

May 13, 2014

**BY HAND DELIVERY & ELECTRONIC MAIL**

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

**RE: Docket 4442 - The Narragansett Electric Company d/b/a National Grid  
Tariff Advice Filing for Customer-Owned Street & Area Lighting Proposal  
Response to Division Post-Hearing Data Request**

Dear Ms. Massaro:

I have enclosed National Grid's<sup>1</sup> response to the Post-Hearing Data Request issued by the Division of Public Utilities and Carriers on May 8, 2014.

Thank you for your attention to this matter. If you have any questions regarding this filing, please contact me at (781) 907-2121.

Very truly yours,



Raquel J. Webster

Enclosures

cc: Docket 4442 Service List  
Leo Wold, Esq.  
Steve Scialabba, Division

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<sup>1</sup> The Narragansett Electric Company d/b/a National Grid (“National Grid” or the “Company”).

**Certificate of Service**

I hereby certify that a copy of the cover letter and/or any materials accompanying this certificate were electronically transmitted to the individuals listed below. Copies of this filing will be hand delivered to the RI Public Utilities Commission and the RI Division of Public Utilities and Carriers



\_\_\_\_\_  
Joanne M. Scanlon

May 13, 2014  
Date

**Docket No. 4442 - National Grid – LED Tariff Advice Filing  
Service List updated 10/2/13**

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Division Post-Hearing Data Request 1-1

Request:

The Division of Public Utilities and Carriers ("Division") propounds the following data request to National Grid relative to the above matter:

*"At the May 6, 2014 Technical session in Docket 4442, Ms. Lloyd verbally discussed a high level analysis that she performed of the costs and benefits of various options for replacing a generic 50 watt HPS street light. These options included, among other things, the replacement with an LED lamp, using the new operating schedules proposed by National Grid, and installing the ability to remotely control the street lights output. Please provide a written copy of that analysis, preferably in a live spreadsheet with all formulae intact, and the basis for all assumptions made."*

Response:

Please see the attached Excel spreadsheet containing the information requested above.

**Illustrative Example of Street Light Energy Charge Savings**  
**[Based Upon LED Conversion and Proposed S-05 Operating Schedules vs. Metered Control]**

**Example Assumptions**

This example assumes a baseline condition following the municipal acquisition of the present street lighting system and addresses a 50 watt high pressure sodium (HPS) lamp and luminaire utilizing a standard photoelectric control operating on a dusk-to-dawn schedule. The example exhibits the application of the proposed S-05 unmetered tariff and comparable assumed metered consumption values. The 50W HPS street light represents approximately 60% of National Grid's total street lighting population within Rhode Island.

Step 1 reflects the anticipated Municipal conversion of the HPS street light to a Light Emitting Diode (LED) street light maintaining approximately the same delivered lumen output. The example uses a 27 watt LED luminaire utilizing a standard photoelectric control operating on a dusk-to-dawn schedule. It is recognized that the luminaire selection and associated energy consumption is at the sole discretion of the Municipality and may result in an annual energy cost savings higher or lower than provided in this example.

Step 2 demonstrates the Municipality's selection to operate the LED street light at conditions which equate the calculated annual operating hours of 3737 or less but greater than 2715 utilizing conventional control technology. For the purpose of this example, it is assumed the street light is being dimmed by 30% to a 70% lumen output level for a 4 hour period daily during the dusk-to-dawn operating cycle.

Step 3 shows the Municipality's selection to operate the LED street light at conditions which equate the calculated annual operating hours to 2715 or less utilizing conventional control technology. For the purpose of this example, it is assumed the street light is turned off for a period of 4 hours during the daily dusk-to-dawn operating cycle.

Step 4 illustrates the incremental energy savings value achieved through the use of metering controls as compared with the assigned values based upon the proposed unmetered S-05 tariff. In this example, the LED street light is assumed to operate at a 50% lumen output (dimmed 50%) condition for a period of 4 hours during the daily dusk-to-dawn operating cycle.

