CITY COUNCIL MEETING

AGENDA ITEM IV

CITY OF FRANKLIN
COUNCIL AGENDA REPORT
June 1, 2015 City Council Meeting

From: Judie Milner, Finance Director

Subject: **Street Light Energy Project**
Resolution #13-15

Suggested Motion:

June 1, 2015

Councilor moves, ***"I move that the Franklin City Council approves Resolution #13-15 concerning the Street Light Energy Project."***

Mayor calls for a second, discussion and the vote.

Discussion:

As the City of Franklin continues to "Go Green", we have looked at municipal buildings and now are looking toward street lights. With about 500 street lights, the City expends upwards of $70,000 annually to keep them lit. With LED and photocell technologies, the City should experience a conservative estimate of 50% savings. This project is looking to pay for itself within 5.33 years. Then it will generate revenue for the City for the remaining 15 years of useful life. In addition, the light produced will be more directional giving better light where it is needed and eliminating much of the "light pollution" effect in the sky.

CDFA has initially approved the funding for this project at 3% through its clean energy grant. That interest rate may go down after the complete application is submitted to them this week.

Attachments:

Resolution 13-15
Streetlight Specification Sheet
Public Hearing Notice

CITY OF FRANKLIN, NEW HAMPSHIRE

"The Three Rivers City"

316 Central Street
Franklin, NH 03235

(603) 934-3900
fax (603) 934-7413
cityhall@franklinnh.org

RESOLUTION #13-15

A Resolution Relating to the authorization for the City of Franklin to enter into a loan agreement through Community Development Financing Authority (CDFA) and FY15 supplemental appropriation of the loan proceeds and vendor rebates in order to fund the streetlight energy performance contract.

In the year of our Lord, Two Thousand Fifteen,

WHEREAS, the City Council of the City of Franklin has adopted a budget for Fiscal Year 2015 which began July 1, 2014, and;

WHEREAS, the City Council of the City of Franklin has supported the Franklin Goes Green initiative, and;

WHEREAS, the City Council wishes to realize savings on energy improvements to streetlights as well as improved directional lighting and reduced sky light pollution, and;

WHEREAS, The City Council understands that the useful life of the improvements are about 20 years and are expected to save the City approximately 50% over current costs, and;

WHEREAS, the City Council wishes to fund the project through CDFA at an interest rate of 3% for a period of 6 years; payments to be funded through the electrical savings which are guaranteed by Energy Efficient Investments Inc., Now

THEREFORE BE IT RESOLVED, that at the scheduled meeting of the City Council on Monday, June 1, 2015, the City Council of the City of Franklin, New Hampshire does hereby adopt resolution 13-15 authorizing the City of Franklin to enter into a loan agreement with Community Development Financing Authority not to exceed $165,200 at a rate of 3.00% for a period of six (6) years and authorizing the following non lapsing appropriations:

An increase in revenues,

Other Financing Sources – Note Proceeds Account No. 01-0-000-39401-000 – One Hundred Sixty Five Thousand Two Hundred ($165,200.00),

Miscellaneous Revenue Account No. 01-0-000-35090-000 – Forty Nine Thousand Eight Hundred Dollars ($49,800.00)

And an increase in expenditure account,

Buildings Account No. 01-9-014-40798-000 – Two Hundred Fifteen Thousand ($215,000)

for the funding of the Streetlight Energy Performance Contract and authorizing the City Manager to sign all necessary documentation of same.

By a roll call vote.

Roll Call:

Councilor Barton	_____	**Councilor Feener**	_____
Councilor Boyd	_____	**Councilor Giunta**	_____
Councilor Clarenbach	_____	**Councilor Starkweather**	_____
Councilor Desrochers	_____	**Councilor Wells**	_____
Councilor Dzujna	_____		

Approved: _____
Mayor

Passed: _____

I certify that said vote has not been amended or repealed and remains in full force and effect as of the date of this Certification and that Katie A. Gargano is the City Clerk for the City of Franklin, Franklin, New Hampshire.

A true copy, attested: _____
City Clerk

Date: _____

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CITY OF FRANKLIN
NOTICE OF PUBLIC HEARING & MEETING

In accordance with the provision of Chapter 31, Division 2 of the Franklin Municipal Code, notice is hereby given that the City of Franklin will hold a Public Hearings on Monday, June 1, 2015 at 6:07 p.m. in the Council Chambers, Franklin City Hall regarding Resolution a proposed Street Light Energy Project.

PHILIPS
LUMEC

LED

Roadway

RoadFocus

145, 180, 215 and 241W RFL

Project
Location
Cat No
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.

