



## City Council Staff Report

**From: City Manager**

**Report Type: ACTION ITEMS**

**Lead Department: Planning and Development Services**

**Meeting Date: April 7, 2025**

Report #:2411-3741

### **TITLE**

FIRST READING: Adoption of an Ordinance Updating Palo Alto Municipal Code (PAMC) Section 18.40.250 (Lighting) of Chapter 18.40 (General Standards and Exceptions) and Amending Chapters 18.10, 18.12, 18.28, and Section 18.40.230 of Title 18 (Zoning) to Adopt New Outdoor Lighting Regulations; CEQA Status -- Exempt pursuant to CEQA Guidelines Section 15308 (Actions for Protection of the Environment).

### **RECOMMENDATION**

Staff recommend the City Council adopt the Draft Ordinance updating Palo Alto Municipal Code (PAMC) Section 18.40.250 (Lighting) of Chapter 18.40 (General Standards and Exceptions) and Amending Chapters 18.10, 18.12, 18.28, and Section 18.40.230 of Title 18 (Zoning) to adopt new outdoor lighting regulations.

### **EXECUTIVE SUMMARY**

In response to growing concerns about light pollution and its impact on both the natural environment and wildlife, the City Council adopted a priority in 2023 and 2024, directing staff to prepare measures to reduce light pollution and protect wildlife. The proposed ordinance is generally consistent with the Dark Sky principles, which focus on reducing unnecessary lighting, directing light where it's needed, and using warmer, less intrusive light sources.

Key elements of the proposed ordinance include requirements for fully shielded outdoor lighting, a maximum color temperature, and the use of timers or motion sensors to ensure that lighting is only on when necessary. The ordinance also includes specific provisions for outdoor lighting in certain areas or for specific purposes. The ordinance has undergone extensive review, resulting in modifications made based on further analysis and understanding of implementation and enforcement impacts. As a result, the ordinance differs from the Planning and Transportation Commission's recommendations in certain areas, and the differences are described in the Analysis section of this report.

Incorporating the Dark Sky principles, staff has prepared a draft ordinance updating the existing lighting standards in Palo Alto Municipal Code Section 18.40.250 for City Council consideration. The ordinance reflects feedback from the Architectural Review Board (ARB), recommendation

from the Planning and Transportation Commission (PTC), as well as comments received from the public and internal City staff review.

The proposed regulations reflect Palo Alto's commitment to sustainability, environmental protection, and responsible urban development.

## **BACKGROUND**

### City Council Priority

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. This report and ordinance address light pollution protections; bird-friendly glass is a separate effort to follow.

### Lighting and Dark Sky International

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 to reduce light pollution.

Dark Sky International is a recognized worldwide authority combatting light pollution.<sup>1</sup> The organization publishes guidance for communities seeking to achieve a "dark sky" and decrease light pollution. The framework focuses on 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.

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<sup>1</sup> Link to the DarkSky International Website: <https://darksky.org/who-we-are/advocates>

5. Warm-colored: Use warmer color lights where possible. Limit the amount of shorter wavelength (blue-violet) light to the least amount needed.

#### Architectural Review Board

On February 15, 2024,<sup>2</sup> and July 18, 2024,<sup>3</sup> the ARB reviewed potential Dark Sky regulations. The ARB suggested approaches for distinctive areas within the city such as foothills and Baylands and explored the creation of a “Light Sensitive Area” to regulate different areas with different lighting standards. Staff considered this concept but concluded that it might be unnecessarily complicated and potentially increase the regulatory requirements in areas of the City that are not significant nighttime light emitters or may result in less stringent regulations in other built-out urban areas in order to different standards from light sensitive areas. Accordingly, this recommendation is not included in the draft ordinance. The ARB also discussed alternative methods for regulating certain lighting requirements, such as string lighting. Staff refined these requirements to eliminate ambiguity and incorporated them into the ordinance. After deliberation at their study sessions, the ARB recommended staff to consider applying the new lighting standards to new construction and “substantial remodels” as defined in 16.17.070<sup>4</sup>, which has been incorporated into the ordinance.

