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

SCAN TO VIEW

Sessions, times, and speakers

DESIGNLIGHTS.ORG/2026DLCSUMMIT

LA DWP Los Angeles Department of Water & Power

Day 1 · Monday, October 26

12:00 PM — **Registration & Networking**
LIBRARY

1:15 PM — **Welcome & Overview**
REDWOOD 1

1:30 PM — **Topic Table Roundtables**
REDWOOD 1

3:15 PM — TWO CONCURRENT SESSIONS

OPEN TO ALL
Lighting Programs 201
REDWOOD 1

MEMBERS ONLY
DLC Member Session
TAHOE 10

4:45 & 5:09 PM — **Buses depart for La Kretz**

5:00–8:00 PM — **Private Tour of the La Kretz Innovation Campus & Mixer**
*Amped-Up Bar sponsored by **nLight***
*Live Wire Social sponsored by **Aleo Lighting***
LA KRETZ INNOVATION CAMPUS

Both days — **Exhibitor & Ask An Expert**
Visit during breaks, lunch & networking
LIBRARY

Day 2 · Tuesday, October 27

7:30 AM Rise & Energize Breakfast
*Sponsored by **MES***

8:30 AM **Opening Remarks**
REDWOOD 1

8:50 AM **Next Gen Lighting Savings**
REDWOOD 1

9:50 AM **Next Gen Buildings**
REDWOOD 1

10:45 AM Networking Break
*Sponsored by **LADWP***

11:00 AM TWO CONCURRENT SESSIONS

Lighting Controls & Light Pollution
BIG SUR 9

Capturing Controls in TRMs
REDWOOD 1

12:00 PM Connections Lunch
*Sponsored by **Sportsbeams***

1:00 PM **Next Gen Lighting Programs**
REDWOOD 1

2:00 PM **Small Group Discussions**
REDWOOD 1

3:00 PM Networking Break
*Sponsored by **LADWP***

3:30 PM **Summit Recap**
REDWOOD 1

4:30 PM **Closing Remarks**
REDWOOD 1

5:00 PM **Member Appreciation Happy Hour**
COURTYARD

DLC SUMMIT 2026

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

Lighting Programs 201 for Industry Partners

LA DWP Los Angeles Department of Water & Power

DESIGNLIGHTS.ORG/2026DLCSUMMIT

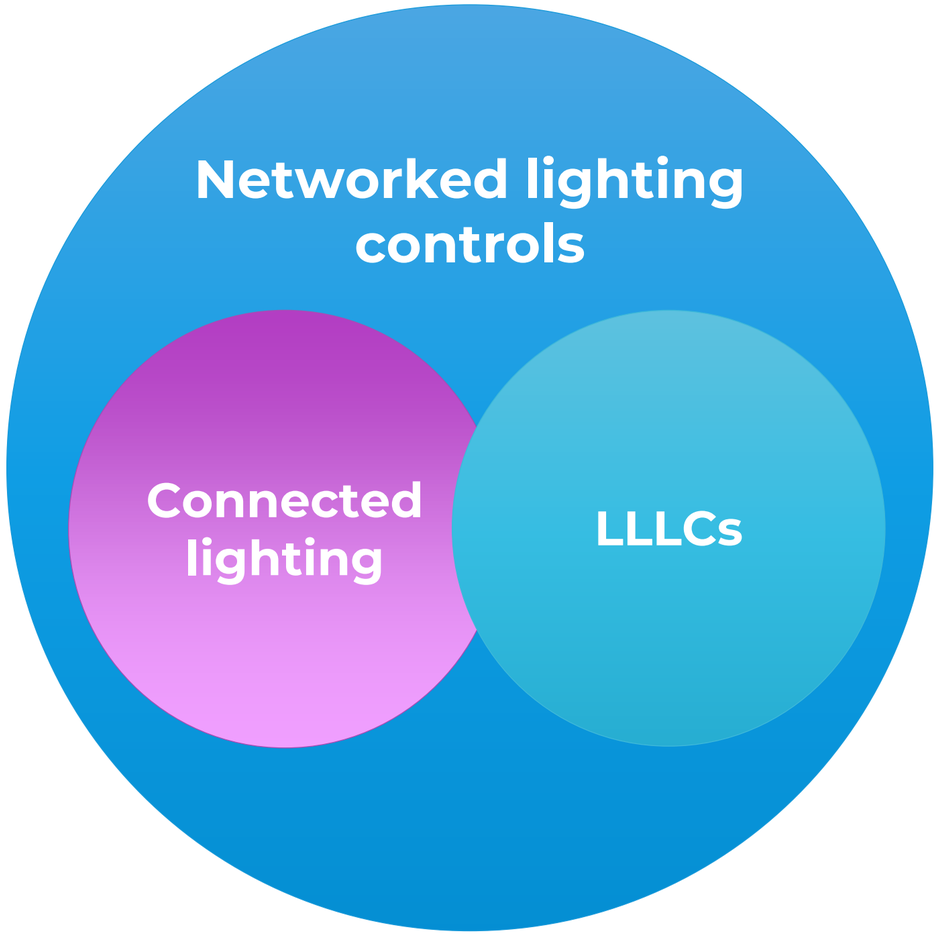
The DesignLights Consortium is an independent, nonprofit organization providing decision makers with data and resources on quality lighting, controls, and integrated building systems to reduce energy, carbon, and light pollution.





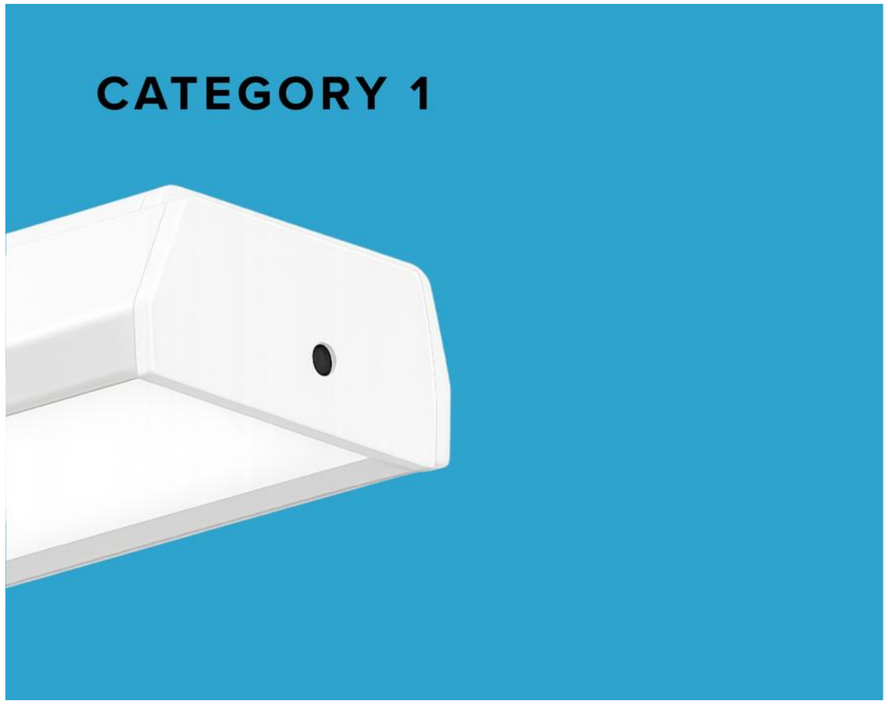


Networked Lighting Controls



- **Networked lighting controls (NLC) = Fixtures + Sensors**
- **Connected lighting = NLC + Other building systems**
- **Luminaire-level lighting controls (LLLC) = Subset of NLC system with integral controls**

Controls ready vs. integral controls



CONTROLS READY

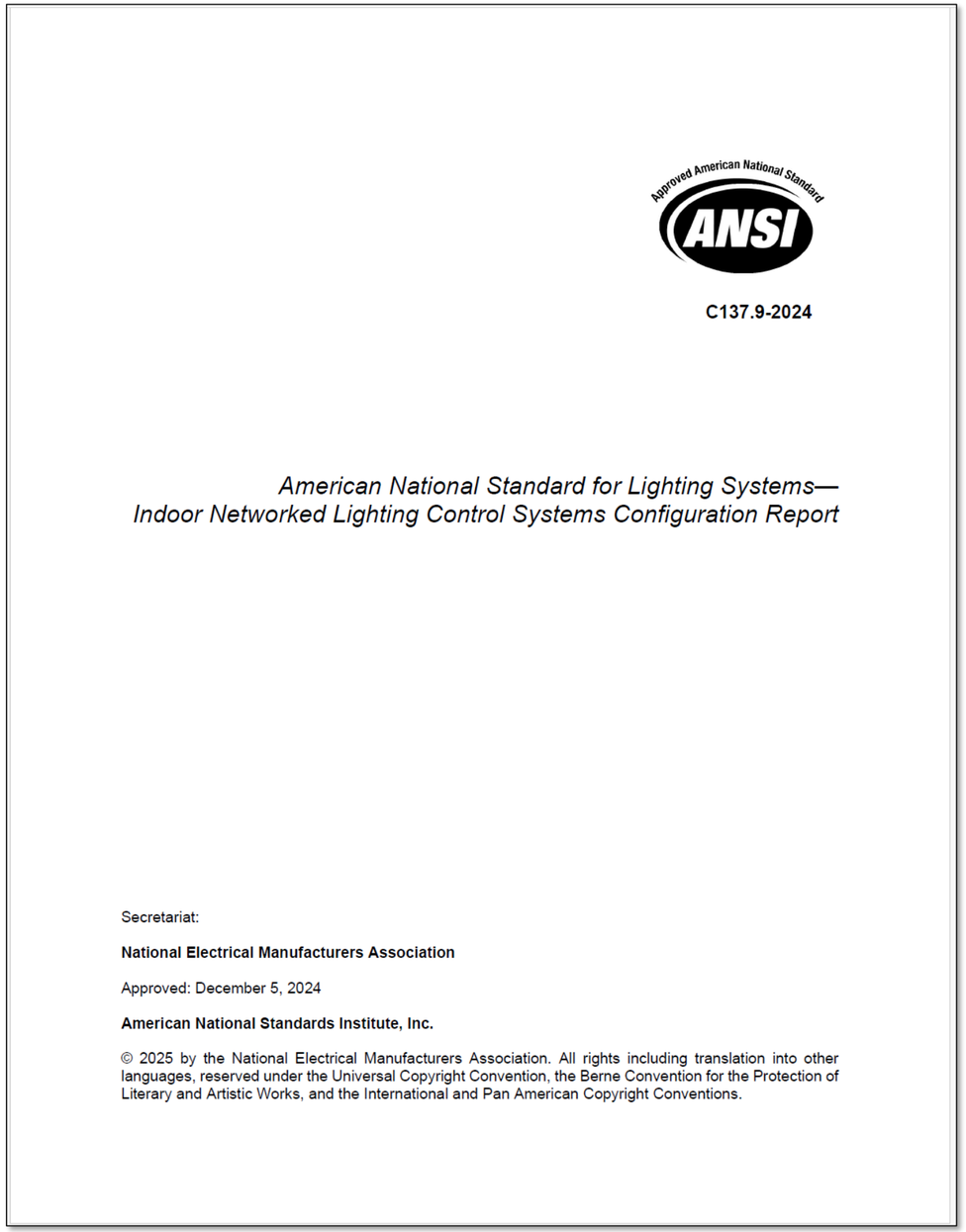
Receptacle ready for controls post-install



INTEGRAL CONTROLS

Sensor or control included in the ordering code

ANSI C137.9
Indoor Networked Lighting Control Systems Configuration Report



Approved American National Standard

ANSI

C137.9-2024

American National Standard for Lighting Systems—
Indoor Networked Lighting Control Systems Configuration Report

Secretariat:

National Electrical Manufacturers Association

Approved: December 5, 2024

American National Standards Institute, Inc.

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C137.9 Support from NLC QPL Listed Systems

SUNRICHER

SunSmart

ALS

Advantage Lighting Solutions

ALS Control

Thermostat support from NLC qualified systems

Keilton
+autani

Market Drivers for Controls

US non-residential annual energy savings potential

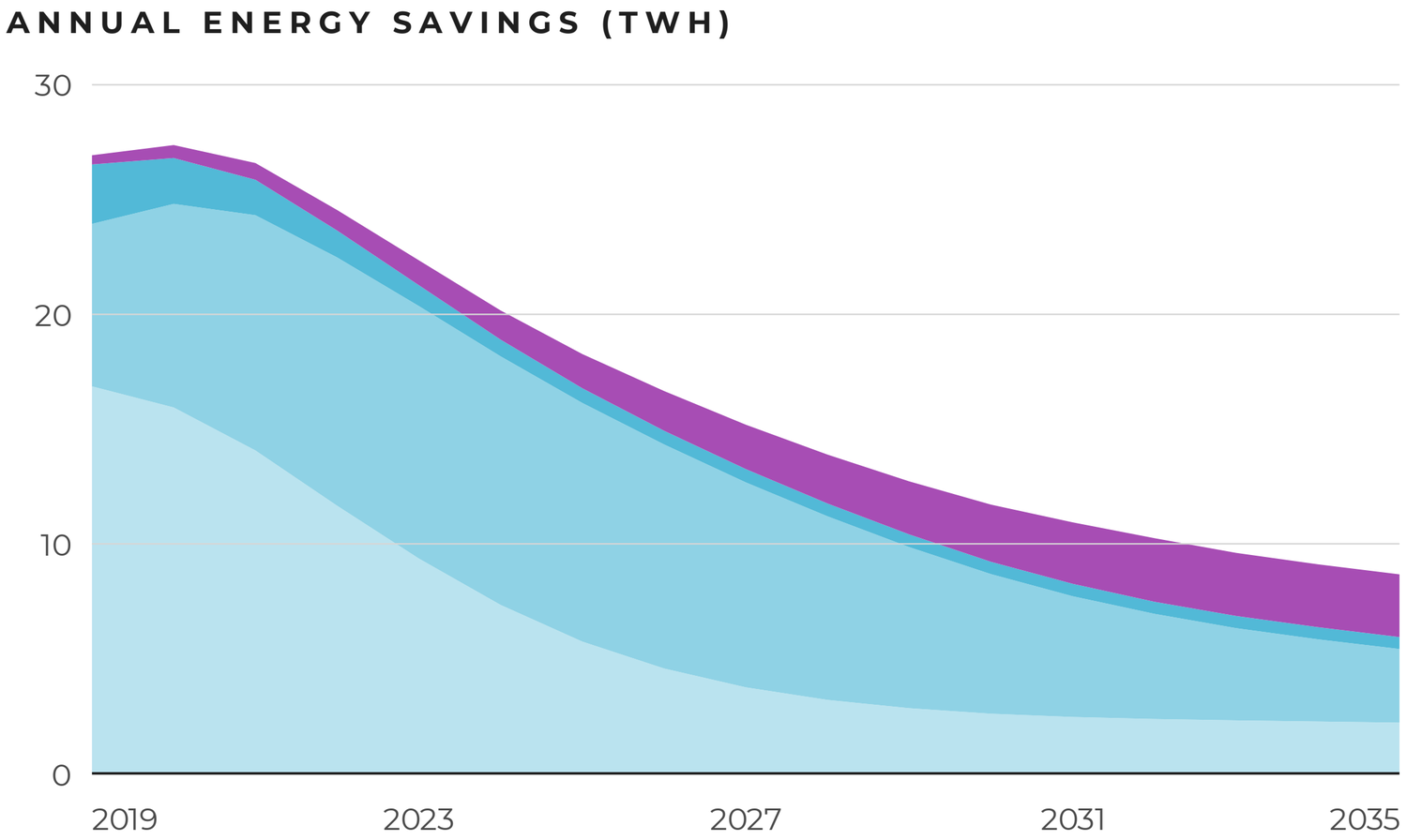
2021 DLC analysis, based on DOE 2019

DOE current path

DOE program goal

Market intervention

- Outdoor LED products
- Indoor LED products
- Screw-base LED products
- NLC – current path



