

PART I**9.04.030 Definitions****Add to existing Definitions in 9.04.030:**

- A. Cutoff Angle (of a luminaire): The angle, measured from the lowest point between a vertical line from the center of the lamp extended to the ground and the first line of sight at which the bare source is not visible.
- B. Fixture (also called a luminaire or light fixture): A complete lighting unit including the light source (bulb), mounting, and shielding.
- C. Floodlight: A light that produces up to one thousand eight hundred (1,800) lumens and is designed to “flood” a well-defined area with light.
- D. Foot-candle: A measure of luminance or a measure of how bright a light appears to the eye. One foot-candle is equal to one lumen per square foot. As an example, a typical 60-watt light (800 lumens) produces an illuminance of one-tenth (0.1) foot candle at a distance of about twenty-five (25) feet.
- E. Glare: Light that causes a visual impairment sensation due to excessive brightness from the light source and can interfere with one's ability to see. See Figures 2 and 3 in 9.42.020.
- F. Hardscape: Permanent hard landscape improvements to the site including parking lots, drives, entrances, curbs, ramps, stairs, steps, medians, walkways and non-vegetated landscaping that is ten (10) feet or less in width. Materials may include concrete, asphalt, stone, gravel, etc.
- G. High Intensity Lighting: Lamps which produce visible light directly by the electrical heating or excitation of a gas. Examples of such lighting include, but are not limited to, metal halide, high-pressure sodium, low-pressure sodium and mercury vapor.
- H. Individual Lamp Limit: Limit on output of any individual light source as enumerated in Section 9.42.040.C
- I. Individual Lot Limit: The maximum for the sum of all individual light sources on a given property as enumerated in 9.42.050.A and 9.42.050.C.
- J. Light Trespass/Trespass Lighting: Any light emitted from an outdoor luminaire that either shines directly beyond the property on which the luminaire is installed or indirectly shines beyond the property on which the luminaire is installed at a brightness that exceeds one-tenth (0.1) foot candle at twenty five (25) feet from the light source or at the property line, whichever is more restrictive. See Figure 4 in 9.42.020.
- K. Lighting Source Height: The distance from finished grade to the top most portion of any light emitting source (e.g., lamp, surface or lens).
- L. Luminaire: See definition for “fixture”.
- M. Marine Lighting: Bright light fixtures pointed at the ocean and coastal tide pools.
- N. Outdoor Lighting Fixture: A luminaire outside of an enclosed building or structure, or any luminaire directed such that it primarily illuminates outdoor areas.

- O. Security Lighting: Minimal lighting for personal and building security and safety after hours.
- P. Shielding: An opaque covering for an Outdoor Lighting Fixture such that no light rays are emitted above the horizontal plane running through the lowest point of the fixture. Shielding can be extended downward to prevent “Light Trespass” as defined above. See examples in Section 9.42.080.D.
- Q. Uplighting: Lighting that is directed in such a manner as to shine light rays above the horizontal plane.

PART II

9.42 City of Yachats Lighting Ordinance

9.42.010 Purpose

The purpose of this Ordinance is to provide regulations for outdoor lighting that will accomplish the following goals:

- A. Permit the use of outdoor lighting that promotes health, safety, security, and productivity.
- B. Protect shoreline natural resources and wildlife.
- C. Enhance the view of the dark sky.
- D. Minimize the adverse effects of bright, outdoor lighting including “light trespass” and “glare”.

9.42.020 Definitions

Types of light are defined in part by their intended use and impact. Figures 1 to 4 provide basic distinctions between types of light and examples of glare and light trespass. Full definitions are in 9.04.030.

