

CHAPTER 2. LIGHT POLLUTION

SEC. 51.201. PURPOSE.

The purpose of this chapter is to minimize light pollution to allow citizens of the County to view and enjoy the night environment, allow communities within the unincorporated areas of the County to become recognized by the International Dark-Sky Association as Dark-Sky Communities, and protect the Palomar and Mount Laguna observatories from the detrimental effect that light pollution has on astronomical research. This chapter establishes three geographic lighting zones, each with different light pollution protection standards.

SEC. 51.202. GENERAL REQUIREMENTS FOR OUTDOOR LIGHTING.

- a) All outdoor luminaires installed, relocated, reinstalled, substantially altered, or located on a structure that requires a building permit shall comply with this chapter.
- b) All outdoor lighting within Zone C shall comply with the requirements of this chapter within 10 years of the date on which it is adopted. Until such compliance, the requirements of the prior Zone A or Zone B shall remain in full force and effect.
- c) This ordinance shall not supersede the requirements of any state or federal law.
- d) Properties that fall within more than one outdoor lighting zone shall be subject to the requirements of the more restrictive zone.

SEC. 51.203. DEFINITIONS.

For the purposes of this chapter, the following definitions shall apply:

- a) "Adaptive control" means devices intended to actively regulate the switching, duration, and/or intensity of the light emitted by lighting systems. Adaptive controls include but are not limited to timers, dimmers, and motion sensors.
- b) "Building official" means the Director of Planning & Development Services and any person appointed or hired by the Director to administer and enforce this chapter.
- c) "Candela" is the standard unit of luminous intensity for the amount of light in a given direction, and is used for measuring the brightness of a lamp, luminaire, or sign. This quantity of brightness is usually expressed as candelas per square meter, which are also known as "nits."

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- d) “Class I lighting” means outdoor lighting for an outdoor sales or eating area, vehicle fueling area, assembly or repair area, or other similar application, where color rendition is important for commercial or safety purposes.
- e) “Class II lighting” means outdoor lighting for commercial, industrial, and residential walkways, roadways and parking lots, equipment yards, outdoor security, and entrance lighting.
- f) “Class III lighting” means outdoor lighting used for decorative effects such as architectural illumination, monument lighting, flags other than state or federal flags, and landscape lighting.
- g) “Close of business” means the time when the business no longer allows entry to members of the public, or when the primary purpose of the business has concluded, whichever is later.
- h) “Correlated color temperature (CCT)” means the color of light produced by a particular light source as compared to a reference device such as a blackbody radiator and measured on the kelvin (K) temperature scale. For example, incandescent light sources are usually 2,700K (also known as “soft white”), halogen and warm LED sources are usually 3,000K (also known as “warm white”), and some metal halide and cool LED are 4,000K–6,500K (also known as “cool white”).
- i) “Entrance luminaire” means an exterior luminaire mounted on a building required by the California Electrical Code or California Building Code to illuminate an outdoor entrance or exit.
- j) “Fuel canopy” means a structure that is erected over fueling pumps and to which lighting is normally attached.
- k) “Fully shielded” means a luminaire constructed in a manner such that all light emitted by the luminaire, either directly from the light source or a defusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal plane, as determined by photometric test or certified by the manufacturer. Any structural part of the luminaire providing this shielding shall be permanently affixed so that light is unable to be emitted above the horizontal plane and is focused to minimize light spill into the night sky or adjacent properties. Luminaires mounted under an opaque canopy such that no light is allowed above the horizontal plane in any direction shall be considered fully shielded for the purpose of this chapter.

