

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of	)	
Ohio Edison Company, The Cleveland	)	
Illuminating Company, and The	)	Case No. 19-1108-EL-ATA
Toledo Edison Company for Modification	)	
Of a Tariff Change	)	

MOTION TO INTERVENE OF THE CITY OF TOLEDO

Now comes the comes the City of Toledo, and, pursuant to Section 4903.221 of the Ohio Revised Code and Section 4901-1-11 of the Ohio Administrative Code, respectfully moves the Public Utilities Commission to grant its request for intervention in these proceedings for the reasons set forth in the following Memorandum in Support.

Respectfully submitted,

/s/ Leslie A. Kovacik
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Counsel for the City of Toledo

MEMORANDUM IN SUPPORT

On May 21, 2019, the Ohio Edison Company, The Cleveland Illuminating Company and The Toledo Edison Company (hereinafter the “Companies”) filed an Application for Tariff Adjustment pursuant to 4909.18 Revised Code. This Application seeks to modify the Companies’ LED lighting program rates.

Toledo has a real and substantial interest in this proceeding because it is currently contemplating LED lighting in the City which encompasses approximately 29,000 streetlights. Moreover, as streetlighting is generally relegated to municipalities, there are not likely to be many, if any, other intervenors. Toledo has four main issues with the Companies’ Application that it seeks to resolve.

Firstly, Toledo has learned through conversations with various Toledo Edison representatives that the Companies currently use and intend to use GE products for its LED streetlights. In Toledo’s evaluation of an LED overhaul it has investigated the lighting that GE offers. Current specification sheets for GE street lighting products reveal an apparent mismatch between the GE products and the wattage and lumen outputs listed in the Companies’ Application (See Exhibit 1).

This is of major significance to Toledo because if true, and Toledo has determined it needs an LED streetlight providing 4,000 lumens, the GE information suggests that Toledo would need a 31 watt lamp. The Companies’ Application, however, indicates to achieve 4,000 lumens the City would need a 50 watt LED lamp.

The 29 watt difference multiplied by thousands of streetlights represents a potentially massive overuse of electricity and misuse of public dollars.

Secondly, the Companies propose increasing Toledo Edison's monthly charge for a 50 watt LED lamp by over 13% from \$7.45 to \$8.47 without any economic justification. The 50 watt LED is anticipated by the City to be the most common as it moves through an LED replacement effort.

Thirdly, the Application's lack of details as to the products the Companies will actually utilize will cause confusion and likely problems for Toledo when deciding what LED lamp to use. For example: the City wants to replace a Toledo streetlight that currently has a 100 watt high pressure sodium bulb. GE's literature on their LED streetlight products suggests that 4,000 to 5,000 lumens is sufficient. Using that as a guide if that bulb is replaced according to the Application, the logical selection would be a 50 watt LED lamp producing 4,000 lumens. However, the closest GE product that Toledo can ascertain from the GE literature is a 47 watt lamp that produces 6,000 lumens. On an average residential street that level of an increase in lighting will be incredibly problematic and sure to produce angry citizens who don't want beacons of light streaming into their houses at night. In this example switching out to a 31 watt LED lamp would, according to Toledo's research, be more appropriate.

GE literature indicates its LED streetlights have a life of 100,000 hours. The Application states the average burn hours for a streetlight is 4,200 per annum. This means new LED light bulbs put in today will last nearly 24 years. That is a ridiculously long time to have inaccurate pricing and inappropriate lighting levels.

Finally, 24 years is also an extremely long time in between needing to change out streetlights when compared to existing technology that lasts only 5 to 6 years. As the Companies will replace existing technologies 4 to 5 times before changing out LED streetlights again, pricing in this Application should cause the monthly charges to go down, not up.

Toledo hopes to significantly contribute to this case by uncovering pertinent details about LED streetlighting. These details are crucial to a City like Toledo that has the largest pool of streetlights in its territory, all of which are paid for by public taxes. There is no reason to foist unnecessary costs and expend unnecessary consumption upon the public. Furthermore Toledo's intervention will not unduly prolong or delay these proceedings.

For these reasons, Toledo respectfully requests that its Motion to Intervene be granted.

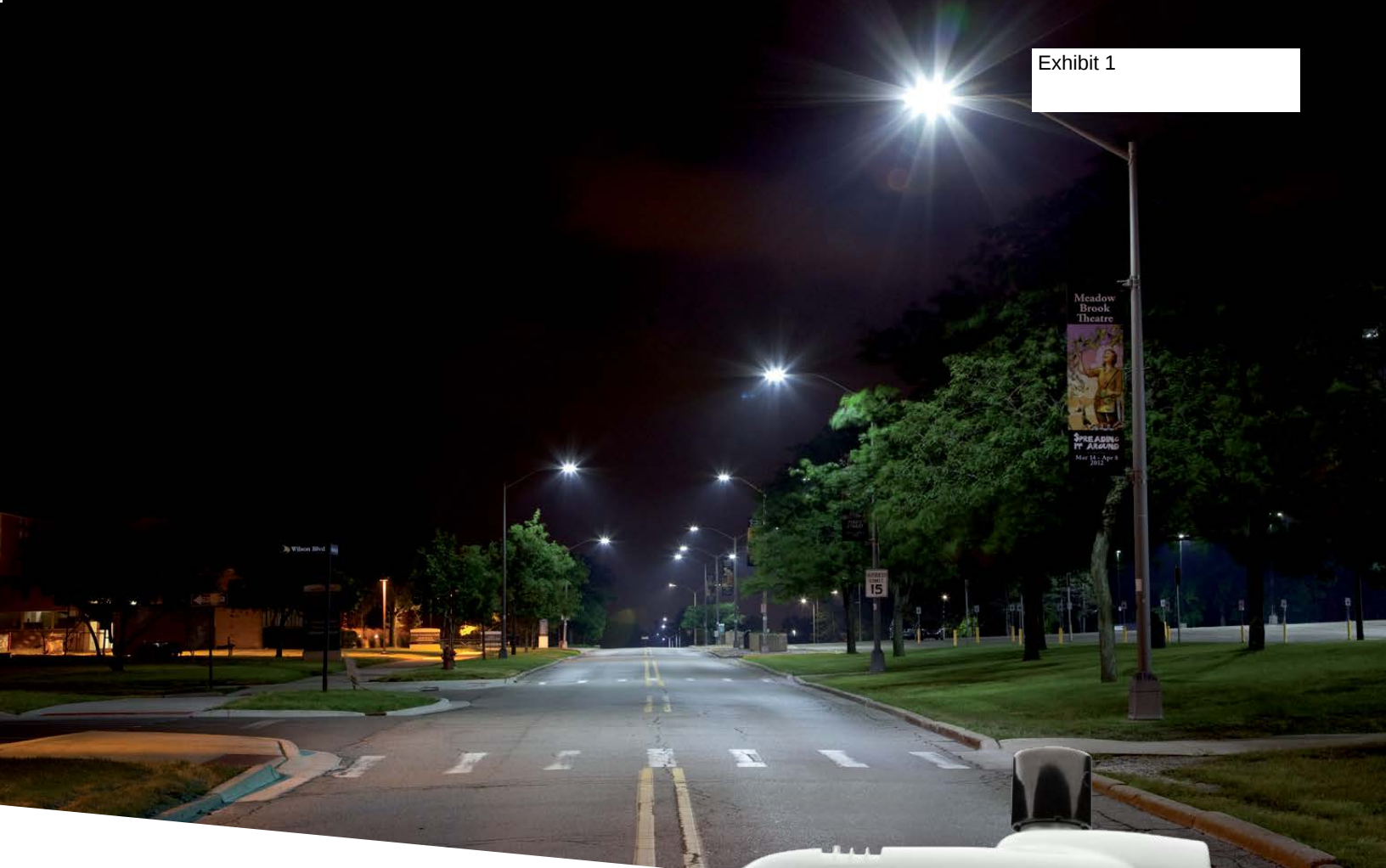
Respectfully submitted,

/s/ Leslie A. Kovacik
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Counsel for the City of Toledo

CERTIFICATE OF SERVICE

A copy of the foregoing Motion to Intervene with Memorandum in Support of the City of Toledo was served electronically to rendris@firstenergycorp.com and thomas.mcnamee@ohioattorneygeneral.gov, this 21st day of June, 2019.

