DLC SUMMIT 2026

OCTOBER 26–27, 2026

THE CALIFORNIA ENDOWMENT

WELCOME

Next Gen Light

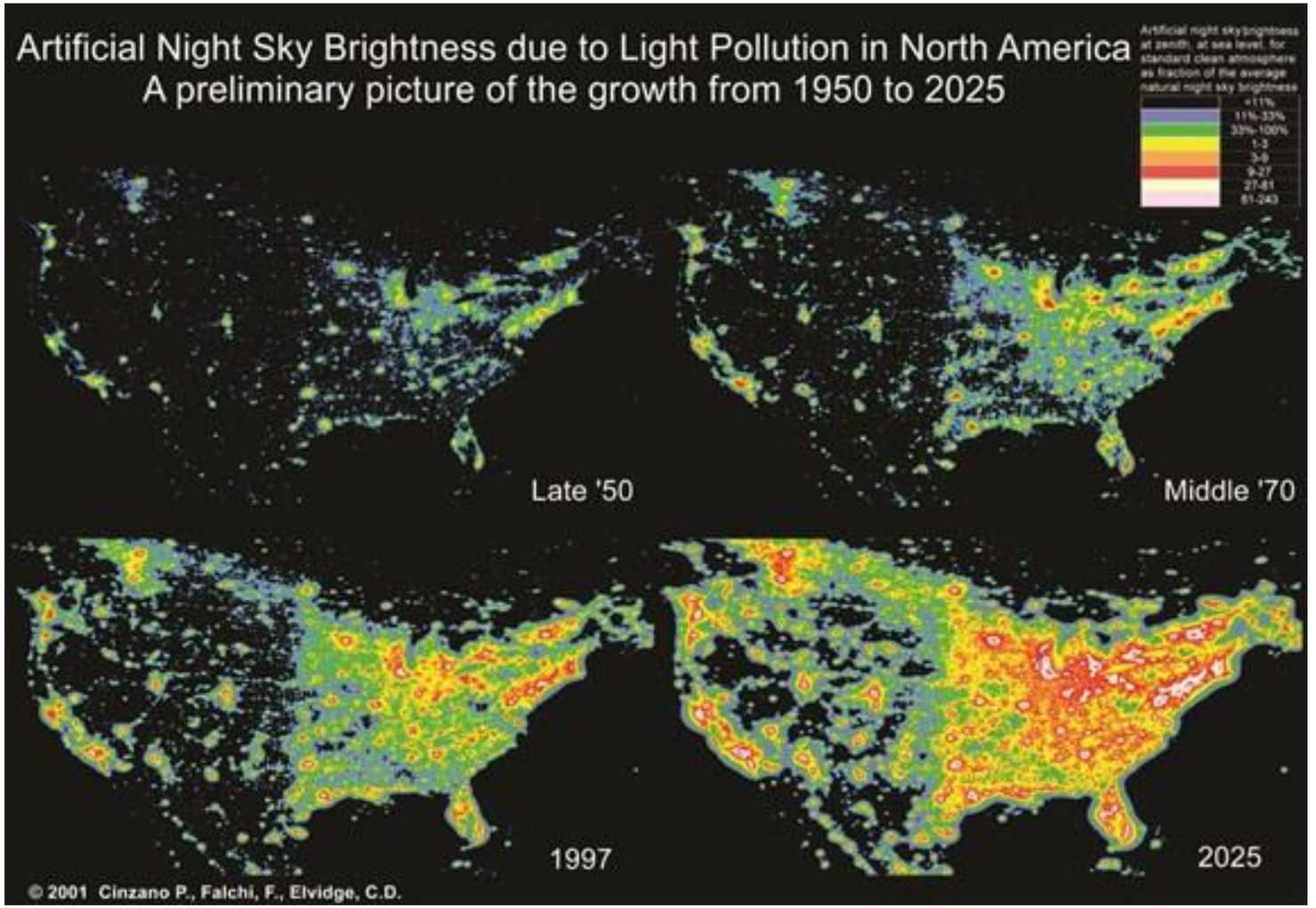
Controls, Integration, and the Environment

DESIGNLIGHTS.ORG/2026DLCSUMMIT

LA DWP Los Angeles Department of Water & Power

Lighting Controls and Light Pollution: Aligning Energy Savings and Environmental Responsibility

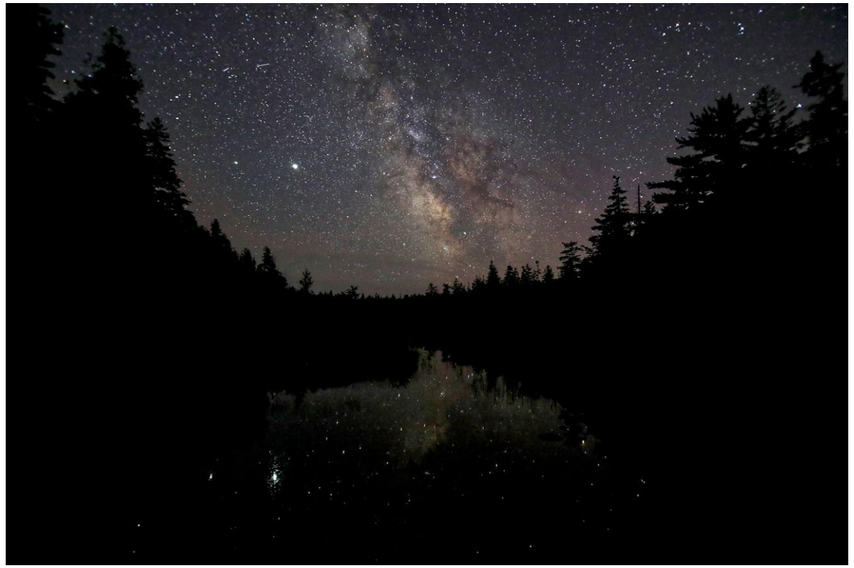
Light pollution is a growing problem



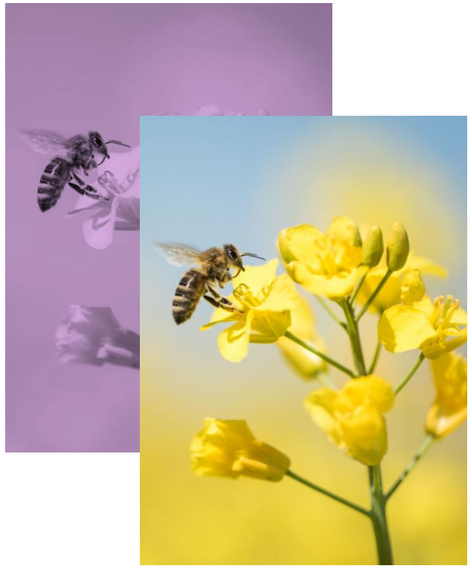
Source: https://www.nps.gov/subjects/nightskies/growth.htm