- l) “Holiday decoration” means an outdoor luminaire that is used only for temporary decorative purposes, to celebrate a specific holiday.
- m) “Illuminance” means the quantity of light falling upon a surface, measured in footcandles (lumens/foot² or lm/ft²) or in lux (lumens/meter² or lm/m²). Illuminance can be measured vertically or horizontally, depending upon the orientation of the task surface.
- n) “Illuminating Engineering Society (IES)” refers to the recognized authoritative body on the science and application of lighting that publishes and promotes recommended practices for a variety of specific lighting applications.
- o) “Initial lumen value” means the initial lumen output of a new light source or luminaire before it has undergone any depreciation due to material or environmental issues.
- p) “Lamp” means the easily removeable/replaceable light source portion of a luminaire whereas “light engine” refers to an integrated system such as LED modules and drivers.
- q) “Light emitting diode” (LED) means an electrical semiconductor device that produces optical radiation when proper voltage and current are applied. Most LEDs in non-theatrical luminaires utilize a blue or violet LED chip that is covered by a clear protective bubble. Different phosphor coatings are applied to the interior of the bubble, and result in the wide range of different colors of “white” light (2,700K–6,500K) available with most luminaires.
- r) “Lighting assembly” means a single luminaire or group of luminaires mounted in a single location.
- s) “Low pressure sodium (LPS)” means a discharge lamp in which light is produced by radiation from sodium vapor operating at a relatively low partial pressure of 0.1 to 0.5 pascals. LPS lamps are generally very large, produce a monochromatic amber-colored light that has a CCT of ~1,800K, and are the discharge light source preferred by astronomers.
- t) “Lumens” is the unit of luminous flux used for rating the output of non-directional light sources and luminaires (whereas “candela” is used with directional light sources and luminaires), and is used in luminance and illuminance calculations.
- u) “Luminaire” means a complete lighting unit, including a light source, fixture housing, optical components, and electric or gas components, etc., that is used to produce visible light.
- v) “Luminous tube lighting” means gas-filled glass tubing which, when subjected to high voltage, becomes luminescent in a color characteristic of the particular gas used, e.g., neon, argon, or cold-cathode.

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- w) “Maintained lumens or maintained illuminance level” means the mean or maintained lumen output or illuminance level after depreciation due to material and environmental issues. For the purpose of this chapter, maintained values shall only be used for recreation, sport court, and athletic field illuminance calculations.
- x) “Narrow spectrum amber LED” means a type of LED that appears amber in color, as it produces its peak spectral intensity within a narrow range of approximately 589 to 595 nanometers. Narrow spectrum amber LEDs are different from other amber LEDs (which are generally used for sensitive ecological applications), and are considered to be a viable alternative to LPS as they produce approximately the same reduced impact upon the night sky.
- y) “Nit” means a metric for luminance equal to one candela per square meter.
- z) “Off-premises sign” means any sign that is not defined herein as an on-premises sign.
- aa) “On-premises sign” means a sign located on the premises of a facility that is open to the public, and which advertises the name of the facility, product or service offered by the facility, the facility's hours of operation, way-finding information, and/or some other fact related to the facility.
- bb) “Outdoor luminaire” means a luminaire (as defined by this ordinance) that is installed outdoors, whether permanent or portable.
- cc) “Outdoor recreation, sport court, and athletic field lighting” means lighting designed and installed specifically to illuminate large outdoor areas or sports fields and courts that often require high-intensity, high color-rendering illumination, and are used for practice and competitive events.
- dd) “Spill light/light trespass” means the unwanted, wasted illumination produced by a lighting system that enters the night sky or crosses a nearby property line. Spill light is calculated and measured as vertical illuminance facing into the site and at a height of 5 feet above grade.
- ee) “Zone A” means the area within a 15-mile radius of the center of Palomar Observatory and the area within a 15-mile radius of the center of Mount Laguna Observatory.
- ff) “Zone B” means all areas within the unincorporated area of the County not included in Zone A or Zone C.
- gg) “Zone C” means any Community Planning Area that has been approved as a County Dark-Sky Community by the Board of Supervisors. Zone C is limited to the boundaries of:

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- 1) Julian Community Planning Area.
- 2) Borrego Springs Community Planning Area.

SEC. 51.204. REQUIREMENTS FOR LIGHTING IN ZONE A.

Allowed lighting in Zone A shall meet the following standards:

a) Shielding and Lamp Requirements

Class I – Color Rendition Important	Class II – Safety and Security	Class III – Decorative and Aesthetic
<p>Fully Shielded Luminaires:</p> <ul style="list-style-type: none"> ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum (any intensity) ▪ Luminaires of any type ($\leq 4,050$ lumens) 	<p>Fully Shielded Luminaires:</p> <ul style="list-style-type: none"> ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum (any intensity) ▪ Luminaires of any type activated by a motion sensor ($\leq 4,050$ lumens) 	<p>Fully Shielded Luminaires:</p> <ul style="list-style-type: none"> ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum (any intensity)
<p>Unshielded Luminaires:</p> <ul style="list-style-type: none"> ▪ Prohibited 	<p>Unshielded Luminaires:</p> <ul style="list-style-type: none"> ▪ Luminaires activated by motion sensors ($\leq 2,000$ lumens) ▪ Entrance luminaires ($\leq 2,000$ lumens) 	<p>Unshielded Luminaires:</p> <ul style="list-style-type: none"> ▪ Prohibited
<p>All lumens shall be based upon the initial lumen value of the light source.</p>		

b) Hours of Operation

All Class I and Class III lighting shall be turned off between 11:00 p.m. and sunrise, except:

