

## [Boulder, Colorado Municipal Code Sec. 9-9-16](#)

CITY OF BOULDER, COLORADO CHARTER AND REVISED CODE Codified through Amendment of September 15, 2020. (Supp. No. 145, Update 1)

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### **§ Sec. 9-9-16 Lighting, Outdoor.**

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- (a) Purpose: The purposes of the **outdoor lighting** standards are to:
- (1) Provide adequate **light** for safety and **security**;
  - (2) Promote efficient and cost effective **lighting** and to conserve energy;
  - (3) Reduce **light** pollution, **light** trespass, glare and offensive **light** sources;
  - (4) Provide an environmentally sensitive nighttime environment that includes the ability to view the stars against a dark sky so that people can see the Milky Way Galaxy from residential and other appropriate viewing areas;
  - (5) Prevent inappropriate, poorly designed or installed **outdoor lighting**; and
  - (6) Encourage quality **lighting** design; **light** fixture shielding, establish maximum uniformity ratios and establish maximum **light** levels within and on property lines.
- (b) Legislative History: The city council adopted the **outdoor lighting** standards of this section in 2003 with an amortization provision requiring that the **outdoor lighting** of all properties in the city be brought into compliance with the standards of this section no later than 2018. As of November 16, 2018, all existing **outdoor lighting** in the city must be in compliance with the design standards, maximum **light** standards, and prohibitions of this section, unless this section expressly provides for a different compliance time line.
- (c) Scope: This section shall apply to all exterior **lighting**, including illumination from **outdoor** signs that impact the **outdoor** environment. No person shall install or maintain any **light** fixture unless such fixture meets the requirements of this section. If an existing **light** fixture is removed, it shall only be replaced with a conforming **light** fixture.
- (d) Design Standards: No person shall install or maintain any exterior **lighting** that fails to meet the requirements of this section:
- (1) Maximum **Light** Levels at Property Line: The maximum **light** level at any point on a property line shall not exceed 0.1 footcandles within or adjacent to a residential zone or 0.2 footcandles in nonresidential zones except as follows:
    - (A) The **light** emitted by **light** fixtures mounted on a structure built within five feet of a public street right-of-way or sidewalk shall not exceed the maximum allowable **light** levels for "pedestrian areas" specified in subsection (e) of this section for the underlying zoning district or use. The maximum allowable **light** level shall include any existing or proposed street or pedestrian **lighting** located within the right-of-way. In no case shall the maximum allowable **light** level within the right-of-way, excluding street **lights**, exceed 0.2 footcandles when measured at the curbline.
    - (B) In nonresidential zoning districts, unless a variance has been granted, **light** levels exceeding 0.2 footcandles at the property line may be approved by the city manager upon finding that the increased **light** levels will not adversely affect an adjacent property owner. Evidence that the **light** will not adversely affect an adjacent property owner may include, without limitation, a statement

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from such property owner that it will not be adversely affected by the increased **light** levels. The maximum allowable **light** levels specified in subsection (e) of this section shall not be exceeded when measured on the property line.

