

# Chapter 18.614 Outdoor Lighting

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### 18.614.010 Purpose

**i** Combines MLO and CIDDS text. Subsection (5) from MLO, 18.07.107. MLO purpose combined into others: Help protect the natural environment from the adverse effects of night lighting from gas or electric sources.

- A. Chapter 18.614 is based on the 2011 Model Lighting Ordinance developed in a partnership of the International Dark Sky Association and Illuminating Engineering Society of North America (IESNA), tailored for the City. It is structured as an overlay based on, yet different from, land use zoning. The purpose of this Chapter is to provide regulations for outdoor lighting that will:
1. Permit the use of outdoor lighting that does not exceed the minimum levels specified in IES recommended practices for night-time safety, utility, security, productivity, enjoyment, and commerce;
  2. Minimize adverse offsite impacts of lighting such as light trespass and obtrusive light;

3. Curtail light pollution, reduce skyglow (a form of light pollution), and improve the nighttime environment for layperson enjoyment and scientific study of astronomy;
4. Protect adjacent uses, and natural and critical areas, from excessive adverse effects and spillover light and glare generated by outdoor exterior building and/or site lighting;
5. Conserve energy and resources to the greatest extent possible; and
6. Ensure a safe, attractive, functional environment that is designed for the range of anticipated after dark activities and needs of residents, businesses, pedestrians, and bicyclists while minimizing negative lighting impacts.

### 18.614.020 Applicability

**i** Language below adapted from MLO.

18.07.107.B: new construction matches this., 75+% structure value, MF common areas

CIDDS: nothing specific to lighting; 50% structure value or maximum extent practical and feasible, no uses excluded

Olde Town: applies to CBD only

**i** Definitions from MLO

Except as identified in 18.614.030 or within areas subject to an active development agreement, all outdoor lighting must comply with the requirements in this chapter. This includes, but is not limited to, new lighting, replacement lighting, or any other lighting whether attached to structures, poles, the earth, or any other location. All lighting regulated by this chapter will be categorized as either Non-Residential/Multi-family or Residential; see 18.614.050 and 18.614.060 for the criteria.

Definitions:

- A. Outdoor lighting is defined as lighting equipment installed within the property line and outside the building envelopes, whether attached to poles, building structures, the earth, or any other location; and any associated lighting control equipment.
- B. Lighting equipment is defined as equipment specifically intended to provide gas or electric illumination, including but not limited to lamp(s), luminaire(s), driver(s), poles, posts, lens(es), and related structures, electrical wiring, and other necessary or auxiliary components.
- C. New lighting is defined as lighting for areas not previously illuminated; newly installed lighting of any type except for lighting repairs.
- D. Replacement Lighting is defined as lighting installed specifically to replace existing lighting that is sufficiently broken to be beyond repair.

### 18.614.030 Exempt from Outdoor Lighting Standards

**i** This section, 18.614.030, is adapted from MLO. New text added referencing Title 12 and City Street Standards. The following are removed from MLO text and governed by 18.614.090 to eliminate conflicts: construction lighting, art and monuments

- A. The following outdoor lighting is exempt from the standards outlined in this chapter but may be subject to regulation under federal law, state law, or other chapters of the Issaquah Municipal Code.
  1. Lighting required by local, state, or federal rule, regulation, or law.

2. Lighting levels and technical standards within public right-of-way, private roads, or easement for the principal purpose of illuminating streets or roads. No exemption may apply to any lighting within the public right of way or easement when the purpose of the luminaire is to illuminate areas outside the public right of way or easement, unless regulated by the City's Street Standards. Street lighting levels and development standards are governed by IMC Title 12 and the City Street Standards; fixture heights are governed by 18.614.050 and design standards are governed in Section 18.614.080.
3. Lighting solely for signs; see IMC 18.11 Sign Code.
4. Repairs to existing luminaires not exceeding the threshold established in section 18.614.090.

**i** Conflict in MLO between the following exemption which contained construction sites and non-residential lighting. Construction removed from here and addressing under non-residential; 18.07.107.K has an exemption for construction but references that it could be covered by SEPA, state and other codes.

5. Temporary lighting for theatrical, television, and performance areas;

**i** A.6 expands the MLO to allow both permanent and temporary strings of lights with bulbs less than 70 lumens (equal to approximately a 7 watt bulb). 18.07.107.K.4-6: gives 78 days for holiday lights 11/15-1/31

6. Permanent or temporary lighting using unshielded strings of lights such as for lighting outdoor dining or patios with individual lamps that are less than 70 lumens.
7. Temporary seasonal/festival lighting provided that individual lamps are less than 70 lumens. Seasonal/festival lighting is defined as temporary lighting installed and operated in connection with holidays, festivals, or traditions. For this chapter, Temporary lighting is defined as lighting installed and operated for periods not to exceed 60 days, completely removed and not operated again for at least 30 days.

**i** 8 and 9 adapted from MLO

8. Lighting that is only used under emergency conditions. Emergency conditions are defined as lighting that is only energized during a situation that poses an immediate risk to health, life, property or environment, such as lighting fed from a backup power source; or, lighting for security purposes used solely during an alarm.
9. Lighting specifically approved in a Special Event/Special Use permit, authorized by IMC 5.14. Lighting that would otherwise be prohibited may be approved; however, the City has the right to not allow an exemption at their discretion including lighting that would be inconsistent with the intent or provisions of IMC 5.14, will shoot into the sky, and negatively impact residences or create unsafe situations for motorists.

## 18.614.040 Prohibited Outdoor Lighting

**i** This section has been adapted from MLO; though other codes also contain them: IMC 18.11 and Olde Town site lighting.

- A. Except when provided for in this chapter, no person may erect, alter, maintain, or relocate any of the following lights in the City and such existing lights must be removed consistent with section 18.614.090. Violators may be subject to the penalty provisions in IMC 1.36.030, Enforcement.
  1. Temporary lighting in which any single luminaire exceeds 20,000 initial luminaire lumens or the total lighting load exceeds 160,000 lumens.

