

ARTICLE XXXXV—OUTDOOR LIGHTING

108-246 Purpose

The general purpose of this Article is to protect and promote the public health, safety and welfare, the quality of life, and the ability to view the night sky, by establishing regulations and a process for review of exterior lighting. This Article establishes standards for exterior lighting in order to accomplish the following:

1. To provide safe roadways for motorists, cyclists and pedestrians;
2. To protect against direct glare and excessive lighting;
3. To ensure that sufficient lighting can be provided where needed to promote safety and security;
4. To prevent light trespass in all areas of the Town;
5. To protect and reclaim the ability to view the night sky;
6. To allow for flexibility in the style of lighting fixtures;
7. To provide lighting guidelines;
8. To provide assistance to property owners and occupants in bringing non-conforming lighting into conformance with this Article; and

108-247 General Provisions

A. Title – Article XXXXV together with the amendments thereto, shall be known and may be cited as the Town of Riverhead Lighting Ordinance.

108-248 Applicability

A. New Lighting.

All exterior lighting installed after the effective date of this Article shall conform to the standards established by this Article.

108-249 Definitions.

Unless specifically defined below, words or phrases used in this Article shall be interpreted so as to give them the meaning they have in common usage and to give this Section its' most reasonable application.

Area light. A luminaire equipped with a lamp that produces over one thousand eight hundred (1,800) lumens. Area lights include, but are not limited to, streetlights, parking lot lights and yard lights. (See Table 1, for light output of various lamps).

Average horizontal footcandle. The average level of illuminance for a given situation (with snow cover if that is to be expected in the given situation) measured at ground level with the light meter placed parallel to the ground.

Eighty-five (85) degree cut-off type of luminaires. Luminaires that do not allow light to escape above an eighty-five (85) degree angle measured from a vertical line from the center of the lamp extended to the ground (see Figure 2)

Exterior lighting. Temporary or permanent lighting that is installed, located or used in such a manner to cause light rays to shine outdoors. Luminaires that are indoors that are intended to light something outside are considered exterior lighting for the purpose of this Article.

Flood light. A lamp that produces up to one thousand eight hundred (1,800) lumens and is designed to flood a well-defined area with light. (See Table 1 for light output of various lamps)

Footcandle (fc). The American unit used to measure the total amount of light cast on a surface (illuminance). One footcandle is equivalent to the illuminance produced by a source of one candle at a distance of one foot. For example, the full moon produces .01 fc are measured with a light meter. One footcandle is approximately equal to ten (10) lux, the British unit used to measure illuminance.

Full cut-off luminaires. A luminaire designed and installed where no light is emitted at or above a horizontal plane running through the lowest point on the luminaire. (See Figure 1)

Further, no more than 10% of the lumen output should be provided at angles between 90 degrees and 80 degrees below the lowest light emitting part of the luminaire.

Fully shielded. The luminaire incorporates a solid barrier (the shield), which permits no light to escape through the barrier. (See Figure 4)

Glare. Stray, unshielded light striking the eye that may result in (a) nuisance or annoyance glare such as light shining into a window; (b) discomfort glare such as bright light causing squinting of the eyes; (c) disabling glare such as bright light reducing the ability of the eyes to see into shadows or (d) reduction of visual performance.

Holiday lighting. Strings of individual lamps, where the lamps are at least three inches apart and the output per lamp is not greater than fifteen (15) lumens.

Illuminance. The amount of light falling on any point of a surface measured in footcandles or lux.

IESNA. Illuminating Engineering Society of North America (IES or IESNA). The professional society of lighting engineers.

IESNA Recommended Practices. The current publications of the IESNA setting forth illuminance levels.

Lamp. The generic term for an artificial light source, to be distinguished from the whole assembly (see Luminaire). Commonly referred to as “bulb”.

Light. The form of radiant energy acting on the retina of the eye to make sight possible.

Light pollution. Any adverse effect of manmade light including, but not limited to, discomfort to the eye or diminished vision due to glare, light trespass, uplighting, the uncomfortable distraction to the eye, or any manmade light that diminishes the ability to view the night sky.

Light trespass. Light falling on the property of another or the public right-of-way when it is not required to do so.