Why light pollution matters

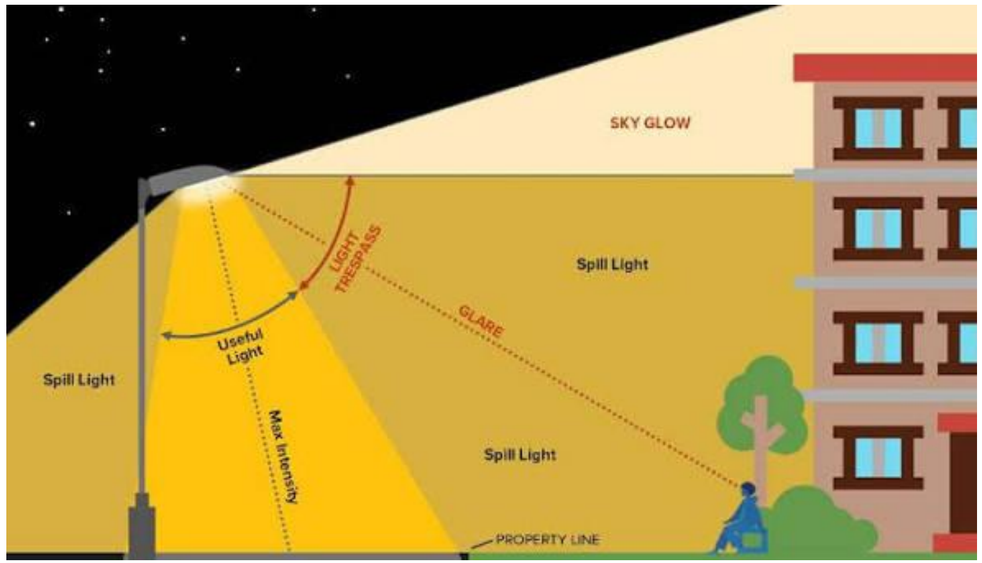
- Impacts on wildlife, agriculture, and people



https://www.nps.gov/articles/000/wildlife-night-sky-acadia.htm

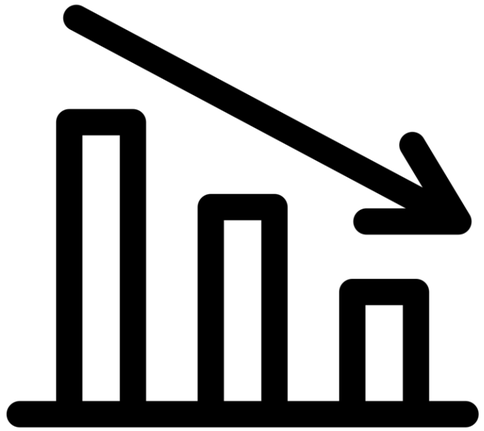


Owens ACS, Lewis SM. The impact of artificial light at night on nocturnal insects: A review and synthesis.



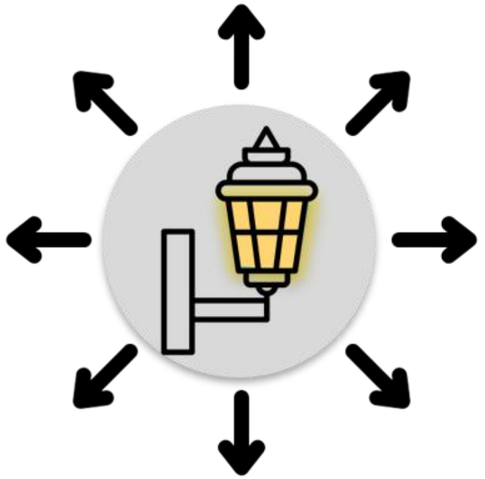
https://designlights.org/resources/reports/seven-strategies-to-minimize-negative-impacts-of-outdoor-light-at-night/

