



CITY OF
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ALTO**

Planning & Transportation Commission Staff Report

**From: Planning and Development Services Director
Lead Department: Planning and Development Services**

**Meeting Date: August 14, 2024
Report #: 2402-2652**

TITLE

Recommend the City Council Adopt the Draft Ordinances Updating Palo Alto Municipal Code (PAMC) Chapter 18.40 (General Standards and Exceptions) Section 18.40.250 (Lighting) and Adding a New Section 18.40.280 (Bird-Friendly Design).

RECOMMENDATION

Staff recommend the Planning and Transportation Commission (PTC) recommend that the City Council adopt the draft ordinances updating Palo Alto Municipal Code (PAMC) Section 18.40.250 (Lighting) and adding a new section 18.40.280 (Bird-Friendly Design).

EXECUTIVE SUMMARY

As directed in accordance with the Implementation Plan for the 2024 City Council Priorities and Objectives, and implementation of Comprehensive Plan Program L6.3.1, staff has drafted ordinances to reduce light pollution and protect avian species. The draft lighting ordinance modifies the existing lighting standards to reduce light pollution in alignment with Dark Sky principles. The draft bird-friendly design standards ordinance requires bird-friendly design principals to be incorporated into building design to better protect avian species.

The draft ordinances reflect:

- The feedback received from the Architectural Review Board (ARB) study session from July 18, 2024,
- A review of model ordinances from Dark Sky International and the Santa Clara Valley Audubon Society,
- Consultation with architects and designers, conversation with retailers and suppliers,
- Technical assistance provided by consultants, and
- Research on regulations implemented in other jurisdictions.

Staff will consider revisions to the draft ordinances based on the PTC recommendations to the City Council. The City Council consideration is tentatively scheduled for September 2024.

PROJECT DESCRIPTION

The proposed project is a Council-directed code amendment updating the City's lighting standards and introducing new bird friendly design standards.

Lighting Ordinance

The draft ordinance updates the City's existing lighting standards (18.40.250) to address light pollution through several key measures. The proposed amendments align with Dark Sky principles, promoting reduced light pollution overall. To ensure consistent enforcement and simplify compliance for property owners, these regulations would apply uniformly across the entire city.

The ordinance mandates shielding for all new exterior lighting fixtures to further minimize light trespass. While maintaining the foot-candle measurement as the primary means of controlling light trespass, the ordinance introduces a new color temperature limit of 3,000 Kelvin. To further reduce excess lighting, the ordinance mandates automatic extinguishment or motion-sensor activation for exterior lights by 10:00 p.m. or whenever people are not present, whichever is later.

Bird-Friendly Design

To enhance bird safety, the draft ordinance would amend Chapter 18.40 (General Standards and Exceptions) to create a new section establishing bird friendly design standards. The ordinance includes a requirement to comply with at least one of three Bird-Friendly Treatment options for all applicable buildings. Having several options to choose from provides more flexibility for applicants. These principles go beyond limiting untreated glass on building facades. They also encourage alternative approaches approved by qualified professionals and promote broader design practices that reduce bird collisions. Some exemptions are recommended for historic structures, small ground-floor retail storefronts, and particular residential projects.

BACKGROUND

On July 3, 2014, the Architectural Review Board (ARB) received a presentation (Attachment D) from the Santa Clara Valley Audubon Society entitled "Building with Birds in Mind." Since that time, requirements related to bird safety have been applied on a case-by-case basis through conditions of approval.

In February 2023, the Council selected and approved the 2023 City Council Priorities and Objectives. Under the Climate Change and the Natural Environment (CC&NE) category, Council directed staff to initiate an evaluation of strategies to protect natural habitats such as bird friendly glass and wildlife protection from light pollution in accordance with implementation measure CC&NE 6.

In January 2024, the Council included “Climate Change and the Natural Environment: Protection and Adaptation” as a continued priority for this year. “Approve a bird friendly glass and wildlife light pollution protections ordinance” is 2024 City Council Objective #35.

Planning and Development Services has worked with advocates, researched the topics, collaborated across departments, and consulted with Michael Baker International (MBI). MBI staff provided additional background information and expertise on bird-friendly design, to prepare the draft ordinance. Conversation with architects, designers, retailers, and suppliers further informed the current version.

The ordinance builds upon and incorporates existing lighting standards codified in PAMC Section 18.40.250 (Attachment A) as well as input from stakeholders related to light pollution and avian safety in the built environment.