- (2) White **Light** Source Required: White **light** sources that include, without limitation, metal halide, fluorescent, or induction lamps, but excluding incandescent and halogen lamps, shall be required for any **light** fixture which exceeds two thousand four hundred lumens that is within a parking lot, vehicular circulation, or pedestrian use area.
- (3) Use of High Pressure Sodium Lamps: Full cutoff high pressure sodium lamps, not exceeding a maximum lumen rating of sixteen thousand lumens, may be used in **outdoor** storage areas and other similar use areas not accessible to the general public and the need for good color rendering capabilities for safety and **security** is not necessary.
- (4) Architectural **Lighting** of Building Facades: The **lighting** of a building facade for architectural, aesthetic, or decorative purposes is permitted subject to the following restrictions:
  - (A) Upward aimed building facade **lighting** shall not exceed nine hundred lumens. All upward aimed **light** shall be fully shielded, fully confined from projecting into the sky by eaves, roofs, or overhangs, and mounted as flush to a wall as possible.
  - (B) Building facade **lighting** exceeding nine hundred lumens shall be fully shielded, aimed downward, and mounted as flush to a wall as possible.
  - (C) Building facade **lighting** shall be fully contained within the vertical surface of the wall being illuminated.
  - (D) Building facade **lighting** that is measurable at the ground level shall be included in the maximum allowable **light** levels.
- (5) Unshielded **Lighting**:
  - (A) Unshielded **lighting** that emits more than nine hundred lumens but less than or equal to one thousand two hundred lumens is permitted provided that it is activated by a motion sensor and provided it is aimed and located in such a manner as to prevent glare and **light** trespass. The **light** shall only go on when activated and go off within five minutes of activation. Motion sensor activated **lighting** shall not be triggered by any movement or activity located off the property on which the **light** is located.
  - (B) All lamps and bulbs less than nine hundred lumens located in residential zones shall be within a fully shielded fixture, or must be within a **light** fixture where the bulb or lamp are obscured from view by a material that diffuses the **light**. (i.e., frosted or milk colored materials), except as otherwise permitted in this section. (See Figure 9-15 of this section.)

**Figure 9-15: Fully Shielded Fixtures**

*Examples of fully shielded **light** fixtures: Sconce, Pole, Canister, and Canopy. In each case the fixture has a solid housing with a flat lens or bottom and the bulb is fully within the housing.*

- (6) Signs: All exterior signs shall be required to meet the standards for this section. In addition, all exterior signs are also subject to the requirements set forth in Section 9-9-21, "Signs," B.R.C. 1981.
- (7) Standards for **Lights** Adjacent to Residential Zoning Districts, Residential Uses, or Public Rights of Way: Any **light** fixture located within ten feet of a property line, of a residential zoning district, an existing residential use, or within ten feet of a public right-of-way, except as permitted in subparagraph (d)(1)(A) of this section shall be:
  - (A) Aimed away from the property line, residential zone, residential use, and/or right-of-way;
  - (B) Classified as an IESNA Type III or Type IV **light** fixture; and
  - (C) Shielded on the side closest to the property line, residential zone, residential use, or public right-of-way.

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- (8) Canopy **Lighting**: **Lighting** fixtures mounted under canopies used for vehicular shelter shall be aimed downward and installed such that the bottom of the **light** fixture or its lens, whichever is lower, is recessed or mounted flush with the bottom surface of the canopy. A full cutoff **light** fixture may project below the underside of a canopy. All **light** emitted by an under-canopy fixture shall be substantially confined to the ground surface directly beneath the perimeter of the canopy. No **lighting**, except that permitted by the sign ordinance, shall be permitted on the top or sides of a canopy.
- (9) Flagpoles: A flagpole meeting the requirements of Section 9-9-21, "Signs," B.R.C. 1981, may be illuminated by one upward aimed fully shielded spotlight **light** fixture which shall not exceed three thousand five hundred lumens. The **light** fixture shall be placed as close to the base of the flagpole as reasonably possible.
- (10) Strings of **Lights**: No person shall use a string of **lights** on property with nonresidential uses except as follows:
  - (A) Strings of **lights** may only be used if they are approved by the city manager as part of an **outdoor lighting** plan or landscape plan. The plan must comply with all of the standards of this Subsection. The purpose of such **lighting** is intended to create pleasing pedestrian spaces, such as **outdoor** dining or patio areas, utilizing low **lighting** levels.
  - (B) Strings of **lights** permitted under this subsection shall be displayed in compliance with the following standards:
    - (i) The string of **lights** contains only low wattage bulbs that are not greater than fifty lumens per bulb (equivalent to a seven watt C7 incandescent bulb);
    - (ii) The string of **lights** shall be located within a pedestrian way, plaza, patio, **outdoor** dining area, or the primary entry into a building;
    - (iii) The string of **lights** is not placed in any required landscape setback adjacent to a street;
    - (iv) The string of **lights** shall be displayed on a building, wall, fence, trees, and shrubs; and
    - (v) The string of **lights** shall not suspend horizontally between any buildings, walls, fences, trees, or shrubs (for the purposes of this paragraph, *horizontally* means any portion of the suspended string which dips less than forty-five degrees below the horizontal).
- (11) Parking Lot **Lights** and Trees: Parking lot **light** fixtures and poles shall be located such that trees located within the parking lot do not obscure the operation of the **light** fixture.
- (12) Full Cutoff Fixtures: Full cutoff fixtures shall be installed in a horizontal position as designed.
- (13) Color Temperature: All exterior **lighting** installed after November 15, 2018, shall have a correlated color temperature (CCT) below three thousand one degrees Kelvin.
- (e) Maximum **Light** Standards: No person shall operate any device which makes **light** in excess of the levels specified in this section. **Light** from any fixture shall not exceed any of the limits for the applicable zoning district or use classification in Tables 9-11 and 9-12 of this section. In the event an applicant utilizes **light** levels at the highest level permitted for a specific use area, such **lighting** shall be substantially confined to that particular use area.

