

DIVISION 6. - OUTDOOR LIGHTING

Sec. 16-44. - Purpose.

The following principles for responsible lighting design define the purpose of this section:

- (a) *Useful* means all lighting at night should have an intended purpose.
- (b) *Targeted* means light should be directed only where it is needed.
- (c) *Low light levels* means light should be no brighter than necessary for the task.
- (d) *Controlled* means lighting should only be used when it is useful.
- (e) *Spectrum* means limit the amount of harmful short wavelengths (blue-violet).

The results from using the forementioned principles will promote the health, safety, and welfare of people and ecological systems, reduce obtrusive and inappropriate light that inhibit human vision, and curtail light pollution (as measured by Zenith or Bortle sky glow metrics) to improve the nighttime environment for residents and visitors of the region.

Sec. 16-45. - Applicability.

- (a) All new development shall meet the requirements of this section, applicable electrical and energy codes, and applicable sections of the building code.
- (b) Within non-residential zone districts, existing outdoor lighting that does not meet the provisions of this section shall be considered legal nonconforming for ten years from the adoption date of this chapter. After ten years, or unless otherwise specified within this chapter, all outdoor lighting fixtures that do not conform to the requirements of this chapter must be replaced with conforming fixtures, or existing fixtures must be retrofitted to comply. This requirement shall not apply to residential zone districts.
- (c) Whenever there is a new use for a property (e.g. zoning or variance change) all outdoor lighting on the property will meet the requirements of this section before the new use commences.
- (d) Expansion, renovation, and modification to existing property that increases the developed square footage, occupant capacity, or parking spaces by 25 percent or more, shall cause the entire property to meet the requirements of this section.
- (e) In the event an outdoor light fixture is not working or damaged to the extent repair costs equal at least 50 percent of replacement cost, the repair/replacement shall conform with the requirements of this section.
- (f) Unless otherwise noted or exempt, existing outdoor lighting that does not meet the provisions of this section shall be considered legal nonconforming until natural maintenance, modifications, change of use, or complaint enforcement obligate meeting the requirements of this chapter.

Sec. 16-46. - Prohibitions.

The following types of exterior lighting sources, fixtures, and installations shall be prohibited in Los Alamos County.

- (a) Mercury vapor lighting.
- (b) Inefficient light sources (efficacy less than 45 lm/w).
- (c) Blinking, flashing, moving, revolving, scintillating, flickering, changing intensity, and changing color lights.
- (d) Unshielded floodlights.
- (e) No outdoor lighting may be used in any manner that could interfere with the safe movement of motor vehicles on public thoroughfares, including the following:
 - (1) Any fixed light not designed for roadway illumination that produces direct light or glare that could cause the operator of a motor vehicle to lose visual performance or visibility.
 - (2) Any light that may be confused with or construed as a traffic control device except as authorized by state, federal, or county government.
- (f) Aerial lasers, beacons, and/or searchlights are prohibited except for emergency use.

Sec. 16-47. - Exemptions.

The following types of lighting installations shall be exempt from the requirements within this section:

- (a) Lighting required by federal, state, or county laws and regulations that conflict with this chapter will supersede and replace the county requirements.
- (b) Lighting associated with the air-side facilities at the airport (runway, taxiway, deice pad, aircraft parking areas and other facilities located inside the security fence) is regulated by the Federal Aviation Administration (FAA) for safety and shall be exempt from the requirements of this chapter. All other exterior lighting at the airport (e.g. entrances, parking, drop-off, and pick-up) shall follow the appropriate lighting zone guidelines within non-residential tasks.
- (c) Flags should be lowered and removed from sunset to sunrise so illumination is not needed when possible. For flags displayed at night, nighttime illumination of the United States of America flag and the New Mexico State flag is allowed. Nighttime illumination of other flags is not allowed. Guidelines are:
 - (1) For an even distribution of light on the flag surface when fully extended, use either top of pole downward directed light, a maximum of three in-ground uplights, or three shielded spotlights that are surface mounted at grade. Surface mounted lights should rotate and tilt so they can be aimed to hit the flag.
 - (2) In-ground and surface mounted shielded spotlights should be narrow beam (15 degree maximum), no more than 100 lumens per foot of height (e.g. 2,500 lumens per light for a 25-foot tall flag), with point sources of light not be visible outside of a 15-foot radius.
- (d) NMDOT lighting installed within the public right-of-way that is not addressed within section 16-53 shall be exempt from the requirements of this chapter. Lighting installed within the public right-of-way with a purpose of illuminating outside the public right-of-way is not exempt.
- (e) Signage illumination is addressed within of division 8, Signage.