Lighting. Any or all parts of a luminaire that function to produce light.

Lumen. The unit used to quantify the amount of light energy produced by a lamp at the lamp. Lumen output of most lamps is listed on the packaging. For example, a 60-watt incandescent lamp produces 950 lumens while a 55-watt low-pressure sodium lamp produces 8000 lumens.

Luminaire. A complete lighting unit, consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power. When used, includes ballasts and photocells. Commonly referred to as “fixture”.

Maintained illuminance. The condition that occurs after 200 hours of lamp use prior to a point where luminaire cleaning is necessary. Measurements are taken at ground level with sensor parallel to the ground for horizontal illuminance and measured at 5 feet above ground with sensor perpendicular to the ground for vertical illuminance.

Non-essential lighting. Lighting that is not necessary for an intended purpose after the purpose has been served. Does not include any lighting used for safety and/or public circulation purposes.

Partially shielded. The luminaire incorporates a translucent barrier, the “partial shield” around the lamp that allows some light to pass through the barrier while concealing the lamp from the viewer. (See Figure 3)

Planning and Zoning Administrator. The Town of Riverhead Planning Director.

Skyglow. The overhead glow from light emitted sideways and upwards. Skyglow is caused by the reflection and scattering of light by dust, water vapor and other particles suspended in the atmosphere. Skyglow reduces one’s ability to view the night sky.

Temporary lighting. Lighting that is intended to be used for a special event for seven days or less.

Uplighting. Lighting that is directed in such a manner as to shine light rays above the horizontal plane.

108-250 Outdoor Lighting Standards

A. General Standards

- i. All exterior lighting shall be designed, located and lamped in order to prevent:
 - a. Overlighting;
 - b. Energy waste;
 - c. Glare;
 - d. Light Trespass;
 - e. Skyglow.
- ii. All non-essential exterior commercial and residential lighting is encouraged to be turned off after business hours and/or when not in use. Lights on a timer are encouraged. Sensor activated lights are encouraged to replace existing lighting that is desired for security purposes.
- iii. Canopy lights, such as service station lighting shall be fully recessed or fully shielded so as to ensure that no light source is visible from or causes glare on public rights of way or adjacent properties.
- iv. Area lights. All area lights are encouraged to be eighty-five (85) degree full cut-off type luminaires.
- v. The Long Island Power Authority shall not install any luminaires after the effective date of this Article that lights the public right of way without first receiving approval for any such application by the Riverhead Town Board.

B. Type of Luminaires.

All exterior lighting shall use full cut-off luminaires with the light source downcast and fully shielded, with the following exceptions:

- a. Luminaires that have a maximum output of four hundred (400) lumens per fixture, regardless of number of lamps (equal to one forty [40] watt incandescent light), may be left unshielded provided the luminaire has an opaque top or is under an opaque structure. (see Figure 5).
- b. Luminaires that have a maximum output of one thousand (1,000) lumens per fixture, regardless of number of lamps (equal to one sixty [60] watt incandescent light) may be partially shielded provided the lamp is not

visible, and the luminaire has an opaque top or is under an opaque structure. (See Figure 3)

- c. Floodlights with external shielding shall be angled provided that no light is directed above a twenty-five (25) degree angle measured from the vertical line from the center of the light extended to the ground, and only if the luminaire does not cause glare or light to shine on adjacent property or public rights-of-way and does not emit light above the horizontal plane (see Figure 6). Photocells with timers that allow a floodlight to go on at dusk and off by 11:00 p.m. are encouraged.
- d. Commercial holiday lighting lit between November 15 and January 15 of the following year,
- e. Sensor activated luminaires, provided:
 - 1. It is located in such a manner as to prevent glare and lighting onto properties of others or into a public right-of-way;
 - 2. The luminaire is set to only go on when activated and to go off within five minutes after activation has ceased;
 - 3. The luminaire shall not be triggered by activity off the property.
- f. Vehicular lights and all temporary emergency lighting needed by the Fire and Police Departments, or other emergency services.
- g. Uplighting for flags provided the flag is of a governmental installation and the maximum lumen output is one thousand three hundred (1,300) lumens. Flags are encouraged to be taken down at sunset to avoid the need for lighting.
- h. Lighting of radio, communication and navigation towers; provided the owner or occupant demonstrates that the Federal Aviation Administration (FAA) regulations can only be met through the use of lighting that does not comply with Article XXXXV, and that the provisions of Article XXXXV are otherwise met.
- i. Runway Lighting. Lighting on any landing strip or runway provided the owner or occupant demonstrates that the Federal Aviation Administration (FAA) regulations can only be met through the use of lighting that does not comply with this Article.
- j. Neon Lights. Neon lights permitted pursuant to the Town of Riverhead sign ordinance.

