

CHAPTER 8: OUTDOOR LIGHTING

Section 8.000 Purpose

The purpose of this Chapter is to provide regulations for outdoor lighting that will:

- a) Permit the use of outdoor lighting that does not exceed the minimum levels recommended for night-time safety, utility, security, productivity, enjoyment, and commerce;
- b) Curtail light pollution, reduce sky glow, and improve the nighttime environment;
- c) Reduce the adverse ecological impact of night lighting to wildlife;
- d) Protect against light trespass onto adjacent properties which may negatively affect occupants of adjacent properties and protect against glare onto public rights of way which may impair vision of motorists; and
- e) Conserve energy and resources to the greatest extent possible.

Section 8.100 Lighting Zones

The lighting zones shall determine the limitations for lighting as specified in this chapter. The Lighting Zones shall be as follows (Figure A):

- a) Open Space Lighting Zone: This applies to all sites zoned Park (P), Greenspace/Preservation (G), and Conservation Area(C). This also includes areas zoned Planned Unit Development (PUD) that are owned by the City.
- b) Residential Lighting Zone: This applies to all sites zoned as Single Family Residential (SF) and Planned Unit Development not owned by the City.
- c) Non-Residential Lighting Zone: This applies to all sites zoned as Government, Utilities, and Institutional (GUI), Conditional Overlay Development (COD), Highway Commercial (HC), Neighborhood Commercial (NC), and Neighborhood Office (NO).

Section 8.200 Applicability

- a) All outdoor lighting shall be installed in conformance with the provisions of this Chapter as well as applicable electrical, energy, and building codes adopted pursuant to Chapter 6 of this Code.
- b) Applicability
 - 1). This chapter applies within the city limits.
 - 2). Nothing herein shall be construed as preventing or limiting the city from applying this Chapter to the extraterritorial jurisdiction (“ETJ”) by agreement with an affected property owner.
 - 3). Except as described below, all outdoor lighting installed after the effective date of this chapter shall comply with these requirements. This includes new light fixtures and replacement light fixtures.
- c) Exemptions: The following are exempt from the application of the regulations of this Chapter:
 - 1). Lighting equipment required by law to be installed on motor vehicles;
 - 2). Lighting by a governmental entity within the public right of way or easement for the principal purpose of illuminating roads, highways, sidewalks, and trails. No exemption shall apply to any street light and to any lighting within the public right of way or easement when the purpose of the light fixture is to illuminate outside of the public right of way or easement;
 - 3). Lighting for public monuments and statuary on public property;
 - 4). Lighting solely for signs which is regulated by and in compliance with Chapter 14 of this Code;
 - 5). Temporary lighting for theatrical, television, performance areas and construction sites;
 - 6). Underwater lighting in swimming pools and other water features.
 - 7). Temporary lighting and seasonal lighting with individual bulbs less than 10 watts and 70 lumens;
 - 8). Lighting that is only used for emergency conditions;
 - 9). Lighting approved for a special event in connection with a special use permit; and,
 - 10). Lighting required by federal or state laws and regulations.
- d) Prohibitions: It shall be unlawful and an offense for any person to do the following:
 - 1). Install lighting that is not in compliance with this Chapter;
 - 2). Fail to comply with any terms or conditions set forth in a permit issued under this Chapter;
 - 3). Use non-conforming lighting after the time or the event described in Section 8.200 e (3) demonstrates that such use is prohibited;
 - 4). Install any mercury vapor fixture or bulb for use as outdoor lighting;
 - 5). Install any wall pack style fixture for use as outdoor lighting unless the fixture is rated by the manufacturer as full cutoff;