2. Aerial Lasers.
3. Searchlights.
4. Other very intense lighting defined as having a light source exceeding 200,000 initial luminaire lumens or an intensity in any direction of more than 2,000,000 candelas.

**i** Following A.5, A.6, and A.8 from 18.07.107.F; A.7 adapted from 18.07.107 after consultation with Mountains to Sound.

5. Any lighting that may be confused with warning signals, emergency signals or traffic signals.
6. Blinking, flashing intermittent and/or moving lights.
7. I-90 Frontage: To prevent glare or distraction to motorists and maintain the Mountains to Sound character and vision of the City frontage, accent lighting (as defined and regulated in Section 18.614.050(E)) is prohibited on those portions of a building or on objects adjacent to I-90 ROW, including on and off ramps, except for lighting of United States Federal Flags and lighting of architecture and landscape below 15 feet (see 18.614.050(E.2.a(3))).
8. Light spillover at more than 0.3 footcandles at the edge of any required critical area buffer, whether on or offsite, to ensure that light diminishes further toward the applicable critical area except related to publicly owned trails. See 18.614.080(B.9).

**i** Following A.9 from Table 18.07.107.E1 with the addition of the assignment light zones

9. At any property line or project boundary of the applicable site, light spillover in light zones LZ 0, LZ 1, LZ2 at more than 0.3 footcandles and in light zone LZ 3 at more than 0.8 footcandles.

**i** Following A.10 from 18.19A Olde Town Design Standards

10. Outlining buildings or roofs with neon or other lighting such as LEDs.

**i** Following A.11 from 18.11 Sign Code

11. Decorative or other non-essential light allowing beams and illumination to shine upon a street, highway, sidewalk, or that project a decorative pattern or image onto the street, highway, or sidewalk using such beam or illumination.

## **18.614.050 Non-Residential and Multi-family Outdoor Lighting.**

**i** Adapted from MLO

- A. Applicability of section 18.614.050: All outdoor lighting shall comply with this section if a property or project is a non-residential, circulation, or recreational use or contains more than seven dwelling units and has a common outdoor area. See definitions, 18.614.100, for Common Outdoor Area.
- B. General requirements
  1. Permits: See 18.614.090(A).

**i** Following B.2 and B.3 mostly adapted from MLO.

2. All luminaires shall be rated and installed using either Performance Method A (18.614.050(C)) or Performance Method B (18.614.050(D)), except temporary construction lighting which is regulated by 18.614.050(F). Only one option may be used per permit application:
3. Complex uses are (If an application is a complex use, as listed below, then the application must use Performance Method B.):
  - a. Sports facilities, including but not limited to unconditioned rinks, open courts, fields, and stadiums.
  - b. Lighting for industrial sites having special requirements, (e.g. petrochemical manufacturing or storage, and shipping piers).
  - c. Parking structures.
  - d. Urban parks
  - e. Accent Lighting as allowed by 18.614.050(D)
  - f. Theme and amusement parks
  - g. Correctional facilities

**i** 18.07.107.E sets different, higher limits for the uses in (3.h)

- h. High light level uses including Automobile and Truck Sales and Gas Station Fueling Areas.
- i. Uses whose lighting levels are controlled by State laws such as Automated Teller Machines in Chapter 19.174 RCW and outdoor swimming pools in WAC 246-260-031(23).

**i** CIDDs 17 uses 3500K; City streets use 4000K. Stantec's proposed compromise.

4. Color temperature: maximum 3000K on-site, 4000K in right of way.
5. Color Rendering: CRI (Color Rendering Index) shall not be less than 80.

**i** Following section from MLO and Stantec edits. Morning hours for Automatic Lighting Reduction added to MLO; consistent with Bothell. MLO doesn't specify evening hours. The following cities use 10pm: Rose Hill area of Kirkland (may be others), Bothell (by uses, most uses 10pm).

6. Light sources: LED
7. Lighting Control and Reduction Requirements.
  - a. Automatic Switching Requirements. Refer to Washington State Non-Residential Energy Code (WS NREC) for automatic controls requirements for Non-Residential developments including multi-family residential.
  - b. Automatic Lighting Reduction Requirements.
    - (1) The City establishes Dark Sky Hours as between 10:00 p.m. or 30 minutes after close of a business or entity with outdoor lighting, whichever comes last, to 6 am or 30 minutes before open of a business or entity with outdoor lighting, whichever comes first.
    - (2) During Dark Sky Hours total outdoor lighting lumens shall be reduced by at least 30% or extinguished. This includes Low Voltage Landscape Lighting, which is defined as landscape

lighting powered at less than 15 volts and limited to luminaires having a rated initial luminaire lumen output of 525 lumens or less.

- (3) The total outdoor lighting lumens shall be uniformly reduced by a specified amount. Individual light fixtures shall not be extinguished to meet this curfew lighting reduction requirement.

**i** Exceptions adapted from MLO. Removed broad, vague option for Director to maintain if they think it should be. Add exception for city facilities. Removed exception to the exception for residential property's landscape lighting; unlikely to be enforceable.

c. Exceptions to 18.614.050(B.7.b). Lighting reductions are not required for any of the following:

- (1) Code required lighting including for steps, stairs, walkways, and building entrances.
- (2) City facilities, as publicly funded and providing public benefit and use, set lighting hours based on the facility's hours. This includes trails, play areas, sports fields, parks, plazas, buildings, streets. Trails through critical areas must comply with 18.614.080(C.9) regarding use of motion detectors.
- (3) Motion activated lighting or lighting controlled by an Astronomic Clock with a manual override that comply with the requirements in 18.614.080(B.4). Lighting levels triggered by the motion detector or Astronomic Clock must comply with all other standards in this chapter.
- (4) Businesses or entities that operate on a 24-hour basis.
- (5) Residential properties that qualify under 18.614.060.
- (6) When all the outdoor lighting for a property consists of only one luminaire.