- k. Luminaries used for playing fields and outdoor recreational uses shall be exempt from the height restriction provided all other provisions of this Article are met and the light is used only while the field is in use.

108-251 Placement and Height of Luminaries

- A. Parking area luminaries shall be no taller than seventeen (17) feet from the ground to their tallest point. Parking area lights are encouraged to be greater in number, lower in height and lower in light level, as opposed to fewer in number, higher in height and higher in light level.
- B. Freestanding luminaries on commercially used properties shall be mounted at a height equal to or less than the sum of $H=(D/3)+3$, where D is the distance in feet to the nearest property boundary, but shall not be higher than fifteen (15') from ground level to the top of the luminaries, and not exceeding the height of the building.
whichever is less. Example:

<u>Pole Height</u>	<u>Distance to Property Line</u>
15 feet	36 feet ($36/3 = 12+3=15$)
12 feet	27 feet ($27/3 = 9+3=12$)
9 feet	18 feet ($18/3 = 6+3=9$)

- C. Streetlights used on arterial roads may exceed twenty (20) feet in height, with the recommendation by the Riverhead Town Board, and only with a finding that exceeding 20 feet is necessary to protect the safety of the residents of the Town of Riverhead.
- D. Luminaries used for playing fields and outdoor recreational uses shall be exempt from the height restriction provided all other provisions of this Article are met and the light is used only while the field is in use.

108-252 Illuminance and Type of Lamp

- A. Illuminance levels for parking lots, sidewalks, and other walkways affected by side-mounted building lights, and freestanding sidewalk lights (not streetlights) shall not exceed illuminance levels listed in the most current IESNA Recommended Practices. The Town of Riverhead recognizes that not every such area will require lighting.
- B. Parking lot lighting shall not exceed an overall average illumination of 1.5 footcandles.
- C. Streetlights shall be Full cut high-pressure sodium, low-pressure sodium, unless otherwise determined that another type is more efficient.
Streetlights along residential streets shall be limited to a seventy (70) watt

high-pressure sodium (hps) light with a lumen output of sixty-four hundred (6400). Street lights along non-residential streets or at intersections shall be limited to one hundred (100) watts hps, with a lumen output of ninety-five hundred (9500), except that lights at major intersections on state highways shall be limited to two hundred fifty (250) watts hps. If a light type other than high-pressure sodium, is permitted, then the equivalent output shall be the limit for the other light type (see Table 1).

- D. All existing and/or new exterior lighting shall not cause light trespass and shall protect adjacent properties from glare and excessive lighting.

108-253 Tables and Information Sheets.

The attached figures and information sheets shall be incorporated into Article XXXXV as guidelines for the public and the Town of Riverhead for use in enforcing this Article. The Town does not endorse or discriminate against any manufacturer or company that may be shown, portrayed or mentioned by the examples. Additional information is provided at the Town of Riverhead Planning Department.

108-254 Procedure.

- A. All applications for site plan review, use permits, planned unit developments, subdivision approvals, applicable sign permits, or building permits shall include lighting plans showing location, type, height, lumen output, and illuminance levels in order to verify that lighting conforms to the provisions of this Article. The Planning Director may waive the requirement for illuminance level information only, if the Lighting Administrator finds that the illuminance levels conform to this Article. For all other exterior lights which must conform to the requirements of this Article XXXXV, an application shall be made to the Town Board, showing location, type, height, lumen output and illuminance levels.
- B. The Town Board or Planning Board shall review any new exterior lighting or any existing exterior lighting on subject property that is part of an application for design review, conditional use permit, planned unit development, subdivision approval, applicable sign permits or building permit, to determine whether the exterior lighting complies with the standards of this Article XXXXV.
- C. For all other exterior lighting which must conform to the requirements of Article XXXXV, the Town Board or Planning Board shall issue a decision whether the exterior lighting complies with the standards of this Article XXXXV. All such decisions may be appealed to the Town of Riverhead Zoning Board of Appeals within thirty (30) days of the decision.

