

LIGHTING REGULATIONS

CITY OF ARVADA



6.7 LIGHTING

6.7.1 Scope

This Section defines allowable outdoor light levels that are compatible with the vision and goals of the City of Arvada and establishes lighting zones throughout the City. Each lighting zone represents the ambient light in the area based on land use and zoning. All lighting restrictions and/or requirements shall be specific to the lighting zone associated with each site.

6.7.2 Intent

It is the intent of this Section to establish effective measures to evaluate and limit light impacts, glare and light pollution as well as promote energy efficiency of outdoor lighting while:

- A. Ensuring that lighting is efficient, used only where needed, without glare and is environmentally sustainable. Lighting may be used for, general site illumination including, but not limited to, parking lots and drive aisles, pedestrian circulation routes, plazas or gathering places, architectural accents, exits or entries, monuments or symbols, or landscape lighting;
- B. Providing an environment where lighting is adequate to see or identify a potential threat in time to react or seek safety;
- C. Grouping allowable light levels in a way that is responsive to both the prevailing uses and light levels in a given area and to the vision for that area; and
- D. Limiting the adverse impact of light onto adjacent properties.

6.7.3 Applicability

This Section shall be applicable to all land uses as follows:

- A. New Construction. All exterior lighting systems and/or plans approved by the Community Development Director on or after the effective date of this Code amendment, with the exception of one- and two-family residential units.
- B. Existing Lighting Systems. All modifications, alterations, relocations, or renovations to exterior lighting fixtures after the effective date of this Code amendment.
- C. Exemptions. The following are exempt from the requirements herein:
 - 1. Existing lighting that remains unchanged (including ongoing standard maintenance such as bulb replacement and/or painting of existing poles and fixtures) shall be exempt from the requirements herein unless altered to meet the criteria of §6.7.3.B. above;
 - 2. Lighting systems that were approved after January 1, 2012, but not yet installed, shall be allowed to build out following the

approved lighting plan and/or specifications and shall be exempt from the new requirements herein. However, should the approved design be altered to meet the criteria of §6.7.3.B, the restrictions herein shall apply. All other previously approved, but not yet installed, lighting shall be considered as new construction and must comply with the criteria specified herein;

3. Seasonal holiday lighting;
4. Lighting that is not permanently installed and of a temporary nature such as that needed for construction or by law enforcement or emergency services personnel to protect life or property. Such lighting shall be discontinued upon completion of the work for the day or resolution of the emergency necessitating its usage. Where safety is a concern, this lighting may be allowed to remain in operation after operations are complete, with City approval;
5. Lighting approved by the Community Development Director as part of a special events permit;
6. Lighting required by any federal, state or local governmental agency including, but not limited to, the Federal Aviation Administration (FAA) used for control, navigation and warning;
7. Lighting of government flags and public monuments;
8. Underwater lighting in swimming pools and fountains; and
9. Low voltage landscape lighting that complies with the requirements of §6.7.2 Intent, and §6.7.5.E Off-site Impacts.
10. Signage that has been approved by the City.

D. Prohibited Lighting. The following are prohibited:

1. Aerial lasers, searchlights and/or rotating beacons; unless part of a special events permit, for a maximum of 5 days;
2. Flashing or blinking lights, or lighting with changing intensity except for seasonal holiday lighting; and
3. Any light that could be construed as a traffic control device and which has not been authorized by a state, federal or city government.

6.7.4 Lighting Zones

The lighting requirements of this Code are based on designated Lighting Zones. Each lighting zone represents the ambient light in the area based on land use and zoning as defined below:

A. Lighting Zone Districts.

1. LZ-1: This lighting zone applies to areas with the lowest ambient light levels and/or areas where preserving and protecting the rural character is consistent with the plans and goals of the City.

2. LZ-2: This lighting zone applies to areas of low to moderate ambient light levels typical of, but not limited to, residential areas.
3. LZ-3: This lighting zone applies to areas with higher ambient light levels and is typical for areas with commercial or industrial uses and generally located along the main arterial roadways within the City.