US non-residential annual energy savings potential

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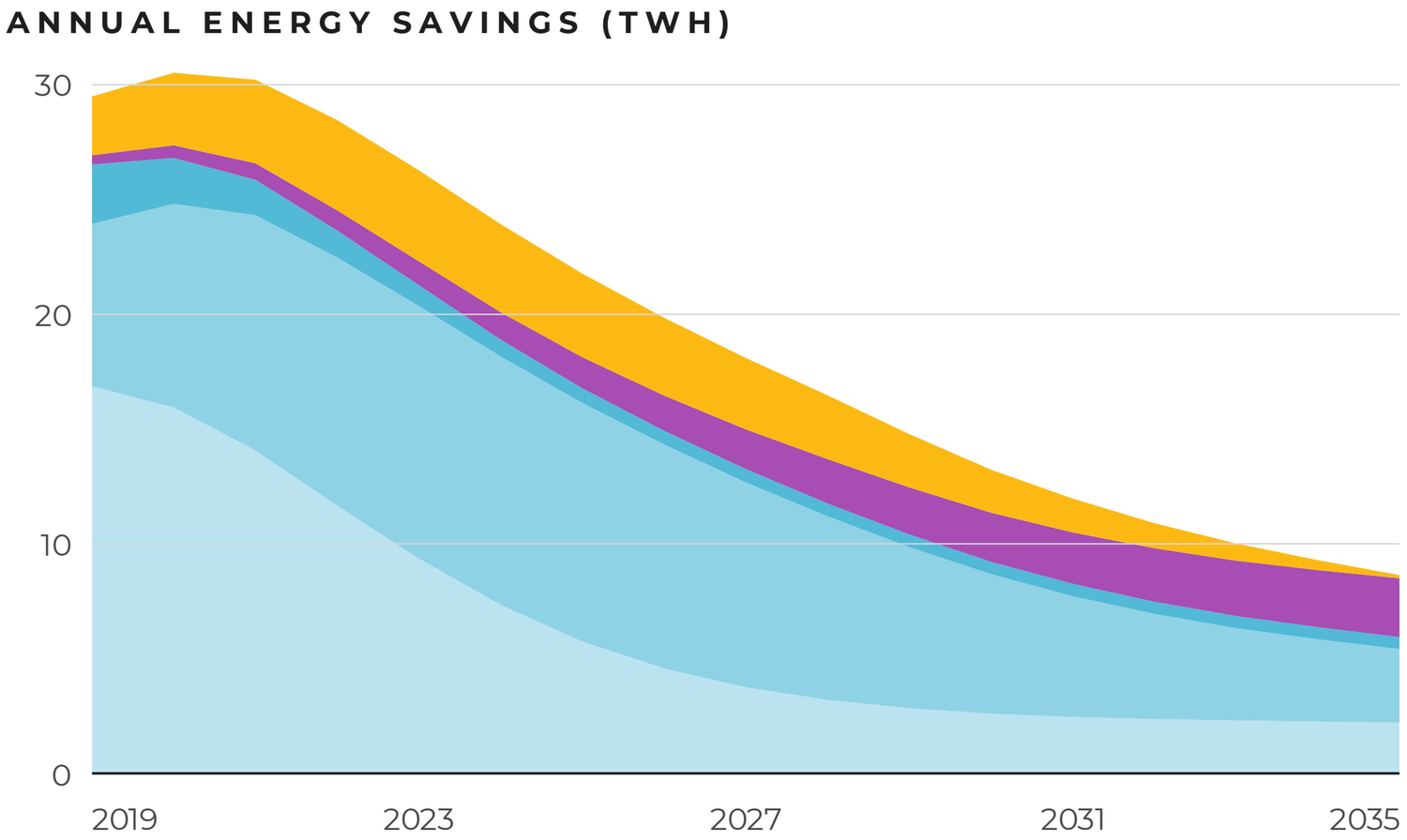
- NLC – DOE program goal



US non-residential annual energy savings potential

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- Outdoor LED products
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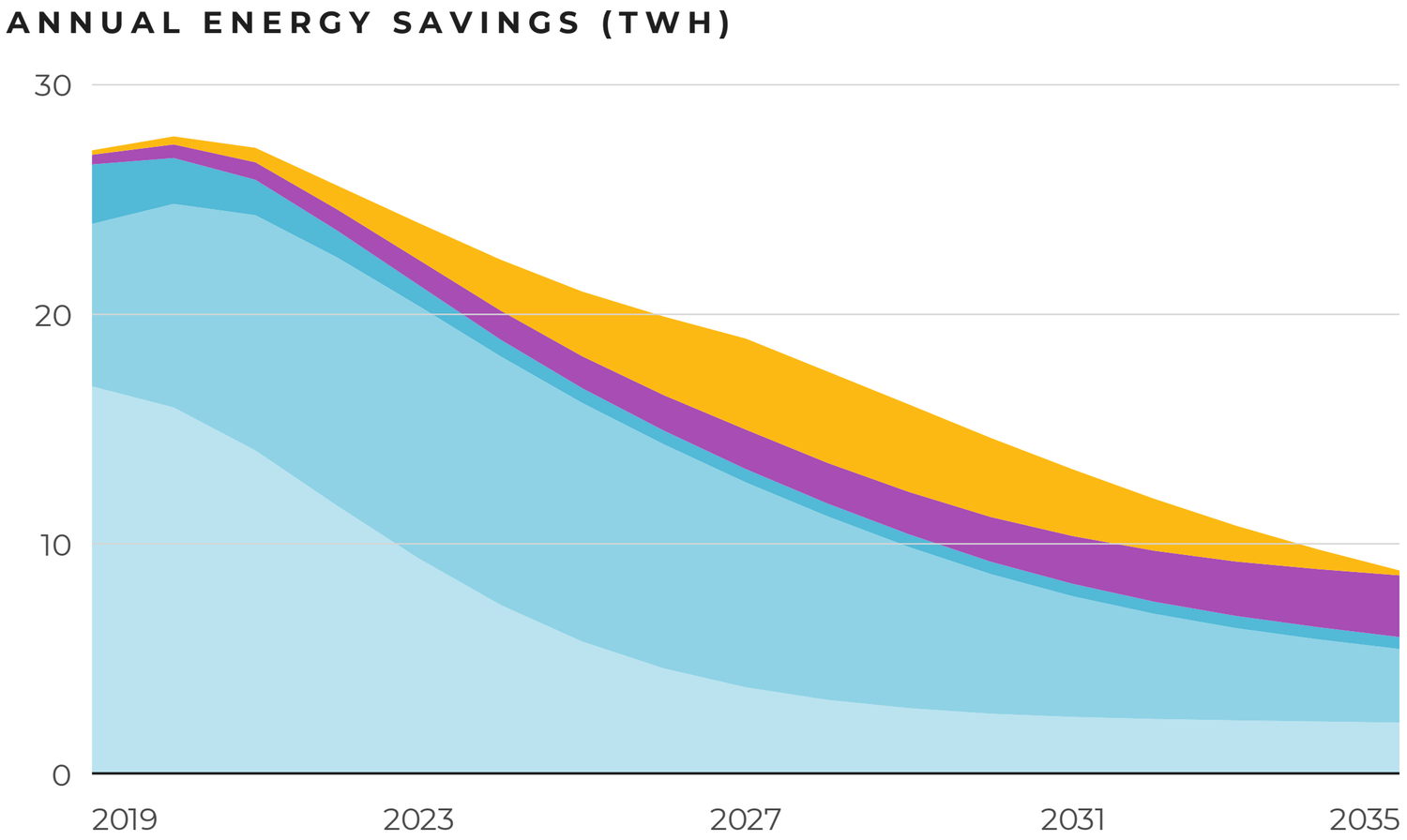
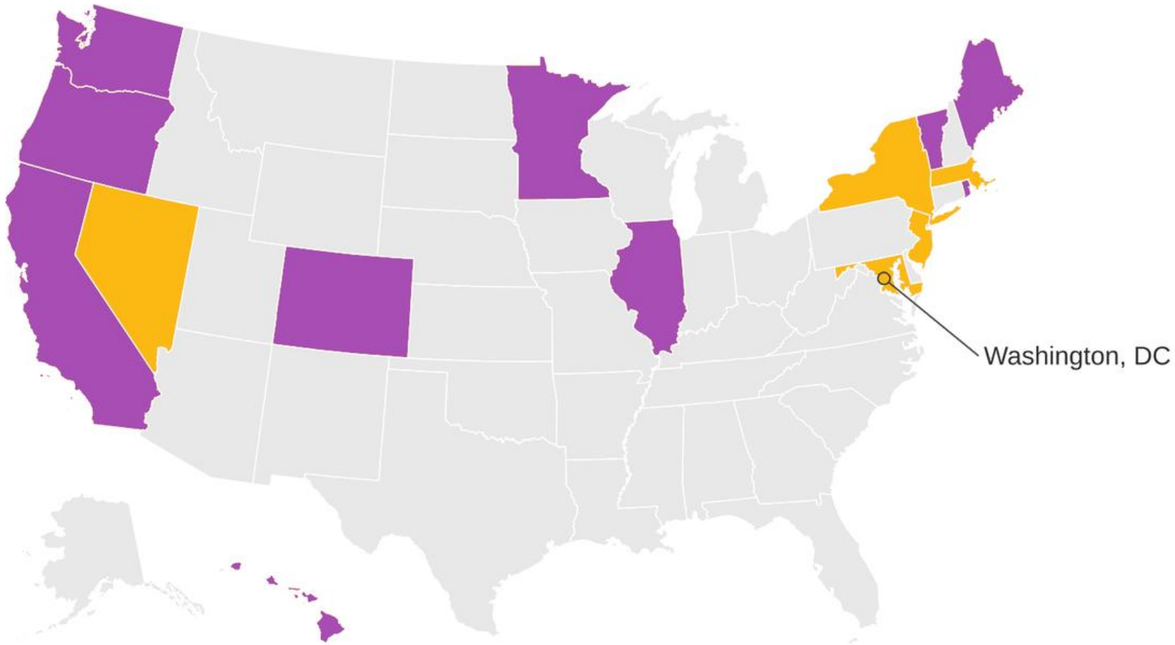


Linear fluorescent lamp bans: US and Canada

UNITED STATES



CANADA



Already enacted linear fluorescent ban

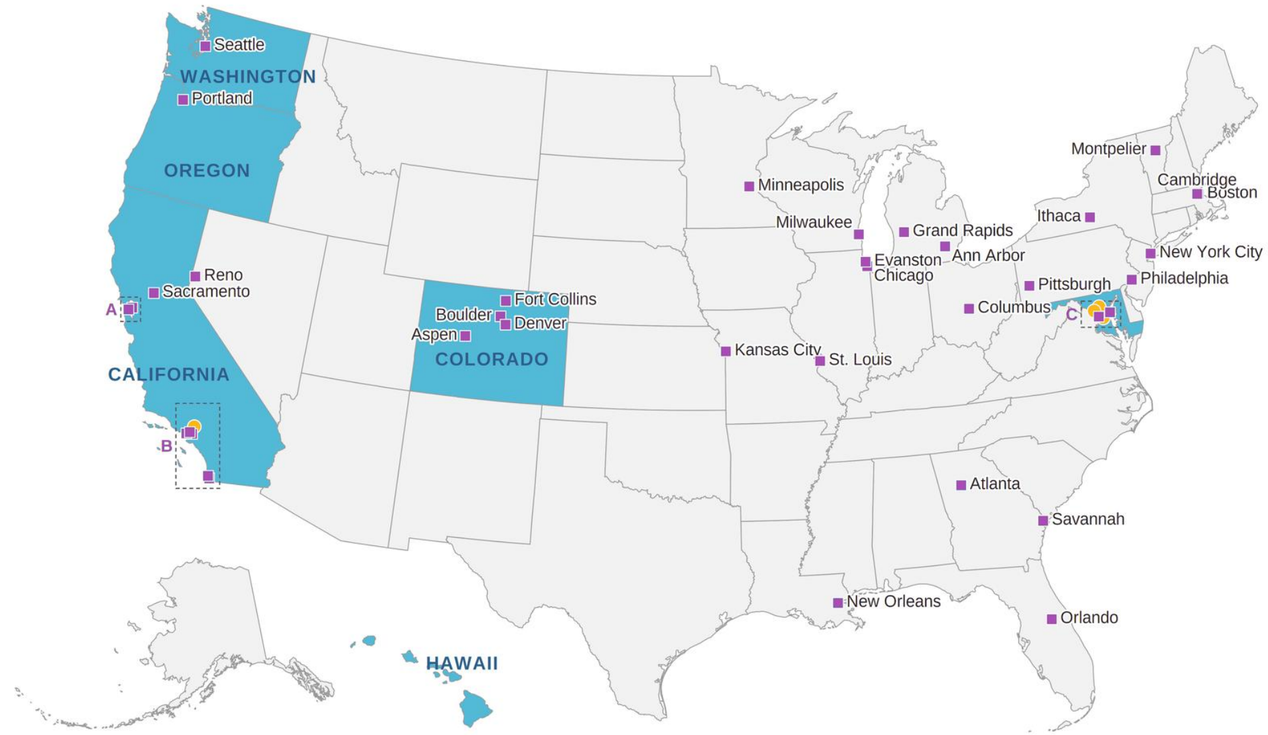
Targeted restriction (high CRI > 87)

Ban in place, working through inventory

No enacted restriction

National Building Performance Standards Coalition

States, counties, and cities with BPS requirements or a commitment to adopt them



State (6) County (4) City (36) and Washington, DC

Source: IMT / National BPS Coalition. 49 members (7 states); two unnamed members not shown.