/s/ Leslie A. Kovacik
Leslie A. Kovacik



GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2



GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2



The **Evolve** LED Roadway Luminaire is optimized for customers requiring a LED solution for local, collector and major roadways. GE's unique reflective optics are designed to optimize application efficiency and minimize glare. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life. This reliable unit has a 100,000 hour design life, significantly reducing maintenance needs and expense over the life of the fixture. This efficient solution lowers energy consumption compared to a traditional HID fixture for additional operating cost savings.

Features:

- Optimized roadway photometric distributions
- **Evolve**™ light engine consisting of reflective technology designed to optimize application efficiency and minimize glare
- 70 CRI at 2700K, 3000K and 4000K typical.
- -40°C to 50°C UL Ambient Typical.
- ULOR = 0 (zero uplight)
- Designed & Assembled in USA

Applications:

- Local Roadways
- Collector Roadways
- Major Roadway/Streets



Compatible with **LightGrid**™ Outdoor Wireless Control System



To learn more about **GE Evolve LED Roadway Lighting**, go to: www.currentbyge.com





Typical Specifications: ERL1-ERLH-ERL2

LED & Optical

- **Output Range:** 1900 – 30000 lm
- **Photometric Options:** Type II Narrow, Type II Wide, Type III, Type IV
- **System Efficacy:** 100 – 145 LPW
- **CCT:** 2700K, 3000K, 4000K; High brightness LEDs @ 70 CRI

Lumen Maintenance Tables

Projected Lxx per IES TM-21 at 25°C for reference:

ERL1 LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
02,03,04,05,06	L96	L95	L91
07,08,09	L95	L91	L84
10	L89	L80	L64

ERLH LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
10, 11	L97	L96	L94
13, 14	L95	L93	L88
15, 16	L94	L91	L85

ERL2 LUMEN OUTPUT CODES	LXX(10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
16, 18, 19, 21, 23	L96	L94	L91
25, 27, 28	L95	L93	L88
30	L95	L93	L87

Note: Projected Lxx based on LM80 (10,000 hour testing). DOE Lighting Facts Verification Testing Tolerances apply to initial luminous flux and lumen maintenance measurements.

Electrical

- **Input Voltage:** 120-277 volt and 347-480 volt
- **Input Frequency:** 50/60Hz
- **Power Factor (PF)*:** >90%
- **Total Harmonic Distortion (THD)*:** <20%

*Power factor and THD tolerance exceptions: ERL1 "02" Lumen output: PF and THD within tolerances above only at 120 volt. ERL1 "03" Lumen output: @120 volt PF~0.89; @ 480 volt THD~26% ERL1 "04" Lumen output: @480 volt THD~22%

Ratings

- **Surge Protection:** per ANSI C136.2-2015:
(Driver Internal):
 - 6kV/3kA "Basic: (120 Strikes)" - Standard on ERL1 (02-06)
 - 10kV/5kA "Enhanced: (40 Strikes)" - Standard on ERL1 (07 - 10), ERLH, ERL2
- **(Additional Separate Secondary SPD)**
 - 10kV/5kA "Enhanced: (40 Strikes)" - Option "R"
 - 20kV/10kA "Elevated" (40 Strikes) - Option "T"
- **Safety:** UL/cUL Listed. UL 1598 listed, suitable for wet locations (UL) (UL)
- **Environmental:** Compliant with the materials restrictions of RoHS
- **EMI:** Title 47 CFR Part 15 Class A
- **Vibration:** 3G per ANSI C136.31-2010
- LM-79 testing in accordance with IESNA Standards
- Std. Optical enclosure rated per ANSI C136.25-2009:
 - ERL1/ERLH/ERL2 = IP65, Optional: IP66



Please refer to the DLC QPL website for the latest and most complete information. www.designlights.org/QPL



International Dark Sky Association listed. 2700K or 3000K must be selected to meet IDA certification and approval.

Operating Temperature:

PRODUCT ID	LUMEN OUTPUT	AMBIENT READING
ERL1	02-10	-40°C to 50°C
ERLH	10-11, 13	-40°C to 50°C
ERLH	14-16	-40°C to 45°C
ERL2	16-28	-40°C to 50°C
ERL2	30	-40°C to 45°C

Delayed start may be experienced < -35°C

Construction & Finish

- **Housing:**
 - Die Cast Enclosure
 - Casting-integral heat sink for maximum heat transfer
- **Lensing:** Impact resistant tempered glass, standard
- **Paint:** Corrosion resistant polyester powder painted, minimum 2.0 mil. thickness.
 - Standard Colors: Dark Bronze, Black, & Gray
 - RAL & custom colors available
 - Optional coastal finish available.
- **Weight:** 12.4lbs (5.6kg) – 24lbs (10.9kg)

Warranty

- **System Warranty:** 5 Year Standard, 10 Year Optional

Controls

- **Dimming:**
 - Standard: 0-10V; Optional: DALI (120-277V Only)
- **Sensors:**
 - Photo electric sensors (PE) available.
- LightGrid™ compatible

Mounting

- Slipfitter with +/- 5 degree of adjustment for leveling.
- Integral die cast mounting pipe stop.
- Adjustable for 1.25 in. or 2 in. mounting pipe.

Suggested HID Replacement Lumen Levels

- ~4,000–5,000 lumens to replace 100W HPS Cobra-head
- ~7,000–8,800 lumens to replace 150W HPS Cobra-head
- ~8,500–11,500 lumens to replace 200W HPS Cobra-head
- ~11,500–14,000 lumens to replace 250W HPS Cobra-head
- ~21,000–30,000 lumens to replace 400W HPS Cobra-head

Note: Actual replacement lumens may vary based upon mounting height, pole spacing, design criteria, etc.

CONVERSION FROM PREVIOUS GENERATION OPTICS TO CURRENT GENERATION OPTICS**			
PREVIOUS	DESCRIPTION	CURRENT	DESCRIPTION
A1, B1	Extra Narrow/Narrow Asymmetric	A3	Type II Narrow
C1, E1	Asymmetric Short/Medium	B3	Type II Wide
D1, G1	Asymmetric Forward/Extra Wide	C3	Type III
F1	Asymmetric Wide	D3	Type IV
		E3	Type II Enhanced Back Light

**The information above is designed to provide a guideline to select the correct luminaire for a roadway application. The best and most accurate way to ensure the proper design is do a lighting layout Utilizing AGI.

GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2



Project name _____
Date _____
Type _____

ERL 1

PROD. ID		VOLTAGE	LUMEN OUTPUT		DISTRIBUTION*		CCT	CONTROLS		COLOR	OPTIONS		
E = Evolve R = Roadway L = Local 1 = Single Module		0 = 120-277V* 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 D = 347 H = 347-480*# * Not available with Fusing. Must choose a discrete voltage with F option. # Not available with E controls option.	02* 03< 04< 05< 06 07 08 09 10 See Table *120V only, not compatible with 0-10V dimming. < See Note Under Controls Column	A3 = Type II Narrow B3 = Type II Wide C3 = Type III D3 = Type IV E3 = Type II Enhanced Back Light See Table *Nominal IES Type classing subject to typical variation, individual units may differ.	27 = 2700K< 30 = 3000K 40 = 4000K < Select 2700K or 3000K CCT for IDA approved units.	A = ANSI C136.41 7-pin D = ANSI C136.41 7-pin with Shorting Cap E = ANSI C136.41 7-pin with non-Dimming PE Control.* *PE Control Only available for 120-277V or 480V Discrete. Not available for 347-480V or 347V Discrete. < If dimming the 03 - 05 lumen output using a control supplied from a source other than GE call 1-888-694-3533, then select Option 2 at the prompt for assistance. NOTE: Dimming controls wired for 0-10V standard unless DALI option "U" requested.	GRAY = Gray BLCK = Black DKBZ = Dark Bronze	A = 4 Bolt Slipfitter † F = Fusing G = Internal Bubble Level I = IP66 Optical L = Tool-Less Entry R = Secondary 10kV/5kA SPD T = Secondary 20kV/10kA SPD U = DALI Programmable +^ V1 = Variable Output via Field Adjustable Module** X = Single Package # Y = Coastal Finish* XXX = Special Options † Contact manufacturer for Lead-Time. # "X" option provides single pack box per fixture. Std Packaging = 20 units per Magna pak container. * Recommended for installations within 750 ft. from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available in 347V, 480V or 347-480V for Lumen Output Levels 07, 08, 09, and 10. ** Not available with DALI (U) option.					
LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS			TYPICAL SYSTEM WATTAGE		BUG RATING			IES FILE NUMBER			
		4000K	3000K	2700K	120-277V	347-480V	4000K	3000K	2700K	120-277V	347-480V	120-277V	347-480V
02	A3	2000	1900	1900	14	N/A	B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_02A330_-120VIES	N/A	ERL1_02A330_-120VIES	N/A
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_02B330_-120VIES	N/A	ERL1_02B330_-120VIES	N/A
	C3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_02C330_-120VIES	N/A	ERL1_02C330_-120VIES	N/A
	D3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_02D330_-120VIES	N/A	ERL1_02D330_-120VIES	N/A
	E3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_02E330_-120VIES	N/A	ERL1_02E330_-120VIES	N/A
03	A3	3000	2900	2800	22	26	B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_03A330_-120-277VIES	ERL1_03A330_-347-480VIES	ERL1_03A330_-120-277VIES	ERL1_03A330_-347-480VIES
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_03B330_-120-277VIES	ERL1_03B330_-347-480VIES	ERL1_03B330_-120-277VIES	ERL1_03B330_-347-480VIES
	C3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_03C330_-120-277VIES	ERL1_03C330_-347-480VIES	ERL1_03C330_-120-277VIES	ERL1_03C330_-347-480VIES
	D3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_03D330_-120-277VIES	ERL1_03D330_-347-480VIES	ERL1_03D330_-120-277VIES	ERL1_03D330_-347-480VIES
	E3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_03E330_-120-277VIES	ERL1_03E330_-347-480VIES	ERL1_03E330_-120-277VIES	ERL1_03E330_-347-480VIES
04	A3	4000	3900	3800	31	34	B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_04A330_-120-277VIES	ERL1_04A330_-347-480VIES	ERL1_04A330_-120-277VIES	ERL1_04A330_-347-480VIES
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_04B330_-120-277VIES	ERL1_04B330_-347-480VIES	ERL1_04B330_-120-277VIES	ERL1_04B330_-347-480VIES
	C3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_04C330_-120-277VIES	ERL1_04C330_-347-480VIES	ERL1_04C330_-120-277VIES	ERL1_04C330_-347-480VIES
	D3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_04D330_-120-277VIES	ERL1_04D330_-347-480VIES	ERL1_04D330_-120-277VIES	ERL1_04D330_-347-480VIES
	E3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_04E330_-120-277VIES	ERL1_04E330_-347-480VIES	ERL1_04E330_-120-277VIES	ERL1_04E330_-347-480VIES
05	A3	5000	4900	4700	39	43	B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_05A330_-120-277VIES	ERL1_05A330_-347-480VIES	ERL1_05A330_-120-277VIES	ERL1_05A330_-347-480VIES
	B3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_05B330_-120-277VIES	ERL1_05B330_-347-480VIES	ERL1_05B330_-120-277VIES	ERL1_05B330_-347-480VIES
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_05C330_-120-277VIES	ERL1_05C330_-347-480VIES	ERL1_05C330_-120-277VIES	ERL1_05C330_-347-480VIES
	D3						B1-U0-G1	B1-U0-G1	B1-U0-G1	ERL1_05D330_-120-277VIES	ERL1_05D330_-347-480VIES	ERL1_05D330_-120-277VIES	ERL1_05D330_-347-480VIES
	E3						B2-U0-G2	B1-U0-G1	B1-U0-G1	ERL1_05E330_-120-277VIES	ERL1_05E330_-347-480VIES	ERL1_05E330_-120-277VIES	ERL1_05E330_-347-480VIES
06	A3	6000	5800	5700	47	52	B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_06A330_-120-277VIES	ERL1_06A330_-347-480VIES	ERL1_06A330_-120-277VIES	ERL1_06A330_-347-480VIES
	B3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_06B330_-120-277VIES	ERL1_06B330_-347-480VIES	ERL1_06B330_-120-277VIES	ERL1_06B330_-347-480VIES
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_06C330_-120-277VIES	ERL1_06C330_-347-480VIES	ERL1_06C330_-120-277VIES	ERL1_06C330_-347-480VIES
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_06D330_-120-277VIES	ERL1_06D330_-347-480VIES	ERL1_06D330_-120-277VIES	ERL1_06D330_-347-480VIES
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_06E330_-120-277VIES	ERL1_06E330_-347-480VIES	ERL1_06E330_-120-277VIES	ERL1_06E330_-347-480VIES
07	A3	7000	6800	6600	58		B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_07A330_-120-277VIES	ERL1_07A330_-347-480VIES	ERL1_07A330_-120-277VIES	ERL1_07A330_-347-480VIES
	B3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_07B330_-120-277VIES	ERL1_07B330_-347-480VIES	ERL1_07B330_-120-277VIES	ERL1_07B330_-347-480VIES
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_07C330_-120-277VIES	ERL1_07C330_-347-480VIES	ERL1_07C330_-120-277VIES	ERL1_07C330_-347-480VIES
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_07D330_-120-277VIES	ERL1_07D330_-347-480VIES	ERL1_07D330_-120-277VIES	ERL1_07D330_-347-480VIES
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_07E330_-120-277VIES	ERL1_07E330_-347-480VIES	ERL1_07E330_-120-277VIES	ERL1_07E330_-347-480VIES
08	A3	8000	7800	7600	71		B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_08A330_-120-277VIES	ERL1_08A330_-347-480VIES	ERL1_08A330_-120-277VIES	ERL1_08A330_-347-480VIES
	B3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_08B330_-120-277VIES	ERL1_08B330_-347-480VIES	ERL1_08B330_-120-277VIES	ERL1_08B330_-347-480VIES
	C3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_08C330_-120-277VIES	ERL1_08C330_-347-480VIES	ERL1_08C330_-120-277VIES	ERL1_08C330_-347-480VIES
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_08D330_-120-277VIES	ERL1_08D330_-347-480VIES	ERL1_08D330_-120-277VIES	ERL1_08D330_-347-480VIES
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_08E330_-120-277VIES	ERL1_08E330_-347-480VIES	ERL1_08E330_-120-277VIES	ERL1_08E330_-347-480VIES
09	A3	9000	8800	8500	84		B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_09A330_-120-277VIES	ERL1_09A330_-347-480VIES	ERL1_09A330_-120-277VIES	ERL1_09A330_-347-480VIES
	B3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_09B330_-120-277VIES	ERL1_09B330_-347-480VIES	ERL1_09B330_-120-277VIES	ERL1_09B330_-347-480VIES
	C3						B2-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_09C330_-120-277VIES	ERL1_09C330_-347-480VIES	ERL1_09C330_-120-277VIES	ERL1_09C330_-347-480VIES
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_09D330_-120-277VIES	ERL1_09D330_-347-480VIES	ERL1_09D330_-120-277VIES	ERL1_09D330_-347-480VIES
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_09E330_-120-277VIES	ERL1_09E330_-347-480VIES	ERL1_09E330_-120-277VIES	ERL1_09E330_-347-480VIES
10	A3	9800	9600	9250	97		B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_10A330_-120-277VIES	ERL1_10A330_-347-480VIES	ERL1_10A330_-120-277VIES	ERL1_10A330_-347-480VIES
	B3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_10B330_-120-277VIES	ERL1_10B330_-347-480VIES	ERL1_10B330_-120-277VIES	ERL1_10B330_-347-480VIES
	C3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_10C330_-120-277VIES	ERL1_10C330_-347-480VIES	ERL1_10C330_-120-277VIES	ERL1_10C330_-347-480VIES
	D3						B1-U0-G2	B1-U0-G2	B1-U0-G2	ERL1_10D330_-120-277VIES	ERL1_10D330_-347-480VIES	ERL1_10D330_-120-277VIES	ERL1_10D330_-347-480VIES
	E3						B2-U0-G2	B2-U0-G2	B2-U0-G2	ERL1_10E330_-120-277VIES	ERL1_10E330_-347-480VIES	ERL1_10E330_-120-277VIES	ERL1_10E330_-347-480VIES

Photometrics:

Evolve™ LED Streetlight (ERL1)