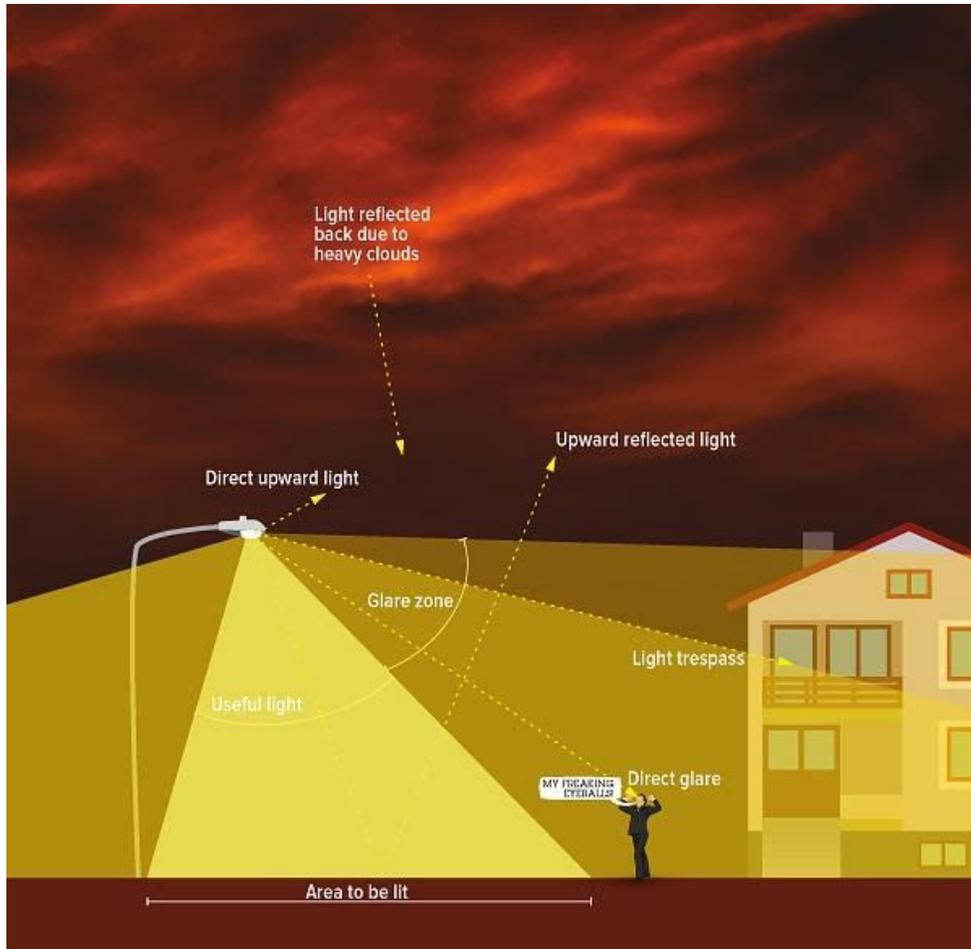


Figure 1. Types of Light

Image by Anezka Gocova, in "The Night Issue", Alternatives Journal 39:5 (2013)



Figure 2. Example of glare from a light pole.

Photo: James Lowenthal, Smith College



Figure 3. Example of glare from car headlights.



Figure 4. Light Trespass

9.42.030 General Lighting Requirements

- A. Conformance with all applicable codes. All outdoor lighting shall be installed in conformance with the provisions of this ordinance, applicable Electrical and Energy codes, and applicable sections of the City, County and State building codes.

- B. Applicability. Except as described below, all outdoor lighting installed after the date of this ordinance shall comply with the requirements specified in section 9.42. This includes, but is not limited to, new lighting, replacement lighting, or any other lighting whether attached to structures, poles, the earth, or any other location, including lighting installed by any third party.
- C. Exemptions. The following are not regulated by this Ordinance:
1. Lighting within the public right-of-way or easement for the principle purpose of illuminating streets or roads.
 2. Lighting for public monuments and statuary.
 3. Lighting solely for signs (Covered in Chapter 9.44).
 4. Repairs to existing luminaires not exceeding twenty-five percent (25%) of the total replacement value of the luminaire.
 5. Temporary lighting for theatrical, musical, and other performance areas and construction sites.
 6. Underwater lighting in swimming pools.
 7. Temporary, seasonal lighting provided that individual lights are less than ten (10) lumens.
 8. Lighting that is only used under emergency conditions.
 9. Lighting identified and approved in a specific use permit.
 10. Lighting required by County, State, or Federal government.

9.42.040 General Standards

- A. Outdoor lighting fixtures and accent lighting must be shielded and aimed downward, and it must be installed at the minimum height necessary so that the cutoff angle does not allow direct lighting of an adjacent property at a level exceeding one-tenth (0.1) foot-candles at twenty-five (25) feet from the light source. See examples in Section 9.42.080.
- B. All trespass lighting/light trespass that exceeds one-tenth (0.1) foot-candles at twenty-five (25) feet from the light source or at the property line is prohibited.
- C. Motion activated security lights must not be triggered by motion on adjacent properties or streets. These lights must be shielded so that they do not shine onto adjacent properties in excess of one-tenth (0.1) foot-candles at the property line.
- D. Marine lighting is prohibited.
- E. Mercury vapor lamps and metal halide lamps are prohibited.
- F. Uplighting of building and landscaping is prohibited.
- G. Lighting on buildings shall not be placed above the eaves.