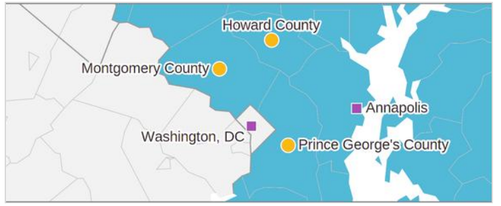
A · SAN FRANCISCO BAY AREA



B · SOUTHERN CALIFORNIA



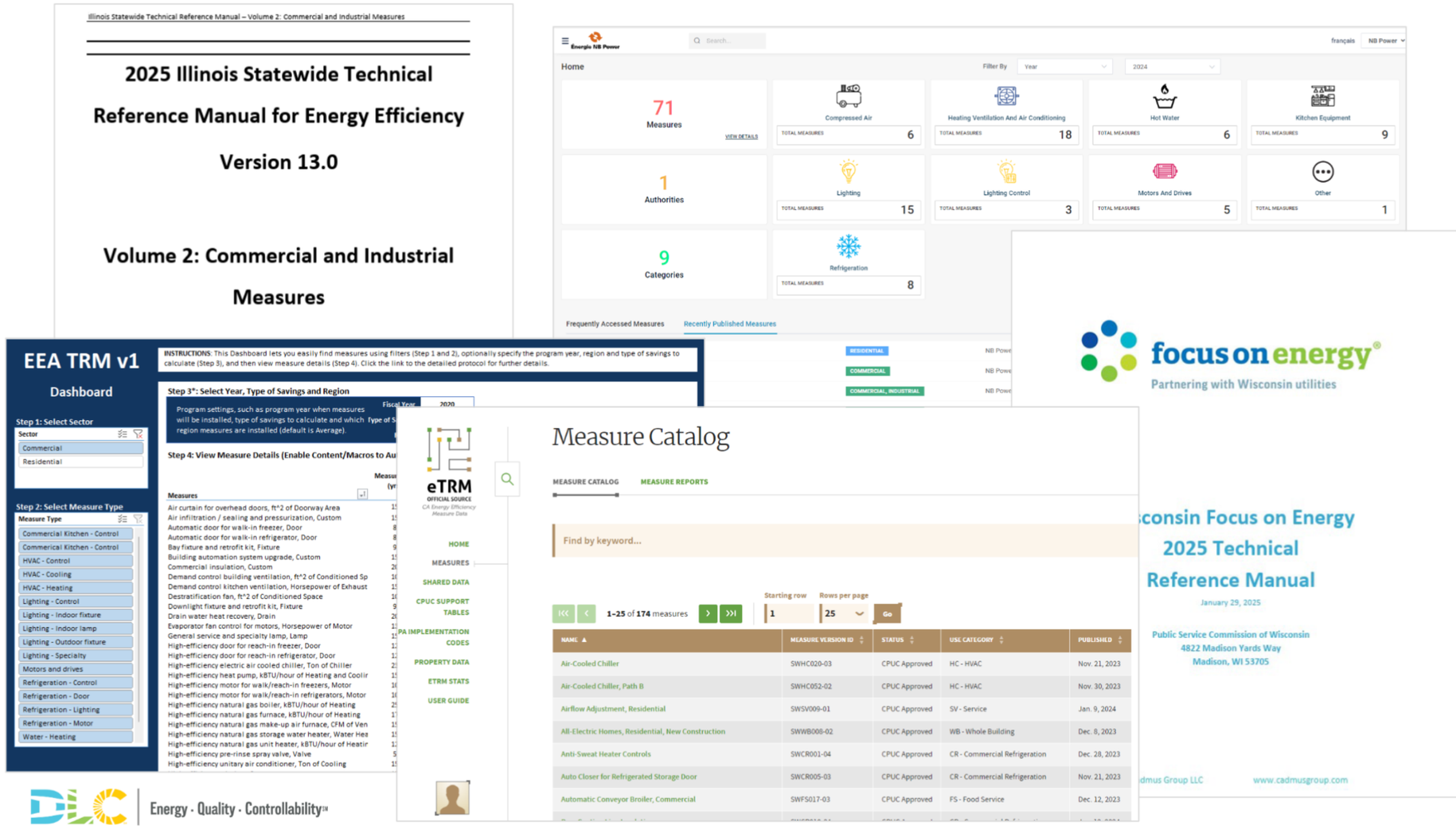
C · WASHINGTON, DC – MARYLAND



Technical Reference Manuals & DLC Controls Categories

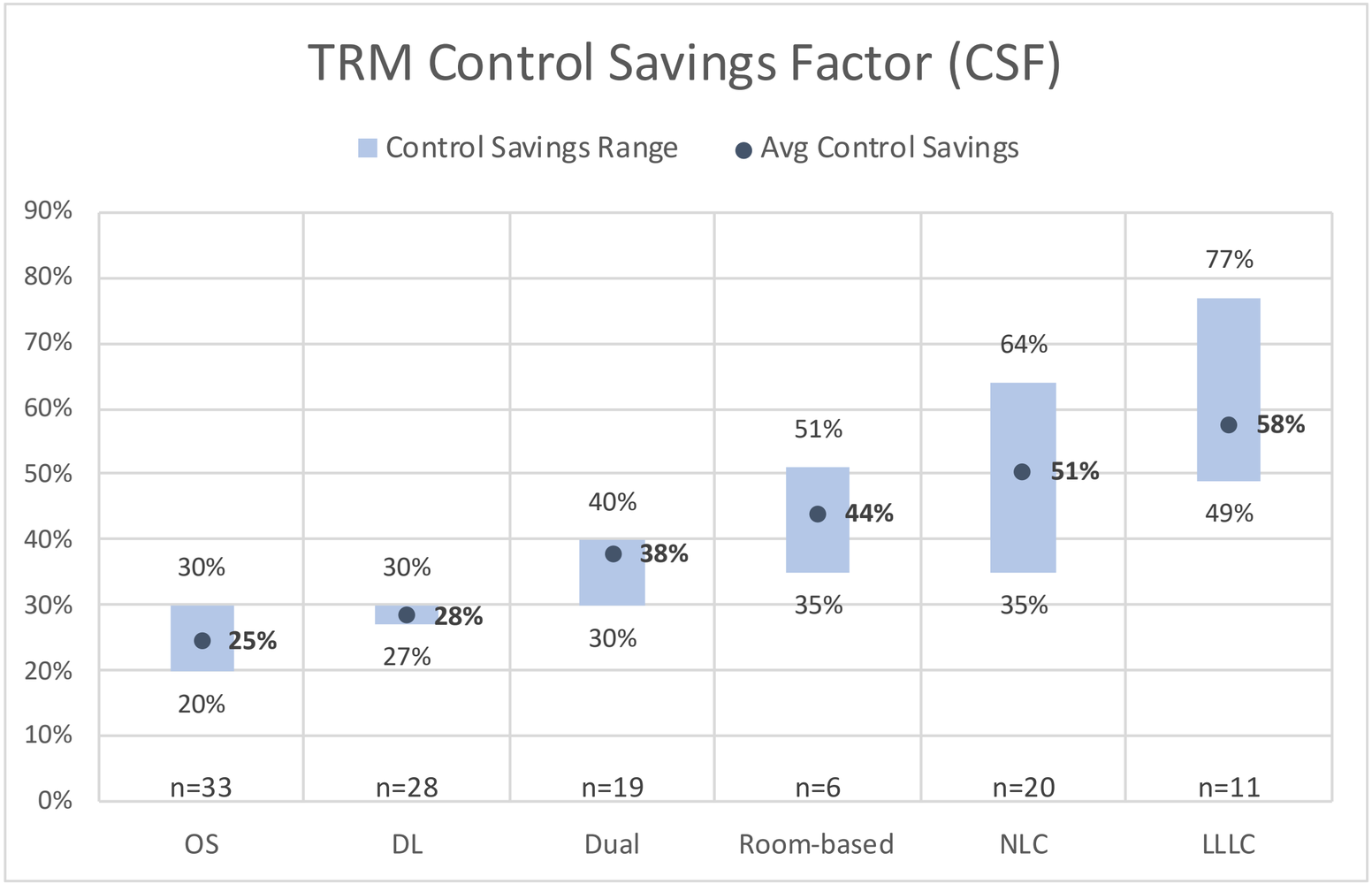
Technical Resource Manuals

Measures govern incentives/rebates based on deemed savings.



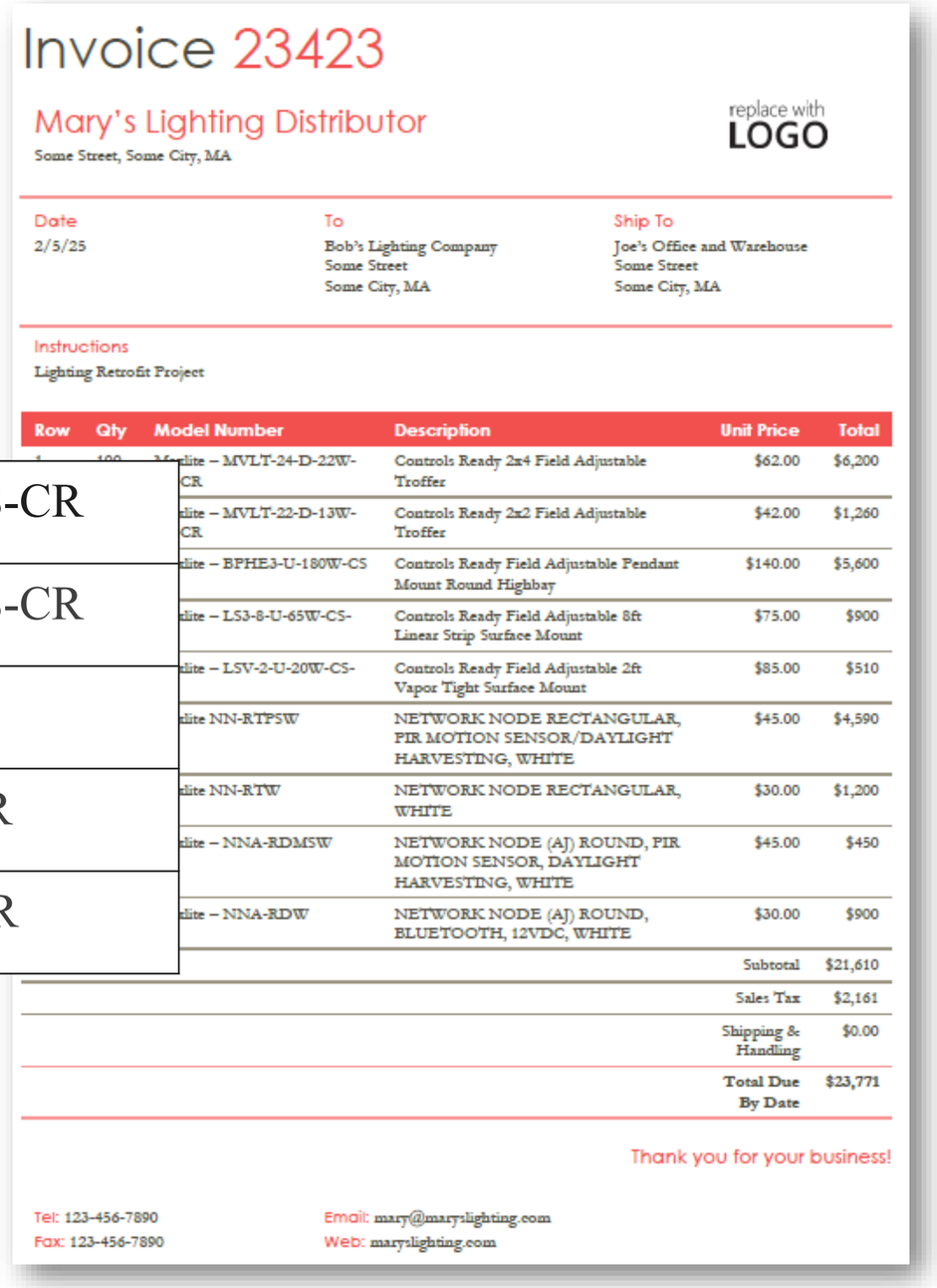
Technical Resource Manuals - Controls Measures

CSF defines the % savings of the controlled load, due to the use of controls



Connecting Integral Controls

Maxlite – MVLT-24-D-22W-CS-CR
Maxlite – MVLT-22-D-13W-CS-CR
Maxlite – BPHE3-U-180W-CS
Maxlite – LS3-8-U-65W-CS-CR
Maxlite – LSV-2-U-20W-CS-CR



Invoice 23423

Mary's Lighting Distributor

Some Street, Some City, MA

replace with LOGO

Date	To	Ship To
2/5/25	Bob's Lighting Company Some Street Some City, MA	Joe's Office and Warehouse Some Street Some City, MA

Instructions

Lighting Retrofit Project

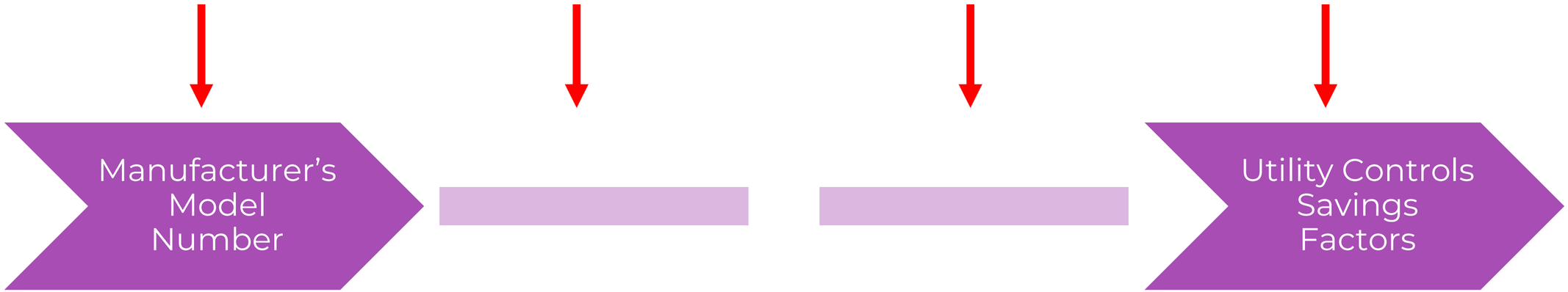
Row	Qty	Model Number	Description	Unit Price	Total
		lite – MVLT-24-D-22W-CR	Controls Ready 2x4 Field Adjustable Troffer	$62.00	$6,200
		lite – MVLT-22-D-13W-CR	Controls Ready 2x2 Field Adjustable Troffer	$42.00	$1,260
		lite – BPHE3-U-180W-CS	Controls Ready Field Adjustable Pendant Mount Round Highbay	$140.00	$5,600
		lite – LS3-8-U-65W-CS-	Controls Ready Field Adjustable 8ft Linear Strip Surface Mount	$75.00	$900
		lite – LSV-2-U-20W-CS-	Controls Ready Field Adjustable 2ft Vapor Tight Surface Mount	$85.00	$510
		lite NN-RTPSW	NETWORK NODE RECTANGULAR, PIR MOTION SENSOR/DAYLIGHT HARVESTING, WHITE	$45.00	$4,590
		lite NN-RTW	NETWORK NODE RECTANGULAR, WHITE	$30.00	$1,200
		lite – NNA-RDMSW	NETWORK NODE (AJ) ROUND, PIR MOTION SENSOR, DAYLIGHT HARVESTING, WHITE	$45.00	$450
		lite – NNA-RDW	NETWORK NODE (AJ) ROUND, BLUETOOTH, 12VDC, WHITE	$30.00	$900
				Subtotal	$21,610
				Sales Tax	$2,161
				Shipping & Handling	$0.00
				Total Due By Date	$23,771

Thank you for your business!

Tel: 123-456-7890
Fax: 123-456-7890

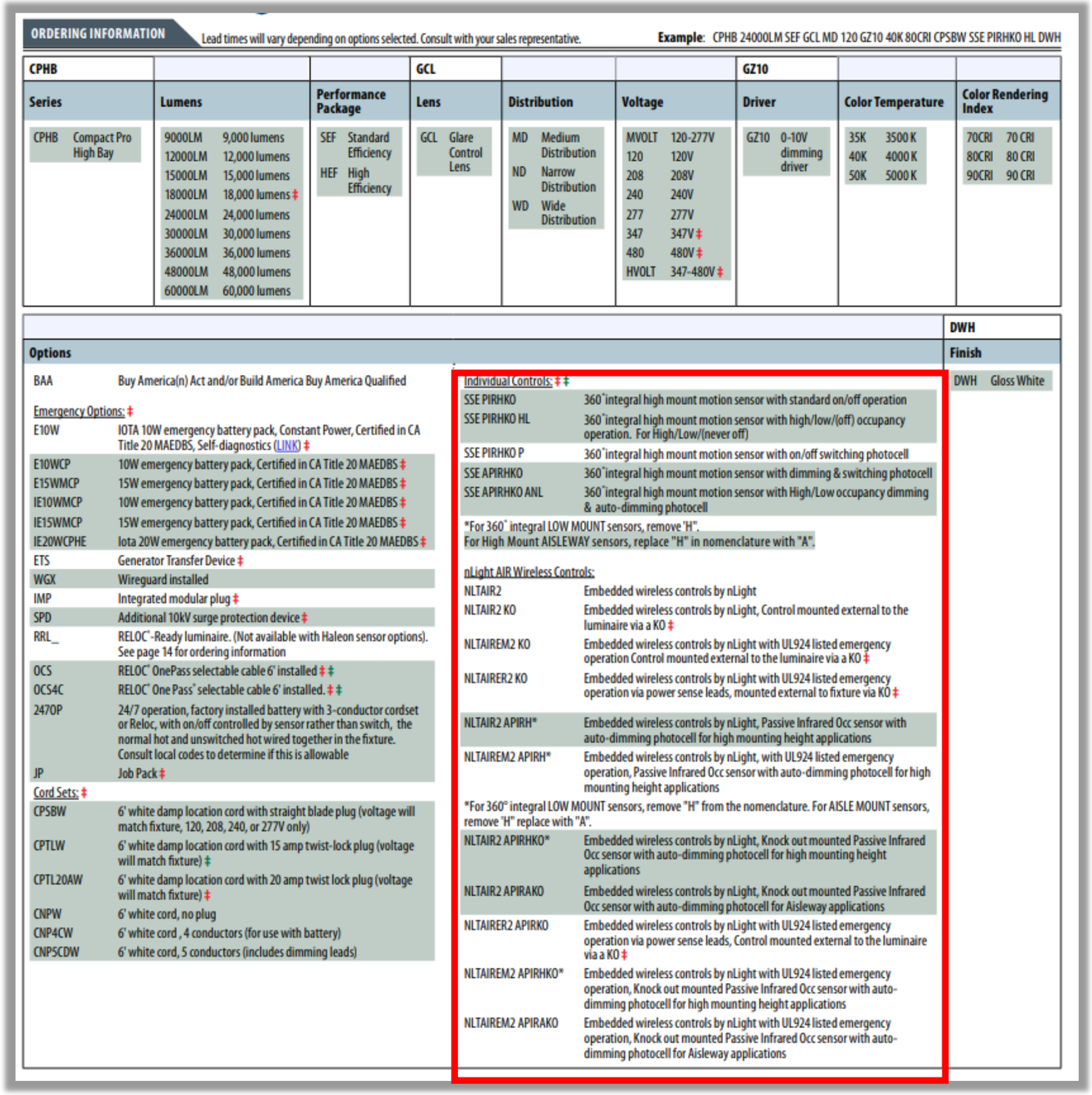
Email: mary@maryslighting.com
Web: maryslighting.com

V6 Controls


Manufacturer's Model Number
Utility Controls Savings Factors

Controls Options Codes

Example Model Number:
CPHB 24000LM SEF GCL MD 120 GZ10 40K 80CRI CPSBW SSE PIRHKO HL DWH



ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example:** CPHB 24000LM SEF GCL MD 120 GZ10 40K 80CRI CPSBW SSE PIRHKO HL DWH

CPHB			GCL			GZ10		
Series	**Lumens**	**Performance Package**	**Lens**	**Distribution**	**Voltage**	**Driver**	**Color Temperature**	**Color Rendering Index**
CPHB Compact Pro High Bay	9000LM 9,000 lumens 12000LM 12,000 lumens 15000LM 15,000 lumens 18000LM 18,000 lumens ‡ 24000LM 24,000 lumens 30000LM 30,000 lumens 36000LM 36,000 lumens 48000LM 48,000 lumens 60000LM 60,000 lumens	SEF Standard Efficiency HEF High Efficiency	GCL Glare Control Lens	MD Medium Distribution ND Narrow Distribution WD Wide Distribution	MVOLT 120-277V 120 120V 208 208V 240 240V 277 277V 347 347V ‡ 480 480V ‡ HVOLT 347-480V ‡	GZ10 0-10V dimming driver	35K 3500 K 40K 4000 K 50K 5000 K	70CRI 70 CRI 80CRI 80 CRI 90CRI 90 CRI

Options

BAA	Buy America(n) Act and/or Build America Buy America Qualified
Emergency Options: ‡	
E10W	IOTA 10W emergency battery pack, Constant Power, Certified in CA Title 20 MAEDBS, Self-diagnostics (LINK) ‡
E10WCP	10W emergency battery pack, Certified in CA Title 20 MAEDBS ‡
E15WMCP	15W emergency battery pack, Certified in CA Title 20 MAEDBS ‡
IE10WMCP	10W emergency battery pack, Certified in CA Title 20 MAEDBS ‡
IE15WMCP	15W emergency battery pack, Certified in CA Title 20 MAEDBS ‡
IE20WCPHE	Iota 20W emergency battery pack, Certified in CA Title 20 MAEDBS ‡
ETS	Generator Transfer Device ‡
WGX	Wireguard installed
IMP	Integrated modular plug ‡
SPD	Additional 10kV surge protection device ‡
RRL_	RELOC®-Ready luminaire. (Not available with Haleon sensor options). See page 14 for ordering information
OCS	RELOC® OnePass selectable cable 6' installed ‡ ‡
OCS4C	RELOC® One Pass® selectable cable 6' installed. ‡ ‡
2470P	24/7 operation, factory installed battery with 3-conductor cordset or Reloc, with on/off controlled by sensor rather than switch, the normal hot and unswitched hot wired together in the fixture. Consult local codes to determine if this is allowable
JP	Job Pack ‡
Cord Sets: ‡	
CPSBW	6' white damp location cord with straight blade plug (voltage will match fixture, 120, 208, 240, or 277V only)
CPTLW	6' white damp location cord with 15 amp twist-lock plug (voltage will match fixture) ‡
CPTL20AW	6' white damp location cord with 20 amp twist lock plug (voltage will match fixture) ‡
CNPW	6' white cord, no plug
CNP4CW	6' white cord , 4 conductors (for use with battery)
CNP5CDW	6' white cord, 5 conductors (includes dimming leads)

