



May 6, 2015

Ms. Luly Massaro  
Clerk of the Commission  
Rhode Island Public Utilities Commission  
89 Jefferson Boulevard.  
Warwick, RI 02888

**Re: LED Street Light Tariff Advice Filing**

Dear Ms. Massaro:

On behalf of the Pascoag Utility District (Pascoag or the District), we herewith file an original and nine copies of Pascoag's proposed LED Street Light Tariff Advice, which will impact RIPUC No 606 Public and Private Lighting Rates. The District would like to add LED flood lights to the tariff. This submission is made to Commission for their review and approval.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

Harle Round  
Customer Service Supervisor/DSM Coordinator

Cc: Ms Karen Lyons, Esquire  
Cc: Mr. William Bernstein, Esquire

PUBLIC AND PRIVATE LIGHTING RATE

<u>Lamp Size</u>	<u>Monthly Rate</u>	<u>Annual Rate</u>
Mercury:		
175 Watt	\$8.47	\$101.64
Sodium:		
50 Watt	\$4.58	\$54.96
70 Watt	\$5.20	\$62.40
100 Watt	\$6.37	\$76.44
150 Watt	\$8.13	\$97.56
250 Watt	\$10.96	\$131.52
400 Watt	\$15.74	\$188.88
LED:		
25W LED/2111 Lumens	\$2.87	\$34.44
50 W LED/ 3816 Lumens	\$3.71	\$44.52
<u>120 W LED Flood/ 11,730</u>	<u>\$8.13</u>	<u>\$97.56</u>
<u>240 W LED Flood/ 22,797</u>	<u>\$12.73</u>	<u>\$152.76</u>

The rates, as specified above, are applicable to all street lights within the Pascoag Utility District's Electric Department service territory for both public and private lights.

The rate for the 175 watt mercury vapor street light is applicable only to such lights currently in service, since such a fixture is no longer offered to PUD customers.

The total cost for public street lighting, in service in PUD's service territory within the Village of Harrisville, will be assessed to the Harrisville Fire District.

The total cost for public street lighting, in service in PUD's service territory within the Village of Pascoag, will be assessed to all classes of electric customers equally. Rhode Island sales tax will be charged where applicable.

The methodology utilized to determine the amount billed monthly to the customers in the Village of Pascoag will be as follows:

Number of Public Street Lights multiplied by the applicable rate per light, as stated herein, divided by the number of customers.

In all cases, both Public and Private lighting assessments will include energy and maintenance.

The Pascoag Utility District will be responsible for the location, size, style and number of fixtures within the Village of Pascoag.

The Harrisville Fire District will be responsible for the location, size, style and number of fixtures within the Village of Harrisville.

Filing Date: May 6, 2015

Effective Date:

Determination of Street Lighting Charges  
Pascoag Utility District

Schedule 1

**Monthly Fixed Cost**

	Annual 25W & 50W	Annual 120W	Annual 240W	
LED/ photo controls Cost	\$ 254.64	\$ 761.35	\$ 911.26	See Schedule 5
Cost Recovery Period (years)	20	20	20	
Cost Per Fixture	\$ 12.73	\$ 38.07	\$ 45.56	
Installation per street light	\$ 137.70	\$ 137.70	\$ 137.70	See Schedule 5
Cost Recovery Period (years)	20	20	20	
Cost Per Fixture	\$ 6.89	\$ 6.89	\$ 6.89	
Washing Maintenance per street light	\$ 82.32	\$ 82.32	\$ 82.32	See Schedule 3
Cost Recovery Period (years)	20	20	20	
Cost Per Fixture	\$ 4.12	\$ 4.12	\$ 4.12	
2% Failure Cost recovery	\$ 8.40	\$ 18.53	\$ 21.53	See Schedule 4
Cost Recovery Period (years)	20	20	20	
Cost Per Fixture	\$ 0.42	\$ 0.93	\$ 1.08	
<b><u>Total Annual Rate per Lamp</u></b>	<b>\$ 24.15</b>	<b>\$ 50.00</b>	<b>\$ 57.64</b>	
Monthly Rate per Lamp	\$ 2.01	\$ 4.17	\$ 4.80	