108-255 Violations and Legal Actions.

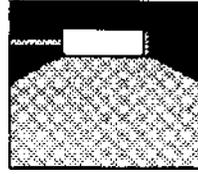
- A. If the Zoning Officer finds that any provision of this Article is being violated, the Zoning Officer shall give notice by hand delivery or by certified mail, return receipt requested, of such violation to the owner and/or to the occupant of such premises, demanding that the violation be abated within thirty (30) days of the date of hand delivery or of the date of mailing of the notice. The Planning Department Staff shall be available to assist in working with the violator to correct said violation. If the violation is not abated within the thirty (30) day period, the Zoning Officer may institute actions and proceedings, either legal or equitable, to enjoin, restrain or abate any violations of this Article.

108-256—EFFECTIVE DATE

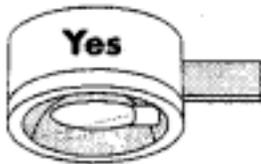
This Ordinance shall be in full force and effect from and after its passage, approval and publication.

Figure 1

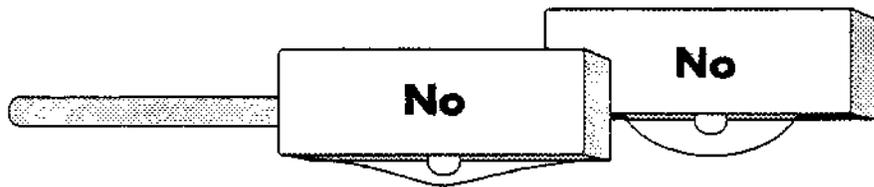
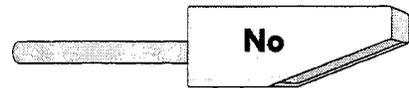
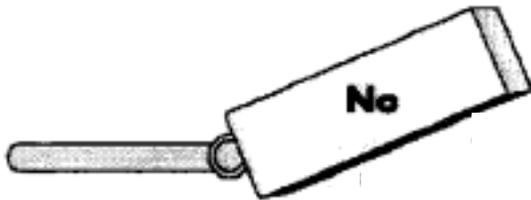
What is a True Full Cutoff Outdoor Lighting Fixture?



Flat glass lens, eliminates or minimizes direct glare, no upward throw of light. The housing for these fixtures are available in many styles.



Same fixture as above mounted incorrectly – defeating the horizontal mounting design. The fixture now produces direct glare, and can also produce uplight at steeper mounting angles.



Known as just "Cutoff" Center "drop" or "sag" lens with or without exposed bulb, produces direct glare.

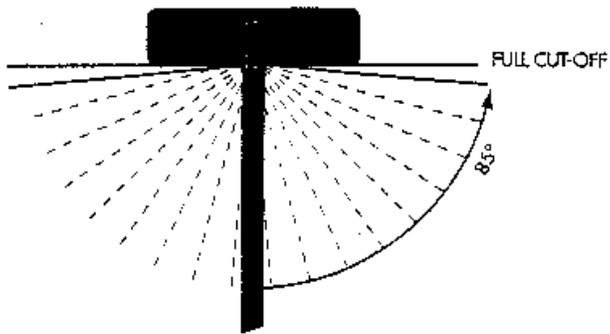


FIGURE 2
85° Full Cut-Off Fixture

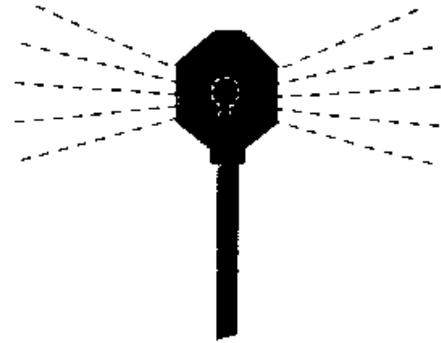


FIGURE 3
Partially Shielded
(translucent siding - bulb not visible)

