

19.73.110 – Purpose.

A. The purposes of this chapter are to.

1. Encourage lighting practices that minimize light pollution, glare, light trespass, and sky glow to curtail the night sky's visual environment's degradation.
2. Encourage lighting practices that promote energy conservation.
3. Maintain nighttime safety, utility, and security and prevent unnecessary or inappropriate outdoor lighting and lighting nuisances on properties.
4. Prevent unnecessary or inappropriate outdoor lighting and lighting nuisances on properties.
5. Maintain the rural atmosphere and community character of the Metro Township.
6. Preserve and enhance views of the night sky and protections for nocturnal wildlife.

19.73.111 - Scope and Applicability.

A. Compliance.

1. Lighting installed and/or replaced after the effective date hereof in all zones in the Metro Township shall conform to the requirements established by this Chapter.

B. Nonconforming Uses.

1. Lighting that does not meet the requirements of this Chapter and is not exempt from the requirements of this chapter shall be considered a nonconforming use. The Metro Township will encourage property owners to voluntarily bring nonconforming lighting into compliance with this chapter.

C. Modifications.


1. Compliance through the Building Permit Process: The Metro Township requires that lighting be brought into compliance through the building permit process;
 - i. If modifications are made to any structure which requires the removal of a nonconforming luminaire, the luminaire shall be replaced or modified to bring it into compliance with the provisions of this Chapter.
 - ii. If the proposed structural modifications represent a value of 50% or more of the property value at the time of submittal. A lighting plan for the property shall be submitted subject to the conditions outlined in Section 19.73.117 - Application and Review Procedures.
2. In the event a nonconforming luminaire is replaced, destroyed, damaged, or modified by fifty percent (50%) or more, the replacement shall comply with the provisions of this Chapter.


D. Conflicts.


1. In the event any federal, state, or county statute or regulation conflicts with any provision of this Chapter, the most restrictive statute, regulation, or provision shall govern unless otherwise required by law. In the event any provision of the Metro Township's other ordinances conflicts with the provisions of this Chapter, the provisions of this Chapter shall govern.


Summary of Comments on 19.73.110 NIGHT LIGHTING (01252023).pdf


Page: 1

 Number: 1 Author: Matt Starley Date: 12/15/2022 9:18:00 AM
How much do we want to articulate the outdoor language v night lighting language?

 Number: 2 Author: Matt Starley Date: 1/25/2023 2:25:00 PM
Jim has suggested that we remove this language. I think that there is some merit in this suggestion. Any opinions

 Number: 3 Author: Matt Starley Date: 12/15/2022 9:13:00 AM
We do not want them to replace every fixture. They should have to bring the entire property into compliance.

 Number: 4 Author: Matt Starley Date: 12/15/2022 9:12:00 AM
Are we saying here that if you have to replace all of your fixtures if you are applying for a building permit.

 Number: 5 Author: Matt Starley Date: 1/25/2023 2:27:00 PM
We need to check to see if this is being modified by the proposed code update changes.

19.73.112 - Conditions and Standards.

A. Minimum Necessary.

1. Outdoor (exterior) lighting shall be the minimum necessary to provide for safety and functionality. The lowest-lumen light source necessary for a lighting application shall be used.
 - a. All lighting shall be purpose-driven:
 - i. Useful: All light used shall have a clear purpose.
 - ii. Targeted: Light shall be directed only to where needed.
 - iii. Low Light Levels: Light shall be no brighter than necessary.
 - iv. Controlled: Light shall be used only when it is useful.
 - v. Color: Where possible, warmer color lights shall be used.




B. Allowable Applications.

1. Outdoor lighting in compliance with the Chapter shall only be allowed in the following applications:
 - a. To illuminate the entrances to buildings (including garage entrances).
 - b. To illuminate pathways and walkways.
 - c. To illuminate parking areas and parking area access lanes.
 - d. To illuminate gathering areas, such as patios, pool and hot tub areas, dining areas, and recreation areas.
 - e. For security purposes, provided all the following conditions are met:
 - i. The lighting is activated by motion sensors and shuts off, within or before, fifteen (15) minutes after each activation or when the activity involved is completed.
 - ii. The lighting is placed and directed such that no direct illumination falls outside the property boundaries where the security lighting is placed.
 - iii. Sensors are adjusted to meet site conditions in order to avoid repetitive activation by wildlife and/or wind disturbance.
 - f. To illuminate signage.
 - g. For Accent Lighting, provided all the following conditions are met:
 - i. All accent lighting is mounted on and illuminating only building facades visible from an adjacent public right of way.
 - ii. The accent lighting is sufficiently shielded such that the light source is not visible beyond the property boundaries.
 - iii. The accent lighting is directed such that all light shines on the building facade, not on the adjacent property or the night sky.
 - iv. The accent lighting is not used to illuminate landscape, landscape elements, statues, or other similar features.
 - h. To illuminate outdoor water features, provided all the following conditions are met:
 - i. The lighting is angled below the horizontal plane.
 - ii. The lighting is placed underneath or behind the water such that the water diffuses the light from all points where the light is visible.

C. Total Light Output.

1. Commercial Properties and Religious Institutions - The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 2.5 footcandles per square foot of hardscape

Page: 2

-
-  Number: 1 Author: Matt Starley Date: 12/15/2022 9:04:00 AM
May need to be a clause that addresses repetitive activation by wildlife or wind disturbance.
-
-  Number: 2 Author: Matt Starley Date: 1/25/2023 2:32:00 PM
Might want to consider language that suggest "when not required or desired for security purposes."
-
-  Number: 3 Author: Matt Starley Date: 12/15/2022 8:40:00 AM
Add language that address if they follow all of the regulations in this section.
-

2. Multi-Family Residential Properties - The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 2.0 footcandles per square foot of hardscape.
 3. Single-Family Residential Properties - The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 1.0 footcandles per square foot of hardscape.
 - a. Single-Family Residential units used for overnight accommodations or commercial uses shall comply with Single-Family Residential standards for total light output.
 4. For all Properties – Light output from indoor and outdoor sources shall not exceed 0.1 footcandles at the property line²
- D. Maximum Color Temperature of All Outdoor Lighting Fixtures.
1. The correlated color temperature of any outdoor lighting fixture shall not exceed three thousand degrees kelvin (3000°K).
- E. Fully Shielded Fixture Requirements.
1. Unless specifically exempted by this Chapter, all outdoor lighting shall use fully shielded fixtures that are designed and constructed so that:
 - a. No light is emitted and/or reflected above the horizontal plane of the fixture.
 - b. Lighting is placed and/or directed at a location, angle, and/or height to prevent direct illumination outside the property boundaries where the light fixtures are located.
 - c. When a light manufacturer provides a BUG rating, the uplight rating (U) shall equal zero (0).
 2. Characteristics:
 - a. To qualify as a fully shielded fixture, the top and sides of a light fixture shall be made of completely opaque material, such that light only escapes through the bottom of the fixture. Fixtures with translucent or transparent sides, or sides with perforations or slits, do not qualify as fully shielded. Any glass or diffuser on the bottom of the fixture must be flush with the fixture (no drop lenses) and must not reflect light that breaks the horizontal plane established at the top of the fixture. Merely placing a light fixture under an eave, canopy, patio cover or other similar cover does not qualify the fixture as being fully shielded.
- F. Exemptions To Fully Shielded Fixture Requirements. All lighting identified in this Section shall be included in calculating the total footcandle output allowed unless otherwise noted and as set forth in Section 19.73.112. C.
1. Spotlights:
 - a. Spotlights controlled by motion sensors having a light output less than one thousand (1000) lumens per lamp are exempt from the fully shielded requirement, provided:
 - i. The fixture is a spotlight or other type of directed light that shall be directed at a forty-five-degree (45°) angle or less, where the zero (0) angle is pointing straight down, and
 - (a) The fixture must not be placed in such a manner that results in light trespass, and
 - (b) The lighting elements controlled by motion sensors shall not be triggered by movement or activity located off the property on which it is located.
 - ii. The fixture is hooded or shielded to the extent necessary to prevent glare on adjacent properties or roadways.
 - iii. The lighting is activated by motion sensors and shuts off, within or before, fifteen (15) minutes after each activation or when the activity involved is completed.
 2. Pathway Lights:
 - a. Pathway lights less than eighteen inches (18") in height are exempt from the fully shielded fixture requirement if:

Page: 3

 Number: 1 Author: Matt Starley Date: 12/15/2022 8:49:00 AM

Up to 2 families in a structure residential. 3 or more legal units would fall into multifamily, more than 10 units = commercial.

 Number: 2 Author: Matt Starley Date: 12/15/2022 8:44:00 AM


Define residential, commercial, and multi-family in the definitions section.


- i. The total light emitted by all pathway light fixtures as measured along the centerline of the pathway lighted does not exceed 0.5 footcandles; and
 - ii. The lights have opaque caps that direct light below the horizontal plane.
- 3. Temporary Exterior Lighting:
 - a. Temporary exterior lighting intended as holiday or seasonal decorations displayed between December 1 and the following January 3, provided that individual lamps do not exceed 70 lumens and the lighting does not cause light intrusion nor interfere with the reasonable use and enjoyment of surrounding properties¹.
- 4. Law Enforcement Lighting Traffic Control Signals and Traffic Safety Devices:
 - a. Traffic control signals, traffic safety devices, and law enforcement lighting, used by a governing agency, is exempt from and not governed by the provisions of this Chapter
- 5. Temporary Emergency Lighting:
 - a. Temporary emergency lighting in use by law enforcement or government agencies, or at their direction, is exempt from and not governed by the provisions of this chapter.
- 6. Pool Lighting
 - a. Underwater lighting fixtures providing illumination to all underwater areas of the pool.
- G. Restrictions On Total Amount of Unshielded Lighting.
 - 1. Outdoor lighting that is exempt from the shielding requirement in this Chapter shall not contribute more than the equivalent of:
 - a. 0.25 footcandles per square foot of hardscape for commercial properties.
 - b. 0.2 footcandles per total square foot of hardscape for multi-family properties.
 - c. 0.1 footcandles per square foot of hardscape for residential properties.
 - 2. All lighting fixtures shall be fully shielded when installed within twenty-five (25) feet of adjacent residential property line²


19.73.113 - Light Curls³.


- A. Commercial Establishments and Religious Institutions. ⁵
 - 1. Shall turn off all outdoor lighting, except those listed below, within one hour after closing.
 - a. Lighting to illuminate the entrance(s).
 - b. Parking lot and pathway lighting required for the safety of guests.
- B. Recreational Lighting (Residential and Commercial).
 - 1. Shall be turned off one hour after dusk ending⁶ the following morning at 6:00 am, except to conclude a community-approved event that is underway.
- C. Multi-Family Residential Property Lighting.
 - 1. Shall be turned off one hour after dusk ending the following morning at 6:00 am, except those listed below:
 - a. Lighting to illuminate entrances.
 - b. Parking lot and pathway lighting required for the safety of residents or guests.
 - c. Outdoor gathering and recreational spaces, when in use.
- D. Single-Family Residential Property Lighting.
 - 1. Shall be turned off one hour after dusk ending the following morning at 6:00 am, except those listed below:
 - a. Lighting to illuminate entrances.


Page: 4


 Number: 1 Author: Matt Starley Date: 1/25/2023 2:45:00 PM
We have some good questions here about whether we want to include Halloween lighting.
Should we require that holiday lights not exceed the total footcandle levels allowed on a property?

 Number: 2 Author: Matt Starley Date: 1/25/2023 2:49:00 PM
We have a good question here about about whether this should be inclusive of all property types.

 Number: 3 Author: Matt Starley Date: 1/25/2023 3:34:00 PM
Do we want to use an alternative word here?

 Number: 4 Author: Matt Starley Date: 12/15/2022 9:25:00 AM
Religious structure be governed by the same requirements as commercial establishments.

 Number: 5 Author: Matt Starley Date: 12/15/2022 9:23:00 AM
May need to add something that articulates that religious purposes should fall under commercial restrictions. And any bed and breakfast would fall under the multifamily restrictions.

 Number: 6 Author: Matt Starley Date: 1/25/2023 2:53:00 PM
We have a comment suggesting that we remove this language. Not sure why?

- b. Parking lot and pathway lighting required for the safety of residents or guests.
- c. Outdoor gathering and recreational spaces, when in use.

19.73.114 - Specialized Outdoor Lighting.

A. Roadway/Streetlights.

1. Roadways and streetlights are prohibited unless recommended by the County Engineer or required by the Utah Department of Transportation (UDOT). When deemed necessary, streetlights shall utilize lamp types that are fully shielded luminaires that minimize sky glow, light trespass, and other unintended impacts of artificial lighting. All street lights shall utilize the lowest light levels accepted by the County Engineer and/or UDOT.

B. Parking Lots.

1. Spot or flood lighting of parking lots from a building or other structure is prohibited.
2. The overall height of any light post used to illuminate parking lots in multi-family residential or commercial zones shall not exceed fourteen feet (14'). All post-mounted parking lot lights shall be set back from property lines a distance equal to two and one-half (2.5) times the height of the pole unless an internal or external shield prevents the fixture from being visible from outside the property boundaries.
3. The overall height of any light post used to illuminate parking lots in residential zones shall not exceed six feet (6').
4. All parking lot lighting shall use fully shielded fixtures.
5. Internal or external shields shall prevent the light source from being visible from outside the relevant parking lot.

C. Recreational Lighting.

1. The Director or designee shall review all requests for new recreational lighting fixtures for fields or courts only after finding:
 - a. The recreational lighting has provisions for minimizing glare, spill light, and uplight using louvers, hoods, or shielding.
 - b. The recreational lighting does not exceed illumination levels for class IV sports lighting set by the Illuminating Engineering Society of North America.
 - c. The recreational lighting only illuminates the playing field or court area and is shielded to prevent illumination from falling outside of those areas.
 - d. The light source for the recreational light is not visible from adjacent properties.

D. Pole-mounted recreational lighting.

1. Pole-mounted recreational lighting shall be limited to eighteen feet (18') in height. Pole-mounted recreational lighting must be set at a distance equal to or greater than the height of the pole installed from any adjacent property line.
2. The lighting for non-playing field and non-court areas shall conform to all provisions of this Chapter.

