82	\$ 303.36	\$ 151.00	\$ 454.36
300	Town of Caroline	BUFFALO RD	4	117	4	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.31	1,267.96	\$ -	\$ 110.24	\$ 110.24	\$ 954.20	\$ 604.00	\$ 1,558.20
301	Town of Caroline	BUFFALO RD	1	313	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.27	1,125.10	\$ -	\$ 93.60	\$ 93.60	\$ 238.55	\$ 151.00	\$ 389.55
302	Town of Caroline	CODDINGTON ROAD	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 39.82	\$ 39.82	\$ 303.36	\$ 151.00	\$ 454.36
303	Town of Caroline	HARFORD RD	1	117	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.08	316.99	\$ -	\$ 27.56	\$ 27.56	\$ 238.55	\$ 151.00	\$ 389.55
304	Town of Caroline	LONDON RD	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 45.75	\$ 45.75	\$ 238.55	\$ 151.00	\$ 389.55
305	Town of Caroline	LEVEL GREEN RD	1	171	1	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.13	539.63	\$ -	\$ 45.75	\$ 45.75	\$ 238.55	\$ 151.00	\$ 389.55
306	Town of Caroline	LOUNSBERY RD (RT 113)	2	313	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.51	2,084.80	\$ -	\$ 175.34	\$ 175.34	\$ 606.72	\$ 302.00	\$ 908.72
307	Town of Caroline	MIDLINE RD	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 39.82	\$ 39.82	\$ 303.36	\$ 151.00	\$ 454.36
308	Town of Caroline	MILL RD	5	117	5	NCH35W/LED16/3kT3-Philips RFS	New LED Cobra Head 35W, 3k, Type 3M, Grey , 4,247LM	A1 - Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	40	0.39	1,584.96	\$ -	\$ 137.80	\$ 137.80	\$ 1,192.75	\$ 755.00	\$ 1,947.75
309	Town of Caroline	MILL RD	1	117	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 21.63	\$ 21.63	\$ 303.36	\$ 151.00	\$ 454.36
310	Town of Caroline	OLD 76 RD(RT 115)	2	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 43.26	\$ 43.26	\$ 606.72	\$ 302.00	\$ 908.72
311	Town of Caroline	OLD 76 RD(RT 115)	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 39.82	\$ 39.82	\$ 303.36	\$ 151.00	\$ 454.36
314	Town of Caroline	SLATERVILLE ROAD (RTE. 79)	16	117	16	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.59	2,425.46	\$ -	\$ 251.19	\$ 251.19	\$ 4,673.60	\$ 2,416.00	\$ 7,089.60
315	Town of Caroline	SLATERVILLE ROAD (RTE. 79)	4	117	4	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.15	606.36	\$ -	\$ 62.80	\$ 62.80	\$ 1,168.40	\$ 604.00	\$ 1,772.40
316	Town of Caroline	SLATERVILLE ROAD (RTE. 79)	1	171	1	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.09	374.23	\$ -	\$ 33.89	\$ 33.89	\$ 292.10	\$ 151.00	\$ 443.10
317	Town of Caroline	SLATERVILLE ROAD (RTE. 79)	2	117	2	NFL/LED71-Lithonia RSFX1	New LED Floodlight 51w, 3k, Dark Bronze, 6,525LM	E2 - Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	60	0.11	468.58	\$ -	\$ 43.26	\$ 43.26	\$ 1,280.00	\$ 302.00	\$ 1,582.00
318	Town of Caroline	SPEEDSVILLE COMMON	1	117	1	NCH50W/LED32/3kT3-Philips RFM	New LED Cobra Head 50W, 3k, Type 3M, Grey , 7,684LM	B1 - Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	60	0.06	234.29	\$ -	\$ 21.63	\$ 21.63	\$ 243.40	\$ 151.00	\$ 394.40
319	Town of Caroline	VALLEY RD	2	117	2	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 43.26	\$ 43.26	\$ 606.72	\$ 302.00	\$ 908.72
320	Town of Caroline	VALLEY RD	2	117	2	NCH65W/LED40/3kT3-Philips RFS	New LED Cobra Head 65W, 3k, Type 3M, Grey, 8,626LM	A3 - Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	60	0.11	468.58	\$ -	\$ 43.26	\$ 43.26	\$ 563.84	\$ 302.00	\$ 865.84
321	Town of Caroline	VALLEY RD	7	117	7	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.26	1,061.14	\$ -	\$ 109.90	\$ 109.90	\$ 2,044.70	\$ 1,057.00	\$ 3,101.70
322	Town of Caroline	VALLEY RD	1	171	1	NCH80W/LED48/3kT3-Philips RFM	New LED Cobra Head 80W, 3k, Type 3M, Grey, 10,463LM	B4 - Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	80	0.09	374.23	\$ -	\$ 33.89	\$ 33.89	\$ 292.10	\$ 151.00	\$ 443.10
			79		79					5.30	21,779.29	\$ -	\$ 1,987.59	\$ 1,987.59	\$ 23,573.83	\$ 11,929.00	\$ 35,502.83

Lighting Line by Line - Statement of Aggregated Savings and Cost																	
Tompkins County Aggregate					Post-Install (Proposed)					Energy Savings		Cost Savings			Labor & Material		
Action #	Account	Street Name	Adj Reg Qty	Pre Watts	Proposed Number of Fixtures	Proposed Action	Action Description	Proposed Fixture Code	Proposed Wattage	kW Saved	kWh Saved	Annual kW Demand Savings	Annual kWh Savings	Total Combined Savings	Total Material Cost	Total Install Cost	Total Action Cost
323	Town of Ulysses	ROUTE 96	3	171	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.33	1,370.80	\$ -	\$ 97.60	\$ 97.60	\$ 910.08	\$ 453.00	\$ 1,363.08
324	Town of Ulysses	ROUTE 89	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 32.53	\$ 32.53	\$ 303.36	\$ 151.00	\$ 454.36
325	Town of Ulysses	ROUTE 96	1	171	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.11	456.93	\$ -	\$ 32.53	\$ 32.53	\$ 303.36	\$ 151.00	\$ 454.36
326	Town of Ulysses	ROUTE 96	3	313	3	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.76	3,127.20	\$ -	\$ 227.87	\$ 227.87	\$ 910.08	\$ 453.00	\$ 1,363.08
327	Town of Ulysses	ROUTE 96	1	313	1	NFL/LED71-Lithonia RSFX2	New LED Floodlight 71w, 3k, Dark Bronze, 9,663LM	E1 - Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	80	0.23	959.70	\$ -	\$ 69.37	\$ 69.37	\$ 640.00	\$ 151.00	\$ 791.00
328	Town of Ulysses	S. TRUMANSBURG RD	1	486	1	NCH55W/LED48/3kT3-Philips RFM	New LED Cobra Head 55W, 3k, Type 3M, Grey , 7,297LM	B2 - Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	60	0.43	1,755.68	\$ -	\$ 128.86	\$ 128.86	\$ 303.36	\$ 151.00	\$ 454.36
			10		10					1.97	8,127.24	\$ -	\$ 588.77	\$ 588.77	\$ 3,370.24	\$ 1,510.00	\$ 4,880.24

J.4 – Cut Sheets



5551 County of Tompkins LED Street Lighting Fixture Schedule		
Type	Manuf/Model #	Qty
A1	Philips - RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7	362
A2	Philips - RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7	11
A3	Philips - RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7	6
B1	Philips - RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7	50
B2	Philips - RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7	211
B3	Philips - RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7	6
B4	Philips - RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7	42
B5	Philips - RFM-100W60LED3K-G2-R3M-UNV-DMG-RCD7	1
C1	Hubbell - TRA30-AC-24NB-55-3K-UNV-DIR3	20
D1	Lumec - RNS20 30W16LED T ACDR LE3 120 DMG SMB RCD N BKTX DE1	43
E1	Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD	7
E2	Lithonia - RSFX1 LED-P1-30K-WFL-MVOLT-IS-DDBXD	3
	Total:	762
Note: Quantities are based on line by line. Any discrepancy between drawing, specification and/or line by line, the largest quantity is the responsibility of the contractor without additional cost to the owner.		



Project: _____

Location: _____

Cat.No: _____

Type: _____

Lamps: _____ Qty: _____

Notes: _____

Type A1, A2, A3
RFS-35W16LED3K-G2-R3M-UNV-DMG-RCD7
RFS-54W16LED3K-G2-R3M-UNV-DMG-RCD7
RFS-65W40LED4K-G2-R3M-UNV-DMG-RCD7

Tompkins County LED Street Lighting Upgrade
Project #: 5551

RoadFocus LED Cobra Head luminaires feature a sleek design that is a replacement of existing HID luminaires. RoadFocus is available in multiple lumen packages, and a complete array of optical configurations. RoadFocus is an outstanding solution for multiple roadway applications. RoadFocus is an innovative way to provide assistance throughout the life cycle of a luminaire.

example: RFS-35W16LED4K-G2-R2M-UNV-DMG-HS-PH8-RCD-GY3K

Prefix	LED module	Series	Distribution	Voltage	Options		
					Controls	Luminaire	Finish
RFS		G2		UNV			
RFS RoadFocus Roadway, small	3000K	G2 Generation 2	Type 2	UNV 120-277V (50/60Hz)	AST ³ Pre-set driver for progressive start-up CDMGE25 ³ 8 hrs. 25% reduction CDMGE50 ³ 8 hrs. 50% reduction CDMGE75 ³ 8 hrs. 75% reduction CDMG25 ³ 6 hrs. 25% reduction CDMG50 ³ 6 hrs. 50% reduction CDMG75 ³ 6 hrs. 75% reduction CDMG25 ³ 4 hrs. 25% reduction CDMG50 ³ 4 hrs. 50% reduction CDMG75 ³ 4 hrs. 75% reduction CLO ³ Pre-set driver to manage lumen depreciation DALI ³ Digitally addressable lighting interface DMG ⁵ 0-10V OTL ³ Pre-set driver to signal end of life of the lamp	API Factory installed NEMA label, ANSI C136.15 compliant FAWS ⁶ Field adjustable wattage selector HS House Side Shield, shield, 1 per 16 LED light engine PH8 Twist-lock Photoelectric Cell, UNV (120-277VAC) PHXL Twist-lock Photoelectric Cell, extended life, UNV (120-277VAC) PH9 Shorting cap RCD ^{2,4} Receptacle for twist-lock photocell or shorting cap, 5-pin (standard) RCD7 ² Receptacle for twist-lock photocell or shorting cap, 7-pin (optional) SP2 20kV / 20kA Surge Protector (optional)	Textured BK Black BZ Bronze GY3 Gray WH White
	25W16LED3K		R2S Type II short (ASYM)				
	30W16LED3K		R2M Type II Medium (ASYM)				
	35W16LED3K		Type 3				
	45W16LED3K ⁵		R3S Type III short (ASYM)				
	54W16LED3K ⁵		R3M Type III Medium (ASYM)				
	4000K		Type 4				
	25W16LED4K		4 Type IV (ASYM)				
	30W16LED4K		Type 5				
	35W16LED4K		5 ¹ Type V (SYMM)				

1. Not available with HS option.
2. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
3. Dimming choices: Select either DMG, DALI or one of the CDMG options.

4. Please note this integrated feature come standard with RoadFocus.
5. Not available with driver options, AST, CLO, CDMG, DALI, OTL.
6. FAWS not available with CDMG options, DALI or CLO.

Accessories (must be ordered as separate line items – quickly and easily installed in the field)

CPC or CPCD¹

CityTouch Connector Node.

1. Contact the factory for additional support when connected lighting or additional services are desired.

RFS RoadFocus

Small, LED Cobrahead

Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L70 is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L70 hours limited to 6 times actual LED test hours

Ambient Temperature °C	Driver mA	Calculated L70 Hours	L70 per TM-21	Lumen Maintenance % at 60,000 hrs
40°C	up to 1050 mA	>100,000 hours	>60,000 hours	>84%

LED Wattage and Lumen Values: 3000K

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type R2S			Type R2M			Type R3S			Type R3M		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFS-25W16LED3K-G2	16	440	3000	24	2,968	123	B1-U0-G0	2,900	120	B1-U0-G1	2,948	122	B1-U0-G1	2,858	118	B1-U0-G1
RFS-30W16LED3K-G2	16	530	3000	29	3,484	121	B1-U0-G1	3,405	118	B1-U0-G1	3,460	120	B1-U0-G1	3,355	116	B1-U0-G1
RFS-35W16LED3K-G2	16	700	3000	38	4,410	116	B1-U0-G1	4,310	113	B1-U0-G1	4,381	115	B1-U0-G1	4,247	112	B1-U0-G1
RFS-45W16LED3K-G2	16	830	3000	45	5,075	112	B1-U0-G1	4,960	110	B1-U0-G1	5,041	111	B1-U0-G1	4,887	108	B1-U0-G1
RFS-54W16LED3K-G2	16	1050	3000	53	5,806	110	B2-U0-G1	5,674	107	B1-U0-G1	5,767	109	B1-U0-G1	5,590	105	B1-U0-G1

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 4			Type 5		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFS-25W16LED3K-G2	16	440	3000	24	2,822	117	B1-U0-G1	2,991	124	B2-U0-G1
RFS-30W16LED3K-G2	16	530	3000	29	3,313	115	B1-U0-G1	3,511	122	B2-U0-G1
RFS-35W16LED3K-G2	16	700	3000	38	4,194	110	B1-U0-G1	4,445	117	B3-U0-G1
RFS-45W16LED3K-G2	16	830	3000	45	4,826	107	B1-U0-G2	5,115	113	B3-U0-G1
RFS-54W16LED3K-G2	16	1050	3000	53	5,521	104	B1-U0-G2	5,851	110	B3-U0-G1

LED Wattage and Lumen Values: 4000K

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type R2S			Type R2M			Type R3S			Type R3M		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFS-25W16LED4K-G2	16	440	4000	24	3,145	130	B1-U0-G0	3,073	127	B1-U0-G1	3,125	129	B1-U0-G1	3,027	125	B1-U0-G1
RFS-30W16LED4K-G2	16	530	4000	29	3,692	128	B1-U0-G1	3,607	125	B1-U0-G1	3,668	127	B1-U0-G1	3,554	123	B1-U0-G1
RFS-35W16LED4K-G2	16	700	4000	38	4,674	123	B1-U0-G1	4,566	120	B1-U0-G1	4,643	122	B1-U0-G1	4,499	118	B1-U0-G1
RFS-45W16LED4K-G2	16	830	4000	45	5,378	119	B1-U0-G1	5,255	116	B1-U0-G1	5,343	118	B1-U0-G1	5,177	114	B1-U0-G1
RFS-54W16LED4K-G2	16	1050	4000	53	6,153	116	B2-U0-G1	6,011	113	B2-U0-G1	6,113	115	B1-U0-G2	5,923	112	B1-U0-G1

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 4			Type 5		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFS-25W16LED4K-G2	16	440	4000	24	2,990	124	B1-U0-G1	3,170	131	B2-U0-G1
RFS-30W16LED4K-G2	16	530	4000	29	3,510	122	B1-U0-G1	3,721	129	B2-U0-G1
RFS-35W16LED4K-G2	16	700	4000	38	4,444	117	B1-U0-G1	4,711	124	B3-U0-G1
RFS-45W16LED4K-G2	16	830	4000	45	5,114	113	B1-U0-G2	5,421	120	B3-U0-G1
RFS-54W16LED4K-G2	16	1050	4000	53	5,850	110	B1-U0-G2	6,201	117	B3-U0-G1

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at outdoorlighting.applications@philips.com.

Note: Some data may be scaled based on tests of similar. But not identical luminaries.

RFS RoadFocus

Small, LED Cobrahead

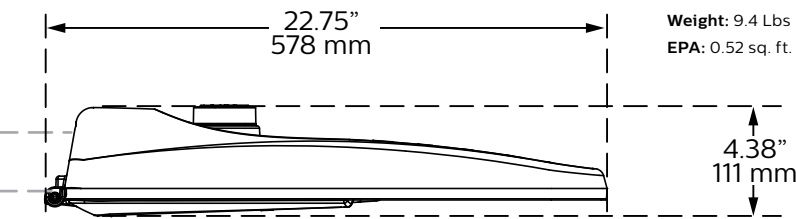
Field Adjustable Wattage (FAWS) Multiplier Chart

FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage
1	0.31	0.28
2	0.53	0.50
3	0.62	0.58
4	0.70	0.67
5	0.78	0.75
6	0.83	0.81
7	0.89	0.87
8	0.92	0.91
9	0.96	0.95
10	1.00	1.00

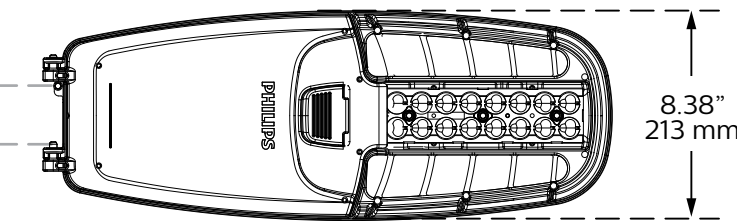
Note: Typical value accuracy +/- 5%

Dimensions

Side View



Bottom View



RFS RoadFocus

Small, LED Cobrahead

Specifications

Housing

Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/2" (140mm) minimum long tenon. Comes with a zinc plated clamp fixed by 2 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. Includes integral bubble level standard (always included). A quick release, tool less entry, single latch, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 13" (330mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label to identify wattage and source (both included in box). Housing (including electrical compartment) rated IP54 per ANSI C136.37.

Light Engine

Composed of 4 main components: LED Module / Optical System / Heat Sink / Driver.

Electrical components are RoHS compliant, IP66 sealed light engine equipped LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module: Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 3000 Kelvin nominal (3045K +/- 175K) or 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical.

Optical System: Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. 0% uplight and U0 per IESNA TM-15.

Heat Sink: Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

Driver: High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max.

DMG: Dimming compatible 0-10 volts. The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

Integrated Features

DMG: Dimmable driver 0-10V.

RCD: Receptacle with 5 pins enabling dimming, can be used with a twist lock Starsense or photoelectric cell or a shorting cap.

SP1: Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

Please note that these integrated features always come with RoadFocus luminaire.

** Use of photoelectric cell or shorting cap is required to ensure proper illumination.*

Driver and Luminaire Options

AST: Pre-set driver for progressive start-up of the LED module(s) to optimize energy management and enhance visual comfort at start-up.

CLO: Pre-set driver to manage the lumen depreciation by adjusting the power given to the LEDs offering the same lighting intensity during the entire lifespan of the LED module.

DALI: Pre-set driver compatible with the DALI control system.

OTL: Pre-set driver to signal end of life of the LED module(s) for better fixture management.

CDMG: Dynadimmer standard dimming functionalities including pre-programmed scenarios to suit many applications and needs from safety to maximum energy savings.

Safety Mode:

CDMG525: 4 hours, 25% power dimming
CDMG550: 4 hours 50% power dimming
CDMG575: 4 hours 75% power dimming

Median Mode:

CDMG25: 6 hours 25% power dimming
CDMG50: 6 hours 50% power dimming
CDMG75: 6 hours 75% power dimming

Economy Mode:

CDMG25: 8 hours 25% power dimming
CDMG50: 8 hours 50% power dimming
CDMG75: 8 hours 75% power dimming

FAWS: Field Adjustable Wattage Selector, pre-set to the highest position, can be easily switched in the field to the required position. This reduces total luminaire wattage consumption and reduces the light level – see the FAWS multiplier chart for more details.

Note: It is not recommended to use FAWS with other dimming or controls; if you do, set the switch to position 10 (maximum output) to enable the other dimming or controls. Switching FAWS to any position other than 10 will disable the other dimming or controls.

SP2: 20kV / 20kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

RCD7: Receptacle with 7 pins enabling dimming and additional functionality (to be determined), can be used with a twist lock Starsense node or photoelectric cell or a shorting cap.

Please note: Additional hardware will be required to utilize the additional 2 pins on this receptacle.

HS: House side shield, 1 per 16 LED light engine.

PH8: Twist-lock Photoelectric Cell, UNV (120-277VAC).

PHXL: Twist-lock Photoelectric Cell, extended life, UNV (120-277VAC).

PH9: Shorting cap.

API: Factory Installed NEMA label, ANSI C136.15 compliant

** Use of photoelectric cell or shorting cap is required to ensure proper illumination.*

RFS RoadFocus

Small, LED Cobrahead

Specifications (continued)

Luminaire Useful Life

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, Philips System Reliability Tool, Philips Advance data and LM-80/TM-21 data, expected to reach 100,000 + hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

Wiring

The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2 14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time-delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

Hardware

All exposed screws shall be complete with Ceramic primer seal to reduce seizing of the parts, also offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish

Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 3000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

LED products manufacturing standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance

The RFS meets the ANSI C136.31, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications. (Tested for 3G over 100,000 cycles by independent lab)

Certifications and Compliance

cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. RoadFocus LED Cobrahead luminaires are DesignLights Consortium qualified. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

Service Tag

Each individual luminaire is uniquely identifiable, thanks to the Philips Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away.

For more details visit: philips.com/servicetag

Limited Warranty

10-year limited warranty.
See philips.com/warranties for details and restrictions.

Brackets/Arms

For brackets / arms available with this luminaire, see Lumec 3D for details.



**PHILIPS
LUMEC**

Roadway

RoadFocus

RFM (medium)

Type B1, B2, B3, B4, B5
RFM-50W60LED3K-G2-R3M-UNV-DMG-RCD7-GY3
RFM-55W48LED3K-G2-R3M-UNV-DMG-RCD7-GY3
RFM-75W60LED3K-G2-R3M-UNV-DMG-RCD7-GY3
RFM-80W48LED3K-G2-R3M-UNV-DMG-RCD7-GY3
RFM-100W60LED3K-G2-R3M-UNV-DMG-RCD7-GY3

Tompkins County LED Street Lighting Upgrade
Project #: 5551



Type:

Lamps:

Qty:

Notes:

The Philips Lumec RoadFocus LED Cobra Head luminaires feature a sleek design that provides seamless replacement of existing HID luminaires. RoadFocus is available in three sizes, offers multiple lumen packages, and a complete array of optical distributions, making it an outstanding solution for all types of roadway applications. Includes Service Tag, Philips innovative way to provide assistance throughout the life of the product.

Ordering guide

example: RFM-108W32LED3K-G2-R3M-UNV-DMG-RCD-GY3

Prefix	LED module	Series	Distribution	Voltage	Options		Finish
					Controls	Luminaire	
RFM		G2					
RFM RoadFocus Roadway, medium	3000K 35W32LED3K ⁷ 55W32LED3K ⁷ 55W48LED3K ⁷ 72W32LED3K ⁷ 80W48LED3K ⁷ 108W32LED3K ⁷ 108W48LED3K ⁷ 160W48LED3K ⁷ 4000K 35W32LED4K ⁷ 55W32LED4K ⁷ 55W48LED4K ⁷ 72W32LED4K ⁷ 80W48LED4K ⁷ 108W32LED4K ⁷ 108W48LED4K ⁷ 160W48LED4K ⁷	G2 Generation 2	Type 2 R2S Type II short (ASYM) R2M Type II Medium (ASYM) Type 3 R3S Type III short (ASYM) R3M Type III Medium (ASYM) Type 4 4 Type IV (ASYM) Type 5 5² Type V (SYMM)	UNV 120-277V HVU 347-480VAC	AST ¹⁴ Pre-set driver for progressive start-up CDMG25 ¹⁴ 8 hrs. 25% reduction CDMG50 ¹⁴ 8 hrs. 50% reduction CDMG75 ¹⁴ 8 hrs. 75% reduction CDMG25 ¹⁴ 6 hrs. 25% reduction CDMG50 ¹⁴ 6 hrs. 50% reduction CDMG75 ¹⁴ 6 hrs. 75% reduction CDMG25 ¹⁴ 4 hrs. 25% reduction CDMG50 ¹⁴ 4 hrs. 50% reduction CDMG75 ¹⁴ 4 hrs. 75% reduction CLO ¹⁴ Pre-set driver to manage lumen depreciation DALI ¹⁴ Digitally addressable lighting interface DMG ⁵ 0-10V OTL ¹⁴ Pre-set driver to signal end of life of the lamp	API Factory installed NEMA label, ANSI C136.15 compliant FAWS ⁶ Field adjustable wattage selector HS House Side Shield, shield, 1 per 16 LED light engine PH8 ¹ Twist-lock Photoelectric Cell, UNV (120-277VAC) PH8/347 ¹ Twist-lock Photoelectric Cell, 347VAC PH8/480 ¹ Twist-lock Photoelectric Cell, 480VAC PHXL ¹ Twist-lock Photoelectric Cell, extended life, UNV (120-277VAC) PH9 Shorting cap RCD ^{3,5} Receptacle for twist-lock photocell or shorting cap, 5-pin (standard) RCD7 ³ Receptacle for twist-lock photocell or shorting cap, 7-pin (optional) SP2 20kV / 20kA Surge Protector (optional)	Textured BK Black BZ Bronze GY3 Gray WH White

1. 347V and 480V not available.

2. Not available with HS option.

3. Use of photoelectric cell or shorting cap is required to ensure proper illumination.

4. Dimming choices: Select either DMG, DALI or one of the CDMG options.

5. Please note this integrated feature come standard with RoadFocus.

6. FAWS not available with CDMG options, DALI or CLO.

7. FAWS table accuracy +/- 15% on these models.

RFM RoadFocus

Medium, LED Cobrahead

Accessories (must be ordered as separate line items – quickly and easily installed in the field)

CPC or CPCD¹

CityTouch Connector Node.

1. Contact the factory for additional support when connected lighting or additional services are desired.

Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L₇₀ is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L₇₀ hours limited to 6 times actual LED test hours

Ambient Temperature °C	Driver mA	Calculated L ₇₀ Hours	L ₇₀ per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	up to 1050 mA	>100,000 hours	>60,000 hours	>88%

LED Wattage and Lumen Values: 3000K

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type R2S			Type R2M			Type R3S			Type R3M		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFM-35W32LED3K-G2	32	350	3000	37	4,555	123	B1-U0-G1	4,406	119	B1-U0-G1	4,401	119	B1-U0-G1	4,411	119	B1-U0-G1
RFM-55W32LED3K-G2	32	530	3000	54	6,552	121	B2-U0-G1	6,339	117	B2-U0-G1	6,331	117	B1-U0-G2	6,345	118	B2-U0-G1
RFM-72W32LED3K-G2	32	700	3000	73	8,294	114	B2-U0-G1	8,024	110	B2-U0-G2	8,015	110	B1-U0-G2	8,033	110	B2-U0-G2
RFM-108W32LED3K-G2	32	1050	3000	108	11,542	107	B3-U0-G1	11,166	103	B2-U0-G2	11,153	103	B2-U0-G2	11,178	104	B2-U0-G2
RFM-55W48LED3K-G2	48	350	3000	55	6,832	124	B2-U0-G1	6,610	120	B2-U0-G1	6,602	120	B1-U0-G2	6,617	120	B2-U0-G1
RFM-80W48LED3K-G2	48	530	3000	81	9,828	122	B2-U0-G2	9,508	118	B2-U0-G2	9,497	118	B1-U0-G2	9,518	118	B2-U0-G2
RFM-108W48LED3K-G2	48	700	3000	106	12,441	117	B3-U0-G2	12,036	114	B3-U0-G2	12,022	113	B2-U0-G2	12,049	114	B3-U0-G2
RFM-160W48LED3K-G2	48	1050	3000	161	17,313	108	B3-U0-G2	16,749	104	B3-U0-G3	16,730	104	B2-U0-G3	16,768	104	B3-U0-G3

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 4			Type 5		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFM-35W32LED3K-G2	32	350	3000	37	4,388	119	B1-U0-G1	4,528	122	B3-U0-G1
RFM-55W32LED3K-G2	32	530	3000	54	6,312	117	B1-U0-G2	6,513	121	B3-U0-G1
RFM-72W32LED3K-G2	32	700	3000	73	7,990	109	B1-U0-G2	8,245	113	B3-U0-G2
RFM-108W32LED3K-G2	32	1050	3000	108	11,119	103	B2-U0-G2	11,474	106	B4-U0-G2
RFM-55W48LED3K-G2	48	350	3000	55	6,582	119	B1-U0-G2	6,791	123	B3-U0-G2
RFM-80W48LED3K-G2	48	530	3000	81	9,468	118	B2-U0-G2	9,769	121	B4-U0-G2
RFM-108W48LED3K-G2	48	700	3000	106	11,985	113	B2-U0-G2	12,367	117	B4-U0-G2
RFM-160W48LED3K-G2	48	1050	3000	161	16,679	104	B2-U0-G3	17,210	107	B4-U0-G2

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at outdoorlighting.applications@philips.com.

Note: Some data may be scaled based on tests of similar. But not identical luminaries.

RFM RoadFocus

Medium, LED Cobrahead

LED Wattage and Lumen Values: 4000K

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type R2S			Type R2M			Type R3S			Type R3M		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFM-35W32LED4K-G2	32	350	4000	37	4,826	131	B1-U0-G1	4,670	126	B1-U0-G1	4,665	126	B1-U0-G1	4,675	126	B1-U0-G1
RFM-55W32LED4K-G2	32	530	4000	54	6,942	129	B2-U0-G1	6,718	124	B2-U0-G1	6,711	124	B1-U0-G2	6,726	125	B2-U0-G1
RFM-72W32LED4K-G2	32	700	4000	73	8,788	120	B2-U0-G1	8,505	117	B2-U0-G2	8,495	116	B1-U0-G2	8,514	117	B2-U0-G2
RFM-108W32LED4K-G2	32	1050	4000	108	12,229	113	B3-U0-G2	11,835	110	B2-U0-G2	11,822	109	B2-U0-G2	11,848	110	B3-U0-G2
RFM-55W48LED4K-G2	48	350	4000	55	7,239	131	B2-U0-G1	7,006	127	B2-U0-G1	6,998	127	B1-U0-G2	7,013	127	B2-U0-G2
RFM-80W48LED4K-G2	48	530	4000	81	10,413	129	B2-U0-G2	10,077	125	B2-U0-G2	10,066	125	B2-U0-G2	10,088	125	B2-U0-G2
RFM-108W48LED4K-G2	48	700	4000	106	13,182	124	B3-U0-G2	12,757	120	B3-U0-G2	12,743	120	B2-U0-G2	12,771	120	B3-U0-G2
RFM-160W48LED4K-G2	48	1050	4000	161	18,344	114	B3-U0-G2	17,753	110	B3-U0-G3	17,733	110	B2-U0-G3	17,772	111	B3-U0-G3

Ordering Code	Total LEDs	LED Current (mA)	Color Temp.	Average System Watts	Type 4			Type 5		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFM-35W32LED4K-G2	32	350	4000	37	4,651	126	B1-U0-G2	4,799	130	B3-U0-G1
RFM-55W32LED4K-G2	32	530	4000	54	6,690	124	B1-U0-G2	6,903	128	B3-U0-G2
RFM-72W32LED4K-G2	32	700	4000	73	8,469	116	B1-U0-G2	8,739	120	B3-U0-G2
RFM-108W32LED4K-G2	32	1050	4000	108	11,785	109	B2-U0-G2	12,161	113	B4-U0-G2
RFM-55W48LED4K-G2	48	350	4000	55	6,976	127	B1-U0-G2	7,198	131	B3-U0-G2
RFM-80W48LED4K-G2	48	530	4000	81	10,035	125	B2-U0-G2	10,355	129	B4-U0-G2
RFM-108W48LED4K-G2	48	700	4000	106	12,703	120	B2-U0-G3	13,109	124	B4-U0-G2
RFM-160W48LED4K-G2	48	1050	4000	161	17,678	110	B3-U0-G3	18,242	113	B4-U0-G2

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at outdoorlighting.applications@philips.com.

Note: Some data may be scaled based on tests of similar. But not identical luminaries.

Field Adjustable Wattage (FAWS) Multiplier Chart

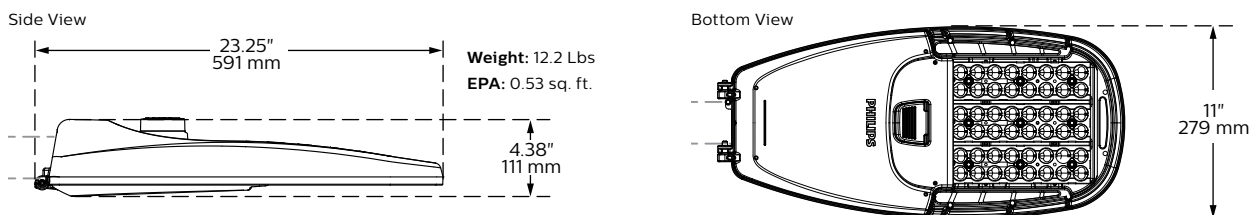
FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage
1	0.31	0.28
2	0.53	0.50
3	0.62	0.58
4	0.70	0.67
5	0.78	0.75
6	0.83	0.81
7	0.89	0.87
8	0.92	0.91
9	0.96	0.95
10	1.00	1.00

Note: Typical value accuracy +/- 5%

RFM RoadFocus

Medium, LED Cobrahead

Dimensions



Specifications

Housing

Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/2" (140mm) minimum long tenon. Comes with a zinc plated clamp fixed by 2 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. Includes integral bubble level standard (always included). A quick release, tool less entry, single latch, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 13" (330mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label to identify wattage and source (both included in box). Housing (including electrical compartment) rated IP54 per ANSI C136.37.

Light Engine

Composed of 4 main components: LED Module / Optical System / Heat Sink / Driver.

Electrical components are RoHS compliant, IP66 sealed light engine LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module: Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 3000 Kelvin nominal (3045K +/- 175K) or 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical.

Optical System: Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. 0% uplight and U0 per IESNA TM-15.

Heat Sink: Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

Driver: High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 or 347 to 480 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max.

DMG: Dimming compatible 0-10 volts. The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

Integrated Features

DMG: Dimmable driver 0-10V.

RCD*: Receptacle with 5 pins enabling dimming, can be used with a twist lock Starsense or photoelectric cell or a shorting cap.

SP1: Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

Please note that these integrated features always come with RoadFocus luminaire.

** Use of photoelectric cell or shorting cap is required to ensure proper illumination.*

RFM RoadFocus

Medium, LED Cobrahead

Specifications (continued)

Driver and Luminaire Options

AST*: Pre-set driver for progressive start-up of the LED module(s) to optimize energy management and enhance visual comfort at start-up.

CLO*: Pre-set driver to manage the lumen depreciation by adjusting the power given to the LEDs offering the same lighting intensity during the entire lifespan of the LED module.

DALI*: Pre-set driver compatible with the DALI control system.

OTL*: Pre-set driver to signal end of life of the LED module(s) for better fixture management.

CDMG*: Dynadimmer standard dimming functionalities including pre-programmed scenarios to suit many applications and needs from safety to maximum energy savings.