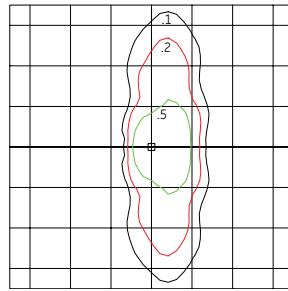
ERL1

Type II Narrow
(05A340)

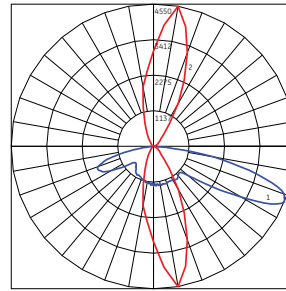
5,000 Lumens

4000K

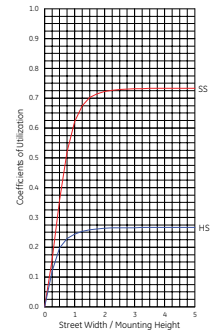
ERL1_05A340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 80°
— Horizontal cone through vertical angle of Max. Cd at 67°



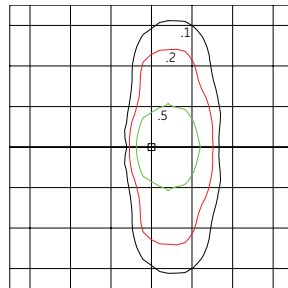
ERL1

Type II Wide
(05B340)

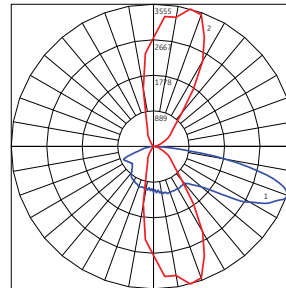
5,000 Lumens

4000K

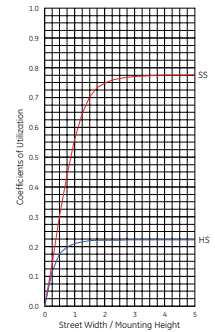
ERL1_05B340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 69°



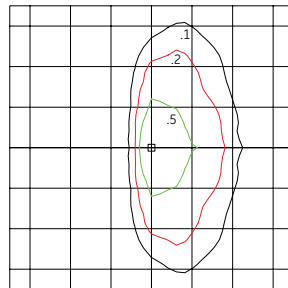
ERL1

Type III
(05C340)

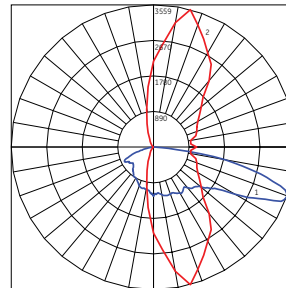
5,000 Lumens

4000K

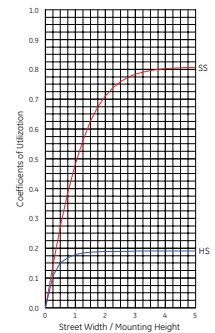
ERL1_05C340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 70°



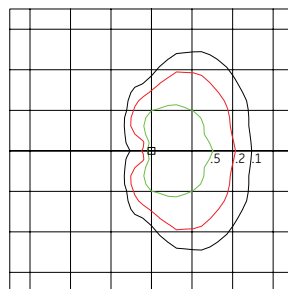
ERL1

Type IV
(05D340)

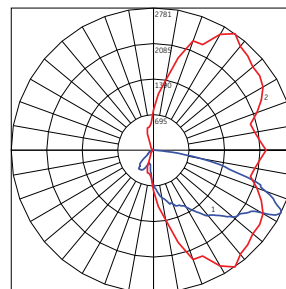
5,000 Lumens

4000K

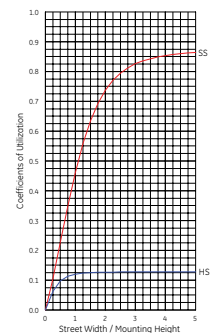
ERL1_(05D340)____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 55°
— Horizontal cone through vertical angle of Max. Cd at 64°



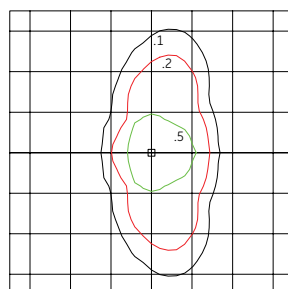
ERL1

Type II Enhanced Back Light
(05E340)

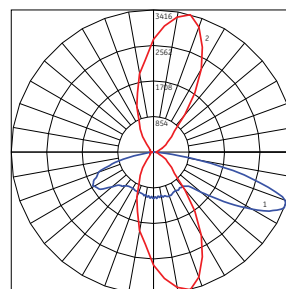
5,000 Lumens

4000K

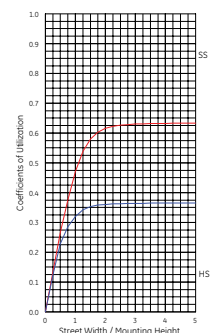
ERL1_(05E340)____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 67°



GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2



Project name _____

Date _____

Type _____

ERLH

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION*	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve R = Roadway L = Local H = High Output	0 = 120-277V* 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 D = 347 H = 347-480*# * Not available with Fusing. Must choose a discrete voltage with F option. # Not available with E controls option.	10 11 13 14 15 16 See Table	A3 = Type II Narrow B3 = Type II Wide C3 = Type III D3 = Type IV E3 = Type II Enhanced Back Light See Table *Nominal IES Type classing subject to typical variation, individual units may differ.	30 = 3000K< 40 = 4000K < Select 3000K CCT for IDA approved units.	A = ANSI C136.41 7-pin D = ANSI C136.41 7-pin with Shorting Cap E = ANSI C136.41 7-pin with non-Dimming PE Control.* *PE Control Only available for 120-277V or 480V Discrete. Not available for 347-480V or 347V Discrete. NOTE: Dimming controls wired for 0-10V standard unless DALI option "U" requested.	GRAY = Gray BLACK = Black DKBZ = Dark Bronze	A = 4 Bolt Slipfitter † F = Fusing G = Internal Bubble Level I = IP66 Optical L = Tool-Less Entry R = Secondary 10kV/5kA SPD T = Secondary 20kV/10kA SPD U = DALI Programmable +^ V1 = Variable Output via Field Adjustable Module** X = Single Package # Y = Coastal Finish* XXX = Special Options † Contact manufacturer for Lead-Time. # "X" option provides single pack box per fixture. Std Packaging = 20 units per Magna pak container. * Recommended for installations within 750 ft. from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available in 347V, 480V or 347-480V. ** Not available with DALI (U) option.

LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE		BUG RATING		IES FILE NUMBER	
		4000K	3000K	120-277V	347-480V	4000K	3000K	4000K	3000K
10	A3	10000	9600	82	82	B2-U0-G2	B2-U0-G2	ERLH_10A340 .IES	ERLH_10A330 .IES
	B3					B2-U0-G2	B2-U0-G2	ERLH_10B340 .IES	ERLH_10B330 .IES
	C3					B2-U0-G3	B2-U0-G2	ERLH_10C340 .IES	ERLH_10C330 .IES
	D3					B1-U0-G3	B1-U0-G2	ERLH_10D340 .IES	ERLH_10D330 .IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_10E340 .IES	ERLH_10E330 .IES
11	A3	11500	11000	98	98	B3-U0-G3	B2-U0-G2	ERLH_11A340 .IES	ERLH_11A330 .IES
	B3					B3-U0-G3	B2-U0-G2	ERLH_11B340 .IES	ERLH_11B330 .IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_11C340 .IES	ERLH_11C330 .IES
	D3					B1-U0-G3	B1-U0-G2	ERLH_11D340 .IES	ERLH_11D330 .IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_11E340 .IES	ERLH_11E330 .IES
13	A3	13000	12500	111	111	B3-U0-G3	B3-U0-G3	ERLH_13A340 .IES	ERLH_13A330 .IES
	B3					B2-U0-G3	B2-U0-G3	ERLH_13B340 .IES	ERLH_13B330 .IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_13C340 .IES	ERLH_13C330 .IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_13D340 .IES	ERLH_13D330 .IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_13E340 .IES	ERLH_13E330 .IES
14	A3	14000	13400	122	122	B3-U0-G3	B3-U0-G3	ERLH_14A340 .IES	ERLH_14A330 .IES
	B3					B2-U0-G3	B2-U0-G3	ERLH_14B340 .IES	ERLH_14B330 .IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_14C340 .IES	ERLH_14C330 .IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_14D340 .IES	ERLH_14D330 .IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_14E340 .IES	ERLH_14E330 .IES
15	A3	15000	14400	136	136	B3-U0-G3	B3-U0-G3	ERLH_15A340 .IES	ERLH_15A330 .IES
	B3					B2-U0-G3	B2-U0-G3	ERLH_15B340 .IES	ERLH_15B330 .IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_15C340 .IES	ERLH_15C330 .IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_15D340 .IES	ERLH_15D330 .IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_15E340 .IES	ERLH_15E330 .IES
16	A3	16000	15300	149	149	B3-U0-G3	B3-U0-G3	ERLH_16A340 .IES	ERLH_16A330 .IES
	B3					B3-U0-G3	B3-U0-G3	ERLH_16B340 .IES	ERLH_16B330 .IES
	C3					B2-U0-G3	B2-U0-G3	ERLH_16C340 .IES	ERLH_16C330 .IES
	D3					B2-U0-G3	B2-U0-G3	ERLH_16D340 .IES	ERLH_16D330 .IES
	E3					B3-U0-G3	B3-U0-G3	ERLH_16E340 .IES	ERLH_16E330 .IES

