

RESOLUTION NO. 10-254

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF KEY WEST, FLORIDA, ACCEPTING THE RECOMMENDATION OF THE SUSTAINABILITY ADVISORY BOARD, TO ASK FDOT TO CONSIDER THE USE OF LED LIGHTING IN THE NORTH AND SOUTH ROOSEVELT BOULEVARD RECONSTRUCTION PROJECTS; DIRECTING STAFF TO CONSIDER THE USE OF LED LIGHTING IN A PILOT PROJECT ON PINE AND OLIVIA STREETS KEY WEST; PROVIDING FOR AN EFFECTIVE DATE

BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF KEY WEST, FLORIDA, AS FOLLOWS:

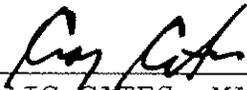
Section 1: That the recommendations of the Sustainability Advisory Board are hereby accepted.

Section 2: That this Resolution shall go into effect immediately upon its passage and adoption and authentication by the signature of the presiding officer and the Clerk of the Commission.

Passed and adopted by the City Commission at a meeting held this 7th day of September, 2010.

Authenticated by the presiding officer and Clerk of the Commission on September 8, 2010.

Filed with the Clerk September 8, 2010.



CRAIG CATES, MAYOR

ATTEST:



CHERYL SMITH, CITY CLERK



GENERAL SERVICES DEPARTMENT MEMORANDUM

EXECUTIVE SUMMARY

TO: Doug Bradshaw, Senior Projects Manager

FROM: Annalise Mannix, P.E. Manager of Environmental Programs

DATE: August 9, 2010

RE: Sustainability Advisory Board Recommending the City Commission request the FDOT approve or install LED lighting improvements in Key West

ACTION STATEMENT: A RESOLUTION OF THE CITY OF KEY WEST REQUESTING THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) TO USE LIGHT EMITTING DIODE (LED) LIGHTING ON THE NORTH ROOSEVELT BOULEVARD RECONSTRUCTION PROJECT AND AUTHORIZE LED LIGHTING ON THE SOUTH ROOSEVLET BOULEVARD RECONSTRUCTION PROJECT; AND DIRECTING STAFF TO CREATE A LED PILOT PROJECT ON PINE AND OLIVIA STREET.

STRATIGIC PLAN INITIATIVE

Environmental management seeking to preserve, maintain and when possible enhance the physical environment of Key West and its nearshore waters and is a strategic plan initiative. The work of the Sustainability Advisory Board (SAB) helps to preserve, maintain and when possible enhance the physical environment of Key West.

BACKGROUND:

The City of Key West recognized that local government plays a vital role in fostering sustainability therefore Commission created a Sustainability Advisory Board of the City of Key West with the mission to promote the sustainability of the community as a whole, with the definition of "Sustainability" defined as meeting the vital human needs of the present without compromising the ability to meet future needs. **The SAB recommends the above resolution in an effort to promote the sustainability of the community by reducing greenhouse gas emissions and reducing costs.** Street lighting accounted for 13.5% of the Key West government emissions in FY2005.

PURPOSE & JUSTIFICATION:

City of Key West City Commission resolved to reduce greenhouse gas emissions by 15% by 2015 based on a 2005 baseline survey. Light emitting diode (LED) lighting uses up to 60% less energy than standard street lighting, is in use on various state and local government roads and is a cost effective way to significantly reduce maintenance costs and energy use for lighting and therefore help to reduce greenhouse gas emissions. The City of Key West Climate Action Plan recommends the use of LED

street lighting. **The SAB recommends the initial use of LED lighting on the FDOT roads (large roads) and as a pilot project on Pine and Olivia Streets.**

The City of Key West currently pays for all FDOT street lighting on North and South Roosevelt Boulevards, and may have to pay the lighting bill for additional street lighting on FDOT roads when they are re-constructed in the coming years. Regardless, the City will have to accept the carbon emissions increase in its greenhouse gas emissions inventory. This means that it will be hard for the City to meet its reduction goals while increasing the lighting electric use in the City. Currently, the City pays an average of \$16,733 per month for the standard cobra head lighting listed below, which averages to \$7.42 per month per fixture. This is expected to rise by 64% when the new tariff begins to an average of \$12.34 per month per fixture. LED lighting will only cost an average of \$10.6 per month per fixture in the new tariff.

Summary of Lights Paid for by Key West

Owner	Size & type	Qty REG	Qty Cutoff	
City KW	100 watt sodium vapor	624	516	
	200 watt sodium (6 are FDOT lights)	385	329	
	400 watt sodium (all FDOT lights)	55	46	
	400 mercury vapor	5		
	175 mercury vapor	275		Total
		1344	891	2235

FDOT staff contacted in Tallahassee (Chester A. Henson, P.E. State Traffic Standards Engineer Florida Dept. of Transportation) suggested the option of a pilot project to install LED lighting on their roads. The number of FDOT lights, as well as City lights that the city pays for is listed above. The City Commission or Mayor would have to make a request from the North Roosevelt Blvd Project Manager, or District 6 Administrator to use LED technology. [Staff recommends this letter be written quickly as design is winding down.]