B. Lighting Zones by Zoning District:

Each Lighting Zone corresponds to a variety of land use zoning districts as follows:

Lighting Zone	Corresponding Zoning Districts
LZ-1	A-1, C-1, R-CE, R-E, PUD-R less than or equal to two (2) units/acre, NC-AG, NC-OS, NC-RA, or NC-RB.
LZ-2	R-L, R-SL, R-I, R-MD, R-M, PUD-R greater than two (2) units/acre, B-1, P-1, NC-RC, NC-MU-A, and NC-MU-B, Olde Town Zoning District, and PUD-BPR with residential uses.
LZ-3	B-2, B-4, PUD-BP, I-1, I-2, PUD-I, all CC zoning districts, NC-OF, NC-I/OF, NC-SU and NC-MU-C or PUD-BPR without residential uses.

6.7.5 Lighting System Design Parameters

New or modified lighting designs for all developments, except one- and two-family residential, must comply with the following design parameters.

- A. Total Lumen Allowance. Every site or development shall be allocated a budgeted lighting allowance that may be used anywhere within that site. This lumen allowance is based on the area of the site, the lighting zone for that site, and the initial luminaire lumens for each light fixture (luminaire) used. This allowance shall consist of the base lumen allowance plus any allowed additional lumens for specific uses. Compliance shall be evaluated by verifying that the sum of the initial luminaire lumens of all light fixtures (luminaires) does not exceed the total lumen allowance. For one- and two-family residential design criteria, see §6.7.6 below.

1. Base Lumen Allowance - The base lumen allowance is applicable to all development and may be used to light parking lots and drive aisles, pedestrian circulation routes, plazas or gathering places, architectural accents exits or entries, private monuments/symbols or landscape lighting over 24 volts. The base lumen allowance for each lighting zone is listed below:

LZ-1 - Seventy thousand (70,000) initial luminaire lumens per acre. However, within a given light fixture (luminaire), no single lamp shall exceed 16,000 lamp lumens.

LZ-2 - Eighty four thousand (84,000) initial luminaire lumens per acre. However, within a given light fixture (luminaire), no single lamp shall exceed 20,000 lamp lumens.

LZ-3 - One hundred forty thousand (140,000) initial luminaire lumens per acre. However, within a given light fixture (luminaire), no single lamp shall exceed 25,000 lamp lumens.

2. Additional Lumen Allowance - In addition to the base lumen allowance, the following uses may add the initial luminaire lumens defined herein to the base lighting allowance. The additional lumen allowances represent the maximum allowable initial lumens for a specific use or area of the site and may not be transferred or used for any other purpose. For allowable light for externally illuminated signs, see §6.17 Signs.

a. Point-of-Service Canopies - Additional lumen allowances shall be allowed only in LZ-2 and LZ-3 as follows:

LZ-2 - 32 initial luminaire lumens per square foot of area directly under the canopy.

LZ-3 - 42 initial luminaire lumens per square foot of area directly under the canopy.

b. Outdoor Seating Areas for Restaurants - Additional lumen allowances shall be allowed only in LZ-2 and LZ-3 as follows:

LZ-2 - 14 initial luminaire lumens per square foot of seating area.

LZ-3 - 18 initial luminaire lumens per square foot of seating area.

c. Non-Auto Related Sales or Display Areas - For locations associated with a retail business, not to exceed 7% of the total lot area. Additional lumen allowances shall be allowed only in LZ-2 and LZ-3 as follows:

LZ-2 - 28 initial luminaire lumens per square foot of sales or display area.

LZ-3 - 35 initial luminaire lumens per square foot of sales or display area.

d. Feature Display Areas - For automotive sale locations, not to exceed 30% of the total lot area. Additional lumen allowances shall be allowed only in LZ-3 as follows:

LZ-3 - 35 initial luminaire lumens per square foot outdoor retail display area.

- e. Outdoor Sports Facilities - These facilities are exempt from the lumen limits provided they meet the requirements of §6.7.2 Intent, and §6.7.5.F Lighting Curfew.