Individual Controls: ‡ ‡	
SSE PIRHKO	360˚integral high mount motion sensor with standard on/off operation
SSE PIRHKO HL	360˚integral high mount motion sensor with high/low/(off) occupancy operation. For High/Low/(never off)
SSE PIRHKO P	360˚integral high mount motion sensor with on/off switching photocell
SSE APIRHKO	360˚integral high mount motion sensor with dimming & switching photocell
SSE APIRHKO ANL	360˚integral high mount motion sensor with High/Low occupancy dimming & auto-dimming photocell
*For 360˚ integral LOW MOUNT sensors, remove "H". For High Mount AISLEWAY sensors, replace "H" in nomenclature with "A".	
nLight AIR Wireless Controls:	
NLTAIR2	Embedded wireless controls by nLight
NLTAIR2 KO	Embedded wireless controls by nLight, Control mounted external to the luminaire via a KO ‡
NLTAIREM2 KO	Embedded wireless controls by nLight with UL924 listed emergency operation Control mounted external to the luminaire via a KO ‡
NLTAIRER2 KO	Embedded wireless controls by nLight with UL924 listed emergency operation via power sense leads, mounted external to fixture via KO ‡
NLTAIR2 APIRH*	Embedded wireless controls by nLight, Passive Infrared Occ sensor with auto-dimming photocell for high mounting height applications
NLTAIREM2 APIRH*	Embedded wireless controls by nLight, with UL924 listed emergency operation, Passive Infrared Occ sensor with auto-dimming photocell for high mounting height applications
*For 360° integral LOW MOUNT sensors, remove "H" from the nomenclature. For AISLE MOUNT sensors, remove "H" replace with "A".	
NLTAIR2 APIRHKO*	Embedded wireless controls by nLight, Knock out mounted Passive Infrared Occ sensor with auto-dimming photocell for high mounting height applications
NLTAIR2 APIRAKO	Embedded wireless controls by nLight, Knock out mounted Passive Infrared Occ sensor with auto-dimming photocell for Aisleway applications
NLTAIRER2 APIRKO	Embedded wireless controls by nLight with UL924 listed emergency operation via power sense leads, Control mounted external to the luminaire via a KO ‡
NLTAIREM2 APIRHKO*	Embedded wireless controls by nLight with UL924 listed emergency operation, Knock out mounted Passive Infrared Occ sensor with auto-dimming photocell for high mounting height applications
NLTAIREM2 APIRAKO	Embedded wireless controls by nLight with UL924 listed emergency operation, Knock out mounted Passive Infrared Occ sensor with auto-dimming photocell for Aisleway applications

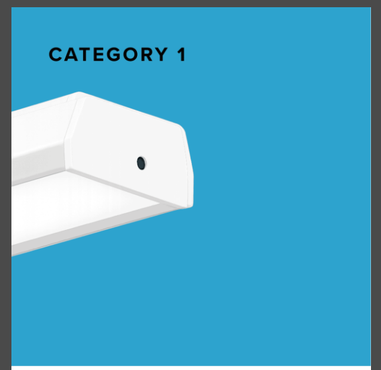
DWH	
Finish	
DWH	Gloss White

31

Controls Categories



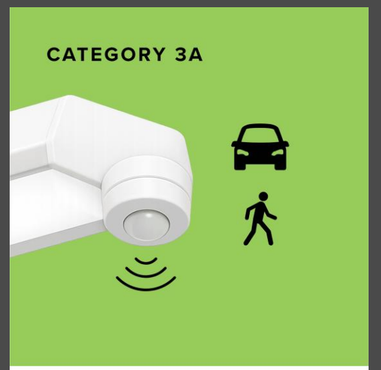
No Integral Controls



Controls Ready



Non-DLC Listed NLC Controller

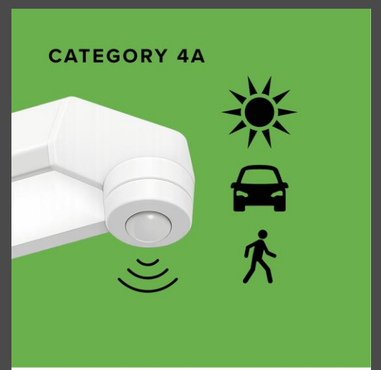


Integral Occupancy or Traffic* Sensor Function Only

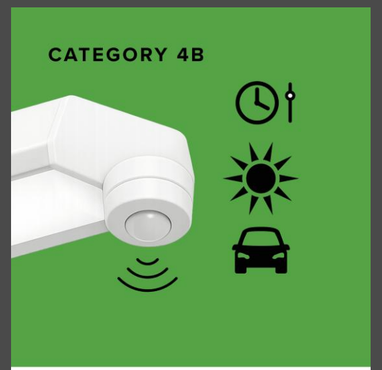


Integral Daylight/Photocell Sensor Function Only

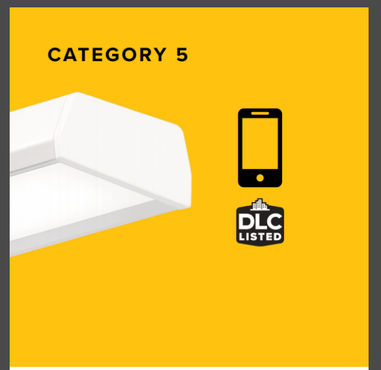
Eligible for Premium



Occupancy or Traffic* and Daylight or Photocell Integral Sensor Functions



Traffic* or Photocell and/or Part-Night Dim Integral Sensor Functions



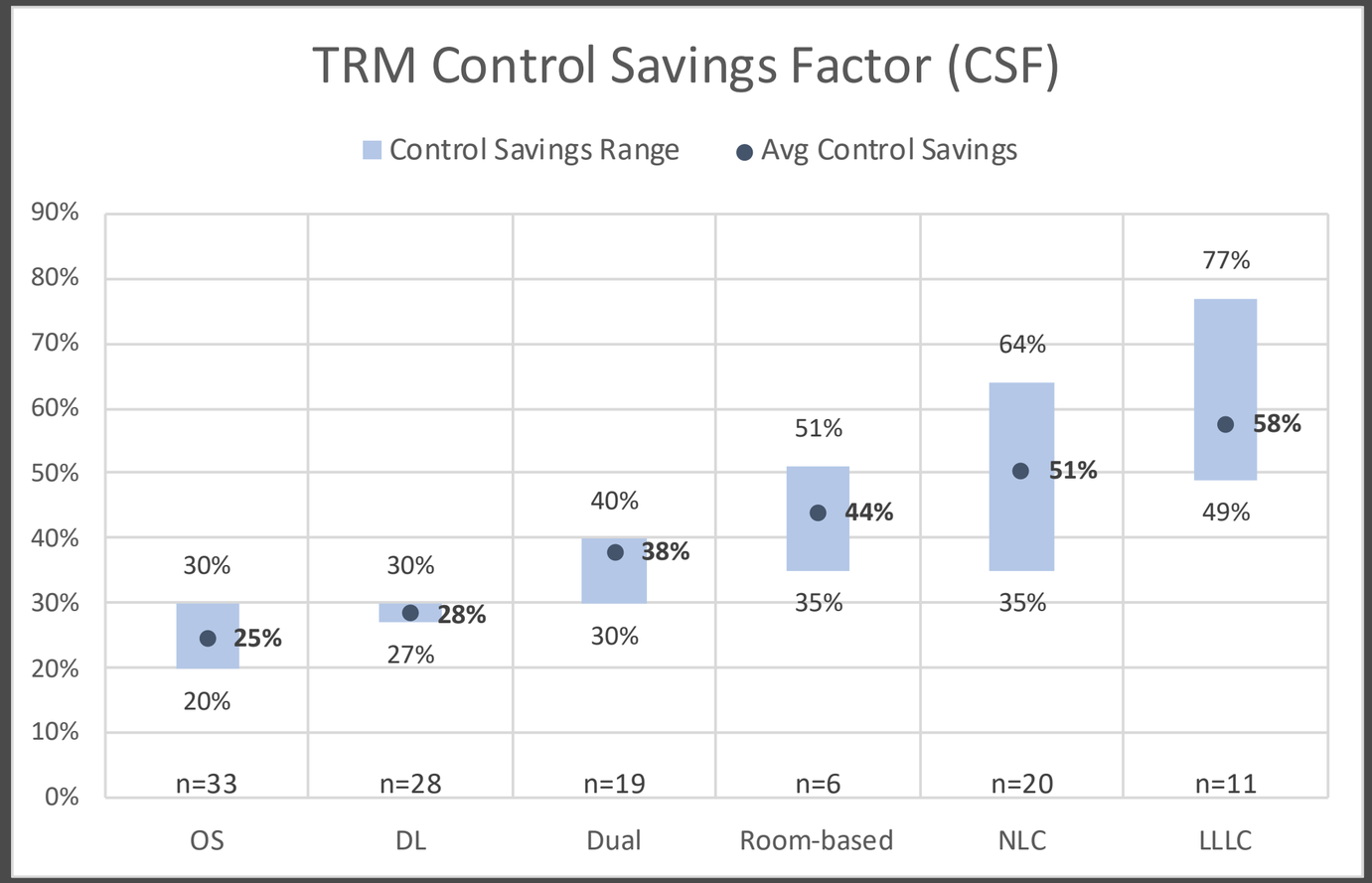
DLC NLC QPL Listed Networked Controller



DLC NLC QPL Listed Networked Controller and Two or More Integral Sensor Functions (LLLC)

Controls Savings Factor (CSF)

- CSF defines the % savings off the controlled load, due to the use of controls



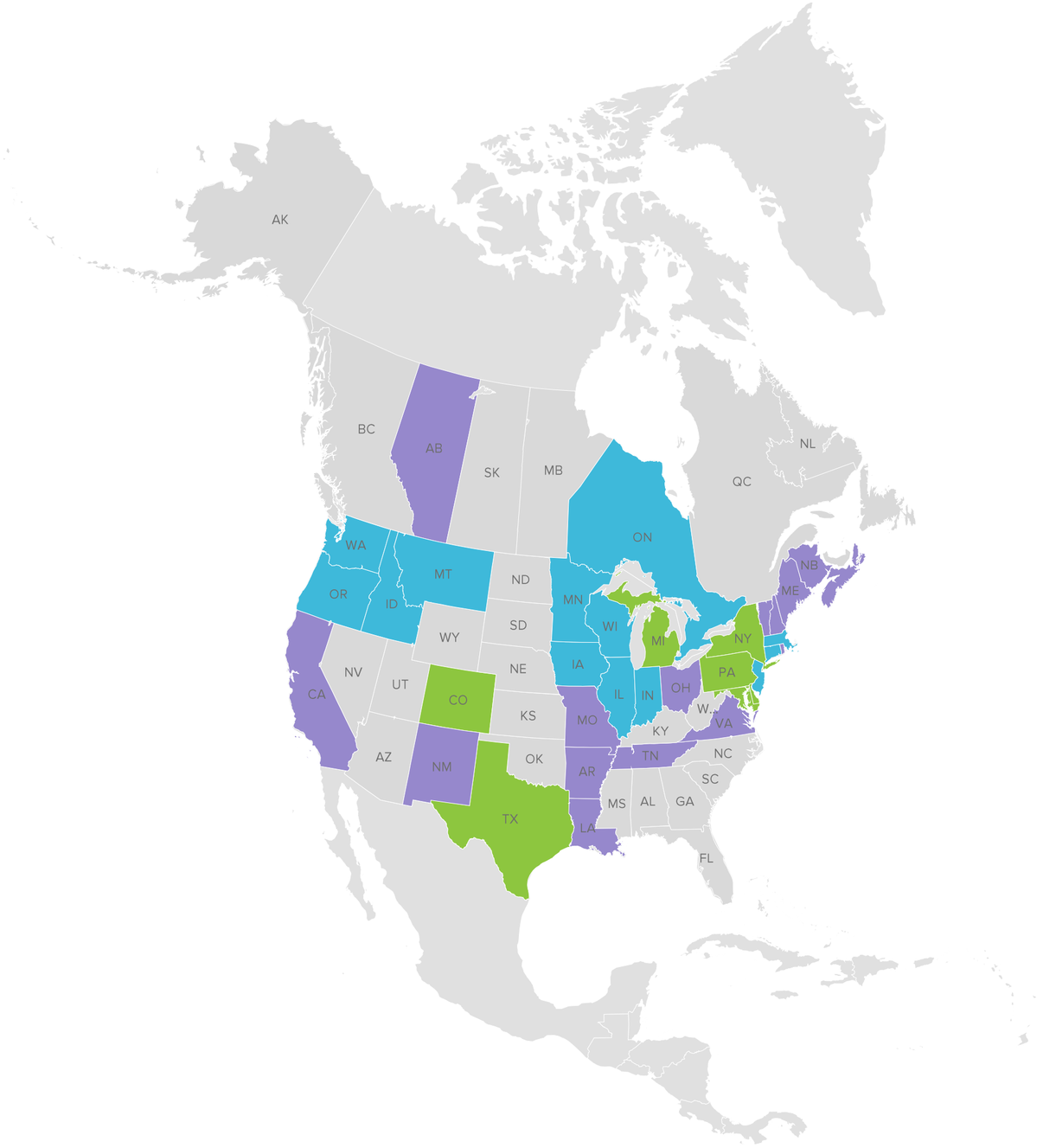
Controls Category:	3	3	4	3 or 4	5	6

V6 Controls


Manufacturer's Model Number
DLC Controls Options Table
DLC Controls Category
Utility Controls Savings Factors

NLC and LLLC Presence in TRMs

- NLC & LLLC
- NLC Only
- NLC/LLLC Not Found
- No Known TRM



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Integrating Lighting and HVAC

Fresh local veggies in the Iowa winter??





Schaus-Vorhies industrial site



https://www.iowasource.com/2014/04/08/fairfield2014_04_greenhouse/
Photos and story from “The Iowa Source”, April 8, 2014

Waste heat through underground water pipes to heat a greenhouse





https://www.iowasource.com/2014/04/08/fairfield2014_04_greenhouse/
Photos and story from “The Iowa Source”, April 8, 2014

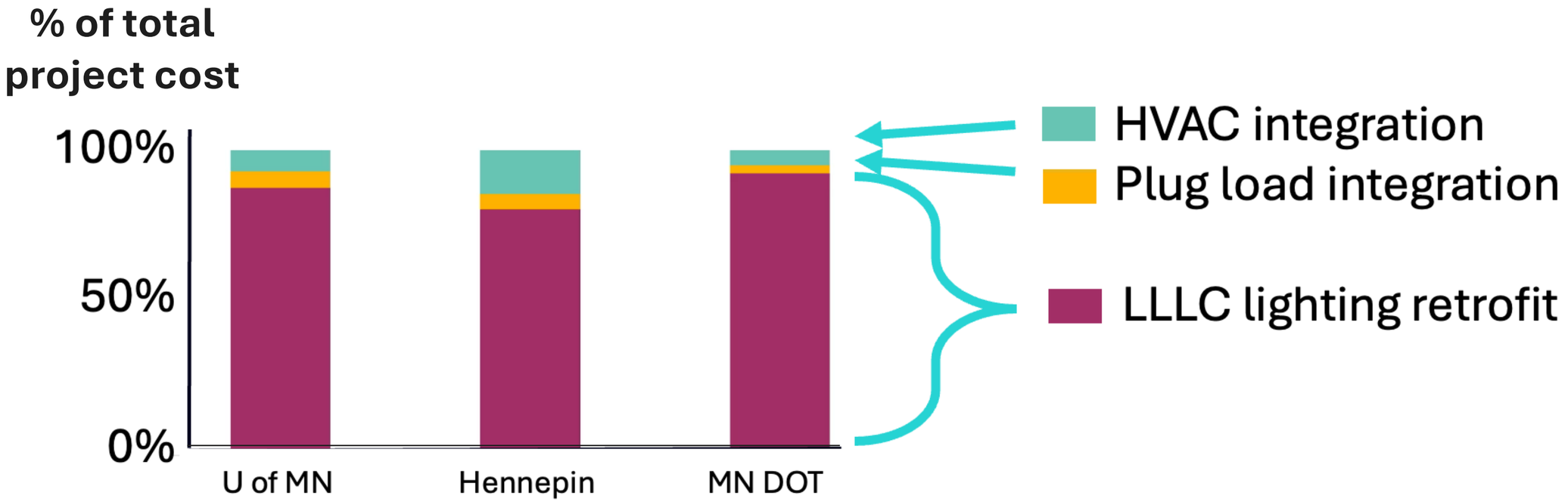
Fresh Local Veggies in School Lunches Throughout the Year



