

PREAMBLE

The purpose of this Ordinance is to provide regulations for outdoor lighting that will:

- a. 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.
- b. Minimize adverse offsite impacts of lighting such as light trespass, and obtrusive light.
- c. Curtail light pollution, reduce skyglow and improve the nighttime environment for astronomy.
- d. Help protect the natural environment from the adverse effects of night lighting from gas or electric sources.
- e. Conserve energy and resources to the greatest extent possible.

II. LIGHTING ZONES

The Lighting Zone shall determine the limitations for lighting as specified in this ordinance. The Lighting Zone encompassing the entirety of Interlaken Town is classified as **LZ1** and is described as follows:

LZ1: Low ambient lighting

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 curfew, most lighting should be extinguished or reduced as activity levels decline.

III. GENERAL REQUIREMENTS**A. Conformance with All Applicable Codes**

All outdoor lighting shall be installed in conformance with the provisions of this Ordinance, applicable Electrical and Energy Codes, and applicable sections of the Building Code.

B. Applicability

Except as described below, all outdoor lighting installed after the date of effect of this Ordinance shall comply with these requirements. 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, including lighting installed by any third party. Exemptions from III. (B.) The following are not regulated by this Ordinance

- a. Lighting for public monuments and statuary.
- b. Repairs to existing luminaires not exceeding 25% of total installed luminaires.
- c. Underwater lighting in swimming pools and other water features
- d. Temporary lighting and seasonal lighting provided that individual lamps are less than 10

watts and 70 lumens.

- e. Lighting that is only used under emergency conditions.
- f. In lighting zones 2, 3 and 4, low voltage landscape lighting controlled by an automatic device that is set to turn the lights off at 10 pm MT (Mountain Time) and at 11:00 pm MT between Memorial day and Labor day.

Exceptions to III. (B.)

- a. Lighting specified or identified in a specific use permit.
- b. Lighting required by federal, state, territorial, commonwealth or provincial laws or regulations.

All lighting shall follow provisions in this ordinance; however, any special requirements for lighting listed in a) and b) below shall take precedence.

C. Road / Street & Other Lighting Within The Right Of Way (ROW)

- a. No property owner will install or operating lighting fixtures within the public right-of-way.
- b. Interlaken Town may install or authorize to be installed lighting fixtures within the easement for the principal purpose of illuminating streets or roads.

D. Lighting Control Requirements

1. Automatic Switching Requirements

Controls shall be provided that automatically extinguish all outdoor lighting when sufficient daylight is available using a control device or system such as a photoelectric switch, astronomic time switch or equivalent functions from a programmable lighting controller, building automation system or lighting energy management system, all with battery or similar backup power or device.

Exceptions to III. (C.) 1. Automatic lighting controls are not required for the following:

- a. Lighting under canopies.

2. Automatic Lighting Reduction Requirements

The Authority shall establish curfew time(s) after which total outdoor lighting lumens shall be extinguished.

Exceptions to III. (C.) 2. Lighting reductions are not required for any of the following:

- a. When the outdoor lighting consists of only one luminaire.
- b. Code required lighting for steps, stairs, walkways, and building entrances.
- c. When in the opinion of the Authority, lighting levels must be maintained.
- d. Motion activated lighting.
- e. Lighting governed by special use permit in which times of operation are specifically identified.

V. RESIDENTIAL LIGHTING

A. General Requirements

For residential properties, all outdoor luminaires shall be fully shielded and shall not exceed the allowed lumen output in Table G, row 2.