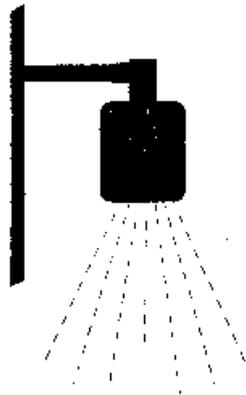


FIGURE 4
Shielded

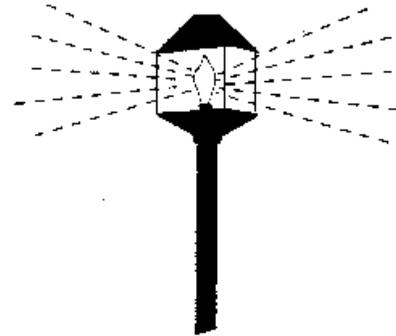


FIGURE 5
Unshielded with Opaque Top
(less than 375 lumens)

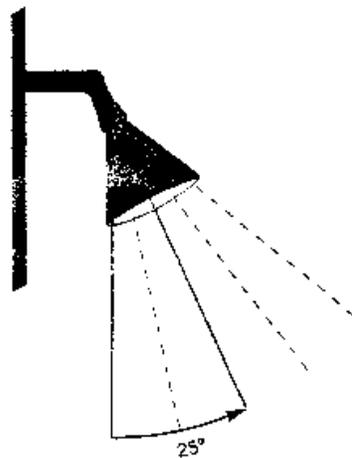


FIGURE 6
Angle of Flood Light
with External Shielding

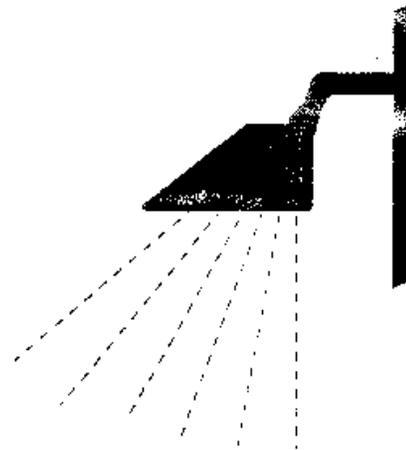


FIGURE 7
Directional Flood Light

Table 1
INITIAL RATED LIGHT OUTPUT OF VARIOUS LAMPS

(Information from Sylvania #PL-150, General Electric #9200 and Phillips #SG-100 large lamp catalogs)

LAMP TYPE	LAMP WATTAGE	INITIAL LUMEN OUTPUT
INCANDESCENT LAMP (FROSTED) (Syl.)	25	235
INCANDESCENT LAMP (FROSTED) (Syl.)	40	375
INCANDESCENT LAMP (FROSTED) (Syl.)	60	890
INCANDESCENT LAMP (FROSTED) (Syl.)	100	1690
INCANDESCENT LAMP (FROSTED) (Syl.)	150	2850
INCANDESCENT FLOOD OR SPOT (G.E.)	75	765
INCANDESCENT FLOOD OR SPOT (G.E.)	120	1500
INCANDESCENT FLOOD OR SPOT (G.E.)	150	2000
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	42	665
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	52	885
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	72	1300
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	300	6000
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	500	10500
QUARTZ HALOGEN LAMP (FROSTED) (Syl.)	1000	21000
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.) (12 volt MR-16 type)	20	260
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.) (12 volt MR-16 type)	42	630
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.) (12 volt MR-16 type)	50	895
QUARTZ HALOGEN MINI FLOOD OR SPOT (G.E.) (12 volt MR-16 type)	75	1300
FLUORESCENT LAMP (Phillips)	7	400
FLUORESCENT LAMP (Phillips)	9	600
FLUORESCENT LAMP (Phillips)	13	900
FLUORESCENT LAMP (Phillips)	22	1200
FLUORESCENT LAMP (Phillips)	28	1600
FLUORESCENT LAMP (G.E. cool white)	40	3150
LOW PRESSURE SODIUM LAMP (Phillips)	18	1800
LOW PRESSURE SODIUM LAMP (Phillips)	35	4800
LOW PRESSURE SODIUM LAMP (Phillips)	55	8000
LOW PRESSURE SODIUM LAMP (Phillips)	90	13500
LOW PRESSURE SODIUM LAMP (Phillips)	135	22500
LOW PRESSURE SODIUM LAMP (Phillips)	180	33000
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	35	2250
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	50	4000
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	70	6400
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	100	9500
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	150	16000
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	250	27500
HIGH PRESSURE SODIUM LAMP (DIFFUSE) (G.E.)	400	50000
MERCURY VAPOR LAMP (WHITE DELUXE) (Syl.)	100	4500
MERCURY VAPOR LAMP (WHITE DELUXE) (Syl.)	175	8500
MERCURY VAPOR LAMP (WHITE DELUXE) (Syl.)	250	11100
MERCURY VAPOR LAMP (WHITE DELUXE) (Syl.)	400	20100
METAL HALIDE LAMP (Coated) (G.E.)	32	2500
METAL HALIDE LAMP (Coated) (Venture)	50	3400
METAL HALIDE LAMP (Coated) (G.E.)	100	9000
METAL HALIDE LAMP (Coated) (G.E.)	175	15750
METAL HALIDE LAMP (Coated) (G.E.)	250	20500
METAL HALIDE LAMP (Coated) (G.E.)	400	36000