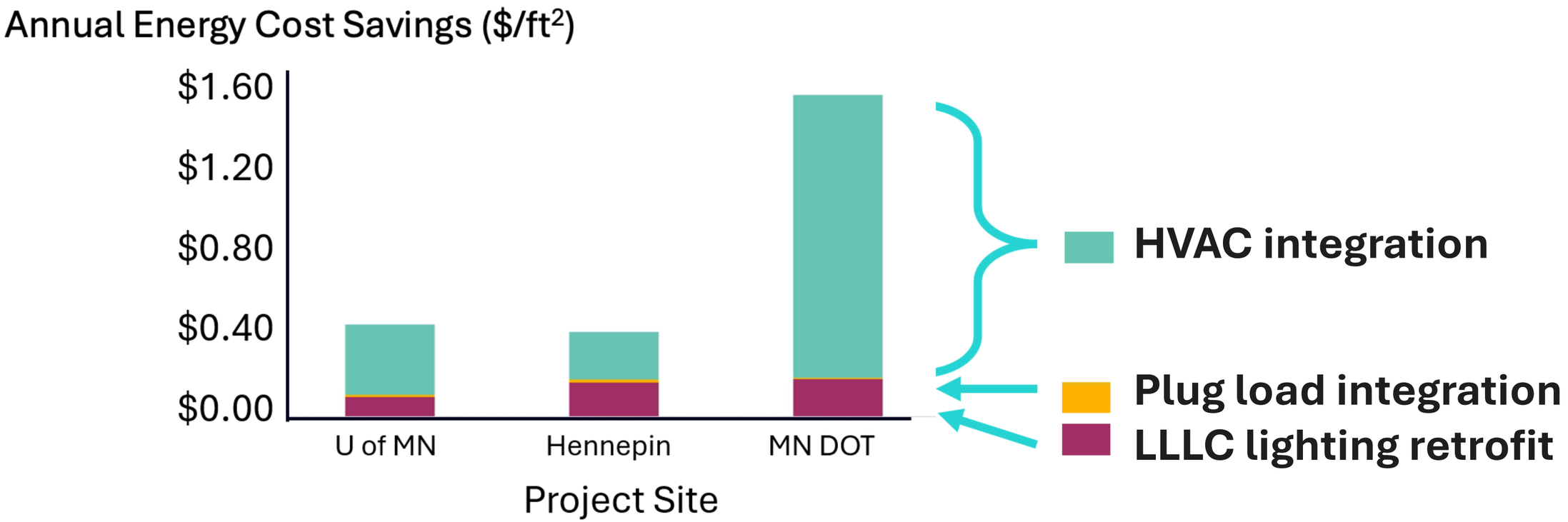


https://www.iowasource.com/2014/04/08/fairfield2014_04_greenhouse/
Photos and story from “The Iowa Source”, April 8, 2014

Main cost of an integration project: the LLLC retrofit

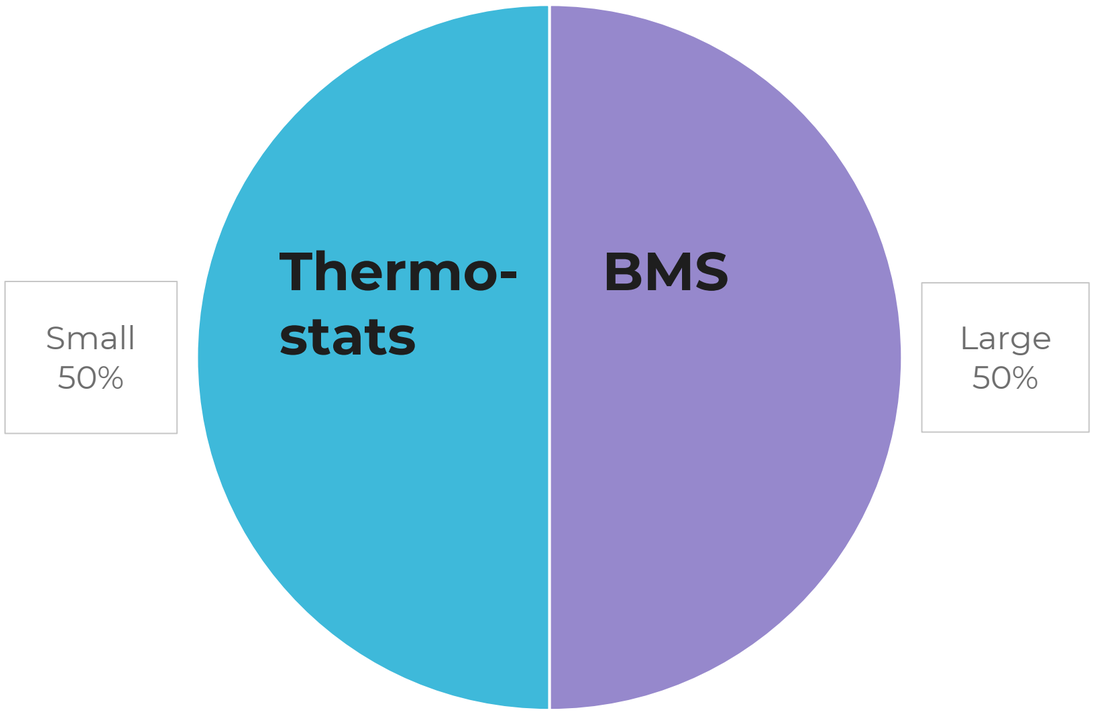


3 Case Studies by Slipstream, in DoD Free Online Training
https://www.wbdg.org/ce/dod/estcpalc

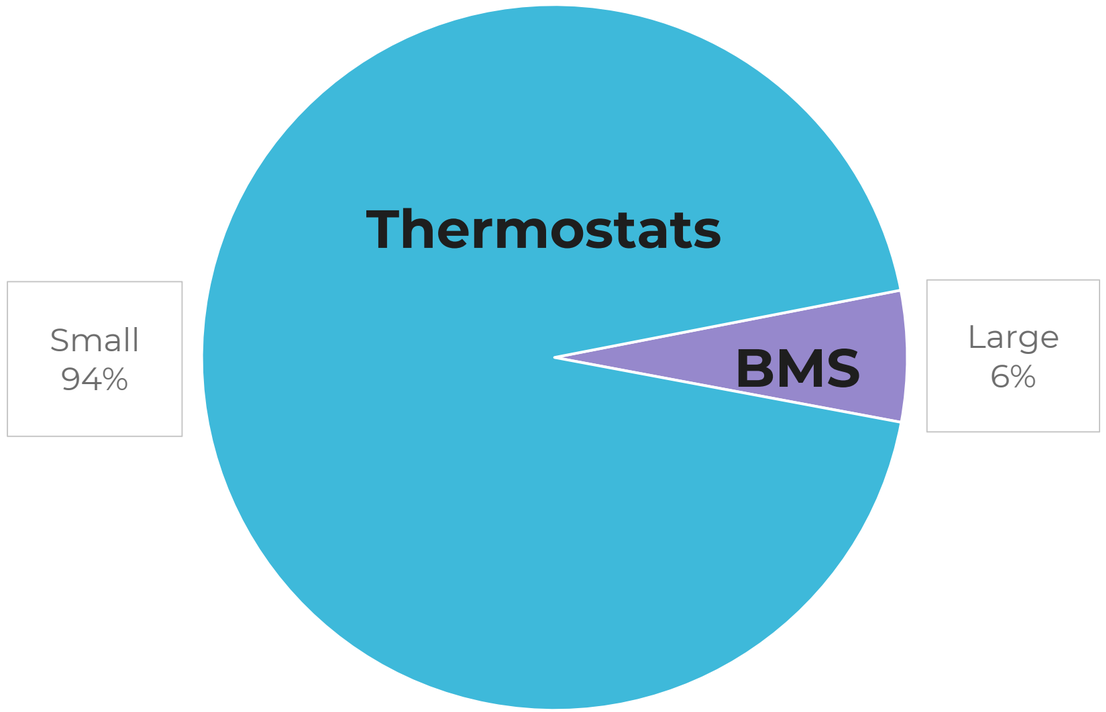


3 Case Studies by Slipstream, in DoD Free Online Training
https://www.wbdg.org/ce/dod/estcpalc

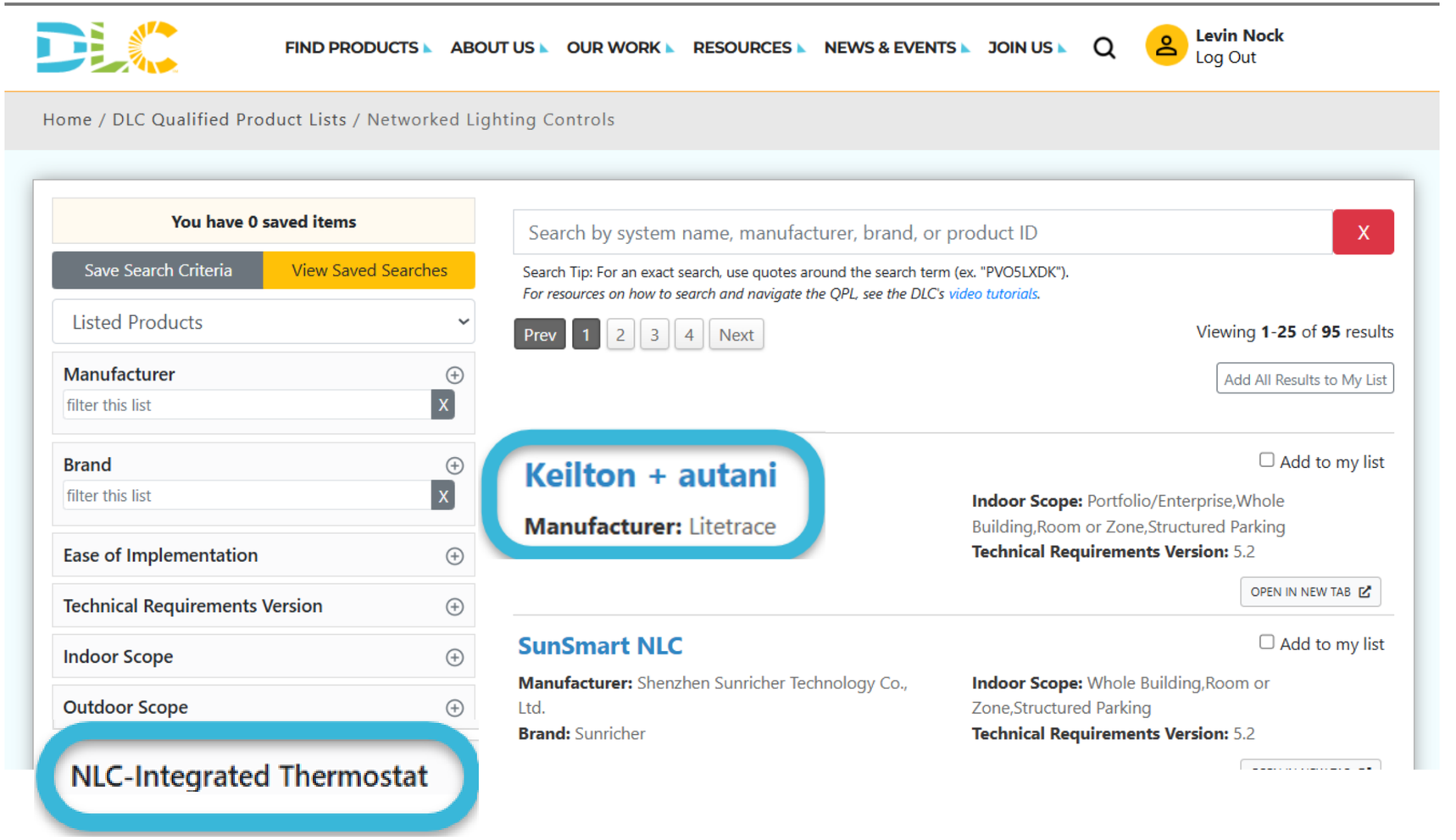
Building Stock (CBECS 2018)



Building Square Footage



Building Quantity


FIND PRODUCTS
ABOUT US
OUR WORK
RESOURCES
NEWS & EVENTS
JOIN US
Levin Nock
Log Out
Home / DLC Qualified Product Lists / Networked Lighting Controls
You have 0 saved items
Save Search Criteria
View Saved Searches
Listed Products
Manufacturer
filter this list
Brand
filter this list
Ease of Implementation
Technical Requirements Version
Indoor Scope
Outdoor Scope
NLC-Integrated Thermostat
Search by system name, manufacturer, brand, or product ID
Search Tip: For an exact search, use quotes around the search term (ex. "PVO5LXDK").
For resources on how to search and navigate the QPL, see the DLC's video tutorials.
Prev 1 2 3 4 Next
Viewing 1-25 of 95 results
Add All Results to My List
Keilton + autani
Manufacturer: Litetrace
Add to my list
Indoor Scope: Portfolio/Enterprise,Whole Building,Room or Zone,Structured Parking
Technical Requirements Version: 5.2
OPEN IN NEW TAB
SunSmart NLC
Add to my list
Manufacturer: Shenzhen Sunricher Technology Co., Ltd.
Brand: Sunricher
Indoor Scope: Whole Building,Room or Zone,Structured Parking
Technical Requirements Version: 5.2

Summary of 1 NLC System

Keilton + autani

Manufacturer: Litetrace
Scope: Indoor
Scale: Portfolio/Enterprise, Whole Building, Room or Zone, Structured Parking
Technical Requirements Version: 5.2

PRODUCT OVERVIEW

Manufacturer	Litetrace
Product Website	View Website
QPL	Networked Lighting Controls
Product ID	NLTRC5KL0TN
Listing Status	Listed
Date Qualified	2026-10-06
Product Case Studies	View Website
Technical Support Phone	8329078998
Standard Warranty	5

SUMMARY

- ✓ Networking
- ✗ Traffic Sensing
- ✓ High-End Trim
- ✓ Individual Luminaire Addressability
- ✓ Control Persistence
- ✓ Energy Monitoring
- ✓ User Interface
- ✓ Personal Control
- ✓ NLC-Integrated Thermostats
- ✓ Scene Control
- ✓ Occupancy Sensing
- ✓ Daylight Harvesting
- ✓ Zoning
- ✓ Continuous Dimming
- ✓ Scheduling
- ✓ Remote Diagnostics
- ✓ Luminaire Level Lighting Control (LLLC)
- ✓ Load Shedding/Demand Response
- ✓ External Systems Integration
- ✓ Emergency Lighting
- ✓ Color Changing/Tuning
- ✗ ANSI C137.9 Configuration Reporting

NETWORK

Thermostat details on NLC QPL

NLC-INTEGRATED THERMOSTATS

Thermostat	Option 1	Option 2
Thermostat Manufacturer	Autani LLC	Autani LLC
Model Name	AWT1000	T-32-P Thermostat
Model Number	AWT1000	1000140-14
Supports HVAC output proportional to occupancy %	No	No
Lighting-thermostat integration requires gateway	Yes	Yes
Gateway Name	Autani LLC	Autani LLC
designations RGYW		Autani Manager
		A13-01-2020-04 Autani ZR01.A0 Zigbee coordinator
		Yes
		Yes
Thermostat also accepts 24VAC wired occupancy input	Yes	Yes
Network protocol(s) between thermostat and NLC	Zigbee 3.0, Other	Zigbee 3.0, Other
Data besides occupancy that NLC can transfer to thermostat	None	None
GUI platforms supported	Web browser	Web browser

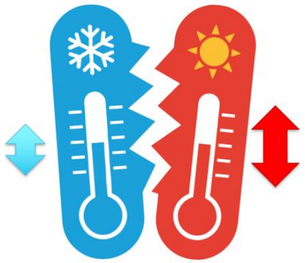
SOME REASONS WHY

Energy Savings Will Vary



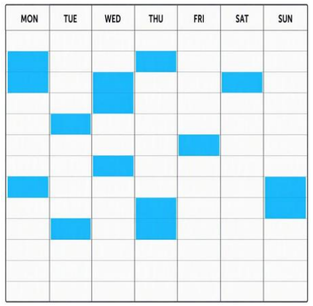
Climate

Ratio of Heating vs Cooling



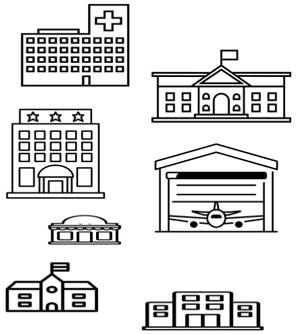
Cooling setpoints less flexible than heating

Humidity, solar gain



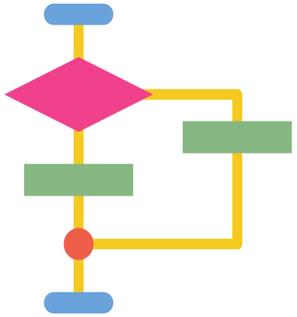
Baseline

Schedule accurate or forgotten long ago?



