



February 25, 2020

Mayor Klein, Vice Mayor Smith and Sunnyvale Council Members,

RE: 2020 Study/Budget Issues Workshop: Dark Sky

Dear Mayor Klein, Vice Mayor Smith and Sunnyvale Council Members,

Santa Clara Valley Audubon Society (SCVAS) and the Sierra Club Loma Prieta Chapter (SCLP) request that you prioritize item DPW 19-11 Exterior Lighting Dark Sky Ordinance for staff to address this year.

SCVAS was founded in 1926, and is one of the largest National Audubon Society chapters in California. SCVAS' mission is to promote the enjoyment, understanding, and protection of birds and other wildlife by engaging people of all ages in birding, education, and conservation. The mission of the Sierra Club is to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment.

The harmful environmental effects of excessive nighttime outdoor lighting are clear as daylight, and the benefits of reducing light pollution are well recognized. Sunnyvale City Council has prioritized this item in 2019 with 5 council member votes, but the item was not allocated a budget. We hope for a better outcome this year. This issue is of concern to many Sunnyvale residents, since artificial lighting affects not only biological systems but also quality of life. It is also critically important due to the growth and densification of the City, and the upcoming Moffett Park Precise Plan process.

Respectfully,

Sincerely,

Katja Irvin  
Conservation Committee co-chair  
Sierra Club Loma Prieta Chapter

Shani Kleinhaus, Ph.D.  
Environmental Advocate  
Santa Clara Valley Audubon Society

## **Attachment A: Advocacy letter from February 2019: Proposed Study Issue: Lighting Ordinance**

Artificial light is a new phenomenon for life on Earth. For millions of years, Earth's species have evolved under natural cycles of light and dark. The circadian rhythms of nearly all living things, including humans, are regulated by light.

Artificial light at night contributes to light pollution, and is biologically disruptive for living beings. Migratory birds are attracted to light and collide with buildings and other structures. Their migratory flight paths can be altered, and in some extreme cases, birds become trapped in beams of artificial light and die of exhaustion. Many species of mammals will avoid areas illuminated by artificial light at night.

Critically, artificial light can have serious impacts on human beings. Humans have melanopsin containing retinal ganglion cells that are light sensitive and are hardwired straight to the clock in the brain. When exposed to light, the brain thinks it is daytime and becomes more alert. These alert responses have lingering effects which persist into the first cycle of sleep, impacting physical and mental health in adults. Since Human Growth Hormone is produced during sleep, disrupting the circadian rhythm in youth can adversely impact growth and development. In 2007, the International Agency for Research on Cancer (IARC) found that shift-work involving circadian disruption is probably carcinogenic for humans.

### **What can Sunnyvale do?**

1. Study the existing street lighting systems in Sunnyvale to determine and compare to the benchmark standards outlined in existing Dark Sky ordinances (such as Ojai, Malibu). Identify structural and operational improvements as needed.

Sunnyvale has recently transitioned from Sodium-based lighting to LED lighting. While LEDs are more energy efficient than sodium lights, they are also brighter, and can cause more light pollution and biological disruption than previous technologies. Sunnyvale should therefore consider not only energy savings (measured in dollars and watts), but also light intensity and temperature (measured in Lumens and Kelvin).

With 80% of its street lighting system being programmable, the city of Sunnyvale could readily meet dark sky standards by implementing changes in operations (for example, dimming lights after 10PM). Older lighting infrastructure can be slowly modified or replaced. For example, reduction in density of lighting structures can be considered.

2. Develop a Lighting Ordinance (Dark Sky/Lights Out Ordinance)

To reduce artificial light that is generated by illuminated parking lots, buildings and other structures in sunnyvale, we propose that the City of Sunnyvale adopt a Lighting ordinance. Such an ordinance can reduce sky glow, protect birds, and allow the citizens of

Sunnyvale to enjoy the nighttime sky. It will contribute to the health and well-being of residents and the environment. It also conserves energy and natural resources.

Sunnyvale's current Bird-Safe Design Guidelines provide a good starting point for a Lighting Ordinance.

Sunnyvale Bird-Safe Design Guidelines that should be codified into an Ordinance:

- Prohibit up lighting or spotlights;
- Shield lighting to cast light down onto the area to be illuminated;
- Turn commercial building lights off at night or incorporate blinds into window treatment to use when lights are on at night; and,
- Create smaller zones in internal lighting layouts to discourage wholesale area illumination

Cities from around the world are creating lighting ordinances to combat the negative effects of light pollution. This provides a wealth of existing legislation that Sunnyvale can use as a model when crafting its own law. A notable international example is France, which on January 1st 2019 enacted a country-wide Decree to Reduce Light Pollution. The French law shares a lot in common with light pollution ordinances passed in multiple California cities, including Ojai, Malibu, and Alameda.

Some core traits of these light pollution laws are listed below:

- Set a maximum lighting temperature (measured in Kelvin) to restrict the emission of blue light, which is significantly more harmful than other color temperatures to humans and wildlife.
- Set a maximum lighting intensity (measured in Lumens) to reduce the impacts of artificial light.
- Set a maximum height allowances for specific types of structures to protect migratory birds and reduce sky glow.
- Establish a Lights Out Program, which sets "Dark Hours" from 10:00 pm, or when people are no longer present, or close of business, whichever is latest, until sunrise. During Dark hours:
  - Turn off exterior decorative lighting
  - Turn off interior lighting, or install blinds to block light emissions, especially on higher stories

We hope a robust dark sky/lights out ordinance can expand the bird safety guidelines to protect night-flying migratory birds, people, and the night. Sunnyvale is well positioned for such an ordinance, and will have access to the resources and knowledge of those who have previously taken concrete steps to fight light pollution. We hope that through this ordinance Sunnyvale can reaffirm its commitment to sustainability and to the health and safety of its citizens. Let's keep the night sky clear and beautiful!

**References:**

France's Decree:

<https://www.legifrance.gouv.fr/eli/arrete/2018/12/27/TREP1831126A/jo/texte>

<https://www.darksky.org/france-light-pollution-law-2018/>

Malibu Dark Sky Ordinance: <https://www.malibucity.org/DocumentCenter/View/22417/Dark-Sky-Ordinance-Ordinance-No-434>

Ojai Ordinance:

[https://docs.vcrma.org/images/pdf/planning/ordinances/Ojai\\_Valley\\_Dark\\_Sky\\_-\\_Public\\_Brochure.pdf](https://docs.vcrma.org/images/pdf/planning/ordinances/Ojai_Valley_Dark_Sky_-_Public_Brochure.pdf)

Alameda Ordinance:

<https://alameda.legistar.com/LegislationDetail.aspx?ID=3756063&GUID=2E8203B6-7841-42FC-A8B8-552FA7D9D246&Options=&Search=>

The International Dark Sky Association

<https://www.darksky.org/>

Carcinogenicity of shift-work involving Circadian Disruption

[https://firefightercancersupport.org/wp-content/uploads/2013/06/carcinogenicity\\_of\\_shiftwork\\_painting\\_and\\_firefighting.pdf](https://firefightercancersupport.org/wp-content/uploads/2013/06/carcinogenicity_of_shiftwork_painting_and_firefighting.pdf)

Physiology of Growth Hormone Secretion During Sleep

<https://www.ncbi.nlm.nih.gov/pubmed/8627466>

National Audubon Lights out recommendations

<https://www.audubon.org/conservation/project/lights-out>

Sunnyvale Bird-Safe Design guidelines

<https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?BlobID=23799>