**Monthly Lamp energy Cost**

Lamp Wattage and Type	Lamp Op Watt	Monthly Op Hours (Schedule 2)	Monthly Energy Use (kWh)	Average Utility Energy COS (\$/kWh)	Monthly Lamp Energy Cost (\$)
25W LED/ 2,188 Lumens	25.72	360.25	9.27	\$ 0.09167	\$ 0.85
50W LED/ 3,956 Lumens	51.30	360.25	18.48	\$ 0.09167	\$ 1.69
120W LED/ 11,730 Lumens	120.00	360.25	43.23	\$ 0.09167	\$ 3.96
240W LED/ 22,797 Lumens	240.00	360.25	86.46	\$ 0.09167	\$ 7.93

**Total Street Lighting Charge**

Lamp Wattage and Type	Monthly Lamp Energy Cost (\$)	Monthly Fixed Cost (\$)	Monthly Lamp Rate (\$)	Annual Lamp Rate (\$)
25W LED/ 2188 Lumens	\$ 0.85	\$ 2.01	\$ 2.86	\$ 34.32
50W LED/ 3956 Lumens	\$ 1.69	\$ 2.01	\$ 3.71	\$ 44.52
120W LED/ 11,730 Lumens	\$ 3.96	\$ 4.17	\$ 8.13	\$ 97.56
240W LED/ 22,797 Lumens	\$ 7.93	\$ 4.80	\$ 12.73	\$ 152.76

Street Lighting Average Monthly Burning Hours  
Pascoag Utility District

Schedule 2

<u>Month</u>	<u>Hours</u>
January	449
February*	341
March	373
April	318
May	292
June	264
July	283
August	317
September	347
October	454
November	426
December	459
	4,323

\* 338 hours ( Leap year 12 additional hours; 12hrs/ 4years= 3hrs

$4323 / 12 = 360.25$  average run time per month

Reference Darkness Duration Table @ [http://aa.usno.navy.mil/cgi-bin/aa\\_durtablew.pl](http://aa.usno.navy.mil/cgi-bin/aa_durtablew.pl)

Darkness Duration Table for One Year  
Pascoag, Rhode Island Eastern Standard Time  
Astronomical Application Dept. U. S. Naval Observatory

Calculation of Washing Maintenance  
Pascoag Utility District

Schedule 3

Real Discount Rate		1.0%
Labor	2013-2032	3.0%
Truck Rate	2013-2032	3.0%

<u>Year</u>	<u>Labor</u>	<u>Total</u>	<u>Present Value</u>	<u>Hours</u>	<u>Cost</u>
1	2013	\$	48.85		
2	2014	\$	50.32		
3	2015	\$	51.82		
4	2016	\$	53.38		
5	2017	\$	54.98		
6	2018	\$	56.63		
7	2019	\$	58.33		
8	2020	\$	60.08		
9	2021	\$	61.88		
10	2022	\$	63.74		
11	2023	\$	65.65		
12	2024	\$	67.62		
13	2025	\$	69.65		
14	2026	\$	71.74		
15	2027	\$	73.89		
16	2028	\$	76.11		
17	2029	\$	78.39		
18	2030	\$	80.74		
19	2031	\$	83.16		
20	2032	\$	85.66		
					<u>\$ 3,270.80</u>
<u>Year</u>	<u>Truck</u>	<u>Total</u>	<u>Present Value</u>	<u>Hours</u>	<u>Cost</u>
1	2013	\$	40.00		
2	2014	\$	41.20		
3	2015	\$	42.44		
4	2016	\$	43.71		
5	2017	\$	45.02		
6	2018	\$	46.37		
7	2019	\$	47.76		
8	2020	\$	49.19		
9	2021	\$	50.67		
10	2022	\$	52.19		
11	2023	\$	53.76		
12	2024	\$	55.37		
13	2025	\$	57.03		
14	2026	\$	58.74		
15	2027	\$	60.50		
16	2028	\$	62.32		
17	2029	\$	64.19		
18	2030	\$	66.11		
19	2031	\$	68.10		
20	2032	\$	70.14		
					<u>\$ 1,339.12</u>
					Total Washing Maintenance \$ 4,609.92
					Total Number of Fixtures <u>56</u>
					Total Washing Maintenance per Fixture <u>\$ 82.32</u>