- 6). Install bulbs with a color temperature above 3000 Kelvins;
 - 7). Install any barn-light style fixture for use as outdoor lighting unless the fixture includes a full opaque reflector instead of the standard translucent lens; or
 - 8). The operation of searchlights for advertising purposes is prohibited.
- e) Existing Lighting
- 1). All existing outdoor lighting that was legally installed before the enactment of this Chapter that does not conform to the standards specified and imposed by this Chapter shall be considered nonconforming. Nonconforming outdoor lighting is allowed to remain until required to be replaced pursuant to the terms of this Chapter.
 - 2). If more than fifty percent (50%) of the residential or non-residential structure has been destroyed, demolished, or will be remodeled, the nonconforming status expires and the nonconforming outdoor lighting on the property must be removed and may only be replaced with lighting that conforms to the standards of this chapter.
 - 3). Nonconforming outdoor lighting shall be discontinued or brought into conformance with this Chapter as follows:
 - (A) Non-residential Lighting Zone: Existing outdoor lighting that is not in compliance with the regulations of this Chapter 8 shall no longer have an allowed non-conforming status and must be discontinued within 90 days after the issuance of any of the following for the subject property:
 - i. Watershed Development Permit;
 - ii. Zoning Changes;
 - iii. Subdivision approval; or
 - iv. Building permit for exterior changes or additions.
 - (B) For areas within the Non-residential Lighting Zone all existing nonconforming lighting must be discontinued within 10 years after the enactment of this Chapter.
 - (C) Residential Lighting Zone: Issuance of a building permit for improvement(s) that include moving or adding one or more exterior wall(s) shall terminate the non-conforming status of all existing non-compliant lighting on the affected wall(s) on the affected property; within 90 days after issuance of such permit non-complying lighting shall be removed, no longer used, or brought into compliance.
 - (D) Abandonment of nonconforming status. If the structure remains vacant for a continuous period of six (6) months, the nonconforming status of outdoor lighting on the property expires and use of the nonconforming outdoor lighting must be discontinued.

Section 8.300 General Requirements

- a) **Automatic Switching Requirements:** All lighting shall have an automatic control or device that will extinguish outdoor lighting when sufficient daylight is available. This can

be done through a photoelectric switch, astronomic time switch or equivalent functions from a programmable lighting controller, building automation system or lighting energy management system, all with battery or similar backup power or device.

b) **Architectural/Landscape Lighting:** Architectural lighting used to illuminate the wall of a building or landscape lighting used to illuminate trees or other landscape elements is permitted subject to the following:

- 1). Architectural and landscape lighting that is directed downward onto a wall, tree or other landscape feature shall be included in the total lumen limits per site standards.
- 2). In Residential Lighting Zones, architectural and landscape lighting that is directed upward onto a wall, tree or other landscape feature shall be partially shielded and shall be included for the purpose of measuring total lumens for partially shielded fixtures.

c) **Flagpole Lighting:** Nothing herein shall be construed to limit or apply to any flagpole lighting in existence prior to the adoption of this Chapter. For flagpole lighting installed after the adoption of this Chapter, the following shall apply:

- 1). Flagpoles illuminated from below are limited to a height of 25 feet aboveground level. Only a single spot-type fixture whose maximum initial output is 75 lumens per foot, measured from the light fixture to the top of the flagpole is permitted. The fixture shall be mounted so that the lens is perpendicular to the flagpole.
- 2). Flagpoles illuminated from above may utilize a light fixture attached to the top of the flagpole or a fixture mounted above the top of the flagpole on a structure within 15 feet of the flagpole, each of which must direct light to the ground and shall not exceed 800 lumens.
- 3). Lighting used for flagpole illumination shall be included in the total outdoor light output calculation for Non-residential Lighting Zones.

Section 8.400 Non-Residential Lighting Zone Standards

a) For non-residential property all outdoor lighting shall be fully shielded and shall comply with the following standards:

- 1). **Total Site Lumen Limit.** The total installed initial light fixture lumens of all outdoor lighting shall not exceed the total site lumen limit. The total site lumen limit shall be determined using either the Parking Space Method (Table A) or the Hardscape Area Method (Table B). Only one method shall be used per permit application, and for sites with existing lighting, existing lighting shall be included in the calculations of total installed lumens. The total installed lumens are calculated as the sum of the initial lumens for all light fixtures.