On South Roosevelt Blvd. the City of Key West has full control of the lighting design requirements (as long as it meets FDOT standards) and the City Commission would have to direct City staff to use LED light fixtures since they are currently designed for non-LED. **The SAB recommends to the Commission that staff change the proposed South Roosevelt Blvd. lighting to LED.** [A staff note: it is recommended that these lights be an approved turtle friendly lights so the lights do not have to be turned off during season].

The SAB also recommends that the City install a pilot project on Pine and Olivia Streets to test LED lighting in Key West. The Lighting Task Force of the Pedestrian Action Committee has been working with staff from the City and Keys Energy to create

a program that installs LED lights to provide better illumination for walking and driving while reducing costs. A full description of the SAB proposed program is attached, however, it is basically a plan to replace 25 or more cobra head lights in the Meadows with 34 watt LED's. The resultant GHG emission reduction is 5.6 tons of CO₂e. The City, KES and the Lighting Task Force tested many lights on Flagler Ave and in the Meadows. They sought homeowners input on the lights installed to ensure the users enjoy the new lighting. Key Energy has agreed to negotiate a pilot program with the City as soon as the City executes the recurring street light tariff contract. KES will make the capital investment for this project, and the monthly light cost to the city will be reduced.

LED lighting intensity can be modified as needed for different size streets. In addition, a computer software package can be purchased to modify light intensity at will, i.e. certain hours of the night with lower intensity at say 3-5 AM or on side streets and higher intensity when there is significant traffic or an event. Tools can be used to have police dispatch personnel flash lights close to a called in complaint to assist an ambulance find a home in an emergency, or it can turn up light intensity in locations a of a called in complaint (i.e. a resident calls complaining of an intruder) or ongoing police incident. These tools are not included in the cost estimates for this analysis, nor are they desired for this project.

OPTIONS:

Approve the resolution as provided, and save money and carbon emissions.

Modify the resolution to limit one or more of the three projects and approve it as desired.

Do not provide any resolution.

[Staff Note: Since LED's are less expensive on a monthly basis and reduce GHG emissions, it is recommended that the Commission create an ordinance that requires all future new installation of street lights be LED if the pilot program is successful.]

FINANCIAL IMPACT:

The City will have positive impacts for the FDOT street lighting through saved operation and maintenance costs over the life cycle of lights. Keys Energy Services installs and maintains all the City street lights and maintains the FDOT street lights. The City pays the fees for both. Keys Energy Services developed a Street Light Financial Evaluation (attached) for the 25 light pilot project and has determined that the cost savings for replacement of an existing 100 watt light over 13 years will result in a cost savings of \$4,212 dollars, and have a 11.7 year payback period over existing cobra head light fixtures.

According to KES, the current estimated annual cobra head lighting cost for 2010 is expected to be \$200, 807. The billing in 2011 is expected to rise to \$329,356 when the new 2011 KES rate tariffs are approved. Additional street lighting costs for "historic" style street lights are billed separately. It is expected that the City will change to LED technology for "historic" lights one day. The HARC Planner has selected an appropriate

fixture head that is designed specifically for LED lighting and meets City engineering safety requirements.

The lighting fee above also has an additional monthly power cost adjustment rate [PCA] which is charged (or credited) based on the rate and the number of kilowatt hours (kWh). The PCA rate has been negative for the past several months, resulting in a credit; however, it is expected to again increase. Keys Energy Services has proposed the following Tariffs for this service; clearly, LED lights are the best option:

Keys Energy Services Tariff		Proposed SL Rate		Current SL Rate	
Type	Wattage	Flat Monthly Fee	Monthly kWh	Flat Monthly Fee	Monthly kWh
Sodium Vapor	100 Watt	\$ 11.13	33	\$ 6.69	47
Sodium Vapor	100 Watt Cobra	\$ 10.99	33	\$ 6.80	47
Sodium Vapor	200 Watt Cobra	\$ 14.15	67	\$ 9.25	83
Sodium Vapor	400 Watt	\$ 19.68	134	\$ 14.33	153
Mercury Vapor	175 Watt	\$ 13.21	59	\$ 8.35	73
Mercury Vapor	400 Watt	\$ 19.74	134	\$ 14.33	153
Cut Off Optic	100 Watt	\$ 11.15	33	\$ 6.69	47
Cut Off Optic	200 Watt	\$ 14.05	67	\$ 9.12	83
LED	34 Watt	\$ 10.07	11	NA	NA
LED	46 Watt	\$ 10.39	15	NA	NA
LED	61 Watt	\$ 10.79	20	NA	NA

RECOMMENDATION:
Approve this resolution.

Resolution No. 2010-04

**A RESOLUTION OF THE CITY OF KEY WEST
"SUSTAINABILITY ADVISORY BOARD" RECOMMENDING THE
CITY REQUEST THE FLORIDA DEPARTMENT OF
TRANSPORTATION (FDOT) TO USE LIGHT EMITTING DIODE
(LED) LIGHTING ON THE NORTH ROOSEVELT BOULEVARD
RECONSTRUCTION PROJECT**

WHEREAS, the City of Key West recognizes that local government plays a vital role in fostering sustainability; and

WHEREAS, the City of Key West created a Sustainability Advisory Board of the City of Key West; and

WHEREAS, the Definition of "Sustainability" is defined as meeting the vital human needs of the present without compromising the ability to meet future needs; and

WHEREAS, the City of Key West City Commission resolved to reduce greenhouse gas emissions by 15% by 2015 based on a 2005 baseline survey; and