- 1) On-premises signs may be illuminated while the facility is open to the public; and
- 2) Off-premises signs may remain lighted until midnight; and
- 3) Outdoor illumination of a sales area, commercial area, assembly area, repair area, or industrial area is allowed when the area is in use and the use is not prohibited by any permit issued by the County or by any law or regulation; and
- 4) Recreation, sport court, and athletic field lighting, pursuant to the conditions of SEC. 51.210. of this chapter.

c) Signage Requirements

- 1) Lighting for on-premises signs shall be shielded where feasible and focused to minimize light spill into the night sky or onto adjacent properties.
- 2) All lighting for off-premises signs shall be aimed downwards and fully shielded.

SEC. 51.205. REQUIREMENTS FOR LIGHTING IN ZONE B.

Allowed lighting in Zone B shall meet the following standards:

a) Shielding and Lamp Requirements

Class I – Color Rendition Important	Class II – Safety and Security	Class III – Decorative and Aesthetic
Fully Shielded Luminaires: <ul style="list-style-type: none"> ▪ Luminaires of any type or intensity 	Fully Shielded Luminaires: <ul style="list-style-type: none"> ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum (any intensity) ▪ Luminaires ($\leq 4,050$ lumens) ▪ High pressure sodium on private roadways 	Fully Shielded Luminaires: <ul style="list-style-type: none"> ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum (any intensity) ▪ Luminous tube lamps
Unshielded Luminaires: <ul style="list-style-type: none"> ▪ Prohibited 	Unshielded Luminaires: <ul style="list-style-type: none"> ▪ Luminaires activated by motion sensors ($\leq 2,000$ lumens) ▪ Entrance luminaires ($\leq 2,000$ lumens) 	Unshielded Luminaires: <ul style="list-style-type: none"> ▪ Luminaires ($\leq 2,000$ lumens)
All lumens shall be based upon the initial lumen value of the light source.		

b) Hours of Operation

All Class I and Class III lighting shall be turned off between 11:00 p.m. and sunrise, except:

- 1) On-premises signs may be illuminated while the facility is open to the public; and
- 2) Off-premises signs may remain lighted until midnight; and
- 3) Outdoor illumination of a sales area, commercial area, assembly area, repair area, or industrial area is allowed when the area is in use and the use is not prohibited by any permit issued by the County or by any law or regulation; and
- 4) Recreation, sports court, and athletic field lighting, pursuant to the conditions of SEC. 51.210.

c) Signage Requirements

- 1) Lighting for on-premises signs shall be shielded where feasible and focused to minimize light spill into the night sky or onto adjacent properties.
- 2) All lighting for off-premises signs shall be aimed downwards and fully shielded.

SEC. 51.206. REQUIREMENTS FOR LIGHTING IN ZONE C.

Allowed lighting in Zone C shall meet the following standards:

a) Shielding, Lumen, and Color Requirements

	Class I – Color Rendition Important	Class II – Safety and Security	Class III – Decorative/Aesthetic
Shielding	<ul style="list-style-type: none"> ▪ All luminaires shall be fully shielded 	<ul style="list-style-type: none"> ▪ All luminaires >1,000 lumens shall be fully shielded ▪ Full shielding is not required for luminaires ≤1,000 lumens 	<ul style="list-style-type: none"> ▪ All luminaires >1,000 lumens shall be fully shielded ▪ Full shielding is not required for luminaires ≤1,000 lumens
Maximum quantity of light per site¹ (50,000 lumens per gross acre)²	<ul style="list-style-type: none"> ▪ Lighting shall not exceed 50% of the lumens per acre limit or of the 5,000 minimum lumen allowance, whichever is greater³ 	<ul style="list-style-type: none"> ▪ Non-fully shielded lighting shall not exceed 10% of the total allowed lumens or of the 5,000 minimum lumen allowance, whichever is greater 	<ul style="list-style-type: none"> ▪ Lighting shall not exceed 20% of the lumens per acre limit or of the 5,000 minimum lumen allowance, whichever is greater
Color	<ul style="list-style-type: none"> ▪ CCT ≤3,000K ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum 	<ul style="list-style-type: none"> ▪ CCT ≤3,000K ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum 	<ul style="list-style-type: none"> ▪ CCT ≤3,000K ▪ Low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum

1. A site may include one or more lots, as determined by the building official.
2. Minimum lumen allowance: All sites shall be allowed a minimum of 5,000 lumens regardless of the size of the property.
3. Fuel canopies may be exempted from the “Maximum quantity of light per site” limitation for Class I lighting provided that the requirements specified in SEC. 51.211 are met.
4. All lumens shall be based upon the initial lumen value of the light source.