- 2). **Parking Space Method.** Allowed lumens per site for non-residential outdoor lighting calculated using the parking space method. This method may only be applied to properties with a maximum of 10 parking spaces including handicap accessible spaces.

Table A: Parking Method

LZ-2: Non -Residential
630 lumens per parking space

- 3). **Hardscape Area Method:** Allowed total lumens per site for non-residential outdoor lighting calculated using the hardscape area method. This method may be used for any project. When lighting is provided at an intersection of a site driveway or entrance and a public street, a total of 600 square feet of hardscape for each such intersection may be added to the total hardscape for purposes of determining total lumens allowed. Total hardscape shall be calculated as the total of all on-site parking lots, drives, entrances, curbs, ramps, stairs, steps, medians, walkways, and non-vegetated landscaping that is 10 feet or less in width.

Table B: Hardscape Method

LZ-2: Non-Residential
2.0 lumens per square foot of hardscape*
*Maximum 100,000 lumens per acre

- 4). **Allowances for Special Site Features:** Table C can be used for specific site features that may require additional lighting.

Table C: Additional Allowance for Special Site Features

Non-Residential Special Site Features	
Additional allowances for sales and service facilities. No more than two additional allowances per site	
Maximum lumens per acre with additional allowances.	150,000
Outdoor Sales Lots. This allowance is lumens per square foot of uncovered sales lot used exclusively for the display of merchandise for sale and may not include the driveways, parking or other non-sale areas. Light fixtures must be within 40 feet of the sales area to use this allowance.	8 lumens per square foot
Outdoor Sales Frontage. This allowance is for linear feet of outdoor sales frontage and unobstructed for its viewing length. A corner lot may include two perpendicular outdoor sales frontage areas. In order to use this allowance light fixtures must be located between the building and the outdoor sales frontage area.	800 lumens per linear foot.
Drive Up Windows. In order to use this allowance light fixtures must be within 20 feet horizontal distance of the center of the window.	4,000 lumens per drive-up window

5). Additional Requirements:

- (A) Parking Lot Illumination: All parking lot lighting fixtures shall be fully shielded and have no light emitted above 90 degrees above nadir, unless it is covered by a canopy as listed below in section 5.
- (B) All lighting elements including but not limited to wall packs and sconces shall be fully shielded with no light emitted above 90 degrees above nadir.
- (C) The source of light (bulb) shall not be visible from other properties.
- (D) Limits to Off Site Impacts: All light fixtures shall be rated and installed according to Table D. Maximum allowable backlight, uplight, and glare (BUG-Backlight, Uplight, and Glare) ratings may be used for any project. A light fixture may be used if it is below or meets the standards found in Table D.
- (E) Outdoor uplighting is prohibited, except as provided in section 8.400 (5).

Table D: Maximum allowable uplight, and glare (Backlight, Uplight, and Glare [BUG]) ratings.

	Non-Residential
Allowed backlight rating	B1
Allowed uplight rating for street or area lighting	UO
Allowed glare rating	G1

6). Lighting Under Canopies and Overhangs

- (A) All outdoor light fixtures located under canopies, under building overhangs, or under roof eaves must conform to all provisions of this chapter.
- (B) Outdoor light fixtures located under canopies, under building overhangs, or under roof eaves where the center of the light fixture is located at least 5 feet, but less than 10 feet from the nearest edge of the canopy or overhang are to be included in the total outdoor light output as though they produced only one-quarter (1/4) of the bulb's rated lumen output.
- (C) Outdoor light fixtures located under canopies, under building overhangs, or under roof eaves where the center of the bulb or light fixture is located 10 or more feet from the nearest edge of a canopy, building overhang, or eave are to be included in the total outdoor light output as though they produced only one-tenth (1/10) of the bulb's rated lumen output.
- (D) The total light output used for illuminating under canopies or building overhangs, defined as the sum of all under canopy initial bulb outputs in lumens, shall not exceed 20 lumens per square foot under the canopy area. All lighting mounted under the canopy, including but not limited to light fixtures mounted on the lower surface of the canopy and auxiliary lighting within signage or illuminated panels under the canopy, is to be included in the total.

