

Attachment C:

Model Ordinance from DarkSky International: https://darksky.org/app/uploads/bsk-pdf-manager/16_MLO_FINAL_JUNE2011.PDF

Model Ordinance from Santa Clara Valley Audubon Society and Sierra Club Loma Prieta Chapter (in the following pages)

Model Lighting Ordinance

(Created by the Santa Clara Valley Audubon Society and Sierra Club Loma Prieta Chapter)

Definitions

Notwithstanding the definitions in Chapter xxxx of this Code, for purposes of this chapter only, the following words and phrases are defined as follows:

“Correlated Color Temperature” or Color Temperature is a specification of the color appearance of the light emitted by a light source, measured in Kelvin (K). Warmer color temperatures are a lower number, and cooler color temperatures are a higher number.

“Curfew” means the time of day when lighting restrictions, Citywide or based on zoning district, are in effect.

“Directional lighting” means methods of directing light downward, rather than upward or outward, with the intention of directing light where it is needed.

“Fully shielded” means a light fixture constructed and installed in such a manner that all light emitted, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the fixture, is projected below the horizontal plane (from the bottom of the lamp).

“Glare” means light entering the eye directly from a light fixture or indirectly from reflective surfaces that causes visual discomfort or reduced visibility to a reasonable person.

“Lamp” means, in generic terms, 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.

“Light pollution” means the material 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, including light sources that are left on when they no longer serve a useful function.

“Light trespass” light that falls beyond the boundary of the property on which it is installed.

“Lumen” means the common unit of measure used to quantify the amount of visible light produced by a lamp or emitted from a light fixture (as distinct from “Watt,” a measure of power consumption).

“Luminaires” means outdoor light fixtures as defined in this Section.

“Outdoor light fixtures” means outdoor illuminating devices, lamps and similar devices, including solar powered lights, and all parts used to distribute the light and/or protect the lamp, permanently installed or portable; synonymous with “luminaires.”

“Outdoor recreational facility” means outdoor athletic and sports areas, such as ball fields, courts, swimming pools, skate parks and similar, but does not mean or include trails or playgrounds

“Seasonal lighting” means lighting installed and operated in connection with holidays or traditions;

“Security lighting” means lighting intended to detect intrusions or other criminal activity occurring on a property or site.

“Skyglow” means the brightening of the nighttime sky that results from scattering and reflection of artificial light by air molecules, moisture, and dust particles in the atmosphere, caused by light directed or reflected upwards or sideways and reduces one’s ability to view the night sky.

“String lights” means light sources connected by free-strung wires or inside of tubing resulting in several or many points of light

1. Purpose

1. The purpose of this Chapter is to regulate design, placement, color temperature, and light intensity of lighting elements in all zoning districts to reduce light pollution; to protect the dark sky, the natural environment, and public health; and to promote lighting systems and practices that conserve energy and prevent overlighting. As described in the International Dark Sky Association’s 5 Principles for Outdoor Lighting, light should be 1) useful, 2) targeted, 3) low level, 4) controlled, and 5) warm-colored.

2. Applicability

1. General Applicability

1. Requirements (Section 3) apply to all new and/or replacement outdoor lighting fixtures installed in residential or nonresidential properties from the effective date of the ordinance, whether attached to structures, poles, the earth, or any other location, unless exempted in Section 2.3 or in Section 3.
2. Nonresidential properties are encouraged to minimize outdoor light pollution from their interior lights. If interior light is visible beyond the boundaries of the lot or parcel, nonresidential properties shall comply with Section 3.6.1.
3. The following types of lighting are not allowed except in emergencies by police, fire, or medical personnel or at their direction: floodlights; outdoor lighting that blinks, flashes, or rotates; search lights; spotlights; high-intensity discharge lighting for recreation courts on private property; aerial lasers.

4. Lighting within the public right-of-way for the principal purpose of illuminating public streets or traffic control are not regulated by this ordinance.