Safety Mode:

CDMG25: 4 hours, 25% power dimming

CDMG50: 4 hours 50% power dimming

CDMG75: 4 hours 75% power dimming

Median Mode:

CDMG25: 6 hours 25% power dimming

CDMG50: 6 hours 50% power dimming

CDMG75: 6 hours 75% power dimming

Economy Mode:

CDMG25: 8 hours 25% power dimming

CDMG50: 8 hours 50% power dimming

CDMG75: 8 hours 75% power dimming

* Not available with HVU (347-480V)

FAWS: Field Adjustable Wattage Selector, pre-set to the highest position, can be easily switched in the field to the required position. This reduces total luminaire wattage consumption and reduces the light level – see the FAWS multiplier chart for more details.

Note: It is not recommended to use FAWS with other dimming or controls; if you do, set the switch to position 10 (maximum output) to enable the other dimming or controls. Switching FAWS to any position other than 10 will disable the other dimming or controls.

SP2: 20kV / 20kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

RCD7*: Receptacle with 7 pins enabling dimming and additional functionality (to be determined), can be used with a twist lock Starsense node or photoelectric cell or a shorting cap.

Please note: Additional hardware will be required to utilize the additional 2 pins on this receptacle.

HS: House side shield, 1 per 16 LED light engine.

PH8*: Twist-lock Photoelectric Cell, UNV (120-277VAC).

PH8/347*: Twist-lock Photoelectric Cell, HVU (347VAC).

PH8/480*: Twist-lock Photoelectric Cell, HVU (480VAC).

PHXL*: Twist-lock Photoelectric Cell, extended life, UNV (120-277VAC).

PH9*: Shorting cap.

API: Factory Installed NEMA label, ANSI C136.15 compliant

** Use of photoelectric cell or shorting cap is required to ensure proper illumination.*

Luminaire Useful Life

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, Philips System Reliability Tool, Philips Advance data and Philips Lumileds LM-80/TM-21 data, expected to reach 100,000 + hours (72W32LED and 108W48LED at 700mA) or 94,500 hours (108W32LED and 160W48LED at 1050mA) with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

Wiring

The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2 14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time-delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

Hardware

All exposed screws shall be complete with Ceramic primer seal to reduce seizing of the parts, also offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish

Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 3000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

LED products manufacturing standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance

The RFM meets the ANSI C136.31, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications. (Tested for 3G over 100,000 cycles by independent lab)

Certifications and Compliance

cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. RoadFocus LED Cobrahead luminaires are DesignLights Consortium qualified. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

Service Tag

Each individual luminaire is uniquely identifiable, thanks to the Philips Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away.

For more details visit: philips.com/servicetag

Limited Warranty

10-year limited warranty.

See philips.com/warranties for details and restrictions.

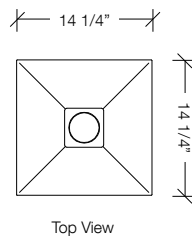
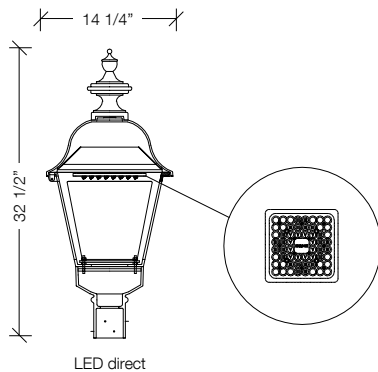
Brackets/Arms

For brackets / arms available with this luminaire, see Lumec 3D for details.

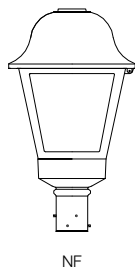


Sample	TRA30	AC	24NB-55	5K	UNV	DIR5	PEC	GENIXX	PM	NF	BBT
Ordering											
	A	B	C	D	E	F	G	H	I	J	K

DETAILS



STYLE OPTIONS



A. MODEL

TRA30 Traditional 30"

B. LENS OPTIONS

AC acrylic, clear
AF acrylic, frosted
AS acrylic, seeded
AW acrylic, white
PC polycarbonate, clear
PF polycarbonate, frosted

C. ENGINE-WATTS

24NB-55 55 Watts - LED array
36NB-80 80 Watts - LED array
48NB-110 110 Watts - LED array
60NB-136 136 Watts - LED array

D. CCT - COLOR TEMP

3K 3000K
4K 4000K
5K 5000K (std.)

E. VOLTAGE

UNV 120-277V
347 347V³
480 480V³

F. OPTICS

DIR2 type II
DIR3 type III
DIR4 type IV
DIR5 type V

G. ELECTRICAL OPTIONS

PEC photocell, button

H. CONTROL OPTIONS

GENI-XX energeni¹

I. MOUNTING OPTIONS

PT post top
PM pendant mount²

J. STYLE OPTIONS

NF no finial

K. COLOR

BBT basic black textured
BMT black matte textured
WHT white textured
MBT metallic bronze textured
BZT bronze textured
DBT dark bronze textured
GYS gray smooth
DPS dark platinum smooth
GNT green textured
MST metallic silver textured
MTT metallic titanium textured
OWI old world iron
RAL _____

¹ When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.

² consult factory

³ 24NB - 55 only



The Hadco **TownView LED post top luminaires** were designed to eliminate the compromises of performance, comfort, style options and value when choosing the right lighting solution for residential street and pedestrian area. The horizontal lens option reduces glare to enhance a sense of security with increased visual comfort. TownView offers design flexibility with a variety of style options, lumen output and mounting options for exceptional value.

Hadco - TVLN-32-G1-7-2S-730

**Tompkins County LED Street Lighting Upgrade
Project #: 5551**

Ordering guide: Luminaire

Project: _____
Location: _____
Cat.No: _____
Type: _____
Lamps: _____ Qty: _____
Notes: _____

example: TVLN-S3-S-16-G1-5-2S-740-A-N-R7-N-SP1-T-N-B-BK

Series	Mounting	Roof option	LED module	Generation	Drive current	Distribution	Color temp.	Voltage	Integral Controls ³
				G1					
TVLN TownView with no lens	A ¹ Arm Mt	S Square Roof	16 16 LEDs	G1 Gen 1	5 530 mA 7 700 mA 9 900 mA 1 1050 mA	2S Type 2 Short 3S Type 3 Short 3W Type 3 Wide 5 Type 5 2H Type 2 House-side shield 3SH Type 3 Short House-side shield 3WH Type 3 Wide House-side shield	730 3000K (70 CRI) 740 4000K (70 CRI) 827 ² 2700K (80 CRI)	A 120-277 Volt J 480V K 347V	DA ⁵ 4 Hrs 25% Reduction DB ⁵ 4 Hrs 50% Reduction DC ⁵ 4 Hrs 75% Reduction DD ⁵ 6 Hrs 25% Reduction DE ⁵ 6 Hrs 50% Reduction DF ⁵ 6 Hrs 75% Reduction DG ⁵ 8 Hrs 25% Reduction DH ⁵ 8 Hrs 50% Reduction DJ ⁵ 8 Hrs 75% Reduction DL ^{4,5} DALI (default: logarithmic) SRD ^{4,5} SR Driver CLO ⁵ Constant light output AST ⁵ Adjustable startup time OTL ⁵ Over the life (default: L70 hrs) S ¹⁰ FAWS Field adjustable wattage selector N None
TVLC TownView with comfort lens	L4 Large Post Top Fitter 4" (tool less entry) L3 Large Post Top Fitter 3" (tool less entry) S2 Small Post Fitter 2-3/8" S3 Small Post Fitter 3" S4 Small Post Fitter 4"	C ¹ Curved Roof	32 32 LEDs 48 48 LEDs	G1 Gen 1 G1 Gen 1	5 530 mA 7 700 mA 8 800 mA 1 1050 mA 5 530 mA 7 700 mA				

Ordering guide (continued)

Receptacle	Sensor Receptacle ⁸	Surge Protection	Term Block	Decorative Option	Bird Guard	Finish ⁹
R7 7 Pin toolless rotatable standard - no photocell PH8 ⁷ 7 Pin toolless rotatable standard - with photocell PH9 7 Pin toolless rotatable standard - with shorting cap PHX ⁵ 7 Pin toolless rotatable standard - with long life photocell	N None SR ¹¹ SR Receptacle	SP1 Parallel 10kV standard SP2 Parallel 20kV	T Terminal Block N None	L ⁶ Ladder Rest N None	B Bird guard N None	BKS Black Smooth WHS White Smooth BZS Bronze Smooth GNS Green Smooth BK Black Texture WH White Texture BZ Bronze Texture GN Green Texture

Footnotes see page 2.

TVLC/TVLN TownView

Post top and arm mount luminaire

Ordering Guide: Arm mount

Must be ordered as a separate line item (if Arm Mount option is chosen for fixture).

Code	Mount	Width	Options	Finish
TV	A	55	S	
TV TownView	A Arm Mount	55 55.5" wide	S Decorative Scroll	BKS Black Smooth WHS White Smooth BZS Bronze Smooth GNS Green Smooth BK Black Texture WH White Texture BZ Bronze Texture GN Green Texture

Only available with Square roof

Footnotes

1. Only **S** Square roof available with **A** Arm Mount

2. Consult factory for information and lead time

3. Only pick one option from the Control list – for multiple control options consult the factory

4. This option requires more information contact factory

5. Only available with **120-277 V**

6. Ladder rest option not available with Arm Mount

7. Not available with **347V**
8. Order a **TVLN** (no panel version if you want the SR Receptacle option) Or consult factory to review sensor compatibility with panels.

9. When any finish other than **BKS** or **BK** is selected cupola will be metal and painted to match finish. Cupola supplied with **BKS** or **BK** finish option may be used with Interact City Astro-Clock node. If using Interact City with other finishes, cupola must be removed and Astro-Clock node is not required.
10. Position 10 is open for receptacle control, must use one or the other not BOTH.

11. **SR** Receptacle only available with 32 LED (receptacle is mounted in the middle of the boards) and **SRD** Driver is required if you choose this receptacle

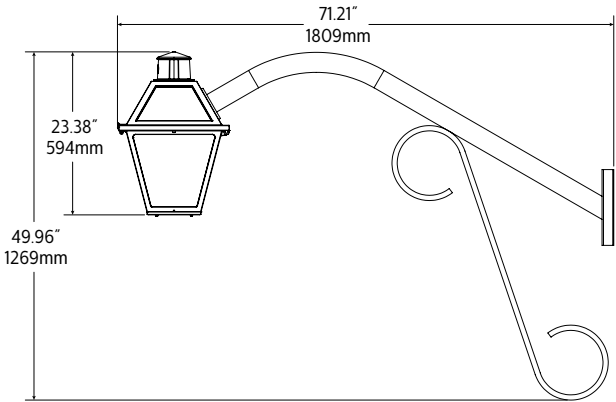
Dimensions: Arm mount

TVPx-A-S

- Arm:** Made of aluminum tubing
- Decorative Element:** Bent aluminum decorative channel scroll mechanically assembled.
- Mounting Plate:** Made of aluminum, mechanically fastened to the pole.

EPA Values

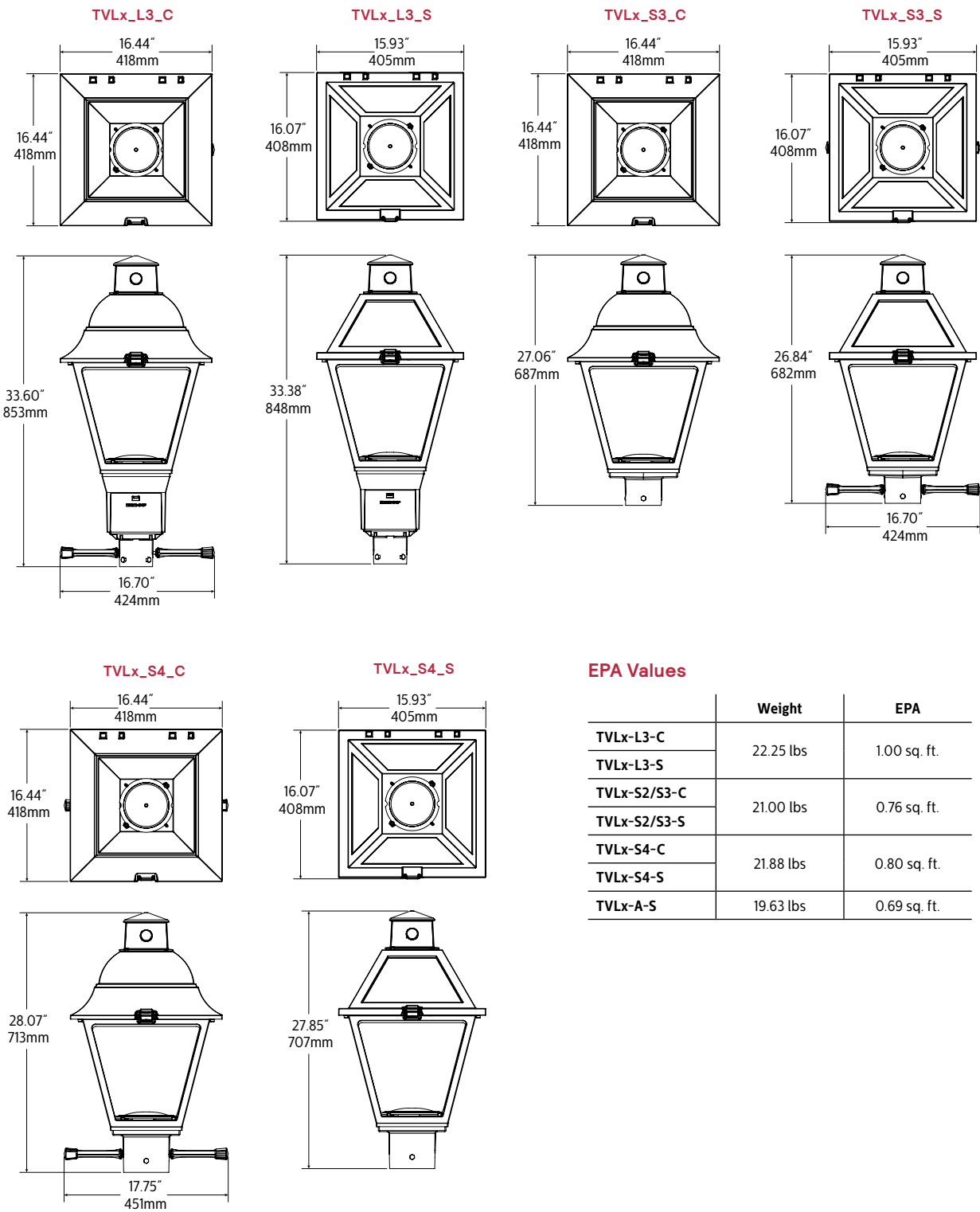
	Weight	EPA
TVPx-A-S	14 lbs	1.98 ft².



TVLC/TVLN TownView

Post top and arm mount luminaire

Dimensions: Luminaire



EPA Values

	Weight	EPA
TVLx-L3-C	22.25 lbs	1.00 sq. ft.
TVLx-L3-S		
TVLx-S2/S3-C	21.00 lbs	0.76 sq. ft.
TVLx-S2/S3-S		
TVLx-S4-C	21.88 lbs	0.80 sq. ft.
TVLx-S4-S		
TVLx-A-S	19.63 lbs	0.69 sq. ft.

TVLC/TVLN TownView

Post top and arm mount luminaire

Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L70 is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L70 hours limited to 6 times actual LED test hours.

Ambient Temperature °C	Driver mA	Calculated L70 Hours	L70 per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	up to 1050 mA	>100,000 hours	>54,000 hours	>96%

Field Adjustable Wattage (FAWS) Multiplier Chart

FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage
1	0.31	0.28
2	0.53	0.50
3	0.62	0.58
4	0.70	0.67
5	0.78	0.75
6	0.83	0.81
7	0.89	0.87
8	0.92	0.91
9	0.96	0.95
10	1.00	1.00

Note: Typical value accuracy +/- 15%

LED Lumen values - TVLN (No lens)

Ordering Code	LED qty.	System Current (mA)	Color Temp.	Avg. System Wattage (W)	Type 2S			Type 3S			Type 3W			Type 5		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
TVLN-16-G1-5-x-730	16	530	3000	29	2,841	98	B1-U0-G1	3,009	104	B1-U0-G1	3,064	106	B1-U0-G1	3,189	110	B2-U0-G1
TVLN-16-G1-7-x-730	16	700	3000	38	3,594	94	B1-U0-G1	3,806	100	B1-U0-G1	3,876	102	B1-U0-G1	4,034	106	B3-U0-G1
TVLN-16-G1-9-x-730	16	900	3000	49	4,410	90	B1-U0-G1	4,671	96	B1-U0-G1	4,756	97	B1-U0-G2	4,950	101	B3-U0-G1
TVLN-16-G1-1-x-730	16	1050	3000	57	4,970	87	B1-U0-G1	5,264	93	B1-U0-G2	5,360	94	B1-U0-G2	5,579	98	B3-U0-G1
TVLN-32-G1-5-x-730	32	530	3000	53	5,645	106	B1-U0-G1	5,821	109	B1-U0-G2	5,878	110	B1-U0-G2	6,086	114	B3-U0-G1
TVLN-32-G1-7-x-730	32	700	3000	70	7,127	102	B1-U0-G1	7,350	105	B1-U0-G2	7,421	106	B2-U0-G2	7,684	109	B3-U0-G2
TVLN-32-G1-8-x-730	32	800	3000	80	7,933	99	B1-U0-G2	8,181	102	B1-U0-G2	8,261	103	B2-U0-G2	8,553	106	B3-U0-G2
TVLN-32-G1-1-x-730	32	1050	3000	108	9,963	92	B2-U0-G2	10,274	95	B2-U0-G2	10,374	96	B2-U0-G2	10,741	99	B4-U0-G2
TVLN-48-G1-5-x-730	48	530	3000	81	8,607	107	B2-U0-G2	8,876	110	B1-U0-G2	8,962	111	B2-U0-G2	9,279	115	B4-U0-G2
TVLN-48-G1-7-x-730	48	700	3000	105	10,805	103	B2-U0-G2	11,143	106	B2-U0-G2	11,251	105	B2-U0-G2	11,649	111	B4-U0-G2
TVLN-16-G1-5-x-740	16	530	4000	29	3,124	107	B1-U0-G1	3,308	113	B1-U0-G1	3,369	115	B1-U0-G1	3,506	120	B2-U0-G1
TVLN-16-G1-7-x-740	16	700	4000	39	3,951	103	B1-U0-G1	4,185	109	B1-U0-G1	4,261	111	B1-U0-G1	4,435	115	B3-U0-G1
TVLN-16-G1-9-x-740	16	900	4000	49	4,848	98	B1-U0-G1	5,135	104	B1-U0-G1	5,229	106	B1-U0-G2	5,442	110	B3-U0-G1
TVLN-16-G1-1-x-740	16	1050	4000	58	5,464	95	B1-U0-G1	5,788	101	B1-U0-G2	5,893	102	B1-U0-G2	6,134	107	B3-U0-G1
TVLN-32-G1-5-x-740	32	530	4000	54	6,207	115	B1-U0-G1	6,400	119	B1-U0-G2	6,463	120	B1-U0-G2	6,691	124	B3-U0-G1
TVLN-32-G1-7-x-740	32	700	4000	71	7,836	110	B1-U0-G1	8,081	114	B1-U0-G2	8,160	115	B2-U0-G2	8,448	119	B3-U0-G2
TVLN-32-G1-8-x-740	32	800	4000	81	8,722	107	B1-U0-G2	8,995	111	B1-U0-G2	9,082	112	B2-U0-G2	9,404	116	B3-U0-G2
TVLN-32-G1-1-x-740	32	1050	4000	110	10,954	100	B2-U0-G2	11,296	103	B2-U0-G2	11,406	104	B2-U0-G2	11,809	108	B4-U0-G2
TVLN-48-G1-5-x-740	48	530	4000	82	9,463	116	B2-U0-G2	9,758	119	B1-U0-G2	9,853	121	B2-U0-G2	10,202	125	B4-U0-G2
TVLN-48-G1-7-x-740	48	700	4000	106	11,880	112	B2-U0-G2	12,251	116	B2-U0-G2	12,370	117	B2-U0-G2	12,808	121	B4-U0-G2

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at outdoorlighting.applications@philips.com. Consult DLC QPL to confirm your specific fixture selection is DLC approved.

Note: Some data may be scaled based on tests of similar but not identical luminaires.

TVLC/TVLN TownView

Post top and arm mount luminaire

LED Lumen values – TVLN (No lens and House-side shield)

Ordering Code	LED qty.	System Current (mA)	Color Temp.	Avg. System Wattage (W)	Type 2SH			Type 3SH			Type 3WSH		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
TVLN-16-G1-5-x-730	16	530	3000	29	2,284	79	B0-U0-G0	2,495	86	B0-U0-G1	2,334	81	B0-U0-G1
TVLN-16-G1-7-x-730	16	700	3000	38	2,889	76	B0-U0-G1	3,156	83	B0-U0-G1	2,952	77	B0-U0-G1
TVLN-16-G1-9-x-730	16	900	3000	49	3,545	72	B0-U0-G1	3,873	79	B0-U0-G1	3,623	74	B0-U0-G1
TVLN-16-G1-1-x-730	16	1050	3000	57	3,996	70	B0-U0-G1	4,365	77	B0-U0-G1	4,083	72	B1-U0-G2
TVLN-32-G1-5-x-730	32	530	3000	53	4,462	84	B0-U0-G1	4,783	90	B1-U0-G2	4,693	88	B1-U0-G2
TVLN-32-G1-7-x-730	32	700	3000	70	5,634	80	B1-U0-G1	6,039	86	B1-U0-G2	5,926	84	B1-U0-G2
TVLN-32-G1-8-x-730	32	800	3000	80	6,271	78	B1-U0-G1	6,722	84	B1-U0-G2	6,596	82	B1-U0-G2
TVLN-32-G1-1-x-730	32	1050	3000	108	7,875	73	B1-U0-G2	8,442	78	B1-U0-G2	8,283	76	B1-U0-G2
TVLN-48-G1-5-x-730	48	530	3000	81	6,803	84	B1-U0-G1	7,293	90	B1-U0-G2	7,156	89	B1-U0-G2
TVLN-48-G1-7-x-730	48	700	3000	105	8,541	81	B1-U0-G2	9,156	87	B1-U0-G2	8,983	86	B1-U0-G2
TVLN-16-G1-5-x-740	16	530	4000	29	2,511	86	B0-U0-G0	2,743	94	B0-U0-G1	2,566	88	B0-U0-G1
TVLN-16-G1-7-x-740	16	700	4000	39	3,177	82	B0-U0-G1	3,470	90	B0-U0-G1	3,246	84	B0-U0-G1
TVLN-16-G1-9-x-740	16	900	4000	49	3,898	79	B0-U0-G1	4,258	86	B0-U0-G1	3,983	81	B0-U0-G1
TVLN-16-G1-1-x-740	16	1050	4000	58	4,393	76	B0-U0-G1	4,799	83	B0-U0-G1	4,489	78	B1-U0-G2
TVLN-32-G1-5-x-740	32	530	4000	54	4,906	91	B0-U0-G1	5,259	97	B1-U0-G2	5,160	96	B1-U0-G2
TVLN-32-G1-7-x-740	32	700	4000	71	6,194	87	B1-U0-G1	6,640	94	B1-U0-G2	6,515	92	B1-U0-G2
TVLN-32-G1-8-x-740	32	800	4000	81	6,894	85	B1-U0-G1	7,391	91	B1-U0-G2	7,252	89	B1-U0-G2
TVLN-32-G1-1-x-740	32	1050	4000	110	8,658	79	B1-U0-G2	9,282	85	B1-U0-G2	9,107	83	B1-U0-G2
TVLN-48-G1-5-x-740	48	530	4000	82	7,480	92	B1-U0-G1	8,018	98	B1-U0-G2	7,867	96	B1-U0-G2
TVLN-48-G1-7-x-740	48	700	4000	106	9,390	89	B1-U0-G2	10,066	95	B1-U0-G2	9,877	93	B1-U0-G2

LED Lumen values – TVLC (Comfort lens)

Ordering Code	LED qty.	System Current (mA)	Color Temp.	Avg. System Wattage (W)	Type 2S			Type 3S			Type 3W			Type 5		
					Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
TVLC-16-G1-5-x-730	16	530	3000	29	2,570	89	B1-U2-G1	2,598	90	B1-U2-G1	2,536	88	B1-U2-G1	2,654	92	B1-U2-G1
TVLC-16-G1-7-x-730	16	700	3000	38	3,251	85	B1-U2-G1	3,286	86	B1-U2-G1	3,208	84	B1-U2-G2	3,357	88	B2-U2-G1
TVLC-16-G1-9-x-730	16	900	3000	49	3,545	72	B1-U2-G1	4,033	82	B1-U2-G2	3,936	80	B1-U3-G2	4,120	84	B2-U2-G1
TVLC-16-G1-1-x-730	16	1050	3000	57	3,996	70	B1-U2-G1	4,545	80	B1-U2-G2	4,437	78	B1-U3-G2	4,643	82	B2-U3-G2
TVLC-32-G1-5-x-730	32	530	3000	53	5,190	97	B1-U3-G2	5,160	97	B1-U3-G2	5,010	94	B1-U3-G2	5,250	98	B2-U3-G2
TVLC-32-G1-7-x-730	32	700	3000	70	6,553	93	B2-U3-G2	6,515	93	B1-U3-G2	6,325	90	B1-U3-G3	6,628	94	B3-U3-G2
TVLC-32-G1-8-x-730	32	800	3000	80	7,294	91	B2-U3-G2	7,252	90	B2-U3-G2	7,041	88	B2-U3-G3	7,378	92	B3-U3-G2
TVLC-32-G1-1-x-730	32	1050	3000	108	9,160	85	B2-U3-G2	9,107	84	B2-U3-G3	8,842	82	B2-U3-G3	9,265	85	B3-U3-G3
TVLC-48-G1-5-x-730	48	530	3000	81	7,913	98	B2-U3-G2	7,867	97	B2-U3-G3	7,638	95	B2-U3-G3	8,004	99	B3-U3-G2
TVLC-48-G1-7-x-730	48	700	3000	105	9,934	95	B2-U3-G2	9,877	94	B2-U3-G3	9,589	91	B2-U3-G3	10,048	96	B3-U3-G3
TVLC-16-G1-5-x-740	16	530	4000	29	2,826	97	B1-U2-G1	2,856	98	B1-U2-G1	2,788	95	B1-U2-G1	2,918	100	B1-U2-G1
TVLC-16-G1-7-x-740	16	700	4000	39	3,574	93	B1-U2-G1	3,613	94	B1-U2-G1	3,527	92	B1-U3-G2	3,691	96	B2-U2-G1
TVLC-16-G1-9-x-740	16	900	4000	49	4,386	89	B1-U2-G1	4,434	90	B1-U2-G2	4,328	88	B1-U3-G2	4,529	92	B2-U3-G1
TVLC-16-G1-1-x-740	16	1050	4000	58	4,943	86	B1-U3-G1	4,997	87	B1-U3-G2	4,878	85	B1-U3-G2	5,105	89	B2-U3-G2
TVLC-32-G1-5-x-740	32	530	4000	54	5,706	106	B1-U3-G2	5,673	105	B1-U3-G2	5,508	102	B1-U3-G2	5,772	107	B3-U3-G2
TVLC-32-G1-7-x-740	32	700	4000	71	7,205	102	B2-U3-G2	7,163	101	B2-U3-G2	6,955	98	B2-U3-G3	7,287	103	B3-U3-G2
TVLC-32-G1-8-x-740	32	800	4000	81	8,019	99	B2-U3-G2	7,973	98	B2-U3-G3	7,741	95	B2-U3-G3	8,111	100	B3-U3-G2
TVLC-32-G1-1-x-740	32	1050	4000	110	10,071	92	B2-U3-G2	10,013	91	B2-U3-G3	9,721	89	B2-U3-G3	10,186	93	B3-U3-G3
TVLC-48-G1-5-x-740	48	530	4000	82	8,700	106	B2-U3-G2	8,650	106	B2-U3-G3	8,398	103	B2-U3-G3	8,800	108	B3-U3-G3
TVLC-48-G1-7-x-740	48	700	4000	106	10,922	103	B2-U3-G3	10,859	102	B2-U3-G3	10,543	99	B2-U3-G3	11,048	104	B3-U3-G3

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout – contact Applications at outdoorlighting.applications@philips.com. Consult DLC QPL to confirm your specific fixture selection is DLC approved.

Note: Some data may be scaled based on tests of similar but not identical luminaires.

TVLC/TVLN TownView

Post top and arm mount luminaire

Specifications

Housing

Roof and Cage: Two Style options

C: Curved Roof and **S:** Square Roof. Tool-less latch made of stainless steel allows for quick access inside of the hinged roof to locate the driver, surge protector and optional FAWs (field adjustable wattage solution). Roof and Cage made of 360 low-copper die-cast aluminum alloy. Decorative Cupola on top of roof covers the 7 pin NEMA socket.

Lens options: **C:** Visual Comfort internal lens help to eliminate glare and pixelization and give a soft glow at night

N: No internal flat lens for optimal performance

Fitter: Two fitter options. **L:** Large Utility Fitter with tool-less door to access the terminal block and wiring. Available in 3" or 4". Or **S:** Small Fitter. Small fitter available in 2" 3/8, 3" or 4". Large 4" fitter uses a secondary adaptor to achieve 4" opening.

Light Engine

Composed of 4 main components: **LED Module / Optical System / Heat Sink / Driver.**

Electrical components are RoHS compliant, IP66 sealed light engine LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module

Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin 2700 Kelvin nominal (2725 ±145K) CRI 80 min, 3000 Kelvin nominal (3045K +/- 175K) or 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical. Other CCT/CRI also available, consult factory.

Heat Sink

Made of die cast aluminum optimizing the LEDs efficiency and life. Product does not use any cooling device with moving parts (only passive cooling device). Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

Optical System

Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. Type **2S**, **3S**, **3W** and **Type 5** Street side indicated. House side shield optional (can be field installed) **2SH:** Type 2 with House Side Shield, **3SH:** Type 3 short with house side shield, **3WH:** Type 3 Wide with House side shield.

Driver:

Driver comes standard with 0-10V dimming capability. High power factor of 95%. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277, 347 and 480 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max. Maximum ambient operating temperature from 40°F (4°C) to 130°F (55°C). Certified in compliance to UL1310 cULus requirement (dry and damp location). The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

Integrated Features

R7*: Tool less rotatable receptacle with 7 pins enabling dimming and additional functionality (to be determined), can be used with a twist lock Interact City node or photoelectric cell or a shorting cap.

SP1: Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

SP2: Optional 20kV / 10kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

NEMA Labels: Installed NEMA label, ANSI C136.15-2015 compliant. Consult factory for other labeling needs.

Please note that these integrated features always come with the luminaire.

** Use of photoelectric cell or shorting cap is required to ensure proper illumination.*

Driver and Luminaire Options

Dimming Options:

DA: 4 Hrs 25% reduction

DB: 4 Hrs 50% reduction

DC: 4 Hrs 75% reduction

DD: 6 Hrs 25% reduction

DE: 6 Hrs 50% reduction

DF: 6 Hrs 75% reduction

DG: 8 Hrs 25% reduction

DH: 8 Hrs 50% reduction

DJ: 8 Hrs 75% reduction

DL: Pre-set driver compatible with the DALI control system. Logarithmic standard

SRD: Sensor Ready Driver including SR communication (used for dimming and other functionalities), 24V auxiliary supply and a logical signal input (LSI) connected to the top NEMA twist lock receptacle and bottom **TLRSR** receptacle, if this option included/ chosen. This configuration is compatible with Interact City controllers.

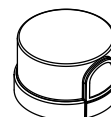
AST: Pre-set driver for progressive start-up of the LED module(s) to optimize energy management and enhance visual comfort at start-up.

CLO: Pre-set driver to manage the lumen depreciation by adjusting the power given to the LEDs offering the same lighting intensity during the entire lifespan of the LED module.

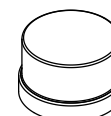
OTL: Pre-set driver to signal end of life of the LED module(s) for better fixture management.

FAWS: Field Adjustable Wattage Selector, pre-set to the highest position, can be easily switched in the field to the required position. This reduces total luminaire wattage consumption and reduces the light level – see the FAWS multiplier chart for more details. Note: It is not recommended to use FAWS with other dimming or controls; if you do, set the switch to position 10 (maximum output) to enable the other dimming or controls. Switching FAWS to any position other than 10 will disable the other dimming or controls.

PH8: 7 Pin Toolless rotatable standard - with photocell. Photocell has dimensional limits: 3" dia x 2" tall (for non black finishes only)



PH9: 7 Pin Toolless rotatable standard - with shorting cap



TVLC/TVLN TownView

Post top and arm mount luminaire

Specifications (continued)

PHX: 7 Pin Tooless rotatable standard – with long life photocell. Photocell has dimensional limits: 3" dia x 2" tall (for non black finishes only)



SR: Sensor ready receptacle located on the heat sink between two LED boards. Cannot be combined With 16 or 48 LED's or horizontal lens.



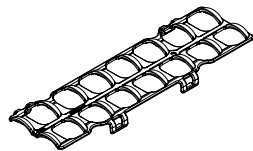
L: Decorative Ladder Rest. Ships in the box, install on site



B: Bird Guard optional. Attaches with two screws to the electrical cover. Can be ordered with the fixture or installed as a separate option later.



**2H,
3SH,
3WH:** House side shield option



Luminaire Useful Life

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, System Reliability Tool, Philips Advance data and LED manufacturer LM-80/TM-21 data, expected to reach 100,000 + hours (72W32LED and 108W48LED at 700mA) or 94,500 hours (108W32LED and 160W48LED at 1050mA) with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

Wiring

18AWG wire, 6" (15mm) minimum extending from luminaire.

Optional Terminal block

Terminal block connector 600V, 85A for use with #14-2 AWG wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time-delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses. Fuses and holders by others or consult factory

Hardware

All non-ferrous fasteners prevent corrosion and ensure longer life. All seals and sealing devices are made and/or lined with EPDM silicone rubber.

Finish

Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with 1 mils / 24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard. The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

BKS: Black Smooth
WHS: White Smooth
BZS: Bronze Smooth
GNS: Green Smooth
BK: Black Texture
WH: White Texture
BZ: Bronze Texture
GN: Green Texture

LED products manufacturing standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance

S2, S3, S4 Fitter and A Arm Mount Meets the ANSI C136.31, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications (Tested for 3G over 100,000 cycles).

TVLC/TVLN TownView

Post top and arm mount luminaire

Specifications (continued)

Certifications and Compliance

cETL listed to Canadian safety standards for wet locations. Manufactured to ISO 9001:2008 Standards. UL8750 and UL1598 compliant. ETL listed to U.S. safety standards for wet locations. cETL listed to Canadian safety standards for wet locations. LM80 & LM79 tested. Listed on the DesignLights TM Consortium (DLC) Qualified Products List (QPL). ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41. The TVLN with CCTs 3000K and warmer are Dark Sky Approved.