E. Amphitheater Lighting.

1. Outdoor amphitheatres may use illumination to light the performance area of the amphitheater and provide public safety. The following standards apply to all amphitheater lighting:

- a. Lighting used to illuminate the performance area must be either directed spotlighting or fully shielded lighting. If directed spotlighting, the light source must be located and designed such that it is not visible beyond the property boundaries.
- b. Lighting used to illuminate the performance area may only be turned on during performances or rehearsals.
- c. Lighting used to illuminate the seating areas, pathways, and other areas of the amphitheater must meet all standards of this Chapter.

F. Signs.

- 1. Signs may be unlighted, lighted externally, lighted internally, or backlit. All sign lighting must be designed, directed, and shielded in such a manner that the light source is not visible beyond the property boundaries where the sign is located. Lighting for signs must be directed such that only the sign's face is illuminated. All lighted signs must have stationary and constant lighting¹.
- 2. Standards for Externally Illuminated Signs:
 - a. Lighting for externally illuminated signs must be aimed and shielded so that light is directed only onto the sign face and does not intrude onto adjacent streets, roads, or properties or into the night sky.
 - b. Lighting for externally illuminated signs must be mounted at the top of the sign (or within two (2) feet of the top of a building-mounted sign), except for freestanding monument-style signs which may be illuminated by ground-mounted lighting².
- 3. Standards for Internally Illuminated Signs
 - a. Lighting Is Visible on Both Sides of the Sign:
 - i. Only sign copy areas and logos may be illuminated on an internally illuminated sign.
 - ii. Internally illuminated signs shall use semi-opaque materials for sign copy such that the light emanating from the sign is diffused. Transparent or clear materials are not allowed for sign copy. Non-copy portions of the sign (e.g., background and graphics) shall be made of completely opaque material.
- 4. Standards for Backlit Signs
 - a. Only One Side of Sign Is Lit:
 - i. Backlit signs shall be designed such that the light source is not visible.
 - ii. Backlit signs shall be designed such that harsh, direct illumination does not emanate out of the sign. Rather, the backlighting shall only allow indirect illumination to emanate from the sign. For example, signs that create a "halo" effect around sign copy are allowed.
 - iii. Backlit signs shall use low lumen light sources.
- 5. Illuminated Window Signage:
 - a. Illuminated window signs positioned to be primarily visible outside the business structure are allowed only if there are no more than two (2) signs per business space and each sign measures less than three and one-half ($3\frac{1}{2}$) square feet in area. Such signs must not be illuminated when the business is closed³.

Page: 6

Number: 1 Author: Matt Starley Date: 1/25/2023 3:00:00 PM

(Q- To be sure, what does this last sentence mean?) We should add definitions. I assume stationary means not moving nor rotating, and constant means not blinking nor flashing.

Number: 2 Author: Matt Starley Date: 1/25/2023 3:01:00 PM

Q: Wouldn't ground-mounted lighting need to shine upward to light a sign? If so we are allowing unshielded outdoor uplights

Number: 3 Author: Matt Starley Date: 1/25/2023 3:01:00 PM

(Note - 19.73.113.A.1 states that all commercial property lights shall be turned off 1 hour after closing.)

19.73.115 - Prohibited Lighting.

- A. Accent Lighting that is directed upward above the horizontal plane to illuminate building structures, landscape, landscape features, statues or similar features, vegetation, or for any other use, except as allowed by other provisions in this Chapter.
- B. Flashing, blinking, intermittent, or other lights that move or give the impression of movement, not including temporary exterior lighting that is intended to consist of or illuminate holiday or seasonal decorations from the period between December 1 and the following January 3. ¹
- C. Floodlights or Spotlights affixed to buildings for the purpose of lighting parking lots²
- D. Searchlights, laser source lights or any similar high intensity light.
- E. In the case of Residential Properties, no lighting fixture shall be mounted on a structure at an elevation of more than 14 ft. above the base floor elevation identified for the primary entrance to the corresponding side of the structure, each structure having an identified front, two sides, and a rear.
 - 1. For structures having sides with no entrance present. The height limitation established by the lowest base floor entrance elevation on any side of the structure shall control.

19.73.116 – Towers.

- A. All monopole, antenna, tower, or support facility lighting not required by the Federal Aviation Administration (FAA), the Federal Communications Commission (FCC), Municipal Fire and Police, or radio towers is prohibited.
- B. When lighting is required by the FAA, FCC, or Municipal Fire and Police, such lighting shall not exceed the minimum requirements of those agencies. Collision markers should have a dual mode for day and night to minimize impact on the night sky and migrating birds.
- C. All other lighting used on the property not regulated by the FAA, FCC, or Municipal Fire and Police shall conform to this Chapter.

19.73.117 - Application and Review Procedures.

- A. Where appropriate, the Metro Township will provide information to homeowners on best practice application of the lighting principles set forth in this Chapter.
- B. Lighting Plan Required.
 - 1. In any application for a sign permit, building permit, conditional use permit, subdivision, design/development review, and any other development application within any zoning district, including all municipal projects, requires the applicant to, as part of the application process, submit sufficient information to enable the Director or Designee to determine whether proposed lighting complies with this Chapter. All applications may be subject to review and action by the Planning Commission at the discretion of the Director or Designee. All applications shall include a Lighting Plan meeting the requirements set forth herein.
 - 2. Lighting Plans shall include the following:
 - a. Site Plans or drawings indicating the proposed location of outdoor lighting fixtures, both proposed and any already existing on site. Including:
 - i. height of lighting fixtures on the premises, and
 - ii. type of illumination devices, lamps, supports, shielding and reflectors used and,
 - iii. installation and electrical details,
 - b. A description of each illuminating device, fixture, lamp, support, and shield, both proposed and existing. The description shall include, but is not limited to, the manufacturer's catalog

Page: 7

Number: 1 Author: Matt Starley Date: 1/25/2023 3:03:00 PM

(Q - Again, any allowance for Halloween-related lighting?) Q - Are holiday lights really needed for the entire month of December? I would prefer December 15-January 3. Should we require that holiday lights not exceed the total footcandle levels allowed on a property?

Number: 2 Author: Matt Starley Date: 1/25/2023 3:03:00 PM

(Q - to be clear, does this mean that all parking lot lighting is to be pole-mounted?) I agree with Jim - should the sentence begin with the word "Unshielded"?

cuts and illustrations (including sections where required); lamp types, wattages, initial lumen outputs, and shielding mechanisms. A B.U.G. rating must be included if supplied for each luminaire or fixture.

- c. A table showing the total number of proposed exterior lights, by fixture type, lumens, and lamp type, Including a Manufacture Cut Sheet whenever possible.
- d. The Lighting Plan must demonstrate that no more than the allotted footcandle of light shall be utilized on the property or properties, as specified in section 19.73.112 - Conditions and Standards. Article C. Total Light Output.
 - i. Commercial Properties and Religious Institutions - The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 2.5 footcandle per square foot of hardscape.
 - ii. Multi-Family Residential Properties - The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 2.0 footcandle per square foot of hardscape.
 - iii. Single-Family Residential Properties - The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 1.0 footcandle per square foot of hardscape. Residential units used for overnight accommodations or other commercial uses shall comply with residential standards for total light output.
 - iv. For all Properties – Light output from indoor and outdoor sources shall not exceed 0.1 footcandles at the property line.
- e. Such other information that the Director or Designee may determine is necessary to ensure compliance with this Chapter.