Architectural Review Board Study Sessions

On February 15, 2024¹, the ARB reviewed the concept presented by staff for both Dark Sky and Bird Friendly Design regulations. The ARB expressed its opinion that staff should explore differentiated management approaches for distinctive areas within the city (e.g., foothills, Baylands, and urbanized areas) for both ordinances. In addition, the ARB recommended exempting residential uses from the Bird Friendly Design ordinance to avoid hindering housing production efforts with added high costs to features such as windows for multi-family uses and burdensome costs to small projects, such as single-family uses. With respect to lighting, the ARB requested staff investigate alternative methods for regulating brightness level (e.g. per square foot, per acre for lots, and per foot for string lights) to ensure a more equitable application of the ordinance.

On July 18, 2024,² the ARB reviewed draft ordinances for both Lighting and Bird Friendly Design regulations. Staff presented draft ordinances and discussion items for feedback. These items related to the applicability of both topics and potential exemptions for the bird-friendly design regulations.

The ARB suggested using the existing definition of “substantial remodel” for the applicability section of both ordinances. They also expressed a preference for a size limitation as a regulatory mechanism, aiming to reduce the burden of implementing these new standards, particularly for single-family homeowners. Further details on how the ARB's feedback has been incorporated are described in the Analysis section below.

Lighting and DarkSky International

¹ Link to the staff report for the study session on February 15, 2024:

<https://www.cityofpaloalto.org/files/assets/public/v/1/agendas-minutes-reports/agendas-minutes/architectural-review-board/2024/arb-2.15-dark-skies-bird-safety.pdf>

² Link to the staff report for the study session on July 18, 2024:

<https://www.cityofpaloalto.org/files/assets/public/v/1/agendas-minutes-reports/agendas-minutes/architectural-review-board/2024/arb-7.18-dark-skies-bird-safe-glass.pdf>

The term “dark sky” generally refers to movement and achievement of significant reduction in light pollution so that the sky returns or becomes closer to its natural nighttime darkness. Jurisdictions can implement regulations to decrease light pollution, and many cities have adopted dark sky ordinances in an effort to reduce light pollution.

DarkSky International is a recognized worldwide authority combatting light pollution.³ The organization publishes guidance for communities seeking to achieve a “dark sky” and decrease light pollution. The framework focuses on five principles, which have been incorporated into the proposed ordinance:

1. Useful: Use light only if it is needed. All light should have a clear purpose. Consider how the use of light would impact the area, including wildlife and their habitat.
2. Targeted: Direct light so it falls only where needed. Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.
3. Low Level: Light should be no brighter than necessary. Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than intended.
4. Controlled: Use light only when it is needed. Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.
5. Warm-colored: Use warmer color lights where possible. Limit the amount of shorter wavelength (blue-violet) light to the least amount needed.

Bird-Friendly Design

Bird-friendly glass regulations are intended to protect the natural environment by enhancing bird-safety features in the built environment. The City’s Comprehensive Plan includes a policy and associated program related to bird-friendly design.

- Policy L-6.3: Encourage bird-friendly design.
 - Program L6.3.1: Develop guidelines for bird-friendly building design that minimizes hazards for birds and reduces the potential for collisions.

Through the draft ordinance, the City seeks to establish regulations to reduce avian mortality as it relates to the built environment, particularly windows and other glass features on buildings. The ordinance would implement the Comprehensive Plan policy and establish uniform standards for development applications, eliminating the need for a case-by-case approach.

ANALYSIS

The proposed ordinances incorporate comments from the July ARB study session, the provisions included in model ordinances from Dark Sky International and the Santa Clara

³ Link to the DarkSky International website: <https://darksky.org/who-we-are/advocates>

Audubon Society for Dark Sky regulations (Attachment C), and a review of regulations on both Dark Sky and bird-friendly design from other jurisdictions (Attachment D).

Lighting Ordinance

Palo Alto Municipal Code (PAMC) Section 18.40.250 includes standards for lighting. Staff updated this section to include additional lighting standards to achieve a reduction in light pollution and for consistency with Dark Sky principles. The updated ordinance has the following components:

- Applicability
- Shielding
- Illumination Level
- Lighting Control
- Special Purpose Lighting

Applicability

During the study session with the ARB in July 2024, a draft of the Lighting Ordinance, which would apply new lighting standards to all new structures and exterior modifications requiring separate planning approval, was presented. However, staff were concerned that this broad scope could burden property owners seeking minor alterations, especially those unrelated to lighting. To address this, staff presented the ARB with three alternative definitions for the ordinance's applicability, seeking feedback on the appropriate level of regulation to balance effectiveness with minimizing cost and maintenance burdens for property owners.