WHEREAS, light emitting diode (led) lighting uses up to 60% less energy than standard street lighting, is in use on various state and local government roads and is a cost effective way to significantly reduce maintenance costs and energy use for lighting and therefore help to reduce greenhouse gas emissions; and

WHEREAS, the Key West Climate Action Plan recommends the use of LED street lighting and;

WHEREAS, the City of Key West will have to pay the lighting bill for street lighting on FDOT roads and accept the carbon emissions increase in its inventory;

**NOW, THEREFORE, BE IT RESOLVED BY THE
SUSTAINABILITY ADVISORY BOARD OF THE CITY OF KEY WEST,
FLORIDA, AS FOLLOWS:**

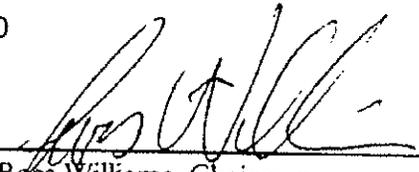
The Board recommends that the City Commission:

- a) request the FDOT District Six office to specify LED lighting as the method of providing street lighting for North Roosevelt Boulevard; and
- b) request the FDOT approve a LED and solar LED street light be approved for use on state roads (like South Roosevelt Boulevard); and
- c) initiate an LED lighting pilot project on Pine Street and Olivia Street.

Passed and adopted by the Sustainability Board at a meeting held this 6th day of May, 2010.

Authenticated by the presiding officer and Secretary of the Board on 5/3, 2010.

Filed with the Clerk June 8, 2010



Dr. Ross Williams, Chairman

Attest


Jaime Baker, Board Secretary

Project Plan

Meadows Area Street Lighting

This project has been being worked on for over a year with input from Lighting Task Force, Keys Energy Services and the City Environmental Programs. We have tested over 6 LED light fixtures on Flagler Ave, and in the Meadows seeking input from the community on the quality of the light output and design features.

This plan is designed to introduce the City of Key West to the technology of LED street lighting. Studies indicate that LED lights have a lower life cycle cost than other street light technologies due to the long life of the LED's and the low electric use. This reduces maintenance and operating cost.

LED lighting in general has better color imaging; under these lights one seen natural daylight colors. LED lights can be turned up or down; dimming during certain hours, say 5 to 7 am, and LED lights can be brightened, within reason, as necessary.

Environmental Programs selected the Meadows location since it is purely residential and has very limited traffic. Since the streets are small it is a perfect opportunity to install lights that can be adjusted and dimmed to meet the needs of small streets, similar to some old town areas, and there are a few blocks that also have larger rights of way that still allow for a good test site for wider blocks. The location of the lights would be designed to minimize the number of lights, have uniformity of light fixture height and improve the quality of the light on the road and sidewalk.

Keys Energy Services developed a financial evaluation of the lights and found that if 25 LED lights were installed to replace 25 existing 100 high pressure sodium lights the annual energy saving would be \$594, and the 13 year life cycle cost a savings would be \$7,722. However, as we design the lights for one full neighborhood based on actual light standards on the ground we may be able to reduce the total number of fixtures and save additional funds.

For this project Keys Energy Services would purchase the light, install them and maintain them. The City would pay a monthly bill as it does now for street lighting which will cover the cost of all of the above, the new cost will be \$1.06 less than the existing 100 watt cobra head lights. The total cost of the project would be \$25,860 and when including purchase and O&M it would have an 11.7 year pay back period over maintaining the existing lights.

The attached sheets include information on one LED product that we tested and believe to be an excellent product, the KES financial analysis, and the photometric print out of the meadows area, with a summary of how many foot-candles of light would be actually seen on the street in different areas of the meadows. The photometric summary determines that 30 lights would provide for an entire neighborhood change out, however, our initial project was for only 25 lights so that is what we continue to request.

Street Light Financial Evaluation

Pay Back Period Calculation

100-HPS ---- 34-LED



HPS 100w CO Street Light		LED 34w Street Light		KEYS Info/Comments
Watts per Fixture with Ballast 100w Street	120	Watts per Fixture	34	
Fixture Cost per unit with overhead	\$257.00	Fixture Cost per unit	\$841.00	
# of Fixtures	25	# of Fixtures	25	<u>Notes--Calculations/assumptions</u> Energy cost same over test period Assumed 6 yr life on HPS bulb Manufacture LED life span is 13yrs Assumed ballast is 10yr life on HPS photocell not included, as same for both in RIO calculations
Install cost (Fixture cost +labor/truck cost w/oh)	\$11,260.00	Install cost (Fixture cost +labor/truck cost)	\$25,860.00	
Total kWh per Month	33.4	Total kWh per Month	11.4	
Cost of Energy per KWH	\$0.090	Cost of energy per KWH	\$0.090	
Energy Cost to operate fixture (per yr)	\$36.07	Energy Cost to operate fixture (per yr)	\$12.31	
Maintenance Bulb (for 1 fixture for 1 yr)	\$26.04	Maintenance (for 1 fixture for 1 yr)	\$0.00	
Maintenance Bulb (per yr for total qty)	\$651.00	Maintenance (per yr for total qty)	\$0.00	
Total COST (O&M and ENERGY) per yr	\$1,552.80	Total COST (O&M and ENERGY) per yr	\$307.80	
Total 13yr Life cycle cost	\$31,446.40	Total 13yr Life cycle cost	\$29,861.40	
<small>Excludes light, initial install, energy and O&M over the 13yrs</small>		<small>Excludes initial light, install, energy and O&M over the 13yrs</small>		
SUMMARY		SUMMARY		
Total Energy savings with LED per yr		\$594.00		
Total Energy Savings with LED over the 13 Years		\$7,722.00		
Initial install Cost LED (material/labor/truck)		\$25,860.00		
Initial install Cost HPS		\$11,260.00		
PP (Payback period) -- In Years		11.7		