**TABLE 9-11: ZONING DISTRICT REQUIREMENTS**

	Residential Zoning Districts (Not Including Public Uses)	Commercial, Mixed Use, Downtown, Business, and Industrial Zoning Districts	Public Zoning District and Public Uses in Residential Zones
Maximum allowable <b>light</b> levels	5.0 at building entries	5.0 at building entries	5.0 at building entries

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(measured in footcandle s)				
3.0 in parking areas	5.0 in parking areas	5.0 in parking lots		
3.0 along pedestrian walkways	3.0 along pedestrian walkways	3.0 along pedestrian walkways		
2.0 in common open space areas	2.0 in <b>outdoor</b> storage areas (maximum uniformity ratio requirements are not applicable)			
Maximum uniformity ratio (maximum to minimum)	n/a	10:1 (except as noted above)	15:1	
Maximum lumen rating for a full cutoff luminaire shielded from view of adjacent streets and properties	8,500 - parking areas of 6 or more spaces	8,500 - pedestrian areas 14,000 - parking and loading areas	14,000 - parking and loading areas	
4,000 - walkway <b>lights</b> and common areas	23,500 on 35 foot pole when permitted (parking and loading areas)			
1,800 stairways and entryways	16,000 for high pressure sodium when permitted			
Maximum lumen rating for a partially shielded (IES TM-15-11 G1 rating) fixture	900	1,250	1,250	
Maximum lumen rating for an unshielde	900: except no lamp or bulb, other than for seasonal displays and landscape ornamental <b>lighting</b> , shall be visible beyond the property	900	900	

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d <b><i>light</i></b> fixture	line		
Controls	Motion sensors required for all unshielded fixtures in excess of 900 lumens	Recommended after close of business	Recommended after close of business
Maximum allowable pole height (includes base, pole and luminaire)	20 feet in parking lots	25 feet in parking lots	20 feet in parking lots within or adjacent to residential zones, otherwise 25 foot maximum
15 feet in all other areas	35 feet for contiguous parking lots of 5 or more acres in size		
	20 feet in all other areas		