- 7). **Outdoor Recreational Facilities:** Lighting for outdoor recreational facilities is allowed between one hour prior to sunset and 10:30 p.m., unless it is needed to complete a specific organized activity or event already in progress at 10:30 p.m. Field lighting is required to be extinguished outside of event operations generally.

Section 8.500 Residential Lighting Zone Standards

- a) Each lot within the Residential Lighting Zone is limited to the following standards:

Table F: Residential Lighting Zone Standards	
Lumen Limit per lot: 10,000 total lumens	
Fully Shielded- (bulbs over 600 lumens permitted.)	Up to 10,000 total lumens
Partially Shielded or Semi Cut-off- bulbs up to and including 600 lumens	Up to 4000 lumens per lot included in the total lumen calculation. No residential lot can be over 10,000 total lumens including fully shielded and partially shielded lighting.

Section 8.600 Open Space Lighting Zone

- a) No permanent lighting is allowed within this zone. These areas are dedicated for wildlife habitat and the use of lighting is restricted. Lighting can be used on a temporary basis under emergency conditions and approved management activities.

Section 8.700 Submission of plans and evidence of compliance

- a) All Non-residential lighting zone building permit applications must include an outdoor lighting plan which includes the following information:
 - 1). The location of all existing and proposed light fixtures (may be included on-site plan).
 - 2). A lumen calculation sheet to determine lumens per acre. It must include the total area to be illuminated, the fixture descriptions, bulb types (i.e., incandescent, low pressure sodium, compact fluorescent, LED, etc.), wattages, number of bulbs, bulb initial lumens and mounting height of all existing and proposed bulbs.
 - 3). Specification sheets for all existing and proposed light fixtures.
 - 4). Acknowledgement that the applicant has reviewed the provisions of this Chapter.
- b) Upon receipt of residential building permit applications, city staff shall provide the homebuilder and/or applicant with educational materials about this Chapter.
- c) Verification that a residential or commercial construction project requiring a building permit application has complied with the requirements of this Chapter shall occur during the final electrical inspection by the city building inspector.
- d) Additional guidance for compliance with this Chapter can be found in the City’s Outdoor Lighting Guides.

Section 8.800 Variances and Alternative Compliance

- a) The city council may authorize a variance from these regulations when, in its opinion, undue hardship will result from requiring strict compliance. In making the required findings, the council shall take into account the nature of the proposed use of the land involved, existing uses of land in the vicinity, and the probable effect of such variance upon traffic conditions and upon the public health, safety, convenience and welfare in the vicinity. No variance shall be granted unless the council finds:
 - 1). That there are special circumstances or conditions affecting the land involved such that the strict application of the provisions of this Chapter would deprive the applicant of the reasonable use of his land; and,
 - 2). That the variance is necessary for the preservation and enjoyment of a substantial property right of the applicant; and,
 - 3). That the granting of the variance will not be detrimental to the public health, safety or welfare, or injurious to other property in the area.

- b) Alternative Equivalent Compliance. A lighting plan which is an alternative to strict compliance with the requirements of this Chapter may be approved by the City Council, if the Council finds that such plan is as good or better than a strictly compliant plan because it conforms to one or more of the following three standards:
 - 1). Latest adopted version of U.S. Green Building Council (USGBC) LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) Sustainable Site Credit 8.
 - 2). Latest adopted version of ILLUMINATING ENGINEERING SOCIETY (IES) - INTERNATIONAL DARK SKY ASSOCIATION (IDA) MODEL LIGHTING ORDINANCE (MLO).
 - 3). Latest adopted version of AUSTIN ENERGY GREEN BUILDING (AEGB) COMMERCIAL RATING LIGHT POLLUTION REDUCTION section.
 - (A) Documentation for demonstrating compliance is as follows:
 - i. Documentation establishing compliance with the selected method of alternative equivalent compliance shall be submitted with a request for approval of alternative equivalent compliance (USGBC LEED, IES MLO, or AEGB program). In addition, for Non-residential Lighting Zones the applicant shall submit an affidavit sealed by a registered Architect or Engineer certifying the proposed plan's compliance with the selected method of alternative equivalent compliance.