#### Planning and Transportation Commission

On August 28, 2024,<sup>5</sup> the PTC considered a Draft Lighting Ordinance. The PTC continued the item to allow for additional staff analysis regarding lighting curfews and technology, appropriate lighting for safety, and lighting needs for specific uses. On October 30, 2024,<sup>6</sup> the PTC considered the revised ordinance voted 6-1 to forward the staff recommendation to the City Council with the following modifications:

1. Reinstate the provision that would expand applicability to projects that only include new or replacement of existing luminaires;
2. Add a hardship exception process;
3. Change light trespass allowance from 0.5 to 0.1 footcandle throughout the ordinance;

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<sup>2</sup> Link to the ARB agenda for the study session on February 15, 2024 (Item #3):

<https://cityofpaloalto.primegov.com/Portal/Meeting?meetingTemplateId=13800>

<sup>3</sup> Link to the ARB agenda for the study session on July 18, 2024 (Item #3):

<https://cityofpaloalto.primegov.com/Portal/Meeting?meetingTemplateId=13877>

<sup>4</sup> PAMC Section 16.17.070 defines that "SUBSTANTIAL REMODEL" (AKA 50-50-50 RULE) is any project or projects that affects the removal or replacement of 50% or more of the linear length of the existing exterior walls of the building, and/or 50% or more of the linear length of the existing exterior wall plate height is raised, and/or 50% or more of the existing roof framing area is removed or replaced, over a 3-year period. Any permit(s) applied for will trigger a review of a 3-year history of the project. This review will result in determining if a substantial remodel has occurred. The Chief Building Official or designee shall make the final determination regarding the application if a conflict occurs.

<sup>5</sup> Link to the PTC agenda for the public hearing on August 28, 2024 (Item #2):

<https://cityofpaloalto.primegov.com/Portal/Meeting?meetingTemplateId=13702>

<sup>6</sup> Link to the PTC agenda for the public hearing on October 30, 2024 (Item #2):

<https://cityofpaloalto.primegov.com/Portal/Meeting?meetingTemplateId=13744>

4. Reduce time limit on motion sensors from 10 minutes to five minutes;
5. Add definition terminology requested by Sierra Club based on suggested best practices; and
6. Recommend to City Council that further outreach be done at the time of implementation, informing residents of the new regulations; and that regulations for interior commercial lighting be considered in the future. (See Stakeholder Engagement section for more information.)

After further staff analysis and discussion about implementation and enforcement, the draft ordinance incorporated some of the PTC recommendations but not all. The analysis section below describes how the draft ordinance differs from the PTC recommendation in more detail.

### **ANALYSIS**

PAMC Section 18.40.250 includes existing standards the City uses to regulate lighting. The proposed ordinance would amend this section with additional lighting standards to reduce light pollution consistent with Dark Sky principles. The ordinance is structured to regulate lighting through the following subsections:

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

Certain provisions of the draft ordinance recommended by staff differ from the PTC's recommendation. These provisions are detailed below where applicable.

#### Applicability

This section specifies that the ordinance applies the lighting standards to new construction, major renovation (per definition of Substantial Remodel), and new outdoor luminaires that require the issuance of a building permit. This differs from the PTC recommendation, which expanded the ordinance to also apply to *replacement* of outdoor luminaries or lighting systems that require the issuance of a building permit, not just new lighting. Staff's recommendation, as reflected in the draft ordinance, differs from that of the PTC in order to reduce the enforcement and limit financial costs associated with these smaller projects.

Staff considered an exception for projects facing significant financial impact from the new lighting requirements per PTC direction. However, staff determined that separating lighting costs from the entire construction cost or project valuation would be difficult for both applicants and staff responsible for verification. Furthermore, the new standards do not apply to the replacement of existing outdoor lighting or changes to the lighting type or system, which was one of scenarios that led to the concerns of financial burdens. An exception for historic resources has been added to ensure that the new standards do not impair historical integrity.

### Exemptions

To provide flexibility, the proposed lighting ordinance includes a number of exemptions, including illuminated street numbers, temporary or emergency lighting, special events, seasonal displays, and lighting for airport operations. The ordinance includes a provision to address conflicts that may arise with other codes or State laws, and allows the conflicting building, fire, or state/federal law to take precedence. Public facilities may be granted for adjustments to the regulations in the ordinance to ensure efficient operation, maintenance, safety, and security.