B. Background

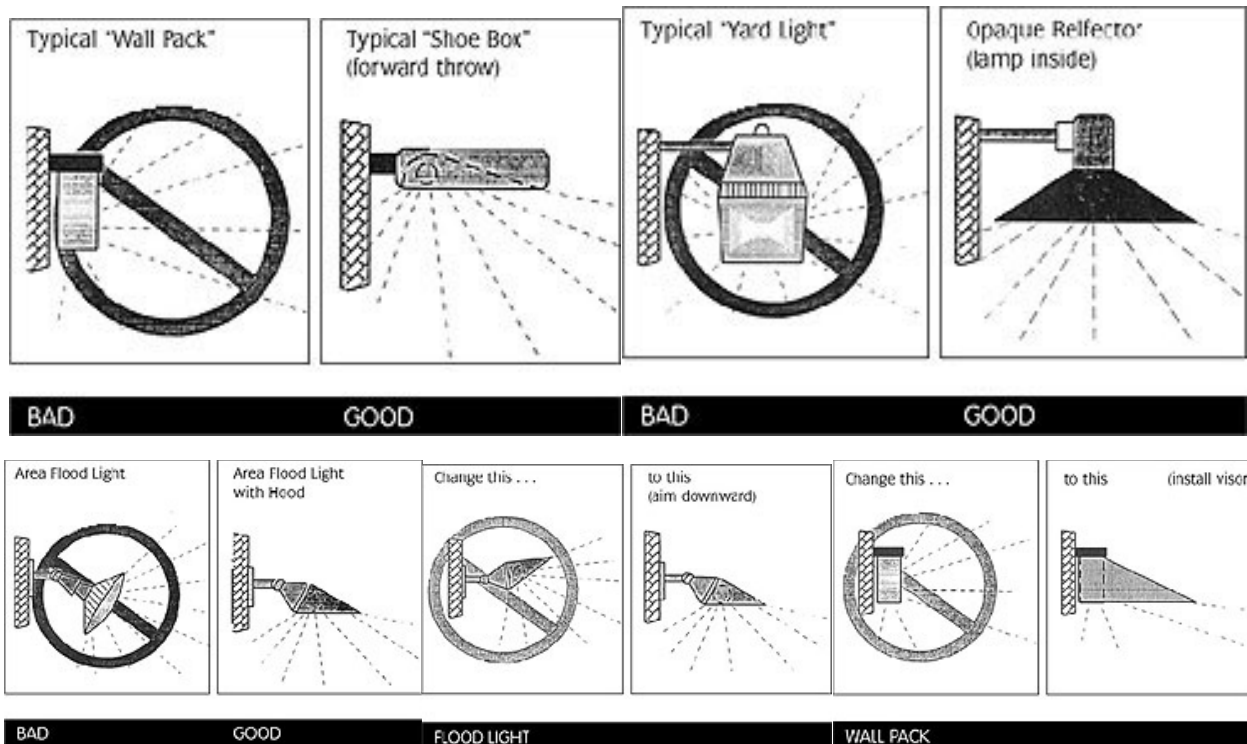
Every homeowner should become acquainted with: a) glare reducing, shielded exterior lighting fixtures; b) ways of reducing “light trespass,” and c) using minimum exterior lighting level (lumens). These principles are the basis of the Interlaken Town Outdoor Lighting Code.

Lighting trespass from one owner’s property to another deserves attention. Steep sloping lots require thoughtful placement and shielding to avoid your lights from illuminating hillside properties below you.

Place a shielded light over every door. Unshielded lights create glare and harsh shadows in which burglars can hide. Without shadows, the human eye is very sensitive to movement.

Poorly designed exterior pole-mounted lighting fixtures and residential exterior floodlights have made the public immune to security lighting. As a result, security lighting has lost the ability to turn heads and grab the attention of a potential witness.

Motion sensor controlled exterior lights alert neighbors and are better than lights that remain on all night. When someone approaches, light your home – not your neighbors (don’t restrict their vision with glare). Motion sensors are both safe and convenient.



Good Lighting Fixtures

<http://www.darksky.org/fixtures/res.html>

Exceptions

1. One partly shielded or unshielded luminaire at the main entry, not exceeding the allowed lumen output in Table G row 1.
2. Any other partly shielded or unshielded luminaires not exceeding the allowed lumen output in Table G row 3.
3. Low voltage landscape lighting aimed away from adjacent properties and not exceeding the allowed lumen output in Table G row 4.
4. Shielded directional flood lighting aimed so that direct glare is not visible from adjacent properties and not exceeding the allowed lumen output in Table G row 5.
5. Lighting installed with a vacancy sensor, where the sensor extinguishes the lights no more than 15 minutes after the area is vacated.
6. Lighting exempt per Section III (B.).