Ordering guide

Example: RFL-145W64LED4K-T-R2S-UNIV-DMG-OTL-RCD7-SP2-WC10-GY3

Luminaire	LED Module	Optical System	Voltage	Driver and Dimming	Wattage Switch	Twist-Lock Receptacle	Surge Protection	Warranty	Finish
RFL								WC10	
RFL RoadFocus Large	**145W64LED4K-T** or **180W80LED4K-T** or **215W96LED4K-T** or **241W112LED4K-T**	**R2S** Type II Short **R2M** Type II Medium **R3S** Type III Short **R3M** Type III Medium **5** Type V	**UNIV** 120-277VAC **HVU** 347-480VAC	*Standard* **DMG**[1,6] Dimmable driver 0-10V *Optional* **AMPD**[2,4,5,6] Amplight Dimming DynaDimmer Economy Profile **CDMGE25**[2,4,5,6] **CDMGE50**[2,4,5,6] **CDMGE75**[2,4,5,6] DynaDimmer Median Profile **CDMGM25**[2,4,5,6] **CDMGM50**[2,4,5,6] **CDMGM75**[2,4,5,6] DynaDimmer Safety Profile **CDMGS25**[2,4,5,6] **CDMGS50**[2,4,5,6] **CDMGS75**[2,4,5,6] **DALI**[2,4,5,6] Digitally Adressable Lighting Interface **DMG-AST***[2,4] Adjustable Startup Time **DMG-CLO***[2,4,5] Constant Light Output **DMG-OTL***[2,4] Over The Life **Includes 0-10v Dimming*	**FAWS**[5] Field Adjustable Wattage Selector (optional)	*Standard* **RCD**[1,3,7] Receptacle for twist-lock photocell or shorting cap, 5-pin (standard) *Optional* **RCD7**[3,7] Receptacle for twist-lock photocell or shorting cap, 7-pin (optional)	**SP2**[8] 20kV / 20kA Surge Protector (optional)	**WC10**[1] 10-year limited warranty (standard)	**BK** Black Finish **BR** Bronze Finish **GY3** Gray Finish **WH** White Finish

1. Please note these integrated features come standard with RoadFocus luminaires.
2. Denotes programmable driver option. Not available with HVU (347-480volt).
3. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
4. Not available with HVU (347-480volt).
5. FAWS not available with AMPD, CDMG options, DALI or CLO.
6. Dimming choices: Select either DMG or AMPD or one of the CDMG options or DALI.
7. When RDC7 option is selected you will get 7-pin instead of standard RCD 5-pin.
8. When SP2 option is selected you will get SP2 instead of standard SP1.

RFL RoadFocus LED Cobrahead, Large

145, 180, 215, and 241W

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

ACC-RFS-RFM-RFL-PH9[9]
Shorting cap

ACC-RFS-RFM-RFL-HS
House side shield, 1 per 16 LED light engine.

ACC-RFS-RFM-RFL-UNIV-PH8[9]
Twist-lock Photoelectric Cell, UNIV (120-277VAC).

ACC-RFM-RFL-PH8/347[9]
Twist-lock Photoelectric Cell, HVU 347VAC.

ACC-RFM-RFL-PH8/480[9]
Twist-lock Photoelectric Cell, HVU 480VAC.

ACC-RFS-RFM-RFL-UNIV-PH8XL[9]
Twist-lock Photoelectric Cell, extended life, UNIV (120-277VAC).

ACC-RFS-RFM-RFL-UNIV-SPC[9,10]
Starsense twist-lock photoelectric cell & antenna node, UNIV (120-277VAC).

ACC-RFM-RFL-HVU-SPC[9,10]
Starsense twist-lock photoelectric cell & antenna node, HVU (347-480VAC).

ACC-RFS-RFM-RFL-UNIV-SPCD[9,10]
Starsense dimmable twist-lock photoelectric cell & antenna node, UNIV (120-277VAC).

9. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
10. Please note that more hardware as well as software are required - please contact the quotations department for help with putting together the entire control system.

LED Wattage and Lumen Values

LED = Philips Lumileds LUXEON T, CRI = 70, CCT = 4000K (+/- 350K)
System (LED + driver) rated life = 100,000 hrs[11]