Application	Proposed S-05 Tariff (Unmetered)	Metered	Metered vs. Unmetered	Notes
	COL (A)	COL (B)	COL (C)	
<b>BASELINE</b> 50 Watt High Pressure Sodium (HPS)				
Annual Energy Consumption (kWh): 50W HPS (Dusk-to-Dawn)	255	255	0	Tariff S-05, Sheet 2: Nominal 50W HPS (Billable 61W) - Dusk-To-Dawn
(1) kWh Charges per Rate S-05	\$0.15800	\$0.15800		Based on Delivery Service rates of 3.8¢ per kWh effective 4/1/14, Standard Offer Service Charge of 9.4¢ per kWh effective 4/1/14, and Rate S-05 distribution kWh charge of 2.6¢ per kWh (based on Division recommendation)
(3) Annual Charge	\$40.29	\$40.29	\$0	Line (1) * Line (2)
<b>STEP 1</b> Convert 50 W High Pressure Sodium to 27 W LED				
(4) Annual Energy Consumption (kWh): 27W LED (Dusk-to-Dawn)	125	113	12	HPS vs. LED at Dusk-to-Dawn Operating Schedule
(5) kWh Charges per Rate S-05	\$0.15800	\$0.15800		Tariff S-05, Sheet 2: Nominal 27W LED (Billed at 30W) - Dusk-to-Dawn
(6) Annual Charge	\$19.75	\$17.85	(\$1.90)	Line (2) Note
(7) Annual Savings	\$20.54	\$22.44	\$1.90	Line (4) * Line (5)
				Line (3) - Line (6); COL (C) = COL (B) - COL (A)
<b>STEP 2</b> 27 W LED Operated at DIM-70 (70% Output for 4 Hours)				
(8) Annual Energy Consumption (kWh): 27W LED (DIM-70)	112	101	11	LED Dusk-to-Dawn vs. DIM-70% Operating Schedules
(9) kWh Charges per Rate S-05	\$0.15800	\$0.15800		Tariff S-05, Sheet 2: Nominal 27W LED (Billed at 30W) - Dim-70% Operating Schedule
(10) Annual Charge	\$17.70	\$15.96	(\$1.74)	Line (2) Note
Incremental Annual Savings in Addition to Savings from LED Conversion	\$2.05	\$1.89	(\$0.16)	Line (8) * Line (9); COL (C) = COL (B) - COL (A)
				Line (6) - Line (10); COL (C) = COL (B) - COL (A)
<b>STEP 3</b> 27 W LED Operated at Part Night-4 (4 Hour Off Period)				
(12) Annual Energy Consumption (kWh): 27W LED (Part-Night-4)	81	73	8	LED Dusk-to-Dawn vs. Part-Night-4 Operating Schedule
(13) kWh Charges per Rate S-05	\$0.15800	\$0.15800		Tariff S-05, Sheet 2: Nominal 27W LED (Billed at 30W) - Part-Night-4 Operating Schedule
(14) Annual Charge	\$12.80	\$11.53	(\$1.27)	Line (2) Note
Incremental Annual Savings in Addition to Savings from LED Conversion	\$6.95	\$6.32	(\$0.63)	Line (12) * Line (13); COL (C) = COL (B) - COL (A)
				Line (6) - Line (14); COL (C) = COL (B) - COL (A)
<b>STEP 4</b> 27 W LED Operated at 50% Dimming (Metered Control Operation) (ILLUSTRATIVE)				
(16) Annual Energy Consumption (kWh): 27W LED (50% Dimming)	101	93	8	LED Dusk-to-Dawn vs. Metered 50% Dimming for 4 Hour Period Operating Schedule
(17) kWh Charges per Rate S-05	\$0.15800	\$0.15800		Nominal 27W LED (Metered) - Dimming at 50% on Part-Night-4 Operating Schedule
(18) Annual Charge	\$15.96	\$14.69	(\$1.27)	Line (2) Note
Incremental Annual Savings in Addition to Savings from LED Conversion	\$3.79	\$3.16	(\$0.63)	Line (16) * Line (17); COL (C) = COL (B) - COL (A)
				Line (6) - Line (18); COL (C) = COL (B) - COL (A)

The total wattage (luminaire and control) of the customer's LED conversion luminaire package will alter the usage and conclusion values provided in this illustration.

Annual Savings Measured From:

	Annual Charge - Rate S-05	LED Conversion - 30W LED	DIM-70 - 30W LED	Part Night-4 - 30W LED	DIM-50 -30W LED (Illustrative)
30-W LED Dusk-to Dawn	\$19.75				
30-W LED DIM-70	\$17.70	\$2.05			
30-W LED Part Night-4	\$12.80	\$6.95	\$4.90		
30-W LED DIM-50 (Illustrative Only)	\$15.96	\$3.79	\$1.74	(\$3.16)	
	Annual Charge - with Meter				
27-W LED DIM-50 (Illustrative Only)	\$14.69	\$5.06	\$3.01	(\$1.89)	\$1.27

Note: Area shaded in gray represents charges per the proposed unmetered Rate S-05 and achievable savings per tariff.