- (f) If a proposed lighting plan or fixtures are proposed that do not meet this section, but that have demonstrated community benefit, an exemption may be considered. The applicant shall submit additional information to adequately assess the community benefit for approval by the community development director or design

Sec. 16-48. - Lighting plan.

- (a) Site plan applications for new development and modifications shall include lighting plans, pursuant to section 16-46(f). Lighting required by federal, state, or county laws and regulations that conflict with this chapter will supersede and be exempt.
- (b) Lighting requiring a permit per section 16-55, Lighting Plan Only must obtain a lighting plan approval, pursuant to section 16-46(f).

Sec. 16-49. - Lighting zone designations.

- (a) The lighting zone shall determine the limitations for lighting as specified in this section. The lighting zones within Los Alamos County shall be per Table 38: Light Zone Designations.

Table 38: LIGHT ZONE DESIGNATIONS		
LIGHT ZONES	LIGHT ZONE CHARACTERISTICS/ DEFINITIONS	APPLICABLE DISTRICTS
Lighting Zone 0 (LZ0)	No Ambient Light (wilderness, protected parks, preserves)	OS-PO; OS-AO
Lighting Zone 1 (LZ1)	Low Ambient Light (rural, residential, developed park areas)	RA; RE; SFR (all types); MFR (all types); RM (all types); MHC; OS-PP
Lighting Zone 2 (LZ2)	Ambient Light (office, commercial, mixed use, schools, light industrial)	MU; DTLA; WRTC; PO; GC; IND; INS; OS-RO
Lighting Zone 3 (LZ3)	Moderately High Ambient Light (central business, play fields, heavy industrial)	Only available for Temporary or Permit Categories
Lighting Zone 4 (LZ4)	LZ4-High Ambient Light (Times Square and Las Vegas)	Not applicable in Los Alamos County

- (b) Lighting zone designations should not be based on existing conditions, but rather the type of environment the municipality seeks to achieve. Unless otherwise mentioned, Los Alamos County will have no lighting zone 4 applications.

Sec. 16-50. - General, responsible design standards.

- (a) The maximum correlated color temperature (CCT) permissible within Los Alamos County shall be 2700K. The color rendering index (CRI) of light sources in LZ-1 and greater must be greater than 65. Lower CCT (e.g. 2200K) is allowed in all zones provided it meets the CRI requirement, and per ANSI/IES, it is encouraged in LZ-0 applications regardless of CRI.
- (b) LZ-2 lighting shall be dimmed by 50 percent by 10:00 p.m. or one hour after business close (whichever comes latest). ^[2] This LZ-2 curfew shall remain in effect until 6:00 a.m. The LZ-2 curfew does not apply to the following:
 - (1) Street, roadway, and other Department of Transportation lighting.
 - (2) Code required lighting for public steps, stairs, walkways, and building entrances.
 - (3) Other special use or permitted exceptions listed within this chapter such as flag, seasonal, sports fields, and businesses which operate during these hours.
- (c) Unless otherwise allowed, all light sources shall be fully shielded and possess a UO rating (IES TM-15) for zero uplight. Meaning, luminaires must be constructed in such a manner that all light emitted by the luminaire, either directly from the light source or diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal.
- (d) All light sources shall be a maximum G2 rating (IES TM-15), and located or shielded such that the point light source shall not be visible from adjacent property or streets.
- (e) The maximum illumination at the property line (measured at grade with the light meter aiming upward) shall not exceed the requirements listed in Table 39: Property Line Light Trespass Illuminance Limits below. These requirements will likely require mounting locations 2.5 times luminaire height away from property lines with addition distance or shielding required for lighting installed along ridgelines or hillsides.
- (f) Illuminance trespass limits per Table 39: Property Line Light Trespass Illuminance Limits are for a single property. Measured values will be the sum of multiple illuminated properties when the property line is shared. The property line can be considered five feet beyond actual when bordering with public walkways, bikeways, plazas, and parking lots.