2. Existing Lighting

1. Existing lighting must comply with the new lighting standards 5 years after the effective date of the ordinance. Any non-compliant lighting still in place after the compliance deadline shall remain extinguished at all times.
2. The following requirements shall be complied with within 30 days of the effective date of the ordinance:
 1. Outdoor light fixtures that have the ability to be redirected, shall be directed downward so as to minimize sky glow, glare, and eliminate light trespass onto adjacent properties.
 2. Outdoor light fixtures that have adjustable dimmers with color temperature that exceeds twenty-seven hundred (2,700) Kelvin shall be dimmed to comply with Section 3 to minimize glare and light trespass onto adjacent properties.
3. Light fixtures that are replaced within the first 5 years of the effective date of the ordinance shall meet the standards (i.e., color temperature and illumination limit) in Section 3.
4. Extensions: A property owner may apply for a 6-month extension of this deadline by submitting a request to the Planning Director or equivalent thirty (30) days before the compliance deadline detailing why an extension is needed. Any noncompliant lighting shall remain extinguished while the request is pending. Upon demonstration of good cause for providing a property owner additional time to comply with the requirements of this section, the Planning Director or equivalent may extend the property owner's time to comply and/or may require a plan for compliance that requires partial compliance in advance of full compliance. For purposes of this section, the term "good cause" shall mean a significant financial or other hardship which warrants an extension or conditional extension of the time limit for compliance established herein. In no instance shall the Planning Director issue an extension of the compliance period in excess of one year's time.

3. California Building Code

1. All lighting must comply with the requirements of the California Building Code including Title 24 of the Building Code.
2. All outdoor lighting shall comply with California Building Code Title 24 Lighting Zone One (LZ1).
3. Should a conflict exist with the provisions of this ordinance, the standards in the California Building Code shall prevail.

3. Outdoor Lighting Standards

1. Exemptions

1. Seasonal lighting
 1. Temporary Seasonal lighting is allowed from October 15 to January 15 only.
 2. Such lighting is exempt from Section 3.3-3.6 and must be extinguished by 11pm.

2. Aircraft navigation lights such as those attached to radio/television towers and other lighting required by the State of California or the U.S. federal government.
3. High intensity and/or special purpose lighting is governed by Section 4.

2. Correlated Color Temperature

1. The correlated color temperature of outdoor luminaires shall not exceed 2700 K. Luminaires rated at or below 2200 K are encouraged for better nighttime visibility, protection of wildlife, and reduction of glare and light pollution.

3. Shielding

1. All outdoor light fixtures shall be fully shielded and directed downward except as otherwise specified.
2. Exceptions
 1. Low-voltage Landscape Lighting: Low-voltage landscape lighting, such as that used to illuminate fountains, shrubbery, trees, and walkways, do not have to be shielded fixtures, provided that they use no more than 150 lumens.
 2. Outdoor Art: Low-voltage lighting used to illuminate outdoor art do not have to be shielded fixtures.
 3. Greenhouse Lighting: At or under 200 lumens, a fixture can be unshielded as long as no light shines outside the structure or is visible from another property or the sky.

4. Lighting Control Requirements

1. All outdoor lighting shall be controlled by motion-sensors or be fully extinguished by 11:00 p.m. or when people are no longer actually present in exterior areas, whichever is earlier, except
 1. Lighting of outdoor art shall be fully extinguished by 11:00 pm
 2. Where required by the California Building Code or state law, any lighting at building entrances, parking areas, walkways, and driveway areas that are required to remain illuminated after 11:00 p.m.
 3. Lighting of a minimal appropriate intensity, allowed in conjunction with uses that are permitted to operate past 11:00 p.m., with a conditional use permit
 4. Outdoor solar-powered pathway lights without controls that are 25 lumens or less
2. All lighting activated by motion-sensors shall extinguish no more than 5 minutes after activation. Owners of such equipment shall (1) maintain it in good working order; and (2) adjust the trigger threshold appropriately such that it only triggers on large objects like people.
3. 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, except
 1. Lighting under canopies or lighting for tunnels, parking garages, garage entrances.

5. Illumination Levels

1. Lighting in which any single luminaire exceeds 20,000 lumens or the total lighting load exceeds 160,000 lumens shall not be installed or used without a conditional use permit.

6. Limits to Offsite Impacts

1. No exterior light or combination shall cast light exceeding zero point one (0.1) foot-candle onto an adjacent or nearby property, with the illumination level measured at the property line between the lot on which the light is located and the adjacent lot, at the point nearest to the light source, except if two adjacent properties are non-residential, or function as a shopping center, and agree to coordinate lighting.
2. No direct off-site glare from a light source shall be visible above three feet at a public right-of-way.
3. Indoor Lighting of Nonresidential Properties
 1. Businesses that involve the direct retailing of goods to the general public may have downward directed, low voltage, and fully shielded lighting for window displays.
 2. Any lighting device located on the inside of a window which is visible beyond the boundaries of the lot or parcel with intermittent fading, flashing, blinking, rotating, or strobe light illumination is prohibited.
 3. Properties are encouraged to draw blinds and/or turn off non-essential indoor lighting at night.
 4. Interior lights shall be extinguished or motion-sensor operated by 11:00 p.m. or within two hours after the business is closed, whichever is earlier.