Reducing light pollution saves energy



Linear reductions

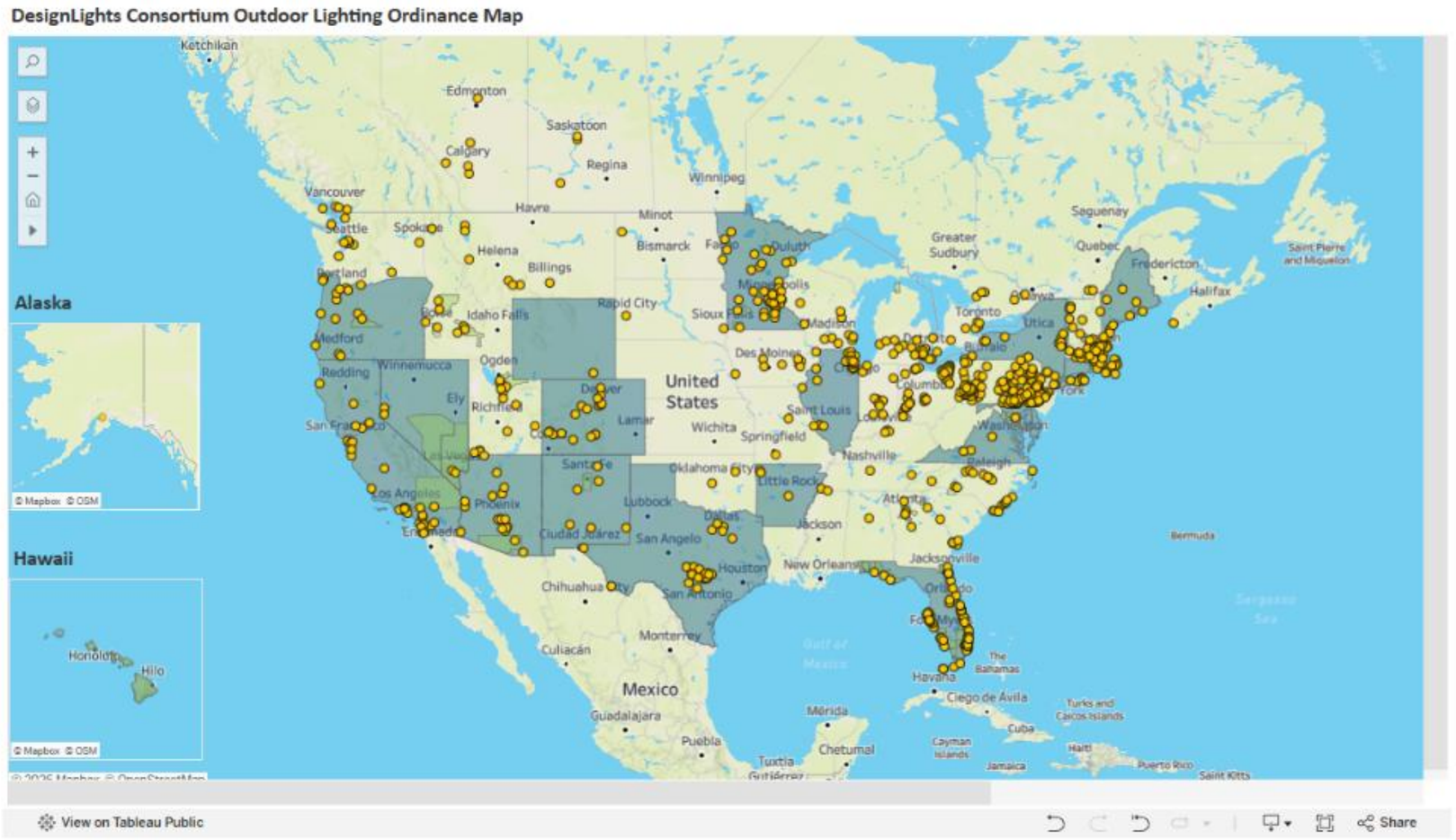
- High end-trim
- Dimming post-curfew



Reducing wasted uplight

- High angle light and uplight scatters and creates sky glow

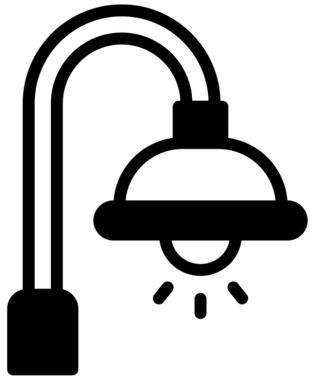
Ordinances, statutes, and regulations



https://designlights.org/outdoor-lighting-ordinances/

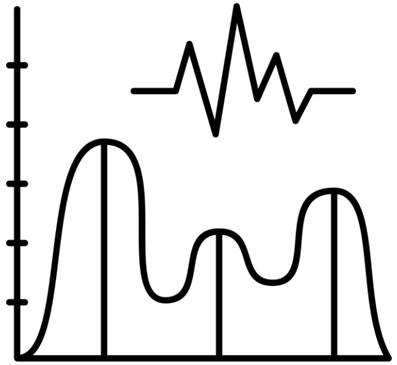
Ordinance attributes

Typically included



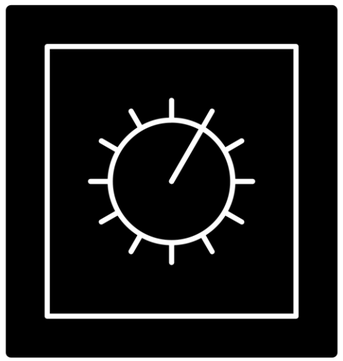
Distribution
Fully shielded/Shielded
Full Cutoff/Cutoff
U Ratings (BUG Ratings)

Often missing



Spectrum
Max CCT
Spectral limits (e.g. amber or 590 nm)

Often missing



Controls
Curfew hours
Switching/dimming
Automatic controls/sensors

Reducing light pollution saves energy and benefits people, plants, and wildlife





Leora Radetsky

DLC SUMMIT 2026

OCTOBER 26-27, 2026
THE CALIFORNIA ENDOWMENT · LOS ANGELES, CA

Lighting Controls and Light Pollution: Aligning Energy Savings and Environmental Responsibility

JILL CARPENTER· ARI ISAAK · SARA NONAKA

PANEL

Meet the panel

Moderated by Leora Radetsky, DesignLights Consortium



Jill Carpenter

Ecologist, LSA



Ari Isaak

Founder, EVARILABS



Sara Nonaka

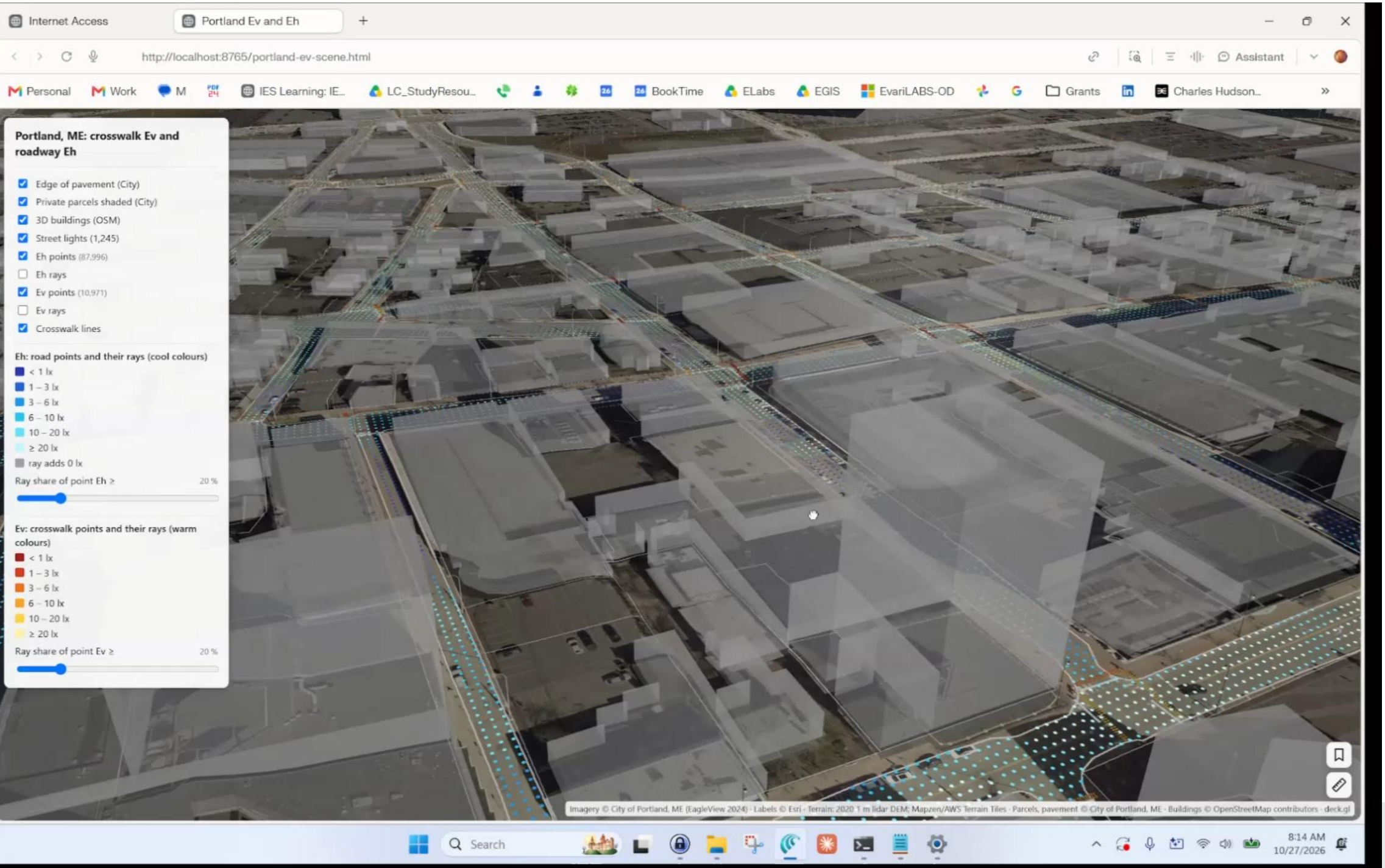
Lighting Designer, LUMA Lighting Design

PANELIST

Ari Isaak

Founder, EVARILABS




Internet Access
Portland Ev and Eh
http://localhost:8765/portland-ev-scene.html
Assistant
Personal
Work
M
IES Learning: IE...
LC_StudyResou...
BookTime
ELabs
EGIS
EvariLABS-OD
Grants
Charles Hudson...
Portland, ME: crosswalk Ev and roadway Eh
Edge of pavement (City)
Private parcels shaded (City)
3D buildings (OSM)
Street lights (1,245)
Eh points (87,996)
Eh rays
Ev points (10,971)
Ev rays
Crosswalk lines
Eh: road points and their rays (cool colours)
< 1 lx
1 – 3 lx
3 – 6 lx
6 – 10 lx
10 – 20 lx
≥ 20 lx
ray adds 0 lx
Ray share of point Eh ≥ 20 %
Ev: crosswalk points and their rays (warm colours)
< 1 lx
1 – 3 lx
3 – 6 lx
6 – 10 lx
10 – 20 lx
≥ 20 lx
Ray share of point Ev ≥ 20 %
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Photometrics.ai