Variable-occupancy patterns vary

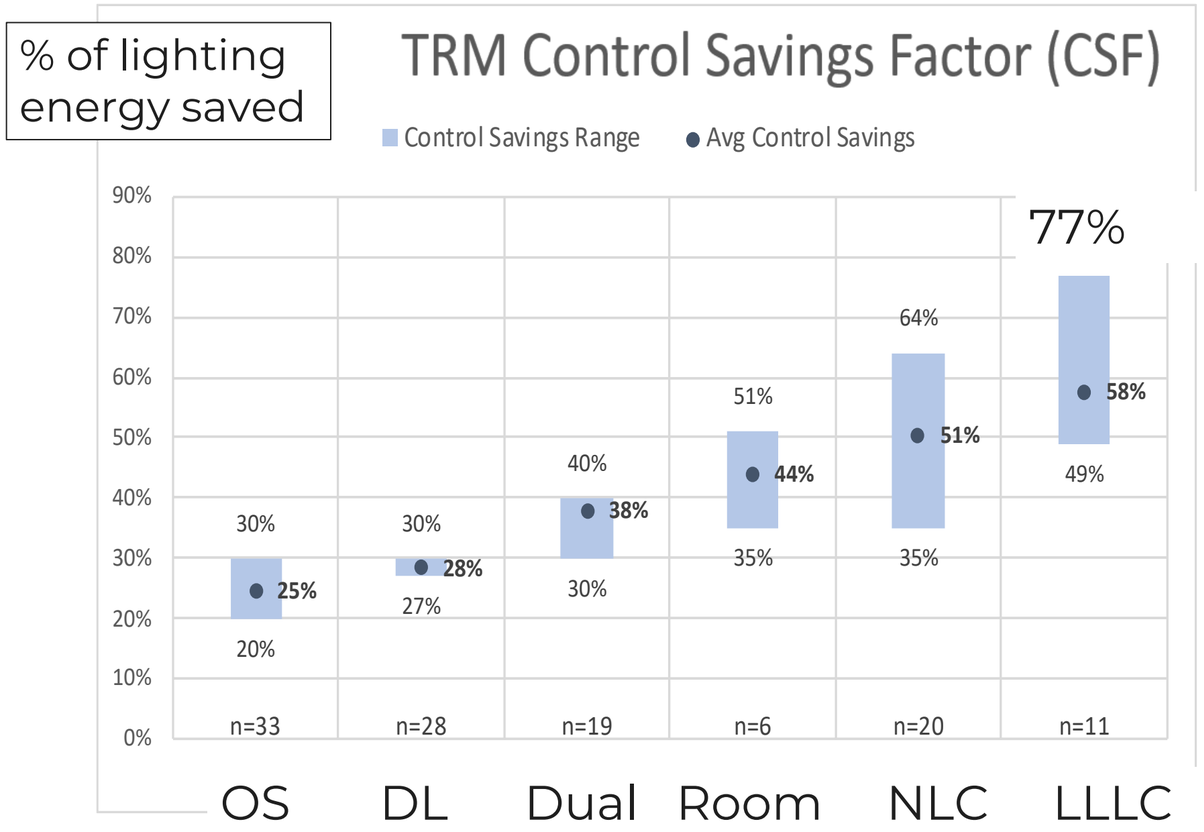
Building type, Individual building



Algorithm

Brand, Settings...

Data Needed for TRM Measures



Integrated Thermostat
(hypothetical) can exceed 100% of lighting load.
Energy savings may vary widely

Inappropriate buildings should be excluded upfront

Repackaged Case Studies

COMING SOON



NLC-HVAC INTEGRATION CASE STUDY

CSU LONG BEACH - ENGINEERING BUILDING RETROFIT

HIGHER EDUCATION RETROFIT — LONG BEACH, CA

AT A GLANCE

Building Type: Higher Education

City: Long Beach

State: CA

Project Size: 101,670 sq. ft.

Building/Occupancy Overview:

- 6-story Engineering/ Computer Science building
- 10-year campus plan to retrofit 70 buildings for IoT

Project Type: Retrofit

Systems Integrated: LLLC, HVAC, Asset Tracking, Emergency Navigation, Geofence

Integration Method: BACnet

Integration Purpose: IoT

Project Date: 2017

Original Publication Date: 2022

PROJECT DETAILS

Summary

- Cal State University Long Beach retrofited a building with 1,000 LED LLLC fixtures, plus an additional 1000 sensors in hallways of other buildings
- Occupancy data-driven HVAC settings by zone
- LLLC system supports additional IoT applications now and future
- Upgrades will continue for several years across campus

Project Decision Drivers/Objectives

- Pilot project with EPIC grant to reduce utility costs
- Move towards full building commissioning and centralized building control across 70 buildings
- Balance retrofit expenditures for popular lighting upgrades vs. lucrative HVAC upgrades
- Support carbon neutrality goals for 2030 & 2040
- Prepare campus with IoT foundation for the future
- Knowledge sharing across 23 campuses and 8 off-campus centers of Cal State University, through an affinity peer group of interested Energy and Utility Managers

RESULTS

Energy Saved:

- Utility costs reduced by over 15%

Efficiency Incentives and Grants:

- EPIC grant from California Energy Commission

INTEGRATION DETAILS

Project Controls

- 1,000 LED LLLC fixtures for networked occupancy-driven lighting and HVAC settings by zone
- BACnet integration with centralized control of setbacks
- Adjust light color output and intensity to enhance learning and attention
- Prevent asset loss, track visitors, and geofence controlled areas
- Provide guidance systems for emergency navigation and evacuation

LESSONS LEARNED

Lessons Learned/Challenges

- The university Energy and Utility team manages a workforce training program, providing paid learnng to select engineering students as they do hands-on work conducting audits, feasibility studies and commissioning

SOURCES

Source Website

- https://www.enlightedinc.com/wp-content/uploads/2023/02/Enlighted_Case-Study_CSU-Long-Beach_r4.pdf

Incentives for LLLC-thermostat integration

- Broadly available now (in theory)
  - Custom Projects
  - LLLC
  - Smart Thermostats



- Limited availability in select locations
  - Direct Install
  - Comprehensive
  - Structured custom

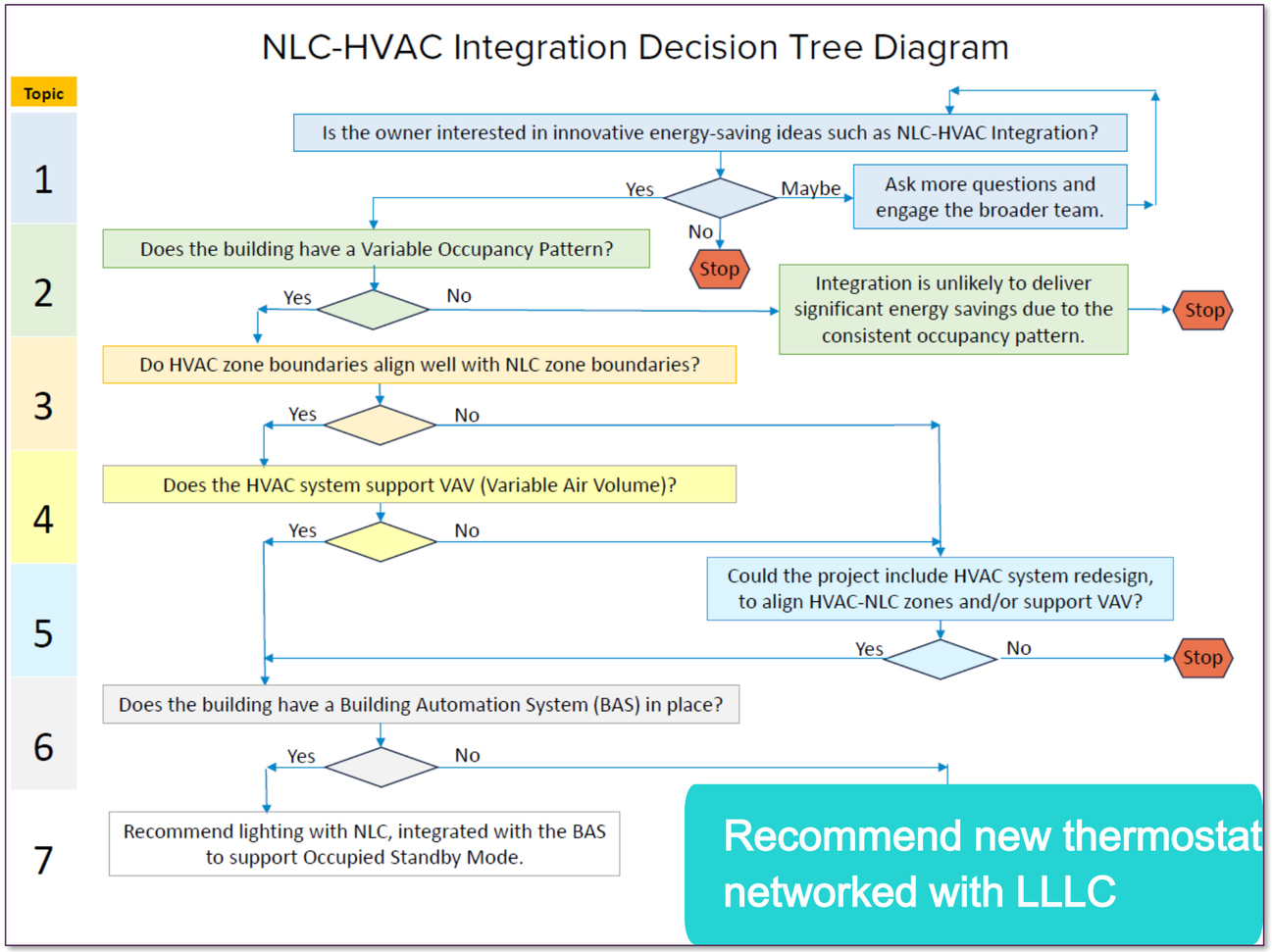


- Goals for future (if pilots deliver promising data)
  - Easy project approvals, not rejections
  - Scalable prescriptive incentives



DLC NLC-HVAC Integration Toolkit

Integration Tool Kit



https://designlights.org/resources/reports/nlc-hvac-integration-toolkit/

DLC SUMMIT 2026

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

Next Gen Buildings: Integrating Lighting and HVAC for Whole Building Savings

LLLC Retrofits with Integrated Thermostats

LEVIN NOCK · ANGELA PILANT · AMY STACY · JERRY DREW

LA DWP Los Angeles Department of Water & Power

DESIGNLIGHTS.ORG/2026DLCSUMMIT

PANEL

Meet the panel

Moderated by Levin Nock



Angela Pilant

Program Manager
Evergreen Energy Partners



Amy Stacy

Regional Vice President
Autani



Jerry Drew

CEO
Network Thermostats

PANELIST

Angela Pilant



Program Manager for NEEA LLLC Market Transformation,
Evergreen Energy Partners

Program Gap

Small and medium commercial customers often do not fit traditional whole-building controls approaches

Many customers have meaningful lighting and HVAC loads, but lack the controls infrastructure or staff resources associated with a full building management system.

Building Controls

- No BMS
- Often a single-zone rooftop unit
- Lighting and HVAC operate separately

Program Delivery

- Prescriptive lighting measures may not address HVAC operation
- Custom approaches can feel too complex for smaller sites

Customer Experience

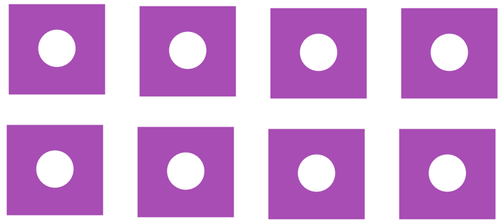
- Customers want a clear controls
- Upgrade that supports comfort, operations, and lower energy use

Question: Can a targeted LLLC-to-thermostat pilot create a simpler pathway to integrated efficiency?

The Integration Concept

Distributed LLLC occupancy information can help a connected thermostat respond to actual space use

Distributed LLLC Sensors



Fixture-level sensors see occupied and unoccupied areas across the space



Question: How do you verify system compatibility, SoO, programming and owner support

Example: NEEA Public Field Evaluation

Lighting-to-HVAC integration field evaluation in a 10,000 sq. ft. commercial office building

- LLLC system, Wi-Fi thermostat, and edge device
- Uses luminaire level occupancy information to help HVAC better reflect actual space use
- Publicly presented estimated annual energy savings: approximately 4–21%*

**Preliminary, site-specific estimate. Results are not intended as a universal savings claim.*



Why We Need Pilots

Many utilities need evidence on savings, delivery, and customer experience before building a broader offering

Customer and Building Fit

Which building types, HVAC configurations, and customer profiles are appropriate for early projects?

Controls and Programming

What sequence of operations and handoff process help savings persist after turnover?

Delivery Roles

Who installs, configures, and supports the connection across electrical, HVAC, and controls scopes?

Savings Evidence

What data supports a workpaper, TRM measure, or future structured incentive?

Question: Can a well-designed pilot show if this can be a reliable customer offer?

A Program Pathway

Pilots can build the evidence and delivery model for future measures

1: Targeted Pilots

- Select early-fit customers
- Use LLLC, Smart Thermostat and RTU configuration
- Document installation and commissioning

2: Evidence & Delivery

- Assess savings and comfort
- Clarify contractor and support roles
- Identify documentation needs for TRMs

3: Define Program Model

- Determine the right program path
- Custom, prescriptive, direct-install
- Set incentive and QA requirements

Goal: The pilot should produce guidance and evidence that makes future delivery happen for Customers, Trade Allies and the Utility, building on lighting controls investments that are already occurring in the market!

PANELIST

Amy Stacy

Regional Vice President, Autani



CASE STUDY · MORGAN HILL, CA

One platform for lighting and HVAC across a six-building campus

- Private K-12 campus: 25 classrooms, offices, gym, library and exterior lighting
- 35 standalone HVAC units, 108 lighting circuits with no controls
- Doors propped open while HVAC kept running
- Goal: one affordable system administrators can run without special training



6 BUILDINGS · 35 HVAC UNITS · 108 CIRCUITS
Controlled with EnergyCenter® by Autani

48%

Lighting energy reduction

31%

HVAC energy reduction

85%

PC and plug-load reduction

The biggest reduction came from plug loads, not lighting or HVAC

Source: Autani case study, Morgan Hill, CA private school campus

LESSONS LEARNED

What integrating lighting and HVAC taught us on a working campus

LESSON	WHAT HAPPENED AT THE SCHOOL	TAKEAWAY
Hidden load	PCs and plug loads kept running in empty rooms and after hours	Look past lighting and HVAC: plug loads dropped 85%
Operational behavior	HVAC kept running while gym and classroom doors were propped open	Door contacts set back HVAC and email staff after 60 seconds
Retrofit integration	35 standalone HVAC units and 108 circuits across six buildings	Existing systems brought under one platform, no wholesale replacement
Platform, not project	School later added exterior and parking lighting, gym measures and HVAC in another building	One platform grows with the campus and with Title 24

PANELIST

Jerry Drew

Founder / CEO, Network Thermostat



Utility Partners… We All Know

- Requirements for Load Reduction is Not Going Away
- SMB’s Need Incentives; Often Get Left Out
- Lightweight Lighting ⟷ Thermostat Integrations Are Here (BAS not required)



Are Utility Incentives Structured for SMBs?

- **Traditional Incentives**
  - Lighting Retrofits (sunsetting?)
  - Residential Wi-Fi Thermostats (sunsetting?)
  - Commercial Full BAS (BACNet) Implementations
- **New Incentives Needed for SMB**
  - Lighting + HVAC Integration without BAS is Real
  - Combined Savings is Greater Than Either Technology Alone
    - 20-30% Savings Commercial Thermostat-based HVAC Controls
    - *10-15% Additional Savings with Combined NLC & HVAC Control



** NEEA Report Coming – End of 2026*

94%

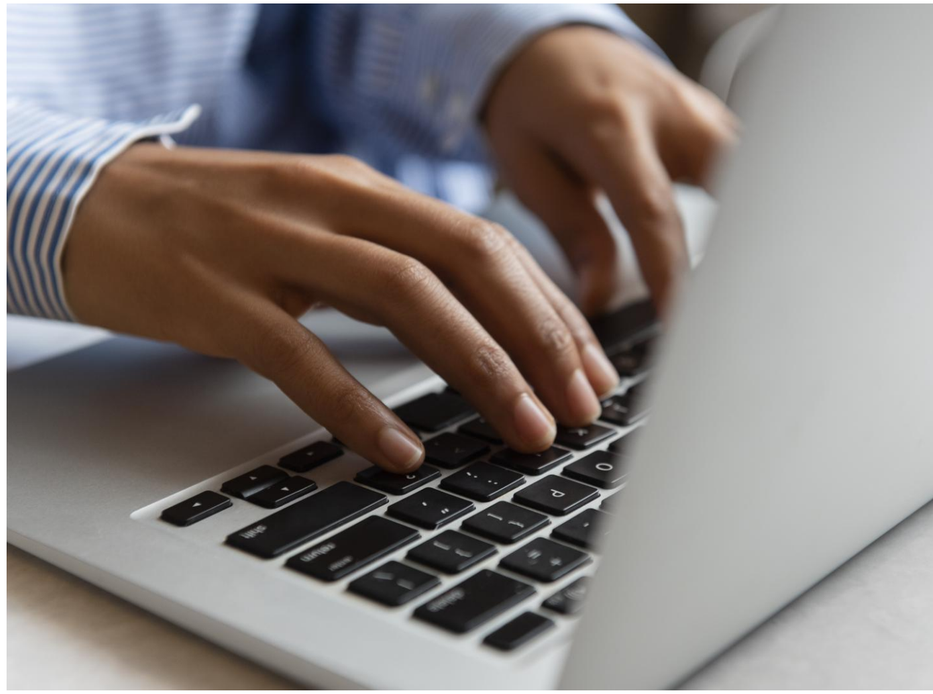
Commercial Buildings With Less Than 25,000 ft^2 (SMB)

An SMB Experience This Year (Our Customer)

“I filed two name redacted small-business rebate applications for a project at name redacted using the NetX Commercial Ecosystem thermostats, and positioned the networked controls as an EMS/DDC measure. IT WAS REJECTED.

I would have had the same result with the XX Commercial Thermostats and the YY Commercial Units due to their rejection comments.”

- Brad W., SMB Energy Manager



Rejection Reason #1

"The name redacted engineer reviewing it (name redacted) turned it down on two counts. First, he says the X7 doesn't qualify as EMS/DDC because it controls single zones rather than a whole building (multiple RTUs, chillers, VAVs, etc.), and their third-party reviewers won't approve it as EMS/DDC."