9.42.050 Standards Based on Use

A. Residential Uses

1. Individual light sources on residential properties are limited to an output of eight hundred (800) lumens each. An eight hundred (800) lumen output is approximately equivalent to:
 - a. One (1) standard incandescent sixty (60) watt bulb
 - b. One (1) compact fluorescent fifteen (15) watt bulb
 - c. One (1) LED eight (8) watt bulb
2. Individual Lot Limit. The sum of the output of all outdoor lighting sources shall not exceed:
 - a. Five thousand six hundred (5,600) lumens on lots greater than zero-point-three (0.3) acres
 - b. Three thousand two hundred (3,200) lumens on lots less than zero-point-three (0.3) acres
3. Residential light sources shall be less than a color temperature of three thousand (3,000) Kelvin.
4. Lights on free standing poles higher than four (4) feet are prohibited.

B. Multi-Family Uses

1. Individual lamps on multi-family properties are limited an output of two thousand four hundred (2400) lumens each.
2. Individual Lot Limit. The sum of the output of all light sources shall not exceed two and one-half (2.5) lumens per square foot of hardscape.
3. A Requirement of a to-scale Area of Illumination Plan. A to-scale Area of Illumination Plan shall include:
 - a. To-scale plans that accurately indicate the location, type, intensity, and height of luminaires including both building-mounted and ground-mounted fixtures;
 - b. A description of the luminaires, including lamps, poles or other supports and shielding devices, which may be provided as catalogue illustrations from the manufacturer;
 - c. Photometric data, such as that furnished by the manufacturer superimposed over a copy of the site plan, showing the angle of light emission and the foot-candles on the ground; and
 - d. Additional information as may be required by the city in order to determine compliance with this chapter.
4. Poles for luminaires shall be limited to:
 - a. Twenty (16) feet in height for parking areas.
 - b. Fourteen (10) feet in height for walkways and pedestrian facilities.

C. Commercial Uses

1. Commercial lots shall not exceed limits on trespass lighting as specified in 9.42.040.B.
2. Except for security lighting for pathways and building doors, outdoor lighting fixtures for commercial properties must be turned off when the business is not open. When businesses are closed, residential lighting requirements apply.
3. Individual Lot Limit. The sum of the output of all light sources shall not exceed two and one-half (2.5) lumens per square foot of hardscape.
4. Requirements of a to-scale Area of Illumination Plan
 - a. New developments for commercial uses shall provide an Area of Illumination Plan drawn to scale as part of the Site Plan.
 - b. An Area of Illumination Plan drawn to scale shall be required with a change of commercial use or transfer of property for existing commercial uses.
 - c. An Area of Illumination Plan drawn to scale shall include:
 - i. The location, type, intensity, and height of luminaires including both building- and ground-mounted fixtures;
 - ii. A description of the luminaires, including lamps, poles or other supports and shielding devices, which may be provided as catalogue illustrations from the manufacturer;
 - iii. Photometric data, such as that furnished by the manufacturer, superimposed over a copy of the site plan, showing the angle of light emission and the foot-candles on the ground; and
 - iv. Additional information as may be required by the city in order to determine compliance with this chapter.
5. High intensity lights shall be limited to two thousand four hundred (2,400) lumens per luminaire. Due to their high energy efficiency, long life, and spectral characteristics, low-pressure sodium (LPS) lamps are the preferred illumination source. Their use is encouraged, while not required, for outdoor illumination whenever their use would not be detrimental to the use of the property. In all applications where LPS lighting is required or preferred, an acceptable alternative is narrow-spectrum amber LEDs.
6. Poles for luminaires shall be limited to:
 - a. Twenty (16) feet in height for parking lots.
 - b. Fourteen (10) feet in height for walkways and pedestrian facilities.