C. Approval Procedure.

- 1. An outdoor lighting plan for all new development shall be submitted for approval concurrent with the associated application process.
- 2. If the Director or Designee determines that any proposed lighting described in a lighting plan does not comply with this Chapter, the plan shall not be approved and the specific permit applied for shall not be issued.

19.73.118 - Appeals, Violations, Enforcement, and Penalties.

A. Appeal for Exemption.

- 1. The Land Use Hearing Officer may approve lighting that does not comply with this Chapter if need is established. An applicant requesting that such lighting be approved must provide proof of requirements of property insurance or findings of competent research demonstrating a substantial need for the requested lighting. The Land Use Hearing Officer may attach other conditions to the approval of such lighting that will make the lighting comply with the spirit of this Chapter.

B. Violations.

- 1. The following constitute violations of this chapter:
 - a. Failing to meet light curfew standards as outlined in section 19.73.113 of this ordinance after the effective date of this Chapter.
 - b. The installation, maintenance, or operation of any lighting fixture not in compliance with the provisions of this Chapter if such fixture is installed after the effective date of this Chapter.

Page: 8

Number: 1 Author: Kayla Mauldin Date: 11/16/2022 8:02:00 AM

These standards have been included elsewhere in the Chapter. You probably don't need them twice, but could include a bullet that says something like: "Lighting plan demonstrating that no more than the allotted footcandle of light shall be utilized on the property or properties, as specified in Section XX.XX.XXXX"

Number: 2 Author: Matt Starley Date: 1/25/2023 3:13:00 PM

(Q - since the information in i through iv is already set forth in 19.73.112.C, is there a need to repeat it here?)

Number: 3 Author: Kayla Mauldin Date: 11/16/2022 8:02:00 AM

See above comment - can just say Director

Number: 4 Author: Matt Starley Date: 1/25/2023 3:39:00 PM

(Given 19.73.117.B.1, this sentence seems unnecessary.)

Number: 5 Author: Matt Starley Date: 1/25/2023 3:17:00 PM

(I am not sure whether we should use a term like "substantial", "definite," etc., in this section.)

- c. The alteration of outdoor lighting fixtures after the approval of a lighting plan by the director or designee, when such alteration does not conform to the provisions of this chapter.
- d. Failure to shield, correct or remove lighting that is installed, operated, maintained, or altered in violation of this Chapter.
- e. In the event, a nonconforming outdoor light fixture is destroyed, damaged, or modified by fifty percent (50%) or more, the replacement fixture shall comply with the provisions of this Chapter.
- f. Amortization: All exterior lighting fixtures that do not conform to the requirements of this Chapter shall be brought into conformance no later than 7 years from the effective date of this Chapter.

C. Enforcement.

- 1. If, after investigation, the Director or Designee finds that any provision of this Chapter is being violated, the Director or Designee shall give notice by hand delivery or by certified mail, return receipt requested, of such violation to the owner and/or occupant of such premises, demanding that the violation be abated within 30 days of the date of hand delivery or of the date of mailing of the notice. Planning and Development Services staff shall be available to assist in working with the violator to correct said violation. If the violation is not abated within the 30-day period, the Director or Designee or designee may institute actions and proceedings, either legal or equitable, to enjoin, restrain or abate any violations of this Chapter and to collect penalties for such violations.
- 2. Hillsides, Ridgelines, and Special Cases
 - a. In certain cases (such as, but not limited to, properties on or near ridgelines or hillsides), the Director or Designee may require that certain steps be implemented to mitigate the effects of light pollution, glare, light trespass, sky glow, and to curtail the degradation of the night sky visual environment.
 - i. Any light source that is directly visible from outside the property boundaries on which the light source is located, the property owner shall be required to demonstrate a good faith effort to redirect, shield, and/or diffuse the light source to address any unintended effect on the quality of night sky conditions within the municipality. This provision does not apply to existing lighting during which time it is subject to the amortization period identified in this Chapter.

D. Penalties.

- 1. Penalties. A violation of this Chapter, or any provision thereof, shall be punishable by a civil penalty of \$50.00 per day, and each day of violation after the expiration of the 30-day abatement period set forth in Section 19.73.118.C.1 shall constitute a separate offense for the purpose of calculating the civil penalty.

19.73.119 – Definitions.

For the purpose of this Chapter, certain words, phrases, and terms used herein shall have the meanings assigned to them by this section:

Page: 9

Number: 1 Author: Kayla Mauldin Date: 11/16/2022 8:04:00 AM

This standard should be included earlier on in the Chapter, in the section on non-conforming uses. This gives clearer direction on when someone modifying a non-conforming light would need to convert to be compliant with this ordinance.

Number: 2 Author: Matt Starley Date: 1/25/2023 3:20:00 PM

(This is a requirement, not a violation. Also, it has already been stated in 19.73.111.C.2. Thus, I recommend it be deleted.)

Number: 3 Author: Matt Starley Date: 1/25/2023 3:23:00 PM

(I am not sure what is meant here by "equitable.")

Number: 4 Author: Matt Starley Date: 1/25/2023 3:41:00 PM

(This is a confusing section. I am not sure what its intent is. Also, a light source is an inanimate object and, thus, cannot demonstrate good or bad faith.)

A-M

Accent Lighting: Lighting of building surfaces, landscape features, statues, and similar items for the purpose of decoration or ornamentation; or lighting that does not contribute to the safety or security of residents, guests, employees, or customers on a property.

Adaptive Controls: Devices such as motion sensors, timers, and dimmers used in concert with outdoor lighting equipment to vary the intensity or duration of the operation of lighting.

Ambient light: The general overall level of lighting in an area.

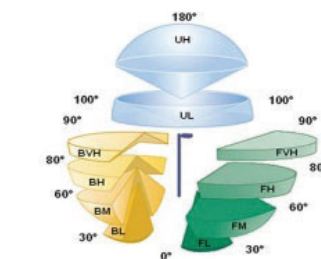
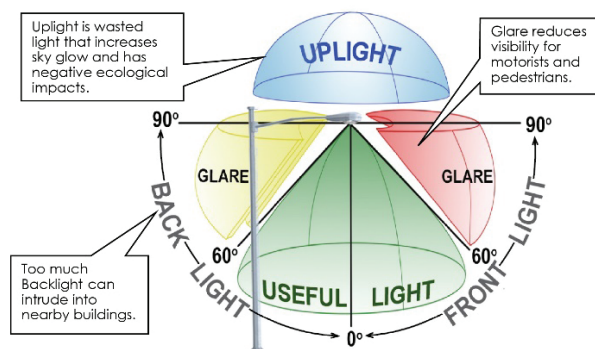
Backlight: All the light emanating behind a luminaire.

Ballast: A device used with a discharge lamp to obtain the necessary voltage, current, and/or waveform for starting and operating the lamp.

Basement: means any area of the building having its floor subgrade (below ground level) on all sides. A walkout basement that does not require a step up to grade is not considered a basement.