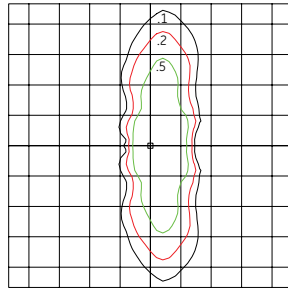
Photometrics:

Evolve™ LED Streetlight (ERLH)

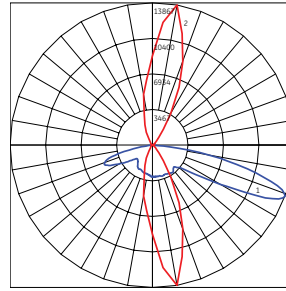
ERLH

Type II Narrow
(13A340)

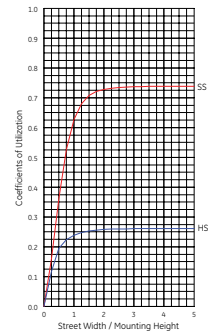
13,000 Lumens
4000K
ERLH_13A340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



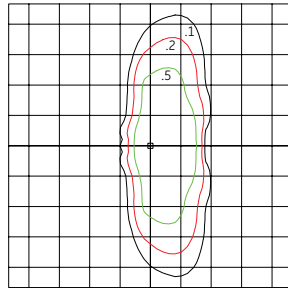
— Vertical plane through horizontal angle of Max. Cd at 80°
— Horizontal cone through vertical angle of Max. Cd at 69°



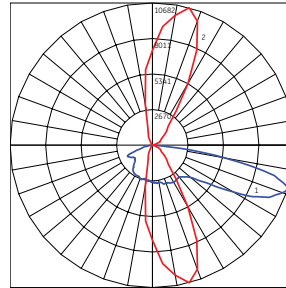
ERLH

Type II Wide
(13B340)

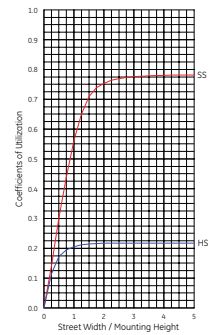
13,000 Lumens
4000K
ERLH_13B340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



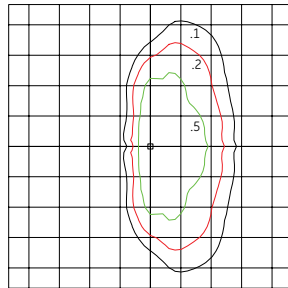
— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 72°



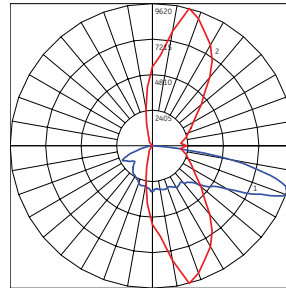
ERLH

Type III
(13C340)

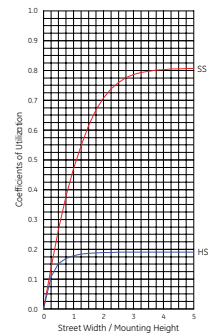
13,000 Lumens
4000K
ERLH_13C340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



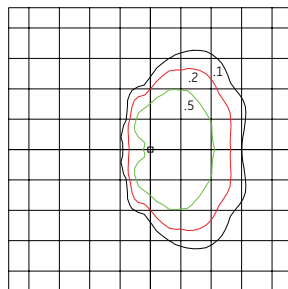
— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 71°



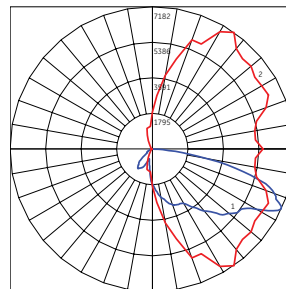
ERLH

Type IV
13D340

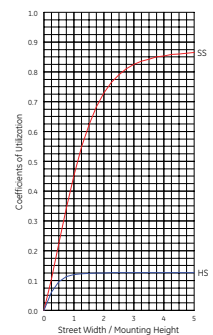
13,000 Lumens
4000K
ERLH_13D340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



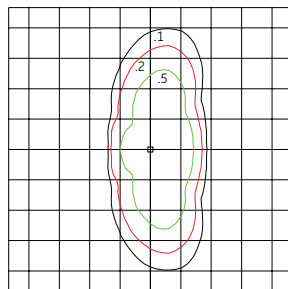
— Vertical plane through horizontal angle of Max. Cd at 55°
— Horizontal cone through vertical angle of Max. Cd at 65°



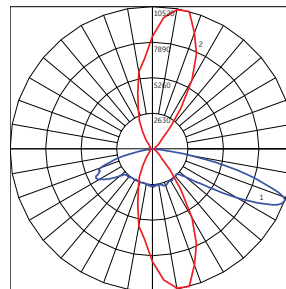
ERLH

Type II Enhanced Back Light
13E340

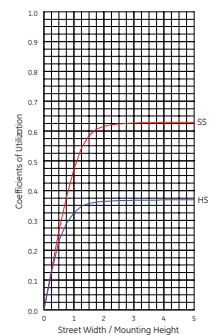
13,000 Lumens
4000K
ERLH_13E340__IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 69°



GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2



Project name _____

Date _____

Type _____

ERL2

PROD. ID	VOLTAGE	LUMEN OUTPUT	DISTRIBUTION*	CCT	CONTROLS	COLOR	OPTIONS
E = Evolve R = Roadway L = Local 2 = Double Module	0 = 120-277V* 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 D = 347 H = 347-480*# * Not available with Fusing. Must choose a discrete voltage with F option. # Not available with E controls option.	16 18 19 21 23 25 27 28 30 See Table	A3 = Type II Narrow B3 = Type II Wide C3 = Type III D3 = Type IV E3 = Type II Enhanced Back Light See Table *Nominal IES Type classing subject to typical variation, individual units may differ.	30 = 3000K <> 40 = 4000K 50 = 5000K* <> Select 3000K CCT for IDA approved units. *50 = 5200K for ERL2 lumen outputs 25, 27, 28, and 30.	A = ANSI C136.41 7-pin D = ANSI C136.41 7-pin with Shorting Cap E = ANSI C136.41 7-pin with non-Dimming PE Control.* *PE Control Only available for 120-277V or 480V Discrete. Not available for 347-480V or 347V Discrete. NOTE: Dimming controls wired for 0-10V standard unless DALI option "U" requested.	GRAY = Gray BLCK = Black DKBZ = Dark Bronze	A = 4 Bolt Slipfitter † F = Fusing G = Internal Bubble Level I = IP66 Optical L = Tool-Less Entry M1 = Magnapack*** R = Secondary 10kV/5kA SPD T = Secondary 20kV/10kA SPD U = DALI Programmable ^ V1 = Variable Output via Field Adjustable Module** Y = Coastal Finish* XXX = Special Options † Contact manufacturer for Lead-Time. * Recommended for installations within 750 ft. from the coast. Contact Factory for Lead-Time. + Compatible with LightGrid 2.0 nodes. ^ Not available in 347V, 480V or 347-480V. ** Not available with DALI (U) option. *** 20 fixtures per Magnapack.