Summary Table

Project: WILLOW STREET LIGHTING KEY WFSI, 5-17-2010

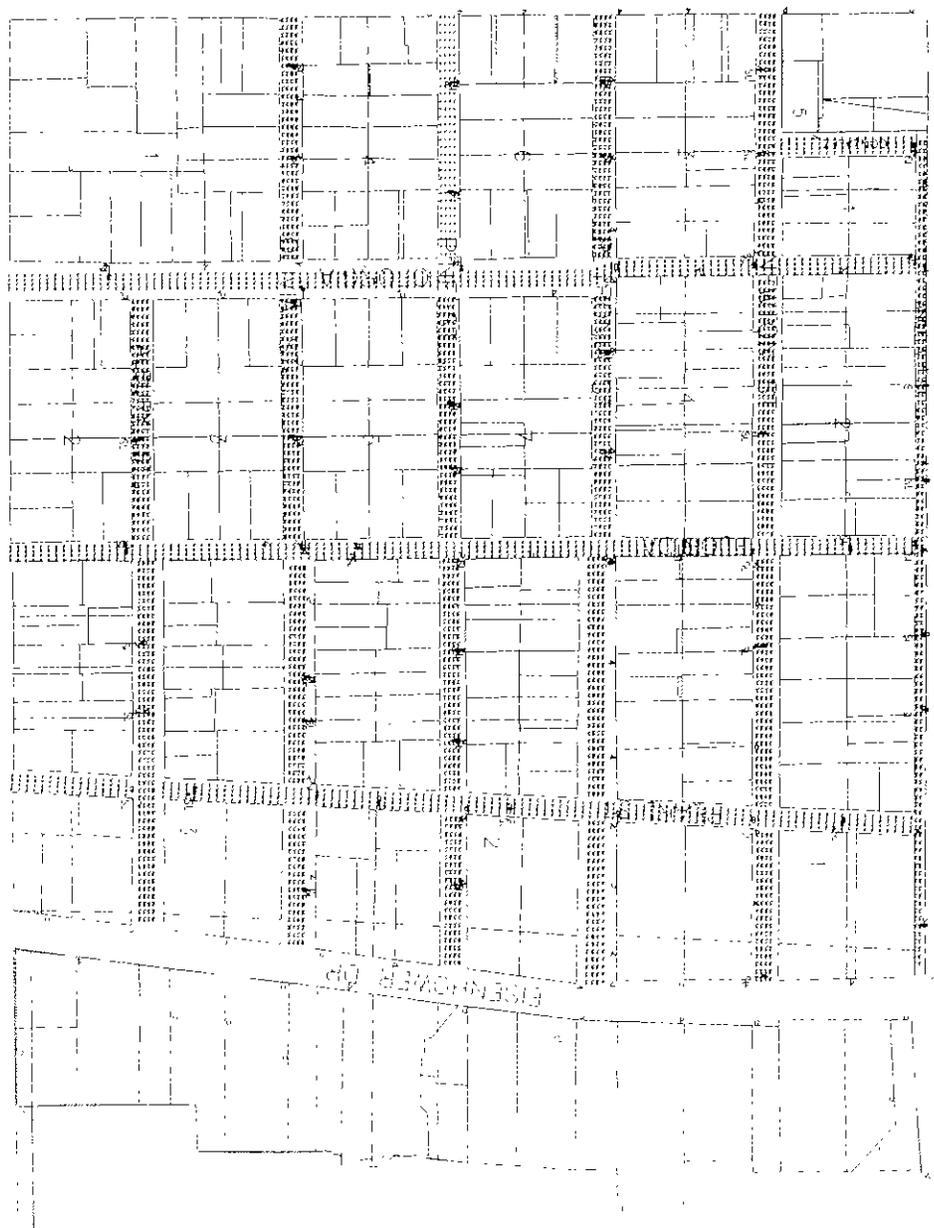
Symbol	Qty	Label	Description	Dimensions (in)	Sum	Units
□	55	S.	BELLSIR-LWP-2MB-AA-04-C-JL-WP-350mA-42K-2'-0" APW PQUE MOUN 2.0' - 0" AFC		1772	6,890 37