C. Requirements for Residential Landscape Lighting

1. Shall comply with Table G.
2. Shall not be aimed onto adjacent properties.

VI. LIGHTING BY SPECIAL PERMIT ONLY**A. High Intensity and Special Purpose Lighting**

The following lighting systems are prohibited from being installed or used except by special use permit:

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 of higher power or used for purposes other than typical Green Laser Pointers used to highlight astronomical features for educational purposes (and in compliance with FAA prohibitions on spotlighting any aircraft).
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.

B. Complex and Non-Conforming Uses

Upon special permit issued by the Authority, lighting not complying with the technical requirements of this ordinance but consistent with its intent may be installed for complex sites or uses or special uses including, but not limited to, the following applications:

1. Construction lighting.

2. Public buildings.

To obtain such a permit, applicants shall demonstrate that the proposed lighting installation:

- a. Has sustained every reasonable effort to mitigate the effects of light on the environment and surrounding properties, supported by a signed statement describing the mitigation measures. Such statement shall be accompanied by the calculations required for the Performance Method.
- c. Employs lighting controls to reduce lighting at a Project Specific Curfew (“Curfew”) time to be established in the Permit.
- d. Complies with the Performance Method after Curfew.

The Authority shall review each such application. A permit may be granted if, upon review, the Authority believes that the proposed lighting will not create unwarranted glare, sky glow, or light trespass.

VII. EXISTING LIGHTING

Lighting installed prior to the effective date of this ordinance shall comply with the following.

A. Amortization

On or before January 1, 2018, all outdoor lighting shall comply with this Code.

B. New Uses or Structures, or Change of Use

Whenever there is a new use of a property (zoning or variance change) or the use of the property is changed (including a change in ownership), all outdoor lighting on the property shall be brought into compliance with this Ordinance before the new or changed use commences.

C. Additions or Alterations

1. Major Additions.

If a major addition occurs on a property, lighting for the entire property shall comply with the requirements of this Code. For purposes of this section, the following are considered to be major additions:

- a. Additions of 25 percent or more in terms of gross floor area
- b. Single or cumulative additions, modification or replacement of 25 percent or more of installed outdoor lighting luminaires existing as of the effective date of this Ordinance.
- c. Resumption of Use after Abandonment
If a property with non-conforming lighting is abandoned for a period of six months or more, then all outdoor lighting shall be brought into compliance with this Ordinance before any further use of the property occurs.

VIII. ENFORCEMENT & PENALTIES

ENFORCEMENT AND PENALTIES NEEDS TO BE DECIDED ON. PERHAPS THE TOWN COUNCIL HELPS DECIDE THIS.

Consequences of failing to meet the lighting code requirements — probably a first warning period of 6 months, followed by a small, but reasonable monthly fine for failure to correct a problem.

Table G - Residential Lighting Limits

Lighting Application	LZ 1
Row 1 Maximum Allowed Luminaire Lumens* for Unshielded Luminaires at one entry only	420 lumens
Row 2 Maximum Allowed Luminaire Lumens* for each Fully Shielded Luminaire	1,260 lumens
Row 3 Maximum Allowed Luminaire Lumens* for each Unshielded Luminaire excluding main entry	315 lumens
Row 4 Maximum Allowed Luminaire Lumens* for each Landscape Lighting	Not allowed
Row 5 Maximum Allowed Luminaire Lumens* for each Shielded Directional Flood Lighting	Not allowed
Row 6 Maximum Allowed Luminaire Lumens* for each Low Voltage Landscape Lighting	Not allowed

* Luminaire lumens equals Initial Lamp Lumens for a lamp, multiplied by the number of lamps in the luminaire.

