

Town of Oro Valley, Arizona

Current Outdoor Lighting Code as of November 2011

(Prior code was revised in 2005) 07)

Section 27.5 Outdoor Lighting

a. Purpose

The purpose of this Code is to preserve the relationship of the residents to their unique desert environment through protection of access to the dark night sky. Intended outcomes include preservation of the Town's residential/resort character, support of astronomical activity, minimizing excessive use of energy, and providing for the safety and security of persons engaged in outdoor night time activities.

B. Applicability

The provisions of this section shall apply to:

1. New Uses and Buildings
2. Major Additions or Modifications to Existing Projects

All projects that propose twenty-five percent (25%) or more cumulative addition or structural modification such as changes in square footage, gross floor area, building facade, etc., shall meet the requirements of this Code for the entire property.

Twenty-five percent (25%) or more cumulative modification or replacement of outdoor lighting shall meet the requirements of this Code.

3. Minor Additions or Modifications to Existing Projects

All projects except in E2a lighting zone that propose less than twenty-five percent (25%) cumulative additions or structural modifications shall require the submission of a lighting plan of existing and any proposed outdoor lighting. All new outdoor lighting provided shall have to meet the requirements of this Code.

4. Change of Use

a. Whenever the use of any existing building, structure, or premises is changed to a new use that is substantially different from the existing one, all outdoor lighting shall be reviewed and brought into compliance with this Code before the new use commences. The Planning and Zoning Administrator will determine whether a substantial change has occurred by evaluating each of the following factors:

- i. Hours of operation
- ii. Type of business
- iii. Traffic generated
- iv. Occupancy
- v. Degree of existing non-conformance with this Chapter
- vi. (Repealed by (O)11-15, 5/18/11)

b. A significant difference or issue with one (1) or a combination of the factors above may be utilized as grounds to require compliance with this Code.

5. Resumption of Use After Abandonment

If a property or use with nonconforming lighting is abandoned as defined in Section 29.4, then all outdoor lighting shall be reviewed and brought into compliance with this Code before the use is resumed.

6. Exemptions

a. All outdoor light fixtures producing light directly by the combustion of natural gas or other fossil fuels.

- b. Street lighting both public and private, except for elements of onsite circulation described in Section 27.7.G.
- c. Seasonal decorations using unshielded fifty (50) watt or less incandescent lamp from Thanksgiving to January 15.

((O)11-15, Amended, 5/18/11)

C. Prohibitions

- 1. Mercury Vapor Lamps Fixtures and Lamps: The installation, sale, offer for sale, lease, or purchase of any mercury vapor lamp for use as outdoor lighting is prohibited.
- 2. Laser Source Light
- 3. Searchlights

D. Lighting Plan Application Requirements

- 1. Applications required under this Chapter shall be submitted in a form and in such numbers as required by the official responsible for accepting the application.

2. Additional Submission

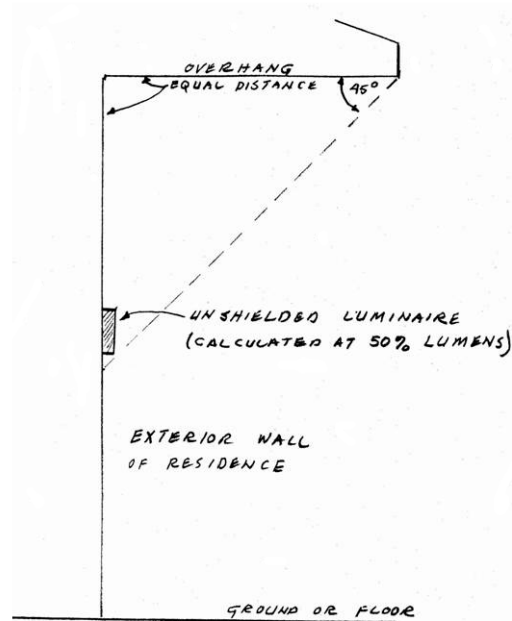
The above required plans, descriptions and data shall be sufficiently complete to enable the Planning and Planning and Zoning Administrator to readily ascertain code compliance. If such plans, descriptions, and data are insufficient to enable this ready determination, by reason of the nature or configuration of the devices, fixtures, or lamps proposed, the application will be deemed incomplete. The Planning and Planning and Zoning Administrator may require additional evidence of compliance such as certified reports of tests by a recognized testing laboratory.