Calculation Summary

Project: WILLOW STREET LIGHTING KEY WFSI, 5-17-2010
 HIGH LEVELS AT 50,000 HOURS OF OPERATION

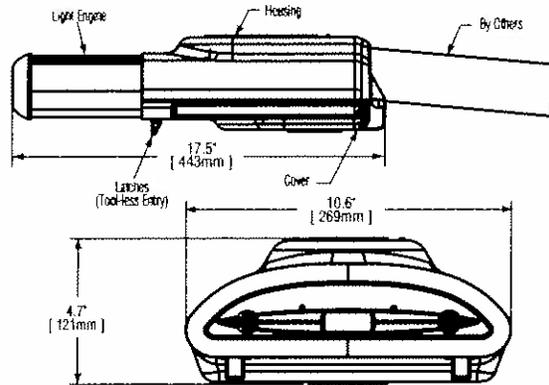
Label	Avg	Max	Min	Avg, Min	Max, Min
ALABAMA	0.19	0.57	0.00	N/A	N/A
ARIZONA	0.24	0.64	0.00	N/A	N/A
FLORIDA	0.25	0.68	0.00	N/A	N/A
GEORGIA	0.17	0.52	0.00	N/A	N/A
LOUISIANA	0.13	0.37	0.00	N/A	N/A
NEW YORK	0.18	0.54	0.00	N/A	N/A
TEXAS	0.23	0.63	0.00	N/A	N/A
VERMONT	0.00	0.62	0.00	N/A	N/A
WISCONSIN	0.16	0.54	0.00	N/A	N/A
WYOMING	0.19	0.61	0.00	N/A	N/A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100





Notes:



Product	Family	Optic	Mounting	# of LEDs (x 10)	LED Series	Voltage	Color Options	Factory-Installed Options
STR	LWY	2M ¹ 2MB ²	HT ³	02 03	C	UL Universal 120-277V UH Universal 347-480V	SV Silver ⁴ BK Black ⁴ BZ Bronze ⁴ PB Platinum Bronze ⁴ WH White ⁴	350 350mA Drive Current ⁵ 43K 4300K Color Temperature ⁶ 700 700mA Drive Current ⁷ DIM 0-10V Dimming ^{8,9} F Fuse ¹⁰ HL HI/Low (175/350/525, dual circuit input) ¹¹⁻¹³ N No Quick Disconnect Harness or Leveling Bubble ¹⁴ PD Power Door ^{15,16} R NEMA Photocell Receptacle ¹⁰ SC Door Safety Tether ¹⁷

Click here for Utility option.
For additional options, see IP66 spec sheet.

Footnotes

- IESNA Type II Medium distribution
- IESNA Type II Medium distribution with backlight control
- Horizontal tenon mount
- Light engine portion of extrusion is not painted and will remain natural aluminum regardless of color selection
- Driver operates at 350mA instead of the standard 525mA providing a lower lumen output and a longer life
- Color temperature per fixture; minimum 70 CRI
- Driver operates at 700mA instead of the standard 525mA providing a higher lumen output and a shorter life
- Control by others
- Please consult factory for availability
- Not available with HL option when UH voltage is selected
- Not available when UH voltage is selected
- Refer to multi level spec sheet for more information
- Sensor not included
- Standard product features unless N option is specified; door clips not included
- All connections between door and fixture are shipped unconnected from the factory; door release spring included to open door automatically when the latches are released
- Hinge retaining clips not included as part of this option
- Stainless steel aircraft cable

LED PERFORMANCE SPECS																								
# of LEDs	Initial Delivered Lumens – Type II Medium @ 6000K			Initial Delivered Lumens – Type II Medium w/ Backlight Control @ 6000K			Initial Delivered Lumens – Type II Medium @ 4300K			Initial Delivered Lumens – Type II Medium w/ Backlight Control @ 4300K			System			L ₈₀ Hours @ 25° C (77° F)								
	B	U	G	B	U	G	B	U	G	B	U	G	Watts	Total Current	Total Current		Total Current							
350mA Fixture Operating at 25° C (77° F)																								
20	1,803 (02)	1	1	1	1,347 (02)	0	1	1	1,582 (02)	1	1	1	1,181 (02)	0	1	1	26	0.22	0.14	0.16	32	0.10	0.13	163,000
30	2,705 (03)	1	1	1	2,020 (03)	0	1	1	2,372 (03)	1	1	1	1,772 (03)	0	1	1	37	0.31	0.18	0.17	43	0.13	0.15	150,000
525mA (Standard) Fixture Operating at 25° C (77° F)																								
20	2,416 (02)	1	1	1	1,805 (02)	0	1	1	2,119 (02)	1	1	1	1,583 (02)	0	1	1	39	0.32	0.19	0.17	44	0.13	0.15	107,000
30	3,624 (03)	1	1	1	2,707 (03)	0	1	1	3,179 (03)	1	1	1	2,375 (03)	0	1	1	55	0.46	0.26	0.22	61	0.18	0.17	92,000
700mA Fixture Operating at 25° C (77° F)																								
20	2,957 (02)	1	1	1	2,209 (02)	0	1	1	2,594 (02)	1	1	1	1,937 (02)	0	1	1	54	0.45	0.25	0.22	59	0.17	0.17	73,000
30	4,436 (03)	1	1	1	3,313 (03)	1	1	1	3,891 (03)	1	1	1	2,906 (03)	0	1	1	77	0.65	0.35	0.30	83	0.24	0.21	61,000

* Utilizes magnetic step-down transformer ** For recommended lumen depreciation data see TD-13 *** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit www.iesna.org/PDF/Erratas/TM-15-07BugRatingsAddendum.pdf



General Description

Fixture housing is all aluminum construction. Standard fixture utilizes terminal block for power input suitable for #2-#14 AWG wire and operates at 525mA. Drive current is field switchable on 20 and 30 LED units. Fixture is designed to mount on 1.25" IP (1.675" O.D.) and/or 2" IP (2.375" O.D.) horizontal tenon and is adjustable +/- 5° to allow for fixture leveling (includes leveling bubble to aid in this process). Fixture carries a limited five year warranty.