Table 39: PROPERTY LINE LIGHT TRESPASS ILLUMINANCE LIMITS

	LZ0	LZ1	LZ2	LZ3
	OS-PO, OS-AO	RA, RE, SFR, MFR,	MU; DTLA; WRTC;	TEMPORARY OR

		RM, MHC, OS-PP	PO; GC; IND; INS; OS-RO	PERMIT CATEGORIES
Footcandles (fc)	0.05	0.1	0.3	0.8
Lux (lx)	0.5	1	3	8

(g) Pole/post mounted lighting taller than 36 inches is prohibited within residential zone districts except multi-family parking and common areas where the maximum height is 12 feet. Pole lighting for non-residential parking lots is limited to 20 feet tall if adjacent to a lot with a residential use, and 25 feet tall thereafter.

(h) Shielded floodlights are limited to 1,260 lumens.

Footnotes:

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See section 16-45, Applicability. Within non-residential zone districts, existing outdoor lighting that does not meet the provisions of this section shall be considered legal nonconforming for ten years from the adoption date of this chapter.

Sec. 16-51. - Residential lighting.

(a) The total allowable site lumens (initial) for any residential zone district or residential use is limited to the values defined in Table 40 below.

Table 40: TOTAL SITE LUMENS ALLOWED RESIDENTIAL		
PROPERTY SIZE	LZ1	LZ2
	RA, RE, SFR, MFR, RM, MHC	MU, DTLA, WRTC
Single Family; 1 acre+ (43,560 sf+)	12,000	n/a
Multi-Family; Per 1 acre (43,560 sf)	12,000	20,000
Single Family; ¾ acre (32,670 sf)	9,000	n/a
Single Family; ½ acre (21,780 sf)	6,000	n/a

Single Family; ½ acre (8,812 sf)	3,000	5,000
Mobile Home; (5,500 sf)	2,000	4,000
Single Family; 1/10 acre (4,356 sf)	2,000	4,000
Single Family; 1/20 acre (2,178 sf)	1,500	3,000

NOTE: The upper lumen limits listed below should not be the design goal. The design goal should be to use the minimum light levels that meet the requirements of the task.

- (b) An additional 3,000 lumens per the limits of Table 40 is allowed for each accessory dwelling unit (ADU) is allowed on lots larger than two acres.
- (c) An additional 300 lumens per parking lot space per the limits of Table 40 is allowed for multi-family developments.
- (d) Vertical illuminance of targeted elements (e.g. façades, or landscape elements) is allowed using partially shielded luminaires, provided the total amount of partially shielded light does not exceed 20% of the total site lumen allowance or the individual luminaire limits listed in Table 41 below.

Table 41: INDIVIDUAL LUMINAIRE LIMITS (LUMENS)

LUMINAIRE TYPE	LZ0	LZ1	LZ2	LZ3
	OS-PO, OS-AO	RA, RE, SFR, MFR, RM, MHC, OS-PP	MU; DTLA; WRTC; PO; GC; IND; INS; OS-RO	TEMPORARY OR PERMIT CATEGORIES
Low Voltage Landscape	n/a	205	430	525
Shielded In-grade Uplight	n/a	455	<u>910</u>	1,820
Partially Shielded Flood	n/a	630	1,260	2,100