Calculation of Costs due to Street Light Failure  
Pascoag Utility District

Schedule 4

Page 1 of 2

**25W & 50W Fixtures**

Total Cost to replace Fixture	\$ 254.64	See Schedule 5
Average Installation costs for Replacement	<u>\$ 165.30</u>	See Schedule 4 (page 2 of 2)
Total Replacement Cost	\$ 419.94	
Potential Failure rate	<u>2%</u>	See Schedule 5
2% Failure Cost recovery	<u>\$ 8.40</u>	

**120W Fixtures**

Total Cost to replace Fixture	\$ 761.35	See Schedule 5
Average Installation costs for Replacement	<u>\$ 165.30</u>	See Schedule 4 (page 2 of 2)
Total Replacement Cost	\$ 926.65	
Potential Failure rate	<u>2%</u>	See Schedule 5
2% Failure Cost recovery	<u>\$ 18.53</u>	

**240W Fixtures**

Total Cost to replace Fixture	\$ 911.26	See Schedule 5
Average Installation costs for Replacement	<u>\$ 165.30</u>	See Schedule 4 (page 2 of 2)
Total Replacement Cost	\$ 1,076.56	
Potential Failure rate	<u>2%</u>	See Schedule 5
2% Failure Cost recovery	<u>\$ 21.53</u>	

Please note: The Cost to replace Fixture was not indexed to inflation like the installation costs were due to the potential costs for these fixtures in the future may become cheaper due to improved production or increase of use in the industry.

Calculation of Costs due to Street Light Failure

Pascoag Utility District

Real Discount Rate		1.0%
Labor	2013-2032	3.0%
Truck Rate	2013-2032	3.0%

	<u>Year</u>	<u>Labor</u>	<u>Present Value</u>	<u>20 year average</u>	<u>Hours</u>	<u>Cost</u>
1	2013	\$ 48.85				
2	2014	\$ 50.32				
3	2015	\$ 51.82				
4	2016	\$ 53.38				
5	2017	\$ 54.98				
6	2018	\$ 56.63				
7	2019	\$ 58.33				
8	2020	\$ 60.08				
9	2021	\$ 61.88				
10	2022	\$ 63.74				
11	2023	\$ 65.65				
12	2024	\$ 67.62				
13	2025	\$ 69.65				
14	2026	\$ 71.74				
15	2027	\$ 73.89				
16	2028	\$ 76.11				
17	2029	\$ 78.39				
18	2030	\$ 80.74				
19	2031	\$ 83.16				
20	2032	\$ 85.66				
		\$ 1,312.62	\$1,173	\$58.64	2	\$ 117.29

	<u>Year</u>	<u>Truck</u>	<u>Present Value</u>	<u>20 year average</u>	<u>Hours</u>	<u>Cost</u>
1	2013	\$ 40.00				
2	2014	\$ 41.20				
3	2015	\$ 42.44				
4	2016	\$ 43.71				
5	2017	\$ 45.02				
6	2018	\$ 46.37				
7	2019	\$ 47.76				
8	2020	\$ 49.19				
9	2021	\$ 50.67				
10	2022	\$ 52.19				
11	2023	\$ 53.76				
12	2024	\$ 55.37				
13	2025	\$ 57.03				
14	2026	\$ 58.74				
15	2027	\$ 60.50				
16	2028	\$ 62.32				
17	2029	\$ 64.19				
18	2030	\$ 66.11				
19	2031	\$ 68.10				
20	2032	\$ 70.14				
		\$ 1,074.81	\$960	\$48.02	1	\$ 48.02

Average Installation costs for Replacement

\$ 165.30

Assumptions  
Pascoag Utility District

All Electrical Components are warrantied for 5 years.