**i** Table 18.07.107.E.1 had a broad range of pole heights allowed by Light Zone. CIDDS limited lights to 15 ft. Olde Town limited to 14 ft. This has been made more consistent. New line added to Table regarding "at signalized Intersections, streetlight Integrated with signal poles".

#### 8. Maximum Mounting Heights

The following mounting heights apply for new or replace luminaires or streetlights.

##### Maximum Mounting Heights for on-site and streetlights:

	Maximum Mounting Height (feet)
On-site light or pole for any purpose, except as listed in 18.614.080 (D.2-4) or (E.2); or as listed below for location compliant parking lots.	15
Parking Structure: Light pole on rooftop or upper deck of parking structure	12
Parking Lot where light poles will be at least 100 ft from a residential zone (SF or MF zones)	20
At signalized Intersections, streetlight Integrated with signal poles	35

Streetlights on local streets, woonerfs, alleys, except at signalized intersections	15
Streetlights in the following neighborhoods, except at signalized intersections: Olde Town, Issaquah Highlands	15
Streetlights on Collector, Minor, and Principal Arterials except at signalized intersections and the specified streets below, and in Talus.	18
Streetlights on East Lake Sammamish Parkway, SR 900, Front Street north of Gilman Blvd.	30

**i** Adapted from MLO except for thresholds for Performance Method A. Identified from City context/code

- C. Performance Method A: Prescriptive lighting for small and simple projects  
 All luminaires shall be rated and installed according to Tables A (A.1 or A.2) and B. Table A establishes the maximum amount of onsite light, Table B specifies the allowed type of luminaire. Any project that does not comply with the thresholds in 18.614.050(C.1) must use Performance Method B. If there is uncertainty about compliance, then Performance Method B must be used.
1. A project whose use is not listed in 18.614.050(B.3) and is below both the following thresholds may choose to use the prescriptive method:
    - a. A building less than or equal to a total of 4,000 square feet, existing or with any proposed additions.
    - b. A site less than or equal to a half-acre (21,780 square feet).
  2. An outdoor lighting installation complies with this section if it meets the requirements of the following subsections:
    - a. Total Site Lumen Limit  
 The total installed initial luminaire lumens of all outdoor lighting shall not exceed the total site lumen limit established by using Table A.1 Parking Space Method or A.2 Hardscape Area Method. One method shall be used per permit application. For sites with existing lighting, existing lighting shall be included in the calculation of total installed lumens. (Existing lighting lumens are available on bulb packaging.) The total installed initial luminaire lumens is calculated as the sum of the initial luminaire lumens for all luminaires.
    - b. Parking Space Method  
 If the parking lot has or is proposed to have less than or equal to 10 spaces, including disabled parking, the applicant may propose to use Table A.1 (Parking Method); otherwise, Table A.2 (Hardscape Method) must be used if an applicant selects and qualifies for the Performance Method A (Prescriptive).

**Table A.1: Allowed Total Initial Luminaire Lumens per Site for Outdoor Lighting**

LZ 0	LZ 1	LZ 2	LZ 3
Lumens /space	lumens /space	lumens /space	Lumens /space
350	490	630	840

Refer to section 18.614.070 to determine Lighting Zone.

- c. Hardscape Area Method  
Use actual total onsite hardscape area to calculate.

**Table A.2: Allowed Total Initial Lumens per Site for Outdoor Lighting.**

LZ 0	LZ 1	LZ 2	LZ 3
Lumens / square foot of hardscape	Lumens / square foot of hardscape	Lumens / square foot of hardscape	Lumens / square foot of hardscape
0.5	1.25	2.5	5.0

Refer to section 18.614.070 to determine Lighting Zone.

3. When using this Performance Method A, a luminaire may be used if it is rated for the lighting zone of the site or lower in number for all BUG ratings; see definition with Table B. The following may not be used with Performance Method A:
  - a. Luminaires equipped with adjustable mounting devices permitting alteration of luminaire aiming in the field.
  - b. Luminaires that do not have BUG ratings or exceed the BUG ratings for the Light Zone.

**i** Following table and table notes largely adapted from MLO

**Table B - Maximum Allowable BUG (Backlight, Uplight, Glare) Ratings by Lighting Zone**

BUG ratings and maximum allowed allowable light	LZ 0	LZ 1	LZ 2	LZ 3
Maximum Allowed Backlight Rating (B)				
Greater than 2 mounting heights from property line	B1	B3	B4	B5
1 to less than 2 mounting heights from property line and ideally oriented	B1	B2	B3	B4
0.5 to 1 mounting heights from property line and ideally oriented	B0	B1	B2	B3
Less than 0.5 mounting height to property line and properly oriented	B0	B0	B0	B1
Maximum Allowed Uplighting Rating (U)				
Allowed Uplight Rating	U0	U1	U2	U3
Allowed % light emission above 90° for street or Area lighting	0%	0%	0%	0%
Maximum Allowed Glare Rating (G)				



BUG ratings and maximum allowed allowable light	LZ 0	LZ 1	LZ 2	LZ 3
Allowed Glare Rating for an ideally located luminaire	G0	G1	G2	G3
Any luminaire not ideally oriented with 1 to less than 2 mounting heights to any property line of concern	G0	G0	G1	G1
Any luminaire not ideally oriented with 0.5 to 1 mounting heights to any property line of concern	G0	G0	G0	G1
Any luminaire not ideally oriented with less than 0.5 mounting heights to any property line of concern	G0	G0	G0	G0