B. Uniformity. Each illuminated area shall conform to the following lighting restrictions to ensure uniformity throughout the site:

1. General Site Illumination – Within all lighting zones, the average light level within any specific illuminated area shall not exceed 3.5 initial footcandles. This shall apply to all lit areas including, but not limited to, parking lots and drive aisles, pedestrian circulation routes, and plazas or gathering places, but excluding areas with additional lumen allowances.
2. Point-of-Service Canopies and Areas with Additional Lumen Allowances - Light distribution shall not exceed a 10:1 ratio between the average light levels under the canopy and the average light levels of the illuminated area outside the canopy.

C. Fixture Specifications. All light fixtures (luminaires) shall comply with the following design parameters:

1. Maximum Mounting Height – Fixture mounting height shall be measured from grade to the bottom of the fixture lens. Mounting heights are limited by light zones as follows:

LZ-1 - 22 feet

LZ-2 - 22feet within 50feet of a residential use or within a development with vertical mixed use; and

27feet in all other applications.

LZ-3 - 22feet within 50feet of a residential use or within a development with vertical mixed use; and

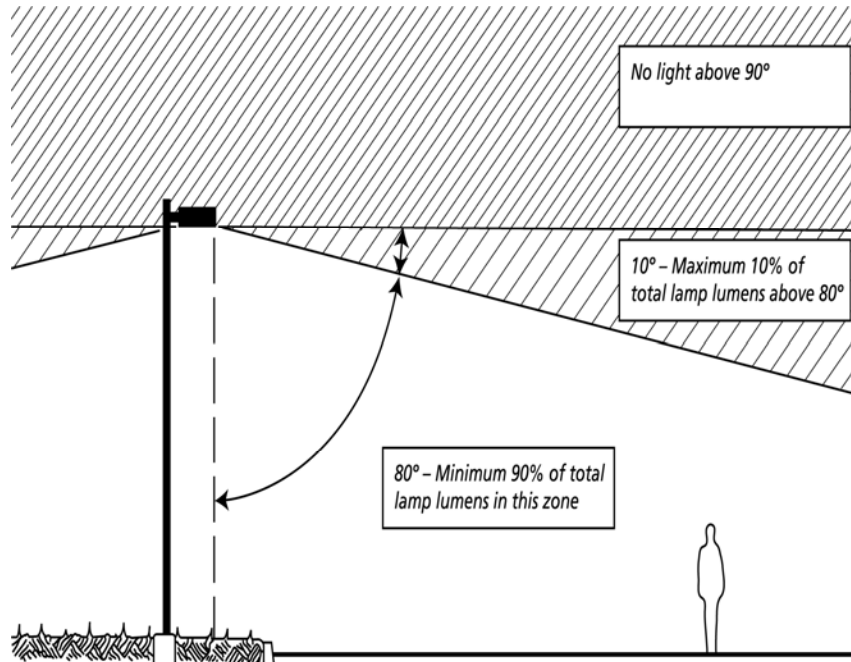
35feet in all other applications.

2. Pole and Fixture Color - All poles and fixtures (luminaires) shall be of dark colors including, but not limited to, black, dark gray, dark green or brown. Reflective or light colored poles are not allowed.
3. Pole Location - All pole mounted fixtures (luminaires) shall be located at least 30 feet away from the nearest shade tree, 20 feet away from the nearest evergreen or columnar deciduous trees and/or 15 feet away from the nearest ornamental tree as measured from tree trunk to the pole.

D. Aiming Requirements.

1. Aiming Requirements - All light fixtures (luminaires) shall be aimed directly downward (90 degrees from true vertical) and shall have a flat lens, emitting no direct light above the lens and shall have no

more than 10% of the total luminaire lumens between 80 and 90 degrees from true vertical.



2. Aiming Exemptions - The following types of lighting are exempt from the aiming requirements:
 - a. Accent and Entry Lighting Exemption - A percentage of the total luminaire lumen allowance, excluding the additional lumen allowance for specific uses, may be used for lighting that is exempt from the aiming requirements. This exemption shall only apply to accent lighting in LZ-2 and LZ-3. Ten percent (10%) of the total allowable luminaire lumens, or 12,000 luminaire lumens, whichever is greater, may be exempt from the aiming requirements and used for architectural accent, entry or exit lighting, pedestrian circulation and/or lighting of monuments, symbols, or landscape lighting.
 - b. Under Canopy Lighting – Any light fixture (luminaire) used to light an entry, exit, or as architectural accent lighting regardless of its design and located directly under any building canopy or overhang extending at least three feet (3') from the building face, shall be considered as having met the aiming requirements. Such fixtures shall still be required to limit off-site impacts and glare and this exemption shall not apply to point-of-service canopies.