Brightness: Strength of the sensation that results from viewing surfaces from which the light comes to the eye.

B.U.G. Rating: A BUG Rating stands for backlight, uplight, and glare. Backlight (B) is the light directed behind the fixture, uplight (U) is any light directed upward above the horizontal plane of the luminaire, and glare (G) is the amount of light emitted from the luminaire at high angles.




Application of BUG
ratings for Dark Skies

- **Bx-U0-Gx** – Must have a “U” rating of “0” resulting in NO uplight
- The appropriate glare rating is determined by the community.

Figure XX: Explanation of BUG Ratings

Bulb or lamp: The source of electric light. To be distinguished from the whole assembly (see luminaire). Lamp often is used to denote the bulb and its housing.

Candela (cd): Unit of luminous intensity. One candela is one lumen per steradian. Formerly called the candle.

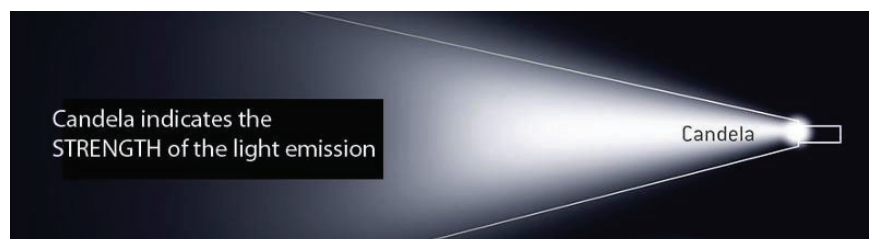


Figure XX: Candela Example

Candlepower: Luminous intensity expressed in candelas.

Commercial Property: Any parcel within the C-2 Zone, and/or any parcel with a building containing 10 or more residential units.

Correlated Color Temperature (CCT): A specification of the color appearance of the light emitted by a lamp, relating its color to the color of light from a reference source when heated to a particular temperature, measured in degrees kelvin (K).

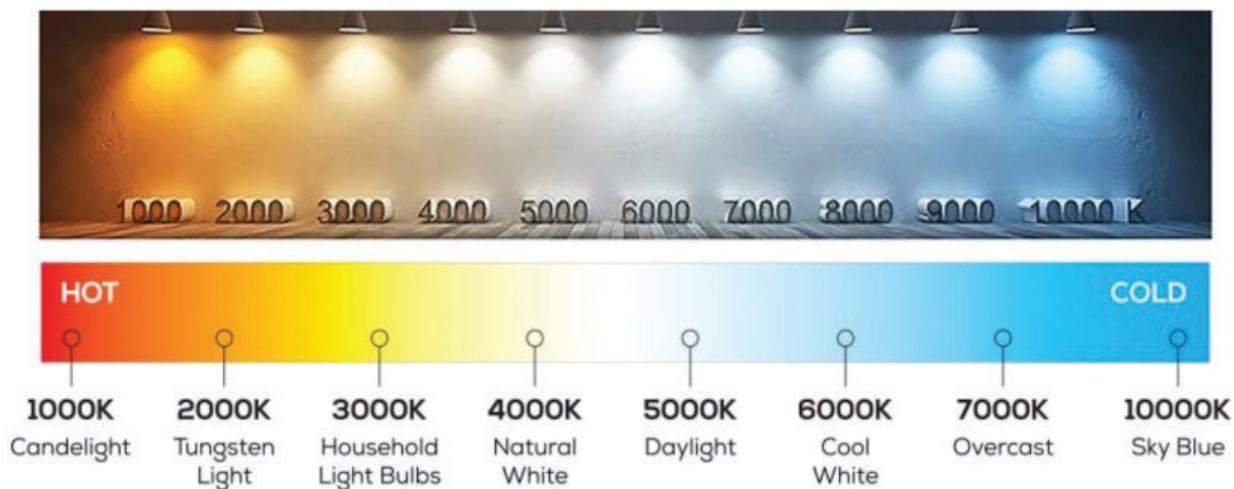


Figure XX: Correlated Color Temperature

Cut-off angle, of a luminaire: The angle, measured up from the nadir (i.e. straight down), between the vertical axis and the first line of sight at which the bare source (the bulb or lamp) is not visible.

Cutoff fixture: Intensity at or above 90° (horizontal) no more than 2.5% of lamp lumens, and no more than 10% of lamp lumens at or above 80°.

Diffuser: A device used to distribute light from a source.

Dimmer: A device for varying the brightness of an electric light.

Direct Illumination: Illumination resulting from light emitted directly from a lamp, luminary, or reflector. This does not include light reflected from other surfaces, such as the ground or building faces.

Dusk: The darker part of twilight especially at night. Timetables identifying specific hour for dusk on any given day are located at: <https://www.gaisma.com/en/location/salt-lake-city-utah.html>.

Efficiency: A measure of the effective or useful output of a system compared to the input of the system.

Energy (radiant energy): Unit is erg, or joule, or kWh.

Facade lighting: The illumination of the exterior of a building. (see also Accent Lighting)

Fixture (light fixture): The assembly that holds the lamp in a lighting system. It includes the elements designed to give light output control, such as a reflector (mirror) or refractor (lens), the ballast, housing, and the attachment parts.

Fixture Lumens: A light fixture's light output after processing of emitted light by optics in that fixture.

Fixture Watts: The total power consumed by a fixture. This includes the power consumed by the lamp(s) and ballast(s).

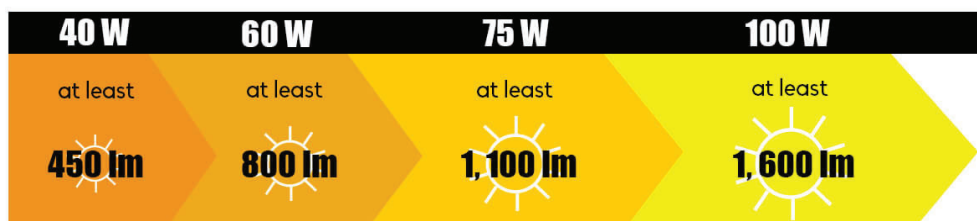


Figure XX: Watts to Lumens Relationship Example

Floodlight: A fixture designed to “flood” a well-defined area with light.

Footcandle: Illuminance produced on a surface one foot from a uniform point source of one candela.

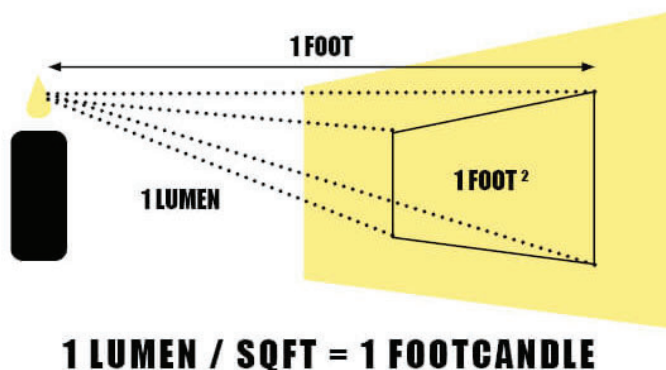


Figure XX: Footcandle Description

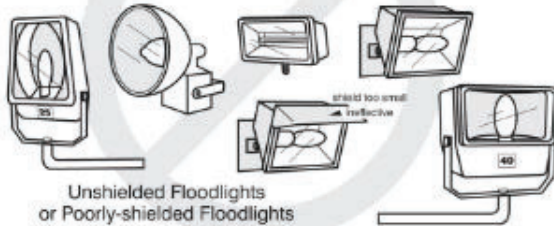
Full-cutoff fixture: An IES definition; “Zero intensity at or above horizontal (90° above nadir) and limited to a value not exceeding 10% of lamp lumens at or above 80°”.