E. Total Outdoor Light Output

1. The total amount of light, measured in lumens, from all outdoor light fixture lamps shall be measured as follows:
 - a. For all lamp types, the mean lumen output, as defined by the lamp manufacturer, shall be the lumen value used. For lamps not listed with mean lumens, the initial rating shall be used.
 - b. The total light output of each outdoor light fixture shall be based on the largest lamp that it is rated to accommodate. Furthermore, the largest lamp rating for fluorescent and high intensity discharge fixtures shall be based on the installed ballast rating.
 - c. For determining compliance with Table 27-5, the total lumens shall be the sum of the following:
 - i. 100 percent of the lumens from outdoor light fixtures installed at grade, on poles, and installed on the top or sides of buildings or other structures, when not shielded from above by the structure itself.

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- ii. 50 percent of the lumens from underwater light fixtures unless the fixture is aimed at an angle of less than 45 degrees above the horizontal, in which case the lumens shall be calculated at ten (10) percent of the lumens.



- iii. For projects in E2a lighting zones, wall mounted unshielded luminaires located within a 45-degree angle from the edge of the canopy or overhang down to the wall shall be calculated at 50 percent of the lumens.

Exceptions: Outdoor lighting fixtures meeting any of the following conditions shall not be counted in determining the lumen caps of Table 27-5:

- a) Full cutoff light fixtures installed under canopies, building overhangs, or roof eaves.
- b) Light fixtures shielded by the canopy, building overhang, or roof eaves in such a manner that no lamp or vertical element of a lens or diffuser is visible at the property line.
- c) Outdoor internally illuminated signs designed according to the Town's sign code.

2. Lighting Zones

The Town of Oro Valley shall have the following lighting zones for the calculation of allowed lumens:

- a. "Lighting Zone E3" shall include areas that are zoned C-2 and C-1.
- b. "Lighting Zone E3a" shall include areas that are zoned C-N, PS, R-4R, R-6, T-P, R-S, and P-1. Religious institutions and schools will be included in E3a.
- c. "Lighting Zone E2" shall include areas that are zoned POS, R-4, and SDH-6.

- d. "Lighting Zone E2a" shall include areas that are zoned R1-144, R1-72, R1-43, R1-36, R1-20, R1-10, and R1-7.
 - e. "Lighting Zone E1" is a special overlay zone, whereby the preservation of a naturally dark environment and preservation of habitat value is considered of paramount importance. It includes identified riparian areas, natural open spaces preserved via easements, covenants, or code restrictions, and PAD designated open spaces. No lighting is permitted in this overlay zone.
3. Table 27-5 provides requirements of the total mean lumens permitted per net lighting acre for the different lighting zones.
- a. The applicant may use any one of the three (3) options - I, II, or III for the entire property.
 - b. Net lighting acre is defined in Chapter 31, Definitions.

TABLE 27-5 LUMEN CAPS: MEAN LUMENS PER NET LIGHTING ACRE

Lighting Options	Lighting Zones			
	E3	E3a	E2	E2a
Option I: Mostly Low Pressure Sodium (LPS) Lighting				
Total lumens	400,000	250,000	100,000	70,000
Limit on non-LPS FCO lumens	45,000	25,000	10,000	7,000
Limit on unshielded lumens	12,000	9,000	6,000	4,000
Option II: All Full Cutoff (FCO) Lighting				
Total Lumens	300,000	150,000	65,000	45,000
Option III: Mostly Full Cutoff Lighting				
Total lumens	200,000	100,000	50,000	35,000
Limit on unshielded lumens	12,000	9,000	6,000	4,000

- c. Lumens for any fraction of a net lighting acre shall be calculated on a pro-rated basis.

((O)07-33, Amended, 9/19/07)

F. Outdoor Light Fixture Height Requirements

- 1. The height of a pole-mounted luminaire shall be measured from finished grade to the bottom of the lens of a luminaire and the poles shall not extend greater than two (2) feet above the bottom of the lens for any purpose.
- 2. The maximum height of the pole-mounted luminaire shall not exceed eighteen (18) feet or as otherwise specified herein.
 - a. In C-2 zoned districts, the maximum height shall not exceed twenty-eight (28) feet.