E. Light Trespass and Off-Site Impacts.

1. Light Impact Limits – Light fixtures (luminaires), luminaire assemblies, (including those using solid state technology), and externally illuminated signs, monuments or symbols and all other lighting systems shall be designed to minimize adverse impacts

on adjacent properties by minimizing glare and limiting light at the property line to the initial foot-candle levels specified below. Measurements shall be made at the property line with a photometer positioned five feet (5') above grade and aimed directly at the luminaire. In mixed used developments without property lines between uses, the point of measurements shall be a line half way between structures of differing uses. Offsite impacts shall be limited to the maximum footcandle limits specified below:

- a. Site Perimeter - when not adjacent to a street
 - LZ-1 0.1 footcandles
 - LZ-2 0.3 footcandles
 - LZ-3 0.8 footcandles
- b. Abutting Local Street - all lighting zones 0.5 footcandles
- c. Abutting Collector Street - all lighting zones 1.0 footcandles
- d. Abutting Arterial Street - all lighting zones 1.5 footcandles

2. Special Conditions - The Community Development Director may approve an alternative to the light trespass limits provided the criteria defined below has been met.

- a. Criteria for evaluating exemptions for special conditions:
 - i. Lighting is dimmed or extinguished per the requirements above in §6.7.2, and §6.7.5;
 - ii. Lighting is aimed away from adjacent properties and streets; and
 - iii. Light trespass is minimized to the maximum extent possible.
- b. Uses that qualify to be exempt from the light trespass limits if they cannot meet the criteria above:
 - i. Structured parking;
 - ii. Illuminated areas where grade is more than 20 vertical feet above the grade of adjacent property;
 - iii. Sports lighting; and
 - iv. Other uses that, at the discretion of the Community Development Director, cannot adequately meet the light trespass limits including, but not limited to, monuments, symbols and externally illuminated signs,

F. Lighting Curfew.

1. Minimum Reduction - One hour after the close of business, all illumination shall be reduced by at least 70% of the total allowable lumens. This reduction in illumination may be achieved by dimming the lamps within a light fixture (luminaire), and/or turning off a luminaire or a portion of a multi-luminaire assemblage. Prior to site plan/final development plan approval or prior to issuance of a building permit (whichever occurs first), a detailed management plan must demonstrate where and how this requirement shall be met.
2. Curfew Exemptions and Special Conditions:
 - a. Multi-unit residential uses and businesses which remain open 24 hours a day are exempt from the Lighting Curfew.
 - b. Sports and recreational lighting shall be reduced by 50% immediately after the end of play and fully turned off one hour after the end of play and when the facility is not in use.
 - c. Lighting in excess of the reduced after hours limits may be used for security lighting providing it is controlled by a motion sensing device. Such devices shall be aimed five (5) feet above grade so as not to be triggered by small animals.

6.7.6 Lighting for One- and Two-Family Residential Dwelling Units

All one- and two-family residential shall comply with the following design parameters:

- A. Decorative light fixtures (luminaires) used to light entry doors, garage doors, patios or decks shall not exceed 850 lumens (equal to one 100 watt incandescent lamp or a 60 watt compact florescent lamp in a transparent or translucent fixture) per luminaire.
- B. All other light fixtures (luminaires) shall fully comply with the requirements of this Section but shall not exceed 1,200 lamp lumens per luminaire.
- C. All light fixtures (luminaires) shall be aimed directly downward (90 degrees from true vertical) with a flat lens, emitting no direct light above the lens and emitting no more than 10% of the total luminaire lumens between 80 and 90 degrees from true vertical, and with no direct light shining onto adjacent residential properties.