The ARB recommended the use the existing definition "Substantial Remodel" from Section 16.14.070 of the Building Code which is broadly defined as any project altering 50 percent or more of the exterior wall linear length, exterior wall height, or roof framing area. Staff is supportive of this recommendation and the approach is reflected in the draft ordinance text. "Substantial Remodel" strikes a balance by ensuring that the ordinance covers significant projects where lighting changes are likely to be impactful while exempting smaller modifications.

In addition, the ARB suggested creating a "Light Sensitive Area" designation, similar to the "Bird Sensitive Area" in the Bird Friendly Design ordinance (definition of the "Bird Sensitive Area" can be found in the draft ordinance, Attachment B). However, rather than delineating specific areas within city limits, staff has opted for an additional criterion focusing on modifications to outdoor lighting. The draft ordinance now applies to new construction, substantial remodels, and any installation, replacement, or alteration of outdoor lighting fixtures or systems.

Shielding

Existing lighting requirements address shielding for pedestrian and security lighting, architectural lighting, and lighting fixture location. Staff recommend expanding these requirements to encompass all light fixtures to reduce light pollution. Limited exceptions are

proposed for low-voltage landscape lighting, low-voltage lighting for illuminating outdoor art or public monuments, lighting on a property line, and string lighting.

Illumination Level

Following the recommendations from Dark Sky International and the Santa Clara Audubon Society, staff initially proposed maximum brightness requirements measured in lumens. Lumens are a measurement unit of lighting brightness, commonly used in other jurisdictions, but can be a complex concept for enforcement purposes. Therefore, the proposed ordinance text retains the existing foot-candle measurement as the primary means to mitigate light trespass from exterior lighting to adjacent properties.

In addition to maintaining the foot-candle measurement, staff also considered color temperature limitations. While initial discussions with environmental advocates from the Santa Clara Audubon Society and the Sierra Club Loma Prieta Chapter favored a 2,700 Kelvin limit due to its reported wider availability, public safety concerns emerged during conversation with other jurisdictions. Specifically, there were concerns about a lower color temperature potentially affecting visibility in public spaces. A minimum color temperature of 4,000 Kelvin is recommended for any outdoor lighting for public safety purposes. Staff confirmed this information with the City of Palo Alto public safety staff. Taking these concerns into account, along with practices in neighboring jurisdictions with dark sky ordinances, staff determined a 3,000 Kelvin limit offered a balanced approach by providing adequate visibility in the exterior space, while minimizing light pollution. However, the PTC could consider a higher limit, such as 4000 Kelvin, for areas where safety is a particular concern as this is the preferred temperature for surveillance in public spaces.

Lighting Control

The existing lighting requirements encourage the installation of timers and dimmers to reduce light glare for both exterior and interior lighting during nighttime hours. Additionally, shielding of interior lighting fixtures to prevent glare and light trespass beyond the property line is required. Building on these existing guidelines, staff propose enhanced lighting control measures for all outdoor lighting. The proposed ordinance would require extinguishment of exterior lights or motion-sensor activation by 10:00 p.m., or whichever time comes later when there is no person present in the outdoor area. To further minimize unnecessary light usage, the motion sensors would deactivate after a maximum of 10 minutes.

Special Purpose Lighting

The Special Purpose Lighting Subsection introduces new standards for and addresses four key categories: outdoor security lighting, outdoor recreational facilities lighting, gasoline service station lighting, and string lighting.

- **Outdoor Security Lighting.** Requirements for outdoor security lighting mirror general lighting standards, including requirements for lighting control and shielding. The

provision prohibits the use of floodlights and limits luminaires to a maximum of 100 watts or 1,600 lumens, whichever is lower.