- b. In T-P zoned areas, the Planning and Zoning Administrator may allow maximum height up to twenty-eight (28) feet based on the following factors but not limited to:
 - i. Proximity to residential areas
 - ii. Height of buildings
 - iii. Size of the site
 - iv. Size of parking lot
 - v. Proximity to open space
3. All pole-mounted luminaires within E3, E3a, or E2 lighting zones that abut E2a or E1 lighting zones shall be restricted as follows:
 - a. Limited in height to ten (10) feet for the first row of luminaires and may increase in elevation at a rate of one (1) foot in height for every two (2) feet, six (6) inches away from the first row of luminaires to maximum height as allowed in this Code.
 - b. Luminaires installed within fifteen (15) feet of the property line shall have internal house-side shields or forward throw optics.
 - c. Installed at least ten (10) feet away from the property line.
4. Wall-mounted luminaire, except for those used to directly illuminate parking areas shall be limited in height from finished grade to a maximum of nine (9) feet to the center of the luminaire. Those luminaires used to illuminate parking areas shall be the same manufacture type and style as the pole-mounted area luminaires and mounted no higher than the pole-mounted luminaires.
5. All wall-mounted luminaires utilizing lamps in excess of four thousand (4,000) lumens and/or installed above nine (9) feet in elevation shall be equipped with an internal house-side shield or provided with similar forward throw optical characteristics so as to minimize the reflected light off the wall below the luminaire.

((O)11-15, Amended, 5/18/11)

G. Outdoor Light Design Standards

1. Light trespass into Lighting Zone E2, E2a, and E1 from abutting properties shall not exceed 0.3 fc measured vertically at five (5) feet above the ground.
2. In E3, E3a, and E2 lighting zones, the design shall incorporate at least eighty (80) percent of the allowed lumens or meet the minimum illumination levels recommended in the latest Handbook of the Illuminating Engineering Society of North America (IESNA), whichever is lesser. The design shall be within the recommended illuminance ratio for the specific task.
3. The religious institutions and schools shall uniformly reduce lighting to the minimum level recommended by IESNA for security purposes one (1) hour after close of business. Other businesses in E3 and E3a areas may uniformly reduce the level of lighting one (1) hour after close of business.
4. The light poles and luminaires shall be spaced in a manner to provide uniform lighting distribution as recommended by the IESNA in areas of frequent use such as parking lots, pedestrian walkways, etc.

5. Canopy lighting shall be limited to an average maintained horizontal illuminance level at 36 inches above grade of 50 fc in E3 and E3a, 30 fc in E2, and 10 fc in E2a.
6. Each unshielded light fixture shall be limited to a maximum of 2000 lumens.
7. All unshielded light fixtures including seasonal decorations shall be turned off between 11:00 p.m. and sunrise.
8. Flood or spot lamps shall be installed within a housing and aimed no higher than 45 degrees to the horizontal (halfway between straight down and straight to the side) when the source is visible from any adjacent property.
9. Any landscaping next to the outdoor light fixtures shall be designed in accordance with Section 27.4 of the code.

((O)07-33, Amended, 9/19/07)

H. Recreational Facilities

Lighting that is directly associated with athletic fields, courts or tracks shall be exempt from the total lumen caps of Table 27.5 and the height limits of Section 27.5.F. All such lighting shall utilize full cutoff luminaires unless certified by a registered design professional that such shielding is impractical, subject to Planning and Planning and Zoning Administrator's approval. Where full cutoff fixtures are not utilized, acceptable luminaires shall include those which:

1. Are provided with internal and/or external glare control louvers that are installed so as to limit direct uplight, to less than five (5) percent of the total lumens exiting from the installed fixtures; and
2. Are installed with minimum aiming angles of 25 degrees downward from the horizontal. The aiming angle shall be measured from the axis of the luminaire's maximum beam candlepower as certified by an independent testing agency; and
3. All events requiring illumination shall be scheduled so as to complete all activity between 6 a.m. and the curfew times listed in Table 27-6. Illumination after the curfew shall be permitted only to complete a scheduled event that was unable to conclude before the curfew due to unusual circumstances.

TABLE 27-6: LIGHTED RECREATION FACILITY CURFEW STANDARDS

Lighting Zones			
E3	E3a	E2	E2a
12 a.m.	11 p.m.	11 p.m.	10 p.m.