LUMEN OUTPUT	DISTRIBUTION	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE		BUG RATING		IES FILE NUMBER					
		4000K/ 5000-5200K	3000K	120-277V	347-480V	4000K	3000K	4000K		3000K			
								120-277V	347-480V	120-277V	347-480V		
16	A3	16000	15300	120	120	B3-U0-G3	B3-U0-G3	ERL2_16A340	IES	ERL2_16A330	IES		
	B3					B3-U0-G3	B3-U0-G3	ERL2_16B340	IES	ERL2_16B330	IES		
	C3					B2-U0-G3	B2-U0-G3	ERL2_16C340	IES	ERL2_16C330	IES		
	D3					B2-U0-G3	B2-U0-G3	ERL2_16D340	IES	ERL2_16D330	IES		
	E3					B3-U0-G3	B3-U0-G3	ERL2_16E340	IES	ERL2_16E330	IES		
18	A3	18000	17300	140	140	B3-U0-G3	B3-U0-G3	ERL2_18A340	IES	ERL2_18A330	IES		
	B3					B3-U0-G3	B3-U0-G3	ERL2_18B340	IES	ERL2_18B330	IES		
	C3					B2-U0-G3	B2-U0-G3	ERL2_18C340	IES	ERL2_18C330	IES		
	D3					B2-U0-G3	B2-U0-G3	ERL2_18D340	IES	ERL2_18D330	IES		
	E3					B3-U0-G3	B3-U0-G3	ERL2_18E340	IES	ERL2_18E330	IES		
19	A3	19000	18200	149	149	B3-U0-G3	B3-U0-G3	ERL2_19A340	IES	ERL2_19A330	IES		
	B3					B3-U0-G3	B3-U0-G3	ERL2_19B340	IES	ERL2_19B330	IES		
	C3					B3-U0-G3	B2-U0-G3	ERL2_19C340	IES	ERL2_19C330	IES		
	D3					B2-U0-G3	B2-U0-G3	ERL2_19D340	IES	ERL2_19D330	IES		
	E3					B3-U0-G3	B3-U0-G3	ERL2_19E340	IES	ERL2_19E330	IES		
21	A3	21000	20100	174	177	B3-U0-G3	B3-U0-G3	ERL2_21A340_-120-277V/IES	ERL2_21A340_-347-480V/IES	ERL2_21A330_-120-277V/IES	ERL2_21A330_-347-480V/IES		
	B3					B3-U0-G3	B3-U0-G3	ERL2_21B340_-120-277V/IES	ERL2_21B340_-347-480V/IES	ERL2_21B330_-120-277V/IES	ERL2_21B330_-347-480V/IES		
	C3					B3-U0-G4	B3-U0-G3	ERL2_21C340_-120-277V/IES	ERL2_21C340_-347-480V/IES	ERL2_21C330_-120-277V/IES	ERL2_21C330_-347-480V/IES		
	D3					B2-U0-G3	B2-U0-G3	ERL2_21D340_-120-277V/IES	ERL2_21D340_-347-480V/IES	ERL2_21D330_-120-277V/IES	ERL2_21D330_-347-480V/IES		
	E3					B3-U0-G3	B3-U0-G3	ERL2_21E340_-120-277V/IES	ERL2_21E340_-347-480V/IES	ERL2_21E330_-120-277V/IES	ERL2_21E330_-347-480V/IES		
23	A3	23000	22100	194	196	B3-U0-G3	B3-U0-G3	ERL2_23A340_-120-277V/IES	ERL2_23A340_-347-480V/IES	ERL2_23A330_-120-277V/IES	ERL2_23A330_-347-480V/IES		
	B3					B3-U0-G3	B3-U0-G3	ERL2_23B340_-120-277V/IES	ERL2_23B340_-347-480V/IES	ERL2_23B330_-120-277V/IES	ERL2_23B330_-347-480V/IES		
	C3					B3-U0-G4	B3-U0-G4	ERL2_23C340_-120-277V/IES	ERL2_23C340_-347-480V/IES	ERL2_23C330_-120-277V/IES	ERL2_23C330_-347-480V/IES		
	D3					B2-U0-G4	B2-U0-G4	ERL2_23D340_-120-277V/IES	ERL2_23D340_-347-480V/IES	ERL2_23D330_-120-277V/IES	ERL2_23D330_-347-480V/IES		
	E3					B4-U0-G4	B3-U0-G3	ERL2_23E340_-120-277V/IES	ERL2_23E340_-347-480V/IES	ERL2_23E330_-120-277V/IES	ERL2_23E330_-347-480V/IES		
25	A3	25000	24000	214	214	B3-U0-G3	B3-U0-G3	ERL2_25A340	IES	ERL2_25A330	IES		
	B3					B3-U0-G3	B3-U0-G3	ERL2_25B340	IES	ERL2_25B330	IES		
	C3					B3-U0-G4	B3-U0-G4	ERL2_25C340	IES	ERL2_25C330	IES		
	D3					B2-U0-G4	B2-U0-G4	ERL2_25D340	IES	ERL2_25D330	IES		
	E3					B4-U0-G4	B4-U0-G4	ERL2_25E340	IES	ERL2_25E330	IES		
27	A3	27000	25900	237	237	B3-U0-G3	B3-U0-G3	ERL2_27A340	IES	ERL2_27A330	IES		
	B3					B3-U0-G4	B3-U0-G4	ERL2_27B340	IES	ERL2_27B330	IES		
	C3					B3-U0-G4	B3-U0-G4	ERL2_27C340	IES	ERL2_27C330	IES		
	D3					B2-U0-G4	B2-U0-G4	ERL2_27D340	IES	ERL2_27D330	IES		
	E3					B4-U0-G4	B4-U0-G4	ERL2_27E340	IES	ERL2_27E330	IES		
28	A3	28000	26900	251	251	B3-U0-G3	B3-U0-G3	ERL2_28A340	IES	ERL2_28A330	IES		
	B3					B3-U0-G4	B3-U0-G4	ERL2_28B340	IES	ERL2_28B330	IES		
	C3					B3-U0-G4	B3-U0-G4	ERL2_28C340	IES	ERL2_28C330	IES		
	D3					B2-U0-G4	B2-U0-G4	ERL2_28D340	IES	ERL2_28D330	IES		
	E3					B4-U0-G4	B4-U0-G4	ERL2_28E340	IES	ERL2_28E330	IES		
30	A3	30000	28800	278	278	B4-U0-G4	B4-U0-G4	ERL2_30A340	IES	ERL2_30A330	IES		
	B3					B3-U0-G4	B3-U0-G4	ERL2_30B340	IES	ERL2_30B330	IES		
	C3					B3-U0-G4	B3-U0-G4	ERL2_30C340	IES	ERL2_30C330	IES		
	D3					B2-U0-G4	B2-U0-G4	ERL2_30D340	IES	ERL2_30D330	IES		
	E3					B4-U0-G4	B4-U0-G4	ERL2_30E340	IES	ERL2_30E330	IES		

Photometrics:

Evolve™ LED Streetlight (ERL2)

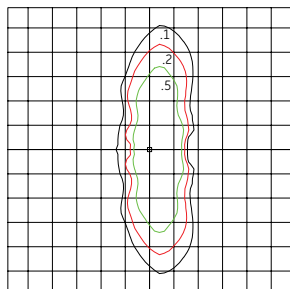
ERL2

Type II Narrow
(23A340)

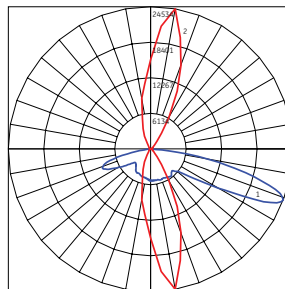
23,000 Lumens

4000K

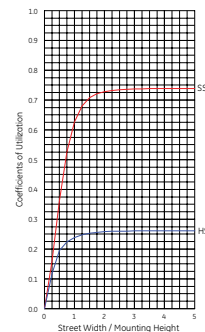
ERL2_23A340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 80°
— Horizontal cone through vertical angle of Max. Cd at 69°