4. Table B Notes:

- a. LZ: Lighting Zone. See Section 18.614.070 to determine Lighting Zone.
- b. Maximum Allowed Backlight Rating: For property lines that abut public walkways, bikeways, plazas, and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section. NOTE: This adjustment is relative to Table B, Backlight and Glare only and shall not be used to increase the lighting area of the site.
- c. To be considered 'ideally oriented', the luminaire must be mounted with the backlight portion of the light output oriented perpendicular and towards the property line of concern.
- d. "Not ideally oriented": Any luminaire that cannot be mounted with its backlight perpendicular to any property line within 2X the mounting heights of the luminaire location shall meet the reduced Allowed Glare Rating in Table.
- e. Definitions:
  - (1) Backlight, for an exterior luminaire, is the lumens emitted by the luminaire in the direction opposite from the area intended to be lighted or more technically the quarter sphere below horizontal and in the opposite direction of the intended orientation of the luminaire. For luminaires with symmetric distribution, backlight will be the same as front light. A higher B rating simply indicates that the luminaire directs a significant portion of light behind the pole so a lower B rating will prevent unwanted light from interfering with neighboring properties.
  - (2) BUG is a luminaire classification system that classifies backlight (B), uplight (U), and glare (G).
  - (3) Glare is lighting entering the eye directly from luminaires or indirectly from reflective surfaces that causes visual discomfort or reduced visibility.
  - (4) Uplight, for an exterior luminaire, causes artificial sky glow and negatively affects astronomy; furthermore uplight not reflected off a surface is mostly energy waste. Technically it is flux radiated in the hemisphere at or above the horizontal plane.

**i** Following, Method B, from MLO and Stantec

D. Performance Method B: Lighting compliance by calculation

1. Any project or property that is subject to 18.614.050 and which does not qualify to use Performance Method A (see 18.614.050(C)) must use Performance Method B. A project may also elect to use Performance Method B to allow more flexibility in design or luminaire selection.
2. The entire outdoor lighting design shall be analyzed using industry standard lighting software including interreflections in the following manner:
  - a. Input data shall describe the lighting system including luminaire locations, mounting heights, aiming directions, and employing photometric data tested in accordance with IES guidelines. Buildings or other physical objects on the site must be included in the calculations.
  - b. Lighting in the ROW that may contribute onto the property must be included in the calculation.
  - c. Industry Standard Lighting Software is defined as lighting software that calculates point-by-point illuminance that includes reflected light using either ray-tracing or radiosity methods.
3. The design complies if:
  - a. Horizontal illuminance and uniformity ratios must meet IES Recommended Practices for the space type(s). More than one space type may apply to a project. All materials submitted must clearly identify the space type and the area it is applied to.

**i** Following from Stantec from based on 18.07.107

- b. The lighting complies with 18.614.040(A.8) and (A.9).
- c. Selected luminaires are fully shielded.

**i** Following adapted from 18.07.107 and MLO definition of Ornamental Lighting


#### E. Accent Lighting

1. Accent lighting is defined as 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. This could include lighting for building facades, architectural features, landscaping, public art, or flags.

**i** Following based on intent of MLO by limiting decorative lighting balanced against a space that's pleasant at night.

2. To ensure that accent lighting meets its aesthetic purpose without contributing to light pollution and does not create glare by being improperly directed, the following provisions apply:
  - a. Accent Lighting:
    - (1) Must be included in the calculation of Performance Method B and in compliance with IES recommendations.
    - (2) Prohibited Accent Lighting:
      - (A) building facades
      - (B) architectural features that cannot comply with 18.614.050(E.2.a (3)(D)) and landscape more than 15 feet above grade
      - (C) flags as defined in IMC 18.11, other than the United States federal flag
      - (D) uncontained uplighting.
    - (3) Allowed Accent Lighting:

- (A) Lighting of United States federal flags; see IMC 18.11, Signs, for definition of flags
- (B) Architectural features and landscape 15 feet and below surrounding grade.
- (C) Ground mounted art.
- (D) Uplighting contained by roof, overhang, eave, opaque canopy, and similar elements which prevent uplighting from spilling into the sky and creating light pollution. This would apply to lighting of building mounted art.

 Insert diagram to illustrate contained uplight, above.

 Following, on Direction adapted from 18.07.107.G. Location guidance deleted as too vague.

b. Direction:

- (1) Accent lighting shall be aimed and shielded so that light is directed only on those features intended for illumination.
- (2) Lighting must not produce glare to pedestrians, cyclists or motorists within the property or from adjacent property or right-of-way.
- (3) Fixtures shall be locked into position after aiming.


 Following from a CIDDS 17.4.D rewrite

- c. This non-essential outdoor lighting must be turned off or substantially reduced consistent with 18.614.050(B.7).

 Following subsection is new code. IMC only regulated construction lighting through SEPA - 18.07.107.K.2

- F. Temporary Construction Site Lighting. As temporary lighting, construction sites may light their sites as needed during the period from 30 minutes before and 30 minutes after the City's construction hours. If the project is granted extended work hours per IMC 16.35, then the hours of lighting are also extended. However at all times light must be directed within the construction site and property, and not directed to adjacent properties or roads. Outside of the hours above, only security lighting is permitted.

## 18.614.060 Residential outdoor lighting

 18.614.060 is adapted from the MLO

- A. Applicability of section 18.614.060. All outdoor lighting must comply with this section if a property or project is a residential use and contains seven or less dwelling units and not having a common outdoor areas. See definitions, 18.614.100, for Common Outdoor Area.
- B. Permits: See 18.614.090(A).
- C. General requirements and prohibitions.
  - 1. Outdoor lighting may not be aimed onto adjacent properties including low voltage and line voltage landscape lighting. In addition, shielded directional flood lighting must be aimed so that direct glare is not visible from adjacent properties.
  - 2. No luminaires may be place at more than 15 feet from grade.