I. Temporary Lighting Exemption

1. Request, Renewal, and Information Required

Any person may submit a written request, not less than 30 days prior to the day of use, for a temporary lighting exemption request. A temporary lighting exemption shall contain the following information:

- a. Specific exemption or exemptions requested;
- b. Type and use of outdoor light fixture involved;
- c. Duration of time of the requested exemption;
- d. Type of lamp and lamp lumens;
- e. Total wattage of lamp or lamps and number of lamps to be used;
- f. Proposed location on premises of the outdoor light fixture(s);
- g. Previous temporary exemptions, if any, and addresses of premises thereunder;
- h. Physical size of outdoor light fixture(s) and type of shielding provided;
- i. Mailing labels for public notification;
- j. Such other data and information as may be required by the Planning and Planning and Zoning Administrator.

At the discretion of Planning and Planning and Zoning Administrator, certain submittal requirements may be waived, if deemed unnecessary or inappropriate.

2. Public Notification

All property owners and homeowners associations within 300 feet shall be notified of the temporary exemption request and given 15 days to respond, prior to the Planning and Planning and Zoning Administrator's determination.

3. Approval; Duration

The Planning and Planning and Zoning Administrator may approve requests for temporary lighting exemptions. If approved, the exemption shall be valid for not more than 30 days from the date of issuance. The approval shall be renewable at the discretion of the Planning and Planning and Zoning Administrator. Each such renewed exemption shall be valid for not more than 30 additional days.

J. Alternate Materials and Methods of Construction, Installation, and Operation

The provisions of this code are not intended to prevent the use of any design, materials or method of installation or operation not specifically prescribed by this code, provided any such alternate has been approved. The Planning and Planning and Zoning Administrator may approve any such proposed alternate provided he finds that it:

1. Provides at least approximate equivalence to the applicable specific requirements of this code; and
2. Is otherwise satisfactory or complies with the intent of this code; and
3. Has been designed or approved by a registered design professional and is supported by calculations showing that the design submitted meets the intent of the code. This Section shall not have the effect of waiving any requirements of this code.

Town of Oro Valley - Chapter 31 - Definitions:

33. Area Lighting

Lighting which is primarily designed to illuminate an area of a development and may coincidentally illuminate one (1) or more sign faces.

140. Full Cutoff Light Fixture (FCO)

Is a luminaire where zero (0) candelas occur at or above an angle of ninety (90) degrees and a maximum of ten percent (10%) candelas at eighty (80) degrees above the nadir of the installed luminaire. This applies to all lateral angles around the luminaire. Such candela information shall be determined by a photometric test report from a nationally recognized independent testing agency and as certified by the manufacturer. Any structural part of the luminaire providing this cutoff angle shielding shall be permanently attached.

EXCEPTION: Building canopies, overhangs, roof eaves, and similar types of construction shall not be considered as the means of providing the cutoff unless the fixtures are shielded in such a manner that no lamp or vertical element of a lens or diffuser is visible at the property line.

185. Light Trespass

Is that portion of the measurable light distribution that extends beyond the property line.

202. Luminaire

Is the complete lighting assembly, less the support assembly. For purposes of determining total light output from a luminaire lighting assemblies which include multiple unshielded or full cutoff lamps on a single pole or standard shall be considered as a single unit. Two (2) or more units with lamps less than three (3) feet apart shall be considered a single luminaire.

201. Lumen

Means a unit of light output from a source; used to measure the amount of light emitted by lamps.

224. Net Lighting Acre

Shall mean an acre of the remaining ground area after deleting all portions for proposed and existing public and private street rights-of-way within a development, parcel, or subdivision. If there are any E1 lighting zones in the property, then they shall also be excluded from the calculations of net lighting acre.

237. Outdoor Light Fixture

Is an outdoor illuminating device, outdoor lighting or reflective surface, lamp or similar device, permanently installed or portable, used for illumination. Such devices shall include, but are not limited to for:

- a. Parking lot lighting
- b. On-site circulation lighting
- c. Building and structural lighting
- d. Landscape lighting
- e. Recreational lighting
- f. Product display area lighting
- g. Building overhangs and open canopies
- h. Security lighting

333. Temporary Lighting

Is intended for uses which by their nature are of limited duration; for example holiday decorations, civic events, or construction projects.

345. Unshielded Light Fixture

Is a luminary without all of the shielding necessary to be defined as Full Cutoff.