Service Tag

Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away. For more details visit: philips.com/servicetag

Limited Warranty

5 year standard warranty. Options available for extended warranties – contact factory. See signify.com/warranties for details and restrictions.

Brackets and Poles

Visit the website for pole and post top bracket options



**TRA30 (LED)**

30" Traditional Luminaire

Max Weight: 35.0 lbs**Max EPA:** 2.60 sq ft

Housing: All cast aluminum parts shall be low copper alloy A356. All extruded aluminum parts shall be alloy 6061-T6, 6063-T5 or equal.

Construction: The upper chamber/lid shall be topped by a decorative cast aluminum finial/cap and mechanically fastened to the optical chamber. The cast multi-sided cage shall accommodate UV stabilized acrylic or polycarbonate lenses (side panels) which shall be sealed for weather tight operation. The electrical chamber/fitter shall be aluminum, decorative fitter designed to accommodate the ballast assembly and shall mount to 3 OD x 3" H tenon and secured by three stainless steel set screws.

Fasteners: All fasteners shall be Corrosion Resistant. When tamper resistant fasteners are required, spanner HD (snake eye) style shall be provided (special tool required, available at additional cost).

Finish: Finish shall be a Beacote V polyester powder-coat electro-statically applied and thermocured. Beacote V finish shall consist of a five stage iron phosphate chemical pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish. The finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pound.

Bezel Optical System: Each luminaire is supplied with an optical one piece cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel. The cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system. Two-piece silicone and polycarbonate foam gasket ensures a weather-proof seal around each individual LED and allows the luminaire to be rated for high-pressure hose down applications. The optical cartridge is secured to the extruded housing with fasteners and a heat pad to ensure thermal conductivity. The optics are held in place without the use of adhesives and the complete assembly is gasketed for high pressure hose down cleaning. The cartridge assembly is available in various lighting distributions using a specially designed acrylic optical lens over each LED.

Power Supply/Driver Requirements: U.L. UL1310, Class 2 and UL48 compliant

Color Rendering Index (CRI): Luminaire shall have a minimum CRI of 67 at 5000K.

Operating Environment: Shall be able to operate normally in ambient temperatures from -40°C to 40°C

LifeShield™ Circuit: Thermal circuit shall protect the luminaire from excessive temperature by interfacing with its 0-10V dimmable drivers to reduce drive current as necessary. The factory-preset temperature limits shall be designed to ensure maximum hours of operation to assure L70 rated lumen maintenance. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range in recognition of the effect of reduced current on the internal temperature and longevity of the LEDs and other components. A luminaire equipped with the device may be reliably operated in any ambient temperature up to 55°C (131°F). The thermal circuit will allow higher maximum Wattages than would be permissible on an unregulated luminaire (if some variation in light output is permissible), without risk of premature LED failure. Operation shall be smooth and undetectable to the eye. Thermal circuit shall directly measure the temperature at the LED solder point.

Thermal circuit shall consist of surface mounted components mounted on the LED engine (printed circuit board). For maximum simplicity and reliability, the device shall have no dedicated enclosure, circuit board, wiring harness, gaskets, or hardware. Device shall have no moving parts, and shall operate entirely at low voltage (NEC Class 2). The device shall be located in an area of the luminaire that is protected from the elements.

Thermal circuit shall be designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers.

Device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.). The device will effectively control the solder point temperature as needed; otherwise it will allow the other control device(s) to function unimpeded.

Surge Protector: The on-board surge protector shall be a UL recognized component for the United States and Canada and have a surge current rating of 20,000 Amps using the industry standard 8/20 pSec wave. The LSP shall have a clamping voltage of 825V and surge rating of 540J. The case shall be a high-temperature, flame resistant plastic enclosure.

Electrical: Luminaires are equipped with LED driver(s) that accept 90 through 305

VAC, 50 Hz to 60 Hz (UNIV). Power factor is .92 at full load. All electrical components are rated at 50,000 hours at full load and 25°C ambient conditions per MIL-217F Notice 2. All driver components supplied are component-to-component wiring within the luminaire will carry no more than 80% of rated current and is listed by UL for use at 600VAC at 50°C or higher. Plug disconnects are listed by UL for use at 600 VAC, 15A or higher.

Agency Certification: The luminaire shall bear an NRTL label and be marked suitable for wet locations.

Limited Warranty: Beacon luminaires feature a 5 year limited warranty. Beacon LED luminaires with LED arrays feature a 5 year limited warranty covering the LED arrays. LED drivers are covered by a 5 year limited warranty. PIR sensors carry a 5 year limited warranty from the sensor manufacturer. See Warranty Information on www.beaconproducts.com for complete details and exclusions.

Due to our continued efforts to improve our products, product specifications are subject to change without notice.



Type D1
D1-Lumec-RNS20 30W16LED T ACDR LE3 120
DMG

Tompkins County LED Street Lighting Upgrade
Project #: 5551

Lumec's **Renaissance** Series mixes refinement together with ambition. The design reflects and evokes late 19th and early 20th century styling, perfectly suited for most urban and rural areas, while the state-of-the-art technology inside assures exceptional photometric performance, a long lifespan, and ease of maintenance.

Project:
Location:
Cat.No:
Type:
Lamps: Qty:
Notes:

D1 - Lumec - RNS20 30W16LED T ACDR LE3 120 DMG SMB RCD N BKTX DE1

Ordering guide: Luminaire

Example: RNS20-35W32LED4K-T-ACDR-LE5-120-DMG-SMA-RC-BKTX

Series	LED module		Lamp type	Globe material	Optical system	Voltage	Driver options	
RNS20			T					
RNS20	4000K	3000K	T	ACDR Acrylic globe GL Glass globe	LE2 Type II (ASYM)	120 120V	AST	Pre-set, progressive start-up
	24W16LED4K	24W16LED3K			LE3 Type III (ASYM)	208 208V	CLO	Pre-set, manage lumen depreciation
	30W16LED4K	30W16LED3K			LE4 Type IV (ASYM)	240 240V	DALI	Pre-set, compatible with the DALI control system
	35W32LED4K	35W32LED3K			LE5 ¹ Type V (SYMM)	277 277V	OTL	Pre-set to signal end of life of the lamp
	55W32LED4K	55W32LED3K				347 347V	DMG	0-10V
						480 480V	CDMGE25	8 hrs. 25% reduction
							CDMGE50	8 hrs. 50% reduction
							CDMGE75	8 hrs. 75% reduction
							CDMGM25	6 hrs. 25% reduction
							CDMGM50	6 hrs. 50% reduction
							CDMGM75	6 hrs. 75% reduction
							CDMGS25	4 hrs. 25% reduction
							CDMGS50	4 hrs. 50% reduction
							CDMGS75	4 hrs. 75% reduction
							SRD ³	Sensor ready driver, standard configuration
							SRD1 ³	Sensor ready driver, alternate configuration

Ordering guide (continued)

Adaptors	Luminaire options		Poles & Brackets	Finish
MA1 1 1/4" NPT threaded hole adaptor	DE1 Decorative deflector		Consult signify.com/ outdoorluminaires for details and the complete line of Signify poles and brackets.	BE2TX Textured midnight blue
MA2 1 1/2" NPT threaded hole adaptor	HS House Side Shield			BE6TX Textured ocean blue
SMA ⁶ Decorative retro side-mounted cast-aluminum, accepts tubes from 1 5/8" to 2 3/8"	PH8 ^{2,3,4} Photoelectric cell			BE8TX Textured royal blue
	PH9 ^{2,3,4} Shorting cap			BG2TX Textured Sandstone
SMB Decorative contemporary side-mounted cast-aluminum, accepts tubes from 1 5/8" to 2 3/8"	PHXL ^{2,3,4} Photoelectric cell, extended life			BKTX Textured black
	RC ^{2,3,4} Receptacle 3 pins			BRTX Textured bronze
	RCD ^{2,3,4} Receptacle 5 pins			GN4TX Textured blue green
	RCD7 ^{2,3,4} Receptacle 7 pins			GN6TX Textured forest green
YM Yoke mount	SP2 Surge protector			GN8TX Textured Dk forest green
				GNTX Textured green
				GR Gray sandtex
				GY3TX Textured medium grey
				NP Natural aluminum
				RD2TX Textured burgundy
				RD4TX Textured scarlet
				TG Hammer-tone gold
				WHTX Textured white

- Not available with HS option.
- SMA or SMB adaptors is required for this option.
- Not available with YM adaptor.
- Luminaire option RC, RCD or RCD7 is required with this options.
- Use of photoelectric cell or shorting cap is required to ensure proper illumination.
- Only 3 pin receptacle RC is available with SMA adaptor.

RNS20 Renaissance LED (small)

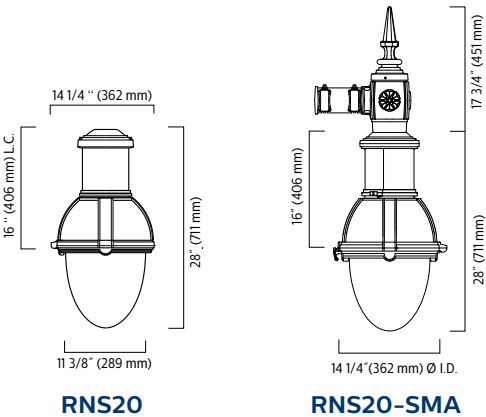
Urban Luminaire

Features

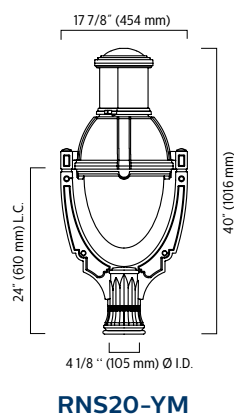
- 1. Constructed from top-quality materials, the Contemporary Lantern Series maintains excellent performance in even the most demanding environments.
- 2. Type LE2, LE3, LE4 and LE5 optic distributions are available to meet a range of lighting applications.
- 3. Acrylic globe has satin-finish to gently obscure the source without compromising photometry.
- 4. Tool free access to lamp and electrical components for ease of maintenance.
- 5. Unique styling merges traditional and contemporary design.

Dimensions

EPA: 1.43 ft² max.
ACDR Weight: 37 lbs (16.8kg) max.
GL Weight: 66 lbs (20.9kg) max.
EPA and weight are calculated without adaptor



EPA: 2.53 ft² max.
ACDR Weight: 48 lbs (21.8kg) max.
GL Weight: 57 lbs (25.9kg) max.



Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L₇₀ is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L₇₀ hours limited to 6 times actual LED test hours.

Ambient Temperature °C	Driver mA	Calculated L ₇₀ Hours	L ₇₀ per TM-21	Lumen Maintenance % at 60,000 hrs
35°C	800 mA	>99,000 hours	>60,000 hours	>83%

RNS20 Renaissance LED (small)

Urban Luminaire

LED light engine technical information for RNS20

LED = Lumileds Luxeon T, CRI = 70, CCT = 4000K (3985K +/- 275K or 3710K to 4260K)

System (LED + driver) rated life = 100,000 hrs¹

LED Module	Typical delivered lumens	Typical system wattage (W) ²	Typical System Current (A) @				LED current (mA)	HID ³ equivalent	Luminaire Efficacy Rating (Lm/W)	BUG rating
			120V	208V	240V	277V				
24W16LED4K-T-LE2	3040	28	0.25	0.15	0.13	0.12	530	70-100	107	B1-U2-G1
24W16LED4K-T-LE3	3017	28	0.25	0.15	0.13	0.12	530	70-100	106	B1-U2-G1
24W16LED4K-T-LE4	3032	28	0.25	0.15	0.13	0.12	530	70-100	107	B1-U2-G1
24W16LED4K-T-LE5	3050	28	0.25	0.15	0.13	0.12	530	70-100	107	B2-U2-G2
30W16LED4K-T-LE2	3825	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE3	3796	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE4	3815	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE5	3837	37	0.32	0.19	0.17	0.15	700	70-100	104	B3-U3-G3
35W32LED4K-T-LE2	4236	36	0.31	0.19	0.17	0.16	350	70-100	118	B1-U3-G1
35W32LED4K-T-LE3	4175	36	0.31	0.19	0.17	0.16	350	70-100	116	B1-U2-G1
35W32LED4K-T-LE4	4225	36	0.31	0.19	0.17	0.16	350	70-100	117	B1-U2-G1
35W32LED4K-T-LE5	4249	36	0.31	0.19	0.17	0.16	350	70-100	118	B3-U3-G3
55W32LED4K-T-LE2	5945	53	0.47	0.27	0.24	0.22	530	100-150	111	B1-U3-G1
55W32LED4K-T-LE3	5900	53	0.47	0.27	0.24	0.22	530	100-150	110	B1-U3-G2
55W32LED4K-T-LE4	5930	53	0.47	0.27	0.24	0.22	530	100-150	111	B1-U3-G2
55W32LED4K-T-LE5	5994	53	0.47	0.27	0.24	0.22	530	100-150	113	B3-U3-G3

LED light engine technical information for RNS20

LED = Lumileds Luxeon T, CRI = 70, CCT = 3000K (3045K +/- 175K or 2870K to 3220K)

System (LED + driver) rated life = 100,000 hrs¹

LED Module	Typical delivered lumens	Typical system wattage (W) ²	Typical System Current (A) @				LED current (mA)	HID ³ equivalent	Luminaire Efficacy Rating (Lm/W)	BUG rating
			120V	208V	240V	277V				
24W16LED3K-T-LE2	2824	28	0.25	0.15	0.13	0.12	530	70-100	100	B1-U2-G1
24W16LED3K-T-LE3	2802	28	0.25	0.15	0.13	0.12	530	70-100	100	B1-U2-G1
24W16LED3K-T-LE4	2817	28	0.25	0.15	0.13	0.12	530	70-100	100	B1-U2-G1
24W16LED3K-T-LE5	2763	28	0.25	0.15	0.13	0.12	530	70-100	98	B2-U2-G2
30W16LED3K-T-LE2	3552	37	0.32	0.19	0.17	0.15	700	70-100	97	B1-U2-G1
30W16LED3K-T-LE3	3525	37	0.32	0.19	0.17	0.15	700	70-100	96	B1-U2-G1
30W16LED3K-T-LE4	3543	37	0.32	0.19	0.17	0.15	700	70-100	96	B1-U2-G1
30W16LED3K-T-LE5	3484	37	0.32	0.19	0.17	0.15	700	70-100	95	B3-U2-G3
35W32LED3K-T-LE2	3907	36	0.31	0.19	0.17	0.16	350	70-100	109	B1-U2-G1
35W32LED3K-T-LE3	3877	36	0.31	0.19	0.17	0.16	350	70-100	108	B1-U2-G1
35W32LED3K-T-LE4	3897	36	0.31	0.19	0.17	0.16	350	70-100	108	B1-U2-G1
35W32LED3K-T-LE5	3939	36	0.31	0.19	0.17	0.16	350	70-100	109	B3-U3-G3
55W32LED3K-T-LE2	5522	53	0.47	0.27	0.24	0.22	530	100-150	103	B1-U3-G1
55W32LED3K-T-LE3	5480	53	0.47	0.27	0.24	0.22	530	100-150	103	B1-U3-G2
55W32LED3K-T-LE4	5508	53	0.47	0.27	0.24	0.22	530	100-150	103	B1-U3-G2
55W32LED3K-T-LE5	5567	53	0.47	0.27	0.24	0.22	530	100-150	104	B3-U3-G3

1. L70 = 70,000 hrs (at ambient temperature = 25°C)

2. System wattage includes the lamp and the LED driver

3. These guidelines show typical replacements for the HID wattage ranges shown. Replacements should always be confirmed with a photometric layout.

Note : Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Signify.

RNS20 Renaissance LED (small)

Urban Luminaire

LED light engine technical information for RNS20 Yoke Mount (YM)

LED = Lumileds Luxeon T, CRI = 70, CCT = 4000K (3985K +/- 275K or 3710K to 4260K)

System (LED + driver) rated life = 100,000 hrs¹

LED Module	Typical delivered lumens	Typical system wattage (W) ²	Typical System Current (A) @				LED current (mA)	HID ³ equivalent	Luminaire Efficacy Rating (Lm/W)	BUG rating
			120V	208V	240V	277V				
24W16LED4K-T-LE2-YM	2307	28	0.25	0.15	0.13	0.12	530	70-100	82	B1-U2-G1
24W16LED4K-T-LE3-YM	2431	28	0.25	0.15	0.13	0.12	530	70-100	87	B1-U2-G1
24W16LED4K-T-LE4-YM	2540	28	0.25	0.15	0.13	0.12	530	70-100	90	B1-U2-G1
24W16LED4K-T-LE5-YM	2645	28	0.25	0.15	0.13	0.12	530	70-100	94	B2-U2-G2
30W16LED4K-T-LE2-YM	2903	37	0.32	0.19	0.17	0.15	700	70-100	79	B1-U2-G1
30W16LED4K-T-LE3-YM	3059	37	0.32	0.19	0.17	0.15	700	70-100	83	B1-U2-G1
30W16LED4K-T-LE4-YM	3195	37	0.32	0.19	0.17	0.15	700	70-100	87	B1-U2-G1
30W16LED4K-T-LE5-YM	3328	37	0.32	0.19	0.17	0.15	700	70-100	90	B2-U2-G2
35W32LED4K-T-LE2-YM	3215	36	0.31	0.19	0.17	0.16	350	70-100	89	B1-U3-G1
35W32LED4K-T-LE3-YM	3388	36	0.31	0.19	0.17	0.16	350	70-100	94	B1-U2-G1
35W32LED4K-T-LE4-YM	3539	36	0.31	0.19	0.17	0.16	350	70-100	98	B1-U2-G1
35W32LED4K-T-LE5-YM	3686	36	0.31	0.19	0.17	0.16	350	70-100	102	B3-U3-G3
55W32LED4K-T-LE2-YM	4600	53	0.47	0.27	0.24	0.22	530	100-150	86	B1-U3-G1
55W32LED4K-T-LE3-YM	4847	53	0.47	0.27	0.24	0.22	530	100-150	91	B1-U3-G2
55W32LED4K-T-LE4-YM	5063	53	0.47	0.27	0.24	0.22	530	100-150	95	B1-U3-G2
55W32LED4K-T-LE5-YM	5273	53	0.47	0.27	0.24	0.22	530	100-150	99	B3-U3-G3

LED light engine technical information for RNS20 Yoke Mount (YM)

LED = Lumileds Luxeon T, CRI = 70, CCT = 3000K nominal (3045K +/- 175K or 2870K to 3220K)

System (LED + driver) rated life = 100,000 hrs¹

LED Module	Typical delivered lumens	Typical system wattage (W) ²	Typical System Current (A) @				LED current (mA)	HID ³ equivalent	Luminaire Efficacy Rating (Lm/W)	BUG rating
			120V	208V	240V	277V				
24W16LED3K-T-LE2-YM	2143	28	0.25	0.15	0.13	0.12	530	70-100	76	B1-U2-G1
24W16LED3K-T-LE3-YM	2258	28	0.25	0.15	0.13	0.12	530	70-100	80	B1-U2-G1
24W16LED3K-T-LE4-YM	2359	28	0.25	0.15	0.13	0.12	530	70-100	84	B1-U2-G1
24W16LED3K-T-LE5-YM	2253	28	0.25	0.15	0.13	0.12	530	70-100	80	B2-U2-G2
30W16LED3K-T-LE2-YM	2696	37	0.32	0.19	0.17	0.15	700	70-100	73	B1-U2-G1
30W16LED3K-T-LE3-YM	2841	37	0.32	0.19	0.17	0.15	700	70-100	77	B1-U2-G1
30W16LED3K-T-LE4-YM	2968	37	0.32	0.19	0.17	0.15	700	70-100	81	B1-U2-G1
30W16LED3K-T-LE5-YM	2835	37	0.32	0.19	0.17	0.15	700	70-100	77	B2-U2-G2
35W32LED3K-T-LE2-YM	2986	36	0.31	0.19	0.17	0.16	350	70-100	83	B1-U3-G1
35W32LED3K-T-LE3-YM	3147	36	0.31	0.19	0.17	0.16	350	70-100	87	B1-U2-G1
35W32LED3K-T-LE4-YM	3287	36	0.31	0.19	0.17	0.16	350	70-100	91	B1-U2-G1
35W32LED3K-T-LE5-YM	3140	36	0.31	0.19	0.17	0.16	350	70-100	87	B3-U3-G3
55W32LED3K-T-LE2-YM	4272	53	0.47	0.27	0.24	0.22	530	100-150	80	B1-U3-G1
55W32LED3K-T-LE3-YM	4502	53	0.47	0.27	0.24	0.22	530	100-150	84	B1-U3-G2
55W32LED3K-T-LE4-YM	4702	53	0.47	0.27	0.24	0.22	530	100-150	88	B1-U3-G2
55W32LED3K-T-LE5-YM	4492	53	0.47	0.27	0.24	0.22	530	100-150	84	B3-U3-G3

1. L70 = 70,000 hrs (at ambient temperature = 25°C)

2. System wattage includes the lamp and the LED driver

3. These guidelines show typical replacements for the HID wattage ranges shown. Replacements should always be confirmed with a photometric layout.

Note : Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Signify.

RNS20 Renaissance LED (small)

Urban Luminaire

Specifications:

Hood

Cast 356 aluminum dome, mechanically assembled on the luminaire, c/w a watertight grommet, mechanically assembled to the bracket with four bolts 3/8 16 UNC. This suspension system permits for a full rotation of the luminaire in 90 degree increments.

YM version: Cast 356 aluminum dome, mechanically assembled on the housing.

Housing

In a round shape, this housing is made of injection die cast A380 aluminum, complete with a weatherproof door giving a tool free access to the ballast, mechanically assembled. This suspension system permits for a full rotation of the luminaire in 90 degree increments.

YM version: In a round shape, this housing is made of die cast A380 aluminum, welded to the yoke.

Access-mechanism

A gravity die cast 356 aluminum frame with latch and hinge. The mechanism shall offer tool free access to the inside of the luminaire. An embedded memory retentive gasket shall ensure weatherproofing.

Globe

Lex: Made of one-piece seamless injection-molded (**ACDR**) DR acrylic or (**GL**) clear borosilicate glass globe having an inner prismatic surface. Complete with a semi-prismatic house side shield and external glare softening prisms. The globe is mechanically assembled and sealed onto the lower part of the heat sink.

Light engine

LEDgine composed of 4 main components:
Heat sink / LED module /
Optical system / Driver

Electrical components are RoHS compliant.

Heat sink

Made of cast aluminum optimising the LEDs efficiency and life. Product does not use any cooling device with moving parts (only passive cooling device)

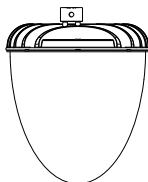
LED engine

LED type Lumileds LUXEON T. Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 3000 Kelvin nominal (3045K +/- 175K) or 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical.

Optical system

LE2 (type II asymmetrical), **LE3** (type III asymmetrical), **LE4** (type IV asymmetrical) or **LE5** (type V symmetrical) light distributions. Composed of high performance optical grade PMMA acrylic refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. Optical system is rated IP66. Performance shall be tested per LM 63, LM 79 and TM 15 (IESNA) certifying its photometric performance. Street side indicated.

Prismatic globe: IP66 rated optical system, composed of individual pre-oriented lens to achieve desired distribution, assembled with globe having an inner prismatic surface permanently sealed onto the lower part of the heat sink.



LE2 - Type II (asymmetrical)
LE3 - Type III (asymmetrical)
LE4 - Type IV (asymmetrical)
LE5 - Type V (symmetrical)

Driver

High power factor of 90% minimum.
Electronic driver, operating range 50/60 Hz.
Auto-adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max. Maximum ambient operating temperature from -40F(-40C) to 130F(55C) degrees. Driver comes with dimming compatible 0-10 volts.

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built-in driver surge protection of 2.5kV (min).

Surge Protector

Surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line Ground, Line Neutral and Neutral Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid State Street Lighting Consortium) model specification for LED roadway luminaires electrical immunity requirements for High Test Level 10kV / 10kA.

Driver options

AST: Pre-set driver for progressive start-up of the LED module(s) to optimize energy management and enhance visual comfort at start-up.

CLO: Pre-set driver to manage the lumen depreciation by adjusting the power given to the LEDs offering the same lighting intensity during the entire lifespan of the LED module.

DMG: Dimmable driver 0-10V.

OTL: Pre-set driver to signal end of life of the LED module(s) for better fixture management.

CDMG: Dynadimmer standard dimming functionalities including pre-programmed scenarios to suit many applications and needs from safety to maximum energy savings.

Order Code	Dimming		
	Scenario	Duration	Level
CDMGS25	Safety	4 hours	25%
CDMGS50	Safety	4 hours	50%
CDMGS75	Safety	4 hours	75%
CDMGM25	Median	6 hours	25%
CDMGM50	Median	6 hours	50%
CDMGM75	Median	6 hours	75%
CDMGE25	Economy	8 hours	25%
CDMGE50	Economy	8 hours	50%
CDMGE75	Economy	8 hours	75%

SRD: Sensor Ready Driver including SR communication (used for dimming and other functionalities), 24V auxiliary supply and a logical signal input (LSI) connected to the top NEMA twist lock receptacle.

SRD1: Sensor Ready Driver including SR communication (used for dimming and other functionalities) but with 24V auxiliary supply and a logical signal input (LSI) not connected to the top NEMA twist lock.

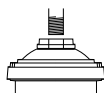
RNS20 Renaissance LED (small)

Urban Luminaire

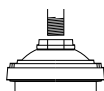
Specifications (continued)

Luminaire adaptor

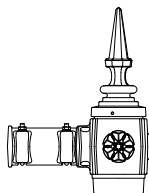
MA1: The luminaire is suspended by means of a mounting adaptor with a 1¼" (32mm) NPT threaded hole accepting a threaded tube from the mounting. Retrofit adaptor for existing mounting.



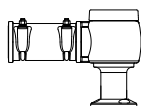
MA2: 1½" (38mm) NPT threaded hole accepting threaded tube from the mounting. Retrofit adaptor for existing mounting.



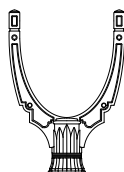
SMA: The luminaire is suspended by means of a decorative side-mounted cast aluminum adaptor. This adaptor accepts tubes from 1⅝" to 2⅝" (41 to 60mm) and is adjustable to more or less 5°. The adaptor features a cast aluminum decorative cover and finial.



SMB: The luminaire is suspended by means of a decorative side-mounted cast aluminum adaptor. This adaptor accepts tubes from 1⅝" to 2⅝" (41 to 60mm) and is adjustable to more or less 5°.

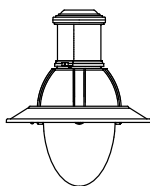


YM: Yoke made of cast 356 aluminum, c/w a fitter to fit over a 4in. (102mm) outside diameter x 4in.(102mm) long tenon, mechanically assembled with 4 set screws 3/8 16 UNC.



Luminaire options

DE1: Decorative deflector



HS: House side shield

RC: Receptacle 3 pins



RCD: Receptacle 5 pins



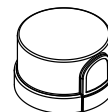
RCD7: Receptacle 7 pins



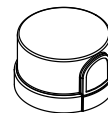
SP2: Integral surge protector

Luminaire accessories

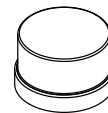
PH8: Photoelectric Cell, Twist-lock Type complete with receptacle. Allows a 90 degree rotation.



PHXL: Extended life photoelectric cell, Twist-lock Type complete with receptacle. Allows a 90 degree rotation.



PH9: Shorting cap, Twist-lock Type complete with receptacle.



RNS20 Renaissance LED (small)

Urban Luminaire

Specifications (continued)

Finish

The Thermosetting powder coating provided meets the color requirements of the AAMA 2604 specification as measured per ASTM D2244. The Thermosetting product is applied at a dry film of 2.5 to 4.0 mils (64–102 microns) on textured finishes, resulting in a durable long lasting finish.

Finish Options Include:

BE2TX: Textured Midnight Blue
BE6TX: Textured Ocean Blue
BE8TX: Textured Royal Blue
BG2TX: Textured Sandstone
BKTX: Textured Black
BRTX: Textured Bronze
GN4TX: Textured Blue Green
GN6TX: Textured Forest Green
GN8TX: Textured Dark Forest Green
GNTX: Textured Green
GR: Gray Sandtex
GY3TX: Textured Medium Grey
NP: Natural Aluminum
RD2TX: Textured Burgundy
RD4TX: Textured Scarlet
TG: Hammer-tone Gold
WHTX: Textured White

Wiring

Gauge (#14) TEW/AWM 1015 or 1230 wires, 6" (152mm) minimum exceeding from luminaire.

Hardware

All exposed screws shall be complete with Ceramic primer-seal base coat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

LED products (manufacturing standard)

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340 5 1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Quality control

Manufactured to ISO 9001 2008 standards and ISO 14001–2004 International Quality Standards Certification.

Vibration resistance

Meets the ANSI C136.31, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications. (Tested for 1.5G over 100 000 cycles)

Certifications and Compliance

UL8750 and UL1598 compliant. ETL and cETL Listed to U.S. and Canadian safety standards for wet locations. In accordance with applicable ANSI C136 standards. Renaissance LED luminaires are DesignLights Consortium qualified.





RSXF2 LED Floodlight



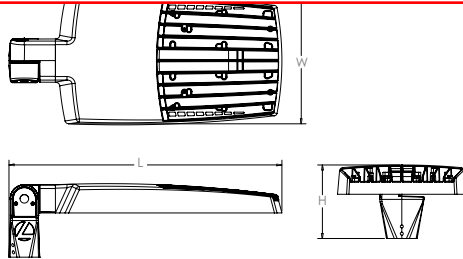
Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Type E1
Lithonia - RSFX2 LED-P1-30K-WFL-MVOLT-IS-DDBXD
Tompkins County LED Street Lighting Upgrade
Project #: 5551

Specifications

EPA (ft²@45°):	0.9 ft² (0.08 m²)
Length:	28.3" (71.9 cm)
Width:	13.4" (34.0 cm)
Height:	3.0" (7.6 cm) Main Body 7.6" (19.3 cm) Arm
Weight (max):	39 lbs (17.7 kg)



The RSXF LED Flood family delivers maximum lumens per watt providing significant energy savings, long life, and outstanding photometric performance at an affordable price. The RSXF2 delivers 11,000 to 31,000 lumens allowing it to replace 250W to 1000W HID floodlights.

The RSXF features an adjustable integral slipfitter that allows the luminaire to be mounted on a 2-3/8" OD tenon. Integral cover/wire box serves as an approved splice compartment allowing for fast, easy mounting and wiring without opening the electrical compartment. A yoke and other mounting configurations are available.

Ordering Information

EXAMPLE: RSXF2 LED P4 40K WFL MVOLT IS DDBXD

RSXF2 LED					
Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSXF2 LED	P1 P2 P3 P4 P5 P6	30K 3000K 40K 4000K 50K 5000K	AWFD Area Wide Forward WFL Wide Flood MFL Medium Flood NFL Narrow Flood SP Spot NSP Narrow Spot	MVOLT (120V-277V) ¹ HVOLT (347V-480V) ² (use specific voltage for options as noted) 120 ³ 277 ³ 208 ³ 347 ³ 240 ³ 480 ³	IS Adjustable slipfitter (fits 2-3/8" OD tenon) ⁴ YKC63 Yoke with 16-3 SO cord, 3ft ⁴ AASP Adjustable tilt arm square pole mounting ⁴ AARP Adjustable tilt arm round pole mounting ⁴ AAWB Adjustable tilt arm with wall bracket ⁴ AAWSC Adjustable tilt arm wall bracket and surface conduit box ⁴

Options		Finish	
Shipped Installed PE Photocontrol, button style ^{5,6} PEX Photocontrol external threaded, adjustable ^{6,7} PER7 Seven-wire twist-lock receptacle only (no controls) ^{8,9,10} CE34 Conduit entry 3/4" NPT (Qty 2) SF Single fuse (120, 277, 347) ³ DF Double fuse (208, 240, 480) ³ SPD20KV 20KV Surge pack (10KV standard) FAO Field adjustable output ^{6,10} DMG 0-10V dimming extend out back of housing for external control (control ordered separate) ^{6,10} DS Dual Switching ^{6,10,11}		Shipped Installed *Standalone and Networked Sensors/Controls (factory default settings, see table page 9) NLTAIR2 nLight AIR generation 2 ^{10,12,13} PIRHN Networked, Bi-Level motion/ambient sensor (for use with NLTAIR2) ^{10,13,14} Shipped Separately (requires some field assembly) FV Full Visor (360° around light aperture) ¹⁵ UBV Upper/bottom visor ¹⁵ BS Bird Spikes ¹⁶ *Note: PIRHN with nLight Air can be used as a standalone or networked solution. Sensor coverage pattern is affected when luminaire is tilted.	
		DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured Dark Bronze DBLBXD Textured Black DNATXD Textured Natural Aluminum DWHGXD Textured White	



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Lithonia RSXF2 Flood LED
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Ordering Information

Accessories

Ordered and shipped separately.

RSXF2FV (FINISH) U	Full visor (specify finish)
RSXF2UBV (FINISH) U	Upper/bottom visor (specify finish)
DLL127F 1.5 IU	Photocell - SSL twist-lock (120-277V) ¹⁷
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) ¹⁷
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) ¹⁷
DSHORT SBK U	Shorting cap ¹⁷

NOTES

- 1 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- 2 HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
- 3 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- 4 Maximum tilt is 90° above horizontal.
- 5 Requires MVOLT or 347V.
- 6 Not available in combination with other light sensing control options (following options cannot be combined: PE, PEX, PER7, FAO, DMG, PIRHN).
- 7 Requires 120V, 208V, 240V, 277V or 347V.
- 8 Twistlock photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included. Dimming leads capped for future use.
- 9 For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
- 10 Two or more of the following options cannot be combined including DMG, DS, PER7, FAO and PIRHN.
- 11 DS only available on performance package P4, P5 and P6.
- 12 Must be ordered with PIRHN.
- 13 Requires MVOLT or HVOLT.
- 14 Must be ordered with NLTAIR2. For additional information on PIRHN visit here.
- 15 It may be ordered as an accessory.
- 16 Must be ordered with fixture for factory pre-drilling.
- 17 Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields



UBV Visor - Top Mounted



UBV Visor - Bottom Mounted

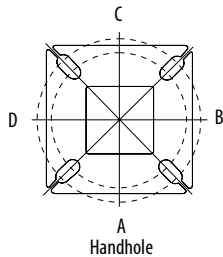


Full Visor - 360°

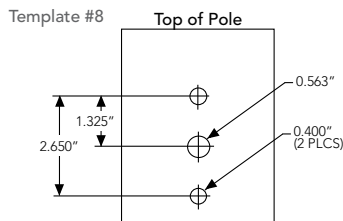
Pole/Mounting Information

Accessories including bullhorns, cross arms and other adapters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit [Accessories](#).