Section 8.900 Administrative Guidance

- a) The city administrator or his/her designee may promulgate educational materials to aid in the administration of, and compliance with, this Chapter. Such documents shall be educational only and shall not constitute regulations, amendments, or exceptions.

Section 8.950 Definitions

As used in this Chapter 8, the following terms shall have the following meanings:

“Architectural Lighting”: Lighting designed to reveal architectural beauty, shape and/or form and for which lighting for any other purpose is incidental.

“Astronomic Time Switch”: An automatic lighting control device that switches outdoor lighting relative to time of solar day with time of year correction.

“Backlight”: For an exterior light fixture, lumens emitted in the quarter sphere below horizontal and in the opposite direction of the intended orientation of the light fixture. For luminaries with symmetric distribution, backlight will be the same as front light.

“BUG”: A light fixture classification system that classifies backlight (B), uplight (U), and glare (G). This system is designed by the Illuminating Engineering Society (IES).

“Bulb”: A generic term for a source of optical radiation (i.e. “light”), often called a “bulb”, “tube”, or “lamp”. Examples include incandescent, fluorescent, high intensity discharge (HID) bulbs, and low pressure sodium (LPS) bulbs, as well as light-emitting diode (LED) modules and arrays.

“Canopy (in regards to lighting)”: A covered, unconditioned (no heat or air conditioning) structure with at least one side open for pedestrian and/or vehicular access.

“Common Outdoor Areas”: One or more of the following: a parking lot; a parking structure, or covered vehicular area, a common entrance or public space shared by all occupants of the domiciles.

“Emergency Conditions”: Generally, lighting that is only energized during an emergency; lighting fed from a backup power source; or lighting for illuminating the path of egress solely during a fire or other emergency situation; or lighting for security purposes used solely during an alarm.

“Footcandle”: The unit of measure expressing the quantity of light received on a surface. One footcandle is the illuminance produced by a candle on a surface one foot square from a distance of one foot. One footcandle is equivalent to approximately 10.76 Lux.

“Forward Light”: For exterior light fixture, lumens emitted in the quarter sphere below horizontal in the direction of the intended orientation of the light fixture.

“Fully Shielded Light fixture”: A light fixture constructed and installed in such a manner that all light emitted by the light fixture, either directly from the bulb or a diffusing element, or indirectly by reflection or refraction from any part of the light fixture, is projected below the horizontal plane through the light fixture’s lowest light emitting part.

“Glare”: Lighting entering the eye directly from light fixtures or indirectly from reflective surfaces that causes visual discomfort or reduced visibility.

“Hardscape”: Permanent hardscape improvements to the site including parking lots, drives, entrances, curbs, ramps, stairs, steps, medians, walkways, and non-vegetated landscaping that is 10 feet or less in width.

“Hardscape Area”: The area measured in square feet of all hardscape. It is used to calculate the Total Site Lumen Limit.

“Hardscape Perimeter”: The perimeter measured in linear feet used to calculate the Total Site Lumen Limit.

“Landscape Lighting”: Lighting of trees, shrubs, or other plant material as well as ponds and other landscape features.

“LED”: Light Emitting Diode.

“Light Pollution”: Any adverse effect of artificial light including but not limited to glare, light trespass, sky-glow, energy waste, compromised safety and security, and impacts on the nocturnal environment.

“Light Trespass”: Light that falls beyond the property it is intended to illuminate.

“Lighting”: “Electric” or “man-made” or “artificial” light. See lighting equipment.