PANELIST

Sara Nonaka

Lighting Designer, LUMA Lighting Design





OUR WORK LUMA STUDIOS OUR OFFICES

LUMA

OUR KEY MARKETS

- AVIATION
- COMMERCIAL OFFICE
- CIVIC AND CULTURAL
- RESIDENTIAL AND HOSPITALITY
- HEALTHCARE
- LANDSCAPE
- HIGHER EDUCATION
- SPORTS AND ENTERTAINMENT



INTRODUCTION

Every 8 years

Sky glow is doubling

Source: US National Park Service, 2025

> 200 miles

Measurable sky glow from cities

Source: US National Park Service, 2025

80%

of migratory bird species migrate at night

Source: Cornell University, 2026

One billion birds

Die from building collisions annually

Source: American Bird Conservancy, 2024

22%

Decline in American butterfly population in two decades

Source: US Geological Survey, 2025

Lighting controls help us align energy savings and environmental responsibility

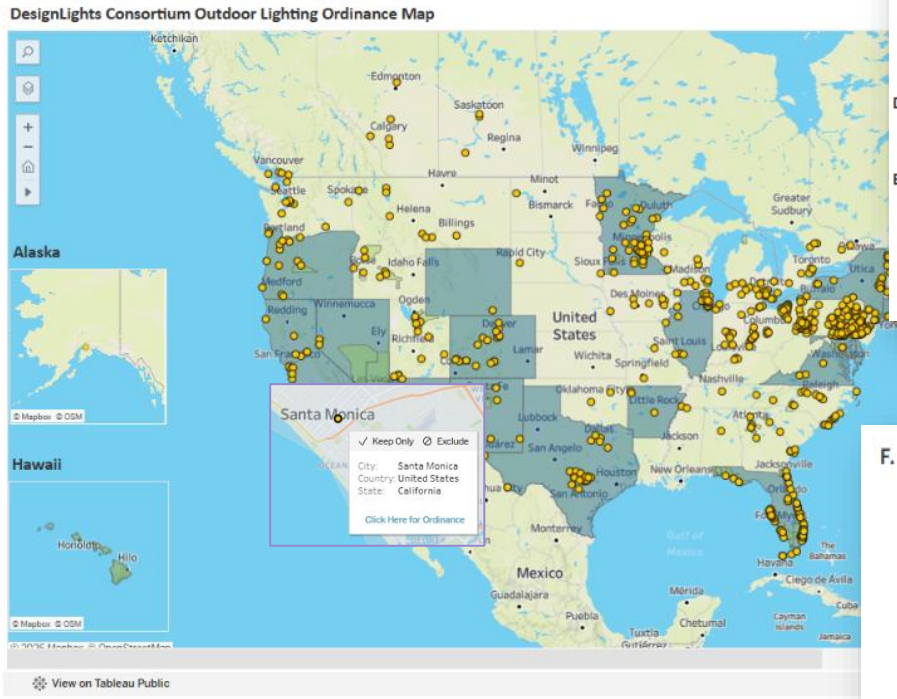
- Managed lighting to reduce wasted energy use and wasted light
- Meet regulatory requirements
- LUNA V2.0 leverages SSL V6.0 controls reporting



SANTA MONICA, CA

Spectrum and controls are missing

Lighting Ordinance example #1



https://designlights.org/outdoor-lighting-ordinances/

C. **General Standards.**

1. ***Residential Multiple-Unit Buildings.*** Aisles, passageways, and recesses related to and within the building complex shall be illuminated with an intensity of at least 0.25 foot-candles at the ground level during the hours of darkness. Lighting devices shall be protected by weather and vandal-resistant covers.
2. ***Nonresidential Buildings.*** All exterior doors, during the hours of darkness, shall be illuminated with a minimum of one foot-light candle of light.
3. ***Shielding.*** All lighting fixtures shall be shielded so as not to produce obtrusive glare onto the public right-of-way or adjacent properties. All luminaries shall meet the most recently adopted criteria of the Illuminating Engineering Society of North America (IESNA) for "Cut Off" or "Full Cut Off" luminaries.
4. ***Light Trespass.*** Lighting may not illuminate other properties in excess of a measurement of 0.5 foot candles of light.
5. ***Maximum Height.*** The maximum height for exterior lighting shall be as follows:
   a. Residential, Ocean Park Oceanfront Districts: 16 feet.
   b. Nonresidential Districts: 26 feet.

D. **Spotlights and Flood Lighting.** Spotlights and flood lighting are permitted for the purpose of emphasizing architectural accents or details on buildings, sculptures, or landscaping, as long as such lighting does not create light trespass. Such lighting shall be prohibited between the hours of midnight and sunrise if projected above the horizon.

E. **Prohibitions.** The following lighting fixtures and systems shall be prohibited:

1. Drop-down lenses;
2. Mercury vapor lamps; and
3. Searchlights, laser lights, or any other lighting that flashes, blinks, alternates, or moves, with the exception of amusement rides located on the Pier, which may have lights that blink, flash and oscillate.

F. **Parking Lot and Structure Lighting.** In addition to the requirements of Section **9.28.120**, Parking Design and Development Standards, the following standards apply:

1. Public parking areas designed to accommodate 10 or more vehicles shall be provided with a minimum of ½ foot-candle and a maximum of 3.0 foot candles of light over of the parking surface from ½ hour before dusk until ½ hour after dawn.
2. Lighting design shall be coordinated with the landscape plan to ensure that vegetation growth will not substantially impair the intended illumination.
3. All lighting used to illuminate a parking area for any number of automobiles in any District shall be arranged so that all direct rays from such lighting fall entirely within such parking lot and be consistent with this Section.