7. Outdoor Security Lighting

1. Security lighting may be provided when necessary to protect persons and property. When security lighting is utilized, the following standards shall apply:
2. Security lighting shall be controlled by a programmable motion-sensor device, except where continuous lighting is required by the California Building Code. All lighting activated by motion sensors shall extinguish no more than 5 minutes after activation. Automated controls shall be fully programmable and supported by battery or similar backup.
3. Security lighting shall be downward directed, fully shielded, and not be mounted at a height that exceeds 12 feet, measured from the adjacent grade to the bottom of the fixture.
4. Floodlights shall not be permitted.
5. Security lights intended to illuminate a perimeter, such as a fence line, are permitted only if such lights do not result in light trespass.
6. Motion-activated security lights shall not use luminaires that exceed a maximum of 1,600 lumens.

8. Service Station Canopies

1. The following standards shall apply to service station canopy lighting, in addition to all other applicable standards.
2. Service station canopies shall not be transparent or translucent.

3. Lighting fixtures in the ceiling of canopies shall be fully recessed into the underside of the canopy. All lighting fixtures shall be located so as to shield direct rays from adjoining properties or public rights-of-way.
4. Light fixtures shall not be mounted on top of the fascia of such canopies.
5. The maximum light intensity under the canopy shall not exceed an average maintained foot-candle (horizontal) of 12.5, when measured at finished grade. Luminaires shall be of a low level, indirect diffused type.
6. No luminaire shall be higher than 15 feet above the finished grade.
7. The fascia of such canopies shall not be illuminated, except for approved signage in compliance with Section 5.

4. High Intensity and/or Special Purpose Lighting

1. Conditional use permits

1. Lighting installations that do not comply with lighting standards may be allowed if a conditional use permit is obtained.
2. To obtain a conditional use permit, applicants shall demonstrate that the proposed lighting installation meets the following requirements:
 1. Demonstrates through third-party review that the intended function cannot be achieved through the requirements of this ordinance.
 2. Is at the lowest illumination levels that meet the requirement of the task.
 3. 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.
 4. Employs lighting controls to reduce lighting at a project-specific curfew time to be established in the Permit.
 5. Complies with the lighting standards in the ordinance after the project-specific curfew.
 6. The permit must demonstrate that the applicant is making every reasonable effort to adhere to the code requirements.

2. String Lighting

1. String lighting shall not be
 1. Blinking and/or chasing lights.
 2. Secured with materials or in a manner that will puncture the skin or restrict the growth of any living landscape feature.
 3. Attached to a fence in a manner that permits light trespass to adjacent property.
 4. Allowed to emit no more than 42 lumens.
 5. A correlated color temperature of more than 2,700 K
2. Residential Areas: In addition to Section 4.2.1, string lighting is permitted subject to the following requirements:
 1. It shall not illuminate more than fifty (50) percent of the rear yard or 500 sq. ft., whichever is more restrictive.
 2. It shall not be visible from a public right-of-way.
 3. It shall be used primarily to illuminate patio areas.
 4. It shall be extinguished by 11:00 p.m.

3. Nonresidential and Mixed-Use Areas: String lighting may be permitted subject to the following requirements, with approval of the Planning Director or equivalent:
 1. Any development or property is permitted to submit one application for string lighting, which shall include all uses of string lighting on the development or property.
 2. It shall not illuminate an area greater than five (5) percent of the building(s) footprint of a shopping center and fifteen (15) percent for a freestanding commercial building not part of a shopping center.
 3. It is limited to designated outside dining or display areas.
 4. It is extinguished two (2) hours after the close of business.

3. Outdoor Recreational Facilities

1. Lighting at public and private outdoor recreational facilities, including but not limited to playing fields, arenas, tracks, and swimming pools, will be fully shielded to the greatest practical extent to reduce glare, safety hazards, light trespass, and light pollution.
2. Such lighting shall meet all of the following requirements.
 1. Provide levels of illuminance that are adjustable according to task, allowing for illuminating levels not to exceed nationally recognized Illuminating Engineering Society (IES). standards according to the appropriate class of play, as well as for lower output during other times, such as when field maintenance is being actively performed
 2. Be provided exclusively for illumination of the surface of play and adjacent viewing stands, and not for any other application, such as lighting a parking lot.
 3. Must be extinguished by 11:00 pm or within one (1) hour of the end of the active play, whichever is earlier.
 4. Shall be fitted with motion sensors and/or mechanical or electronic timers to prevent lights from being left on accidentally overnight.
3. Illumination levels shall be designed to be no higher than recommended for Class IV play, as defined by the Illuminating Engineering Society publication ANSI/IES RP-6-20, as amended.
 1. design and installation adheres to the IDSA's Criteria for Community Friendly Outdoor Sports Lighting
 2. Height?