Fully Shielded Fixture: An outdoor light fixture constructed and mounted so that the installed fixture emits no light above the horizontal plane. Where a light manufacturer provides a BUG rating, the uplight rating (U) must equal zero (0). Fully shielded light fixtures must be shielded in and of themselves. Surrounding structures, like canopies, are not to be considered when determining if the fixture is fully shielded. Fully shielded fixtures must be appropriately mounted so that the shielding prevents light from escaping above the horizontal and all light is directed downward.

Examples of Acceptable / Unacceptable Lighting Fixtures

Unacceptable / Discouraged

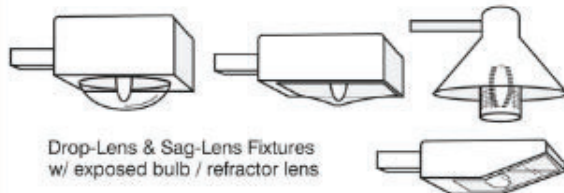
Fixtures that produce glare and light trespass



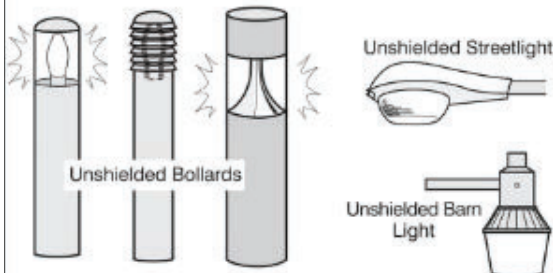
Unshielded Floodlights or Poorly-shielded Floodlights



Unshielded Wallpacks & Unshielded or Poorly-shielded Wall Mount Fixtures



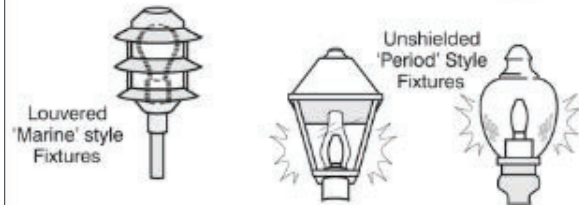
Drop-Lens & Sag-Lens Fixtures w/ exposed bulb / refractor lens



Unshielded Bollards

Unshielded Streetlight

Unshielded Barn Light



Louvered 'Marine' style Fixtures

Unshielded 'Period' Style Fixtures



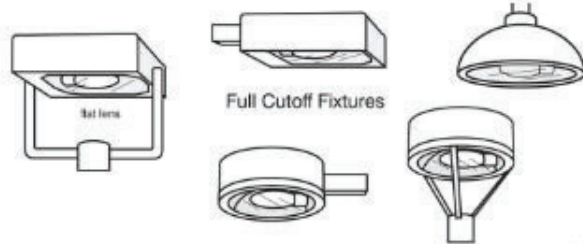
Unshielded PAR Floodlights



Drop-Lens Canopy Fixtures

Acceptable

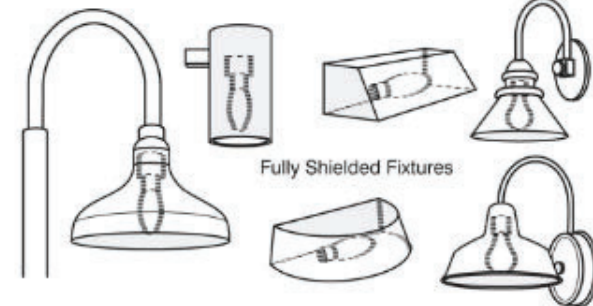
Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



Full Cutoff Fixtures



Fully Shielded Wallpack & Wall Mount Fixtures



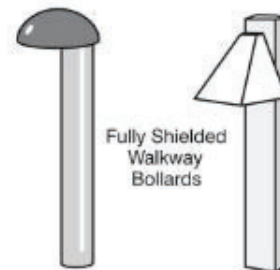
Fully Shielded Fixtures



Full Cutoff Streetlight



Fully Shielded Barn Light



Fully Shielded Walkway Bollards



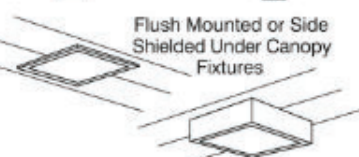
Fully Shielded Decorative Fixtures



Fully Shielded 'Period' Style Fixtures



Shielded / Properly-aimed PAR Floodlights



Flush Mounted or Side Shielded Under Canopy Fixtures

Illustrations by Bob Crein© 2005. Rendered for the Town of Southampton, NY. Used with permission.

Figure XX: Examples of Acceptable and Unacceptable Light Fixtures

Glare: the visual sensation caused by excessive brightness, and which causes annoyance, discomfort, or a disability loss in visual performance or visibility.

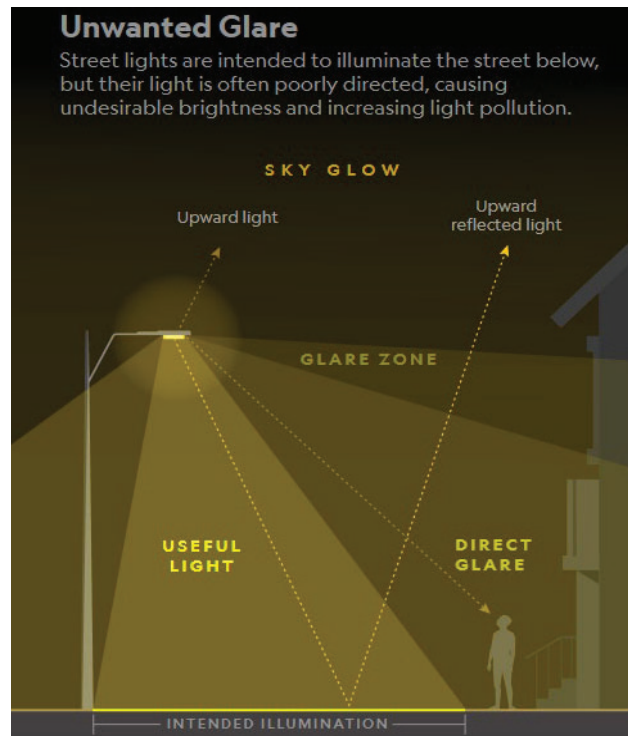


Figure XX: Unwanted Glare

Hardscape: Any non-living horizontal site element, including but not limited to patios, decks, walkways, sidewalks, driveways, and steps.

House-side Shield: Opaque material applied to a fixture to block the light from illuminating a residence or other structure being protected from light trespass.

Illuminance: Density of luminous flux incident on a surface. Unit is footcandle or lux.