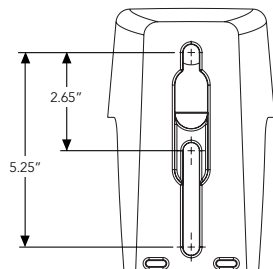
HANDHOLE ORIENTATION



RSX POLE DRILLING



RSXF ADJUSTABLE ARM



Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
2 - 3/8"	AARP	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 320	AS3-5 390	AS3-5 490
2 - 7/8"	AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Drill Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
#8	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
	Drill Nomenclature	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSXF2 - Luminaire EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration		EPA (ft ²)							
		Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side
Mounting Type	Tilt								
IS - Integral Slipfitter YK - Yoke AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06
	10°	0.53	1.06	1.05	1.58	1.37	2.08	1.06	1.59
	20°	0.52	1.02	1.03	1.52	1.33	2.02	1.03	1.55
	30°	0.64	1.11	1.18	1.63	1.45	2.21	1.27	1.91
	40°	0.81	1.21	1.35	1.74	1.65	2.39	1.62	2.43
	45°	0.91	1.25	1.5	1.81	1.75	2.48	1.82	2.73
	50°	1.34	1.83	2.17	2.61	2.56	3.62	2.68	4.02
	60°	2.2	2.97	3.57	4.24	4.17	5.89	4.41	6.61
	70°	2.86	4.13	4.7	5.89	5.71	8.21	5.71	8.57
	80°	3.4	5.13	5.67	7.34	7.09	10.21	6.79	10.19
	90°	3.85	5.96	6.55	8.58	8.31	11.88	7.7	11.56



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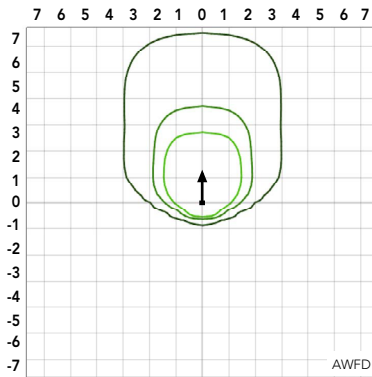
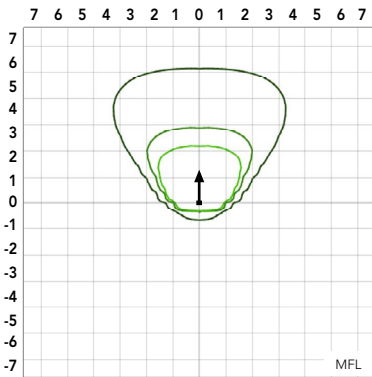
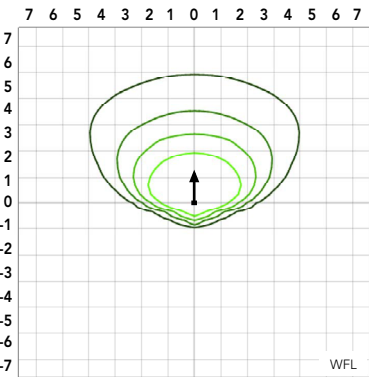
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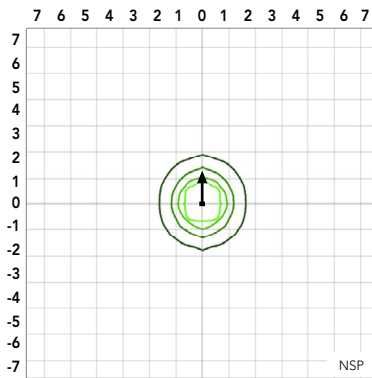
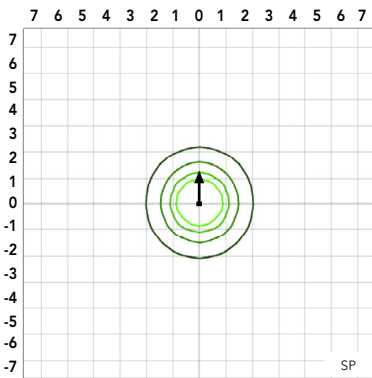
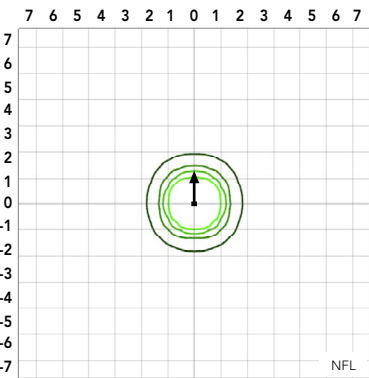
Isofootcandle plots for the RSXF2 LED P6 40K. Distances are in units of mounting height (30').

- LEGEND
- 0.1 fc
 - 0.5 fc
 - 1.0 fc

Luminaires tilted at 45°



Luminaires tilted at 0°



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

Ambient	Ambient	Lumen Multiplier
0°C	32°F	1.05
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97
45°C	113°F	0.96
50°C	122°F	0.95

Electrical Load

Performance Package	System Watts (W)	Current (A)					
		120V	208V	240V	277V	347V	480V
P1	71W	0.59	0.34	0.30	0.26	0.20	0.15
P2	111W	0.93	0.53	0.46	0.40	0.32	0.23
P3	147W	1.23	0.70	0.61	0.53	0.42	0.31
P4	187W	1.55	0.90	0.78	0.68	0.53	0.38
P5	210W	1.75	1.01	0.87	0.76	0.60	0.44
P6	244W	2.03	1.17	1.01	0.88	0.70	0.51

Projected LED Lumen Maintenance

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.97	>0.95	>0.92

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

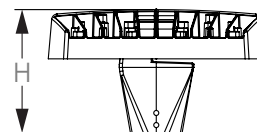
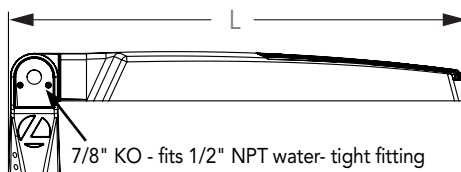
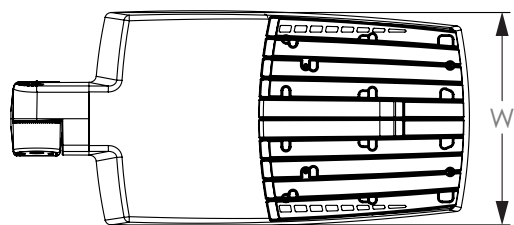
Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Distribution Type	Field Angle		Beam Angle		30K (3000K, 70 CRI)			40K (4000K, 70 CRI)			50K (5000K, 70 CRI)		
			°H	°V	°H	°V	Lumens	LPW	Max CD	Lumens	LPW	Max CD	Lumens	LPW	Max CD
P1	71W	AWFD	119	120	69	41	9,663	136	7,915	10,616	150	8,696	10,616	150	8,696
		WFL	133	129	116	80	9,467	133	4,031	10,401	146	4,428	10,401	146	4,428
		MFL	105	110	91	96	9,873	139	4,482	10,847	153	4,924	10,847	153	4,924
		NFL	78	79	44	45	9,529	134	14,090	10,469	147	15,480	10,469	147	15,480
		SP	48	48	27	27	9,223	130	29,378	10,133	143	32,277	10,133	143	32,277
		NSP	42	44	19	21	9,385	132	49,553	10,311	145	54,443	10,311	145	54,443
P2	111W	AWFD	119	120	69	41	15,094	136	12,364	16,584	149	13,584	16,584	149	13,584
		WFL	133	129	116	80	14,788	133	6,296	16,248	146	6,918	16,248	146	6,918
		MFL	105	110	91	96	15,422	139	7,001	16,944	153	7,692	16,944	153	7,692
		NFL	78	79	44	45	14,885	134	22,010	16,354	147	24,182	16,354	147	24,182
		SP	48	48	27	27	14,407	130	45,891	15,828	143	50,418	15,828	143	50,418
		NSP	42	44	19	21	14,660	132	77,406	16,107	145	85,046	16,107	145	85,046
P3	147W	AWFD	119	120	69	41	19,007	129	15,569	20,883	142	17,106	20,883	142	17,106
		WFL	133	129	116	80	18,622	127	7,928	20,460	139	8,711	20,460	139	8,711
		MFL	105	110	91	96	19,420	132	8,816	21,337	145	9,687	21,337	145	9,687
		NFL	78	79	44	45	18,744	128	27,716	20,594	140	30,451	20,594	140	30,451
		SP	48	48	27	27	18,142	123	57,788	19,932	136	63,490	19,932	136	63,490
		NSP	42	44	19	21	18,461	126	97,475	20,282	138	107,090	20,282	138	107,090
P4	187W	AWFD	119	120	69	41	22,974	123	18,819	25,241	135	20,676	25,241	135	20,676
		WFL	133	129	116	80	22,509	120	9,583	24,730	132	10,529	24,730	132	10,529
		MFL	105	110	91	96	23,474	126	10,657	25,790	138	11,708	25,790	138	11,708
		NFL	78	79	44	45	22,656	121	33,500	24,892	133	36,807	24,892	133	36,807
		SP	48	48	27	27	21,928	117	69,848	24,092	129	76,741	24,092	129	76,741
		NSP	42	44	19	21	22,314	119	117,820	24,516	131	129,446	24,516	131	129,446
P5	210W	AWFD	119	120	69	41	24,722	118	20,251	26,786	128	21,941	26,786	128	21,941
		WFL	133	129	116	80	24,222	115	10,312	26,612	127	11,330	26,612	127	11,330
		MFL	105	110	91	96	25,260	120	11,468	27,752	132	12,599	27,752	132	12,599
		NFL	78	79	44	45	24,380	116	36,050	26,786	128	39,607	26,786	128	39,607
		SP	48	48	27	27	23,597	112	75,164	25,925	123	82,580	25,925	123	82,580
		NSP	42	44	19	21	24,012	114	126,785	26,381	126	139,294	26,381	126	139,294
P6	244W	AWFD	119	120	69	41	27,637	113	22,638	30,364	124	24,872	30,364	124	24,872
		WFL	133	129	116	80	27,077	111	11,528	29,749	122	12,666	29,749	122	12,666
		MFL	105	110	91	96	28,237	116	12,819	31,024	127	14,085	31,024	127	14,085
		NFL	78	79	44	45	27,254	112	40,299	29,944	123	44,277	29,944	123	44,277
		SP	48	48	27	27	26,378	108	84,023	28,981	119	92,314	28,981	119	92,314
		NSP	42	44	19	21	26,842	110	141,728	29,491	121	155,715	29,491	121	155,715

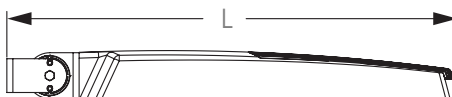
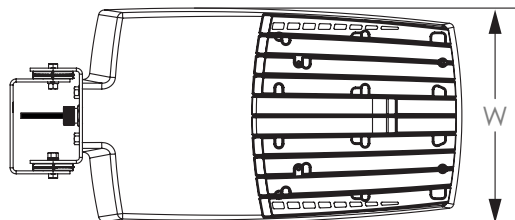
Dimensions

RSXF2 with Adjustable Slipfitter (IS)



Length: 28.3" (71.9 cm)
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 7.6" (19.3 cm) Arm

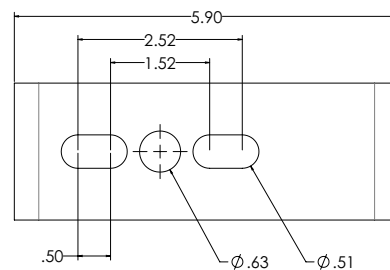
RSXF2 with Yoke (YKC63)



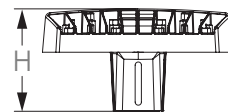
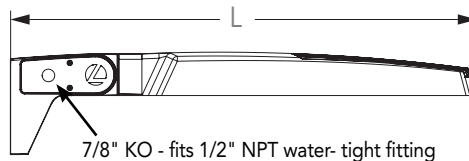
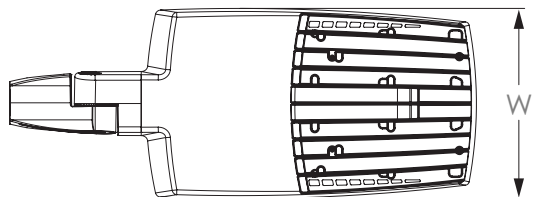
Length: 28.3" (71.9 cm)
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body

Yoke (YK) Mounting Detail

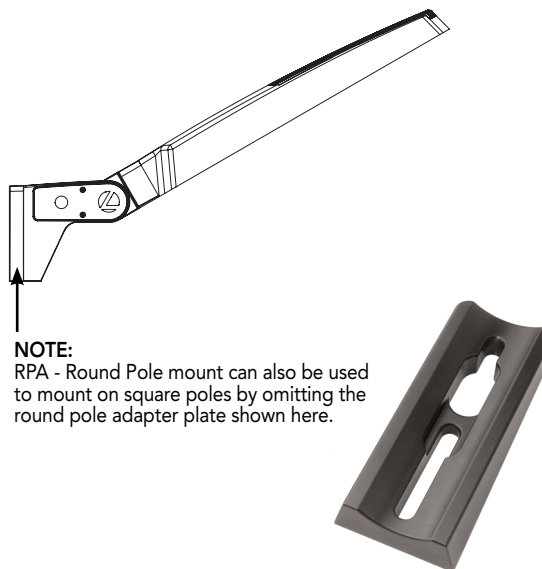
Note: Mounting hole pattern is in-line with center of luminaire



RSXF2 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)



Length: 32.8" (83.3 cm) **AASP**
 33.8" (85.9 cm) **AARP**
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 7.2" (18.2 cm) Arm



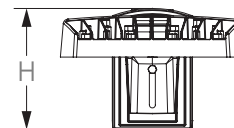
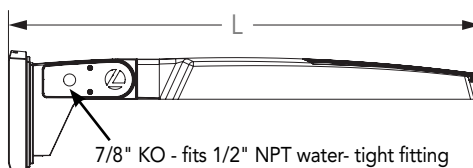
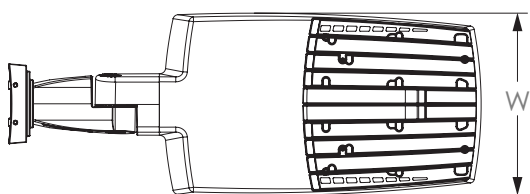
NOTE:
 RPA - Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

Notes

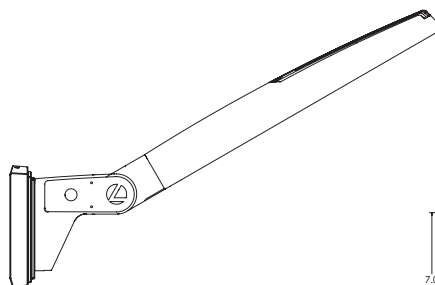
AASP: Requires 3.0" min. square pole for 1 at 90°. Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°.

AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

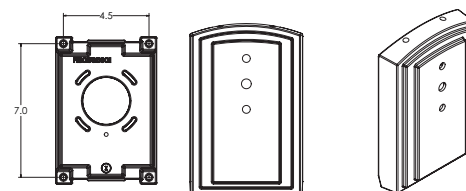
RSXF2 with Adjustable Tilt Arm with Wall Bracket (AAWB)



Length: 34.7" (88.1 cm)
 Width: 13.4" (34.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 8.9" (22.6 cm) Arm

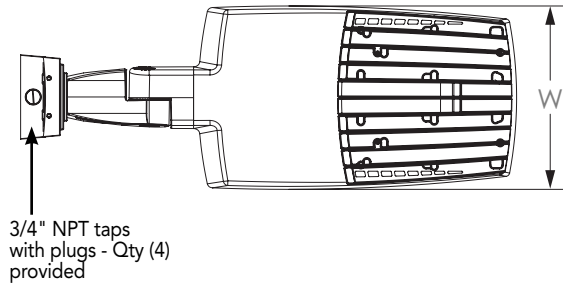


Wall Bracket (WBA) Mounting Detail

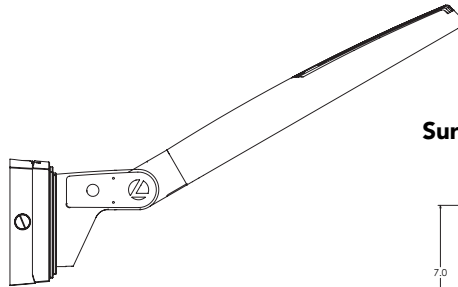
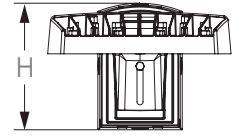
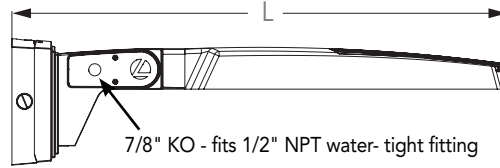


Dimensions

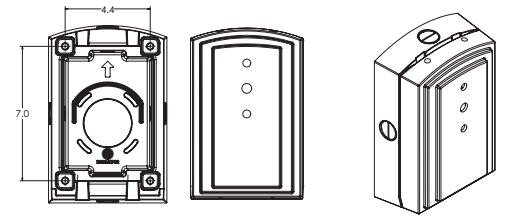
RSXF2 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)



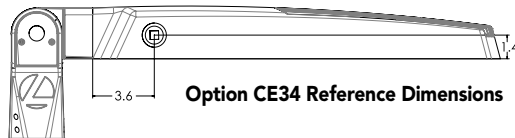
Length: 36.2" (91.9 cm)
 Width: 13.4" (4.0 cm)
 Height: 3.0" (7.6 cm) Main Body
 9.2" (23.4 cm) Arm



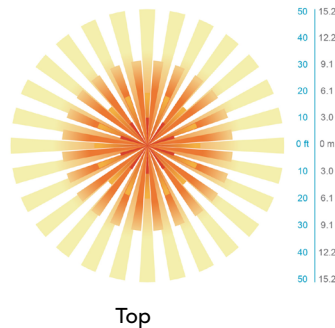
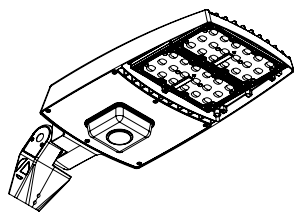
Surface Conduit Box (SCB) Mounting Detail



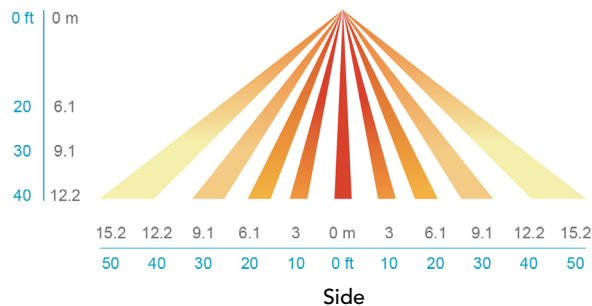
Additional Reference Drawings



PIRHN nLight Sensor Coverage Pattern



Top



Side

Motion Sensor Default Settings - Option PIRHN

Option	Dimmed State (unoccupied)	High Level (when occupied)	Photocell Operation	Dwell Time (occupancy time delay)	Ramp-up Time (from unoccupied to occupied)	Ramp-down Time (from occupied to unoccupied)
PIRHN	Approx. 30% Output	100% Output	Enabled @ 1.5FC	7.5 minutes	3 seconds	5 minutes

*Note: PIRHN default settings including photocell set-point, high/low dim rates, and occupancy sensor time delay are all configurable using the Clarity Pro App.

FEATURES & SPECIFICATIONS

INTENDED USE

The RSX LED flood family is designed to provide a long-lasting, energy-efficient solution for the one-for-one replacement of existing metal halide or high pressure sodium lighting. The RSXF1 delivers 11,000 to 31,000 lumens and is ideal for replacing 250W to 1000W HID floodlights in parking lots and other area lighting applications.

CONSTRUCTION

The RSX LED flood luminaire features a rugged die-cast aluminum main body that uses heat-dissipating fins and flow-through venting to provide optimal thermal management that both enhances LED performance and extends component life. Integral adjustable slipfitter mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box for easy installation. The light engines and housing are sealed against moisture and environmental contaminants to IP66. The low-profile design results in a low EPA, allowing pole optimization. Vibration rated per ANSI 136.31: RSXF and mountings rated for 3G vibration include IS, YK, AASP and AARP. RSXF and mountings rated for 1.5G vibration include AAWB and AAWSC.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures superior adhesion as well as a minimum finish thickness of 3 mils. The result is a high-quality finish that is warranted not to crack or peel.

OPTICS

Precision acrylic refractive lenses are engineered for superior application efficiency, distributing the light to where it is needed most. Available in short and wide pattern distributions including Wide Flood, Medium Flood, Narrow Flood, Spot, Narrow Spot and an Area Wide/Forward distribution pattern featuring a strong forward throw reach that is ideal for lighting large areas from the perimeter.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted on metal-core circuit boards and aluminum heat sinks to maximize heat dissipation. Light engines are IP66 rated. LED lumen maintenance is >L92/100,000 hours. CCT's of 3000K, 4000K and 5000K (minimum 70 CRI) are available. Class 1 electronic drivers ensure system power factor >90% and THD <20%. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The RSX LED flood luminaire has a wide assortment of control options. Dusk to dawn controls include MVOLT and 347V button-type photocells and NEMA twist-lock photocell receptacles.

nLIGHT AIR CONTROLS

The RSXF LED flood luminaire is also available with nLight® AIR which can be used for simple motion occupancy dimming or for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing with photocontrol functionality and is suitable for mounting heights up to 40 feet. No commissioning is required when using factory default settings that provide basic stand-alone motion occupancy dimming that is switched on and off with a built-in photocell. See chart above for motion sensor default out-of-box settings. For more advanced wireless functionality, such as group dimming, nLight AIR can be commissioned using a smartphone and the easy-to-use CLAIRITY app. nLight AIR equipped luminaires can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclipse. Additional information about nLight Air can be found [here](#).

INSTALLATION

The integral "IS" mount offers an adjustable slipfitter that mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box and offers easy installation, wiring and precision distribution pattern aiming. A steel yoke mount is also available and includes a water-tight cord grip and cord. Additional mountings are available including an adjustable tilt arm for direct-to-pole and wall and a surface conduit box for wall mount applications. All mountings are adjustable in 5° increments. RSXF is not rated for tilting above 90° or mounting within 4 feet of ground. Can be tilted up to 90° above horizontal.

LISTINGS

CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.



COMMERCIAL OUTDOOR

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Lithonia RSXF2 Flood LED
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RSXF1 LED Floodlight



Catalog Number
Notes
Type

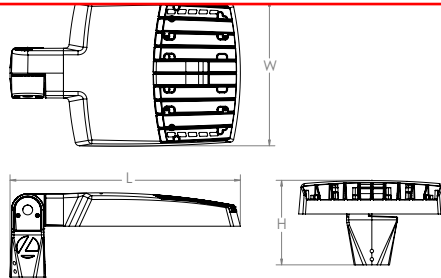
Click the Tab key or mouse over the page to see all interactive elements.

Type E1
Lithonia - RSXF1 LED-P1-30K-WFL-MVOLT-IS-DDBXD

Tompkins County LED Street Lighting Upgrade
Project #: 5551

Specifications

EPA (ft²@45°):	2.1 ft² (0.2 m²)
Length:	20.7" (52.6 cm)
Width:	13.3" (33.8 cm)
Height:	3.0" (7.6 cm) Main Body 7.6" (19.3 cm) Arm
Weight (max):	31 lbs (14.1 kg)



Production

The new RSXF LED Flood family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSXF1 delivers 7,000 to 17,000 lumens allowing it to replace 70W to 400W HID floodlights.

The RSXF features an adjustable integral slipfitter that allows the luminaire to be mounted on a 2-3/8" OD tenon. Integral cover/wire box serves as an approved splice compartment allowing for fast, easy mounting and wiring without opening the electrical compartment. A yoke and other mounting configurations are available.

Ordering Information

EXAMPLE: RSXF1 LED P4 40K WFL MVOLT IS DDBXD

RSXF1 LED					
Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSXF1 LED	P1 P2 P3 P4	30K 3000K 40K 4000K 50K 5000K	AWFD Area Wide Forward WFL Wide Flood MFL Medium Flood NFL Narrow Flood SP Spot NSP Narrow Spot	MVOLT (120V-277V) ¹ HVOLT (347V-480V) ² (use specific voltage for options as noted) 120 ³ 277 ³ 208 ³ 347 ³ 240 ³ 480 ³	IS Adjustable slipfitter (fits 2-3/8" OD tenon) ⁴ YKC62 Yoke with 16-3 SO cord, 2ft ⁴ AASP Adjustable tilt arm square pole mounting ⁴ AARP Adjustable tilt arm round pole mounting ⁴ AAWB Adjustable tilt arm with wall bracket ⁴ AAWSC Adjustable tilt arm wall bracket and surface conduit box ⁴

Options	Finish
Shipped Installed PE Photocontrol, button style ^{5,7} PEX Photocontrol external threaded, adjustable ^{6,7} PER7 Seven-wire twist-lock receptacle only (no controls) ^{7,8,9,10} CE34 Conduit entry 3/4" NPT (Qty 2) SF Single fuse (120, 277, 347) ³ DF Double fuse (208, 240, 480) ³ SPD20KV 20KV Surge pack (10KV standard) FAO Field adjustable output ^{7,10} DMG 0-10V dimming extend out back of housing for external control (control ordered separate) ^{7,10} Shipped Separately (requires some field assembly) FV Full Visor (360° around light aperture) UBV Upper/bottom visor BS Bird Spikes ¹¹	Shipped Installed *Standalone and Networked Sensors/Controls (factory default settings, see table page 5) NLTAIR2 nLight AIR generation 2 ^{10,12,13} PIRHN Networked, Bi-Level motion/ambient sensor (for use with NLTAIR2) ^{7,10,12,14} *Note: PIRHN with nLight Air can be used as a standalone or networked solution. Sensor coverage pattern is affected when luminaire is tilted.
	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured Dark Bronze DBLBXD Textured Black DNATXD Textured Natural Aluminum DWHGXD Textured White



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Lithonia RSXF1 Flood LED
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Ordering Information

Accessories

Ordered and shipped separately.

RSXF1FV U	Full visor (specify finish)
RSXF1UBV U	Upper/bottom visor (specify finish)
RSXWBA U	RSX WBA wall bracket (specify finish)
RSXSCB U	RSX Surface conduit box (specify finish, for use with WBA, WBA not included)
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) ¹⁵
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) ¹⁵
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) ¹⁵
DSHORT SBK U	Shorting cap ¹⁵

NOTES

- 1 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- 2 HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
- 3 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- 4 Maximum tilt is 90° above horizontal.
- 5 Requires MOVLT or 347V.
- 6 Requires 120V, 208V, 240V, 277V or 347V.
- 7 Not available in combination with other light sensing control options (following options cannot be combined: PE, PEX, PER7, FAO, DMG, PIRHN).
- 8 Twistlock photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included. Dimming leads capped for future use.

- 9 For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
- 10 Two or more of the following options cannot be combined including DMG, PER7, FAO and PIRHN.
- 11 Must be ordered with fixture for factory pre-drilling.
- 12 Must be ordered with PIRHN.
- 13 Requires MVOLT or HVOLT.
- 14 Must be ordered with NLTAIR2. For additional information on PIRHN visit [here](#).
- 15 Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields



UBV Visor - Top Mounted



UBV Visor - Bottom Mounted

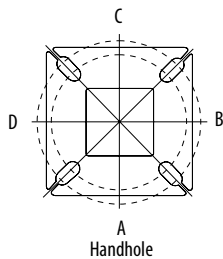


Full Visor - 360°

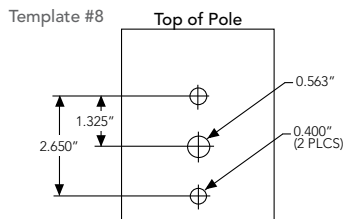
Pole/Mounting Information

Accessories including bullhorns, cross arms and other adapters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit [Accessories](#).

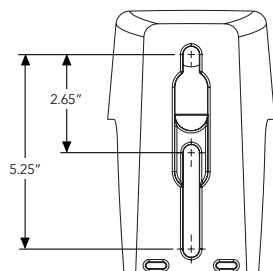
HANDHOLE ORIENTATION



RSX POLE DRILLING



RSXF ADJUSTABLE ARM



Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
2 - 3/8"	AARP	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 320	AS3-5 390	AS3-5 490
2 - 7/8"	AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Drill Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	Drill Nomenclature	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSXF1 - Luminaire EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration		EPA (ft ²)							
		Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side
Mounting Type	Tilt								
IS - Integral Slipfitter YK - Yoke AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.57	1.03	1.05	1.52	1.36	2.03	1.31	1.7
	10°	0.68	1.34	1.33	2	1.74	2.64	1.35	2.03
	20°	0.87	1.71	1.73	2.56	2.26	3.42	1.75	2.62
	30°	1.24	2.19	2.3	3.21	2.87	4.36	2.49	3.73
	40°	1.81	2.68	2.98	3.85	3.68	5.3	3.62	5.43
	45°	2.11	2.92	3.44	4.2	4.08	5.77	4.22	6.33
	50°	2.31	3.17	3.72	4.52	4.44	6.26	4.62	6.94
	60°	2.71	3.66	4.38	5.21	5.15	7.24	5.43	8.14
	70°	2.78	3.98	4.54	5.67	5.47	7.91	5.52	8.27
	80°	2.76	4.18	4.62	5.97	5.76	8.31	5.51	8.27
	90°	2.73	4.25	4.64	6.11	5.91	8.47	5.45	8.18



COMMERCIAL OUTDOOR

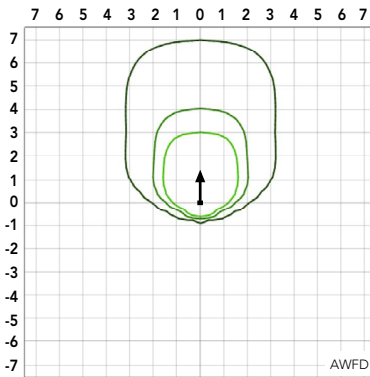
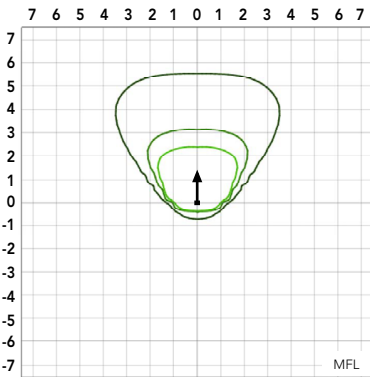
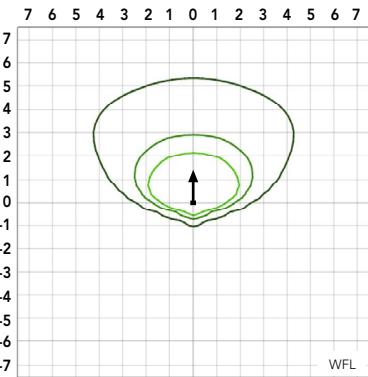
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Lithonia RSXF1 Flood LED
Rev. 02/17/20
Page 2 of 8

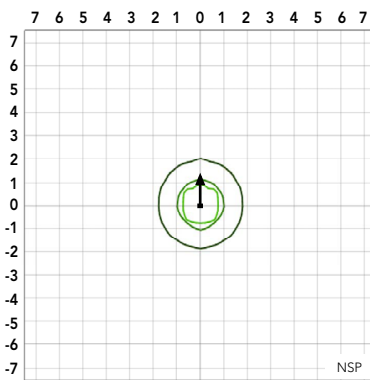
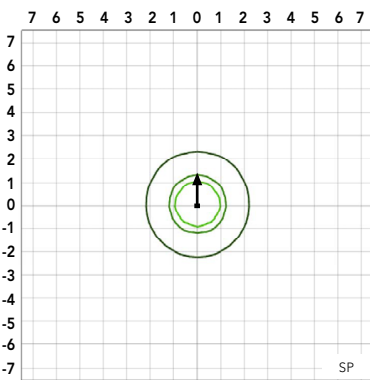
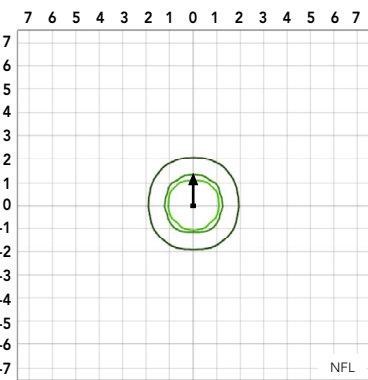
Isofootcandle plots for the RSXF1 LED P4 40K. Distances are in units of mounting height (20').