5. Sign Lighting

1. All externally or internally illuminated signs, advertising displays, and building identification shall be extinguished at 11:00 p.m. or within one (1) hour of the end of normal business hours, whichever occurs first.
2. Externally Illuminated Signs
 1. Externally illuminated signs shall be lit only from the top of the sign, with fully shielded luminaires designed and installed to prevent light from spilling beyond the physical edges of the sign.
 2. All external sign illumination must comply with the Correlated Color Temperature (CCT) requirements of this ordinance.
3. Internally Illuminated Signs:
 1. Outdoor internally illuminated signs (whether free standing or building mounted) shall be subject to all the following requirements:

1. The internally illuminated portion of the sign cannot be white, cream, off-white, light tan, yellow or any light color unless it is part of a registered logo that does not have an alternate version with dark tones. Light tone colors such as white, cream, off-white, light tan, yellow or any light color are permitted in the logo only, provided that such colors in the logo shall represent not more than 33% of the total sign area permitted.
2. The internal illumination, between sunset and sunrise, is to be the lowest intensity needed to allow the sign to be visible and shall not exceed 50 nits (=170 lumens).
3. Size limit: The luminous surface area of an individual sign shall not exceed 50 square feet.
4. Electronic message displays are discouraged and shall comply with outdoor lighting curfews stipulated in this ordinance.
5. Moving and/or flashing text or images are prohibited.
6. Street lighting must consist of fully shielded fixtures, directed downward to meet particular need and away from adjacent properties and rights-of-ways to avoid light trespass. [1]
7. Street lighting shall have a correlated color temperature of 2,700 Kelvin or less (Cupertino and Los Gatos). [1]
8. The lumen output of each streetlight shall be the lowest reasonable lumen output to meet safety standards but in no case greater than 10,000 lumens. [4]

References

[1] Communication with Public Works Directors in Cupertino, Los Gatos

[2] Flagstaff Ordinance:

<https://www.codepublishing.com/AZ/Flagstaff/html/Flagstaff13/Flagstaff1312003.html#13.12.003>
<https://flagstaffdarksdies.org/dark-sky-solutions/dark-sky-solutions-2/outdoor-lighting-codes/>

[3] County of LA Rural ordinance

https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT22_PLZO_DIV4COZOSUDI_CH22.80RUOULIDI#:~:text=The%20Rural%20Outdoor%20Lighting%20District,and%20preserving%20the%20nighttime%20environment

Malibu's Dark Sky Ordinance:

https://www.malibucity.org/DocumentCenter/View/29389/Attachment-2_Malibu-Municipal-Code-Ch-1741?bidId=

Brisbane's Staff Report + Dark Sky Ordinance:

<https://mccmeetingspublic.blob.core.usgovcloudapi.net/brisbaneca-meet-af1c62b805bd463ea43072d7018a7c98/ITEM-Attachment-001-5913cc8fb5de4f06a173268ed08d5a49.pdf>

Cupertino's Dark Sky and Bird Safe Design Ordinance:

https://codelibrary.amlegal.com/codes/cupertino/latest/cupertino_ca/0-0-0-96605



American Bird Conservancy Model Bird-Friendly Building Guidelines

October 2023

These model guidelines are intended to be a starting point for cities, towns, villages, counties, states, universities, businesses, and any other entity interested in regulating or guiding building construction to reduce bird collisions with glass. They describe a truly bird-friendly building.

Summarized simply, these guidelines are based on a 100/100/100 framework: 100% of all glass and other building materials should be bird friendly in the first 100 feet of 100% of buildings. The guidelines also specifically include making bird friendly all hazardous features and materials that cause collisions no matter where they are found.

Any group that adopts these guidelines as written will be at the leading edge of creating a bird-friendly built environment. However, many groups considering such guidelines will be interested in softening the language to exempt certain types of buildings or to reduce the amount of bird-friendly materials required. In anticipation of this, American Bird Conservancy (ABC) has created a discussion of the issues to be considered when revising this model (see [ABC's Legislation, Ordinances, and Codes](#)).

This model will be most commonly adopted as an ordinance to modify municipal building codes and is therefore written in that format. However, the text can be easily adapted to fit other building guidance formats.

ABC will revise these guidelines as new science, materials, techniques, and technologies become available, so please make sure that you have the most current version before you begin the process of creating your own guidelines. The most recent version can be found on ABC's website (see [ABC's Legislation, Ordinances, and Codes](#)).