Illuminating Engineering Society of North America (IES or IESNA): The professional society of lighting engineers, including those from manufacturing companies, and others professionally involved in lighting.

Incandescent lamp: Light is produced by a filament heated to a high temperature by electric current.

Indoor Lighting: Any lamp, pendant, or fixture used to illuminate the interior of any structure.

Intensity: The degree or amount of energy or light.

Internally Illuminated: As it relates to signs, any sign which has a light source entirely enclosed within the sign and not directly visible.

International Dark-Sky Association (IDA, Inc.): A non-profit organization whose goals are to build awareness of the value of dark skies, and of the need for quality outdoor lighting.

kWh: Kilowatt-hour: A unit of energy equal to the work done by one kilowatt (1000 watts) of power acting for one hour.

Lamp: A generic term for a manufactured source created to produce optical radiation.

Lamp Life: The average life span for a specific type of lamp. Half of lamps will perform longer than the average; the others will fail before the average.

LED: Light emitting diode.

Light Pollution: Any adverse effect of artificial light.



Figure XX: Gradient of Light Pollution in the Form of Sky Glow

Light Quality: A measurement of a person's comfort and perception based on the lighting.

Light Source: The part of a lighting fixture that produces light, e.g. the bulb, lamp, or chips on board.

Light Spill: Unwanted spillage of light onto adjacent areas and may affect sensitive receptors particularly residential properties and ecological sites.

Light Trespass: Light falling where it is not wanted or needed. Light Spill. Obtrusive light.



Figure XX: Light trespass Compared to Adequate Shielding

Lighting Controls: Devices used for either turning lights on and off or for dimming.

Photocells Sensors that turn lights on and off in response to natural light levels. Some advanced modes can slowly dim or increase the lighting. See also: Adaptive Controls.

Low-Pressure Sodium (LPS) lamp: A discharge lamp where the light is produced by radiation from sodium vapor at a relatively low partial pressure (about 0.001 torr). LPS is a “tube source”. It is monochromatic light.

Lumen: A unit of luminous flux equal to the light emitted by a uniform point source of one candle intensity. Lumens refers to the amount of light emitted by a bulb (a bulb with higher lumens outputs brighter light).

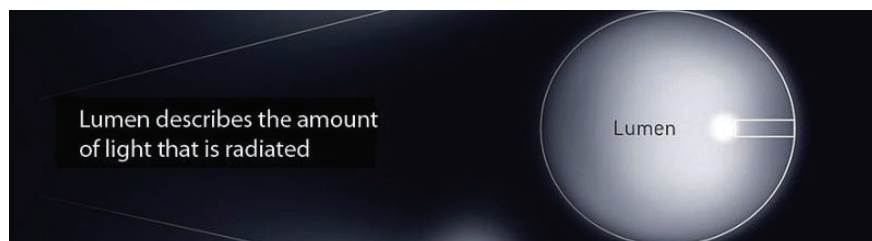


Figure XX: Lumen Example

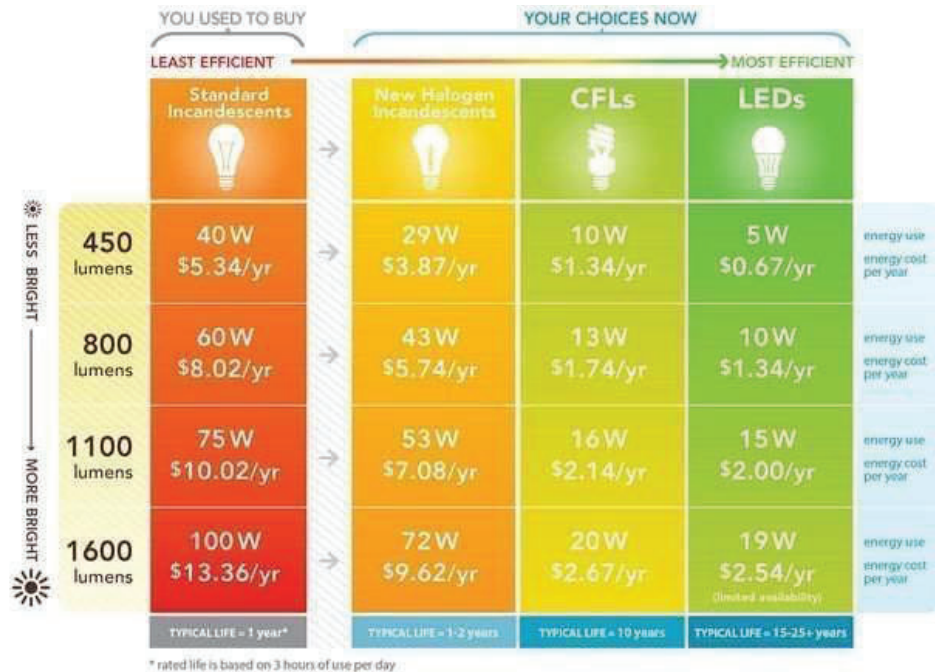


Figure XX: Comparison of Bulbs with Light Output and Cost

<https://georgebrazilplumbingelectrical.com/how-to-choose-the-best-light-bulb-for-your-home/>

Luminaire: A complete lighting unit that typically includes components such as a fixture housing, ballasts, reflector, translucent shield or diffuser, and a lamp or lamps.

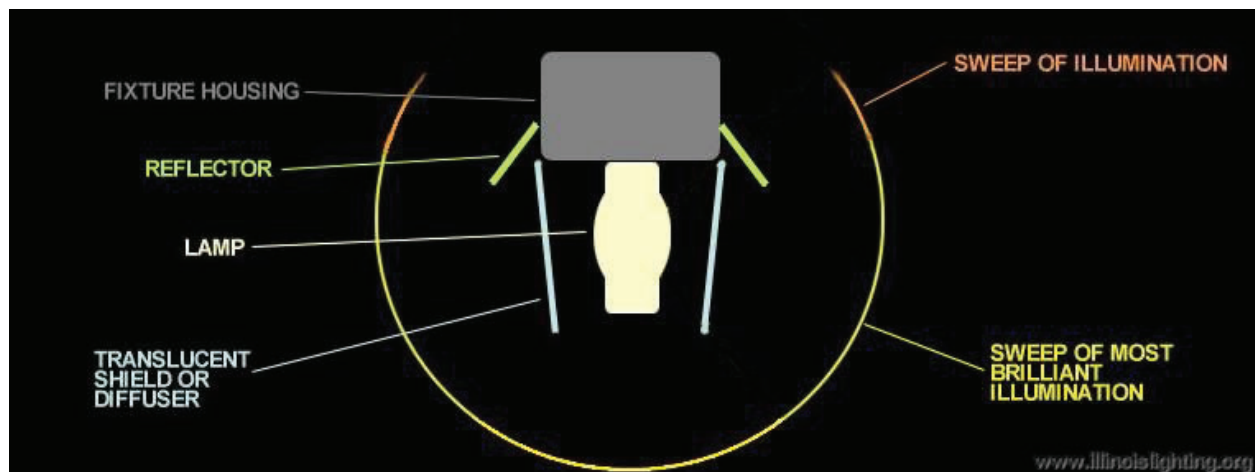


Figure XX: Comparison of Bulbs with Light Output and Cost

Luminance: At a point and in a given direction, the luminous intensity in the given direction is produced by an element of the surface surrounding the point divided by the area of the projection of the element on a plane perpendicular to the given direction. Units: candelas per unit area.