**TABLE 9-12: SPECIAL USE REQUIREMENTS**

	Open Parking Structures and Parking Below a Building	Private Recreation Use	Public Recreation Use	Service Stations, Automobile Dealerships, Drive-Thru Windows
Maximum allowable <b><i>light</i></b> levels (measured in footcandles)	5.0 within open parking structure and parking below a building 5.0 for uncovered upper levels 5.0 for covered exterior pedestrian circulation areas that are a part of a parking structure or parking below a building	The lesser of 30 footcandles or the IESNA recommended standards for the specific sports venue 5.0 in parking lots 4.0 in pedestrian areas	The IESNA recommended standards for the specific sports venue 5.0 in parking lots 4.0 in pedestrian areas	5.0 in building entries and drive-up windows 20.0 under service station canopies 15.0 within vehicular display areas 5.0 in parking lots 3.0 along pedestrian walkways
Maximum uniformity ratio (maximum to minimum)	5:1 within parking structure 10:1 remainder of site	3:1 on sports field or court 10:1 remainder of site	3:1 on sports field or court 10:1 remainder of site	10:1
Maximum lumen rating for a full	14,000	23,500 for field or court area 8,500 for parking and pedestrian areas	107,000 for sports field 23,500 for courts 14,000 for parking areas 8,500 for pedestrian areas	14,000

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cutoff <b>light</b> fixture shielded from view of adjacent streets and properties	1,800	1,250	4,000	1,800
Maximum lumen rating for a partially shielded (IES TM-15-11 G1 rating) fixture	900	900	900	900
Maximum lumen rating for an unshielded <b>light</b> fixture	n/a	Internal and external	Internal and external	n/a
Sports shielding	n/a	n/a	Not greater than 60 degrees from nadir	n/a
<b>Light</b> fixture aiming angle	Automatic daylight adaptation controls required	Field or court <b>lights</b> shall be turned off within 30 minutes of the last event or 12:00 midnight, whichever is earlier	Field or court <b>lights</b> shall be turned off within 30 minutes after the last event	Service station canopies and vehicular display <b>lights</b> shall not exceed 5.0 footcandles within 1 hour of the close of business
Controls	12 feet for uncovered upper level parking	20 feet in residential zones 25 feet in all	20 feet in parking lots within or adjacent to	20 feet when adjacent to residential zones,
Maximum allowable				

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le pole height (includes base, pole, and <b><u>light</u></b> fixture)	other zones	residential zones, otherwise 25 feet 35 feet for sports <b><u>lighting</u></b> or as approved by the city manager per, "Site Review," B.R.C. 1981	otherwise 25 feet in parking lots 20 feet in all other areas
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(f) Prohibitions: No person shall install any of the following types of **outdoor lighting** fixtures:

- (1) Mercury vapor lamps;
- (2) Low pressure sodium lamps, unless within six hundred feet of an existing astronomical observatory, which is owned or operated by a governmental entity;
- (3) Blinking, flashing, moving, revolving, flickering, changing intensity or color, and chase **lighting**, except **lighting** for temporary seasonal displays, **lighting** for public safety or required for air traffic safety;
- (4) Any **light** fixture that may be confused with or construed as a traffic control device;
- (5) Any upward oriented **lighting** except as otherwise provided for in this section;
- (6) Searchlights, beacons, and laser source **light** fixtures;
- (7) Exposed linear lamps that include, without limitation, neon, **Light** Emitting Diode (L.E.D.), and fluorescent **lighting**, primarily intended as an architectural highlight to attract attention or used as a means of identification or advertisement except as permitted by Section 9-9-21, "Signs," B.R.C. 1981;
- (8) Any lamp or bulb, except for seasonal displays and landscape ornamental **lighting**, which is visible beyond the property line on which it is located; and
- (9) After November 15, 2018, any lamp or bulb with a correlated color temperature (CCT) that exceeds three thousand degrees Kelvin.

(g) **Lighting** Plans Required: A **lighting** plan shall be submitted with any building permit application in which **outdoor lighting** is proposed or required, except when all proposed **lighting** is provided by fixtures of nine hundred lumens or less, and except for a single detached dwelling unit on an individual lot. The **lighting** plan shall include:

- (1) A site plan showing the location of all buildings and building heights, parking, and pedestrian areas on the lot or parcel;
- (2) The location and description including mature height of existing and proposed trees and the location of **light** fixtures on adjacent properties or the street right-of-way within ten feet of the subject property;
- (3) The location and height above grade of all proposed and existing **light** fixtures on the subject property;
- (4) The type, initial lumen rating, color rendering index, and wattage of each lamp source;
- (5) The general style of the **light** fixture such as cutoff, lantern, coach **light**, globe, and a copy of the manufacturer's catalog information sheet and IESNA photometric distribution type, including any shielding information such as house side shields, internal, and/or external shields;
- (6) Control descriptions including type of controls (timer, motion sensor, time clock, etc.), the **light** fixtures to be controlled by each type, and control schedule when required;
- (7) Aiming angles and diagrams for sports **lighting** fixtures; and
- (8) A **light** calculation which shows the maximum **light** levels on a grid not to exceed ten feet by ten feet across the entire site and a minimum of ten feet beyond the lot or parcel property line. The grid shall also indicate maximum to minimum uniformities for each specific use area such as parking and circulation areas, pedestrian areas, and other common public areas.

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- (h) Final Inspection and Certification: Prior to a building permit final inspection or the issuance of a certificate of occupancy, the applicant shall provide certification that the **outdoor lighting** as installed complies with the approved illumination plan and the requirements of this section unless waived or amended by the city manager in writing. The certification shall be submitted in a format prescribed by the city manager. The certification shall be completed by the architect, electrical engineer, electrical contractor, or **lighting** consultant responsible for the plans or the final installation.
- (i) Exceptions: The standards of this section shall not apply to the following types of exterior **lighting**:
- (1) Ornamental **Lighting**: Low voltage (twelve volts or less), low wattage ornamental landscape **lighting** fixtures, and solar operated **light** fixtures having self-contained rechargeable batteries, where any single **light** fixture does not exceed one hundred lumens.
  - (2) Strings of **Light**: Strings of **light**, not exceeding a maximum of fifty lumens per lamp, (equivalent of a seven watt C7 incandescent **light** bulb) on properties located in all residential zoning districts or on properties that are used exclusively for residential uses shall be exempt from the requirements of this chapter.
  - (3) Aviation **Lighting**: **Lighting** used exclusively for aviation purposes. All heliport **lighting**, except **lighting** associated with emergency facilities, shall be turned off when the heliport is not in use.
  - (4) Right-of-Way **Lighting**: Public **lighting** that is located within the right-of-way.
  - (5) Seasonal **Lighting** Displays: **Lighting** displays from November 15 through January 30 of the following year.
  - (6) Ballfields: **Lighting** at ballfields, including the Stazio, Mapleton, and Scott Carpenter Park ballfields, to the extent the **lighting** is necessary to maintain certification for league and tournament play at the ballfield.
- (j) Variances and Exemptions: The city manager is authorized to grant variances to this section in accordance with the following standards:
- (1) Equivalent Material: The provisions of this section are not intended to prevent the use of any design, material or method of installation not specifically prohibited by this section provided any such alternate has been approved by the city manager. The city manager may approve any such alternate provided that the proposed design, material or method provides an approximate equivalent method of satisfying the standards of this section.
  - (2) Historic **Lighting**: The city manager may grant a variance from the provisions of this section if the manager finds the following:
    - (A) The **lighting** fixture is located on a property designated as a landmark or recognized as a contributing property to a designated historic district;
    - (B) The **lighting** fixture is of historic significance to the property; and
    - (C) Removal of or a modification to the **lighting** that would otherwise be required to come into compliance with the requirements of this section would have an adverse impact on the historic character of the property.
  - (3) Variance: The city manager may grant a variance from the provisions of this section if the city manager finds that one of the criteria of Subparagraph (j)(3)(A), (j)(3)(B) or (j)(3)(C), and Subparagraphs (j)(3)(D) and (j)(3)(E) of this section have been met:
    - (A) There are special circumstances or conditions applying to the land, buildings, or **outdoor light** fixtures for which the variance is sought, which circumstances or conditions are peculiar to such land, buildings or **outdoor light** fixtures and do not apply generally to the land, buildings or **outdoor light** fixtures in the neighborhood;
    - (B) For nonresidential uses, there are occupational safety **lighting** requirements for activities or processes that occur outdoors that are required by another governmental agency; or