PROPOSAL NUMBER:

PROPOSAL NAME: Bird-Friendly Building Design Requirements

SPONSOR(S):

PURPOSE: This building ordinance has been created to address the role of the (MUNICIPALITY)'s built environment in the annual loss of up to 1 billion birds due to glass collisions in the United States.

WHEREAS, birds provide valuable and important ecological services,

WHEREAS, (MUNICIPALITY) has recorded (XXX) species of resident and migratory bird species,

WHEREAS, birding is a hobby enjoyed by 46 million Americans with an annual \$107 billion total industry output in the United States,

WHEREAS, as many as 1 billion birds may be killed by collisions with windows every year in the United States,

WHEREAS, new buildings can be designed to reduce bird deaths from collisions without significant additional cost,

WHEREAS there exist strategies to mitigate collisions on existing buildings,

WHEREAS witnessing a collision is an upsetting, sad event,

WHEREAS no person wants to live or work in a building that kills wildlife,

WHEREAS façades with more than 30% glass usually increase costs and CO₂ emissions from heating and cooling,

WHEREAS, bird-friendly practices can go hand-in-hand with energy efficiency improvements,

And **WHEREAS** (ANY ADDITIONS SPECIFIC TO THE MUNICIPALITY),

NOW, THEREFORE, the (LEGISLATIVE BODY) of the (MUNICIPALITY) does hereby ordain as follows:

1. Section (XX.XXX) of the (MUNICIPALITY)'s General Ordinances is created to read as follows:

- a. DEFINITIONS

- i. Glass: All glass, including spandrel glass.
- ii. Reflective and/or Transparent Non-Glass Materials: Any non-glass materials that are transparent or highly reflective, including but not limited to plexiglass and polished metal.
- iii. Bird Activity Zone: The zone between 0 and 100 feet above grade.
- iv. Auxiliary Structures: Structures that pose significant collision risks to birds wherever they are found, including but not limited to:
 1. Transparent or highly-reflective:
 - a. Railings, including balconies
 - b. Noise barriers
 - c. Wind barriers (including in parking structures)

- d. Transportation or weather shelters, including both private and public bus and train stops
 - 2. Small, stand-alone buildings that present conditions that can be both transparent and reflective:
 - a. Gazebos
 - b. External ticket booths
 - 3. Any other free-standing glass, plexiglass, or other clear, transparent, or highly-reflective free-standing structure
- v. High-Risk Building Features:
 - 1. Skyways/skywalks
 - 2. All floors of building connectors
 - 3. All outside corners where a bird can see in one side of the building and out the other (“fly-through conditions”) within 30 feet of the corner
 - 4. All interior corners within 30 feet of the corner
 - 5. Glazing adjacent to courtyards
 - 6. Atria, open and enclosed
 - 7. Three floors of glazing adjacent to any green roof or partial green roof
- vi. Major Renovations and Additions Involving Glass: Any renovation in the Bird Activity Zone that:
 - 1. Replaces at least 25% of a structure’s existing glass or other transparent or reflective materials, or
 - 2. Adds any new glass or transparent or reflective materials
- vii. Bird-Friendly Glass: Glass or materials that meet any of the following conditions:
 - 1. Any product with an American Bird Conservancy Material Threat Factor Rating ≤ 30 . Visit birdsmartglass.org to view the continuously-updated database
 - 2. Any product that follows American Bird Conservancy’s [Prescriptive Rating Criteria \(abcthreatfactor.org\)](http://abcthreatfactor.org)
 - 3. Glass with exterior surface (surface 1) obstructed and effectively covered by building-integrated structures that do not have gaps larger than 12” in any dimension, including non-glass double-skin facades, metal screens, fixed solar shading, exterior insect or solar screens, and other features as determined by the (BUILDING DEPARTMENT OR SIMILAR) that meet these conditions.
 - 4. Continuous-surface materials, including spandrel glass and polished or brushed metals, whose surface 1 gloss reading follows the [ABC Prescriptive Rating Criteria \(abcthreatfactor.org\)](http://abcthreatfactor.org) to ensure that they do not produce strong reflections).

b. REQUIREMENTS

- i. 100% of the glazing for all building types must be Bird-Friendly Glass for the following projects:
 - 1. All new construction in the Bird Activity Zone.

2. Major Renovations and Additions Involving Glass and Reflective and/or Transparent Materials in the Bird Activity Zone.
3. All Auxiliary Structures regardless of whether the rest of the building or project triggers these bird-friendly building requirements.
4. All High-Risk Building Features regardless of whether the rest of the building or project triggers these bird-friendly building requirements.