3. If a United States flag will be flown at night, it may be lit to the minimum necessary to comply with federal law. Lights may not be compliant with Table 18.614.060(xx).
  4. Unshielded luminaires are prohibited. All outdoor luminaires must be fully shielded.
- D. Maximum allowed lumens for lighting of residential uses.

**Table C - Residential Lighting: Maximum Allowed Luminaire Lumens by Lighting Zone**

	LZ 0	LZ 1	LZ 2	LZ 3
	Lumens	Lumens	Lumens	Lumens
Unshielded Luminaires at one entry only	Not allowed	420	630	630
Each fully shielded luminaire	630	1,260	1,260	1,260
Each line voltage landscape light	Not allowed	Not allowed	1,050	2,100
Each low voltage landscape light	Not allowed	Not allowed	525	525
Each shielded directional flood light	Not allowed	Not allowed	1,260	2,100

E. Table B Notes

1. Refer to section 18.614.070 to determine Lighting Zone.
2. Each row in Table B specifies the Maximum Allowed Luminaire Lumens for that type of light.
3. Luminaire lumens equals Initial Lamp Lumens for a lamp, multiplied by the number of lamps in the luminaire.
4. One partly shielded or unshielded luminaire at the main entry, not exceeding the allowed lumen output for Maximum Allowed Luminaire Lumens for Unshielded Luminaires at one entry only. Partly Shielded Luminaire is defined as a luminaire with opaque top and translucent or perforated sides, designed to emit most light downward.

F. Other residential outdoor lighting.

1. For docks lighting on Lake Sammamish, refer to 18.804, Shoreline Master Program.
2. For lighting of houses, structures, and streets in the Hillside Overlay, refer to 18.810.

## 18.614.070 Lighting zones

**i** Lighting Zones descriptions are from the MLO. Categorization of Issaquah's zones is based on the MLO's descriptions. (Note light zones are currently used in 18.07.107)

- A. Description and purpose. The Lighting Zone determines the limitations for lighting as specified in this chapter. Lighting Zone is defined as the overlay zoning system establishing legal limits for lighting for particular parcels, areas, or districts in the City. The Lighting Zones are established as follows:
1. Lighting Zone 0 (LZ 0): No ambient lighting
    - a. Description: Areas where the natural environment will be seriously and adversely affected by lighting. Impacts include disturbing the biological cycles of flora and fauna and/or detracting from human enjoyment and appreciation of the natural environment. Human activity is subordinate in importance to nature. The vision of human residents and users is adapted to the darkness, and they expect to see little or no lighting. When not needed, lighting should be extinguished.
    - b. Zones:
      - (1) TP-NRCA Tradition Plateau – Natural Resource Conservation Area
      - (2) C-REC Conservancy Recreation
      - (3) CF-OS Community Facilities – Open Space (for portions with critical areas)
      - (4) CF-OSPO Community Facilities – Open Space Privately Owned (for portions with critical areas)
  2. Lighting Zone 1 (LZ 1): Low ambient lighting
    - a. Description: Areas where lighting might adversely affect flora and fauna or disturb the character of the area. The vision of human residents and users is adapted to low light levels. Lighting may be used for safety and convenience but it is not necessarily uniform or continuous. After Dark Sky Hours, most lighting should be extinguished or reduced as activity levels decline.
    - b. Zones:
      - (1) C-RES Conservancy Residential – 1 du/5acres
      - (2) CF-OS Community Facilities – Open Space (for portions without critical areas)
      - (3) CF-OSPO Community Facilities – Open Space Privately Owned (for portions without critical areas)
      - (4) SF-E Single Family Estates – 1.24 du/acre
      - (5) SF-S Single Family Suburban – 4.5 du/acre
      - (6) SF-D Single Family Duplex – 7.26 du/acre
      - (7) SF-SL Single Family Small Lot – 7.26 du/acre
      - (8) UVSF-0 Urban Village – Single Family, Zoning cap 0 du/lot
      - (9) UVSF-1 Urban Village – Single Family, Zoning cap 1 du/lot
  3. Lighting Zone 2 (LZ 2): Moderate ambient lighting
    - a. Description: Areas of human activity where the vision of human residents and users is adapted to moderate light levels. Lighting may typically be used for safety and convenience but it is not necessarily uniform or continuous. After Dark Sky Hours, lighting may be extinguished or reduced as activity levels decline.

b. Zones:

- (1) CF-R                      Community Facilities – Recreation
- (2) CF-RPO                  Community Facilities – Recreation Privately Owned
- (3) CF-F                      Community Facilities – Facilities
- (4) CF-FPO                  Community Facilities – Facilities Privately Owned
- (5) MF-M                      Multifamily Medium – 14.52du/acre
- (6) MUR                      Mixed Use Residential – 14.52du/acre
- (7) MF-H                      Multifamily High – 29du/acre
- (8) VR                        Village Residential
- (9) UV- MF                  Urban Village – Multifamily
- (10)UV-MUR                Urban Village – Mixed Use Residential
- (11)PO                        Professional Office
- (12)UV-VC                  Urban Village – Village Center

4. Lighting Zone 3 (LZ 3): Moderately high ambient lighting

a. Description: Areas of human activity where the vision of human residents and users is adapted to moderately high light levels. Lighting is generally desired for safety, security and/or convenience and it is often uniform and/or continuous. After Dark Sky Hours, lighting may be extinguished or reduced in most areas as activity levels decline.

b. Zones:

- (1) CBD                      Cultural and Business District
- (2) UV-COM/RET          Urban Village–Commercial /Retail
- (3) UC                        Urban Core
- (4) MU                        Mixed Use
- (5) MU-CI                  Mixed Use–Central Issaquah
- (6) IC                        Intensive Commercial
- (7) IC-CI                  Intensive Commercial –Central Issaquah
- (8) M                        Mineral Resources

5. Lighting Zone 4 (LZ 4): High ambient lighting

a. Description: Areas of human activity where the vision of human residents and users is adapted to high light levels. Lighting is generally considered necessary for safety, security and/or convenience and it is mostly uniform and/or continuous. After Dark Sky Hours, lighting may be extinguished or reduced in some areas as activity levels decline.

b. Zones: None

6. New zones. If a new land use zone is created after the enactment of this chapter, the Director will have the authority to determine the appropriate light zone based on the most analogous land use zone described in this section.