Table 2 lists the maximum lumen levels standards at various heights above ground level. It provides specific examples listing the common types of lighting sources, lumen levels, and permitted mounting heights.

Table 2
MOUNTING HEIGHT/LAMP OUTPUT RECOMMENDATIONS

MOUNTING HEIGHT (FEET)	MAX LUMENS
6	1,000
8	600 to 1,600
10	1,000 to 2,000
12	1,600 to 2,400
16	2,400 to 6,000
20	4,000 to 8,000
24	6,000 to 9,000
28	8,000 to 12,000
32	9,000 to 24,000
36	12,000 to 28,000
40	16,000 to 32,000

Table 3
MOUNTING HEIGHT RECOMMENDATIONS PER LAMP TYPE

Low Pressure Sodium

Wattage	180W	135W	90W	55W	35W	18W
Mounting Heights	>40'	30'-32'	28'	24'	16'-20'	10'
Initial Lumens	33000	22500	13500	8000	4800	1800
Mean Lumens	33000	22500	13500	8000	4800	1800
Lamp Wattage	180	135	90	55	35	18
Circuit Wattage	220	180	125	80	60	30
Initial Lum/watt	150	125	108	100	80	60
Mean Lum/watt	150	125	108	100	80	60
Annual KWH use	902	738	513	328	216	123

High Pressure Sodium

Wattage	400W	250W	200W	150W	100W	70W	50W	35W
Mounting Heights	>'50	32-36'	30'	28'	24'	20'	16'	12'
Initial Lumens	50000	28500	22000	16000	9500	6300	4000	2250
Mean Lumens	45000	25700	19800	14400	8550	5470	3600	2025
Lamp Wattage	400	250	200	150	100	70	50	35
Circuit Wattage	465	294	246	193	130	88	66	46
Initial Lum/watt	108	97	89	83	73	72	61	49
Mean Lum/watt	97	87	80	75	66	64	55	44
Annual KWH use	1907	1205	1009	791	533	361	271	189

Metal Halide

Wattage	1000 W	400W	250W	175W	150W	100W	70W	50W	32W
Mounting Heights	>60'	>36'	>30'	>28'	>24'	>20'	>16'	>12'	>10'
Initial Lumens	110000	36000	20500	16600	13000	9000	5500	3500	2500
Mean Lumens	88000	28800	17000	10350	8700	6400	4000	2500	1900
Lamp Wattage	1000	400	250	175	150	100	70	50	32
Circuit Wattage	1070	456	295	215	184	115	88	62	43
Initial Lum/watt	103	79	69	77	71	78	63	56	58
Mean Lum/watt	82	63	58	48	47	56	45	40	44
Annual KWH use	4387	1870	1210	882	754	472	361	254	176