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- (C) Upon a finding by the city manager that **outdoor lighting** in specific areas of the community, that otherwise meets the requirements of this section is not adequate and additional **lighting** is necessary to improve safety or **security** for the property or its occupants; and
  - (D) The granting of the variance will generally be consistent with the purpose of this section and will not be injurious to the neighborhood or otherwise detrimental to the public welfare; and
  - (E) The variance is the minimum variance that provides the relief required.
- (4) Temporary **Lighting** Exemption: The city manager may grant an exemption from the requirements of this section for temporary **outdoor** activities that include, without limitation, fairs, carnivals, sporting events, concerts, and promotional activities, if the city manager finds the following:
- (A) The length of time that the temporary **lighting** is to be used is not longer than thirty days;
  - (B) The proposed **lighting** is designed in such a manner as to minimize **light** pollution, **light** trespass, and glare as much as feasible; and
  - (C) The proposed **lighting** will comply with the general purpose of this section.
- (k) Amortization: All exterior **lighting** fixtures which do not conform to the following standards shall be brought into conformance no later than November 15, 2018.
- (1) Extension of Amortization Period: The city manager may extend the amortization period of this section. The city manager shall provide a compliance date for meeting the requirements of this section under a plan whereby the owner's actual investment in the improvements before the time that the use became nonstandard under this section can be amortized within a definite time period. The city manager shall consider the following factors in determining a reasonable amortization period:
- (A) The owner's investment in improvements and other assets on the property before the time the improvements became nonstandard.
  - (B) Any costs that are directly attributable to the establishment of a compliance date, including demolition expenses and reconstruction expenses.
  - (C) Any return on investment since inception of the use, including net income and depreciation.
  - (D) The anticipated annual recovery of investment, including net income and depreciation.
- (2) Compliance Requirement: If the city manager establishes a compliance date for a nonconforming use, the use must cease operations on that date and it may not operate thereafter unless it meets the **lighting** standards of the Boulder Revised Code.
- (3) Appeal: A property owner that requested the extension of an amortization period under this section that is aggrieved by any decision of the city manager denying such an extension may appeal to the BOZA by providing a notice to the city manager of the owner's intent to appeal within fourteen days after receiving notice of the City's decision. The hearing shall be held in conformance with the requirements of Subsection 9-2-3(g), B.R.C. 1981.
- (4) Exempt From Amortization Requirements: The following shall be exempt from the amortization provisions, but not the shielding requirements, of this section:
- (A) Existing high pressure sodium and metal halide **light** fixtures which do not exceed the maximum allowable **light** levels of subsection (e) of this section by more than twenty percent;
  - (B) Existing high pressure sodium and metal halide **light** fixtures mounted on poles which exceed the maximum allowable pole heights of subsection (e) of this section, but do not exceed thirty-five feet in height and do not exceed the maximum allowable **light** levels of subsection (e) of this section;
  - (C) Existing high pressure sodium and metal halide **light** fixtures which exceed the maximum lumen ratings of subsection (e) of this section, but comply with the maximum allowable **light** levels of subsection (e) of this section.

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- (l) Immediate Compliance Required: No person shall fail to comply with and no property owner shall fail to ensure compliance of its property with the following:
- (1) Operation of unshielded mercury vapor ***light*** fixtures is prohibited.
  - (2) Installation and operation of a ***light*** bulb that does not meet the requirements of this section is prohibited.
  - (3) Fixtures shall be aimed consistent with the requirements of this section.

**HISTORY NOTE:**

Ordinance Nos. 6017 (1998); 7297 (2003); 7484 (2006); 7522 (2007); 7568 (2007); 7577 (2007); 8005 (2014) ; 8018 (2014) ; 8257 (2018); 8280 (2018)

Annotations

## **Notes Applicable To Entire Chapter**

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Adopted by Ordinance No. 7476.

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