D. Pedestrian Ways and Parks

1. Illumination: Light shall be directed in such a manner that any changes in elevation of the walkway (e.g., steps or curbs) shall be illuminated such that said features are clearly discernible (without shadow).
2. Fixture Type: Pedestrian walkway light fixtures can be a combination of freestanding pole, bollard, in-place step or building-mounted fixtures. For building mounted fixtures, the Planning Director shall ensure that the proposed fixture type will be in scale with the building elevation on which it is to be installed. The Planning Director

may refer this latter determination to the Planning Commission.

3. Fixture Heights: Light fixtures shall not exceed the following height provisions:
 - a. Freestanding pole - Not greater than fourteen (14) feet as measured from finished grade to the bottom of the light fixture.
 - b. Building-mounted - Shall be located below the roof's eave or up to a height of fourteen (14) feet, whichever is less.
 - c. Bollard - Said fixture type shall not exceed a height of forty-two (42) inches as measured from finished grade to the top of the fixture.

E. Public Right-of-Ways

1. Shielding for street lights other than those on Highway 101 may be requested from the public utility provider.

9.42.060 Variances

To provide for reasonable interpretation of this Chapter, and in certain instances where this Chapter will produce a hardship, a property owner may apply for a variance pursuant to Chapter 9.80 of this Code.

9.42.070 Time to Become Compliant

- A. The General Standards described in 9.42.030 and 9.42.040 require compliance within one year after the passage of this Ordinance.
- B. Compliance based on extent of modification:
 1. New uses and buildings. For all proposed new land uses, developments, buildings, and structures that require a permit, all outdoor lighting installations shall meet the requirements of this Code.
 2. Additions and modifications. All building additions or modifications exceeding twenty-five (25) percent in terms of additional dwelling units, gross floor area, or parking spaces, and that require a permit, either with a single addition or cumulative additions, shall invoke the requirements of this Code. This requirement shall hold for the entire property, including both previously installed and any new outdoor lighting.
 3. If replacement or repair is required to an outdoor lighting fixture due to weather damage, accident, vandalism, or other unforeseen event, the outdoor lighting fixture may be replaced as it was previously built. Compliance to section 9.42 requirements is not required. However, if the design is changed in any way then compliance is required.
- C. Resumption of use following abandonment. If a property or use with non-conforming lighting is abandoned, all outdoor lighting shall be reviewed and brought into compliance with this Code before the use is resumed.

9.42.080 Examples

A. Example showing that bright lights are not always better for security. Glare from bright wall light masks person standing at gate.

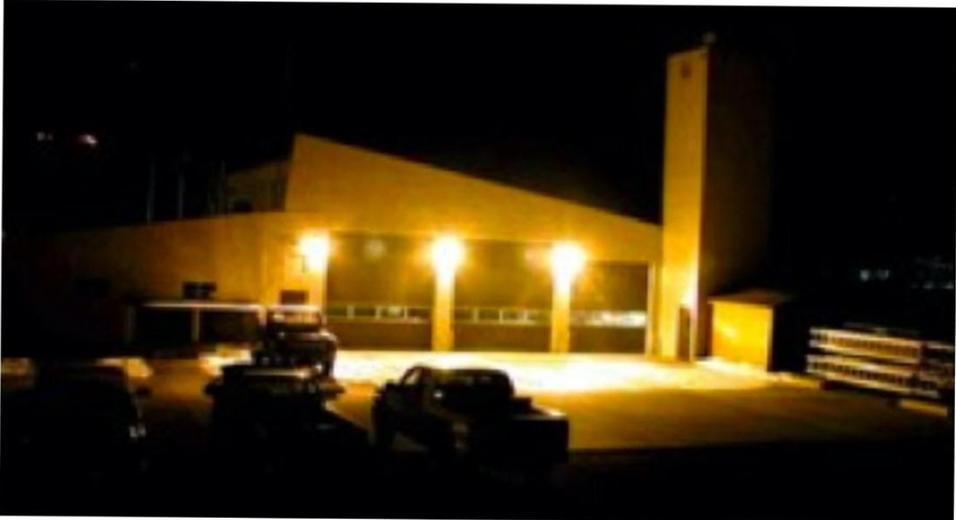
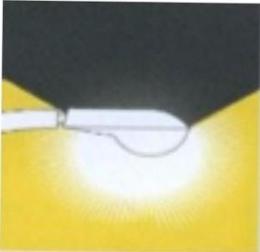


B. Example of before and after with addition of shielding on a street light. Shielded light better illuminates roadway and sidewalks. (Images from International Dark-Sky Association Intro to Lighting public materials)