Electrical

Modular design accommodates varied lighting output from high power, white, 6000K (+/- 500K per full fixture), minimum 70 CRI, long life LED sources. 120-277V 50/60 Hz. Class 1 LED drivers are standard. 347-480V 50/60 Hz option is available. LED drivers have power factor >90% and THD <20% at full load. Units provided with integral 9kV surge suppression protection standard. Quick disconnect harness suitable for mate and break under load provided on power feed to driver for ease of maintenance. Surge protection tested in accordance with IEEE C62.41.2 and ANSI standard 62.41.2.

Finish

Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable silver powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Bronze, black, white and platinum bronze powder topcoats are also available. The finish is covered by our 10 year limited warranty.

Fixture and finish are endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117.

Testing & Compliance

UL listed in the U.S. and Canada for wet locations. Consult factory for CE Certified products. RoHS compliant. Meets CALTrans 611 Vibration Testing and GR-63-CORE Section 4.4.1/5.4.2 Earthquake Zone 4. International Dark-Sky Association approved.

Patents

U.S. and international patents granted and pending. BetaLED is a division of Ruud Lighting, Inc. For a listing of Ruud Lighting, Inc. patents, visit www.uspto.gov.

Field-Installed Accessories

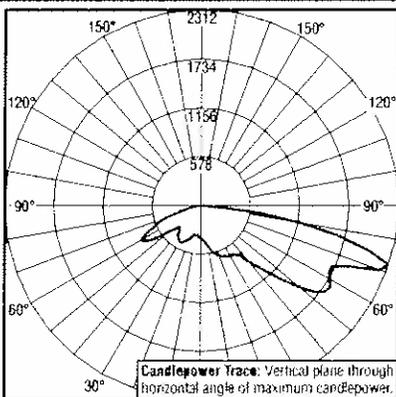


Bird Spikes for Light Engine
XA-BRDSPK30

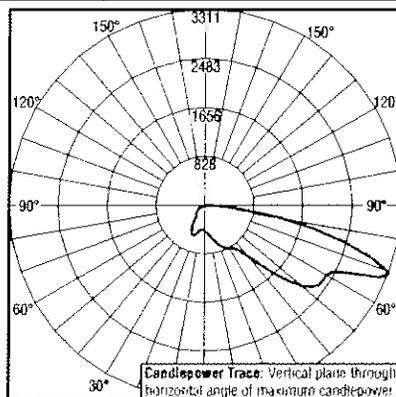


Bird Spikes Kit for Housing
XA-BRDSPKHSG

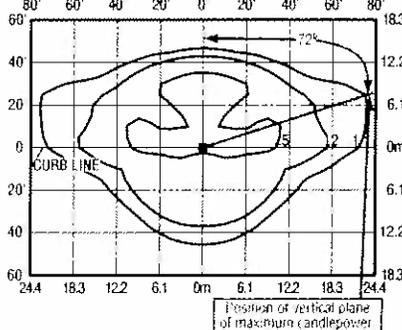
Photometrics



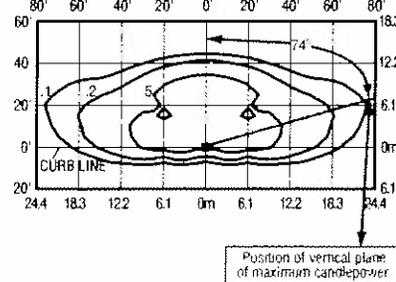
Independent Testing Laboratories certified test. Report No. ITL63655. Candlepower trace of 6000K, 30 LED Type II Medium streetlight luminaire with 3,604 initial delivered lumens operating at 525mA. All published luminaire photometric testing performed to IESNA LM-79-08 standards.



Independent Testing Laboratories certified test. Report No. ITL63996. Candlepower trace of 6000K, 40 LED Type II Medium streetlight luminaire with backlight control and 3,534 initial delivered lumens operating at 525mA. All published luminaire photometric testing performed to IESNA LM-79-08 standards.



Isofootcandle plot of 6000K, 30 LED Type II Medium streetlight luminaire at 25° A.F.G. Luminaire with 3,624 initial delivered lumens operating at 525mA. Initial FC at grade.



Isofootcandle plot of 6000K, 40 LED Type II Medium streetlight luminaire with backlight control at 25° A.F.G. Luminaire with 2,707 initial delivered lumens operating at 525mA. Initial FC at grade.