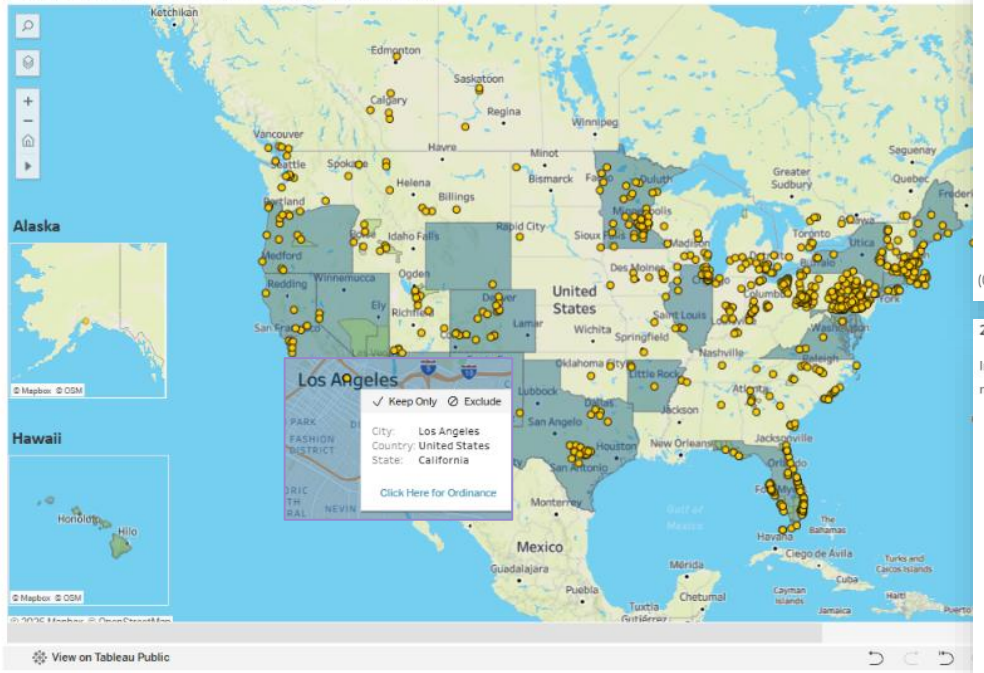
G. **Maintenance.** Exterior lighting fixtures and lamps shall be maintained in good working order.

(Added by Ord. No. 2486CCS §§ 1, 2, adopted June 23, 2015)

LOS ANGELES, CA

Lighting Ordinance example #2

DesignLights Consortium Outdoor Lighting Ordinance Map



https://designlights.org/outdoor-lighting-ordinances/

22.80.050 - General Development Standards.

In addition to complying with the applicable provisions of Title 26 (Building Code) and Title 27 (Electrical Code) of the County Code, outdoor lighting within the ROLD, other than street lights, shall be subject to the following requirements:

A. Lighting Allowance. For properties located in a Residential, Agricultural, Open Space, or Watershed Zone, outdoor light fixtures installed above 15 feet in height shall have a manufacturer's maximum output rating of no greater than 400 lumens.

B. Light Trespass. Outdoor lighting shall cause no unacceptable light trespass.

C. Shielding. Outdoor lighting shall be fully shielded.

D. Maximum Height.

1. The maximum height for an outdoor light fixture, as measured from the finished grade to the top of the fixture, shall be as follows:
   a. 20 feet for a property located in a Residential, Agricultural, Open Space, or Watershed Zone.
   b. 35 feet for a property located in an Industrial Zone.
   c. 30 feet for property located in any other zone.
2. Notwithstanding Subsection D.1, above, the height of any new outdoor light fixture used for an outdoor recreational activity area, regardless of the zone, shall be the minimum height necessary to illuminate the activity area, but in no event shall exceed 75 feet; and
3. Notwithstanding Subsections D.1 and D.2, above, the Director may approve an outdoor light fixture with a height higher than as otherwise permitted by these subsections through a Ministerial Site Plan Review (Chapter 22.186) application, if the applicant demonstrates that a higher light fixture would reduce the total number of light fixtures needed at the involved site, or would reduce the light trespass of the outdoor lighting.

E. Maintenance. Outdoor lighting shall be maintained in good repair and function as designed, with shielding securely attached to the outdoor lighting.

(Ord. 2019-0004 § 1, 2019.)

22.80.060 - Additional Standards for Commercial, Industrial, and Mixed Uses.

In addition to complying with the applicable provisions of Section 22.80.050 (General Development Standards) outdoor lighting located on a property with a commercial, industrial, or mixed use shall be subject to the following requirements:

A. Building Entrances. All building entrances shall have light fixtures providing light with an accurate color rendition so that persons entering or exiting the building can be eas recognized from the outside of the building.

B. Hours of Operation.

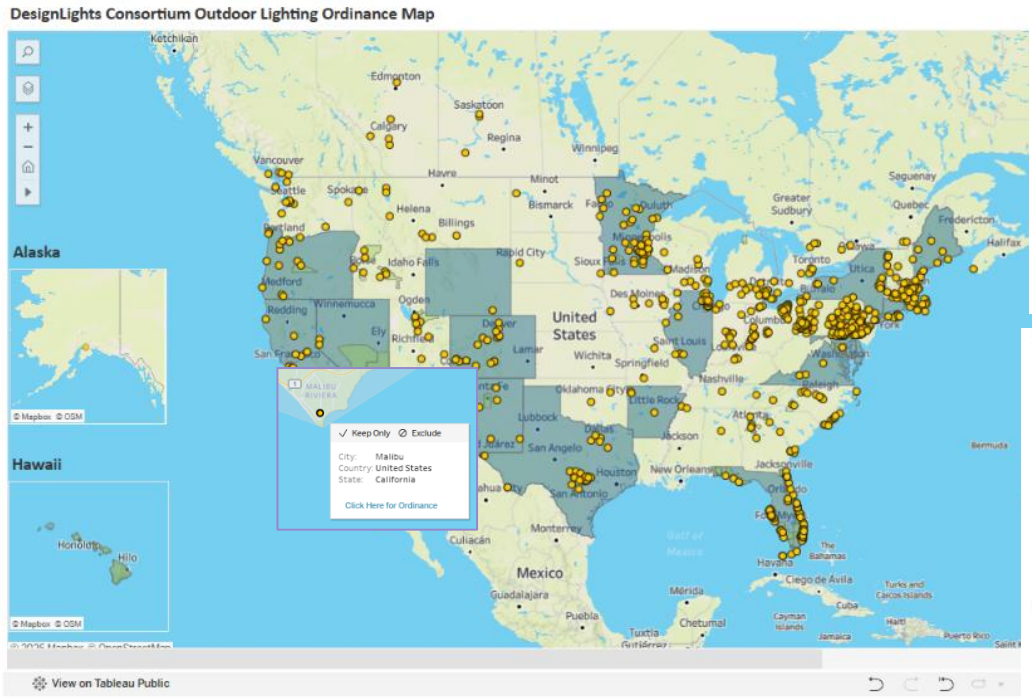
1. Outdoor lighting shall be turned off between the hours of 10:00 p.m. and sunrise every day, unless the use on the involved property operates past 10:00 p.m., and then outdoor lighting shall be turned off within one hour after the use's operation ends for the day. Notwithstanding the foregoing, if the use on the involved property requi outdoor lighting between 10:00 p.m. and sunrise every day for safety or security reasons, outdoor lighting shall be allowed during these hours, but only if:
   a. Fully-shielded motion sensors are used to turn the outdoor lighting on after 10:00 p.m., and these sensors turn the outdoor lighting off automatically no more than minutes after the involved area has been vacated; or
   b. Where the use is commercial or industrial, at least 50 percent of the total lumen levels for the outdoor lighting are reduced, or 50 percent of the total number of outdoor light fixtures are turned off, between 10:00 p.m. and sunrise.
2. Exemption from Hours of Operation. Outdoor lighting shall be exempt from the hours of operation requirements of Subsection B.1, above, if such lighting:
   a. Is required by Title 26 (Building Code) for steps, stairs, walkways, or points of ingress and egress to buildings; or
   b. Is governed by an approved discretionary permit which specifically provides for different hours of operation.