### Lighting Standards – Shielding

Directing lighting downwards and minimizing light trespass is one of the Dark Sky principles. The existing lighting requirements address shielding for pedestrian and security lighting, architectural lighting, and lighting fixture location. The update to the ordinance would expand the requirements to encompass all lighting to reduce light pollution. Limited exceptions are included for low-voltage landscape lighting, low-voltage lighting for illuminating outdoor art or public monument, sidewalk-facing lighting on a property line, and string lighting.

The maximum light trespass to an adjacent property is currently 0.5 foot-candle in the City's lighting code. Staff recommends no change to this standard. The PTC recommends 0.1 foot candle, which was adopted in a nearby jurisdiction and reflects the Commission's interest to minimize light spilling over to adjacent properties. While supporting this interest, staff is concerned that it sets up an unrealistic expectation of essentially no light spilling over to adjacent property and may result in increased complaints to the code enforcement program – taking staff away from other priority cases. Moreover, the California Building and Safety Code stipulates a minimum illumination of 1 foot-candle for exit paths to ensure safe building egress; this standard will prevail where there is a conflict. Balancing the ordinance's objectives with critical safety considerations, the maximum light trespass level was ultimately maintained at 0.5 foot-candle.

### Lighting Standards – Illumination Level

The ordinance requires the color temperature at maximum of 2,700 Kelvin. This warmer temperature is less likely to disrupt the night environment and can minimize light pollution and glare when combined with other lighting requirements in the draft ordinance.

### Lighting Standards – 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. The proposed ordinance requires exterior lights be extinguished or motion-sensor activated by 10:00 p.m., unless the outdoor area is being used. To further minimize unnecessary light use, the proposed regulations require motion sensors to deactivate after a maximum of five minutes.

The PTC recommendation included applying the lighting curfew to all new and existing buildings and structures. Staff recommendation, as reflected in the draft ordinance, does not extend this

requirement to existing buildings and structures because it presents significant enforcement challenges. Enforcing a lighting curfew on all existing buildings would be extremely complex and resource-intensive and is simply unsupported based on existing staff levels. Moreover, requiring existing lighting fixtures to comply would set up an unrealistic expectation that all existing lighting would comply with the subject ordinance upon ordinance adoption. Because mandatory motion sensors would be a cost burden for property owners, a lighting curfew without them would likely result in widespread non-compliance, increased neighbor disputes, and diminished public support for dark sky initiatives. Accordingly, the proposed ordinance does not apply the lighting curfew to existing buildings and structures.

### Special Purpose Lighting

The Special Purpose Lighting subsection includes new standards for the following five key categories:

- **Low Density Residential Lighting.** The existing lighting requirements from low density residential chapters have been consolidated into this subsection. To avoid requiring lighting plans for low-density residential projects, which are typically not needed for single-family homes, a separate brightness standard is provided in lumens. If the standard were specified in footcandles, lighting plans would be necessary. This lumen level is based on the Dark Sky International's model lighting ordinance.
- **Outdoor Security Lighting:** Requirements for outdoor security lighting mirror general lighting standards, including requirements for lighting control and shielding. Exceptions for motion sensors are provided where continuous lighting is required by the California Building Code.
- **Athletic Facilities Lighting:** This section aims to minimize light pollution and disturbance to surrounding areas. Lighting must be focused based on the purpose of the facility, with adjustable intensity for different uses. Lights have specific timer and shutoff requirements.
- **Automobile Service Station Lighting:** Automobile service station lighting is required to be fully recessed or mounted directly to the underside of canopies. The maximum light intensity level for canopies is set at 12.5 foot-candles, which falls within the Illuminating Engineering Society (IES) recommended range of 10 to 15 foot-candles for gas stations.<sup>7</sup>
- **Lighting for Outdoor Space above Ground Floor:** The lighting standards from the existing PAMC Section 18.40.230 (Rooftop Gardens) were incorporated into this ordinance for consistency with Dark Sky principles.
- **String Lighting:** A color temperature of 2,700 Kelvin and brightness not exceeding 42 lumens per each light bulb is required.

