

CITY OF SOMERVILLE

**DARK SKY POLICY FOR OUTDOOR LIGHTING**

**1. Intent**

- a. To increase night sky visibility, improve nighttime vision and the color rendition of outdoor light, and reduce the impacts of outdoor lighting for people and wildlife.
- b. To conserve energy and reduce the consumption of electricity for lighting purposes.

**2. Purpose**

- a. To reduce light pollution and glare from outdoor lighting fixtures and reduce excessive light levels as existing fixtures are replaced over time.
- b. To permit the use of outdoor lighting that does not exceed the minimum levels specified by recommended practices of the Illuminating Engineering Society (IES) for night-time safety, utility, security, productivity, enjoyment, and commerce.
- c. To minimize adverse impacts of lighting such as light trespass, obtrusive light spillover, and harmful glare.
- d. To curtail light pollution, reduce sky-glow, and improve the nighttime environment.

**3. Applicability**

- a. This section is applicable to all outdoor lighting fixtures, except for the following:
  - i. Lighting within rights-of-way or easements for the principal purpose of illuminating streets, alleys, mid-block passages, or civic spaces;
  - ii. Sign lighting (see SZO §12.4.2. *Lighting*);
  - iii. Lighting for public monuments and statuary;
  - iv. Holiday lighting;
  - v. Outdoor lighting used for emergency equipment and work conducted in the interest of law enforcement or for public health, safety, or welfare;
  - vi. Underwater lighting;
  - vii. Temporary lighting for theatrical, television, performance areas and construction sites; and
  - viii. Low voltage landscape lighting controlled by an automatic device that is set to turn the lights off at one hour after the site is closed to the public.

**4. Lighting Standards**

- a. General
  - i. Outdoor lighting is regulated by the amount of light emitted, the color temperature of light, and the design of light fixtures to achieve certain desired environmental characteristics.
- b. Amount of Light Emitted
  - i. The following standards are applicable in the RB and RC district:  
At installation, individual luminaires may not exceed the lumen limits specified on the Permitted Lumens Table.
  - ii. The following standards are applicable to all other districts:  
At installation, the total lumens of all outdoor lighting may not exceed the lumen limits specified on the Permitted Lumens Table.
- c. Color

- i. All luminaires in all districts must have light sources with a color temperature or correlated color temperature (CCT) of 3000 Kelvin or less.
  - ii. The color rendering index of all luminaires in all districts must be sixty-five (65) or higher.
- d. Light Fixtures
- i. The following standards are applicable in the RA & RB districts:
    - All outdoor luminaires must be full cutoff or fully shielded to emit no light above horizontal (ninety degrees (90°) above nadir), with the following exceptions:
      - Up to two partly shielded or unshielded luminaires at any principal entrance.
      - Low voltage lighting that does not project onto adjacent properties.
      - Shielded directional flood lighting that is aimed so that direct glare is not visible from adjacent properties.
      - Open flame gas lamps.
      - Lighting installed with a vacancy sensor, which extinguishes the lights no more than fifteen (15) minutes after the area is vacated.
    - Luminaires with the International Dark-Sky Association's Fixture Seal of Approval are recommended.
  - ii. The following standards are applicable to all other districts:
    - All luminaires must be rated and installed according to the *Maximum Backlight, Uplight and Glare (BUG) Ratings Table*, which identifies the maximum backlight (B), uplight (U), and glare (G), as rated by the luminaire manufacturer, allowed in each zoning district.
    - BUG rating limits are based on the internal and external design of a luminaire, its aiming, and the initial lumens. The ratings permitted by the *Maximum Backlight, Uplight and Glare (BUG) Ratings Table* differ based on the distance the luminaire is installed from the property line, in multiples of the mounting height of the luminaire
    - Luminaires equipped with adjustable mounting devices permitting alteration of luminaire aiming are prohibited.

**Permitted Lumens Table**

	<b>RA &amp; RB</b>	<b>RC &amp; NB</b>	<b>OTHERS</b>
Unshielded luminaires at principal entrances	630 lumens	--	--
Unshielded luminaires, any other locations	315 lumens	--	--
Fully Shielded luminaires	1,260 lumens	--	--
Landscape Lighting (total)	1,050 lumens	--	--
Landscape Lighting, Low Voltage (total)	525 lumens	--	--
Shielded Directional Flood Lighting	1,260 lumens	--	--
Lumens/sf Impervious Surface Area (per square foot of illuminated area)	2.50 lumens	2.50 lumens	5.00 lumens
Building Entrances/Exits (per door, installed within twenty (20) feet of the door)	+2,000 lumens	+2,000 lumens	+4,000 lumens
Building Facades (per square foot of illuminated facade, for luminaries aimed at the facade)	+8/sf	+8/sf	+16/sf
Outdoor Cafes (per square foot of cafe area, within two (2) mounting heights of the luminaries)	+5/sf	+5/sf	+10/sf
Outdoor Displays (per square foot of outdoor sales area, within two (2) mounting heights of the luminaries)	+8/sf	+8/sf	+16/sf

**Maximum Backlight, Uplight, and Glare (BUG) Ratings Table**

	<b>RA &amp; RB</b>	<b>RC &amp; NB</b>	<b>OTHERS</b>
Greater than 2 mounting heights from property line.	B4	B5	B5
One (1) to less than two (2) mounting heights from property line <sup>2</sup> and ideally oriented.	B3	B4	B4
0.5 to 1 mounting heights from property line <sup>2</sup> and ideally oriented.	B3	B3	B3
Less than 0.5 mounting height to property line <sup>2</sup> and ideally oriented.	B0	B1	B1
Allowed uplighting rating	U2	U3	U3
Allowed percentage light emission above 90 degrees for street or area lighting.	0%	0%	0%
Allowed Glare Rating	G2	G3	G3
Any luminaire not ideally oriented with 1 to less than 2 mounting heights to any property line <sup>2</sup> of concern.	G1	G1	G1
Any luminaire not ideally oriented with 0.5 to less than 1 mounting heights to any property line <sup>2</sup> of concern.	G0	G1	G1
Any luminaire not ideally oriented with less than 0.5 mounting heights to any property line <sup>2</sup> of concern.	G0	G0	G0

<sup>1</sup> An 'ideally oriented' luminaire must be mounted with its backlight portion of the light output oriented perpendicular and towards the property line of concern.

<sup>2</sup> An additional five (5) feet may be added to this calculation for any property line abutting a civic space. Any property line abutting a thoroughfare may be considered to be located at the centerline of the thoroughfare for the purpose of determining compliance with maximum BUG ratings.