- Outdoor Recreational Facilities Lighting. Lighting for any outdoor recreational facilities or athletic facilities lighting would need to adhere to Illuminating Engineering Society (IES) guidelines based on the type of activity and should only illuminate the playing surface and stands. Light levels should be adjustable for different tasks, and off-site light pollution minimized. Lights must be off by 10:30 p.m., unless in use for active play, in which case timers must be installed to prevent accidental overnight illumination.
- Gasoline Service Station Lighting. Consistent with general lighting standards, service station lighting requires all fixtures in the ceiling of canopies to be fully recessed or mounted directly to the underside. This regulation aims to minimize light spillover by prohibiting light fixture placement on top of the fascia. The maximum light intensity level for canopies is set at 12.5 foot-candles, with a maximum luminaire height of 15 feet above finished grade.
- String Lighting. String lighting prohibits blinking or chasing effects. Consistent with other outdoor lighting, a color temperature of 3,000 Kelvin or brightness not exceeding 42 lumens per each light bulb is required. In commercial and mixed-use areas, string lighting is restricted to designated outdoor dining or display areas, or to common open space and would be subject to Director approval.

Bird-Friendly Design Ordinance

The draft ordinance would establish a new section 18.40.280 under PAMC Chapter 18.40 for the Bird-Friendly Design standards. The new section has the following components:

- Applicability
- Bird-Friendly Treatment
- Bird-Friendly Treatment Location
- Alternative Compliance
- Exemptions

The conversations with glass retailers, suppliers, and manufacturers revealed that bird-friendly treated glass is rarely requested for residential buildings. While some local retailers were aware of bird-friendly standards (e.g., fritted or patterned glass), they confirmed these options are not readily available and require special orders.

Retailers and suppliers did not provide specific cost data, but they unanimously confirmed that treated glass is more expensive than standard glass. There are some general estimates of the cost of implementing bird-friendly design from the “Building Safer Cities for Birds” report by

Yale Law School and the American Bird Conservancy.⁴ Although the cost may vary based on specific project requirements, building types, and local conditions, the report estimates that the overall cost increase for implementing bird-friendly design in new construction is approximately two to ten percent. This cost increase would include not only the treated glass itself but also other bird-friendly design elements, such as window patterns, screens, and building orientation.

Furthermore, single-family homes and other smaller residential properties typically have less glass surface area and are less reflective than larger non-residential buildings, posing a lower risk of bird collisions. Retrofitting existing homes with bird-friendly treatments could be particularly difficult and expensive.

Considering these factors, staff drafted the ordinance to balance bird protection with the potential burden on property owners, particularly those with smaller buildings such as single-family homes. The ordinance prioritizes bird safety in high-risk areas (designated Bird Sensitive Areas) and for larger glass installations, while exempting smaller residential projects and less hazardous situations through clearly defined applicability criteria.

Applicability

Similar to the Lighting standards, the phrase "exterior modifications that require a separate planning approval" was replaced with "substantial remodel" to allow more flexibility for single-family homeowners or other property owners seeking minor alterations. In addition, the current draft states that only new construction or substantial remodels proposed within a Bird Sensitive Area are subject to these regulations. A Bird Sensitive Area is defined as a 300-foot buffer around water features, parks, or open spaces exceeding one acre, as well as areas east of Highway 101 and west of Foothill Expressway. This type of buffer, commonly used in urban planning, has been successfully implemented in other cities for bird-friendly design.

During the ARB study session on July 18, 2024, concerns were raised about exempting all single-family homes outside the Bird Sensitive Area, as even smaller structures with large glass areas could pose a risk to birds. Therefore, the current draft ordinance, consistent with the ARB feedback, requires any new or replacement fenestration (unbroken glass) that is 24 square feet or larger to comply with Bird Friendly Design standards, regardless of the building type or location. This size-based approach aims to balance the need for bird protection with flexibility for smaller residential projects. Standard window sizes vary by type of window, but common widths range from two to four feet and common heights range from three to six feet.

While a size-based regulation may not be perfect (as birds can collide with smaller windows too), it is a reasonable compromise that addresses the most significant risks while minimizing the burden on homeowners. The ordinance also requires Bird Hazard Installations (e.g., glass awnings, handrails) and Fly-through Hazards (openings that birds might try to fly through) to

⁴ "Building Safer Cities for Birds" report by Yale Law School and the American Bird Conservancy: https://law.yale.edu/sites/default/files/documents/pdf/building_safer_cities_for_birds.pdf

comply with Bird Friendly Design standards, regardless of size or location, as these pose a particularly high risk of bird collisions.

The definition of Bird Sensitive Area was simplified to include specific geographic areas east of Highway 101 and west of Foothill Expressway since the 300-foot buffer. This change was made because the previous 300-foot buffer zone already encompassed most of these areas, which have a higher risk of bird collisions due to their expansive vegetation and proximity to the shoreline. This simplification aims to make the ordinance clearer and easier to apply, while still effectively protecting areas where bird collisions are most likely to occur.