“Lighting Equipment”: Equipment specifically intended to provide gas or electric illumination, including but not limited to bulb(s), light fixture(s), ballast(s), poles, posts, lens(es), and related structures, electrical wiring, and other necessary or auxiliary components.

“Light Fixture”: The complete lighting unit (fixture), consisting of a bulb, or bulbs and ballast(s) (when applicable), together with the parts designed to distribute the light (reflector lens, diffuser) to position and protect the bulb(s), and to connect the light fixture to the power source.

“Light Fixture Lumens”: For light fixtures with relative photometry per IES, it is calculated as the sum of the initial bulb lumens for all bulbs within an individual light fixture, multiplied by the light fixture efficiency. If the light fixture efficiency is not known for a residential light fixture, it is assumed at 70%. For light fixtures with absolute photometry per IES LM-79, it is the total light fixture lumens. The lumen rating of a light fixture assumes the bulb or light fixture is new and has not depreciated in light output.

“Lighting Zone”: An overlay system based on zoning classifications that establish legal limits for lighting for particular parcels, areas, or districts in a community.

“Low voltage Landscape Lighting”: Landscape lighting powered at less than 15 volts and limited to luminaries having an initial light fixture lumen output of 525 lumens or less.

“Lumen”: The measure used to quantify the amount of light produced by a bulb or emitted from a light fixture (as distinct from “watt”, a measure of power consumption).

“Lux”: The SI unit of illuminance. One lux is one lumen per square meter. 1 Lux is a unit of incident illuminance approximately equal to 1/10 footcandle.

“Mounting Height”: The height of the photometric center of a light fixture above grade level.

“Nadir”: The direction directly below an object. In terms of light fixtures it is the area pointing directly below the fixture to the ground.

“New Lighting”: Lighting for areas not previously illuminated; newly installed lighting of any type except for replacement lighting or lighting repairs.

“Ornamental Lighting”: Lighting that does not impact the function and safety of an area but is purely decorative, or used to illuminate architecture and/or landscaping, and installed for aesthetic effect.

“Outdoor Lighting”: Lighting equipment installed within the property line and outside of building envelopes, whether attached to poles, building, structures, the earth, or any other location; and any associated lighting control equipment.

“Outdoor Sales Frontage”: The portion of the perimeter of an outdoor sales area immediately adjacent to a street, road, or public sidewalk.

“Partly Shielded Light Fixture”: A light fixture with opaque top and translucent or perforated sides, designed to emit most light downward.

“Photoelectric Switch”: A control device employing a photocell or photodiode to detect daylight and automatically switch lights off when sufficient daylight is available.

“Replacement Lighting”: Lighting installed to specifically replace existing lighting that is sufficiently broken to be beyond repair.

“Seasonal Lighting”: Temporary lighting installed and operated in connection with holidays or traditions.

“Semi-Cutoff Light Fixture”: Light fixture designed to allow light intensity at or above 90° (horizontal) no more than 5% of lamp lumens and no more than 20% at or above 80°.

“Shielded Directional Light Fixture”: A light fixture that includes an adjustable mounting device allowing aiming in a direction and contains a shield, louver, or baffle to reduce direct view of the bulb.

“Sky-glow”: The brightening of the nighttime sky that results from scattering and reflection of artificial light by moisture and dust particles in the atmosphere. Sky-glow is caused by light directed or reflected upwards or sideways and reduces one’s ability to view the night sky.

“Temporary lighting”: Lighting installed and operated for periods not to exceed 60 days, removed and not operated again for at least 30 days.

“Time Switch”: An automatic lighting control device that switches lights according to time of day.

“Translucent”: Allowing light to pass through, diffusing it so that objects beyond cannot be seen clearly (not transparent or clear).

“Unshielded Light Fixture”: A light fixture capable of emitting light in any direction including downwards.

“Uplight”: For an exterior light fixture, light radiated in the hemisphere at or above the horizontal plane.