C. Example of shielding reducing glare on property and providing for better illumination of area.

UNSHIELDED



SHIELDED



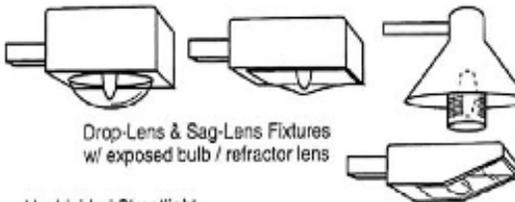
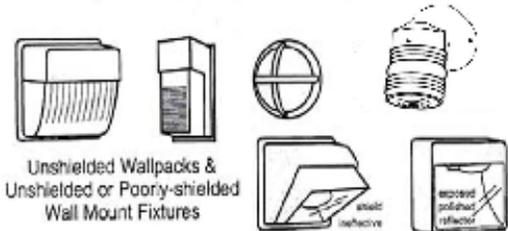
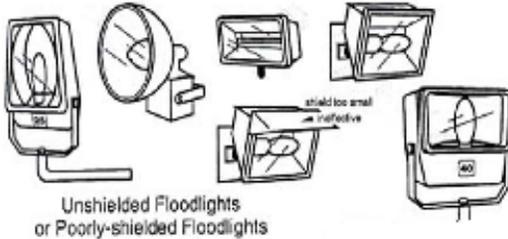
D. Examples of properly shielded light fixtures. (Images from International Dark-Sky Association Intro to Lighting public materials)

Examples of Light Fixtures

Creates Lots of Light Pollution, Glare and Light Trespass

Unacceptable / Discouraged

Fixtures that produce glare and light trespass



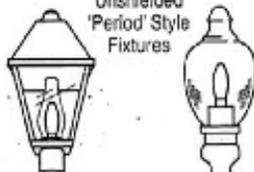
Unshielded Streetlight



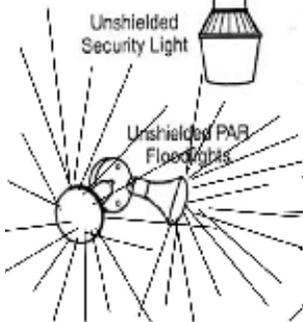
Unshielded Security Light



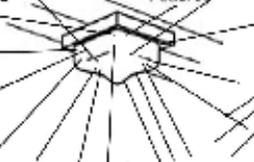
Unshielded 'Period' Style Fixtures



Unshielded PAR Floodlights



Drop-Lens Canopy Fixtures

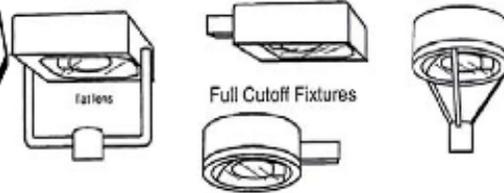


**UnControlled Light
About 60% Wasted Light**

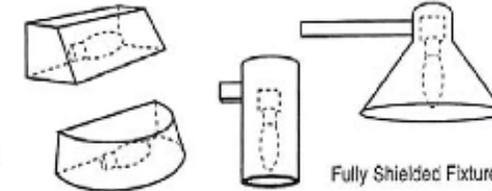
Only Reflected Light Causes Light Pollution

Acceptable

Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



Fully Shielded Wallpack & Wall Mount Fixtures



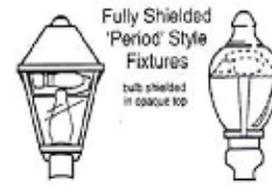
Full Cutoff Streetlight



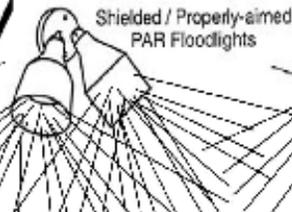
Fully Shielded Security Light



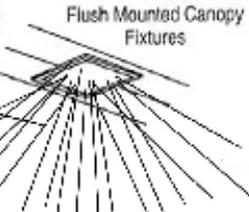
Fully Shielded 'Period' Style Fixtures



Shielded / Properly-aimed PAR Floodlights



Flush Mounted Canopy Fixtures



Controlled Light

**Note:
Each Lamp has 16 rays of Light
Which one puts more Light on the ground?**

From International Dark-Sky Association Model Lighting Ordinance for use by municipalities)