Unlike HPS Streetlights the LED's do not normally fail by burning out after long periods of time LED's will gradually become dimmer. The ones that we chosen have an L70 factor, which means over the 20 year life they will still produce 70% of their initial light after 100,000 hours.

The power supplies are typically rated for 100,000 hour life and the expectation is that replacement will be less than 1% ; we will use less than 2% over the 100,000 hour life of the system. It will be more practical to replace the entire luminaire rather than stock the power supplies; first, because of the 5 year manufacturer's warranty and second, because the LED streetlights may be outdated or better and cheaper LED SL's may be available after the 5 year warranty.

- 1 25W or 50W Led Street light @\$237
- 1 120W Led Street light(includes photo control) @\$701
- 1 240W Led Street light(Includes photo control) @\$850.50

The photo controls we have purchased are Long Life Photo Cells which are rated for 90,000 hrs. and are warrantied for 10 year from the date of sale.

We will use the less than 2% failure rate for the photo cells also.

- 1 photo control for 25W & 50W fixtures@\$17.64

The 120W and 240W size street lights require an additional bracket and miscanelous mounting Fasteners

- 1 120W bracket@\$50.35
- 1 240W bracket@\$50.76
- 1 additional mounting fasteners@\$10.00

Total cost per fixture

	Cost	Cost	Cost
	25W & 50W	120W	240W
1 Led Street light	\$ 237.00	\$ 701.00	\$ 850.50
1 photo control	\$ 17.64	\$ -	\$ -
1 additional bracket	\$ -	\$ 50.35	\$ 50.76
1 additional mounting fasteners	\$ -	\$ 10.00	\$ 10.00
	<u>\$ 254.64</u>	<u>\$ 761.35</u>	<u>\$ 911.26</u>

Installation of a streetlight and photo cell

2 men (\$48.85 Per hour)\* @ 1 hour each plus truck (\$40hr)\*\*

	Hours	Rate	Cost
2 Men	2	\$ 48.85	\$ 97.70
1 Truck	1	\$ 40.00	\$ 40.00
<i>Installation of a streetlight and photo cell</i>			<u>\$ 137.70</u>

2% Failure Cost recovery

See Schedule 4 (page 2 of 2)

Luminary Cleaning

See Schedule 3

LED Street lights are subject to dirt that will reduce the light output over time. Given the lack of data regarding cleaning of luminaires the District would suggest a cleaning Maintenance program to wash the lenses with a soft cloth after 7 years and again 14 years from the date of insulation.

2 men 15 min per light =28 hours. We will wash the lens 2 times in 20 years for a total of 56 hours.  
14 hours for the Bucket Truck. We will wash the lens 2 times in 20 years for a total of 28 hours.

\*LABOR = \$35 X 1.31=\$48.85

\*\*Bucket Truck rate is \$40 per hour

Proof of Revenues  
Pascoag Utility District

Schedule 6

	Count or Usage	Current Rate	Proposed Rate	Annual Proposed Revenue	
<u>LED Street Lighting (per month rate)</u>					
25W LED/ 2188 Lumens	32	\$ 2.86	\$ 2.86	\$ 1,098.24	
50W LED/ 3956 Lumens	24	\$ 3.71	\$ 3.71	\$ 1,068.48	
120W LED/ 11,730 Lumens	1		\$ 8.13	\$ 97.56	
240W LED/ 22,797 Lumens	1		\$ 12.73	\$ 152.76	
TOTAL REVENUE	58			\$ 2,417.04	\$ 2,417.04