LED Module	Typical Delivered Lumens	Typical System Wattage (W)[12]	LED Current (mA)	Typical System Current (A) @						Efficacy (Lm/W)	BUG Rating
				120V	208V	240V	277V	347V	480V		
145W64LED4K-T-R2S	16,349	137	700	1.15	0.66	0.58	0.51	0.41	0.31	119	B3-U0-G2
145W64LED4K-T-R2M	16,046	137	700	1.15	0.66	0.58	0.51	0.41	0.31	117	B3-U0-G3
145W64LED4K-T-R3S	15,763	137	700	1.15	0.66	0.58	0.51	0.41	0.31	115	B2-U0-G3
145W64LED4K-T-R3M	15,697	137	700	1.15	0.66	0.58	0.51	0.41	0.31	115	B3-U0-G2
180W80LED4K-T-R2S	20,444	174	700	1.46	0.86	0.76	0.69	0.52	0.39	117	B3-U0-G2
180W80LED4K-T-R2M	20,065	174	700	1.46	0.86	0.76	0.69	0.52	0.39	115	B3-U0-G3
180W80LED4K-T-R3S	19,711	174	700	1.46	0.86	0.76	0.69	0.52	0.39	113	B2-U0-G3
180W80LED4K-T-R3M	19,628	174	700	1.46	0.86	0.76	0.69	0.52	0.39	113	B3-U0-G3
215W96LED4K-T-R2S	24,538	207	700	1.74	1.01	0.89	0.80	0.62	0.46	119	B3-U0-G2
215W96LED4K-T-R2M	24,084	207	700	1.74	1.01	0.89	0.80	0.62	0.46	116	B3-U0-G3
215W96LED4K-T-R3S	23,658	207	700	1.74	1.01	0.89	0.80	0.62	0.46	114	B3-U0-G4
215W96LED4K-T-R3M	23,559	207	700	1.74	1.01	0.89	0.80	0.62	0.46	114	B3-U0-G3
241W112LED4K-T-R2S	28,633	248	700	2.03	1.17	1.02	0.91	0.72	0.53	115	B4-U0-G3
241W112LED4K-T-R2M	28,102	248	700	2.03	1.17	1.02	0.91	0.72	0.53	114	B3-U0-G4
241W112LED4K-T-R3S	27,606	244	700	2.03	1.17	1.02	0.91	0.72	0.53	113	B3-U0-G4
241W112LED4K-T-R3M	27,490	244	700	2.03	1.17	1.02	0.91	0.72	0.53	113	B3-U0-G4

Type V (5) IES files for all LED modules pending.

11. L_{70} >100,000 hrs (at ambient temperature = 25°C).
12. System wattage or total luminaire wattage includes the LED module and the LED driver.
Note: Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Philips.

RFL RoadFocus LED Cobrahead, Large

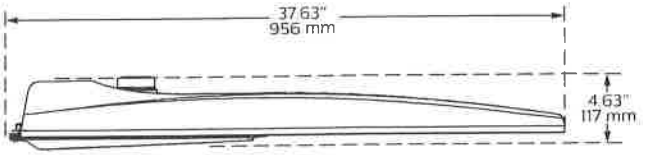
145, 180, 215, and 241W

Field Adjustable Wattage (FAWS) Multiplier Chart

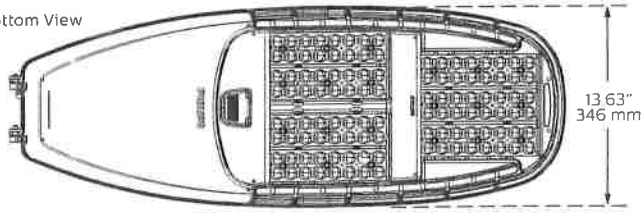
FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage and typical current
1	0.37	0.29
2	0.55	0.50
3	0.62	0.58
4	0.71	0.69
5	0.77	0.75
6	0.81	0.81
7	0.84	0.87
8	0.94	0.91
9	0.98	0.96
10	1.00	1.00

Dimensions

Side View



Bottom View



Weight: 27.3 Lbs

EPA: 0.92 sq. ft.

Predicted Lumen Depreciation Data[14,15,16]

Ambient Temperature °C	Driver mA	Calculated L_{70} Hours	L_{70} per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	700 mA	>100,000 hours	>60,000 hours	>94%

14 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.

15 L_{70} is the predicted time when LED performance depreciates to 70% of initial lumen output.

16 Calculated per IESNA TM21-11. Published L_{70} hours limited to 6 times actual LED test hours.

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 2.5º 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 with Philips Lumileds LUXEON T LEDs. 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 (Included), LED type Philips Lumileds LUXEON T. Composed of high performance white LEDs. Color temperature as per ANSI bin 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical.

Optical System: Composed of high performance 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. Dark Sky compliant with 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.

RFL RoadFocus LED Cobrahead, Large

145, 180, 215, and 241W

Specifications (continued)

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.

WC10: 10-year limited warranty from defects in material and workmanship in its intended use, as well as coverage for finish. Visit website for more details.

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

AMPD*: Driver pre-programmed for compatibility with Amplight control system.

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:
CDMGS25: 4 hours, 25% power dimming
CDMGS50: 4 hours 50% power dimming
CDMGS75: 4 hours 75% power dimming

Median Mode:
CDMGM25: 6 hours 25% power dimming
CDMGM50: 6 hours 50% power dimming
CDMGM75: 6 hours 75% power dimming

Economy Mode:
CDMGE25: 8 hours 25% power dimming
CDMGE50: 8 hours 50% power dimming
CDMGE75: 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: When using FAWS with dimming, set the switch to position 10 (maximum output) to enable dimming.*

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.

** 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 time delay or slow blow fuse to avoid unnecessary and unwanted fuse blowing that can occur with fast acting fuses.

Hardware

All exposed screws shall be stainless steel with Ceramic primer seal basecoat to reduce seizing of the parts. 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 2000 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 RFL 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 an 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.

Limited Warranty

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

Brackets/Arms

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

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