C. Automatic Controls. Outdoor lighting shall use automatic control devices or systems to turn the outdoor lighting off so as to comply with the applicable hours of operation requirements of Subsection B.1, above. These devices or systems shall have backup capabilities so that, if power is interrupted, the schedule programmed into the device c system is maintained for at least seven days.

(Ord. 2019-0004 § 1, 2019.)

MALIBU, CA

Lighting Ordinance example #3



https://designlights.org/outdoor-lighting-ordinances/

§ 17.41.050 **Citywide requirements.**

A. All outdoor light fixtures shall be fully shielded and installed and maintained in such a manner that the shielding does not permit light trespass in excess of those amounts set forth in subsection **G** below. Lighting shall be directed away from ESHA, ESHA buffer, Pacific Ocean, beaches, and public viewing areas in a manner to ensure no lamp is directly visible from public viewing areas.

B. Lighting around the perimeter of the site, except as required for security lighting purposes and where it is controlled by motion sensor which extinguishes the light no later than 10 minutes after activation, and lighting for aesthetic purposes on any parcel of land that is located along, within, provides views to or is visible from any scenic area, scenic road, public viewing area, ESHA or ESHA buffer is prohibited.

C. Light pollution shall be minimized through the use of directional lighting, fixture location, height, the use of shielding and/or motion sensors and timers.

D. Automated control systems, such as motion sensors and timers, shall be used to meet the curfew requirements of Section **17.41.060**. Photocells or photocontrols shall be used to extinguish all outdoor lighting automatically when sufficient daylight is available. Automated controls should be fully programmable and supported by battery or similar backup.

E. Lighting Color (Chromaticity). The correlated color temperature of all outdoor lighting shall be 3,000 Kelvin or less except:

1. Amber colored sources of a lower temperature necessary to protect beach and ESHA, as determined by the planning director.
2. Seasonal lighting.

B. Residential Zoning Districts, Including SF, MF, MFBF, RR, PD, and MH.

1. Curfew. All outdoor lighting shall be extinguished by 11:00 p.m. or when people are no longer present in exterior areas, whichever is later, except for lighting activated by motion sensor which extinguishes 10 minutes after activation and lighting at building entrances, parking areas and driveways.
2. Each outdoor light fixture shall be fully shielded, directed downward and shall not exceed 850 lumens. Outdoor light fixtures shall not be mounted higher than 18 feet above ground level. For the portion(s) of a property containing ESHA or ESHA buffer or located in or adjacent to ESHA or ESHA buffer or visible from public viewing areas, lighting shall comply with the OS zone standards detailed in subsection (A)(2) instead of this subsection (B)(2).
3. Outdoor lighting shall only be used within 50 feet of a residentially habitable building or swimming pool except that security lighting, driveways and walkways may include outdoor lighting which complies with subsection (A)(2).

C. All Other Zoning Districts Including, But Not Limited to Commercial and Institutional Zoning Districts (CN, CC, CV, CG, I, RVP, and RD).

1. All outdoor lighting shall comply with California Building Code Title 24 Lighting Zone One (LZ1).
2. Curfew. All outdoor lighting shall be extinguished by 11:00 p.m. or close of business, whichever is later, except for lighting activated by motion sensor which extinguishes 10 minutes after activation and lighting at the building entrances and driveway egress points.
3. Lighting for ATMs and exterior accessways to hotel/motel rooms are not subject to the curfew.
4. For the portions of a property containing ESHA or ESHA buffer or located in or adjacent to ESHA or ESHA buffer, on any parcel of land that is located along, within, provides views to or is visible from any scenic area, scenic road, public viewing area, lighting shall comply with the standards of subsection (A)(2) under the OS zone standards instead of this subsection (C)(4).

(Ord. 434 § 4, 2018)

DISCUSSION

PANEL QUESTIONS

How does light at night affect individual animals vs. ecosystems?

DISCUSSION

Where have you seen ordinances actually enforce what happens in the middle of the night, and where do they fall short?

DISCUSSION

When a local ordinance is silent on controls, is the energy code enough to reduce light pollution?

DISCUSSION

When a client or council says ‘we need more light for safety,’ how do you respond, and have you changed minds?”

DISCUSSION

How do you turn lighting standards into precise luminaire-level operating settings?

DISCUSSION

How does your design approach differ between a national or state park and urban mixed use master planning, and where do controls fit in each?

DISCUSSION

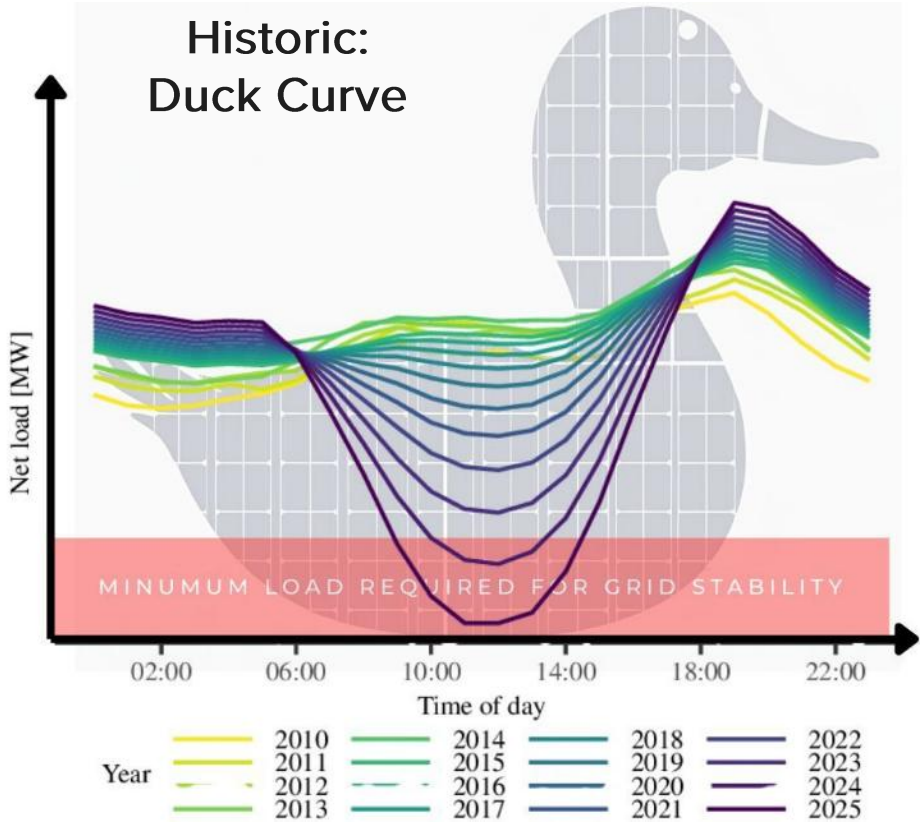
Is there a ‘safe’ light level, and does it vary by species?”