Bird-Friendly Treatment

Bird-friendly treatment includes three options for making buildings safer for birds, requiring at least one option for compliance.

- Fenestration and glazing: This is the most common and effective way to address bird collisions, as most occur due to reflectivity on glass or glazing. It provides specific design standards for patterns on fenestration or glass.
- Exterior features: Permanent features like screens, shutters, or shading devices can minimize glare and reflection. This option is often more approachable for single-family homeowners or smaller developments than fenestration/glazing treatments (which may not be readily available) or threat factor analysis (described below).
- Threat factor: This system, developed by the American Bird Conservancy and architects, quantifies the risk a material poses for bird collisions. Staff proposes a threat factor of 15 or below, consistent with the U.S. Green Building Council's Bird Collision Deterrence Pilot Program.

Bird-Friendly Treatment Location

Similar to requirements in other jurisdictions, staff included proposed limitations on where the Bird-Friendly Treatment should be incorporated at minimum:

- Below 40 Feet: Bird-Friendly Treatment should be incorporated on no less than 90 percent of the facade's surface area between the existing grade and 60 feet above.
- Above 40 Feet: Bird-Friendly Treatment should be incorporated on no less than 60 percent for the portion of the facade exceeding 40 feet in height.

The initial height threshold staff considered was similar to other jurisdictions, such as San Francisco and Cupertino, at 60 feet. However, after further analysis, including voluntary requirements on bird-friendly design in the California Green Buildings Standards Code (CALGreen), staff adjusted the threshold to 40 feet. This aligns with CALGreen standards and is deemed more appropriate for Palo Alto. Aligning the City's standards with CALGreen standards is consistent with ARB recommendations.

Exemptions

The draft ordinance exempts a few building types from the bird-friendly design standards. These exemptions include:

- **Historic Structures:** Buildings with historical designation are exempt, recognizing the importance of preserving cultural heritage.
- **First-Floor Retail Storefronts:** Storefronts on the ground floor, up to 14 feet in height, are exempt to avoid undue burden on small businesses.
- **100% affordable housing projects:** 100% affordable housing project, as defined in Section 18.32.030, are exempt from the requirements for Bird-Friendly Treatments. This exemption acknowledges the financial constraints faced by these projects, which prioritize providing essential affordable housing while operating within limited budgets.

NEXT STEPS

Staff will forward the PTC's recommendation to the City Council for consideration and adoption of these ordinances in September 2024.

FISCAL/RESOURCE IMPACT

The implementation of the proposed ordinances is not anticipated to have any direct fiscal impacts on the City budget.

STAKEHOLDER ENGAGEMENT

Staff have actively engaged with representatives from the Santa Clara Valley Audubon Society and Sierra Club Loma Prieta Chapter to solicit their input and expertise on the proposed ordinances. Staff also conducted two study sessions, one in February and another in July 2024, through the ARB's regular meeting schedule to provide a platform for community members to express their views and concerns regarding the proposed ordinances.

At the time of staff report preparation, staff received two comment letters from the Santa Clara Valley Audubon Society (Attachment F). The email from June 28, 2024 included comments and suggestions on the draft Lighting ordinance while the email from June 30, 2024 includes comments and suggestions on the draft Bird-Safe Design ordinance.

ENVIRONMENTAL REVIEW

The City has reviewed these proposed ordinances in accordance with that authority and criteria set forth in the California Environmental Quality Act. The City, as the lead agency, anticipates that these ordinances will be exempt from CEQA in accordance with CEQA Guidelines Section 15308, which includes actions by regulatory agencies for the protection of the environment.

ALTERNATIVE ACTIONS

In addition to the recommended action, the PTC may:

1. Forward the staff recommendation to City Council with modifications.
2. Take no action on the draft ordinances and provide direction on desired changes.

ATTACHMENTS

Attachment A: Draft ordinance Updating Lighting Standards (PAMC Section 18.40.250)

Attachment B: Draft ordinance Introducing Bird-Friendly Design standards (PAMC Section 18.40.280)

Attachment C: Model Ordinances from Dark Sky International, Santa Clara Audubon Society, and American Bird Conservancy

Attachment D: Dark Sky and Bird Friendly Design regulations from Other Jurisdictions

Attachment E: Map of Bird Sensitive Area

Attachment F: Comments from the Santa Clara Valley Audubon Society

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