- LEGEND
- 0.1 fc
 - 0.5 fc
 - 1.0 fc

Luminaires tilted at 45°



Luminaires tilted at 0°



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

Ambient	Ambient	Lumen Multiplier
0°C	32°F	1.05
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97
45°C	113°F	0.96
50°C	122°F	0.95

Electrical Load

Performance Package	System Watts (W)	Current (A)					
		120V	208V	240V	277V	347V	480V
P1	51W	0.42	0.25	0.21	0.19	0.14	0.11
P2	72W	0.60	0.35	0.30	0.26	0.21	0.15
P3	109W	0.91	0.52	0.45	0.39	0.31	0.23
P4	133W	1.11	0.64	0.55	0.48	0.38	0.27

Projected LED Lumen Maintenance

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.97	>0.95	>0.92

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

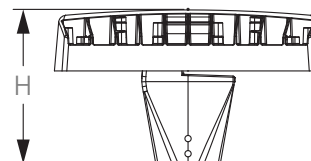
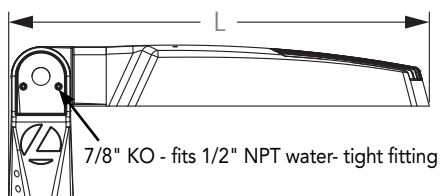
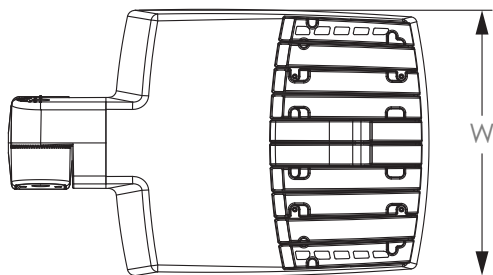
Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Distribution Type	Field Angle		Beam Angle		30K (3000K, 70 CRI)			40K (4000K, 70 CRI)			50K (5000K, 70 CRI)		
			°H	°V	°H	°V	Lumens	LPW	Max CD	Lumens	LPW	Max CD	Lumens	LPW	Max CD
P1	51W	AWFD	119	120	69	41	6,660	131	5,455	7,318	143	5,994	7,318	143	5,994
		WFL	133	129	116	80	6,525	128	2,778	7,169	141	3,052	7,169	141	3,052
		MFL	105	110	91	96	6,805	133	3,089	7,477	147	3,394	7,477	147	3,394
		NFL	78	79	44	45	6,568	129	9,712	7,216	141	10,670	7,216	141	10,670
		SP	48	48	27	27	6,357	125	20,249	6,984	137	22,246	6,984	137	22,246
		NSP	42	44	19	21	6,469	127	34,157	7,107	139	37,525	7,107	139	37,525
P2	72W	AWFD	119	120	69	41	9,235	128	7,565	10,146	141	8,311	10,146	141	8,311
		WFL	133	129	116	80	9,048	126	3,852	9,941	138	4,232	9,941	138	4,232
		MFL	105	110	91	96	9,436	131	4,284	10,367	144	4,707	10,367	144	4,707
		NFL	78	79	44	45	9,107	126	13,466	10,006	139	14,795	10,006	139	14,795
		SP	48	48	27	27	8,814	122	28,076	9,684	135	30,847	9,684	135	30,847
		NSP	42	44	19	21	8,969	125	47,357	9,854	137	52,030	9,854	137	52,030
P3	109W	AWFD	119	120	69	41	13,149	121	10,771	14,447	133	11,834	14,447	133	11,834
		WFL	133	129	116	80	12,883	118	5,485	14,154	130	6,026	14,154	130	6,026
		MFL	105	110	91	96	13,435	123	6,099	14,761	135	6,701	14,761	135	6,701
		NFL	78	79	44	45	12,967	119	19,174	14,247	131	21,066	14,247	131	21,066
		SP	48	48	27	27	12,550	115	39,976	13,789	127	43,923	13,789	127	43,923
		NSP	42	44	19	21	12,771	117	67,432	14,031	129	74,085	14,031	129	74,085
P4	133W	AWFD	119	120	69	41	15,279	115	12,515	16,786	126	13,750	16,786	126	13,750
		WFL	133	129	116	80	14,969	113	6,373	16,446	124	7,002	16,446	124	7,002
		MFL	105	110	91	96	15,611	117	7,087	17,151	129	7,786	17,151	129	7,786
		NFL	78	79	44	45	15,067	113	22,279	16,554	124	24,478	16,554	124	24,478
		SP	48	48	27	27	14,583	110	46,452	16,022	120	51,036	16,022	120	51,036
		NSP	42	44	19	21	14,839	112	78,351	16,304	123	86,086	16,304	123	86,086

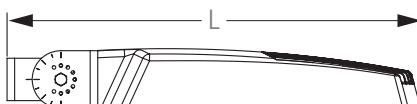
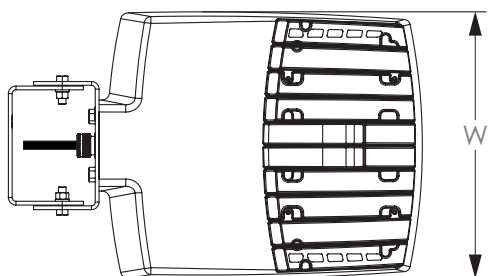
Dimensions

RSXF1 with Adjustable Slipfitter (IS)



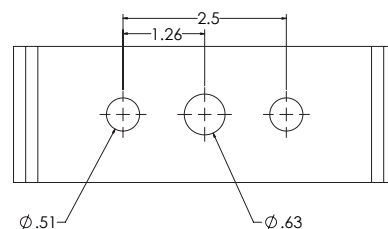
Length: 20.7" (52.7 cm)
 Width: 13.3" (33.8 cm)
 Height: 3.0" (7.6 cm) Main Body
 7.6" (19.3 cm) Arm

RSXF1 with Yoke (YKC62)

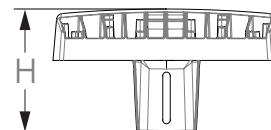
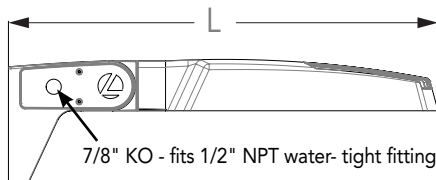
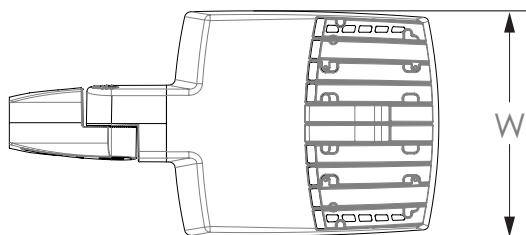


Length: 20.5" (52.1 cm)
 Width: 13.3" (33.8 cm)
 Height: 3.0" (7.6 cm) Main Body

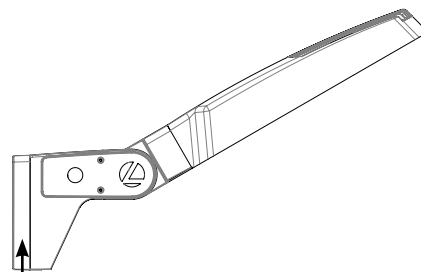
Yoke (YK) Mounting Detail



RSXF1 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)



Length: 25.3" (65.3 cm) **AASP**
 26.3" (66.8 cm) **AARP**
 Width: 13.3" (33.8 cm)
 Height: 3.0" (7.6 cm) Main Body
 7.2" (18.2 cm) Arm



NOTE:
 RPA - Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

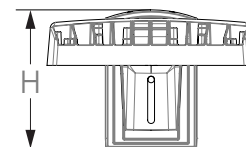
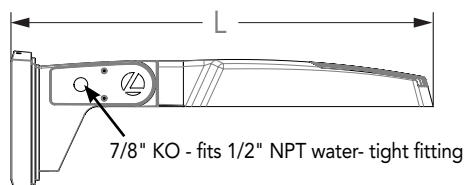
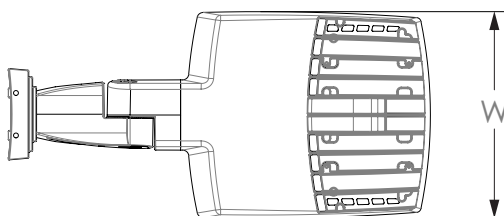


Notes

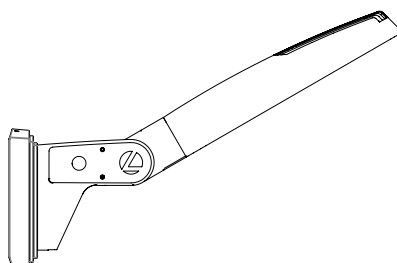
AASP: Requires 3.0" min. square pole for 1 at 90°. Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°.

AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

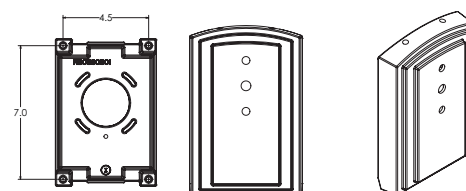
RSXF1 with Adjustable Tilt Arm with Wall Bracket (AAWB)



Length: 27.1" (68.8 cm)
 Width: 13.3" (33.8 cm)
 Height: 3.0" (7.6 cm) Main Body
 8.9" (22.6 cm) Arm

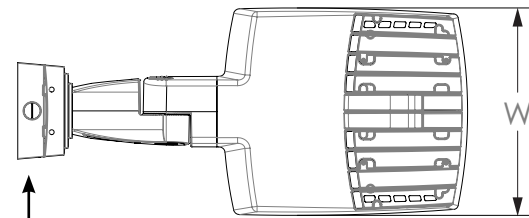


Wall Bracket (WBA) Mounting Detail



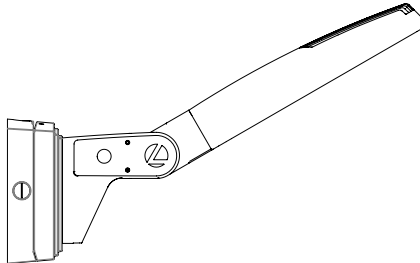
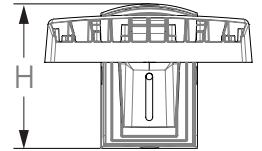
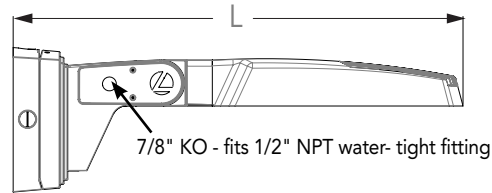
Dimensions

RSXF1 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)

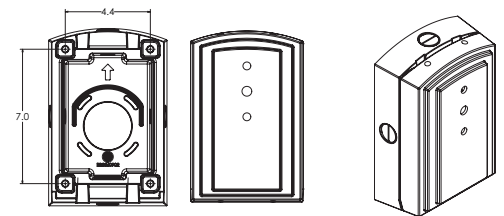


3/4" NPT taps
with plugs - Qty (4)
provided

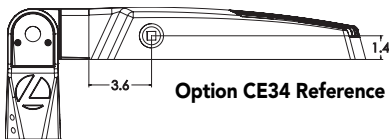
Length: 28.8" (73.2 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm



Surface Conduit Box (SCB) Mounting Detail



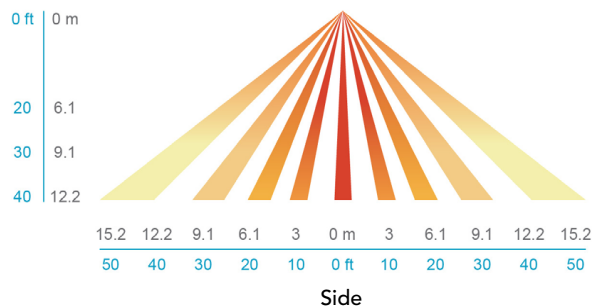
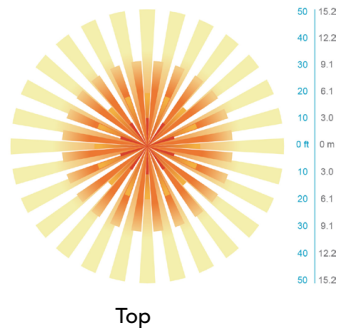
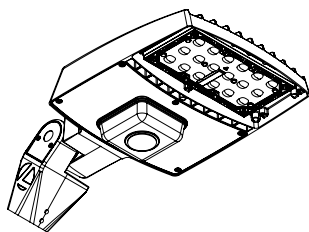
Additional Reference Drawings



Option CE34 Reference Dimensions

PIRHN nLight Sensor Coverage Pattern

nLight PIRHN



Motion Sensor Default Settings - Option PIRHN

Option	Dimmed State (unoccupied)	High Level (when occupied)	Photocell Operation	Dwell Time (occupancy time delay)	Ramp-up Time (from unoccupied to occupied)	Ramp-down Time (from occupied to unoccupied)
PIRHN	Approx. 30% Output	100% Output	Enabled @ 1.5FC	7.5 minutes	3 seconds	5 minutes

*Note: PIRHN default settings including photocell set-point, high/low dim rates, and occupancy sensor time delay are all configurable using the Clarity Pro App.

FEATURES & SPECIFICATIONS

INTENDED USE

The RSX LED flood family is designed to provide a long-lasting, energy-efficient solution for the one-for-one replacement of existing metal halide or high pressure sodium lighting. The RSXF1 delivers 7,000 to 17,000 lumens and is ideal for replacing 70W to 400W HID floodlights in parking lots and other area lighting applications.

CONSTRUCTION

The RSX LED flood luminaire features a rugged die-cast aluminum main body that uses heat-dissipating fins and flow-through venting to provide optimal thermal management that both enhances LED performance and extends component life. Integral adjustable slipfitter mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box for easy installation. The light engines and housing are sealed against moisture and environmental contaminants to IP66. The low-profile design results in a low EPA, allowing pole optimization. Vibration rated per ANSI 136.31: RSXF and mountings rated for 3G vibration include IS, YK, AASP and AARP. RSXF and mountings rated for 1.5G vibration include AAWB and AAWSC.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures superior adhesion as well as a minimum finish thickness of 3 mils. The result is a high-quality finish that is warrantied not to crack or peel.

OPTICS

Precision acrylic refractive lenses are engineered for superior application efficiency, distributing the light to where it is needed most. Available in short and wide pattern distributions including Wide Flood, Medium Flood, Narrow Flood, Spot, Narrow Spot and an Area Wide/Forward distribution pattern featuring a strong forward throw reach that is ideal for lighting large areas from the perimeter.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted on metal-core circuit boards and aluminum heat sinks to maximize heat dissipation. Light engines are IP66 rated. LED lumen maintenance is >L92/100,000 hours. CCT's of 3000K, 4000K and 5000K (minimum 70 CRI) are available. Class 1 electronic drivers ensure system power factor >90% and THD <20%. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The RSX LED flood luminaire has a wide assortment of control options. Dusk to dawn controls include MVOLT and 347V button-type photocells and NEMA twist-lock photocell receptacles.

nLIGHT AIR CONTROLS

The RSXF LED flood luminaire is also available with nLight® AIR which can be used for simple motion occupancy dimming or for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing with photocontrol functionality and is suitable for mounting heights up to 40 feet. No commissioning is required when using factory default settings that provide basic stand-alone motion occupancy dimming that is switched on and off with a built-in photocell. See chart above for motion sensor default out-of-box settings. For more advanced wireless functionality, such as group dimming, nLight AIR can be commissioned using a smartphone and the easy-to-use CLAIRITY app. nLight AIR equipped luminaires can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclipse. Additional information about nLight Air can be found [here](#).

INSTALLATION

The integral "IS" mount offers an adjustable slipfitter that mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box and offers easy installation, wiring and precision distribution pattern aiming. A steel yoke mount is also available and includes a water-tight cord grip and cord. Additional mountings are available including an adjustable tilt arm for direct-to-pole and wall and a surface conduit box for wall mount applications. All mountings are adjustable in 5° increments. RSXF is not rated for tilting above 90° or mounting within 4 feet of ground. Can be tilted up to 90° above horizontal.

LISTINGS

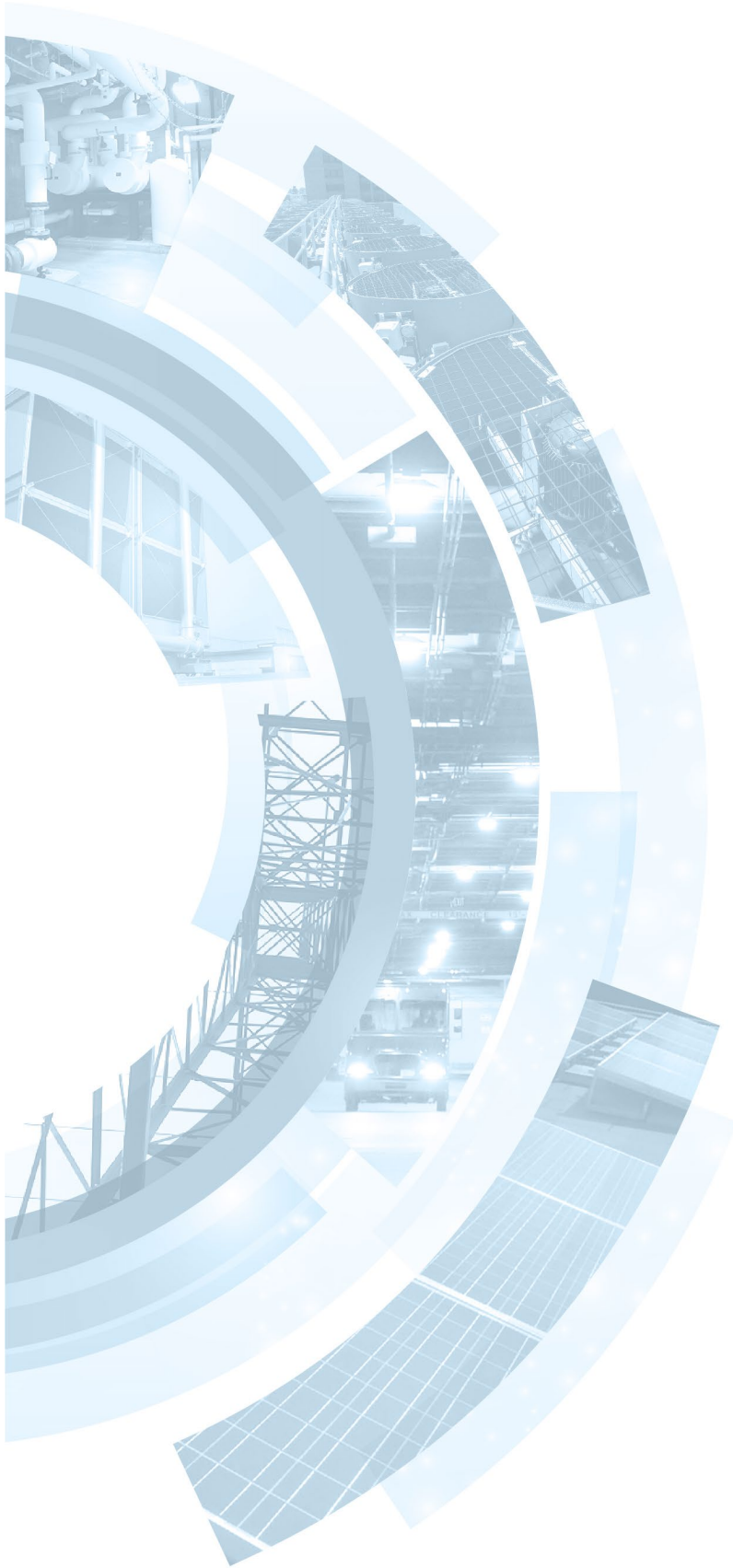
CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

J.5 – RP-08-14 Annex C & E: Glossary & Classification



Note that while a 20-year old may find a 3000 cd/m² light source acceptable, a 50-year old person would judge the light source as producing excessive discomfort.⁵²

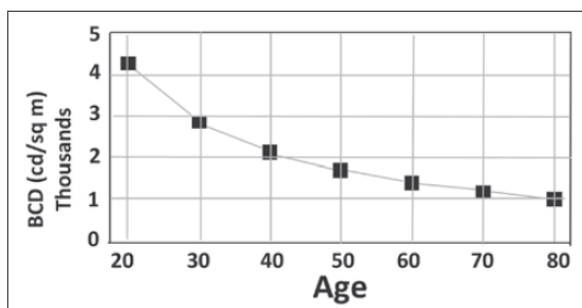


Figure B3: Border between comfort and discomfort versus age

ANNEX C - GLOSSARY

(This Annex is not part of *ANSI/IES RP-8-14 American National Standard Practice for Roadway*, but is included for informational purposes only.)

(Other definitions can be found in *ANSI/IES RP-16-10 Nomenclature and Definitions for Illuminating Engineering*.)

accommodation the process by which the eye changes focus from one distance to another.

adaptation the process by which the visual system becomes accustomed to more or less light or of a different color than it was exposed to during an immediately preceding period. It results in a change in the sensitivity of the eye to light.

arrangement the repeating pattern of luminaires on a roadway. Usually described as opposite, staggered, one-side, center-suspended, or median mounted (see **Figure C1**).

ballast a device used with an electric-discharge lamp to obtain the necessary circuit conditions (voltage, current and waveform) for starting and operating.

beacon lighting a single luminaire that will identify the presence of an intersection or an interchange or potential conflict with other traffic and physical features and will serve as a warning or marker.

bifurcation area the triangular shaped area between two diverging lanes, beyond the point of physical separation of one lane from the other. This area is immediately beyond the decision point where a driver must commit to one lane or the other, and lies in the direct line of travel of an over-running vehicle.

bidirectional reflectance-distribution function (BRDF) the ratio of the differential luminance of a ray reflected in a given direction to the differential luminous flux density incident from a given direction of incidence, which produces it.

bikeway any road, street, path, or way that in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

bracket (mast arm) an attachment, to a lamp post or pole, to which a luminaire is attached.

brightness see **luminance** and **subjective brightness**.

candela, cd the SI unit of luminous intensity. One candela is one lumen per steradian. Formerly candle. (See **Figure C2**.)

candela per square meter, Cd/m² the SI unit of luminance equal to the uniform luminance of a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per square meter or the average luminance of any surface emitting or reflecting light at that rate.

candlepower, cp luminous intensity expressed in candelas. (It is no indication of the total lumen output)

central (foveal) vision the seeing of objects in the central or foveal part of the visual field, approximately two degrees in diameter. It permits seeing much finer detail than does peripheral vision.

contrast sensitivity the ability to detect the presence of luminance differences. Quantitatively, it is equal to the reciprocal of the contrast threshold.

contrast see **luminance contrast**.

contrast threshold the minimal perceptible contrast for a given state of adaptation of the eye. It also is defined as the luminance contrast detectable during some specific fraction of the times it is presented to an observer, usually 50 percent.

Conflict A conflict occurs whenever the paths followed by vehicles diverge, merge or cross

Conflict Area Is an area of a roadway where the motorist's special attention is required in order to interpret the functional features (e.g., bullnose) and / or activities (e.g., pedestrians, turning vehicles, railroad grade crossing) of the roadway, in order to make a decision on their driving routine. It is that area which encompasses all of the conflict points.

Conflict Points Points at which conflicts can occur.

Continuous Lighting A fixed overhead lighting system designed to provide a specific level of illuminance, luminance and uniformity of light on the roadway throughout a highway complex.

crosswalk see **pedestrian crosswalk**.

diffuse reflectance the ratio of the flux leaving a surface or medium by diffuse reflection to the incident flux.

directional reflectance the reflectance in a given direction from an incident ray reaching the surface or medium from a given direction (see **bidirectional reflectance-distribution function**).

disability glare glare resulting in reduced visual performance and visibility. It often is accompanied by discomfort. See veiling luminance.

discomfort glare glare producing discomfort. It does not necessarily interfere with visual performance or visibility.

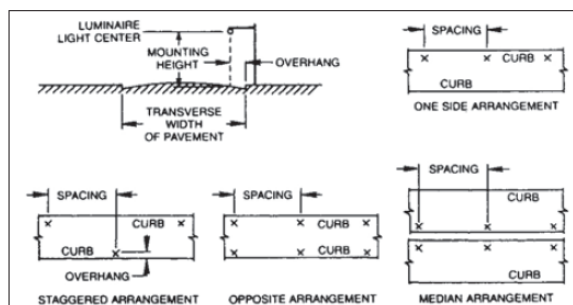


Figure C1. Terminology with respect to luminaire arrangement and spacing.

Entrance Ramp Conflict Area That area of an entrance ramp from the bullnose (covering both the ramp lane(s) and the right through lane) to the end of the ramp taper.

Exit Ramp Conflict Area That area of an exit ramp and the right through lane from the beginning point of the bifurcation area (neutral area) to the end of the gore area and extended 15 to 40 meters- dependent on the design speed for both the ramp lane(s) and the right through lane.

footcandle, fc the unit of illuminance when the foot is taken as the unit of length. It is the illuminance on a surface one square foot in area on which there is a uniformly distributed flux of one lumen, or the illuminance produced on a surface all points of which are at a distance of one foot from a directionally uniform point source of one candela.

glare the sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort, or loss in visual performance and visibility. See disability glare, discomfort glare.

high mast lighting illumination of a large area by means of a group of luminaires which are designed to be mounted in fixed orientation at the top of a high support or pole (generally 20 meters or higher).

illuminance, E the density of the luminous flux incident on a surface; it is the quotient of the luminous flux by the area of the surface when the latter is uniformly illuminated.

illuminance (lux or footcandle) meter an instrument for measuring illuminance on a plane. Instruments which accurately respond to more than one spectral distribution (color) are color corrected. Instruments which accurately respond to more than one spatial distribution of incident flux are cosine corrected. The instrument is comprised of some form of photo-detector with or without a filter, driving a digital or analog readout through appropriate circuitry.

intensity a shortening of the terms luminous intensity and radiant intensity.

Intersection the general area where two or more roadways (highways) join or cross, including the roadway and roadside facilities for traffic movement within it.

Intersection Conflict Area That area of an intersection that is extended to cover the conflict area

Lambertian surface a surface that emits or reflects light in accordance with Lambert's cosine law. A Lambertian surface has the same luminance regardless of viewing angle.

lamp a generic term for an artificial source of light.

lamp life the average life of a lamp defined as the total operating hours at which 50 percent of any group of lamps is still operating.

lamp lumen depreciation factor, LLD the multiplier to be used in calculations to relate the initial rated output of light sources to the anticipated minimum output based on the relamping program to be used.

lamp post a support or pole provided with the necessary internal attachments for wiring and the external attachments for the bracket and/or luminaire.

lamp re-strike time the amount of time it takes for a hot lamp to reestablish the arc discharge.

light center (of a lamp) the center of the smallest sphere that would completely contain the light emitting element of the lamp.

light loss factor, LLF a factor used in a lighting calculation after a given period of time and under given conditions. It takes into account temperature and voltage variations, dirt accumulation on luminaire surfaces, lamp lumen depreciation, maintenance procedures, equipment and ballast variations. Formerly called maintenance factor.

line of sight the line connecting the point of observation and the point of fixation.

longitudinal roadway line, LRL may be any line along the roadway parallel to the roadway centerline.

lumen, lm the SI unit of luminous flux. Radiometrically, it is determined from the radiant power. Photometrically, it is the luminous flux emitted within a unit solid angle (one steradian) by a point source having a uniform luminous intensity of one candela.

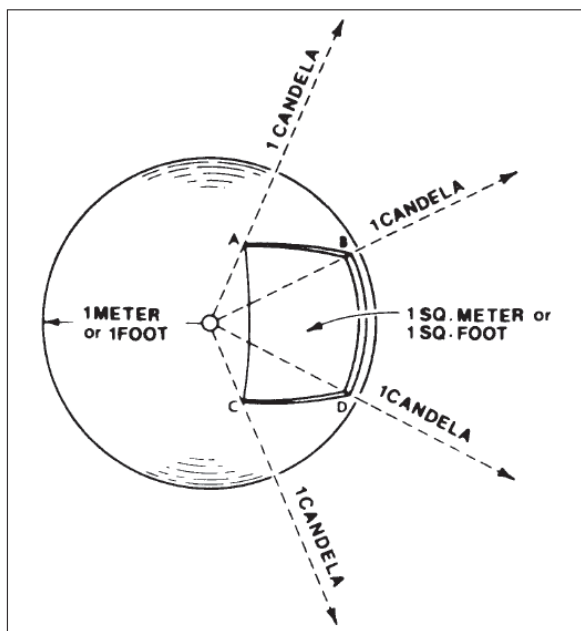


Figure C2. Relationship between candelas, lumens, lux, and footcandles: A uniform point source (luminous intensity or candlepower = one candela) is shown at the center of a sphere of unit radius whose surface has a reflectance of zero. The illuminance at any point on the sphere is one lux (one lumen per square meter) when the radius is one meter, or one footcandle (one lumen per square foot) when the radius is one foot. The solid angle subtended by the area A,B,C,D is one steradian. The flux density is therefore one lumen per steradian, which corresponds to a luminous intensity of one candela as originally assumed. The sphere has a total area of 4 (or 12.57) square units (square meters or square feet), and there is a luminous flux of one lumen falling on each unit area. Thus the source provides a total of 12.57 lumens.

luminaire a complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply. Sometimes includes ballasts and photocells.

luminaire cycle the distance between two luminaires along one side of the roadway. Note: this might not be the same as luminaire spacing along the centerline considering both sides of the road (see **spacing**).

luminaire dirt depreciation factor, LDD the multiplier to be used in lighting calculations to reduce the initial light level provided by clean, new luminaires to the light level that they will provide due to dirt collection on the luminaires at the time at which it is anticipated that cleaning procedures will be instituted.

luminance, L (cd/m²) the quotient of the luminous flux at an element of the surface surrounding the point, and propagated in directions defined by an elementary cone containing the given direction, by the product of the solid angle of the cone and area of the orthogonal projection of the element of the surface on a plane perpendicular to the given direction. The luminous flux can be leaving, passing through, and/or arriving at the surface. Note: In common usage the term “brightness” usually refers to the strength of sensation which results from viewing surfaces or spaces from which light comes to the eye. This sensation is determined in part by the definitely measurable luminance defined above and in part by conditions of observation such as the state of adaptation of the eye.

luminance contrast the relationship between the luminances of an object and its immediate background.

luminance meter an instrument for measuring the luminance of an object or surface. Instruments which accurately respond to more than one spectral distribution (color) are color corrected. The instrument is comprised of some form of a lens system and aperture creating an image on a photo detector, driving a digital or analog readout through appropriate circuitry.

luminous efficacy of a source of light the quotient of the total luminous flux emitted by the total lamp power input. It is expressed in lumens per watt.

luminous flux density at a surface the luminous flux per unit area at a point on a surface. Note: this need not be a physical surface; it may equally well be a mathematical plane.

luminous intensity, I (cd) the luminous flux per unit solid angle in a specific direction. Hence, it is the luminous flux on a small surface normal to that direction, divided by the solid angle (in steradians) that the surface subtends at the source.

lux, lx the SI unit of illuminance. It is the illuminance on a surface one square meter in area on which there is a uniformly distributed flux of one lumen, or the illuminance produced at a surface all points of which are at a distance of one meter from a uniform point source of one candela.

mean lamp lumens the mean lumen output of a lamp is calculated by determining the area beneath the lumen maintenance characteristic curve of that source over a given period of time and dividing that area by the time period in hours.

mounting height, MH the vertical distance between the roadway surface and the center of the apparent light source of the luminaire.

orientation the angular position of the luminaire around an axis through the light center and along the 0-180 degree vertical angles. When the zero degree horizontal angle is directed north, orientation is zero degrees. Displacement of the zero degree horizontal end (front side) of the luminaire clockwise is a positive angle (see **roll**, **tilt**, and **Figure C3**).

overhang, OH the horizontal distance between a vertical line passing through the luminaire light center and the curb or edge of the travelled roadway.

Partial Lighting: Partial Lighting refers to lighting installed at the decision areas of isolated interchanges and intersections whereby it provides visibility of potential conflicts with other traffic and physical features.

pedestrian crosswalk an area designated by markings for pedestrians to cross the roadway.

pedestrian way a sidewalk or pedestrian walkway, usually paved, intended for pedestrian usage.

point of fixation a point or object in the visual field at which the eyes look and upon which they are focused.

r-table a table for a particular pavement type which provides reduced luminance coefficients in terms of the variable angles, beta and tan gamma.

reaction time the interval between the beginning of a stimulus and the beginning of the response of an observer.

reduced luminance coefficient, r the value at a point on the pavement defined by angles beta and gamma which, when multiplied by the appropriate luminous intensity from a luminaire and divided by the square of the mounting height, will yield the pavement luminance at that point produced by the luminaire.

reflectance of a surface or medium the ratio of the reflected flux to the incident flux (see also **directional reflectance**, **diffuse reflectance**, and **bidirectional reflectance-distribution function**).

roll the angular position of the luminaire around an axis through the light center that is an extension of the 0-180 degree horizontal angle. When viewed from the 180 degree angle (mast arm end) rotation clockwise is a positive angle (see **tilt**, **orientation**, and **Figure C3**).

setback the lateral offset of the pole center from the face of the curb or edge of the travelled way.

spacing the distance between successive luminaires measured along the center line of the street (see **luminaire cycle**).

spacing-to-mounting height ratio, S/MH the ratio of the distance between luminaire centers, along the center line of the street, to the mounting height above the roadway.

subjective brightness the subjective attribute of any light sensation given rise to the perception of luminous intensity, including the whole scale of qualities of being bright, lightness, brilliant, dim, or dark.

tilt the angular position of the luminaire around an axis through the light center and along the 90-270 degree horizontal angles. When the luminaire is level the tilt is zero degrees. Displacement of the zero degree horizontal end (front side) of the luminaire upward is a positive angle (see **roll**, **orientation**, and **Figure C3**).

traffic conflict area the area on a road system where a strong potential exists for collisions between vehicles or between vehicles and pedestrians.

transverse roadway line, TRL may be any line across the roadway that is perpendicular to the roadway center line.

veiling luminance a luminance superimposed on the retinal image which reduces its contrast. It is this veiling effect produced by bright sources or areas in the visual field that results in decreased visual performance and visibility.

visibility the quality or state of being perceivable by the eye. In many outdoor applications, visibility is sometimes defined in terms of the distance at which an object can be just perceived by the eye. In indoor and out- door applications it usually is defined in terms of the contrast or size of a standard test object, observed under standardized view-conditions, having the same threshold as the given object.

visibility index, VI a measure closely related to **visibility level** sometimes used in connection with road lighting applications.

visibility level, VL a contrast multiplier to be applied to the visibility reference function or provide the luminance contrast required at different levels of task background luminance to achieve visibility for specified conditions relating to the task and observer.

visibility meter an instrument with a means of reducing the visibility of a scene, or part of a scene, to threshold without affecting the adaptation level of the observer.

visual angle the angle subtended by an object or detail at the point of observation. It usually is measured in minutes of arc.

walkway a sidewalk or pedestrian way.

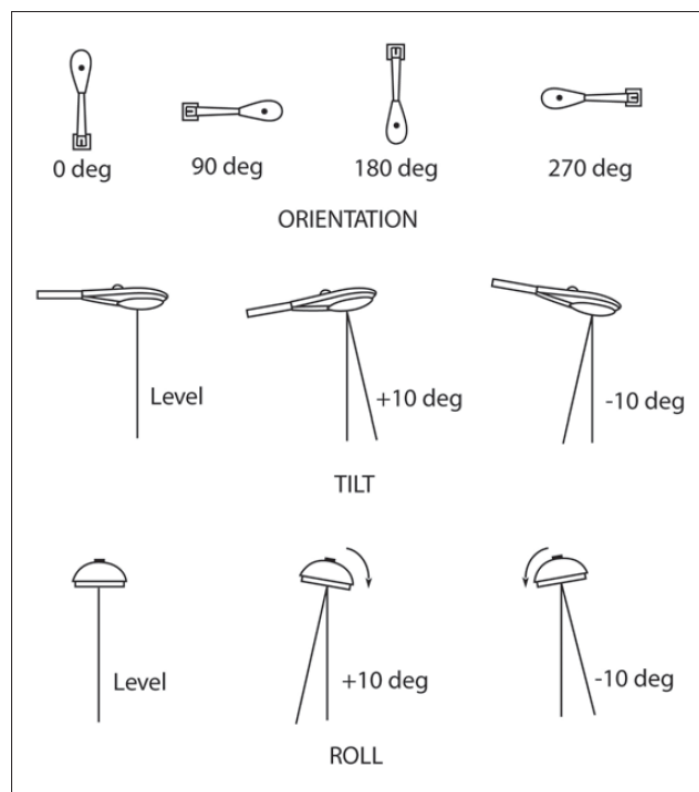


Figure C3. Luminaire orientation (top), tilt (center), and roll (bottom).