Lux: (symbol: lx) is *the unit of illuminance or luminous flux per unit area*.

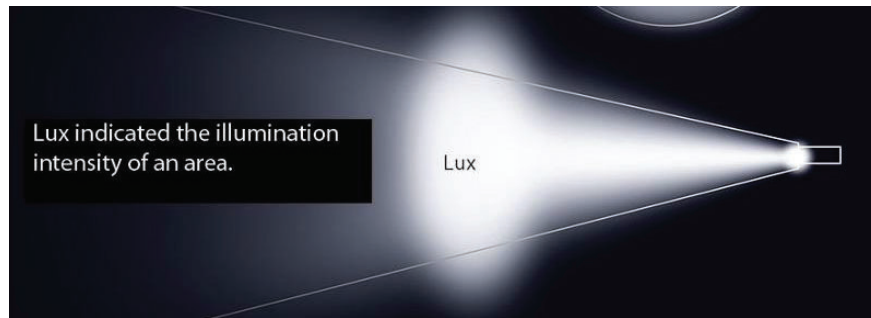


Figure XX: Lux Example

Manufacturer's Catalog Cuts: A publication or other printed material of a lamp or lighting manufacturer offering visual and technical information about a lighting fixture or lamp.

Mercury lamp: An HID lamp where the light is produced by radiation from mercury vapor.

Metal-halide lamp: An HID lamp where the light is produced by radiation from metal-halide vapors.

Mounting height: The height of the fixture or lamp above the ground.

Multi-Family Residential Property: Any parcel having a building containing three to ten dwelling units.

N-Z

Optic: The components of a luminaire such as reflectors, refractors, protectors which make up the light emitting section.

Outdoor Light Fixture (Outdoor Lighting): An outdoor, electric, or solar powered, illuminating lamp or similar device used for lighting structures, parking lots, pathways, service canopies, recreational areas, signs, or other similar outdoor uses. These lighting fixtures may be attached to a building, parking structure, or sign, or may stand on their own.

Partially Shielded Light Fixture: An outdoor light fixture constructed and mounted so that the installed fixture emits most of its light below the horizontal plane. Light emitted at or above the horizontal plane (sideways or upwards) shall arise solely from incidental decorative elements or strongly colored or diffusing materials, such as colored glass or plastic. Fixtures using spot or flood lamps are considered partially shielded if the lamps are aimed no higher than forty-five (45) degrees above the vertical plane beneath the fixture.



Figure 1: Unshielded versus Shielded Light Fixtures

Pathway Lights: A luminaire, or collection of luminaires, less than eighteen inches (18") in height, lining one or both sides of a pathway that offer illumination to guide along an outdoor path or walkway.

Photometry: The quantitative measurement of light level and distribution.

Photocell: An electronic device that changes the light output of a luminaire dynamically in response to the ambient light level around the luminaire.

Pool Lighting: Underwater lighting fixtures provide illumination to all underwater areas of the pool.

Recreational Lighting: Lighting is used to illuminate sports fields, ball courts, playgrounds, or similar outdoor recreational facilities.

Reflector: An optic that achieves control of light by means of reflection (using mirrors).

Refractor: An optic that achieves control of light by means of refraction (using lenses).

Religious Institutions: and property containing a Church, Synagogue, Mosque, Temple, Cathedral, or other religious buildings, including any accessory buildings and uses, where persons regularly assemble for religious purposes and related social events and which building, with accessory buildings and uses, is maintained, and controlled by a religious body organized to sustain religious ceremonies and purposes.

Security Lights: Lighting designed to illuminate a property or grounds for the purpose of visual security.

Shielding: An opaque material that blocks the transmission of light.

Single-Family Residential Properties: Any parcel within the FR-0.5, FR-1, FR-2.5, FR-5, FR-10, and FR-20 having a building containing one or two dwelling units.

Skyglow: The brightening of the nighttime sky resulting from the scattering and reflection of artificial 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 nighttime sky (Figure 5).

Spotlight: A fixture or lamp designed to light a small area very brightly. See the definition of Floodlight.

Stray light: Emitted light that falls away from the area where it is needed or wanted. Light trespass.

Task Lighting: Task lighting is used to provide direct light for specific activities without illuminating the entire area.

Tower: Any monopole, antenna or the like that exceeds eighteen feet (18') in height.

Unshielded Fixture (lighting): A fixture that allows light to be emitted above the horizontal plane, either directly from the lamp or indirectly from the fixture or reflector.

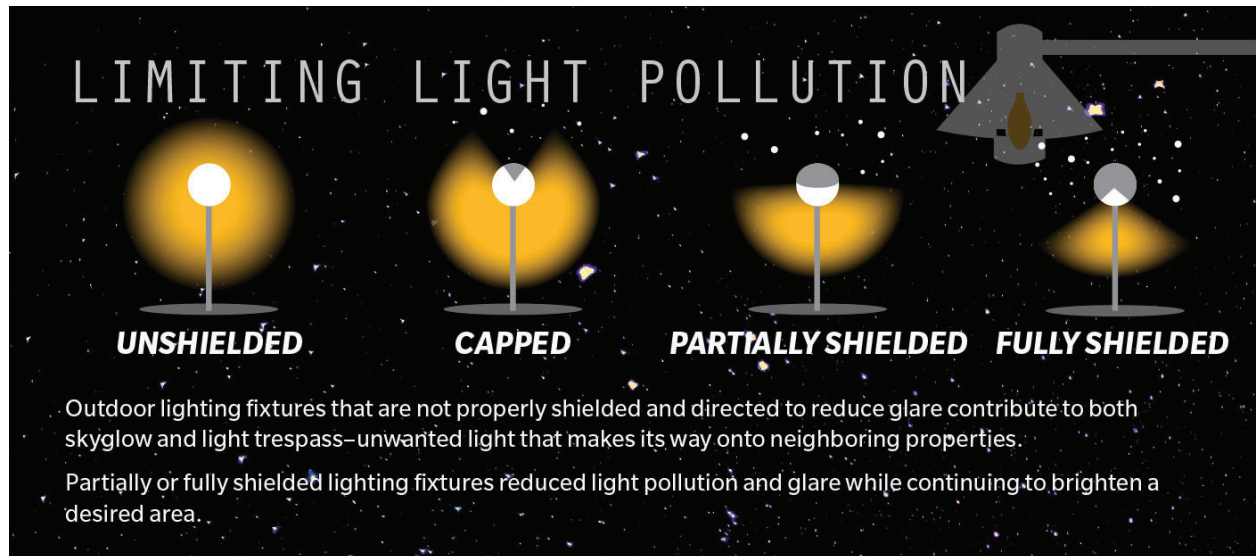


Figure XX: Unshielded, Capped, Partially Shielded, and Fully Shielded Fixtures

Vertical Illuminance: The amount of light falling on a vertical surface or plane.

Visibility: Being perceived by the eye. Seeing effectively. The goal of night lighting.

Wallpack: A luminaire, typically affixed to the side of a structure, used for area lighting.