- Brad W., SMB Energy Manager

- This rational excludes these verticals from incentives:
  - Restaurants - Warehouse - Manufacturing
  - Strip Center Retail - Student Housing - Multi-Family
  - Small Office - Assisted Living



Rejection Reason #2

“Second, and the bigger issue, he says Wi-Fi thermostats were "deemed non-strategic by the PSC and utility," so the measure can’t be incentivized at all. The only thing they'd cover is DCV via CO2 sensors, but this building has no outside air to control, so that's a dead end for us.”

- Brad W., SMB Energy Manager



After 3 Months of Persistence...

“The measure was eventually accepted on reconsideration and reclassified as a BMS controls measure. It got there, but only after months of back and forth and a full reconsideration package.

That is really the heart of it. Even when the technology clearly fits, the process is long enough that most small building owners, and the contractors serving them, would have walked away well before the finish line. That is where the 94 percent get left out.”

- Brad W., SMB Energy Manager



Why Have Utilities Often Left HVAC Out of SMB Incentives?

* Difficult Calculation

- HVAC Equipment Efficiency
- HVAC Maintenance (Filters, Coil Cleaning, Refrigerant, etc.)
- Daily Use Hours Vary Greatly
- Building Insulation & Exposure
- Attention to Proper Scheduling
- And of course… Weather



* Constantly Changing Variables Makes it Hard for Utilities to Calculate True Savings without an M&V Team or ESCO.

Combined Lighting (Occ/LLLC) + HVAC Clarifies ROI

- **Savings are Usually 20-30% of HVAC Energy Consumption**
  - Typical Office, Restaurant, or Retail Environment
  - Nominal Savings for 24/7 Facilities
- **Building Automation System ROI (2– 3+ Years) Due to Expense of Deployment**
  - Expensive Hardware; Expensive Programming; Expensive Maintenance
  - Specialized Controls Contractors are Required
- **Commercial Intelligent Thermostat ROI (~1 Year) Due to Lower Deployment and Maintenance Cost**
  - Simple Installation; ‘Any’ Contractor
  - Same Savings Controls as BAS; Often More Savings



The SMB Lighting + HVAC Control ROI Drivers

- **Improved HVAC Schedule Control**
  - Saves **20-30%**
- **Lighting Occupancy Driven HVAC**
  - Saves Another **10-15%**
- **Combined Potential Energy Savings of 30-45%**
  - Schedules define **intent.**
  - Occupancy defines **reality.**



Combined Lighting (Occ/LLLC) + HVAC Integration Webinar

- Integrating Lighting and HVAC for SMBs
  - Breaking Down the Industry Silos
  - Lighting Occupancy Data ⟷ Thermostat
  - Graduated Soft Setback and Recovery
  - Time to Recover vs Temp Setpoint Only
- Schedules define intent
- Occupancy defines reality

EXPLORE FURTHER

Resources

DLC

- NLC-HVAC Integration Toolkit



AUTANI LITETRACE

- Videos on lighting-HVAC integration



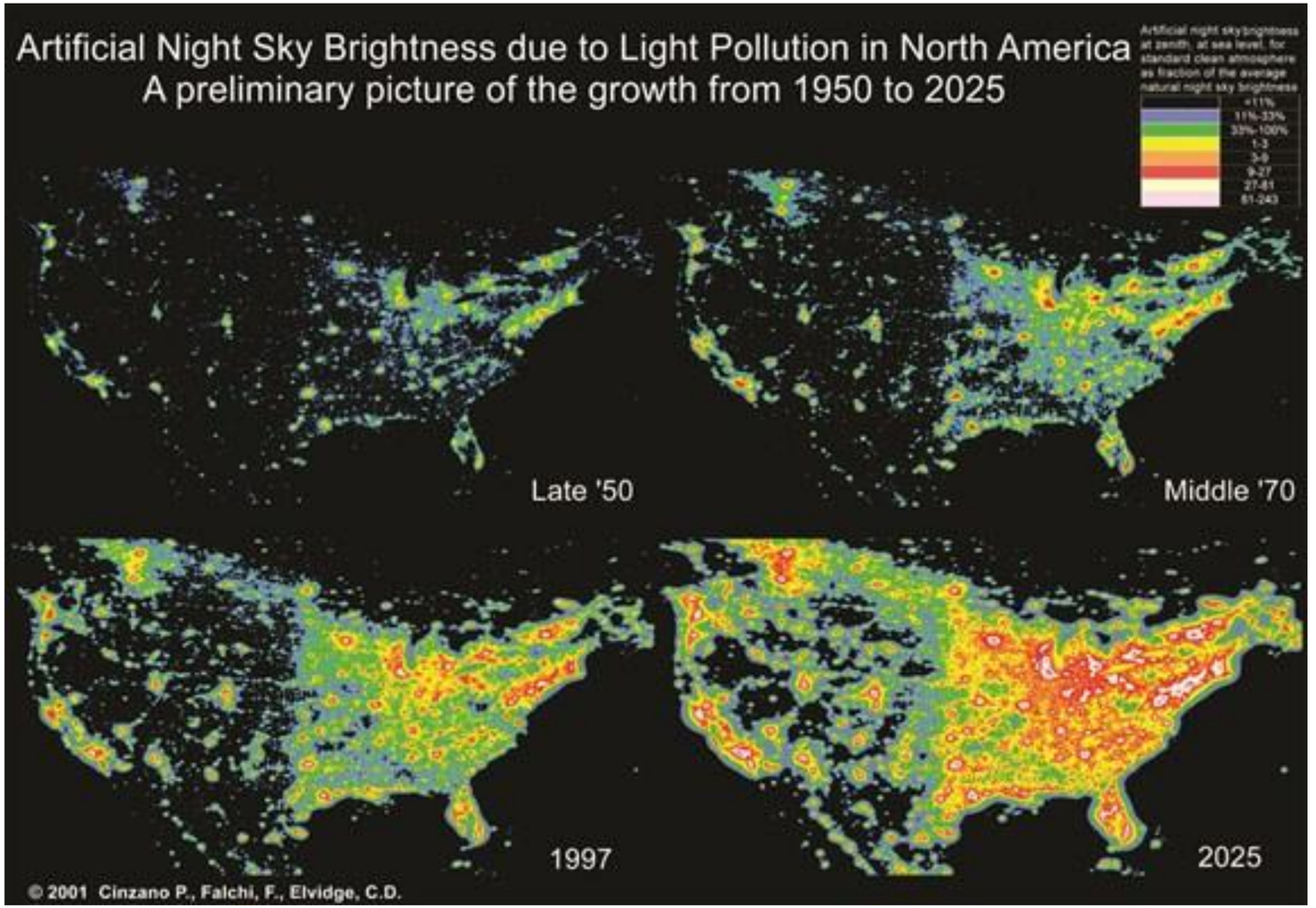
NETWORK THERMOSTAT

- Webinar: NLC Integration with NetX Thermostats



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

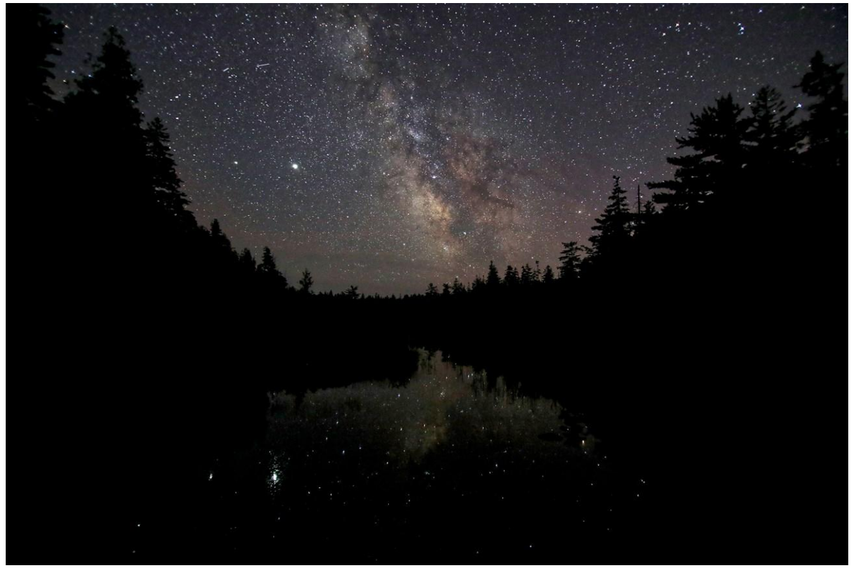
Light pollution is a growing problem



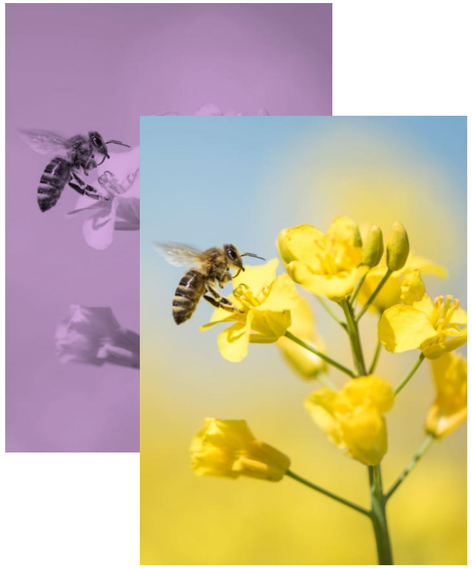
Source: https://www.nps.gov/subjects/nightskies/growth.htm

Why light pollution matters

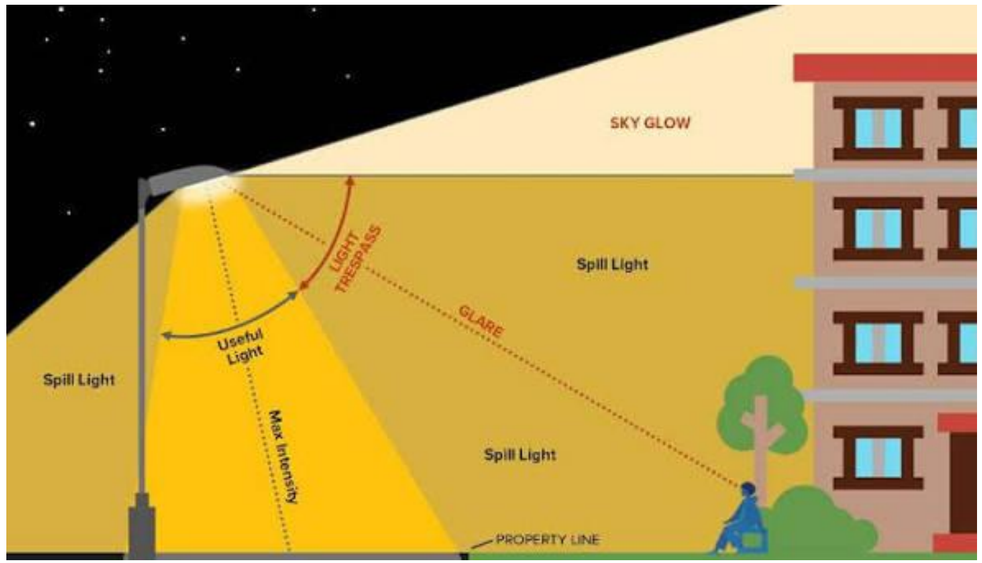
- Impacts on wildlife, agriculture, and people



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

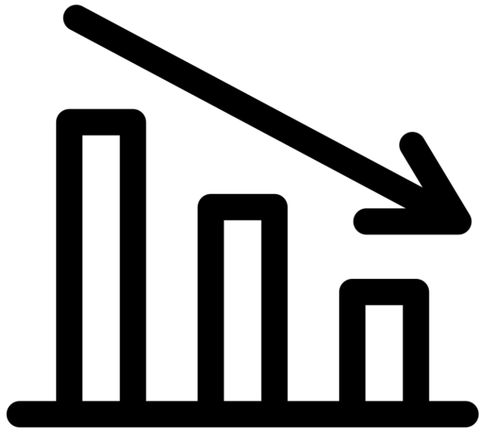


Owens ACS, Lewis SM. The impact of artificial light at night on nocturnal insects: A review and synthesis.



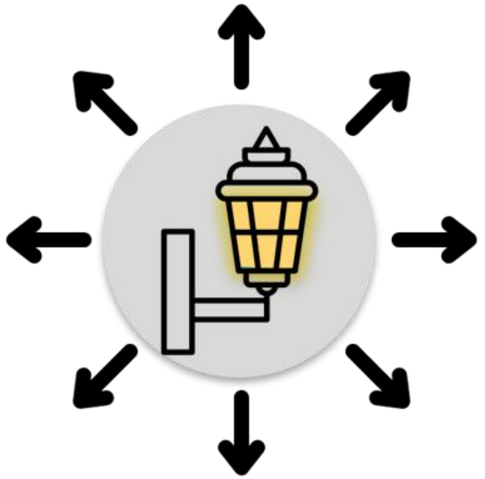
https://designlights.org/resources/reports/seven-strategies-to-minimize-negative-impacts-of-outdoor-light-at-night/

Reducing light pollution saves energy



Linear reductions

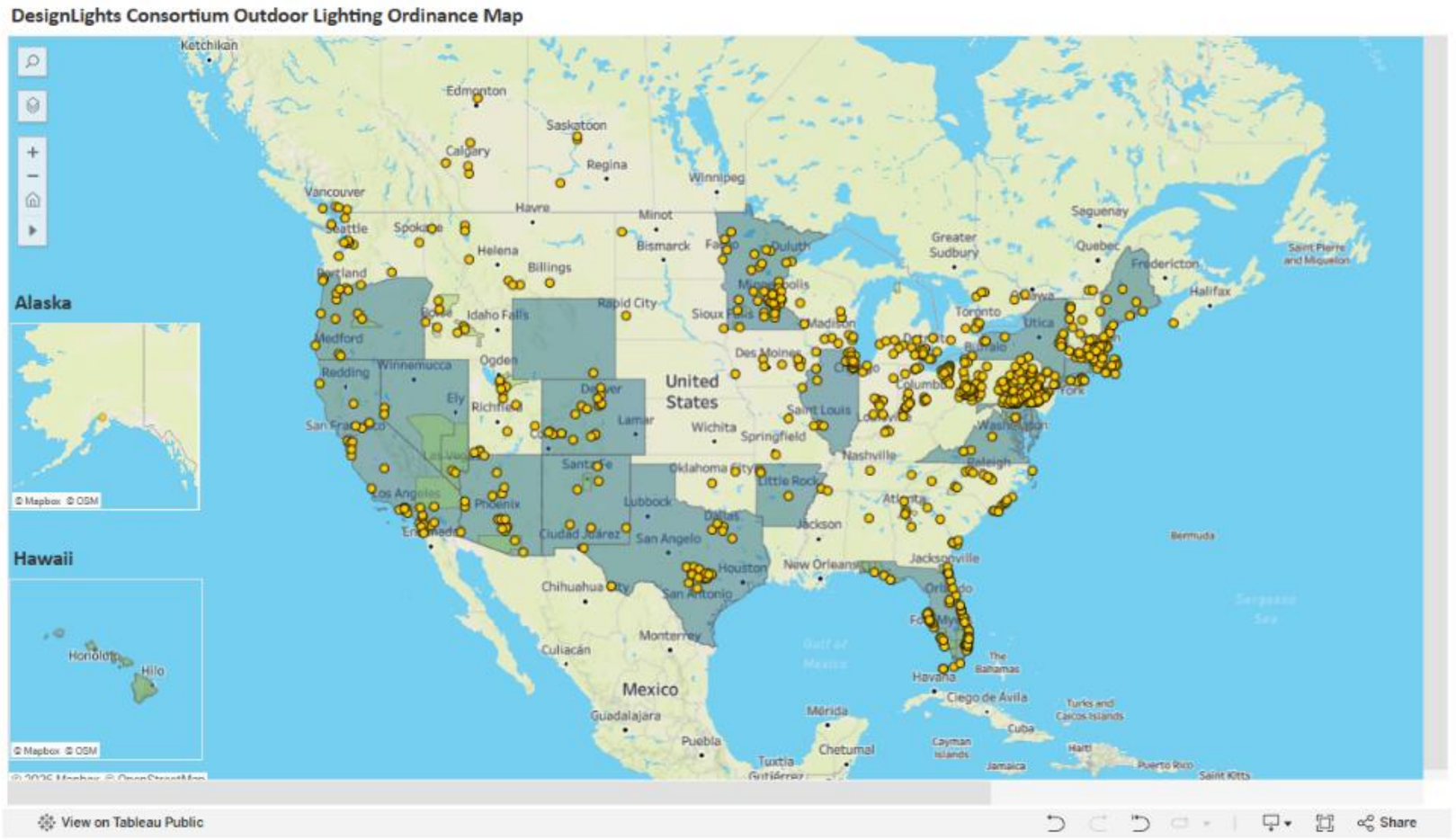
- High end-trim
- Dimming post-curfew



Reducing wasted uplight

- High angle light and uplight scatters and creates sky glow

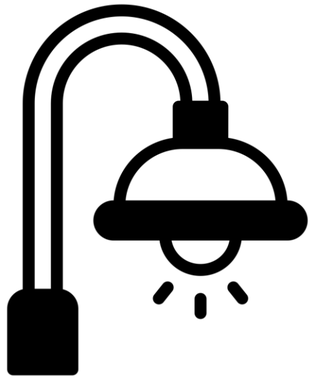
Ordinances, statutes, and regulations



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

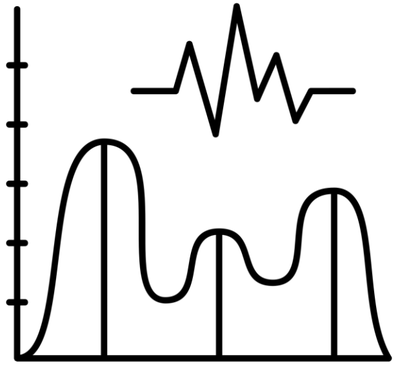
Ordinance attributes

Typically included



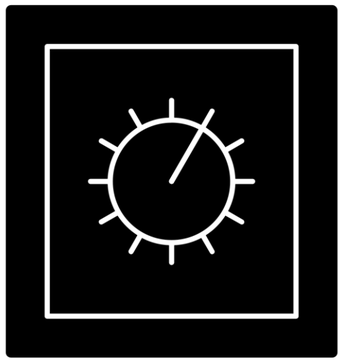
Distribution
Fully shielded/Shielded
Full Cutoff/Cutoff
U Ratings (BUG Ratings)