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ANNEX E - CLASSIFICATION OF LUMINAIRE LIGHT DISTRIBUTION

(This Annex is not part of *ANSI/IES RP-8-14 American National Standard Practice for Roadway Lighting*, but is included for informational purposes only.)

This annex was contained in *IESNA RP-8-1983*. The classification method is still valid and used for roadway lighting luminaires. The IES has however replaced the categories of **Section E4** describing the control of the candlepower distribution with a new system of classification described in *IES TM-15-11 Luminaire Classification System for Outdoor Luminaires*. This classification system is intended to aid the designer in luminaire selection and not to be used for product specifications.

E.1. Introduction

E1.1 Distribution Proper distribution of the light flux from luminaires is one of the essential factors in efficient roadway lighting. The light emanating from the luminaires is directionally controlled and proportioned in accordance with the requirements for seeing and visibility. Light distributions are generally designed for a typical range of conditions that include: luminaire mounting height; transverse (overhang) location of luminaires; longitudinal spacing of luminaires; widths of roadway to be effectively lighted; arrangement of luminaires; percentage of lamp light directed toward the pavement and adjacent areas; and maintained efficiency of the system.

E1.2 Classification Several methods have been devised for showing the light distribution pattern from a luminaire (see **Figures E1 - E5**). For practical operating reasons the range in luminaire mounting heights may be kept constant. Therefore, it becomes necessary to have several different light distributions in order to effectively light different roadway widths, using various luminaire spacing distances at a particular luminaire mounting height. All luminaires can be classified according to their lateral and vertical distribution patterns. Different lateral distributions are available for different street widths to mounting height ratios; and different vertical distributions are available for different spacing-to-mounting height ratios.

Distributions with higher vertical angles of maximum candlepower emission are necessary to obtain the required illuminance uniformity where longer luminaire spacings are used (as on residential and light traffic roadways). These higher vertical emission angles produce a more favorable pavement bright-

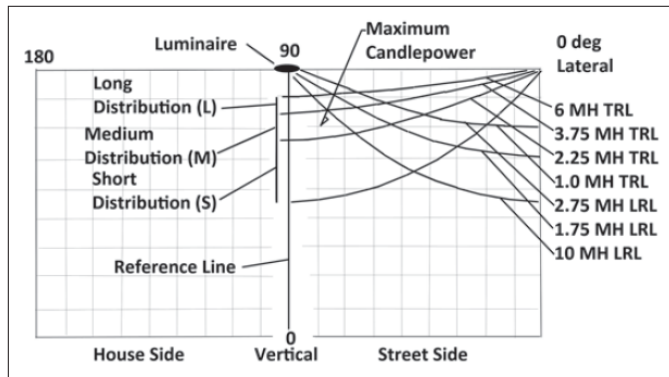


Figure E1. Recommended vertical light distribution boundaries on a rectangular coordinate Grid (representation of a sphere). Dashed lines are isocandela traces.

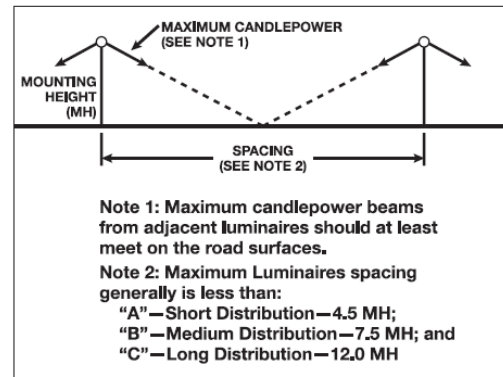


Figure E2. Typical roadway lighting layout showing spacing-to-mounting height relationships.

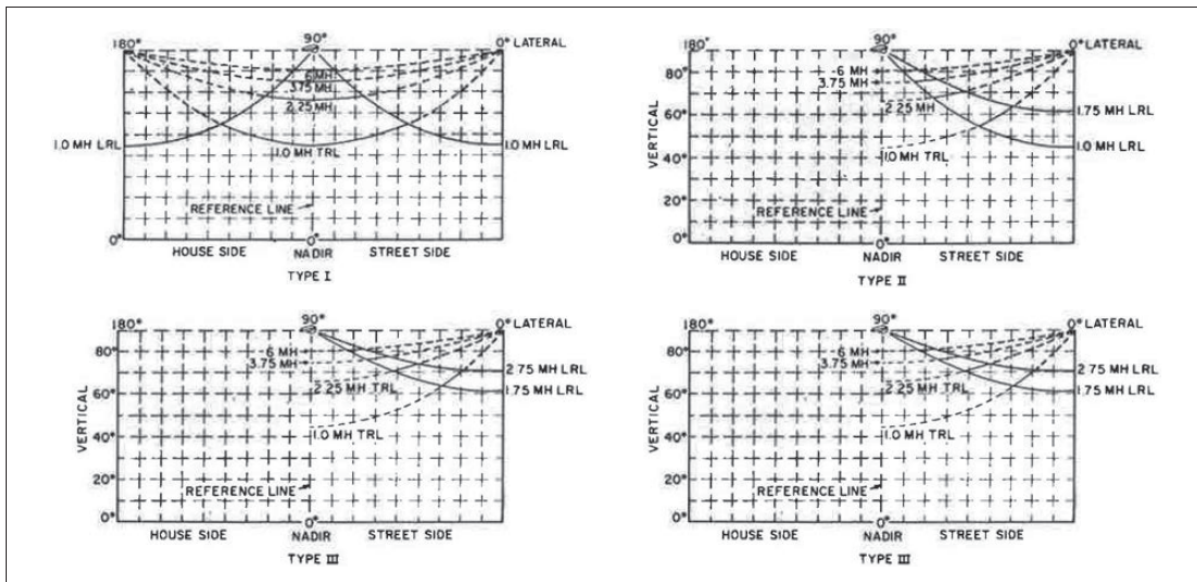


Figure E3. Recommended lateral light distribution boundaries on a rectangular coordinate grid (representation of a sphere).

ness which might be desired for silhouette seeing where traffic volume is relatively light. Distributions with lower vertical angles of maximum candlepower emission are used in order to reduce system glare. This becomes more important when using high lumen output lamps. The lower the emission angle, the closer the luminaire spacing should be to obtain required illuminance uniformity. This applies to luminance as well. Therefore, to achieve specific illuminance results it becomes necessary as a part of any lighting system design to consider and to check the illuminance uniformity by checking ratios of average illuminance to minimum illuminance.

E1.3 Criteria

Luminaire light distribution may be classified in respect to three criteria:

- Vertical light distribution
- Lateral light distribution
- Control of light distribution above maximum candlepower

E1.4 Classification of light distribution should be made on the basis of an isocandela diagram which, on its rectangular coordinate grid, has superimposed a series of Longitudinal Roadway Lines (LRL) in multiples of mounting height (MH), and a series of Transverse Roadway Lines (TRL) in multiples of mounting height. The relationship of LRL and TRL to an actual street, and the representation of such a web, are shown in **Figures E1 - E5**. The minimum information that should appear on such an isocandela diagram for classification is as follows:

- (a) LRL lines of 1.0 MH, 1.75 MH, and 2.75 MH
- (b) TRL lines of 1.0 MH, 2.25 MH, 3.75 MH, 6.0 MH, and 8.0 MH
- (c) Maximum candlepower location and half maximum candlepower trace
- (d) Candlepower lines equal to the numerical values of 2 percent, 5, 10 and 2 percent of the rated bare lamp lumens.

E2. Lateral light distributions

Lateral light distributions are divided into three groups: short (S), medium (M), and long (L). See **Figures E1 and E4**.

E2.1 Short distribution A luminaire is classified as having a short light distribution when its maximum candlepower point lies in the "S" zone of the grid which is from the 1.0-MH TRL to less than the 2.25-MH TRL.

E2.2 Medium distribution A luminaire is classified as having a medium light distribution when its maximum candlepower point lies in the "M" zone of the grid which is from the 2.25-MH TRL to less than the 3.75-MH TRL.

E2.3 Long distribution A luminaire is classified as having a long light distribution when its maximum candlepower point lies in the "L" zone of the web which is from the 3.75-MH TRL to less than the 6.0-MHTRL.

E3. Transverse light distributions

Transverse light distributions (see **Figures E3 and E4**) are divided into two groups based on the location of the luminaire as related to the area to be lighted. Each group may be subdivided into divisions with regard to the width of the area to be lighted in terms of the MH ratio. Only the segments of the half maximum candlepower isocandela trace that fall within the longitudinal distribution range, as determined by the point of maximum candlepower (short, medium, or long), are used for the purpose of establishing the luminaire distribution width classification.

E3.1 Luminaires at or near center of area The group of lateral width classifications that deals with luminaires intended to be mounted at or near the center of the area to be lighted has similar light distributions on both the "house side" and the "street side" of the reference line.

E3.1.1 Type I A distribution is classified as Type I when its half maximum candlepower isocandela trace lies within the Type I width range on both sides of the reference line which is bounded by 1.0-MH house side. LRL and 1.0-MH street side LRL within the longitudinal distribution range (short, medium, or long) where the point of maximum candlepower falls.

E3.1.2 Type I, four-way A distribution is classified as Type I, Four-Way when it has four beams of the width as defined for Type I above.

E3.1.3 Type V A distribution is classified as Type V when the distribution has a circular symmetry of candlepower distribution which is essentially the same at all lateral angles around the luminaire.

E3.2 Luminaires near side of area The group of lateral width classifications that deals with luminaires intended to be mounted near the side of the area to be lighted vary as to the width of distribution range on the street side of the reference line. The house side segment of the half maximum candlepower isocandela trace within the longitudinal range in which the point of maximum candlepower falls (short, medium, or long) may or may not cross the reference line. In general, it is preferable that the half maximum candlepower isocandela trace remains near the reference line. The variable width on the street side is as defined.

E3.2.1 Type II A distribution is classified as Type II when the street side segment of the half maximum candlepower isocandela trace within the longitudinal range in which the point of *maximum candlepower falls (short, medium, or long) does not cross the 1.75-MH street side LRL*.

E3.2.2 Type II, four-way A distribution is classified as a Type II, Four-Way when it has four beams each of the width on the street side as defined for Type II above.

E3.2.3 Type III A distribution is classified as Type III when the street side segment of the half maximum candlepower isocandela trace within the longitudinal range in which the point of maximum candlepower falls (short, medium, or long) lies partly or entirely beyond the 1.75-MH street side LRL, but does not cross the 2.75-MH street side LRL.

E3.2.4 Type IV A distribution is classified as Type IV when the street side segment of the half maximum candlepower isocandela trace within the longitudinal range in which the point of maximum candlepower falls (short, medium, or long) lies partly or entirely beyond the 2.75-MH street side LRL.

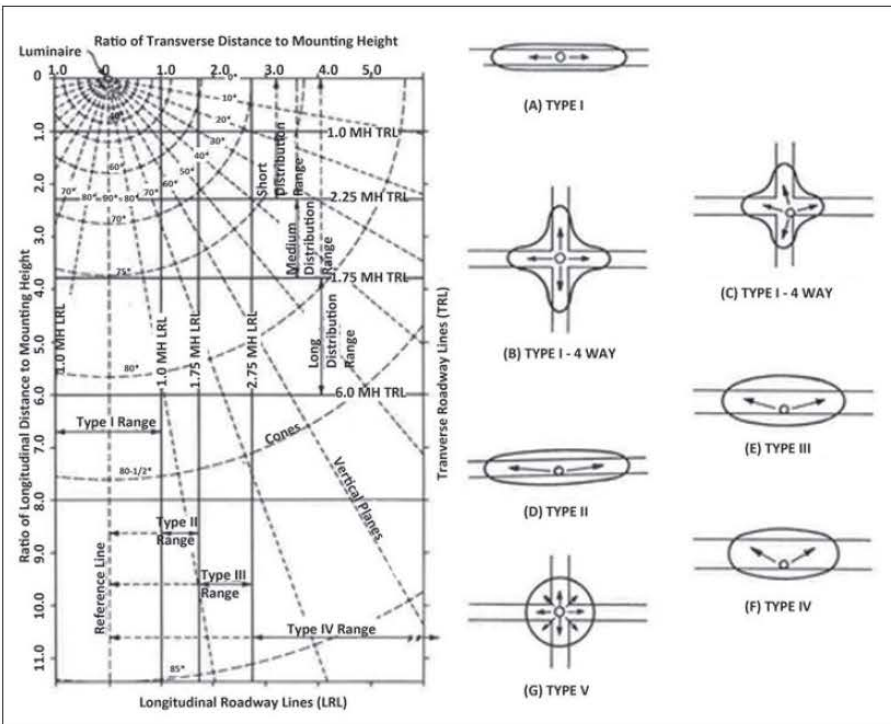
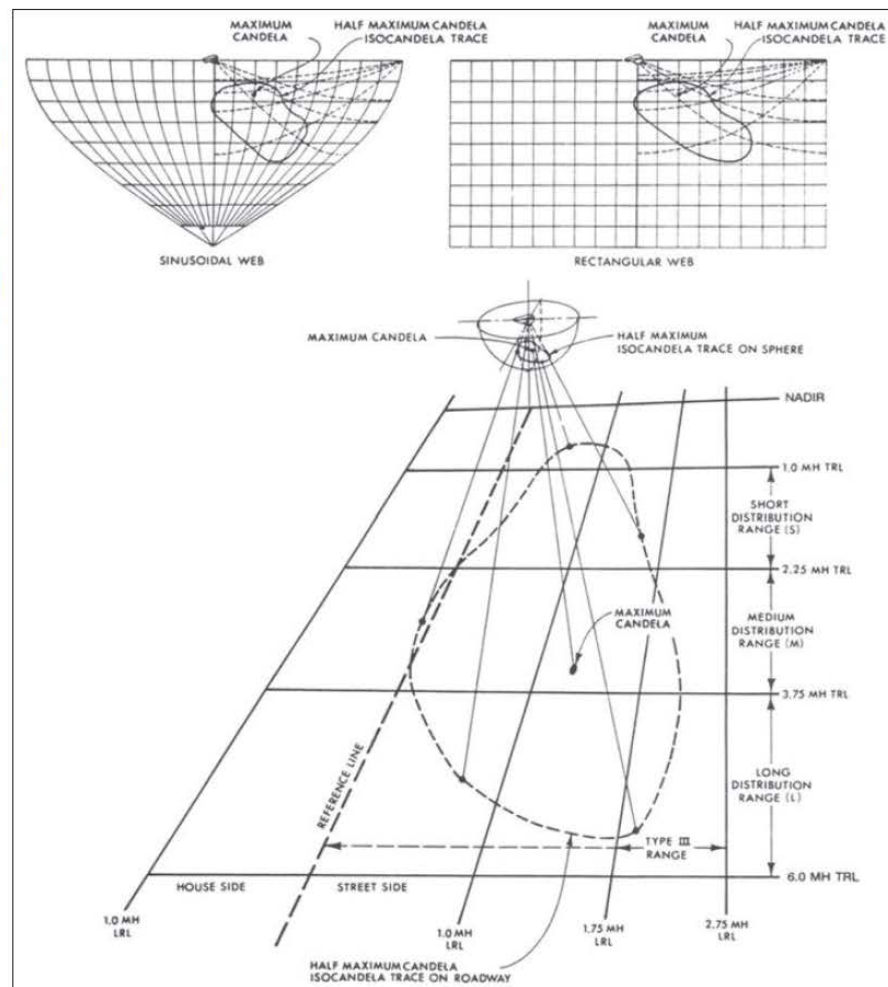


Figure E4.
Plan view of roadway
coverage for different
types of luminaires.

Figure E5. Diagram showing
projection of maximum
candlepower and half
maximum candlepower
isocandela trace from a
luminaire having a Type III
– Medium distribution,
on the imaginary sphere and
the roadway. Sinusoidal
web and rectangular web
representation of sphere
are also shown, with
maximum
candlepower and half
maximum candlepower
isocandela trace.



E4. Control of distribution above maximum candlepower

Although the pavement brightness generally increases when increasing the vertical angle of light flux emission, it should be emphasized that the disability and discomfort glare also increase. However, since the respective rates of increase and decrease of these factors are not the same, design compromises become necessary in order to achieve balanced performance. Therefore, varying degrees of control of candlepower in the upper portion of the beam above maximum candlepower are required. This control of the candlepower distribution is divided into four categories. These categories do not apply to luminaires tested using absolute photometry.

E4.1 Full Cutoff A luminaire light distribution is designated as full cutoff (FC) when there is no light at or above an angle of 90 degrees above nadir (horizontal), and the candlepower per 1000 lamp lumens does not numerically exceed 100 (10 percent) at an angle of 80 degrees above nadir. This applies to any lateral angle around the luminaire.

E4.2 Cutoff A luminaire light distribution is designated as cutoff (C) when the candlepower per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle of 90 degrees above nadir (horizontal), and 100 (10 percent) at a vertical angle 80 degrees above nadir. This applies to any lateral angle around the luminaire.

E4.3 Semi cutoff A luminaire light distribution is designated as semi cutoff (SC) when the candlepower per 1000 lamp lumens does not numerically exceed 50 (5 percent) at an angle of 90 degrees above nadir (horizontal), and 200 (20 percent) at a vertical angle of 80 degrees above nadir. This applies to any lateral angle around the luminaire.

E4.4 Non-cutoff A luminaire light distribution is designated as non-cutoff (NC) when there is no candlepower limitation in the zone above maximum candlepower.

E5. Variations and comments

E5.1 With the variations in roadway width, type of surface, luminaire mounting height, and spacing that may be found in actual practice, there can be a large number of "ideal" intensity distributions. For practical applications, however, a few types of lateral distribution patterns may be preferable to many complex arrangements. This simplification of distribution types will be more easily understood and consequently there will be greater assurance of proper installation and more reliable maintenance.

E5.2 When luminaires are tilted upward it raises the angle of the street side light distribution. Features such as cutoff or width classification can be changed appreciably. When the tilt is planned, the luminaire should be photo-metered and the light distribution classified in the position in which it will be installed.

E5.3 Types I, II, III and IV lateral light distributions should vary across transverse roadway lines other than that including the maximum candlepower in order to provide adequate coverage of the rectangular roadway area involved. The width of the lateral angle of distribution required to cover adequately a typical width of roadway varies with the vertical angle or length of distribution as shown by the TRL (transverse roadway line). For a TRL 4.5-MH, the lateral angle of distribution for roadway coverage is obviously narrower than that required for a TRL 3.0-MH or for a TRL 2.0-MH.

E5.4 For typical roadway conditions it is desirable to achieve very closely the light distributions prescribed for consistency. Variations from these distributions are expected when necessary. Several examples of these exceptions are:

- (a) Linear source luminaires which provide broad Type I or Type II distributions and which project the maximum candlepower lower than specified.
- (b) Directional lighting for one-way streets and divided highways, where the light projected in the direction of traffic is substantially reduced in the high vertical angle.
- (c) Linear source luminaires parallel to the street to obtain reduced glare and increased utilization.
- (d) Luminaires mounted at low mounting heights.
- (e) Types IV and V luminaire distributions with extra upward light for illuminating building fronts.
- (f) "Offset mounting" style luminaires designed to be located at a lateral distance from the area to be lighted.

Other purposeful variations from the distributions specified may be found advantageous from time to time for special applications.

E5.5 For high mast installations involving multiple luminaires on one structure or support, the entire group of luminaires may be considered as a single composite luminaire for purposes of determining distribution type, cutoff classification, or maximum candlepower. Photometric data may be supplied in this form.

J.6 – Reference Utility Billing



Village of Trumansburg



VILLAGE OF TRUMANSBURG

Account Number: 1001-3629-463

Statement Date: July 03, 2019

Amount Due: \$3,301.24

Service Address: ST-LIGHT, TRUMANSBURG NY 14886

Next Scheduled Read Date: On or about July 31, 2019

Page 1 of 5

Consolidated Account Summary

Previous invoice	\$1,697.83
Payments received as of 07/02/19	0.00
Balance forward	\$1,697.83
NYSEG energy charges	1,437.02
CONSTELLATION NEWENERGY INC Chgs	166.39
Payment due upon receipt.	\$3,301.24

To avoid a 1.5% late payment charge, please ensure payment is received by the date displayed below.

Street Lighting

See details beginning on page 3

See messages on page 2

033531 1/3

AS182.41

Think of the minutes, money and natural resources you'll save by doing business online or by phone 24/7.

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Call our self-service line at **1.800.600.2275** for billing information, provide a meter reading and to pay by phone.

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Please return bottom portion with your payment. Make checks payable to NYSEG.



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VILLAGE OF TRUMANSBURG

56 E MAIN ST
TRUMANSBURG NY 14886-9593

Account Number
10013629463
Late Fee After
07/26/19
Due Upon Receipt
\$3,301.24
Amount Paid
\$ 1603.41

Please do not write below this line.



Service Address: ST -LIGHT, TRUMANSBURG NY 14886

Page 3 of 5

NYSEG DETAILED ACCOUNT ACTIVITY**Electricity Service - Street Lighting****Electricity Rate - 12103 ESCO Supply Service**

Service from: 06/01/19 - 06/30/19

PoD ID: N01000002120335

Electricity Delivery Charges

Delivery charge	6896	kwh	@	0.02342	161.50
SBC charge	6896	kwh	@	0.005932	40.91
Transition charge	6896	kwh	@	0.003418	23.57
Revenue decoupling mech	6896	kwh	@	-0.000103	-0.71
175W MRC light	20	lamps	@	4.45	89.00
250W MRC light	3	lamps	@	4.65	13.95
400W MRC light	1	lamp	@	4.72	4.72
100W HPS cobra head light	102	lamps	@	8.15	831.30
150W HPS cobra head light	10	lamps	@	8.15	81.50
250W HPS cobra head light	21	lamps	@	8.15	171.15
400W HPS cobra head light	2	lamps	@	8.62	17.24
Standard bracket, 16' and over	1	brkt	@	2.89	2.89

Subtotal Electricity Delivery \$1,437.02**Total Electricity Cost** \$1,437.02**Total Energy Charges** \$1,437.02

003531 2/3

Account Number: 1001-3629-463**Statement Date:** July 03, 2019**Service Address:** ST -LIGHT, TRUMANSBURG NY 14886

Page 5 of 5



CONSTELLATION NEWENERGY INC
PO BOX 4911
HOUSTON TX 77210

www.constellation.com

Account number: 623130

Please call 844-636-3749 with
questions concerning your bill.

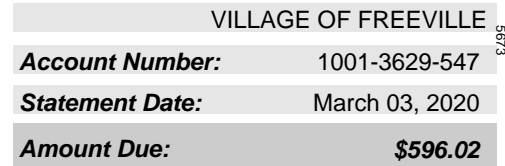
003531 3/3

Messages

Electricity Supply Detail

Balancing Energy	6896 kwh	@	0.0134252	92.58
Market Charges	34480 kwh	@	0.0016407	56.57
Contract Charges	6896 kwh	@	0.0025	17.24
Current Electricity Supply Charges				\$166.39

Village of Freeville



Page 1 of 4

Previous invoice	\$610.37
Payments received as of 03/02/20	<u>-610.37</u>
Balance forward	0.00
Energy charges	595.21
Miscellaneous charges	0.81
<hr/>	
Payment due upon receipt.	\$596.02

Street Lighting

See details beginning
on page 3

See messages on page 2

To avoid a 1.5% late payment charge, please ensure payment is received by the date displayed below.

Think of the minutes, money and natural resources you'll save by doing business online or by phone 24/7.

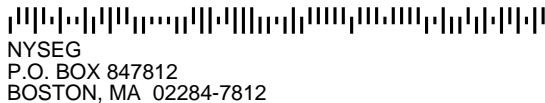
Visit **nyseg.com** to:

- View and pay your bill online
- Submit and view meter readings
- Enroll and manage budget billing
- Enroll in Autopay

Call our self-service line at **1.800.600.2275** for billing information, provide a meter reading and to pay by phone.

Add \$1, \$2, or \$5 to your payment to make a tax-deductible donation to NYSEG and RG&E Project SHARE Heating Fund. Learn more at nyseg.com.

Please return bottom portion with your payment. Make checks payable to NYSEG.



VILLAGE OF FREEVILLE
ATTN:VILLAGE CLERK
PO BOX 288
FREEVILLE NY 13068-0288

Account Number
10013629547
Late Fee After
03/26/20
Due Upon Receipt
\$596.02
Amount Paid
\$

Messages

By accepting service from NYSEG, you expressly consent to us or our representatives contacting you by phone (autodialed and automated voice call), email or text message regarding your utility service. You may opt out of these calls by contacting us at 1.800.572.1111 or at nyseg.com (select Contact Us in the footer).

Our new mobile app makes taking care of your account easy and convenient. With just a few clicks, you can pay your bill, report an outage, submit a meter read and more! Download the app today by searching NYSEG in the App Store or get it on Google Play.

Receive bills based on your actual energy use. We've made it easier for you to provide us your meter reading using our new mobile app - even in the dark with our flashlight feature! You can also provide your meter readings online, by calling 1.800.600.2275, or enrolling in our free Meter Read Reminder Alerts service. Visit nyseg.com for more information.

Check your inbox, not your mailbox, by signing up for eBill. It's free, delivered to your secure email box, and you're notified when your bill is available, and reminded when it's due. Add AutoPay and your bill will practically take care of itself. Sign up today at nyseg.com.

To ensure the safe delivery of natural gas to your home or business, we are conducting mandatory safety inspections on indoor natural gas meters. Our inspectors carry a green or orange identification badge - ask to see it! Thank you for allowing us access to your inside meter. To learn more about these inspections, please visit nyseg.com.

Contact Information

Service or billing questions:
1.800.572.1111, 7 a.m. to 7 p.m., (M-F)
Payment arrangements:
1.888.315.1755, 7 a.m. to 7 p.m., (M-F)
Self service line:
1.800.600.2275, 24 hours a day
Power interruptions or emergencies
1.800.572.1131, 24 hours a day
Natural gas emergencies or if you smell gas:
1.800.572.1121, 24 hours a day
Hearing/speech impaired (TTY):
Dial 711 (New York Relay Service)

Electronically:
Use our "Write to NYSEG" form at nyseg.com
By mail:
NYSEG Customer Service
P.O. Box 5240
Binghamton, NY 13902-5240
Payment address:
NYSEG
P.O. Box 847812
Boston, MA 02284-7812

Mailing Address Changes

Please mark with an "X" for address and telephone changes.

Street: _____ Apt: _____
City: _____
State: _____ ZIP: _____
Home Phone: _____
Alternate Phone: _____

Autopay

To sign up for Autopay, where we deduct your bill amount from your checking account 23 days after we mail your bill, please mark with an "X" and provide the following:

Name: _____
(as it appears on bank statement)
9-Digit Routing Number: _____
Bank Account Number: _____
Name of Bank: _____
Signature: _____ Date: _____

For program terms and details, visit nyseg.com/efterms.html

Please do not write below this line.

Service Address: STREET LIGHTS, FREEVILLE NY 13068
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 4



Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 02/01/20 - 02/29/20
PoD ID: N01000002204543

Electricity Delivery Charges

Delivery charge	2796	kwh	@	0.02342	65.48
SBC charge	2796	kwh	@	0.005782	16.17
Transition charge	2796	kwh	@	0.00252	7.05
Revenue decoupling mech	2796	kwh	@	-0.0139	-38.86
400W MRC light	1	lamp	@	4.72	4.72
70W HPS cobra head light	28	lamps	@	8.15	228.20
100W HPS cobra head light	29	lamps	@	8.15	236.35
150W HPS cobra head light	3	lamps	@	8.15	24.45
250W HPS cobra head light-Feb	1	lamp	@	4.50	4.50
250W HPS cobra head light-Feb	1	lamp	@	3.65	3.65
250W HPS flood light	1	lamp	@	15.67	15.67
Aluminum pole - over 16 feet	1	pole	@	19.61	19.61
Direct burial cable	100	feet	@	0.08221	8.22

Subtotal Electricity Delivery \$595.21

Total Electricity Cost \$595.21

Total Energy Charges \$595.21

Miscellaneous Charges

03/03/20 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81

Service Address: STREET LIGHTS, FREEVILLE NY 13068

Page 4 of 4

Terms and Definitions

Delivery charge: what you pay NYSEG to transport energy to your home or business.

Supply charge: what you pay for the energy purchased for you by NYSEG or a supplier other than NYSEG.

Payment & billing services charge: the cost to produce and send you (electronically or paper) a bill and process payments. Customers who use an energy supplier (also known as an energy services company or ESCO) other than NYSEG will not be assessed this charge by NYSEG if their ESCO's supply charges appear on their NYSEG bill, however, their energy supplier may charge a similar fee.

Competitive meter charge, Competitive meter service charge, and Competitive meter data service: apply to customers billed under service classes 2, 3, and 7 whose metering services are provided by NYSEG. These meter services charges, previously included in the customer charge, are now broken out in the electricity section of the bill. Customers with a demand of 50 kilowatts or more for two consecutive months who use a meter service provider and a meter data service provider other than NYSEG are not assessed these charges.

Basic service charge: includes a portion of the cost of the meter, meter reading, billing and part of the cost for delivery service. Appears on your bill whether or not you use any electricity or natural gas during the billing period.

Kilowatt-hours (kwh): measure of electricity use.

Residential consumer discount: monthly payment received from the New York Power Authority (NYPA) to be used for the benefit of residential customers. It is included in the Transition Charge.

ccf (hundreds of cubic feet): measure of volume of natural gas used. You are charged based on therms, the energy (heat) content of natural gas.

Merchant function charge: reflects the administrative costs of obtaining electricity and natural gas supply. Customers with a supplier other than NYSEG are not charged by NYSEG for this service.

System Benefits Charge (SBC): a state mandated charge for all electric and natural gas customers. The SBC is used to fund clean energy activities conducted by NYSEDA and energy efficiency programs administered by NYSEG.

Revenue Decoupling Mechanism: a charge or credit on your bill that reflects the difference between forecast and actual delivery service revenues by service classification to encourage the promotion of energy efficiency and renewable technologies.

Weather adjustment: moderates natural gas bills during any extreme weather between October 1 and May 31. If temperatures during the billing period are colder than normal, customers typically receive a credit; if temperatures are warmer than normal, customers receive a charge.

Meter Mult (Meter Multiplier): when the actual amount of energy you use is more than can be registered on the meter, the meter displays a fraction of your actual use. A multiplier is then applied to determine your actual energy use. When a multiplier is used, it will be shown in the "Meter Mult" box under the "NYSEG Detailed Account Activity" section of your bill.

Transition charge/surcharge: reflects the costs of making the electricity and/or natural gas industry more competitive; includes associated credits and/or charges.

Prorated bills: calculated by determining your average daily energy cost and multiplying it by the number of days in your billing period. Prorated bills are used only when your billing period is shorter or longer than usual.

Pay your bill by mail, at nyseg.com or at any of NYSEG's authorized pay agents. If you pay in person, please bring your entire bill.

Payment is due when you receive your bill. Your payment must be postmarked by the "Late Fee After" date shown on page 1. If paying in person, payment must be made by the "Late Fee After" date. Payments received after the "Late Fee After" date will be subject to a 1.5% late payment charge per month.