X. DEFINITIONS - Ordinance Text

<i>Absolute Photometry</i>	Photometric measurements (usually of a solid-state luminaire) that directly measures the footprint of the luminaire. Reference Standard IES LM-79
<i>Architectural Lighting</i>	Lighting designed to reveal architectural beauty, shape and/or form and for which lighting for any other purpose is incidental.
<i>Authority</i>	The adopting municipality, agency or other governing body.
<i>Astronomic Time Switch</i>	An automatic lighting control device that switches outdoor lighting relative to time of solar day with time of year correction.
<i>Backlight</i>	For an exterior luminaire, lumens emitted in 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.
<i>BUG</i>	A luminaire classification system that classifies backlight (B), uplight (U) and glare (G).
<i>Canopy</i>	A covered, unconditioned structure with at least one side open for pedestrian and/or vehicular access. (An unconditioned structure is one that may be open to the elements and has no heat or air conditioning.)
<i>Common Outdoor Areas</i>	One or more of the following: a parking lot; a parking structure or covered vehicular entrance; a common entrance or public space shared by all occupants of the domiciles.
<i>Curfew</i>	A time defined by the authority when outdoor lighting is reduced or extinguished.

<i>Emergency conditions</i>	Generally, lighting that is only energized during an emergency; lighting fed from a backup power source; or lighting for illuminating the path of egress solely during a fire or other emergency situation; or, lighting for security purposes used solely during an alarm.
<i>Footcandle</i>	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.
<i>Forward Light</i>	For an exterior luminaire, lumens emitted in the quarter sphere below horizontal and in the direction of the intended orientation of the luminaire.
<i>Fully Shielded Luminaire</i>	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.
<i>Glare</i>	Lighting entering the eye directly from luminaires or indirectly from reflective surfaces that causes visual discomfort or reduced visibility.
<i>Hardscape</i>	Permanent hardscape improvements to the site including parking lots, drives, entrances, curbs, ramps, stairs, steps, medians, walkways and non-vegetated landscaping that is 10 feet or less in width. Materials may include concrete, asphalt, stone, gravel, etc.
<i>Hardscape Area</i>	The area measured in square feet of all hardscape. It is used to calculate the Total Site Lumen Limit in both the Prescriptive Method and Performance Methods. Refer to Hardscape definition.

<i>Hardscape Perimeter</i>	The perimeter measured in linear feet is used to calculate the Total Site Lumen Limit in the Performance Method. Refer to Hardscape definition.
<i>IDA</i>	International Dark-Sky Association.
<i>IESNA</i>	Illuminating Engineering Society of North America.
<i>Impervious Material</i>	Sealed to severely restrict water entry and movement
<i>Industry Standard Lighting Software</i>	Lighting software that calculates point-by-point illuminance that includes reflected light using either ray-tracing or radiosity methods.
<i>Lamp</i>	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.
<i>Landscape Lighting</i>	Lighting of trees, shrubs, or other plant material as well as ponds and other landscape features.
<i>LED</i>	Light Emitting Diode.
<i>Light Pollution</i>	Any adverse effect of artificial light including, but not limited to, glare, light trespass, sky-glow, energy waste, compromised safety and security, and impacts on the nocturnal environment.

<i>Light Trespass</i>	Light that falls beyond the property it is intended to illuminate.
<i>Lighting</i>	“Electric” or “man-made” or “artificial” lighting. See “lighting equipment”.
<i>Lighting Equipment</i>	Equipment specifically intended to provide gas or electric illumination, including but not limited to, lamp(s), luminaire(s), ballast(s), poles, posts, lens(s), and related structures, electrical wiring, and other necessary or auxiliary components.
<i>Lighting Zone</i>	An overlay zoning system establishing legal limits for lighting for particular parcels, areas, or districts in a community.
<i>Lighting Equipment</i>	Equipment specifically intended to provide gas or electric illumination, including but not limited to, lamp(s), luminaire(s), ballast(s), poles, posts, lens(s), and related structures, electrical wiring, and other necessary or auxiliary components.
<i>Low Voltage Landscape Lighting</i>	Landscape lighting powered at less than 15 volts and limited to luminaires having a rated initial luminaire lumen output of 525 lumens or less.
<i>Lumen</i>	The unit of measure used to quantify the amount of light produced by a lamp or emitted from a luminaire (as distinct from “watt,” a measure of power consumption).
<i>Luminaire</i>	The complete lighting unit (fixture), consisting of a lamp, or lamps and ballast(s) (when applicable), 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.