DISCUSSION

How do lighting controls help energy efficiency programs and utilities meet their savings goals?

Why Lighting is the Great Energy Unlock

Historic:
Duck Curve



Future:
Avoided Cost
Calculator

Figure 2-2. Month-hour averages of 2026 SP15 Energy Avoided

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Jan	58	57	58	57	59	65	68	60	40	30	26	22	20	14	18	26	60	76	71	69	67	65	63	59
Feb	61	60	60	61	64	71	75	61	36	33	25	21	19	17	14	15	45	81	77	73	71	68	66	63
Mar	51	50	49	50	50	53	52	23	12	11	9	6	6	5	6	6	12	52	57	58	59	57	54	52
Apr	50	48	48	49	50	50	25	7	3	3	1	1	1	0	1	0	2	46	55	57	57	57	53	51
May	52	50	50	48	50	47	11	6	5	3	3	3	2	2	1	1	11	43	53	58	58	58	55	52
Jun	56	55	53	53	53	52	31	28	27	24	22	21	23	25	28	29	47	75	70	69	67	66	62	59
Jul	62	60	59	59	61	57	49	46	44	42	42	39	43	47	51	54	69	93	88	76	74	74	70	66
Aug	66	64	64	63	65	68	55	50	47	45	45	46	49	52	56	61	89	94	90	76	74	73	69	67
Sept	67	65	64	66	74	78	59	49	47	44	43	43	46	49	62	58	84	137	100	82	79	77	70	69
Oct	60	59	58	58	61	67	62	46	45	41	38	36	36	39	41	47	74	76	70	71	70	70	64	62
Nov	58	57	57	57	59	62	65	48	44	39	36	36	33	34	34	43	69	72	71	70	69	66	62	60
Dec	60	59	59	59	61	70	74	62	54	50	46	45	43	42	43	52	82	75	72	74	72	70	65	63

Figure 2-3. Month-hour averages of 2030 SP15 Energy Avoided Costs

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Jan	64	63	61	62	62	65	68	53	21	17	14	13	11	8	9	9	42	69	71	70	70	69	66	64
Feb	64	63	63	63	64	65	68	43	18	10	10	8	7	6	5	8	15	69	72	72	71	69	66	66
Mar	53	54	52	50	49	51	43	12	6	6	4	3	3	2	2	3	5	44	55	56	56	55	52	55
Apr	42	38	34	30	27	25	9	3	2	2	0	0	0	0	0	0	0	13	25	31	38	36	41	43
May	35	34	31	29	26	21	3	2	2	0	0	0	0	0	0	0	0	14	21	31	36	38	37	36
Jun	54	51	52	50	49	46	8	5	4	3	3	2	2	2	2	2	3	49	50	57	58	58	56	55
Jul	63	61	60	60	59	54	22	13	12	10	9	7	8	8	10	12	15	65	67	70	70	70	66	64
Aug	63	61	61	60	61	61	30	13	12	10	9	9	9	8	9	10	17	71	71	71	70	70	66	65
Sept	67	66	65	65	67	69	44	20	19	17	15	15	16	16	19	20	42	81	76	74	75	73	68	68
Oct	66	64	63	63	65	66	63	21	18	13	14	11	12	10	11	19	56	69	71	71	71	68	68	67
Nov	65	64	63	63	63	66	68	33	24	21	19	16	15	12	15	21	66	70	71	71	70	69	67	67
Dec	66	65	63	64	64	66	70	54	41	37	32	30	26	21	20	30	72	73	75	75	72	71	69	68

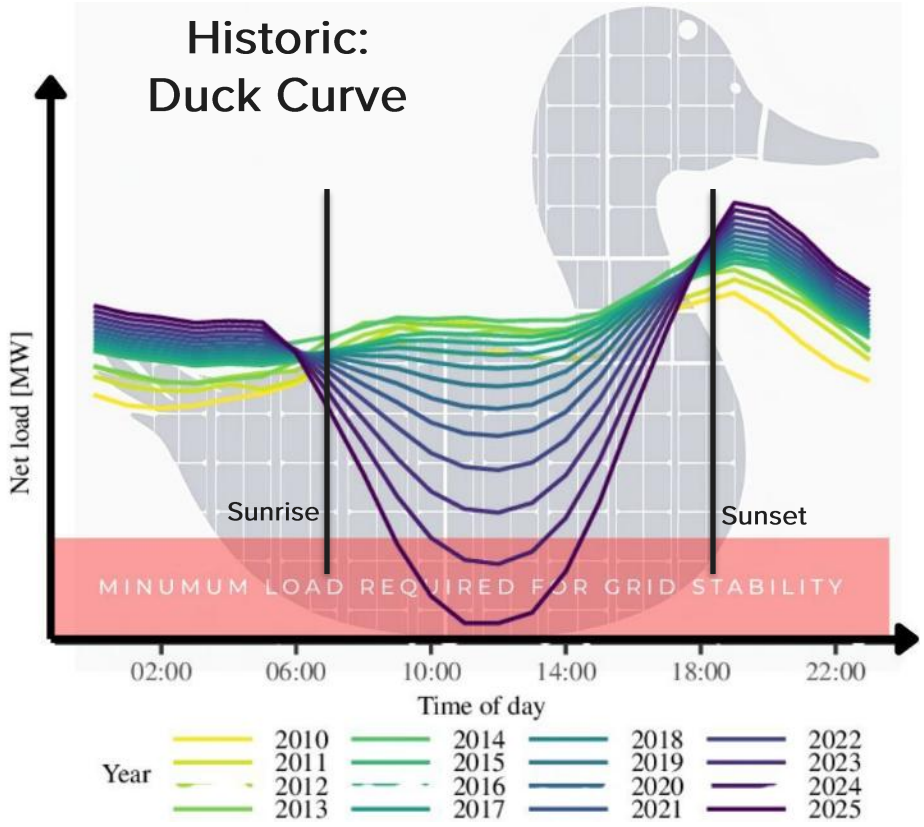
Figure 2-4. Month-hour averages of 2035 SP15 Energy Avoided Costs