## 18.614.080 Design standards for outdoor lighting

**i** Design Standards are synthesized from CIDDs, Olde Town, and 18.07.107.

**!** Images from CIDDs, Olde Town, and 18.07.107 to be integrated into Design Standards section.

- A. Purpose. A vibrant city relies on being active most of the day and into the evening. Thus lighting is necessary to encourage pedestrian and bicycle activity beyond daylight hours. The quality of light can have a strong positive impact on the overall quality of the nighttime environment. Furthermore, due to the long nights during the Pacific Northwest winters, lighting can have a significant impact on the use of exterior, outdoor areas during hours when most people are awake, yet it is dark. Creating a hierarchy of light that contributes to understanding the public realm and addresses the safety and security of both pedestrian, bicycle, and vehicular traffic is critical to a successful after dark environment. To encourage more pedestrian and bicycle activity, visibility must be enhanced through the quality of the light and its sources.
- B. General design standards.
1. Illumination of the entire volume, encompassing horizontal and vertical elements, is a key ingredient in perception of the space. Illuminating only the horizontal (ground) plane will result in spaces perceived to be uninteresting or unsafe. Lighting must be used to illuminate the entire volume as a key ingredient in perception of the space.
  2. Illumination levels vary depending on activities. The overall illumination must be the minimum necessary to achieve its purpose. Specific elements should be emphasized with slightly higher light levels such as plazas, and pedestrian circulation paths such as stairs, ramps, abrupt changes in walking direction, crossing vehicle lanes, or other changes in elevations that can become trip hazards.
  3. The types and locations of lights contribute to the public realm not only in the nature of light, but the nature of the fixtures. Streetlights, lit bollards, sconces, and gooseneck lamps, for example, all have a presence that shapes the urban character, whether they are illuminated or not. Use fixtures and locations that contribute to the neighborhood or project's form and help shape the character whether illuminated or not.
  4. Where off hours lighting is desired for security purposes (such as at loading docks and employee entrances) or for safety purposes (such as where lighting has been lowered or turned off for Dark Sky Hours), motion sensors, astronomical clocks, or similar devices must be used. The following design standards apply:
    - a. Motion sensor may be used where the user will be passing through (such as on a trail or private walkway), the route is unpredictable, the area is small (such as a waste enclosure) and/or a user is unlikely to be familiar with the equipment.
    - b. Astronomic Clocks with manual overrides will be used when users are coming from fixed locations (such as a building entry), the lighting is needed in a larger area, and/or a user is likely to be familiar with the equipment. Astronomic Clocks with manual overrides are preferred.
    - c. The motion sensor or Astronomic Clock may be activated for a duration of no more than five minutes unless it can be objectively demonstrated that a longer period is needed. For example, if the distance to be walked is calculated based on an average user to be longer, which would then establish the lengthier duration.
    - d. The motion sensors may not be activated by off-site movement.
    - e. Security Lighting:

(1) The luminaire must be fully shielded, aimed downward to light only the designated areas and meet limits in 18.614.040(A.8 and A.9).

(2) Lighting fixture(s) may emit up to 1200 lumens.

5. Permanent lighting may not be attached to trees. Temporary, seasonal, or festival lighting may be placed in trees in a manner that does not harm the tree.

C. Street and circulation design standards.

1. Streetlights will use the City's Master Street Light plan to identify public light fixtures in color, style, height, and other characteristics.

2. Streetlight poles must be located in pairs directly across the street from each other or staggered, resulting in an intentional pattern created by poles on both sides of the street.

3. Streetlight poles must be coordinated with other street elements especially those that impact the fixture's ability to illuminate the intended area. Street tree design must be coordinated with streetlight placement, to ensure that both at installation and as the tree matures that streetlights will achieve the required lighting and uniformity levels.

4. For alleys, the minimum lighting necessary to ensure safety. Appropriate lighting may be provided by the lights associated with individual residences along the alley rather than streetlights or other shared lighting. Lighting should be placed to eliminate glare into adjacent uses. If lighting in alleys is located on private structures instead of independent fixtures, such as poles, lighting must be programmed to come on at dusk and be uniformly reduced at a specified time.

5. Pedestrian and/or bicycle facilities must be lit to ensure users are safe and feel safe.

a. Multi-modal pathways, not associated with a vehicular circulation facility, must have a low but uniform light level. Appropriate lighting may be provided by building mounted lights rather than separate light fixtures if appropriate to the character of the space.

b. Light fixtures for street corridors serving vehicles, pedestrians, and/or bicycles, must meet the needs of all users rather than providing light fixtures for each user separately; however, for some streets where tall fixtures are needed to light the vehicular travelways consistent with lighting levels and uniformity, separate fixtures will be necessary and appropriate.

6. Trail and pedestrian only routes must have lighting that creates a sense of safety without adversely affecting the surrounding uses, such as abutting residences. Trail lighting associated with critical areas is addressed in 18.614.080(C.9).

7. Poles may be located on just one side of the pedestrian and bicycle facilities or paired or staggered like vehicular Circulation Facilities, as is appropriate to the character of the facility, urban design, and adjacent uses.

8. Lighting within and adjacent to critical areas must have no spillover light into the critical area in accordance with 18.614.040(A.8). Trails within Critical Areas must intentionally be left dark to protect the natural habitat for nocturnal animals and wildlife with the following exceptions:

a. Non-motorized bridges within Critical Areas may have a low level of the light for safe use, and the light should be contained and focused on the bridge deck.

b. Publicly owned trails may use motion detectors per 18.614.080(C.9) to increase trail lighting to allow a user's safe passage through critical areas if the City or other agency has determined that lit passage after dark is appropriate and necessary.