<i>Luminaire Lumens</i>	For luminaires with relative photometry per IES, it is calculated as the sum of the initial lamp lumens for all lamps within an individual luminaire, multiplied by the luminaire efficiency. If the efficiency is not known for a residential luminaire, assume 70%. For luminaires with absolute photometry per IES LM-79, it is the total luminaire lumens. The lumen rating of a luminaire assumes the lamp or luminaire is new and has not depreciated in light output.
<i>Lux</i>	The SI unit of illuminance. One lux is one lumen per square meter. 1 Lux is a unit of incident illuminance approximately equal to 1/10 footcandle.
<i>Mounting height</i>	The height of the photometric center of a luminaire above grade level.
<i>New lighting</i>	Lighting for areas not previously illuminated; newly installed lighting of any type except for replacement lighting or lighting repairs.
<i>Object</i>	A permanent structure located on a site. Objects may include statues or artwork, garages or canopies, outbuildings, etc.
<i>Object Height</i>	The highest point of an entity, but shall not include antennas or similar structures.
<i>Ornamental lighting</i>	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.

<i>Ornamental Street Lighting</i>	<p>A luminaire intended for illuminating streets that serves a decorative function in addition to providing optics that effectively deliver street lighting. It has a historical period appearance or decorative appearance, and has the following design characteristics:</p> <ul style="list-style-type: none"> · designed to mount on a pole using an arm, pendant, or vertical tenon; · opaque or translucent top and/or sides; · an optical aperture that is either open or enclosed with a flat, sag or drop lens; · mounted in a fixed position; and · with its photometric output measured using Type C photometry per IESNA LM-75-01.
<i>Outdoor Lighting</i>	<p>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.</p>
<i>Partly shielded luminaire</i>	<p>A luminaire with opaque top and translucent or perforated sides, designed to emit most light downward.</p>
<i>Pedestrian Hardscape</i>	<p>Stone, brick, concrete, asphalt or other similar finished surfaces intended primarily for walking, such as sidewalks and pathways.</p>
<i>Photoelectric Switch</i>	<p>A control device employing a photocell or photodiode to detect daylight and automatically switch lights off when sufficient daylight is available.</p>
<i>Property line</i>	<p>The edges of the legally-defined extent of privately owned property.</p>

<i>Relative photometry</i>	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.
<i>Repair(s)</i>	The reconstruction or renewal of any part of an existing luminaire for the purpose of its on-going operation, other than relamping or replacement of components including capacitor, ballast or photocell. Note that retrofitting a luminaire with new lamp and/or ballast technology is not considered a repair and for the purposes of this ordinance the luminaire shall be treated as if new. "Repair" does not include normal relamping or replacement of components including capacitor, ballast or photocell.
<i>Replacement Lighting</i>	Lighting installed specifically to replace existing lighting that is sufficiently broken to be beyond repair.
<i>Sales area</i>	Uncovered area used for sales of retail goods and materials, including but not limited to automobiles, boats, tractors and other farm equipment, building supplies, and gardening and nursery products.
<i>Seasonal lighting</i>	Temporary lighting installed and operated in connection with holidays or traditions.
<i>Shielded Directional Luminaire</i>	A luminaire that includes an adjustable mounting device allowing aiming in any direction and contains a shield, louver, or baffle to reduce direct view of the lamp.
<i>Sign</i>	Advertising, directional or other outdoor promotional display of art, words and/or pictures.

<i>Sky Glow</i>	The brightening of the nighttime sky that results from 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 night sky.
<i>Temporary lighting</i>	Lighting installed and operated for periods not to exceed 60 days, completely removed and not operated again for at least 30 days.
<i>Third Party</i>	A party contracted to provide lighting, such as a utility company.
<i>Time Switch</i>	An automatic lighting control device that switches lights according to time of day.
<i>Translucent</i>	Allowing light to pass through, diffusing it so that objects beyond cannot be seen clearly (not transparent or clear).
<i>Unshielded Luminaire</i>	A luminaire capable of emitting light in any direction including downwards.
<i>Uplight</i>	For an exterior luminaire, flux radiated in the hemisphere at or above the horizontal plane.
<i>Vertical Illuminance</i>	Illuminance measured or calculated in a plane perpendicular to the site boundary or property line.

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