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Jan	64	63	61	62	62	65	68	53	21	17	14	13	11	8	9	9	42	69	71	70	70	69	66	64
Feb	64	63	63	63	64	65	68	43	18	10	10	8	7	6	5	8	15	69	72	72	71	69	66	66
Mar	53	54	52	50	49	51	43	12	6	6	4	3	3	2	2	3	5	44	55	56	56	55	52	55
Apr	42	38	34	30	27	25	9	3	2	2	0	0	0	0	0	0	0	13	25	31	38	36	41	43
May	35	34	31	29	26	21	3	2	2	0	0	0	0	0	0	0	0	14	21	31	36	38	37	36
Jun	54	51	52	50	49	46	8	5	4	3	3	2	2	2	2	2	3	49	50	57	58	58	56	55
Jul	63	61	60	60	59	54	22	13	12	10	9	7	8	8	10	12	15	65	67	70	70	70	66	64
Aug	63	61	61	60	61	61	30	13	12	10	9	9	9	8	9	10	17	71	71	71	70	70	66	65
Sept	67	66	65	65	67	69	44	20	19	17	15	15	16	16	19	20	42	81	76	74	75	73	68	68
Oct	66	64	63	63	65	66	63	21	18	13	14	11	12	10	11	19	56	69	71	71	71	68	68	67
Nov	65	64	63	63	63	66	68	33	24	21	19	16	15	12	15	21	66	70	71	71	70	69	67	67
Dec	66	65	63	64	64	66	70	54	41	37	32	30	26	21	20	30	72	73	75	75	72	71	69	68

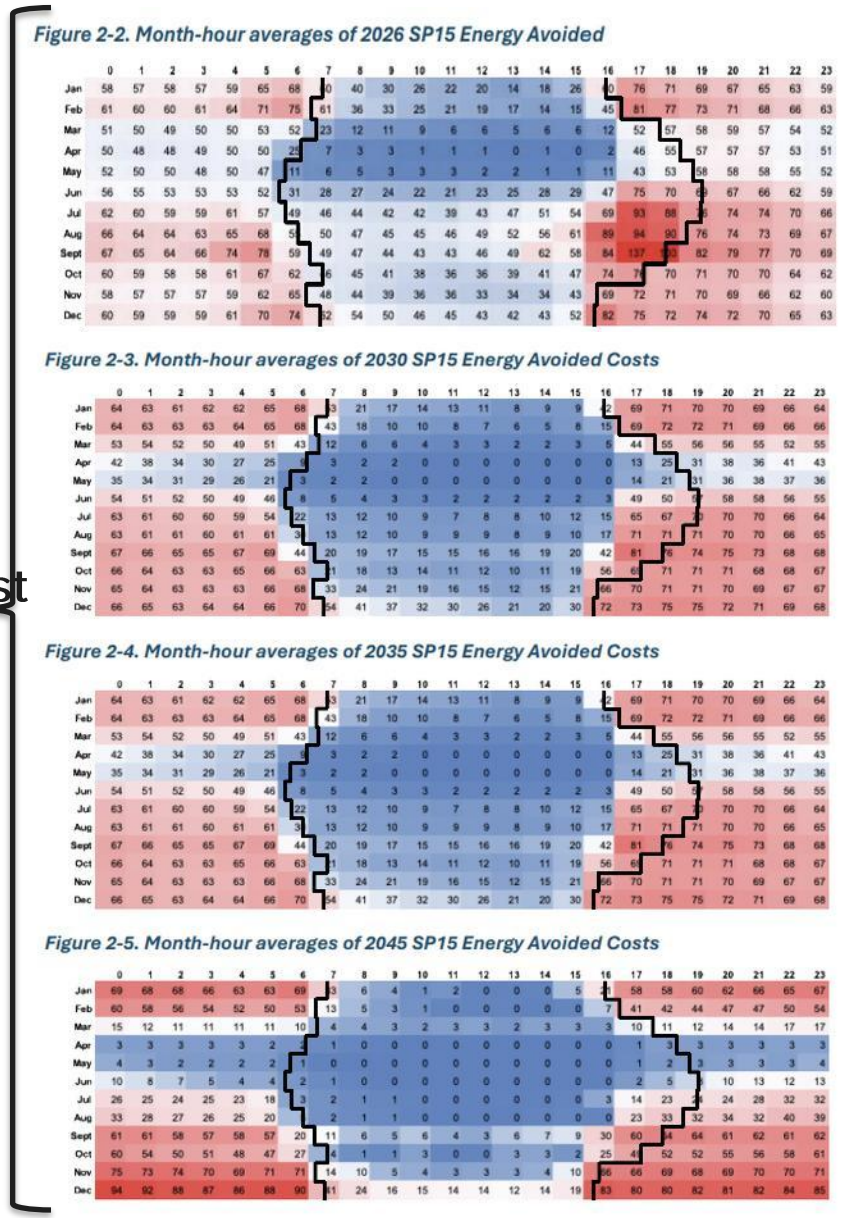
Figure 2-5. Month-hour averages of 2045 SP15 Energy Avoided Costs

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Jan	69	68	68	66	63	63	69	33	6	4	1	2	0	0	0	5	21	58	58	60	62	66	65	67
Feb	60	58	56	54	52	50	53	13	5	3	1	0	0	0	0	0	7	41	42	44	47	47	50	54
Mar	15	12	11	11	11	11	10	4	4	3	2	3	3	2	3	3	3	10	11	12	14	14	17	17
Apr	3	3	3	3	3	2	2	1	0	0	0	0	0	0	0	0	0	1	3	3	3	3	3	3
May	4	3	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	1	2	3	3	3	3	4
Jun	10	8	7	5	4	4	2	1	0	0	0	0	0	0	0	0	0	2	5	8	10	13	12	13
Jul	26	25	24	25	23	18	3	2	1	1	0	0	0	0	0	0	3	14	23	24	24	28	32	32
Aug	33	28	27	26	25	20	5	2	1	1	0	0	0	0	0	0	0	23	33	32	34	32	40	39
Sept	61	61	58	57	58	57	20	11	6	5	6	4	3	6	7	9	30	60	64	64	61	62	61	62
Oct	60	54	50	51	48	47	27	4	1	1	3	0	0	3	3	2	25	49	52	52	55	56	58	61
Nov	75	73	74	70	69	71	71	14	10	5	4	3	3	3	4	10	66	66	69	68	69	70	70	71
Dec	94	92	88	87	86	88	90	41	24	16	15	14	14	12	14	19	83	80	80	82	81	82	84	85

Why Lighting is the Great Energy Unlock



Future:
Avoided Cost
Calculator



Civil Lighting Design

- Civil Engineering: Designing street and roads
- Planning (urban/transportation/environmental): Planning for lighting which facilitates and changes regularly
- IT: Systems to know when ELRP or CBP events occur and tell the lighting how to perform.
- GIS: crime, transportation safety, demographics, weather, land use, major events, migratory birds
- Street lighting is ubiquitous, and many municipalities and utilities have already adopted controls. I believe lighting (especially street lighting) is the next big opportunity to bring value to utilities, and one directly aligned with DLC's LUNA program.

DISCUSSION

What gets in the way of a control system doing what was designed?

DISCUSSION

Which control strategies matter most biologically: dimming, turning off, timing, or spectrum?

DISCUSSION

If you could change one thing about how efficiency programs incentivize lighting and controls so they also reduce light pollution, what would it be?

DISCUSSION

What are the easy wins, like scheduled dimming or high-end trim, that make networked lighting controls pay for themselves?”

Thank you

LEORA RADETSKY· LRADETSKY@DESIGNLIGHTS.ORG

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