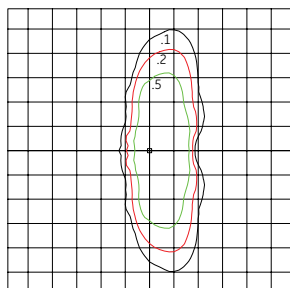
ERL2

Type II Wide
(23B340)

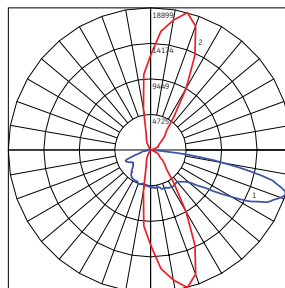
23,000 Lumens

4000K

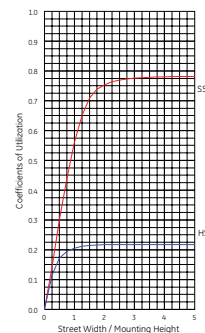
ERL2_23B340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 72°



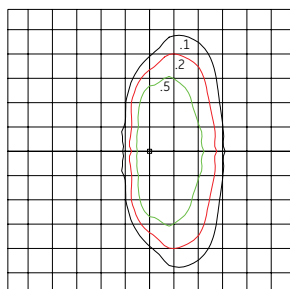
ERL2

Type III
(23C340)

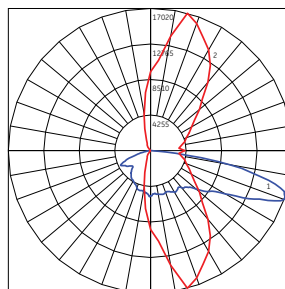
23,000 Lumens

4000K

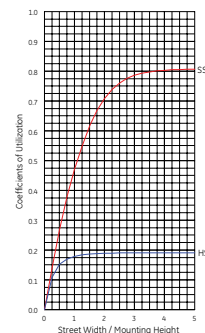
ERL2_23C340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 71°



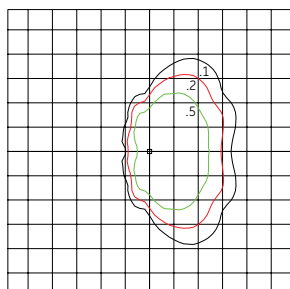
ERL2

Type IV
(23D340)

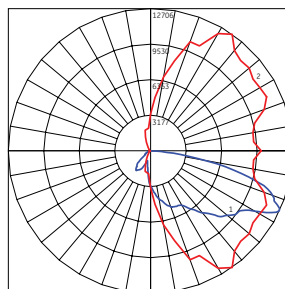
23,000 Lumens

4000K

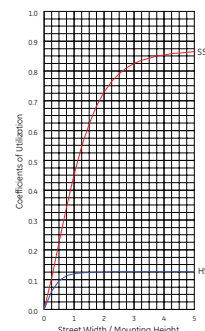
ERL2_23D340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 55°
— Horizontal cone through vertical angle of Max. Cd at 65°



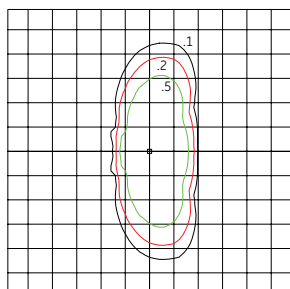
ERL2

Type II Enhanced Back Light
(23E340)

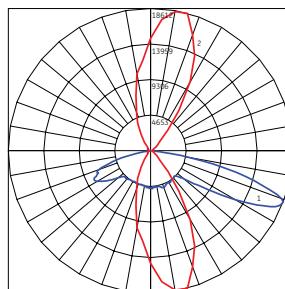
23,000 Lumens

4000K

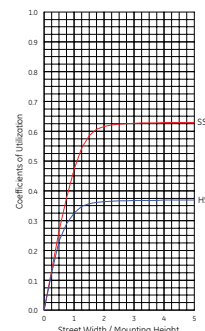
ERL2_23E340____.IES



Grid Distance in Units of Mounting Height at 30'
Initial Footcandle Values at Grade



— Vertical plane through horizontal angle of Max. Cd at 75°
— Horizontal cone through vertical angle of Max. Cd at 69°



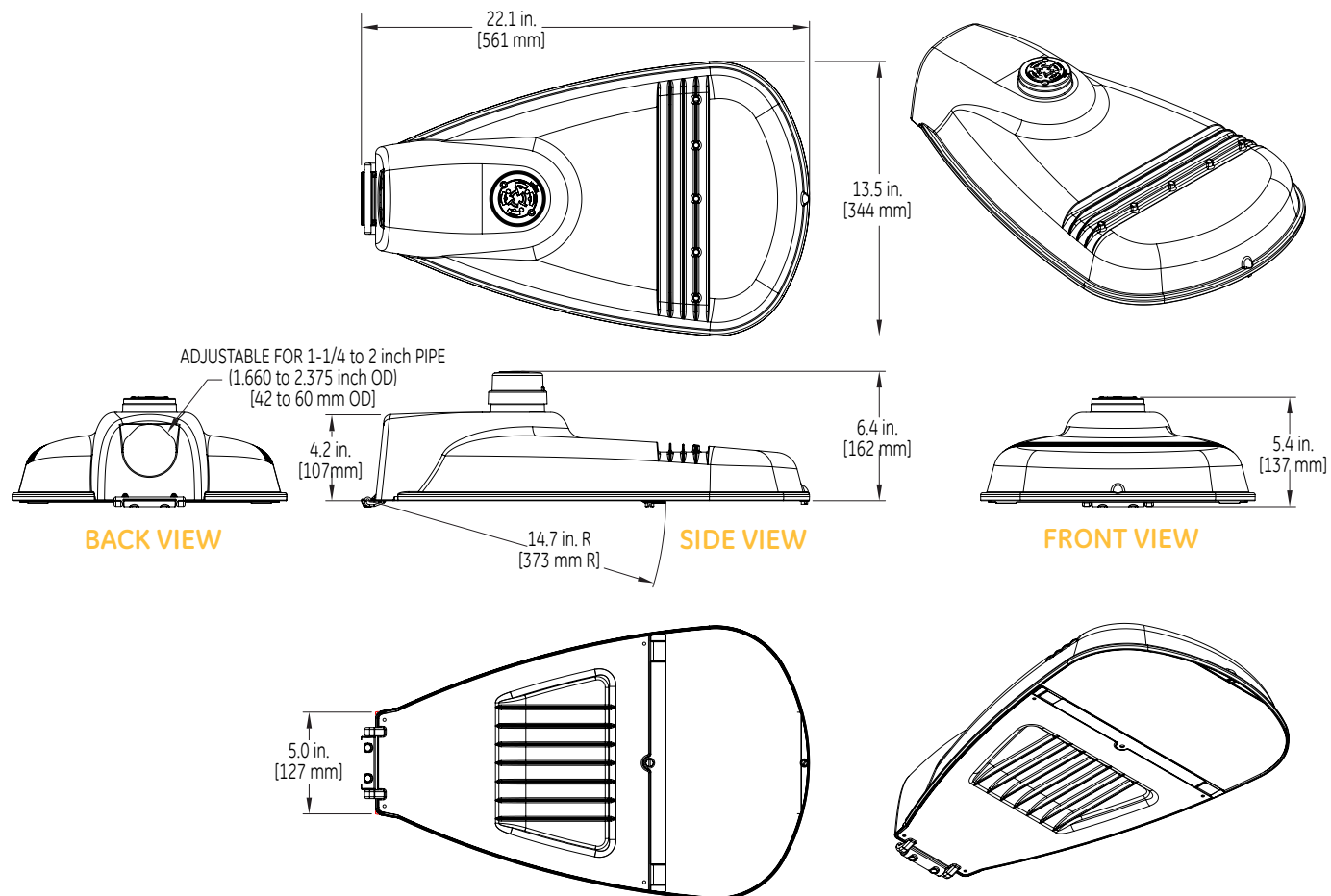
GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2

Product Dimensions:

Evolve™ LED Streetlight (ERL1)



DATA

- Approximate net weight: 12.4 lbs (5.6kgs) -15.5 lbs (7.0kgs) with XFMR
- Effective Projected Area (EPA): 0.5 sq ft max (0.046 sq m)