Fully Shielded U0 Down	n/a	630	1,260	2,100
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- (e) Façade lighting on multi-family and mixed use lots is prohibited above residential floors to prevent unwanted light.
- (f) Art, monuments, and fountains may be illuminated if they are adjacent (i.e. within ten feet) to the residential structure.
- (g) Tree, garden, and landscape lighting is only allowed within 25 feet of a residence or driveway entrance. Tree and landscape lighting must be turned off during hours of curfew. For this reason, solar powered landscape lights are not recommended.
- (h) Perimeter fence lighting for walls, fences, and perimeter barriers is prohibited within the LZ1 zone.
- (i) Illumination of walls and underneath built in shorter than five feet to help reassurance and egress is allowed within common areas of development within the LZ2 zone, provided they are washed with approved façade or landscape lighting techniques and meet the other requirements of this section.
- (j) Driveway and parking lot lighting is not permitted within the LZ1 zone.
- (k) Porte cochere and covered porch/canopy lighting for entrances and transfers is allowed. Luminaires mounted under canopies shall be aimed downward and installed such that the bottom of the luminaire or lens, whichever is lower, is recessed or fully cutoff and not producing any light above horizontal. All light emitted by an under-canopy fixture shall be substantially confined to the posts, façades and ground surface directly beneath the perimeter of the canopy.
- (l) Pathways, stairs, and steps lighting shall be no taller than 36 inches.
- (m) If local code allows, gas flame and fire pits are allowed. Artificial lighting used to illuminate patios, above grade decks, balconies, or gazebos must be shielded or fully shielded with the point light source not visible beyond the property line in which it is located.

Sec. 16-52. - Non-residential lighting.

- (a) The total allowable site lumens (initial) for all non-residential zone districts shall be based on the lot size (per acre) or hardscape square footage of developed structure, parking lots, and landscape buffer. Individual site lumen limits are outlined in Table 42 below.

Table 42: TOTAL SITE LUMENS ALLOWED FOR NON-RESIDENTIAL ZONE DISTRICTS					
LIGHTING REQUIREMENT	UNIT	LZ0	LZ1	LZ2	LZ3
		OS-PO, OS-AO	RA, RE, SFR, MFR, RM,	MU; DTLA; WRTC; PO; GC;	TEMPORARY OR PERMIT

			MHC, OS-PP	IND; INS; OS-RO	CATEGORIES
Site Lumen Limit; Per Acre (43,560 sf)		50,000	0	20,000	35,000
Tree and Landscape Buffer	lm/sf	4	n/a	1	2
Parking Lot	lm/space	880	n/a	220	440
Vehicle Sales/Display Lot	lm/sf	16	n/a	4	8
Drive Up Window	ea.	8,000	n/a	2,000	4,000
Gas Station Canopy	lm/pump	16,000	n/a	4,000	8,000
sf = Square Foot					

(b) Partially shielded luminaires for the following applications are allowed for this purpose if the light distribution is effectively contained by the targeted element (e.g. façade, sculpture, shrub), and if the total amount of partially shielded light does not exceed 20 percent of the total site lumen allowance or individual luminaire limits listed in Table 43 below.

Table 43: INDIVIDUAL LUMINAIRE LIMITS (LUMENS)				
LUMINAIRE TYPE	LZ0	LZ1	LZ2	LZ3
	OS-PO, OS-AO	RA, RE, SFR, MFR, RM, MHC, OS-PP	MU; DTLA; WRTC; PO; GC; IND; INS;	TEMPORARY OR PERMIT

			OS-RO	CATEGORIES
Low Voltage Landscape	n/a	205	430	525
Shielded In-grade Uplight	n/a	455	<u>910</u>	1,820
Partially Shielded Flood	n/a	630	1,260	2,100
Fully Shielded U0 Down	n/a	630	1,260	2,100

(c) Façade lighting shall ensure the following standards:

- (1) The point light source shall not be visible from adjacent properties.
- (2) Façade lighting within mixed use zone district property is prohibited above residential floors.
- (3) Non-residential façade lighting must be turned off no later than curfew or after business hours, whichever comes later.

(d) Art, monuments, and fountain features shall only be lit in non-residential applications to help people gain understanding of their surroundings and avoid conflict prior to curfew.