LEDway™ EPA & Weight Calculations

	Approximate Weight 120-277V*
20-30 LED fixture	10.5 lbs.
EPA	
Horizontal Tenon Mount	
1 fixture	0.565
EPA	
Round External Mount / Square Internal Mount	
Horizontal Tenons with Fixture(s)	
PT/PD-1H Single	0.785
PT/PD-2H(90) 90° Twin	1.019
PT/PD-2H(180) 180° Twin	1.350
PT/PD-3H(90) 90° Triple	1.534
PT/PD-3H(120) 120° Triple	1.383
PT/PD-4H(90) 90° Quad	1.938
*Add 5 lbs. for transformer in 347-480V fixtures	



Qty Per City	Per July Billing	Difference
685	624	61
425	516	(91)
-	-	-
416	385	31
300	329	(29)
-	-	-
-	7	(7)
65	55	10
6	5	1
-	46	(46)
<u>275</u>	<u>257</u>	<u>18</u>
2,172	2,224	(52)

100 watt SV
100 watt SV cut off
100 watt SV cobra
200 watt SV
200 watt SV cut off
200 watt SV cobra
250 watt MV
400 watt SV
400 watt MV
400 watt SV cut off
175 watt MV

Type

100 watt SV
100 watt SV cut off
100 watt SV cobra
200 watt SV
200 watt SV cut off
200 watt SV cobra
250 watt MV
400 watt SV
400 watt MV
400 watt SV cut off
175 watt MV
34 watt LED
46 watt LED
61 watt LED

Qty	Current SL Rate			Billing Assume (0.0078) PCA
	Flat Monthly Fee	Monthly kWh		
624	\$ 6.69	47	\$ 3,945.80	
516	\$ 6.69	47	3,262.87	
-	\$ 6.80	47	-	
385	\$ 9.25	93	3,281.97	
329	\$ 9.12	83	2,787.49	
-	\$ 9.25	93	-	
7	\$ 9.86	98	63.67	
55	\$ 14.33	153	722.51	
5	\$ 14.33	153	65.68	
46	\$ 14.33	153	604.28	
257	\$ 8.35	73	1,999.61	
2,224		Monthly	\$ 16,733.90	
		Annual	\$ 200,806.74	

Qty	Proposed SL Rate			Billing Assume (0.0078) PCA	Difference
	Flat Monthly Fee	Monthly kWh			
594	\$ 11.13	33	\$ 6,456.62	\$ 2,510.82	
516	\$ 11.15	33	5,619.86	2,356.99	
-	\$ 10.99	33	-		
385	\$ 14.15	67	5,244.85	1,962.88	
329	\$ 14.05	67	4,451.58	1,664.09	
-	\$ 14.15	67	-		
7	\$ 17.69	84	119.24	55.57	
55	\$ 19.68	134	1,025.14	302.62	
5	\$ 19.74	134	93.47	27.79	
46	\$ 19.74	134	859.96	255.68	
257	\$ 13.21	59	3,276.09	1,276.47	
30	\$ 10.07	11	299.54	299.54	
-	\$ 10.39	15	-	-	
-	\$ 10.79	20	-	-	
2,224		Monthly	\$ 27,446.35	\$ 10,712.45	
		Annual	\$ 329,356.19	\$ 128,549.45	

UTILITY BOARD OF THE CITY OF KEY WEST, FLORIDA
Development of Lighting Rates

		<u>LED</u>			
		<u>34 Watt</u>			
2011					
Monthly kWh		11.4		11.4	
			<u>w/o OH</u>	<u>w/OH</u>	
	<i>Initial Cost</i>				
Lamp		\$ 429.63			
Luminaire					
Photo Cell		4.02			
Wire, Bolts, etc.		30.86			
Arm and Foot		119.76			
Total Fixture Cost		13 <u>584.27</u>			
Monthly Cost		3.75	1.4396	\$ 5.39	
		<u># hr.</u>	<u>\$/hr.</u>	<u>Yrs</u>	
Labor - Lineman	1	\$ 33.68	0.22	2.0296	0.44
Labor Apprentice	1	\$ 27.13	0.17	2.0296	0.35
Truck	1	\$ 60.00	0.38	1.1800	0.45
Total Installation Costs			<u>0.77</u>		<u>1.24</u>
Total Monthly Initial Costs			4.52		6.64
	<i>O&M</i>				
Lamp					
Labor - Lineman					
Labor - Apprentice					
Truck					
Photo Cell			5 0.07	1.4396	0.10
Labor - Lineman	0.75	33.68	5 0.42	2.0296	0.85
Labor - Apprentice	0.75	27.13	5 0.34	2.0296	0.69
Truck	0.75	60.00	5 <u>0.75</u>	1.1800	<u>0.89</u>
			1.58		2.52
Monthly Replacement Costs			1.58		2.52
monthly initial and replacement costs			6.10		9.16
<u>Monthly Charges</u>					
Fixture Charge					6.64
Replacement O&M					2.52
Energy and Distribution		0.0800 per kWh			<u>0.91</u>
TOTAL MONTHLY BASE CHARGE					10.07

Overhead Rates	
FY 2011	
Labor	72%
Materials	22%
General	18%

Overhead
Factor
2.0296
1.4396
1.1800

Resolution No. 2010-04

**A RESOLUTION OF THE CITY OF KEY WEST
“SUSTAINABILITY ADVISORY BOARD” RECOMMENDING THE
CITY REQUEST THE FLORIDA DEPARTMENT OF
TRANSPORTATION (FDOT) TO USE LIGHT EMITTING DIODE
(LED) LIGHTING ON THE NORTH ROOSEVELT BOULEVARD
RECONSTRUCTION PROJECT**

WHEREAS, the City of Key West recognizes that local government plays a vital role in fostering sustainability; and

WHEREAS, the City of Key West created a Sustainability Advisory Board of the City of Key West; and

WHEREAS, the Definition of “Sustainability” is defined as meeting the vital human needs of the present without compromising the ability to meet future needs; and

WHEREAS, the City of Key West City Commission resolved to reduce greenhouse gas emissions by 15% by 2015 based on a 2005 baseline survey; and