9. Walking and biking routes must be lit to illuminate the faces of users, to a height of approximately six feet high. Spillover lighting from adjacent sidewalks, streets, buildings, etc. may fulfill this requirement



and must be incorporated into the lighting calculations. Internally illuminated bollards may be used, and are appropriate to highlight pedestrian routes, demark changes between users (e.g. pedestrian and vehicular areas), steps or other grade changes. Illuminated bollards should not be the only light source when it is useful to illuminate people's faces, to create a sense of safety.

D. Community space design standards.

1. Community space lighting will have low levels of uniform illumination for safety, with higher levels for focal points or areas of high activity, such as walking routes.
2. Recreation and children's play areas must be illuminated if they are intended for use after dark with controls so that they are "off" after hours. Areas not intended for use after dark may not be illuminated. For publicly owned recreation and children's play areas, see 18.614.050(B.7.c).

E. Building and specific use design standards.

1. Primary building entrances and individual entrances to retail or other separate uses and residences along streets, plazas, trails, and similar uses will highlight the entries with lighting. This does not apply to employee only entrances or entries used only for exiting.
2. To avoid glare and minimize distraction, canopy lighting, such as with automobile fueling stations, hotel or hospital entrances must be contained by the canopy design and luminaire selection and will not be mounted to the canopy sides (fascia) or top. (Sign lighting on the sides of the canopy are regulated by the 18.11, Sign Code.) This can be achieved by one of the following methods:
  - a. The luminaires are fully recessed into the canopy; or
  - b. If the luminaires are surface mounted, they have no exposed lens outside of the canopy area, such as through the use of a soffit.
  - c. If indirect lighting is desired, the light may be beamed upward and then reflected won from the underside of the canopy. When this method is used, light fixtures must be shielded so that direct illumination is focused exclusively on the underside of the canopy.
  - d. And the luminaires comply with the Glare portion of the BUG rating for that lighting zone.

! Diagram to be inserted with 2.b above.

! Cross code need: Landscape to incorporate evergreen tree buffer between sports field lights and adjacent residential uses to screen from lights.

3. When the following are illuminated, lighting fixtures must be mounted, aimed and shielded so that their beams fall within the primary playing area and so that no illumination is directed off-site: outdoor performance venue and sport or recreation fields, for activities including sports, ballgames, and play. All luminaires must be directed or shielded so as to not be visible off-site to roads or residences. Pole heights may only be as tall as necessary to meet lighting requirements for the Class of Play and Facilities.
4. Sports and event lighting: The main event lighting must be turned off no more than 30 minutes following the end of the event. A secondary lighting system with lower height and light level lighting must be used to facilitate patrons exiting the event location and for maintenance crews.

F. Olde Town design standards.

1. Lighting selected both on-site and in the right of way must complement the historic character of Olde Town through complementing the City's public light fixtures in color, style, and other architectural features.
2. Light Use through block passages and connections to and from parking.

3. At Olde Town's gateways, lighting will be used as one of the elements to highlight entrance into the neighborhood.

G. Parking facility design standards.

1. Structured parking, including the roof, must ensure no direct light spill from fixtures or vehicles and must minimize glare spilling from garage fixtures and vehicles on to the adjacent roadways, off-site views, and residential areas, and eliminate or significantly reduce visibility of light sources by shielding the view of the light fixtures when viewed from outside the garage. Techniques include limiting openings or screening openings with architectural and/or landscape elements.
2. Light standards may not be located where they will interfere with or impinge on parking stalls, stacking areas, ingress or egress, or marked pedestrian routes.
3. Parking lot light poles must be located so that trees within the parking lots do not obscure the operation of the light pole.

## 18.614.090 Administration of Outdoor Lighting Standards

**i** Adapted from Sign Code except Inspections which addresses issues staff have observed.

A. Permits.

1. City permits are required for all lighting except:
  - a. Lighting that is not covered by this code; see 18.614.020 Applicability.
  - b. Lighting that is exempt; see 18.614.030, Exempt from Outdoor Lighting Standards.
  - c. Lighting for Residential projects per 18.614.060, when all standards are met and compliant fixtures are used; unless another City construction permit, such as a building permit, is required. Then lighting must be incorporated into that permit for review.
  - d. Maintenance and cleaning. See 18.614.090(C).
2. Applicants must obtain all applicable permits associated with the proposed lighting before constructing, installing, replacing, or repairing the outdoor lighting, including permits required by other applicable codes, except when a permit is not required per 18.614.090. Other applicable permits may include, but are not limited to, other local, state, and federal codes include applicable electrical and energy codes and applicable sections of the building code.
3. Permit submittal to City's Permit Center shall include all information required to demonstrate compliance with the standards. Also see the City's submittal requirements.

- B. Inspections. All lighting permitted by this chapter may be subject to inspection by the Director. If a complaint is filed or violation suspected, the City may request the property owner hire a consultant to evaluate the lighting to determine if it is consistent with this chapter or the City may hire a consultant to either peer review the evaluation or perform the evaluation if the property owner does not do so within 30 days of receiving a written notice. Any cost incurred by the City to determine if the lighting is in compliance will be the responsibility of the property owner.

**i** Adapted from Sign Code adopted in 2021

C. Maintenance

1. Maintenance or Cleaning does not require a permit. Replacement of lighting is allowed without a permit following temporary removal for maintenance or cleaning of lighting or following temporary removal for

permitted building facade changes. This exception does not include any structural, electrical, or luminaire changes.