b) Hours of Operation

All Class I and Class III lighting shall be extinguished two hours after sunset or within 30 minutes after the close of business, whichever is later, until one hour before sunrise, except:

- A) On-premises signs shall be extinguished one hour after sunset until one hour before sunrise, unless the business is operating; and
- B) Off-premises signs shall be extinguished one hour after sunset until one hour before sunrise; and
- C) Outdoor illumination of a sales area, commercial area, assembly area, repair area, or industrial area is allowed when the area is in use and the use is not prohibited by any permit issued by the County or by any law or regulation; and
- D) Recreation, sports court, and athletic field lighting, pursuant to the conditions of SEC. 51.210.

c) Signage Requirements

All on-premises signs and off-premises signs shall comply with all of the following provisions:

- 1) All signs shall have a luminance of less than or equal to 100 candelas per square meter (nits) between sunset and sunrise. For electronic signs, the luminance shall be measured under the conditions of a full-white display; and
- 2) The luminous/illuminated surface area of an individual sign shall not exceed 200 square feet.

d) Publicly Owned Lighting

- 1) New installations of outdoor lighting on public properties and rights-of-way shall only be installed upon determination by the director of the responsible department that the lighting is necessary for the safety and welfare of the general public, and that the result can only be achieved through the provision of outdoor lighting and not through other passive means, such as reflectorized roadway paint or markers.
- 2) All new public lighting shall be regulated with adaptive controls such that the lighting of areas is restricted to times, places, or amounts required for safe occupancy or use.

SEC. 51.207. SUBMISSION OF PLANS AND EVIDENCE OF COMPLIANCE.

An applicant for any permit required by the County for work that involves an outdoor luminaire, unless the work is exempt as provided in this chapter, shall submit evidence with the permit application that the proposed work will comply with this chapter. The submission shall contain the following:

- a) A map or other drawing showing the location of the property where any outdoor luminaire will be installed.
- b) Plans indicating the location on the property where each type of outdoor luminaire will be installed, indicating the type of fixture.
- c) The specifications for each outdoor luminaire to be installed, including but not limited to manufacturer specification sheets, photometric studies, and drawings.
- d) To be considered complete, the plans and descriptions shall enable the plans examiner to readily determine whether the work will comply with the requirements of this chapter. If the plans examiner cannot determine from the applicant's submission whether the proposed work complies with this chapter, the examiner may reject the application or allow the applicant to submit additional information.

SEC. 51.208. EQUIPMENT SUBSTITUTIONS OR ALTERATIONS.

The outdoor lighting equipment installed at a project site (luminaires, lamps, poles, finishes, controls, etc.) and the locations thereof shall not be substituted or altered in any way from the approved plans (except for the use of prior-approved alternate manufacturers with detailed specifications already listed in the Luminaire & Lighting Control Device Schedule of the approved plans) without first submitting the changes to the County (including updated photometric studies where appropriate) and then receiving written approval. Failure to comply with this requirement can result in penalty action from the County, including administrative citations, civil penalties, and a decline to issue the final Certificate of Occupancy or final Certificate of Completion until the project is brought into conformance with the approved plans, to the satisfaction of County staff.

SEC. 51.209. SPECIAL REQUIREMENTS.

County airports and County correctional institutions located in the unincorporated area of the County shall be subject to the following special requirements:

- a) Outdoor lighting at a County airport in an area not regulated by state or federal law, such as a parking lot or outside building, shall be fully shielded and use low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum.
- b) Outdoor lighting at a County correctional institution in an area not regulated by state or federal law, such as a parking lot, shall be fully shielded and use low pressure sodium or narrow spectrum amber LED or another light source with the same limited spectrum.

SEC. 51.210. OUTDOOR RECREATION, SPORTS COURTS, OR ATHLETIC FIELD LIGHTING.