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<sup>7</sup> IES Recommended Light Levels:

[https://waypointlighting.com/uploads/2/6/8/4/26847904/ies\\_recommended\\_light\\_levels.pdf](https://waypointlighting.com/uploads/2/6/8/4/26847904/ies_recommended_light_levels.pdf)

### Enforcement

Existing light fixtures and sources that do not comply with the subject provisions may continue and the ordinance allows for minor replacement and repair. Enforcement of this ordinance will largely occur when staff are reviewing plans for a building permit and upon final building inspection. Proactive enforcement of this ordinance to existing buildings, structures, or properties is not possible with existing resources. Complaints about non-complying properties will be evaluated on a case-by-case basis.

### **POLICY IMPLICATIONS**

The lighting ordinance update to reduce light pollution is consistent with the Comprehensive Plan's Natural Environment Element. The vision for the Natural Environment Element is to preserve its natural environment and resources for future generations through sustainable practices, conservation efforts, and climate change adaptation strategies. Policy N-7.5 encourages lighting that protects dark skies and Policy N-1.9 specifically references shielding exterior lighting in the foothills. By improving nighttime visibility, protecting nocturnal wildlife, and enhancing energy efficiency, the updated lighting ordinance aligns with the Comprehensive Plan's goals of protecting the natural environment and promoting a healthier and more sustainable community.

While the lighting ordinance update primarily aims to reduce light pollution, it does not directly relate to any of the key actions of the Palo Alto Sustainability Climate Action Plan (S/CAP). However, it contributes to one of the goals of "restoring and enhancing resilience and biodiversity of our natural environment throughout the City." Implementation of the updated lighting ordinance would provide better habitat for nocturnal wildlife species, which would result in protecting the natural environment and promoting a more sustainable environment. Although not explicitly listed as a goal or action in the S/CAP, implementing the updated lighting ordinance could reduce electricity usage over time. This is because outdoor lighting would need to be turned off and controlled by motion sensors after a certain time. This reduction could contribute to a more sustainable community in Palo Alto and support other S/CAP goals and actions.

As part of the implementation of Housing Element Program 3.2 (Monitor Constraints to Housing), the City evaluates initiatives proposing new regulations and the impact regulations may impact housing production, if at all. The update to the Lighting ordinance is anticipated to have an insignificant impact on housing production, if any, as it is not directly related to building design and only addresses outdoor lighting. While new housing projects may experience some cost increases and design restrictions due to the ordinance, these are expected to be minimal. Dark sky compliant products are readily available, and effective lighting control technologies exist.

However, policy recommendations in this report, particularly with respect to ordinance applicability to existing structures, may be viewed by some as not going far enough to advance dark skies initiatives.

## **FISCAL/RESOURCE IMPACT**

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

## **STAKEHOLDER ENGAGEMENT**

Staff conducted two study sessions, one in February and another in July 2024 through the ARB to provide a forum for community members to express their views and concerns regarding the proposed ordinance. In addition, staff have engaged with representatives from the Santa Clara Valley Audubon Society and Sierra Club Loma Prieta Chapter to solicit their input on the proposed ordinances.

Staff received numerous comment letters from the Santa Clara Valley Bird Alliance (formerly known as the Santa Clara Valley Audubon Society) and Sierra Club Loma Prieta Chapter on various versions of the draft ordinance presented to the ARB and PTC. The public comments included specific modification recommendations on the multiple versions of the draft Lighting ordinance. Staff received an additional comment letter from a resident who expressed concern that the lighting ordinance update might be too prescriptive, despite supporting responsible outdoor lighting practices and fearing it might reduce the safety of his property.

All public comments received for the draft lighting ordinance are in Attachment D.

### Future Outreach

PTC recommended to the City Council that further outreach be done at the time of implementation, informing residents of the new regulations; and that regulations for interior commercial lighting be considered in the future. Unless directed otherwise, staff will inform the project's interested parties about the ordinance adoption and provide a copy for review. Staff will also prepare information to be shared on the City's website and at the Development Center regarding the new regulations and communicate as appropriate through other City communication channels. The City Council could also consider additional regulations for interior commercial lighting at future priority-setting sessions.

## **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.

## **ATTACHMENTS**

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

Attachment B: Model Dark Sky Ordinances

Attachment C: Other Jurisdictions on Outdoor Lighting and Dark Sky Regulations

Attachment D: Public Comments



**APPROVED BY:**

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