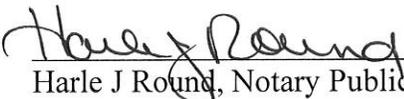
<u>LED Street Lighting (Revenue Requirement)</u>				<u>Annual per Fixture</u> (See Schedule 1)		
<u>25W &amp; 50W Fixtures</u>						
<i>Fixture Cost recovery</i> (20 years)	56		\$ 12.73	\$ 712.99		
<i>Installation Cost recovery</i> (20 years)	56		\$ 6.89	\$ 385.56		
<i>Maintenance Cost recovery</i> (20 years)	56		\$ 4.12	\$ 230.50		
<i>2% Failure Cost recovery</i> (20 years)	56		\$ 0.42	\$ 23.52		
<u>120W Fixtures</u>						
<i>Fixture Cost recovery</i> (20 years)	1		\$ 38.07	\$ 38.07		
<i>Installation Cost recovery</i> (20 years)	1		\$ 6.89	\$ 6.89		
<i>Maintenance Cost recovery</i> (20 years)	1		\$ 4.12	\$ 4.12		
<i>2% Failure Cost recovery</i> (20 years)	1		\$ 0.93	\$ 0.93		
<u>240W Fixtures</u>						
<i>Fixture Cost recovery</i> (20 years)	1		\$ 45.56	\$ 45.56		
<i>Installation Cost recovery</i> (20 years)	1		\$ 6.89	\$ 6.89		
<i>Maintenance Cost recovery</i> (20 years)	1		\$ 4.12	\$ 4.12		
<i>2% Failure Cost recovery</i> (20 years)	1		\$ 1.08	\$ 1.08		
 <i>Energy Usage</i>		(See Calculation Below)		\$ 956.74		
<i>Revenue Required</i>				\$ 956.74		\$ 2,416.94
Variance						\$ 0.10

<u>Calculation of Energy Usage</u>					
	<u>Lamp Count</u>	<u>Monthly Energy Use (kWh)</u>	<u>Total Yearly Energy Use (kWh)</u>	<u>Monthly Lamp Energy Cost (\$)</u>	<u>Total Yearly Lamp Energy Revenue</u>
25W LED/ 2188	32	9.27	3559.68	\$ 0.85	\$ 326.16
25W LED/ 2188	24	9.27	2669.76	\$ 1.69	\$ 487.91
25W LED/ 2188	1	9.27	111.24	\$ 3.96	\$ 47.55
25W LED/ 2188	1	9.27	111.24	\$ 7.93	\$ 95.11
	58		6451.92		\$ 956.74

Docket No. 4392 - Pascoag Utility District – LED Street Light Tariff Advice  
 Service List updated 5/4/15

Name/Address	E-mail	Phone
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William L. Bernstein, Esq. 627 Putnam Pike Greenville, RI 02828	<a href="mailto:wblaw@verizon.net">wblaw@verizon.net</a> ;	401-949-2228
Karen Lyons, Esq. Dept. of Attorney General 150 South Main St. Providence, RI 02903	<a href="mailto:klyons@riag.ri.gov">klyons@riag.ri.gov</a> ; <a href="mailto:Al.contente@dpuc.ri.gov">Al.contente@dpuc.ri.gov</a> ; <a href="mailto:steve.scialabba@dpuc.ri.gov">steve.scialabba@dpuc.ri.gov</a> ; <a href="mailto:jmunoz@riag.ri.gov">jmunoz@riag.ri.gov</a> ;	401-222-2424
<b>Original &amp; 11 copies file w/:</b> Luly E. Massaro, Commission Clerk Public Utilities Commission 89 Jefferson Blvd. Warwick, RI 02888	<a href="mailto:Luly.massaro@puc.ri.gov">Luly.massaro@puc.ri.gov</a> ; <a href="mailto:Todd.bianco@puc.ri.gov">Todd.bianco@puc.ri.gov</a> ; <a href="mailto:Alan.nault@puc.ri.gov">Alan.nault@puc.ri.gov</a> ; <a href="mailto:Amy.dalessandro@puc.ri.gov">Amy.dalessandro@puc.ri.gov</a> ;	401-780-2107

I hereby certify that copy/copies of this LED Street Light Tariff Advice filing were served electronically on the individuals named in the above List of Recipients of Filing, this 6th day of May, 2015.

  
 Harle J Round, Notary Public  
 My commission expires 7-10-2017