2. All outdoor lighting, together with their supports, attachments, and anchors, must be kept in repair and in a safe condition.
3. Lighting is maintained by the property owner or person in possession of the permit.
4. The ultimate responsibility for any outdoor lighting is borne by the legal owner of the property on which the outdoor lighting is located.
5. Maintenance must be such that the outdoor lighting continues to conform to the conditions imposed by the permit.
6. A damaged outdoor light must be repaired within 30 days.
7. All lighting components including metal pole covers, cabinets, raceways, shields, and cabinets must be kept free of rust and rust stains.

**i** Adapted from the MLO except for Existing Lighting which relies on Non-conforming chapter.

- D. Existing lighting. Lighting installed prior to the effective date of this chapter must comply with 18.08 Non-conforming.
- E. Additions or alterations.
  1. Any new outdoor lighting must meet the requirements of this Chapter regardless of any threshold provided.
  2. Major additions for non-residential and multiple dwellings governed by 18.614.050. If a major addition occurs on a property, lighting for the entire property must comply with the requirements of this Title. Property means all contiguous land in common ownership. For purposes of this section, the following are considered to be a major addition:

**!** "Cumulative additions" is altered from MLO to three years rather than from the effective date as that would require a citywide inventory.

- a. Additions of 25% or more in terms of additional dwelling units, gross floor area, seating capacity, or parking spaces, either with a single addition or with cumulative additions within a three-year period.
- b. Single or cumulative additions, modification, or replacement of 25% or more of installed outdoor lighting luminaires within a three-year period.
3. Minor modifications, additions, or new lighting fixtures for non-residential and multiple dwellings governed by 18.614.050.
  - a. For non-residential and multiple dwellings, all additions, modifications, or replacement of more than 25 percent of outdoor lighting fixtures existing within a three year period requires the submission of a complete inventory and site plan detailing all existing and any proposed new outdoor lighting.
4. Right-of-way:
  - a. Private Development that is required to replace, add, or update street lighting must comply with the lighting requirements of this chapter.
  - b. Capital Facilities Projects must comply with the requirements of the Street Standards.

**i** 18.07.107 relies on Variances for Lighting. CIDDS relies on AASs.

F. Variances.

1. Refer to variance criteria established in the Procedures chapter, 18.xxx.xxx.
2. For lighting within the right-of-way, the process established by the Street Standards applies. This includes use of cobra heads on existing power poles for interim street lighting.

G. Penalties: See 18.xxx.xxx.

## 18.614.100 Definitions

**i** Definitions are from the MLO except Public Realm which is from the sign code.

**!** Definitions such as Community Space or Common Areas will be considered whether to use unique definitions or existing/common ones from 18.02 or CIDDS Chap. 2

- A. Refer to definitions in IMC 18.02 except definitions specific to this chapter, some of which are shown in 18.11.100 below. Definitions which are used in one location within this chapter have been incorporated into that section.
1. Astronomic Clock: An automatic lighting control device that switches outdoor lighting relative to time of solar day with time of year correction.
  2. Common Outdoor Areas: One or more of the following: a parking lot or a parking structure; or a common entrance or public space shared by the occupants and/or residents, or accessible to the public.
  3. Community space: Public lands containing resource protection, recreation or public amenity such as parks, plazas, trails, informal gathering areas, community gardens, and other similar facilities and areas. Some community spaces are required, others are encouraged.
  4. 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.
  5. Lamp: A generic term for a source of optical radiation (i.e., "light"), often called a "bulb" or "tube". Examples include incandescent, fluorescent, high-intensity discharge (HID) lamps, and low-pressure sodium (LPS) lamps, as well as light-emitting diode (LED) modules and arrays.
  6. Landscape lighting: Lighting of trees, shrubs, or other plant material as well as ponds and other landscape features.
  7. Landscape lighting, line voltage: Landscape lighting powered at 120 to 277 volts.
  8. Landscape lighting, low voltage: Landscape lighting powered at less than 24 volts, limited to luminaires having a rated initial luminaire lumen output of 525 lumens or less, and requiring the use of a transformer.
  9. Light pollution: Any adverse effect of artificial light including, but not limited to, glare, light trespass (defined as light that falls beyond the property it is intended to illuminate), sky-glow, energy waste, compromised safety and security, and impacts on the nocturnal environment. Skyglow is defined as the brightening of the nighttime sky that results from scattering and reflection of electric light by moisture and dust particles in the atmosphere. Skyglow is caused by light directed or reflected upwards or sideways and reduces one's ability to view the night sky.

10. Lumen: The unit of measure used to quantify the amount of light produced by a lamp (as distinct from “watt,” a measure of power consumption).
11. Luminaire: The complete lighting unit (fixture), consisting of a lamp, or lamps and ballast(s) (when applicable), driver(s), together with the parts designed to distribute the light (reflector, lens, diffuser), to position and protect the lamps, and to connect the lamps to the power supply.
12. Luminaire, fully shielded: A luminaire constructed and installed in such a manner that all light emitted by the luminaire, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal plane through the luminaire's lowest light-emitting part.
13. Luminaire, shielded directional: A luminaire, such as a flood light, is a luminaire that includes an adjustable mounting device allowing it to be aimed in any direction and containing a shield, louver, or baffle to reduce direct view of the lamp.
14. Luminaire, unshielded: A luminaire capable of emitting light in any direction, including downwards.
15. Luminaire lumens: For luminaires with relative photometry per Illuminating Engineering Society (IES), it is calculated as the sum of the initial lamp lumens for all lamps within an individual luminaire, multiplied by the luminaire efficiency. Relative photometry is defined as the photometric measurements made of the lamp plus luminaire, and adjusted to allow for light loss due to reflection or absorption within the luminaire. Reference standard: IES LM-63 or as revised.
16. Mounting height: The height above grade level at which light exits the fixture.
17. Public realm: The space that is generally publicly accessible, regardless of ownership, including streets, roads, squares, forecourts, parks, sidewalks, trails, and open spaces.