WHEREAS, light emitting diode (led) lighting uses up to 60% less energy than standard street lighting, is in use on various state and local government roads and is a cost effective way to significantly reduce maintenance costs and energy use for lighting and therefore help to reduce greenhouse gas emissions; and

WHEREAS, the Key West Climate Action Plan recommends the use of LED street lighting and;

WHEREAS, the City of Key West will have to pay the lighting bill for street lighting on FDOT roads and accept the carbon emissions increase in its inventory;

**NOW, THEREFORE, BE IT RESOLVED BY THE
SUSTAINABILITY ADVISORY BOARD OF THE CITY OF KEY WEST,
FLORIDA, AS FOLLOWS:**

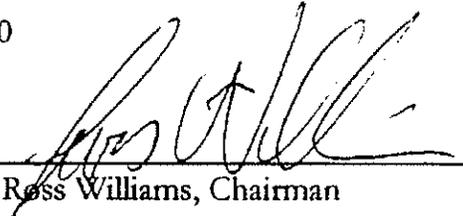
The Board recommends that the City Commission:

- a) request the FDOT District Six office to specify LED lighting as the method of providing street lighting for North Roosevelt Boulevard; and
- b) request the FDOT approve a LED and solar LED street light be approved for use on state roads (like South Roosevelt Boulevard); and
- c) initiate an LED lighting pilot project on Pine Street and Olivia Street.

Passed and adopted by the Sustainability Board at a meeting held this 6th day of May, 2010.

Authenticated by the presiding officer and Secretary of the Board on 5/3, 2010.

Filed with the Clerk June 8, 2010



Dr. Ross Williams, Chairman

Attest


Jaime Baker, Board Secretary

RESOLUTION NO. 09-021

**A RESOLUTION OF THE CITY COMMISSION OF THE
CITY OF KEY WEST, FLORIDA, ESTABLISHING THE
"SUSTAINABILITY ADVISORY BOARD"; PROVIDING FOR
ITS COMPOSITION, STAFFING AND DUTIES;
PROVIDING FOR AN EFFECTIVE DATE**

WHEREAS, the City of Key West recognizes that local government plays a vital role in fostering sustainability; and

WHEREAS, the City has a longstanding commitment to adopting implementing, and maintaining sustainable practices; and

WHEREAS, Mayor Morgan McPherson is a signatory of the U.S. Mayor's Climate Protection Agreement; and

WHEREAS, the City is a member of ICLEI-Local Governments for Sustainability and an active member of the Cities for Climate Protection Campaign;

WHEREAS, the City has committed to reducing greenhouse gas and air pollution emissions; and

WHEREAS, citizens are essential partners in reducing emissions and increasing the sustainability of the entire community;

WHEREAS, the City Commission finds that City of Key West citizens, business owners, institutions and organizations are also committed to identifying, implementing and supporting sustainable practices in their community;

WHEREAS, the City Commission desires to establish an advisory committee that will study sustainability issues and make recommendations to the City Commission; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE

CITY OF KEY WEST, FLORIDA, AS FOLLOWS:

Section 1:

A. Definition. "Sustainability" is defined as meeting the vital human needs of the present without compromising the ability to meet future needs.

B. Creation; Membership; Term. There is hereby created a Sustainability Advisory Board of the City of Key West consisting of seven regular members appointed for three-year terms, plus two members less than 18 years old at the time of appointment who shall be appointed for one-year terms, which may be renewed for one additional year. The two members under the age of eighteen shall be appointed by the Mayor, with the advice of local education leaders; The remaining seven positions on the Board shall be filled by one appointment by each member of the City Commission.

C. Qualifications. No less than a majority of the members of the Sustainability Advisory Board shall be residents of the City of Key West. Any members not residing in the City shall own a business located within the City, be employed full-time within the City or attend school full-time in the City. Appointments will endeavor to include representatives of diverse neighborhoods, local businesses, educational institutions, social service providers, and professionals in sustainability-related professions, such energy, transportation and development.

D. Mission and Duties. The mission of the Sustainability Advisory Board shall be to promote the sustainability of the

community as a whole, considering public and private actors and their effects on ecological, economic, and community systems. The Sustainability Advisory Board shall:

1. Advise and assist the City Commission in efforts to make City operations more sustainable.
2. Assist in the development of plans and policies to enhance the sustainability of the City as a whole.
3. Educate and support other Key West organizations to become more sustainable.
4. Educate and engage the public in efforts to make the community of Key West, including residents, businesses, and institutions, more sustainable.

Section 3: The Committee shall operate in accordance with the Florida Sunshine Law and the Florida Public Records Law. The Committee shall appoint a chairperson and vice-chairperson, and establish a schedule of its public meetings. The City Manager shall provide staff support to the Committee. The Committee shall issue a written report to the City Commission at least once per year.

Section 4: That this Resolution shall go into effect immediately upon its passage and adoption and authentication by the signature of the presiding officer and the Clerk of the Commission.

Passed and adopted by the City Commission at a meeting held
this 21 day of January, 2009.

Authenticated by the presiding officer and Clerk of the
Commission on January 22, 2009.

Filed with the Clerk January 22, 2009.



MORGAN MCPHERSON, MAYOR

ATTEST



CHERYL SMITH, CITY CLERK