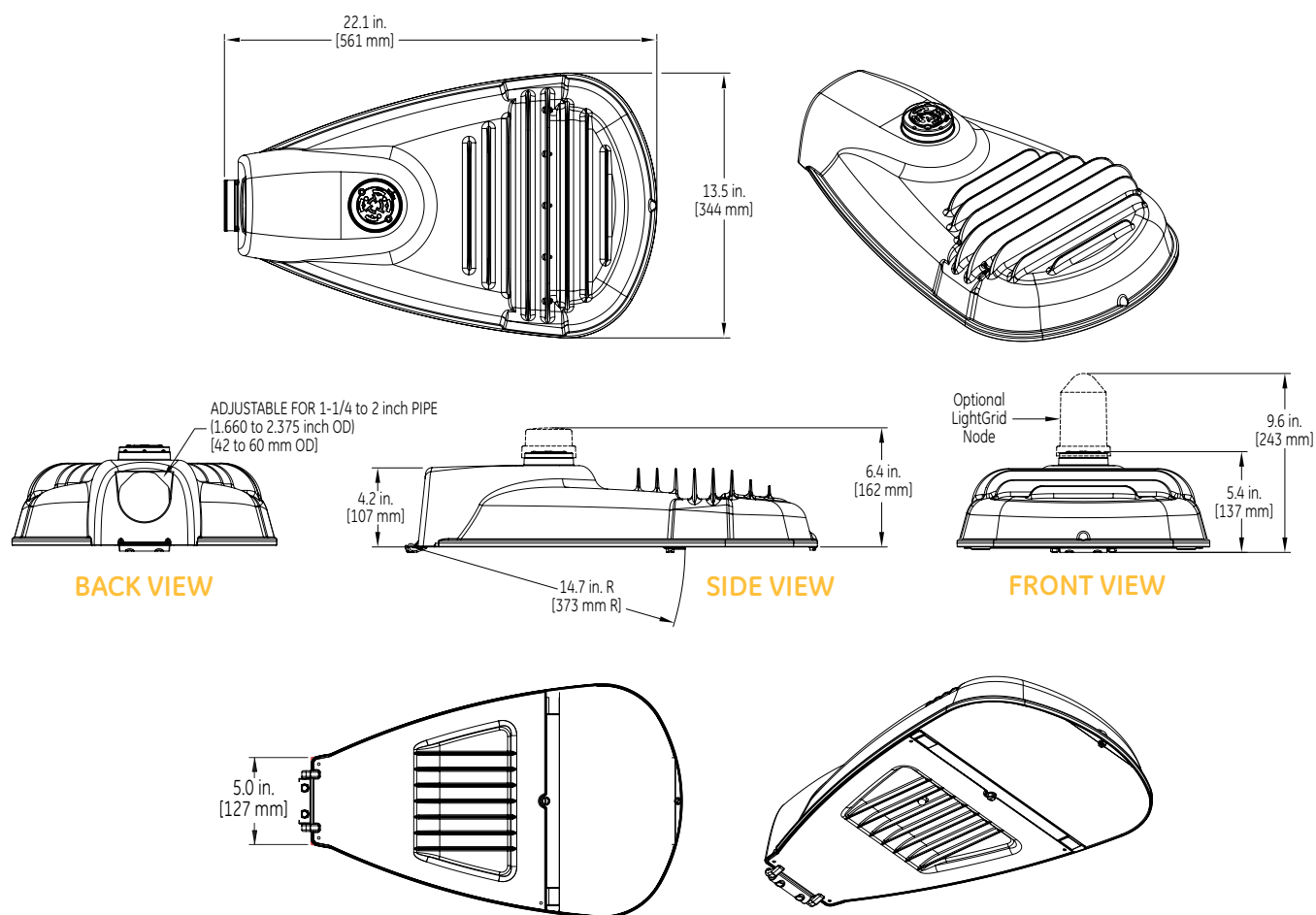
GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2

Product Dimensions:

Evolve™ LED Streetlight (ERLH)



DATA

- Approximate net weight: 15.15 lbs (6.9 kgs) - 2 Bolt Slipfitter
- Approximate net weight: 15.85 lbs (7.2 kgs) - 4 Bolt Slipfitter
- Effective Projected Area (EPA): 0.5 sq ft max (0.046 sq m)

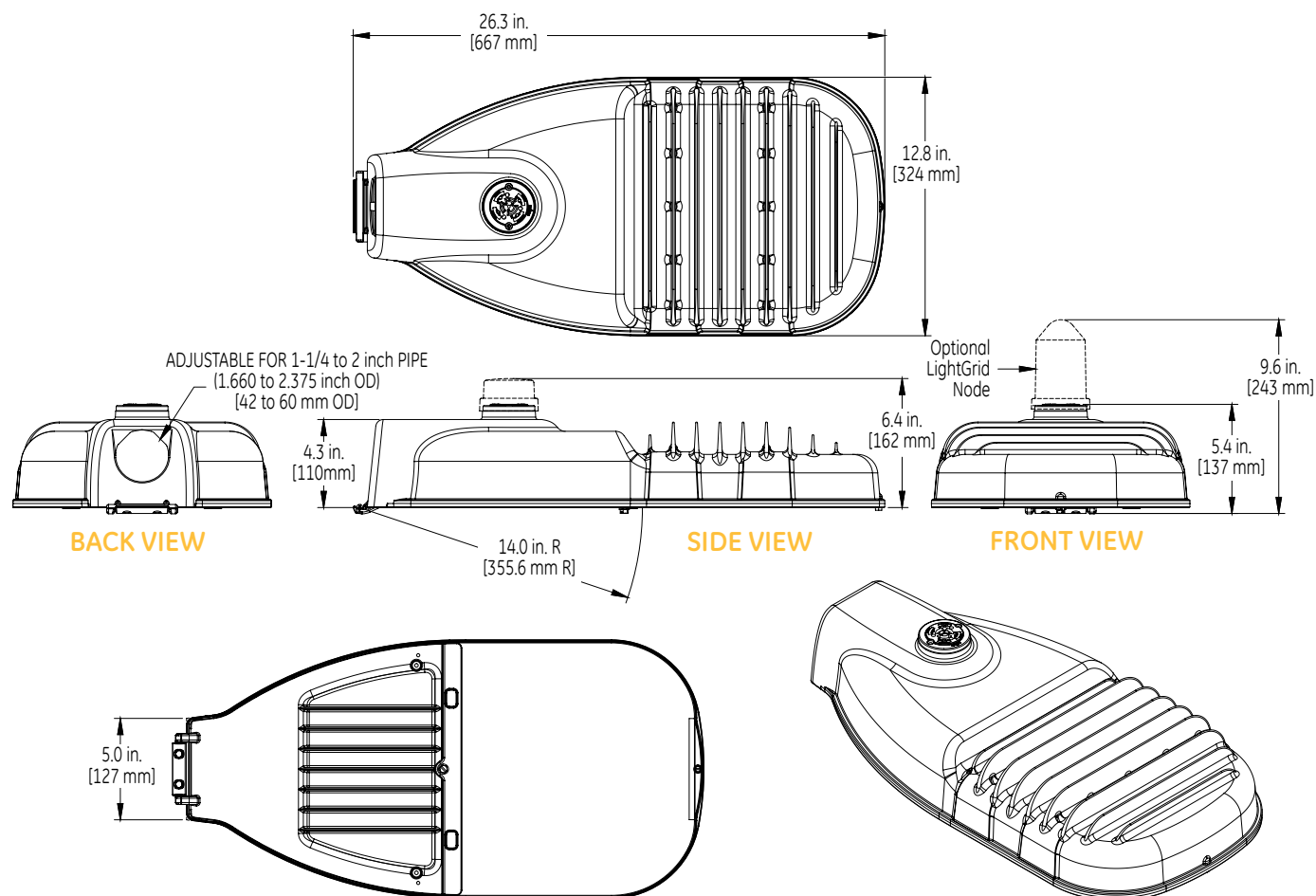
GE Evolve™

LED Roadway Lighting

ERL1-ERLH-ERL2

Product Dimensions:

Evolve™ LED Streetlight (ERL2)



DATA

- Approximate net weight: 24.0 lbs (10.9 kgs)
Contact manufacturer for specific configuration weight.
- Effective Projected Area (EPA): 0.57 sq ft max (0.053 sq m)

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in

Case No(s). 19-1108-EL-ATA

Summary: Motion Motion for Intervention electronically filed by Ms. Leslie A Kovacik on behalf of Kovacik, Leslie A Ms.