Town of Ithaca (Delivery)



TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-895

STATEMENT DATE: December 03, 2019

Service Address: ST LT BURLEIGH DR ITHACA NY 14850

Page: 20

NYSEG DETAILED ACCOUNT ACTIVITY



Electricity Service - Street Lighting

Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19

PoD ID: N01000002332872

Electricity Delivery Charges

Delivery charge	344	kwh	@	0.02342	8.06
SBC charge	344	kwh	@	0.005932	2.04
Transition charge	344	kwh	@	0.005223	1.80
Revenue decoupling mech	344	kwh	@	-0.0139	-4.78
100W HPS cobra head light	7	lamps	@	8.15	57.05

Subtotal Electricity Delivery	\$64.17
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Total Electricity Cost	\$64.17
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Total Energy Charges	\$64.17
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Miscellaneous Charges

12/03/2019 Payment & billing svcs charge	0.81
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Total Miscellaneous Charges	\$0.81
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TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-703

STATEMENT DATE: December 03, 2019

Service Address: ST LIGHT ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY



Electricity Service - Street Lighting

Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19

PoD ID: N01000002760015

Electricity Delivery Charges

Delivery charge	18362	kwh	@	0.02342	430.04
SBC charge	18362	kwh	@	0.005932	108.92
Transition charge	18362	kwh	@	0.005223	95.90
Revenue decoupling mech	18362	kwh	@	-0.0139	-255.23
100W MRC light	1	lamp	@	4.45	4.45
175W MRC light	42	lamps	@	4.45	186.90
250W MRC light	5	lamps	@	4.65	23.25
400W MRC light	27	lamps	@	4.72	127.44
100W HPS cobra head light	45	lamps	@	8.15	366.75
150W HPS cobra head light	28	lamps	@	8.15	228.20
250W HPS cobra head light	29	lamps	@	8.15	236.35
400W HPS cobra head light	1	lamp	@	8.62	8.62
400W MHL cobra head light	1	lamp	@	15.87	15.87
250W HPS flood light	1	lamp	@	15.67	15.67
150W HPS Turnpike light	1	lamp	@	18.67	18.67
250W HPS Turnpike light	1	lamp	@	23.25	23.25
Standard pole	19	poles	@	12.26	232.94
Center-bored wood pole	5	poles	@	11.09	55.45
Standard bracket, 16' and over	4	brkts	@	2.89	11.56
Cable and conduit	115	feet	@	0.09608	11.05
Direct burial cable	212	feet	@	0.08221	17.43
Underground circuits	450	feet	@	0.05843	26.29

000060 11/27

Subtotal Electricity Delivery \$1,989.77

Total Electricity Cost \$1,989.77

Total Energy Charges \$1,989.77

Miscellaneous Charges

12/03/2019 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81



TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-711

STATEMENT DATE: December 03, 2019

Service Address: ST-LIGHT ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY



Electricity Service - Street Lighting

Service from: 11/01/19 - 11/30/19

Electricity Rate - 12103 ESCO Supply Service

PoD ID: N01000003186095

Electricity Delivery Charges

Delivery charge	147	kwh	@	0.02342	3.44
SBC charge	147	kwh	@	0.005932	0.87
Transition charge	147	kwh	@	0.005223	0.77
Revenue decoupling mech	147	kwh	@	-0.0139	-2.04
100W HPS post top light	3	lamps	@	10.70	32.10
Fiberglass pole - 18' and unde	3	poles	@	6.90	20.70
Direct burial cable	120	feet	@	0.08221	9.87

Subtotal Electricity Delivery	\$65.71
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Total Electricity Cost	\$65.71
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Total Energy Charges	\$65.71
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Miscellaneous Charges

12/03/2019 Payment & billing svcs charge	0.81
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Total Miscellaneous Charges	\$0.81
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TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-729

STATEMENT DATE: December 03, 2019

Service Address: GLENSIDE ST LGT ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY

Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19
PoD ID: N01000003611696

Electricity Delivery Charges

Delivery charge	316	kwh	@	0.02342	7.40
SBC charge	316	kwh	@	0.005932	1.87
Transition charge	316	kwh	@	0.005223	1.65
Revenue decoupling mech	316	kwh	@	-0.0139	-4.39
100W MRC light	2	lamps	@	4.45	8.90
70W HPS cobra head light	6	lamps	@	8.15	48.90

000060 12/27

Subtotal Electricity Delivery	\$64.33
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Total Electricity Cost	\$64.33
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Total Energy Charges	\$64.33
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Miscellaneous Charges

12/03/2019 Payment & billing svcs charge	0.81
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Total Miscellaneous Charges	\$0.81
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TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-737

STATEMENT DATE: December 03, 2019

Service Address: CODDINGTON RD STLGT ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY



Electricity Service - Street Lighting

Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19

PoD ID: N01000004038014

Electricity Delivery Charges

Delivery charge	793	kwh	@	0.02342	18.57
SBC charge	793	kwh	@	0.005932	4.70
Transition charge	793	kwh	@	0.005223	4.14
Revenue decoupling mech	793	kwh	@	-0.0139	-11.02
100W HPS cobra head light	3	lamps	@	8.15	24.45
150W HPS cobra head light	9	lamps	@	8.15	73.35

Subtotal Electricity Delivery	\$114.19
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Total Electricity Cost	\$114.19
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Total Energy Charges	\$114.19
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Miscellaneous Charges

12/03/2019 Payment & billing svcs charge	0.81
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Total Miscellaneous Charges	\$0.81
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TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-752

STATEMENT DATE: December 03, 2019

Service Address: ST LT FOREST HM ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY



Electricity Service - Street Lighting

Service from: 11/01/19 - 11/30/19

Electricity Rate - 12103 ESCO Supply Service

PoD ID: N01000001098656

Electricity Delivery Charges

Delivery charge	1056	kwh	@	0.02342	24.73
SBC charge	1056	kwh	@	0.005932	6.26
Transition charge	1056	kwh	@	0.005223	5.52
Revenue decoupling mech	1056	kwh	@	-0.0139	-14.68
100W MRC light	15	lamps	@	4.45	66.75
175W MRC light	1	lamp	@	4.45	4.45
70W HPS cobra head light	2	lamps	@	8.15	16.30
100W HPS cobra head light	2	lamps	@	8.15	16.30

0000601327

Subtotal Electricity Delivery \$125.63

Total Electricity Cost \$125.63

Total Energy Charges \$125.63

Miscellaneous Charges

12/03/2019 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81



TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-760

STATEMENT DATE: December 03, 2019

Service Address: ST LT RENWICK ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY

Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19
PoD ID: N01000001523901

Electricity Delivery Charges

Delivery charge	527	kwh	@	0.02342	12.34
SBC charge	527	kwh	@	0.005932	3.13
Transition charge	527	kwh	@	0.005223	2.75
Revenue decoupling mech	527	kwh	@	-0.0139	-7.33
100W MRC light	7	lamps	@	4.45	31.15
70W HPS cobra head light	3	lamps	@	8.15	24.45
100W HPS cobra head light	1	lamp	@	8.15	8.15

Subtotal Electricity Delivery	\$74.64
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Total Electricity Cost	\$74.64
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Total Energy Charges	\$74.64
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Miscellaneous Charges

12/03/2019 Payment & billing svcs charge	0.81
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Total Miscellaneous Charges	\$0.81
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TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-778

STATEMENT DATE: December 03, 2019

Service Address: EASTWOOD COMMON ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY

 **Electricity Service - Street Lighting**
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19
PoD ID: N01000001949445

Electricity Delivery Charges

Delivery charge	738	kwh	@	0.02342	17.28
SBC charge	738	kwh	@	0.005932	4.38
Transition charge	738	kwh	@	0.005223	3.85
Revenue decoupling mech	738	kwh	@	-0.0139	-10.26
175W MRC light	7	lamps	@	4.45	31.15
100W HPS cobra head light	1	lamp	@	8.15	8.15
150W HPS cobra head light	1	lamp	@	8.15	8.15
Standard pole	1	pole	@	12.26	12.26
Center-bored wood pole	6	poles	@	11.09	66.54
Direct burial cable	110	feet	@	0.08221	9.04
Cable only (conduit by cust.)	350	feet	@	0.04374	15.31

0000601427

Subtotal Electricity Delivery \$165.85**Total Electricity Cost** \$165.85**Total Energy Charges** \$165.85

Miscellaneous Charges

12/03/2019 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81



TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-786

STATEMENT DATE: December 03, 2019

Service Address: WESTHAVEN RD STLGT ITHACA NY 14850
NYSEG DETAILED ACCOUNT ACTIVITY

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Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19
PoD ID: N01000002375558

Electricity Delivery Charges

Delivery charge	1365	kwh	@	0.02342	31.97
SBC charge	1365	kwh	@	0.005932	8.10
Transition charge	1365	kwh	@	0.005223	7.13
Revenue decoupling mech	1365	kwh	@	-0.0139	-18.97
150W HPS cobra head light	19	lamps	@	8.15	154.85
Standard bracket, 16' and over	3	brkts	@	2.89	8.67

Subtotal Electricity Delivery \$191.75

Total Electricity Cost \$191.75

Total Energy Charges \$191.75

Miscellaneous Charges

12/03/2019 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81



TOWN OF ITHACA

ACCOUNT NUMBER: 1001-3629-836

STATEMENT DATE: December 03, 2019

Service Address: CLOVER LN ITHACA NY 14850

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NYSEG DETAILED ACCOUNT ACTIVITY



Electricity Service - Street Lighting

Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/19 - 11/30/19

PoD ID: N01000001141068

Electricity Delivery Charges

Delivery charge	98	kwh	@	0.02342	2.30
SBC charge	98	kwh	@	0.005932	0.58
Transition charge	98	kwh	@	0.005223	0.51
Revenue decoupling mech	98	kwh	@	-0.0139	-1.36
100W HPS cobra head light	2	lamps	@	8.15	16.30

00006015/27

Subtotal Electricity Delivery	\$18.33
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Total Electricity Cost	\$18.33
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Total Energy Charges	\$18.33
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Miscellaneous Charges

12/03/2019 Payment & billing svcs charge	0.81
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Total Miscellaneous Charges	\$0.81
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Town of Ithaca (Supply)

Statement Number: 16189479101

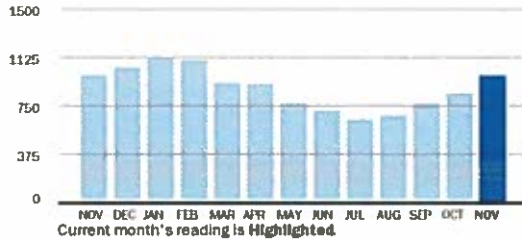
Customer Number: 681796-40734

Invoice Number: 16079662101

Town of Ithaca - N01000001098656
St Lt Forest Hm, Ithaca, NY 14850-9353

Account ID: 633657

Read Dates: 10/01/2019 - 10/31/2019

**Tax Charges**

0.00

Market Charges

3.88

**Contract Charges**

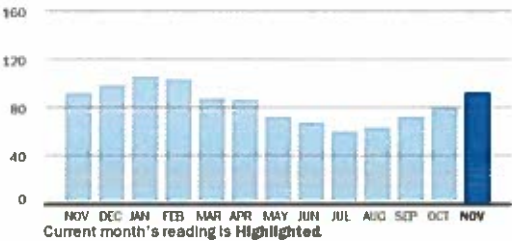
47.82

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	993.00 KWH	\$0.0481600	\$47.82
Subtotal Contract Charges			\$47.82
Market Charges			
Zero Emissions Credit	993.00 KWH	\$0.0037100	\$3.68
Renewable Portfolio Standards	993.00 KWH	\$0.0002020	\$0.20
Subtotal Market Charges			\$3.88
Tax Charges			
State Sales Tax	51.70 EXEMPT		\$0.00
County Sales Tax	51.70 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$51.70

Town of Ithaca - N01000001141068
Clover Ln, Ithaca, NY 14850-9353

Account ID: 822729
Read Dates: 10/01/2019 - 10/31/2019



Tax Charges
0.00
Market Charges
0.36



Contract Charges
4.43

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	92.00 KWH	\$0.0481600	\$4.43
Subtotal Contract Charges			\$4.43
Market Charges			
Zero Emissions Credit	92.00 KWH	\$0.0037100	\$0.34
Renewable Portfolio Standards	92.00 KWH	\$0.0002020	\$0.02
Subtotal Market Charges			\$0.36
Tax Charges			
State Sales Tax	4.79 EXEMPT		\$0.00
County Sales Tax	4.79 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$4.79

03100002-00000762-00000019 of 00000802-LU3-ps-4336-P000022

Statement Number: 16189479101

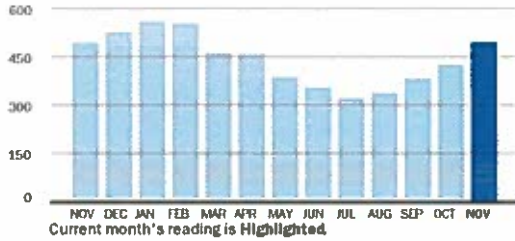
Customer Number: 68179640734

Invoice Number: 16079629101

Town of Ithaca - N01000001523901
St Lt Renwick, Ithaca, NY 14850-9353

Account ID: 822731

Read Dates: 10/01/2019 - 10/31/2019



Tax Charges

0.00

Market Charges

1.94



Contract Charges

23.84

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	495.00 KWH	\$0.0481600	\$23.84
Subtotal Contract Charges			\$23.84
Market Charges			
Renewable Portfolio Standards	495.00 KWH	\$0.0002020	\$0.10
Zero Emissions Credit	495.00 KWH	\$0.0037100	\$1.84
Subtotal Market Charges			\$1.94
Tax Charges			
County Sales Tax	25.78 EXEMPT		\$0.00
State Sales Tax	25.78 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$25.78

Statement Number: 16189479101

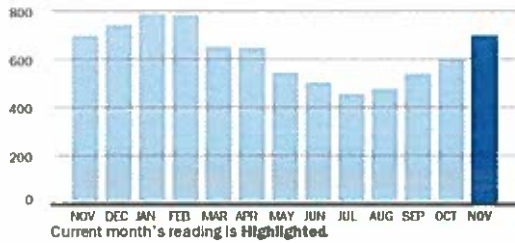
Customer Number: 681796-40734

Invoice Number: 16079628501

Town of Ithaca - N01000001949445
Eastwood Common, Ithaca, NY 14850-9353

Account ID: 622730

Read Dates: 10/01/2019 - 10/31/2019



Tax Charges

0.00

Market Charges

2.72



Contract Charges

33.47

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	695.00 KWH	\$0.0481600	\$33.47
Subtotal Contract Charges			\$33.47
Market Charges			
Renewable Portfolio Standards	695.00 KWH	\$0.0002020	\$0.14
Zero Emissions Credit	695.00 KWH	\$0.0037100	\$2.58
Subtotal Market Charges			\$2.72
Tax Charges			
State Sales Tax	36.19 EXEMPT		\$0.00
County Sales Tax	36.19 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$36.19

Statement Number: 16189479101

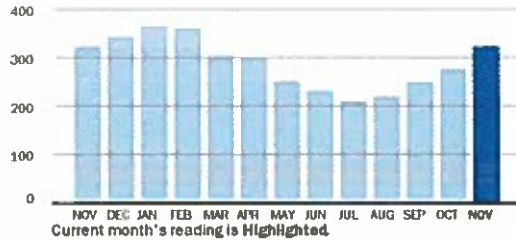
Customer Number: 681796-40734

Invoice Number: 16079627301

Town of Ithaca - N01000002332872
St Lt Burleigh Dr, Ithaca, NY 14850-9353

Account ID: 622727

Read Dates: 10/01/2019 - 10/31/2019



Tax Charges

0.00

Market Charges

1.27



Contract Charges

15.60

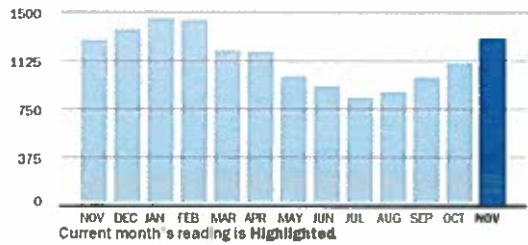
SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	324.00 KWH	\$0.0481600	\$15.60
Subtotal Contract Charges			\$15.60
Market Charges			
Zero Emissions Credit	324.00 KWH	\$0.0037100	\$1.20
Renewable Portfolio Standards	324.00 KWH	\$0.0002020	\$0.07
Subtotal Market Charges			\$1.27
Tax Charges			
State Sales Tax	16.87 EXEMPT		\$0.00
County Sales Tax	16.87 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$16.87

Statement Number: 16189479101
Customer Number: 68179640734
Invoice Number: 16079625601

Town of Ithaca - N01000002375558
Westhaven Rd Stlgt, Ithaca, NY 14850-9353

Account ID: 622725
Read Dates: 10/01/2019 - 10/31/2019



Tax Charges
0.00

Market Charges
5.05



Contract Charges
62.22

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	1,292.00 KWH	\$0.0481600	\$62.22
Subtotal Contract Charges			\$62.22
Market Charges			
Renewable Portfolio Standards	1,292.00 KWH	\$0.0002020	\$0.26
Zero Emissions Credit	1,292.00 KWH	\$0.0037100	\$4.79
Subtotal Market Charges			\$5.05
Tax Charges			
State Sales Tax	67.27 EXEMPT		\$0.00
County Sales Tax	67.27 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$67.27

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Statement Number: 16189479101

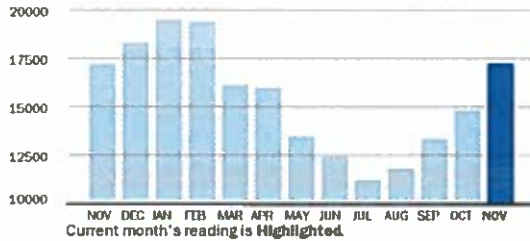
Customer Number: 681796-40734

Invoice Number: 16079630801

At Large - N01000002760015
St Light, Ithaca, NY 14850-9353

Account ID: 622733

Read Dates: 10/01/2019 - 10/31/2019

**Tax Charges**

0.00

Market Charges

67.57

**Contract Charges**

831.87

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	17,273.00 KWH	\$0.0481600	\$831.87
Subtotal Contract Charges			\$831.87
Market Charges			
Renewable Portfolio Standards	17,273.00 KWH	\$0.0002020	\$3.49
Zero Emissions Credit	17,273.00 KWH	\$0.0037100	\$64.08
Subtotal Market Charges			\$67.57
Tax Charges			
State Sales Tax	899.44 EXEMPT		\$0.00
County Sales Tax	899.44 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$899.44

Statement Number: 16189479101

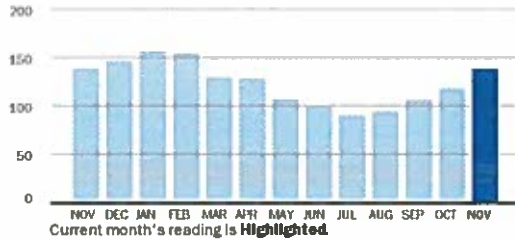
Customer Number: 681796-40734

Invoice Number: 16079628101

Town of Ithaca - N01000003186095**St-Light, Ithaca, NY 14850-9353**

Account ID: 622728

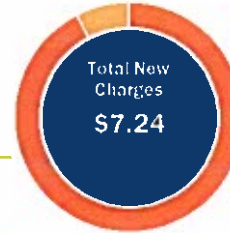
Read Dates: 10/01/2019 - 10/31/2019

**Tax Charges**

0.00

Market Charges

0.55

**Contract Charges**

6.69

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	139.00 KWH	\$0.0481600	\$6.69
Subtotal Contract Charges			\$6.69
Market Charges			
Zero Emissions Credit	139.00 KWH	\$0.0037100	\$0.52
Renewable Portfolio Standards	139.00 KWH	\$0.0002020	\$0.03
Subtotal Market Charges			\$0.55
Tax Charges			
State Sales Tax	7.24 EXEMPT		\$0.00
County Sales Tax	7.24 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$7.24

Statement Number: 16189479101

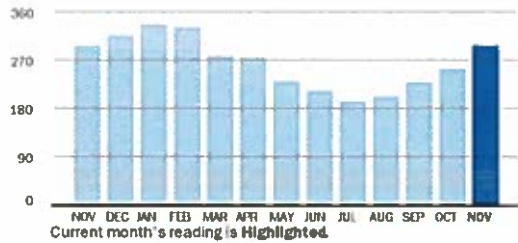
Customer Number: 681796-40734

Invoice Number: 16079629901

Town of Ithaca - N01000003611696
Glenside St Lgt, Ithaca, NY 14850-9353

Account ID: 622732

Read Dates: 10/01/2019 - 10/31/2019



Tax Charges

0.00

Market Charges

1.16



Contract Charges

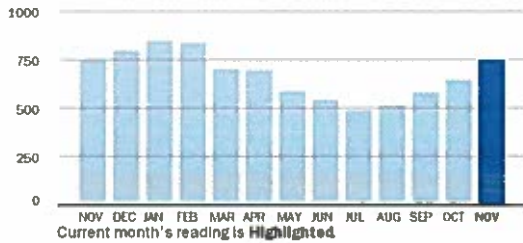
14.30

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	297.00 KWH	\$0.0481600	\$14.30
Subtotal Contract Charges			\$14.30
Market Charges			
Zero Emissions Credit	297.00 KWH	\$0.0037100	\$1.10
Renewable Portfolio Standards	297.00 KWH	\$0.0002020	\$0.06
Subtotal Market Charges			\$1.16
Tax Charges			
State Sales Tax	15.46 EXEMPT		\$0.00
County Sales Tax	15.46 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$15.46

Invoice Number: 16079626401

Read Dates: 10/01/2019 - 10/31/2019



2.92



35.98

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Fixed Price	747.00 KWH	\$0.0481600	\$35.98
Subtotal Contract Charges			\$35.98
Market Charges			
Zero Emissions Credit	747.00 KWH	\$0.0037100	\$2.77
Renewable Portfolio Standards	747.00 KWH	\$0.0002020	\$0.15
Subtotal Market Charges			\$2.92
Tax Charges			
County Sales Tax	38.90 EXEMPT		\$0.00
State Sales Tax	38.90 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$38.90

Town of Newfield (Delivery)



TOWN OF NEWFIELD

Account Number: 1001-1855-433

Statement Date: December 04, 2018

Amount Due: \$285.81

Service Address: ST LT AT LARGE, NEWFIELD NY 14867

Page 1 of 4

Next Scheduled Read Date: On or about December 31, 2018

A 5182.4

Account Summary

Previous invoice	\$285.81
Payments received as of 12/03/18	-285.81
Balance forward	0.00
Miscellaneous charges	0.81
Budget billing amount	285.00

Payment due upon receipt.	\$285.81
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To avoid a 1.5% late payment charge, please ensure payment is received by the date displayed below.

Street Lighting

See details beginning on page 3

See messages on page 2

035945 1/2

Budget Billing Summary**Plan End Date: 01/2019**

Current Month	Actual Charges since 02/01/18	Budgets Billed since 02/01/18	Budget Balance (after payment)
285.00	2,917.32	2,850.00	67.32

Think of the minutes, money and natural resources you'll save by doing business online or by phone 24/7.

Visit nyseg.com to:

- View and pay your bill online
- Submit and view meter readings
- Enroll and manage budget billing
- Enroll in Autopay

Call our self-service line at **1.800.600.2275** for billing information, provide a meter reading and to pay by phone.

Add \$1, \$2, or \$5 to your payment to make a tax-deductible donation to NYSEG and RG&E Project SHARE Heating Fund. Learn more at nyseg.com.

1,2,6

Please return bottom portion with your payment. Make checks payable to NYSEG.



Service Address: ST LT AT LARGE, NEWFIELD NY 14867
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 4



Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/18 - 11/30/18
PoD ID: N01000003952470

Electricity Delivery Charges

Delivery charge	2349	kwh	@	0.02342	55.01
SBC charge	2349	kwh	@	0.006332	14.87
Transition charge	2349	kwh	@	-0.000288	-0.68
Revenue decoupling mech	2349	kwh	@	-0.000103	-0.24
400W MRC light	1	lamp	@	4.72	4.72
100W HPS cobra head light	1	lamp	@	8.15	8.15
150W HPS cobra head light	8	lamps	@	8.15	65.20
250W HPS cobra head light	7	lamps	@	8.15	57.05
400W HPS cobra head light	1	lamp	@	8.62	8.62
400W MHL cobra head light	2	lamps	@	15.87	31.74
High mount use pole	1	pole	@	33.54	33.54

035045 2/2

Subtotal Electricity Delivery \$277.98

Total Electricity Cost \$277.98

Total Energy Charges \$277.98

Miscellaneous Charges

12/04/18 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81

6979



TOWN OF NEWFIELD

Account Number: 1001-1855-425

Statement Date: December 04, 2018

Amount Due: \$1,353.71

Service Address: STREET LIGHTING, NEWFIELD NY 14867

Next Scheduled Read Date: On or about December 31, 2018

Page 1 of 4

Account Summary

Previous invoice	\$1,348.84
Payments received as of 12/03/18	-1,348.84
Balance forward	0.00
Energy charges	1,352.90
Miscellaneous charges	0.81
Payment due upon receipt.	\$1,353.71

To avoid a 1.5% late payment charge, please ensure payment is received by the date displayed below.

521-5182.4

Street Lighting

See details beginning on page 3

See messages on page 2

035944 1/2

Think of the minutes, money and natural resources you'll save by doing business online or by phone 24/7.

Visit nyseg.com to:

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- Submit and view meter readings
- Enroll and manage budget billing
- Enroll in Autopay

Call our self-service line at **1.800.600.2275** for billing information, provide a meter reading and to pay by phone.


Add \$1, \$2, or \$5 to your payment to make a tax-deductible donation to NYSEG and RG&E Project SHARE Heating Fund. Learn more at nyseg.com.

1,2,6



Service Address: STREET LIGHTING, NEWFIELD NY 14867
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 4

 **Electricity Service - Street Lighting**
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/18 - 11/30/18
PoD ID: N01000003101409

Electricity Delivery Charges

Delivery charge	5572	kwh	@	0.02342	130.50
SBC charge	5572	kwh	@	0.006332	35.28
Transition charge	5572	kwh	@	-0.000288	-1.60
Revenue decoupling mech	5572	kwh	@	-0.000103	-0.57
100W MRC light	12	lamps	@	4.45	53.40
175W MRC light	4	lamps	@	4.45	17.80
250W MRC light	2	lamps	@	4.65	9.30
70W HPS cobra head light	58	lamps	@	8.15	472.70
100W HPS cobra head light-Nov	9	lamps	@	4.08	36.72
100W HPS cobra head light-Nov	9	lamps	@	3.26	29.34
100W HPS cobra head light-Nov	9	lamps	@	0.82	7.38
150W HPS cobra head light	11	lamps	@	8.15	89.65
250W HPS cobra head light	1	lamp	@	8.15	8.15
70W HPS post top light	3	lamps	@	9.42	28.26
100W HPS post top light	13	lamps	@	10.70	139.10
400W HPS flood light	1	lamp	@	15.67	15.67
Standard pole	1	pole	@	12.26	12.26
Fiberglass pole - 18' to 22'	16	poles	@	9.37	149.92
Standard bracket, 16' and over	2	brkts	@	2.89	5.78
Direct burial cable	1385	feet	@	0.08221	113.86

Subtotal Electricity Delivery \$1,352.90

Total Electricity Cost \$1,352.90

Total Energy Charges \$1,352.90

Miscellaneous Charges

12/04/18 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81

Town of Newfield (Supply)



Constellation.

An Exelon Company

Town of Newfield
166 Main Street
Newfield, NY 14867

Monthly Invoice

Statement Date: 10/30/2018

Customer Number: 25723-40486

Total Amount Due by 11/20/2018

\$529.51

Statement Number: 13073240601

Previous Balance:	\$304.76
Payments Since Last Invoice:	-\$304.76
Unpaid Balance:	\$0.00
Late/Finance Charges:	\$0.00
Credit/Adjustments:	\$0.00
Total New Charges:	\$529.51

HOW WE CALCULATED YOUR BILL

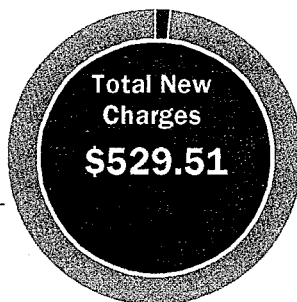
See reverse side for detailed description of charges →

Tax Charges

\$0.00

Market Charges

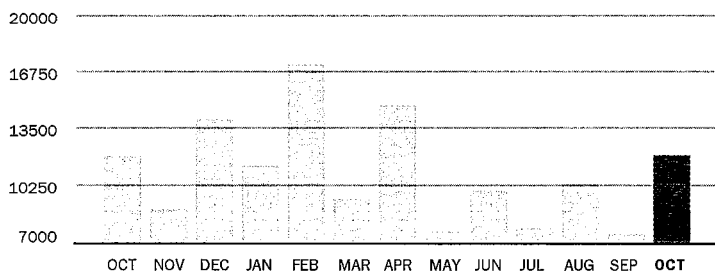
\$520.49



Contract Charges

\$9.02

CONSUMPTION HISTORY



MONTHLY USAGE

Current Month **12,032** KWH

Last Month
7,525
KWH

You can also pay your bill online - go to Energy Manager at <https://energymanager.constellation.com> to get started. It's fast, simple and secure.

Detach stub and enclose with your payment in return envelope. Please write your statement number on your check. Thank you for your payment!

Total Amount Due by 11/20/2018

\$529.51

Adjustments: Any adjustments that were made to your account within the invoice period. Adjustments may be made for a variety of reasons, including special contract calculations, corrections to prior bills, or settlement of disputed charges.

Administration Fee or Service Charge: The fee or charge set forth for each account per billing cycle.

Ancillary Service Charges: Charges regarding ancillary services as set forth in the applicable Independent Service Operator (ISO) Open Access Transmission Tariff (OATT) and for other ISO costs not included in the definition of Capacity Costs, Energy Costs, and Transmission Costs. Generally, these costs are associated with ensuring the reliability of the electrical grid.

Capacity Charge: Charge for fulfilling the capacity requirements for the Account(s) imposed by the ISO or otherwise. Generally, these costs are associated with ensuring there is enough generating capacity available now and in the future to meet customer requirements.

Energy Charge - Non-Time of Use (TOU): Charge per kWh for electricity supplied for all hours of each day.

Kilowatt Hour (kWh): A measure of the quantity of electricity (energy) that you use.

Late Fees or Finance Charges: Additional charges assessed to accounts for late payment of invoices. Payment terms and charge calculations are specified in your contract.

Line Loss Charges: The cost associated with the loss of electricity as it travels over the transmission and distribution wires.

Locational Forward Reserves (LFR): Ancillary service administered by the ISO that facilitates the availability of generating units in the future to provide backup reserve service to ensure system reliability.

Reliability Must Run (RMR): Ancillary service administered by the ISO. Generation resources scheduled to operate out-of-merit order and identified by the ISO as necessary to preserve regional system reliability.

Renewable Portfolio Standards Cost (RPS): NewEnergy's cost of procuring renewable energy to comply with Renewable Portfolio Standards (RPS) requirements, usually established by individual states. Generally, these costs are associated with requirements to support generating units that produce power using renewable fuels such as water (hydro-electric) and solar.

Retail Service Charge: A contracted charge for supplying electricity to an account, based upon total kWh consumption per billing cycle.

Retail Trade Transaction (RTT): The fixed unit Price and Quantity for a specific commodity for a specific delivery point and pattern.

Transmission Service Charge: The charge for Network Transmission Service as identified in the applicable OATT Tariff for the provision of transmission service by the ISO within the Utility's service territory. Generally, these costs are associated with building and maintaining the electric transmission lines.

Disputed Invoices: Should you question any portion of your Constellation NewEnergy invoice, please call 844-6ENERGY (844-636-3749) Monday to Friday 7AM-6PM Central Time, email CustomerCare@Constellation.com, or write to: Constellation NewEnergy, c/o Customer Care, PO Box 4911 Houston, TX 77210-4911. If you have a billing dispute that you are not able to resolve with Constellation NewEnergy you may file a complaint with the New York State Public Service Commission (PSC). The PSC can be reached by phone at 800-342-3377 or you may visit their website at www.dps.state.ny.us.

Your Utility Contact Information

Service Interruption/Electric Emergency
New York State Electric & Gas Corp
800-572-1131

Non-Emergencies
800-572-1111

DISCLAIMER: General Understanding - This glossary is for informational purposes only. Please refer to your agreement with us for the defined terms that govern the contractual obligations applicable to us supplying you. Not all defined terms set forth above may be applicable to your agreement with Constellation NewEnergy.

Total Amount Due by 11/20/2018

\$529.51**CHARGES BY SITE (Con't)**

Town of Newfield - N01000003101409

Street Lighting, Newfield, NY 14867

Invoice Number: 13073240601

Customer Number: 25723-40486

Meter Number: UNMETERED

Read Dates: 09/01/2018 - 09/30/2018

Account ID: 1144988

Product: Index Solutions

Usage: 4,481.000

Previous Balance	Payments	Late/Finance Charges	Credit/ Adjustments	Total New Charges	Total Amount Due
\$149.30	-\$149.30	\$0.00	\$0.00	\$164.76	\$164.76

Town of Newfield - N01000003952470

St Lt At Large, Newfield, NY 14867

Invoice Number: 13073240701

Customer Number: 25723-40486

Meter Number: UNMETERED

Read Dates: 09/01/2018 - 09/30/2018

Account ID: 1144987

Product: Index Solutions

Usage: 2,106.000

Previous Balance	Payments	Late/Finance Charges	Credit/ Adjustments	Total New Charges	Total Amount Due
\$70.27	-\$70.27	\$0.00	\$0.00	\$77.43	\$77.43

SL 5182.41

Town of Newfield - N01000006144489

NEAR 8 BRIDGE ST, NEWFIELD, NY 14867

Invoice Number: 13115964101

Customer Number: 25723-40486

Meter Number: NAB0099953934

Read Dates: 09/08/2018 - 10/03/2018

Account ID: 1144931

Product: Index Solutions

Usage: 0.000

Previous Balance	Payments	Late/Finance Charges	Credit/ Adjustments	Total New Charges	Total Amount Due
\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

A 5182.41

Statement Number: 13073240601

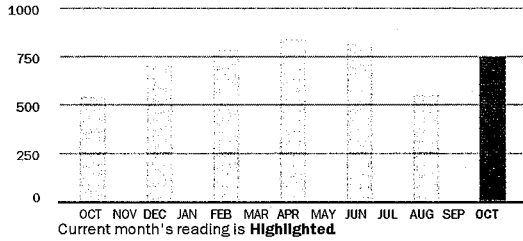
Customer Number: 25723-40486

Invoice Number: 13115966701

Town of Newfield - N01000000424937
NEAR 155 MAIN ST, NEWFIELD, NY 14867

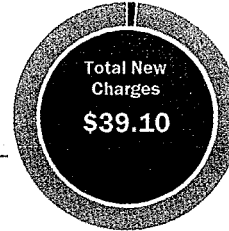
Account ID: 1144934

Read Dates: 08/04/2018 - 10/03/2018



Tax Charges
0.00

Market Charges
38.53



Contract Charges
0.57

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Adder	754.00 KWH	\$0.0007500	\$0.57
Subtotal Contract Charges			\$0.57
Market Charges			
Market Energy - Real Time	754.00 KWH	\$0.0364500	\$27.48
Renewable Portfolio Standards	754.00 KWH	\$0.0000295	\$0.02
Rest of State Capacity Charge	1.51 KW	\$4.0168900	\$6.06
Zero Emissions Credit	754.00 KWH	\$0.0032605	\$2.46
Ancillary Services	754.00 KWH	\$0.0031859	\$2.40
Transmission Owner Transmission Solutions	754.00 KWH	\$0.0001486	\$0.11
Subtotal Market Charges			\$38.53
Tax Charges			
County Sales Tax	39.10 EXEMPT		\$0.00
State Sales Tax	39.10 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$39.10

Statement Number: 13073240601

Customer Number: 25723-40486

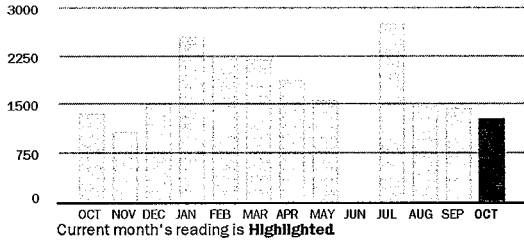
Invoice Number: 13152493401

Town of Newfield - N01000000850784

166 Main St Town Hall, Newfield, NY 14867-9264

Account ID: 1144925

Read Dates: 09/11/2018 - 10/11/2018

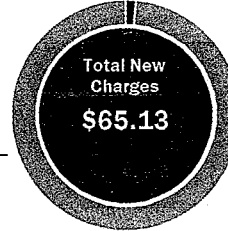


Tax Charges

0.00

Market Charges

64.17



Contract Charges

0.96

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Adder	1,280.00 KWH	\$0.0007500	\$0.96
Subtotal Contract Charges			\$0.96
Market Charges			
Rest of State Capacity Charge	3.78 KW	\$3.5211600	\$13.31
Renewable Portfolio Standards	1,280.00 KWH	\$0.0000295	\$0.04
Transmission Owner Transmission Solutions	1,280.00 KWH	\$0.0001429	\$0.18
Market Energy - Real Time	1,280.00 KWH	\$0.0335600	\$42.96
Ancillary Services	1,280.00 KWH	\$0.0027414	\$3.51
Zero Emissions Credit	1,280.00 KWH	\$0.0032605	\$4.17
Subtotal Market Charges			\$64.17
Tax Charges			
County Sales Tax	65.13 EXEMPT		\$0.00
State Sales Tax	65.13 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$65.13