(e) Tree and landscape lighting must be turned off during hours of curfew. For this reason, solar powered landscape lights are not recommended.

(f) Illumination of walls, fences, and perimeter barriers shorter than eight feet to help reassurance and egress is allowed only within non-residential common areas.

(g) Outdoor lighting used to illuminate parking spaces, driveways, or maneuvering areas shall meet fully shielded requirements and be designed, arranged, and shielded so that the point light source is not visible from adjoining lot lines or public streets.

(h) Porte cochere and covered porch/canopy lighting for entrances and transfers is allowed. Luminaires mounted under canopies shall be aimed downward and installed such that the bottom of the luminaire or lens, whichever is lower, is recessed or fully cutoff and not producing any light above horizontal. All light emitted by an under-canopy fixture shall be substantially confined to the posts, façades and ground surface directly beneath the perimeter of the canopy.

(i) Lighting of pathways, stairs, and steps shall be no taller than 36 inches.

- (a) Local and arterial roadway lighting shall be designed to the ANSI/IES RP-8-21 recommended practice for design and maintenance of roadway lighting for one of the county-designated, roadway lighting design categories (RLDC) in Table 44 below.

Table 44: ROADWAY LIGHTING

ROADWAY LIGHTING DESIGN CATEGORY	ROADWAY ILLUMINATION
RLDC-1	Roadway with non-continuous lighting.
RLDC-3	Roadway with lighted intersections.
RLDC-4	Roadway with lighted intersections and non-continuous lighting between intersections.
RLDC-5	Continuously lighted roadway (IESNA RP-8).
	Partial lighting for the purpose of RLDC-2 and RLDC-4 means the additional lighting needed for a specific designated section of roadway where one or more streetlights would substantially improve public safety, but local conditions do not indicate the need for lighting based on a higher RLDC.
	These design categories specify only the target light levels for the lighting system design and are not intended to prevent a reasonable variation from the design criteria necessitated by public safety or the details of the topography of the roadway for which the lighting system is being designed.

- (b) The RLDC category for a roadway shall be determined by county council upon advice of the county engineer. The county engineer's RLDC category recommendation for a given roadway, or portion thereof, shall occur only after a study of local conditions and shall take into account the lighting purposes per

section 16-44 including minimizing light pollution and light trespass, especially in residential zone districts.

- (c) The study of local conditions for a particular road or segment of road is to be prepared for the county by the roadway lighting designer.
- (d) New roadway lighting systems shall be designed to the lowest RLDC consistent with the lighting goals of the neighborhood or subdivision in which it is to be installed but shall not be a lower light level than the minimum IES RP-8-18 recommendation needed for public safety as indicated by a study of local conditions.
- (e) Street lighting must conform to the standards outlined in Table 45: Lighting Standards for Roads.

Table 45: LIGHTING STANDARDS FOR ROADS			
LIGHT LOCATION	LUMEN LIMIT	COLOR TEMPERATURE	BUG RATING
Pedestrian pathway fixtures < 18 inches tall, such as bollards	300 lumen	2,700 K maximum	U2 B-N/A G1
Pedestrian pathway fixtures > 18 inches tall	3,500 lumen	2,700 K maximum	U0 B1 G1
Street lighting	N/A	2,700 K maximum	G2 (Arterials) G1 (Collector/Locals)

- (f) Street lighting must conform to the following maximum average illuminance limits in Table 46: Illuminance Limits for Roads. The spacing and lumen outputs of each street lighting luminaire shall be calculated so that these limits are not exceeded. The establishment of these limits shall not be construed to permit increasing existing levels of illuminance in any location.