Outdoor recreation, sport courts, or athletic field lighting may be exempted from the shielding, CCT, and hours of operation requirements provided that the following conditions are met:

a) Facilities in Zone A and Zone B:

- 1) Lighting at an outdoor recreational facility may remain on to allow an organized recreational event in progress to be completed, provided the event and the facility are not violating the terms of any permit issued by the County or any law or regulation.

b) Facilities in Zone C:

- 1) The maintained illuminance levels do not exceed the values of IES-recommended practice; and
- 2) The color temperature of the lighting is $\leq 5,000\text{K}$; and
- 3) The luminaires shall utilize internal or external shielding in order to minimize uplight and off-site direct visibility of the light sources. A small amount of uplighting is permitted for those activities where the playing unit (ball, etc.) can exceed the height of the luminaires; and
- 4) Field lighting is provided exclusively for the illumination of the surface of play and viewing stands and not for other applications, and shall not exceed 50 percent of the full light output when the field is being utilized for other than practice and tournament play; and
- 5) Off-site impacts (spill light/light trespass) shall be limited to ≤ 2.0 vertical footcandles at any of the property lines (based upon maintained lumen values) unless approved otherwise by the building official. A photometric study documenting compliance of the horizontal on-site illuminance (field, court, etc.) and the perimeter vertical spill illuminance must be included with the plan submittal; and
- 6) Lights must be extinguished by 10:00 p.m. or one hour after the end of play, whichever is later; and
- 7) Title 24-compliant timing or central control devices must be installed to prevent the lighting from being left on later than one hour after the facility is occupied.

SEC. 51.211. FUEL CANOPIES.

All lighting attached to fuel canopies within Zone C shall meet the following additional requirements:

- a) The maintained illuminance levels shall not exceed 120 percent of IES-recommended practice for low ambient light zones; and
- b) Luminaires for new and rebuilt canopies are to be recessed or semi-recessed into the canopy and possess a flat lens that resides at ≤ 2.5 inches below the canopy ceiling. Replacement luminaires for existing canopies may be surface mounted as long as there is a flat lens and it resides higher than the bottom edge of the perimeter canopy structure. Neither external nor internal lighting of the perimeter structure is allowed unless it exists at the time this updated ordinance was adopted, and then still needs to be brought into compliance within 10 years from the date of adoption of this ordinance.

SEC. 51.212. EXEMPTIONS.

An outdoor luminaire in any of the following categories is exempt from the requirements of this chapter:

- a) An outdoor luminaire producing light directly by the combustion of a fossil fuel such as a kerosene lantern or gas lamp.
- b) A luminaire used for a holiday decoration, provided it is used for no more than 60 days in a 12-month period and is off between the hours of 11:00 p.m. and sunrise.
- c) Lighting that illuminates a United States or California flag and the flagpole to which the flag is affixed. All luminaires or combination of luminaires shall be shielded as necessary so that the light source is not visible from the property line. In Zone C, luminaires in excess of 4,050 lumens shall be affixed to the top of the flagpole and be aimed downward.
- d) Outdoor lighting for a facility required by state or federal law to have outdoor lighting that does not comply with this chapter. A person seeking an exemption under this subsection shall request an exemption at that time the person submits the application for the permit required by the County Electrical Code. The applicant shall submit proof along with the application for the permit that demonstrates the applicant is entitled to an exemption under this subsection.
- e) Life-safety luminaires that only operate via battery or generator during a power failure.

- f) Outdoor lighting for a state or federal facility or activity for which there is no practicable alternative that complies with one or more of the specific requirements of this chapter.

SEC. 51.212. TEMPORARY EXEMPTIONS.

- a) A person may submit a written request to the Building Division for a temporary exemption from the requirements of this chapter. The request shall be submitted on a form provided by the building official. The fee for the temporary exemption shall be as provided in Section 362.1 of the County Administrative Code.
- b) A temporary exemption under this section shall only be granted if the applicant is able to establish that: (1) an exemption is necessary during a community event or some other event that benefits the public and the public benefit outweighs any harm that might result to the public or any private person, or (2) the exemption is necessary due to an emergency that is beyond the control of the applicant and when no other reasonable alternative exists. No temporary exemption shall be granted when the outdoor lighting for which a temporary exemption is requested has been installed in violation of this chapter.
- c) The building official shall have 10 days from the date the applicant submits a complete request for a temporary exemption to approve or disapprove the request. The building official shall notify the applicant of the decision in writing.
- d) The temporary exemption shall be valid for no more than 30 consecutive days from the date the County approves the request. Upon request from the applicant, the County, upon receipt of evidence that a condition justifying the continuation of the exemption exists, may extend the exemption for up to an additional 30 consecutive days. The request for renewal shall be processed in the same manner as the original request. No exemption for an outdoor luminaire shall be granted for more than 60 days during any 12-month period.
- e) If the building official denies the request for a temporary exemption, the applicant may request that the chief of the Building Division review the denial. The applicant shall submit the request for review in writing within 15 days from the date of the denial. The fee for the review shall be the same as the fee for the request for a temporary exemption. The decision by the chief of the Building Division shall be final.