Statement Number: 13073240601

Customer Number: 25723-40486

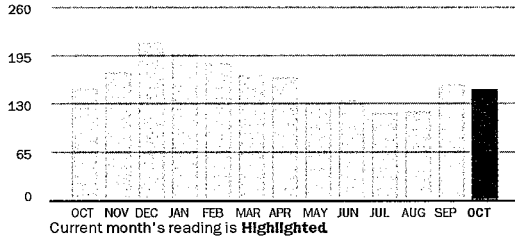
Invoice Number: 13145977001

Town of Newfield - N01000001396506

Rt 13, Newfield, NY 14867

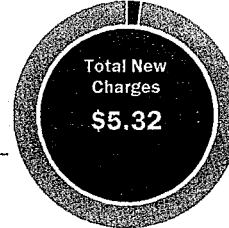
Account ID: 1144936

Read Dates: 09/12/2018 - 10/09/2018



Tax Charges
0.00

Market Charges
5.21



Contract Charges
0.11

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Adder	151.00 KWH	\$0.0007500	\$0.11
Subtotal Contract Charges			\$0.11
Market Charges			
Zero Emissions Credit	151.00 KWH	\$0.0032605	\$0.49
Renewable Portfolio Standards	151.00 KWH	\$0.0000295	\$0.00
Ancillary Services	151.00 KWH	\$0.0027410	\$0.41
Rest of State Capacity Charge	0.00 KW	\$0.0000000	\$0.00
Market Energy - Real Time	151.00 KWH	\$0.0284400	\$4.29
Transmission Owner Transmission Solutions	151.00 KWH	\$0.0001429	\$0.02
Subtotal Market Charges			\$5.21
Tax Charges			
County Sales Tax	5.32 EXEMPT		\$0.00
State Sales Tax	5.32 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$5.32

0200276-0003092-0000049 of 0000058-C03-p2-4307--P00276

Statement Number: 13073240601

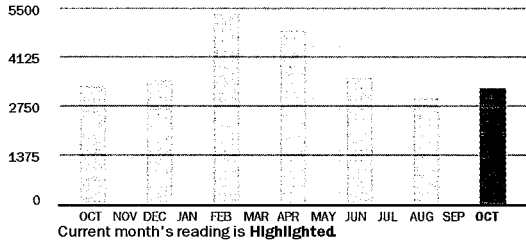
Customer Number: 25723-40486

Invoice Number: 13107269901

Town of Newfield - N01000001825355
79 Main St, Newfield, NY 14867-9312

Account ID: 1144928

Read Dates: 08/03/2018 - 10/03/2018

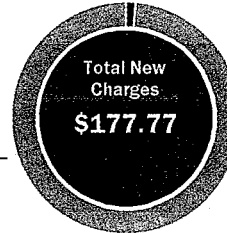


Tax Charges

0.00

Market Charges

175.33



Contract Charges

2.44

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Adder	3,260.00 KWH	\$0.0007500	\$2.44
Subtotal Contract Charges			\$2.44
Market Charges			
Ancillary Services	3,260.00 KWH	\$0.0031943	\$10.41
Market Energy - Real Time	3,260.00 KWH	\$0.0363900	\$118.63
Rest of State Capacity Charge	8.72 KW	\$4.0220900	\$35.08
Zero Emissions Credit	3,260.00 KWH	\$0.0032605	\$10.63
Renewable Portfolio Standards	3,260.00 KWH	\$0.0000295	\$0.10
Transmission Owner Transmission Solutions	3,260.00 KWH	\$0.0001487	\$0.48
Subtotal Market Charges			\$175.33
Tax Charges			
County Sales Tax	177.77 EXEMPT		\$0.00
State Sales Tax	177.77 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$177.77

Statement Number: 13073240601

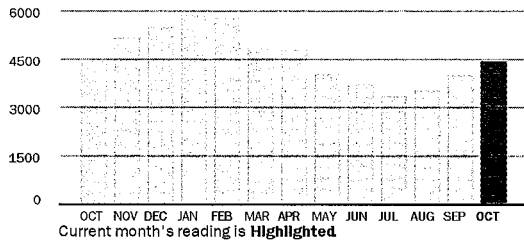
Customer Number: 25723-40486

Invoice Number: 13073240601

Town of Newfield - N01000003101409**Street Lighting, Newfield, NY 14867**

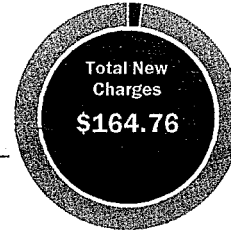
Account ID: 1144988

Read Dates: 09/01/2018 - 09/30/2018



Tax Charges
0.00

Market Charges
161.40



Contract Charges
3.36

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Adder	4,481.00 KWH	\$0.0007500	\$3.36
Subtotal Contract Charges			\$3.36
Market Charges			
Renewable Portfolio Standards	4,481.00 KWH	\$0.0000295	\$0.13
Transmission Owner Transmission Solutions	4,481.00 KWH	\$0.0001429	\$0.64
Market Energy - Real Time	4,481.00 KWH	\$0.0298600	\$133.80
Zero Emissions Credit	4,481.00 KWH	\$0.0032605	\$14.61
Rest of State Capacity Charge	0.00 KW	\$0.0000000	\$0.00
Ancillary Services	4,481.00 KWH	\$0.0027262	\$12.22
Subtotal Market Charges			\$161.40
Tax Charges			
County Sales Tax	164.76 EXEMPT		\$0.00
State Sales Tax	164.76 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$164.76

Statement Number: 13073240601

Customer Number: 25723-40486

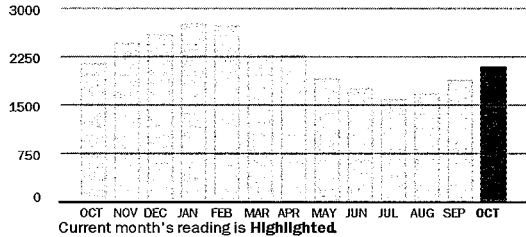
Invoice Number: 13073240701

Town of Newfield - N01000003952470

St Lt At Large, Newfield, NY 14867

Account ID: 1144987

Read Dates: 09/01/2018 - 09/30/2018

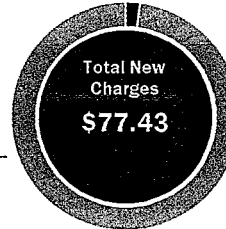


Tax Charges

0.00

Market Charges

75.85



Contract Charges

1.58

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Adder	2,106.00 KWH	\$0.0007500	\$1.58
Subtotal Contract Charges			\$1.58
Market Charges			
Renewable Portfolio Standards	2,106.00 KWH	\$0.0000295	\$0.06
Transmission Owner Transmission Solutions	2,106.00 KWH	\$0.0001429	\$0.30
Zero Emissions Credit	2,106.00 KWH	\$0.0032605	\$6.87
Rest of State Capacity Charge	0.00 KW	\$0.0000000	\$0.00
Market Energy - Real Time	2,106.00 KWH	\$0.0298600	\$62.88
Ancillary Services	2,106.00 KWH	\$0.0027262	\$5.74
Subtotal Market Charges			\$75.85
Tax Charges			
County Sales Tax	77.43 EXEMPT		\$0.00
State Sales Tax	77.43 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$77.43

Statement Number: 13073240601

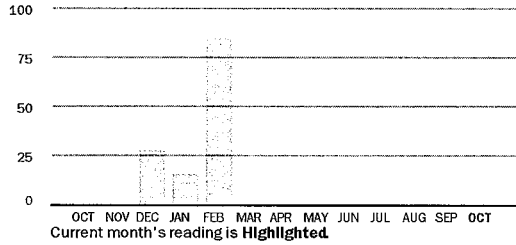
Customer Number: 25723-40486

Invoice Number: 13115964101

Town of Newfield - N01000006144489
NEAR 8 BRIDGE ST, NEWFIELD, NY 14867

Account ID: 1144931

Read Dates: 09/08/2018 - 10/03/2018



Market Charges
0.00

Total New
Charges
\$0.00

Contract Charges
0.00

SITE DETAILED CHARGES

	QUANTITY	RATE	AMOUNT
Contract Charges			
Energy - Adder	0.00 KWH	\$0.0007500	\$0.00
Subtotal Contract Charges			\$0.00
Market Charges			
Market Energy - Real Time	0.00 KWH	\$0.0000000	\$0.00
Transmission Owner Transmission Solutions	0.00 KWH	\$0.0000000	\$0.00
Renewable Portfolio Standards	0.00 KWH	\$0.0000000	\$0.00
Rest of State Capacity Charge	0.00 KW	\$0.0000000	\$0.00
Ancillary Services	0.00 KWH	\$0.0000000	\$0.00
Zero Emissions Credit	0.00 KWH	\$0.0000000	\$0.00
Subtotal Market Charges			\$0.00
Total New Charges			\$0.00

0200276-0003096-0000057 of 0000058-C03-p2-4307-P00276

Town of Caroline (Delivery)



Service Address: SLATERVILLE RD STLT, BROOKTONTDALE NY 14817
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 4

💡 Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/18 - 11/30/18
PoD ID: N01000003995149

Electricity Delivery Charges

Delivery charge	1029	kwh	@	0.02342	24.10
SBC charge	1029	kwh	@	0.006332	6.52
Transition charge	1029	kwh	@	-0.000288	-0.30
Revenue decoupling mech	1029	kwh	@	-0.000103	-0.11
100W HPS cobra head light	18	lamps	@	8.15	146.70
150W HPS cobra head light	2	lamps	@	8.15	16.30

Subtotal Electricity Delivery \$193.21

Total Electricity Cost \$193.21

Total Energy Charges \$193.21

Miscellaneous Charges

12/04/18 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81



Service Address: BROOKTONDALE ST LT, SLATERVILLE SPRINGS NY 14881
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 4



Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/18 - 11/30/18
PoD ID: N01000001439017

Electricity Delivery Charges

Delivery charge	1278	kwh	@	0.02342	29.93
SBC charge	1278	kwh	@	0.006332	8.09
Transition charge	1278	kwh	@	-0.000288	-0.37
Revenue decoupling mech	1278	kwh	@	-0.000103	-0.13
100W HPS cobra head light	26	lamps	@	8.15	211.90

Subtotal Electricity Delivery \$249.42

Total Electricity Cost \$249.42

Total Energy Charges \$249.42

Miscellaneous Charges

12/04/18 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81



Service Address: ST LT SPEEDSVLE, SLATERVILLE SPRINGS NY 14881
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 4



Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/18 - 11/30/18
PoD ID: N01000001864099

Electricity Delivery Charges

Delivery charge	442	kwh	@	0.02342	10.35
SBC charge	442	kwh	@	0.006332	2.80
Transition charge	442	kwh	@	-0.000288	-0.13
Revenue decoupling mech	442	kwh	@	-0.000103	-0.05
100W HPS cobra head light	9	lamps	@	8.15	73.35

Subtotal Electricity Delivery \$86.32

Total Electricity Cost \$86.32

Total Energy Charges \$86.32

Miscellaneous Charges

12/04/18 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81



Service Address: ST LIGHT, BROOKTONDALE NY 14817
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 4



Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 11/01/18 - 11/30/18
PoD ID: N01000000629535

Electricity Delivery Charges

Delivery charge	1443	kwh	@	0.02342	33.80
SBC charge	1443	kwh	@	0.006332	9.14
Transition charge	1443	kwh	@	-0.000288	-0.42
Revenue decoupling mech	1443	kwh	@	-0.000103	-0.15
100W HPS cobra head light	15	lamps	@	8.15	122.25
150W HPS cobra head light	7	lamps	@	8.15	57.05
250W HPS cobra head light	1	lamp	@	8.15	8.15
150W HPS Turnpike light	1	lamp	@	18.67	18.67
Standard pole	6	poles	@	12.26	61.30
Standard bracket, 16' and over	2	brkts	@	2.89	5.78

Subtotal Electricity Delivery \$315.57

Total Electricity Cost \$315.57

Total Energy Charges \$315.57

Miscellaneous Charges

12/04/18 Payment & billing svcs charge 0.81

Total Miscellaneous Charges \$0.81

Town of Caroline (Supply)



Constellation

An Exelon Company

Town of Caroline - N01000000629535
St Light
Brooktondale, NY 14817

RECEIVED

DEC 11 2018

TOWN OF CAROLINE

Monthly Invoice

Statement Date: 12/04/2018

Customer Number: 681700-7

Total Amount Due by 01/04/2019

\$62.81

Rate Plan: Index Solutions
Account ID: 622503
Utility Number: N01000000629535
Service Period: 11/1/2018 to 11/30/2018
Statement Number: 13552716601

Previous Balance:	\$46.50
Payments Since Last Invoice:	-\$46.50
Unpaid Balance:	\$0.00
Late/Finance Charges:	\$0.00
Credit/Adjustments:	\$0.00
Total New Charges:	\$62.81

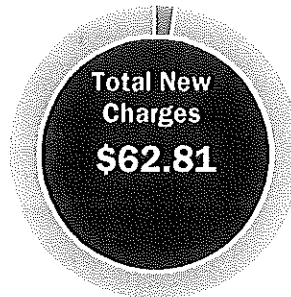
HOW WE CALCULATED YOUR BILL

See reverse side for detailed description of charges ➡

\$0.00

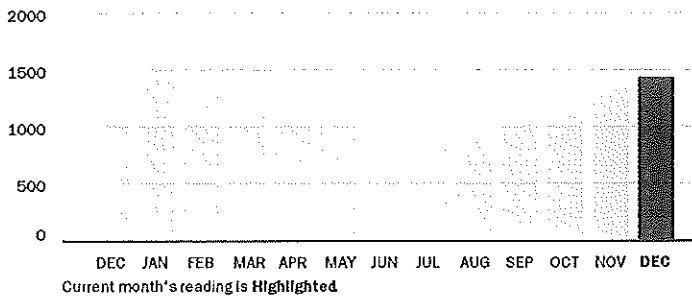
Contract Charges

\$61.37



Contract Charges
\$1.44

CONSUMPTION HISTORY



MONTHLY USAGE

Current Month **1,443** KWH

0.0% from last year

Last Month
1,358
KWH

Last Year
1,443
KWH

You can also pay your bill online - go to Energy Manager at <https://energymanager.constellation.com> to get started. It's fast, simple and secure.
Detach stub and enclose with your payment in return envelope. Please write your statement number on your check. Thank you for your payment!



Town of Caroline - NO1000006192850
2670 Slaterville Rd
Slaterville, NY 14881-9412

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DEC 03 2018

Monthly Invoice

Statement Date: 11/28/2018

Customer Number: 681700-9

TOWN OF CAROLINE

No Payment Due

Rate Plan: Index Solutions
Account ID: 622508
Utility Number: NO1000006192850
Service Period: 10/26/2018 to 11/27/2018
Statement Number: 13515059001

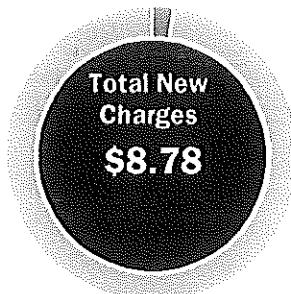
Previous Balance:	-\$36.00
Payments Since Last Invoice:	\$0.00
Unpaid Balance:	-\$36.00
Late/Finance Charges:	\$0.00
Credit/Adjustments:	\$0.00
Total New Charges:	\$8.78

HOW WE CALCULATED YOUR BILL

See reverse side for detailed description of charges ➔

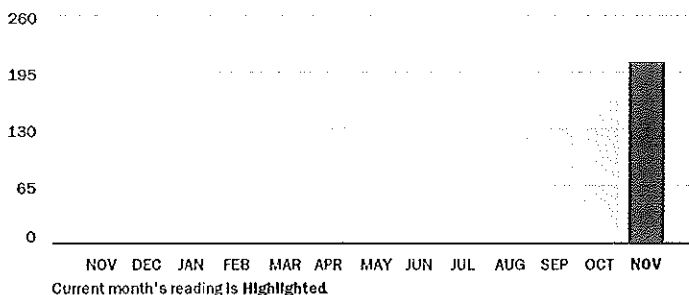
\$0.00

\$8.57



Contract Charges
\$0.21

CONSUMPTION HISTORY



MONTHLY USAGE

Current Month **208** KWH
0.0% from last year

Last Month
173
KWH

Last Year
208
KWH

You can also pay your bill online - go to Energy Manager at <https://energymanager.constellation.com> to get started. It's fast, simple and secure.
Detach stub and enclose with your payment in return envelope. Please write your statement number on your check. Thank you for your payment!

**HAVE A QUESTION OR EMERGENCY?**

To Contact Your Local Utility
New York State Electric & Gas Corp
800-572-1131

No Payment Due

For Customer Care Contact Constellation

Website <https://energymanager.constellation.com>
Email CustomerCare@Constellation.com
Phone 844-6ENERGY (844-636-3749)

Meter Number:	Previous Meter Read Date	Current Meter Read Date	USAGE
UNMETERED	10/26/2018	11/27/2018	208.000

DETAILED CHARGES

Contract Charges	Quantity	Rate	Amount
Energy - Adder	208.00 KWH	\$0.0010000/KWH	\$0.21
Subtotal Contract Charges			\$0.21
Market Charges			
Ancillary Services	208.00 KWH	\$0.0026626/KWH	\$0.55
Market Energy - Real Time	208.00 KWH	\$0.0351200/KWH	\$7.30
Rest of State Capacity Charge	0.00 KW	\$0.0000000/KW	\$0.00
Renewable Portfolio Standards	208.00 KWH	\$0.0000295/KWH	\$0.01
Transmission Owner Transmission Solutions	208.00 KWH	\$0.0001634/KWH	\$0.03
Zero Emissions Credit	208.00 KWH	\$0.0032605/KWH	\$0.68
Subtotal Market Charges			\$8.57
Tax Charges			
County Sales Tax	8.78 EXEMPT		\$0.00
State Sales Tax	8.78 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$8.78



Constellation

An Exelon Company

Barn - N01000008635583
866 Valley Rd
Brooktondale, NY 14817-9748

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DEC 04 2018

TOWN OF CAROLINE

Monthly Invoice

Statement Date: 11/30/2018

Customer Number: 681700-2

Total Amount Due by 12/31/2018

\$1.78

Rate Plan: Index Solutions
Account ID: 622509
Utility Number: N01000008635583
Service Period: 10/27/2018 to 11/29/2018
Statement Number: 13529967601

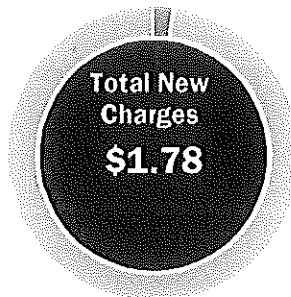
Previous Balance:	\$0.67
Payments Since Last Invoice:	-\$0.67
Unpaid Balance:	\$0.00
Late/Finance Charges:	\$0.00
Credit/Adjustments:	\$0.00
Total New Charges:	\$1.78

HOW WE CALCULATED YOUR BILL

See reverse side for detailed description of charges →

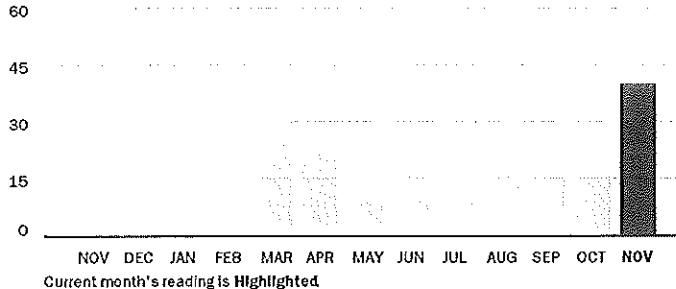
\$0.00

\$1.74



Contract Charges
\$0.04

CONSUMPTION HISTORY



MONTHLY USAGE

Current Month **40** KWH

▲ **>1000%** from last year

Last Month

18
KWH

Last Year

3
KWH

You can also pay your bill online - go to Energy Manager at <https://energymanager.constellation.com> to get started. It's fast, simple and secure.

Detach stub and enclose with your payment in return envelope. Please write your statement number on your check. Thank you for your payment!

HAVE A QUESTION OR EMERGENCY?

To Contact Your Local Utility
New York State Electric & Gas Corp
800-572-1131

Total Amount Due by 12/31/2018**\$1.78**

For Customer Care Contact Constellation

Website <https://energymanager.constellation.com>Email CustomerCare@Constellation.com

Phone 844-6ENERGY (844-636-3749)

Meter Number:	Previous Meter Read Date	Current Meter Read Date	USAGE
NGE0048717645	10/27/2018	11/29/2018	40.000

DETAILED CHARGES

Contract Charges	Quantity	Rate	Amount
Energy - Adder	40.00 KWH	\$0.0010000/KWH	\$0.04
Subtotal Contract Charges			\$0.04
Market Charges			
Transmission Owner Transmission Solutions	40.00 KWH	\$0.0001645/KWH	\$0.01
Rest of State Capacity Charge	0.00 KW	\$0.0000000/KW	\$0.00
Renewable Portfolio Standards	40.00 KWH	\$0.0000295/KWH	\$0.00
Zero Emissions Credit	40.00 KWH	\$0.0032605/KWH	\$0.13
Market Energy - Real Time	40.00 KWH	\$0.0373000/KWH	\$1.49
Ancillary Services	40.00 KWH	\$0.0026571/KWH	\$0.11
Subtotal Market Charges			\$1.74
Tax Charges			
County Sales Tax	1.78 EXEMPT		\$0.00
State Sales Tax	1.78 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$1.78



Constellation

An Exelon Company

Town of Caroline - N01000004282174
852 Valley Rd
Brooktondale, NY 14817-9748

RECEIVED

DEC 10 2018

TOWN OF CAROLINE

Monthly Invoice

Statement Date: 11/30/2018

Customer Number: 681700-0

Total Amount Due by 12/31/2018

\$193.31

Rate Plan: Index Solutions
Account ID: 622501
Utility Number: N01000004282174
Service Period: 9/28/2018 to 11/29/2018
Statement Number: 13533493401

Previous Balance: \$181.26
Payments Since Last Invoice: -\$181.26
Unpaid Balance: \$0.00
Late/Finance Charges: \$0.00
Credit/Adjustments: \$0.00
Total New Charges: \$193.31

HOW WE CALCULATED YOUR BILL

See reverse side for detailed description of charges ➔

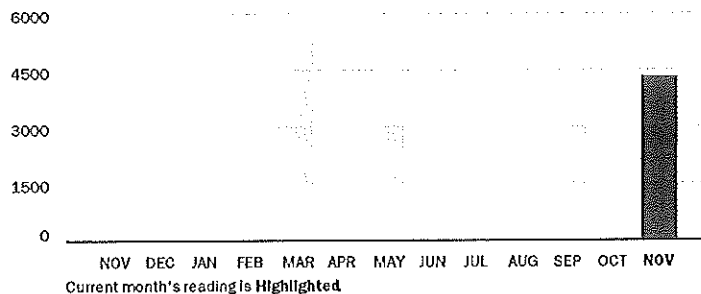
\$0.00

\$188.97



Contract Charges
\$4.34

CONSUMPTION HISTORY



MONTHLY USAGE

Current Month **4,340** KWH

▲ **9.0%** from last year

Last Month

0

KWH

Last Year

3,977

KWH

You can also pay your bill online - go to Energy Manager at <https://energymanager.constellation.com> to get started. It's fast, simple and secure.

Detach stub and enclose with your payment in return envelope. Please write your statement number on your check. Thank you for your payment!

**HAVE A QUESTION OR EMERGENCY?**

To Contact Your Local Utility
New York State Electric & Gas Corp
800-572-1131

Total Amount Due by 12/31/2018**\$193.31**

For Customer Care Contact Constellation

Website <https://energymanager.constellation.com>
Email CustomerCare@Constellation.com
Phone 844-6ENERGY (844-636-3749)

Meter Number:	Previous Meter Read Date	Current Meter Read Date	USAGE
NSA0080791145	09/28/2018	11/29/2018	4,340.000

DETAILED CHARGES

Contract Charges	Quantity	Rate	Amount
Energy - Adder	4,340.00 KWH	\$0.0010000/KWH	\$4.34
Subtotal Contract Charges			\$4.34
Market Charges			
Transmission Owner Transmission Solutions	4,340.00 KWH	\$0.0001544/KWH	\$0.67
Zero Emissions Credit	4,340.00 KWH	\$0.0032605/KWH	\$14.15
Rest of State Capacity Charge	8.21 KW	\$1.7848300/KW	\$14.66
Renewable Portfolio Standards	4,340.00 KWH	\$0.0000295/KWH	\$0.13
Market Energy - Real Time	4,340.00 KWH	\$0.0340100/KWH	\$147.61
Ancillary Services	4,340.00 KWH	\$0.0027074/KWH	\$11.75
Subtotal Market Charges			\$188.97
Tax Charges			
County Sales Tax	193.31 EXEMPT		\$0.00
State Sales Tax	193.31 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$193.31



Constellation

An Exelon Company

Town of Caroline - N01000005383864
852 Valley Rd
Brooktondale, NY 14817-9748

RECEIVED

DEC 04 2018

Monthly Invoice

Statement Date: 11/29/2018

Customer Number: 681700-3

Total Amount Due by 12/30/2018

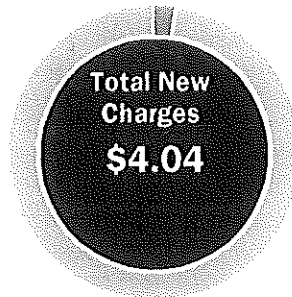
\$4.04

Rate Plan: Index Solutions
Account ID: 622502
Utility Number: N01000005383864
Service Period: 10/27/2018 to 11/28/2018
Statement Number: 13523410001

Previous Balance: \$0.55
Payments Since Last Invoice: -\$0.55
Unpaid Balance: \$0.00
Late/Finance Charges: \$0.00
Credit/Adjustments: \$0.00
Total New Charges: \$4.04

HOW WE CALCULATED YOUR BILL

See reverse side for detailed description of charges →

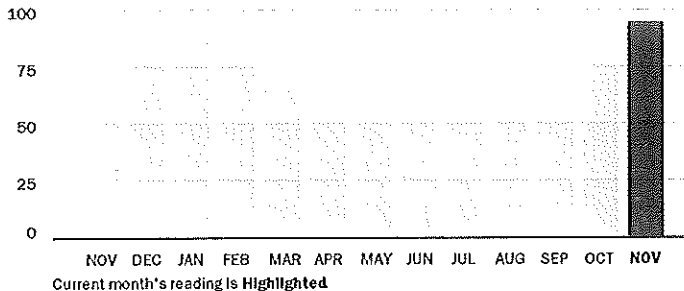


\$0.00

Contract Charges
\$0.10

\$3.94

CONSUMPTION HISTORY



MONTHLY USAGE

Current Month **95** KWH
0.0% from last year

Last Month
78
KWH

Last Year
95
KWH

You can also pay your bill online - go to Energy Manager at <https://energymanager.constellation.com> to get started. It's fast, simple and secure.
Detach stub and enclose with your payment in return envelope. Please write your statement number on your check. Thank you for your payment!



HAVE A QUESTION OR EMERGENCY?

To Contact Your Local Utility
New York State Electric & Gas Corp
800-572-1131

Total Amount Due by 12/30/2018

\$4.04

For Customer Care Contact Constellation

Website <https://energymanager.constellation.com>

Email CustomerCare@Constellation.com

Phone 844-6ENERGY (844-636-3749)

Meter Number:	Previous Meter Read Date	Current Meter Read Date	USAGE
UNMETERED	10/27/2018	11/28/2018	95.000

DETAILED CHARGES

Contract Charges	Quantity	Rate	Amount
Energy - Adder	95.00 KWH	\$0.0010000/KWH	\$0.10
Subtotal Contract Charges			\$0.10
Market Charges			
Ancillary Services	95.00 KWH	\$0.0026590/KWH	\$0.25
Market Energy - Real Time	95.00 KWH	\$0.0353200/KWH	\$3.36
Rest of State Capacity Charge	0.00 KW	\$0.0000000/KW	\$0.00
Renewable Portfolio Standards	95.00 KWH	\$0.0000295/KWH	\$0.00
Transmission Owner Transmission Solutions	95.00 KWH	\$0.0001641/KWH	\$0.02
Zero Emissions Credit	95.00 KWH	\$0.0032605/KWH	\$0.31
Subtotal Market Charges			\$3.94
Tax Charges			
County Sales Tax	4.04 EXEMPT		\$0.00
State Sales Tax	4.04 EXEMPT		\$0.00
Subtotal Tax Charges			\$0.00
Total New Charges			\$4.04

Town of Ulysses

TOWN OF ULYSSES
10 ELM STREET
TRUMANSBURG, NY 14886

**CLAIMANT'S
NAME AND
ADDRESS**

NYSEG
NYSEG
PO Box 847812
Boston, MA 02284-7812

TERMS

**PURCHASE
ORDER NO.**

Account	Description	Invoice #	Amount
A5182.4	STREET LIGHTING - CONTRACTUAL ELECTRIC SUPPLY, DELIVERY NATURE CENTER ST LIGHT	12108446591	14.50
A5182.4	STREET LIGHTING - CONTRACTUAL ELECTRIC SUPPLY, DELIVERY ROUTE 96 STREET LIGHTS	12108446590	150.69
TOTAL			165.19

I, _____, certify that the above account in the amount of \$ _____ is true and correct; that the items, services and disbursements charged were rendered to or for the municipality on the dates stated; that no part has been paid or satisfied; that taxes, from which the municipality is exempt, are not included; and that the amount claimed is actually due.

Date _____

Signature

Title

(Space below for municipal use)

The above services or materials were rendered or furnished to the municipality on the dates stated and the charges are correct.

11.7.2019

Date _____

SMC

Authorized Official

**This claim is approved and ordered paid
from the appropriations indicated above.**

[Handwritten signature]

Auditing Board

Auditing Board



TOWN OF ULYSSES

Account Number: 1001-3629-489

Statement Date: November 05, 2019

Amount Due: \$14.50

Service Address: 1420 TAUGHANNOCK BLVD, ITHACA NY 14850
Next Scheduled Read Date: On or about November 30, 2019

Page 1 of 5

Consolidated Account Summary

Previous invoice	
Payments received as of 11/04/19	\$13.98
Balance forward	-13.98
Budget billing amount	0.00
ENERGY COOPERATIVE OF AMERICA RENEW Chgs	11.00
	3.50
Payment due upon receipt.	\$14.50

To avoid a 1.5% late payment charge, please ensure payment is received by the date displayed below.

Budget Billing Summary

Plan End Date: 01/2020

Current Month	Actual Charges since 02/01/19	Budgets Billed since 02/01/19	Budget Balance (after payment)
11.00	87.35	99.00	-11.65

Street Lighting

See details beginning on page 3

See messages on page 2

No NYSEG bills due for:

- Town Hall

- Highway Barn

- SMC 11-7-19

Think of the minutes, money and natural resources you'll save by doing business online or by phone 24/7.

Visit nyseg.com to:

- View and pay your bill online
- Submit and view meter readings
- Enroll and manage budget billing
- Enroll in Autopay

Call our self-service line at **1.800.600.2275** for billing information, provide a meter reading and to pay by phone.

Add \$1, \$2, or \$5 to your payment to make a tax-deductible donation to NYSEG and RG&E Project SHARE Heating Fund. Learn more at nyseg.com.

Please return bottom portion with your payment. Make checks payable to NYSEG.



Service Address: 1420 TAUGHANNOCK BLVD, ITHACA NY 14850
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 5

💡 Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 10/01/19 - 10/31/19
PoD ID: N01000020522827

Electricity Delivery Charges

Delivery charge	68	kwh	@	0.02342	1.59
SBC charge	68	kwh	@	0.005932	0.40
Transition charge	68	kwh	@	0.004268	0.29
Revenue decoupling mech	68	kwh	@	-0.0139	-0.95
150W HPS cobra head light	1	lamp	@	8.15	8.15

Subtotal Electricity Delivery	\$9.48
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Total Electricity Cost	\$9.48
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Total Energy Charges	\$9.48
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Account Number: 1001-3629-489**Statement Date:** November 05, 2019**Service Address:** 1420 TAUGHANNOCK BLVD, ITHACA NY 14850

Page 5 of 5

ENERGY COOPERATIVE OF AMERICA RENEW
1408 SWEET HOME ROAD STE 8
AMHERST NY 14228www.ecamerica.org

Account number: 84346

Please call 1-800-422-1475 with
questions concerning your bill.**Messages**Thank you for your continued support.
Your referral is our greatest compliment.
New members may join via our website at www.ecamerica.org**Electricity Supply Detail**

Non-metered service	68 kwh	@	0.05146	3.50
Current Electricity Supply Charges				\$3.50



TOWN OF ULYSSES LTG
Account Number: 1001-3629-471
Statement Date: November 05, 2019
Amount Due: **\$150.69**

Service Address: ST-LIGHT, TRUMANSBURG NY 14886
Next Scheduled Read Date: On or about November 30, 2019

Page 1 of 5

Consolidated Account Summary

Previous invoice	\$143.89
Payments received as of 11/04/19	-143.89
Balance forward	0.00
NYSEG energy charges	107.82
ENERGY COOPERATIVE OF AMERICA RENEW Chgs	42.87
Payment due upon receipt.	\$150.69

To avoid a 1.5% late payment charge, please ensure payment is received by the date displayed below.

Street Lighting

See details beginning on page 3

See messages on page 2

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- Enroll and manage budget billing
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Please return bottom portion with your payment. Make checks payable to NYSEG.



Service Address: ST-LIGHT, TRUMANSBURG NY 14886
NYSEG DETAILED ACCOUNT ACTIVITY

Page 3 of 5



Electricity Service - Street Lighting
Electricity Rate - 12103 ESCO Supply Service

Service from: 10/01/19 - 10/31/19
PoD ID: N01000002546281

Electricity Delivery Charges

Delivery charge	833	kwh	@	0.02342	19.51
SBC charge	833	kwh	@	0.005932	4.94
Transition charge	833	kwh	@	0.004268	3.56
Revenue decoupling mech	833	kwh	@	-0.0139	-11.58
150W HPS cobra head light	5	lamps	@	8.15	40.75
250W HPS cobra head light	4	lamps	@	8.15	32.60
Standard pole	1	pole	@	12.26	12.26
Standard bracket, 16' and over	2	brkts	@	2.89	5.78

Subtotal Electricity Delivery	\$107.82
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Total Electricity Cost	\$107.82
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Total Energy Charges	\$107.82
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Account Number: 1001-3629-471**Statement Date:** November 05, 2019**Service Address:** ST-LIGHT, TRUMANSBURG NY 14886

Page 5 of 5



ENERGY COOPERATIVE OF AMERICA RENEW
1408 SWEET HOME ROAD STE 8
AMHERST NY 14228

www.ecamerica.org

Account number: 84348

Please call 1-800-422-1475 with
questions concerning your bill.

Messages

Thank you for your continued support.
Your referral is our greatest compliment.
New members may join via our website at www.ecamerica.org

Electricity Supply Detail

Non-metered service	833 kwh	@	0.05146	42.87
Current Electricity Supply Charges				\$42.87



123 Main Street
White Plains, NY 10601
nypa.gov