Table 46: ILLUMINANCE LIMITS FOR ROADS	
ROAD	MAXIMUM AVERAGE ILLUMINANCE
Central Ave.	10 lux
Canyon Rd.	9 lux

Diamond Dr.	10 lux
Sherwood Blvd.	6 lux
Rover Blvd.	6 lux
Collector Roads	6 lux
Other Roads and Rights-of-way	5 lux

(g) The county shall comply with requests supplied to the county traffic and streets division to install, move, or remove a publicly owned streetlight when the request is signed by the majority of property owners within 300 feet of that streetlight and the request is feasible and does not create a public safety hazard. The property owners requesting that change agree to bear the estimated cost of installing, moving, or removing that streetlight, said estimated cost to be provided by the county engineer upon a request for information.

Sec. 16-54. - Special use.

- (a) Security lights emitting infrared radiation used for security surveillance systems is permitted if they are fully shielded and aimed no higher than 70 degrees from horizon. Special review by the planning and zoning commission may allow lighting of a greater intensity under the following circumstances:
- (1) Multi-family, mixed use, and commercial common areas with increased density and activity may require increased illumination at primary points of entrances or exits. Light intensity shall not exceed five foot-candles average at grade.
 - (2) Shielded flood lights controlled by a motion sensor must be limited to motion within the owner's property lines, and turned off five minutes after motion.
- (b) Lights located at historic landmark sites that have illuminance purpose and are consistent with the time period and character of the historic structure or district may be exempt from shielding, uplight, and light trespass requirements upon request and subsequent approval from the community development director or historic preservation advisory board.
- (1) Historically approved fixtures shall be limited to 700 lumens per fixture and 10,000 lumens per acre.
 - (2) If new site lighting is needed to meet pedestrian safety requirements (e.g. stairs and egress), or an architectural or historical feature requires greater illumination, modern lighting techniques should not compete with the historic character of the property or convey a false sense of history (e.g. faux historic lights).
- (c) Holiday lighting of a temporary nature is allowed between November 1 and January 30, provided that the lighting is low-wattage (one watt/ft. for string lights or 70 lumens for single bulb), does not exceed 1,000

lumens per site, create dangerous glare on adjacent streets or properties, is maintained in an attractive condition and does not constitute a fire hazard. All other lighting associated with any national, local or religious holiday or celebration may be illuminated two weeks prior to the holiday and extinguished within two days after the holiday.

- (d) Gas station canopies shall not exceed a measured illuminance of 20 footcandles average under the canopy.

Sec. 16-55. - Lighting plan only.

The following lighting types shall require a lighting plan pursuant to section 16-6(f).

- (a) Temporary lighting exemptions may be secured for a maximum of 14 days from the date of signed approval and issuance by the community development director. The director shall have the authority to refer an application for a temporary exemption to the planning and zoning commission or the historic preservation commission if deemed appropriate. A temporary exemption request shall contain at least the following information:
 - (1) Specific exemption(s) requested, luminaire locations, mounting heights, and area(s) to be illuminated;
 - (2) Data sheets for exact luminaires (including lamp type, lumen output, CCT, CRI, polar distribution plot, and BUG rating);
 - (3) Duration of time requested for exemption;
 - (4) Other information as may be required by the community development department director.
- (b) Outdoor lighting used for construction or major renovation can be exempt from the requirements of this chapter with an approved lighting plan.
- (c) Sport and recreation lighting shall confine illumination to the field, bleacher, track, or recreational area. Such lighting may need to exceed lighting zone illumination standards and CCT requirements to meet requirements for play and safety per ANSI/IES RP-6. Additional guidelines are as follows:
 - (1) Direct light from luminaires must not be visible from adjacent properties.
 - (2) Shielding and internal louvers to prevent light trespass, glare, and light emitted above 62 degrees from the horizontal ground plane are required.
 - (3) Lighting shall be extinguished no later than one hour after the event ends.
- (d) Underwater pool, spa, and pool deck lighting is allowed pursuant to approval by a lighting plan. Such lighting should follow ANSI/IES, or local municipal lighting recommendations based on residential, hospitality, or public use. This lighting is not part of the total site lumen limit.
- (e) Decorative lighting elements, such as shades with translucent, perforated patterns, and diffusers, may be exempted from the fully-shielded requirement provided they are less than 1,000 lumens and meet all other requirements of this chapter and demonstrate a benefit for the community.