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

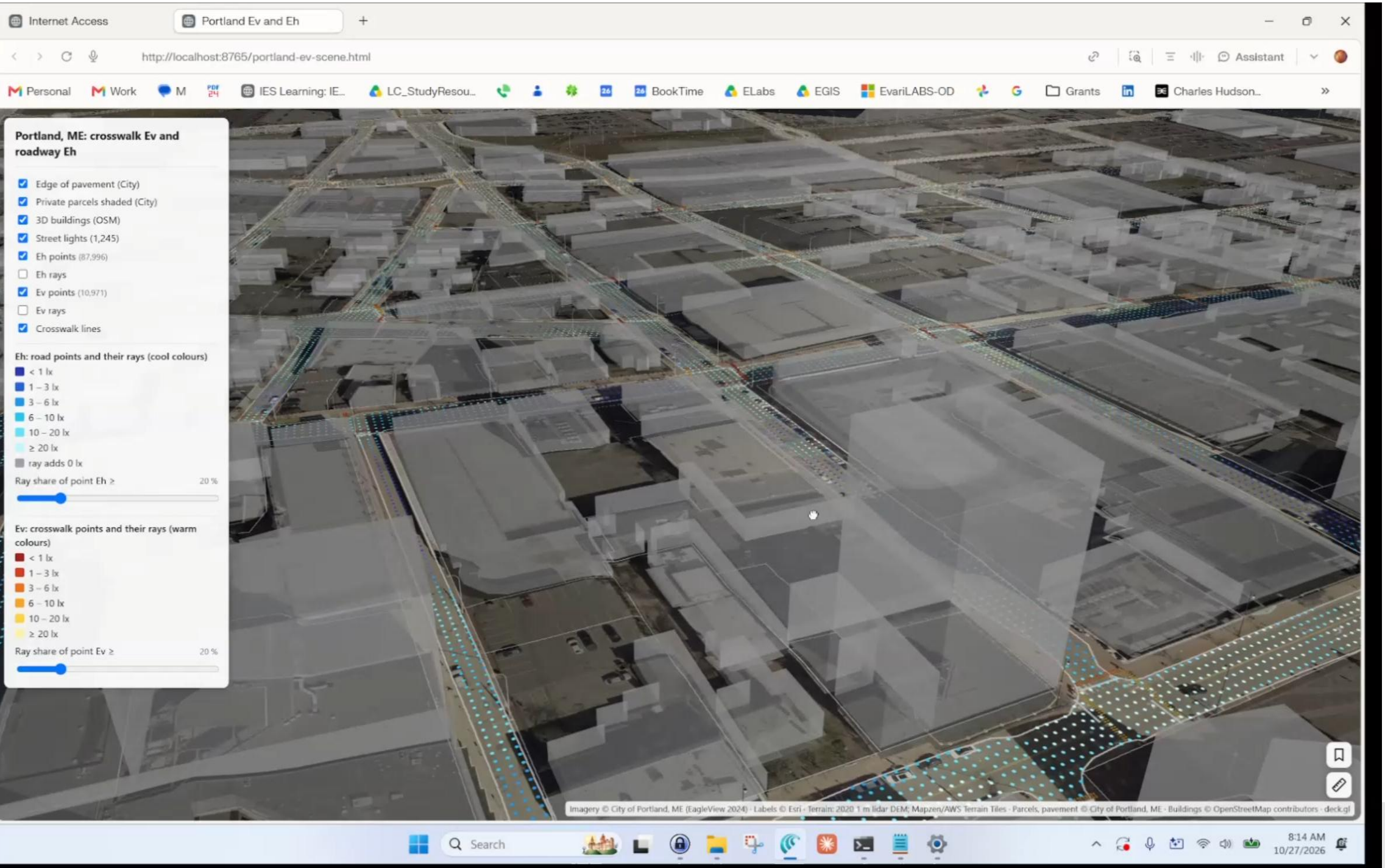
Lighting Designer, LUMA Lighting Design

PANELIST

Ari Isaak

Founder, EVARILABS




Internet Access
Portland Ev and Eh
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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 %
Imagery © City of Portland, ME (EagleView 2024) · Labels © Esri · Terrain: 2020 1 m lidar DEM; Mapzen/AWS Terrain Tiles · Parcels, pavement © City of Portland, ME · Buildings © OpenStreetMap contributors · deck.gl
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EvariLUX

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

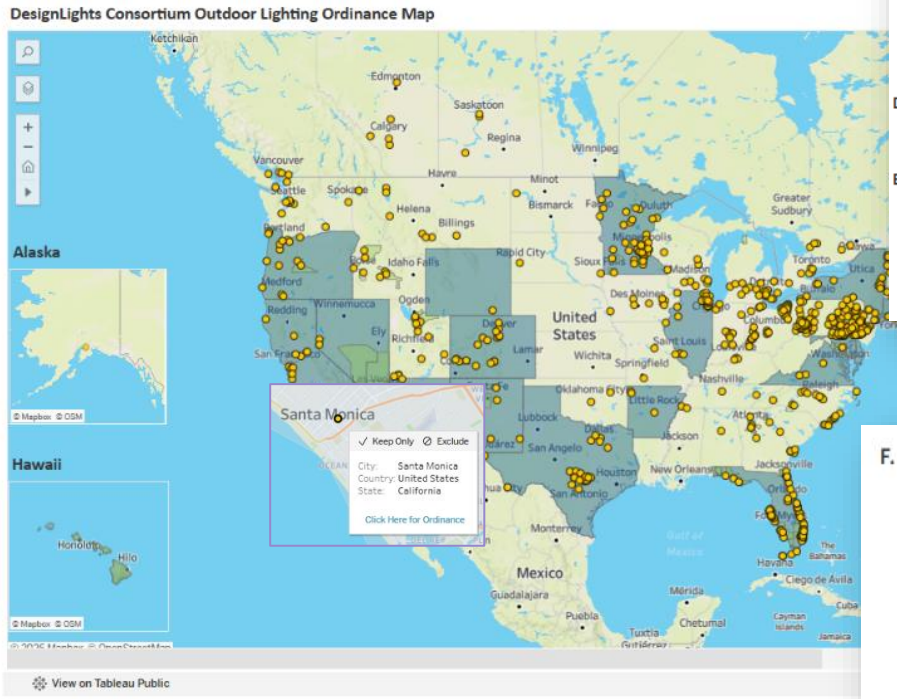
- Managed lighting to reduce wasted energy use and wasted light
- Meet regulatory requirements
- LUNA V2.0 leverages SSL V6.0 controls reporting



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.

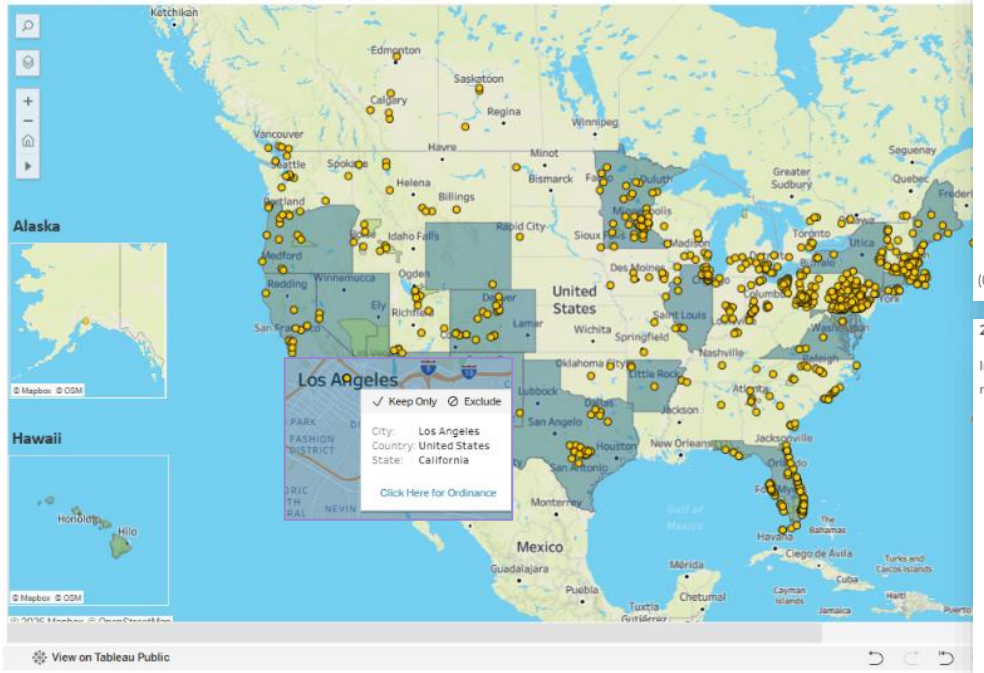
G. **Maintenance.** Exterior lighting fixtures and lamps shall be maintained in good working order.

(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.

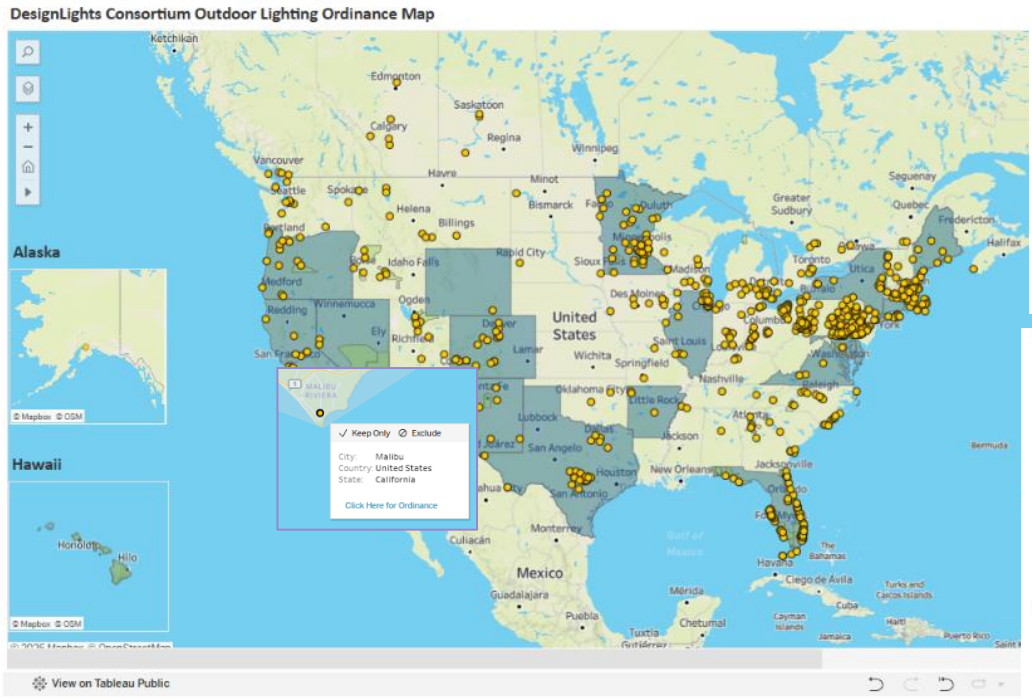
1. Outdoor lighting shall be turned off between the hours of 10:00 p.m. and sunrise every day, unless the use on the involved property operates past 10:00 p.m., and then outdoor lighting shall be turned off within one hour after the use's operation ends for the day. Notwithstanding the foregoing, if 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

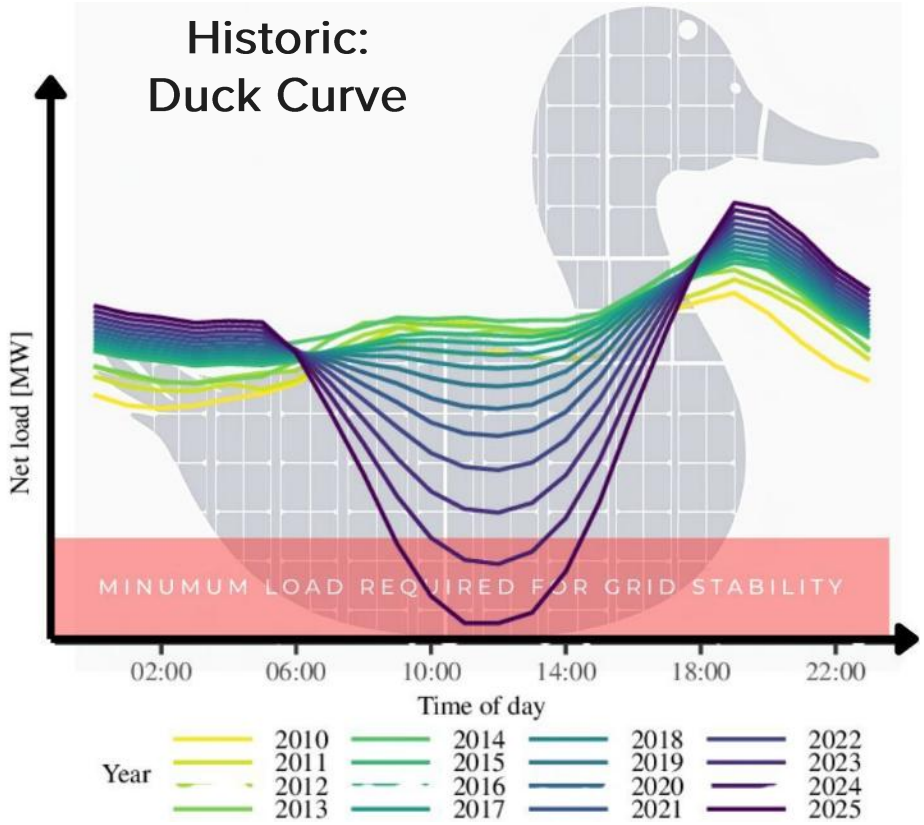
Is there a ‘safe’ light level, and does it vary by species?”

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

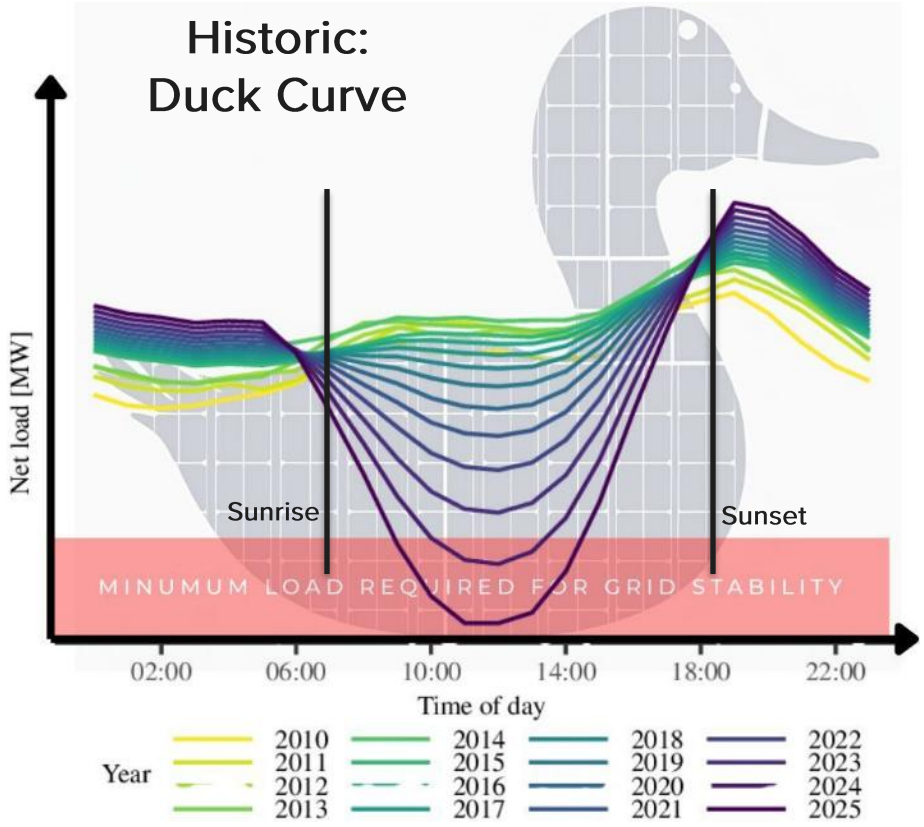
Figure 2-4. Month-hour averages of 2035 SP15 Energy Avoided Costs

	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

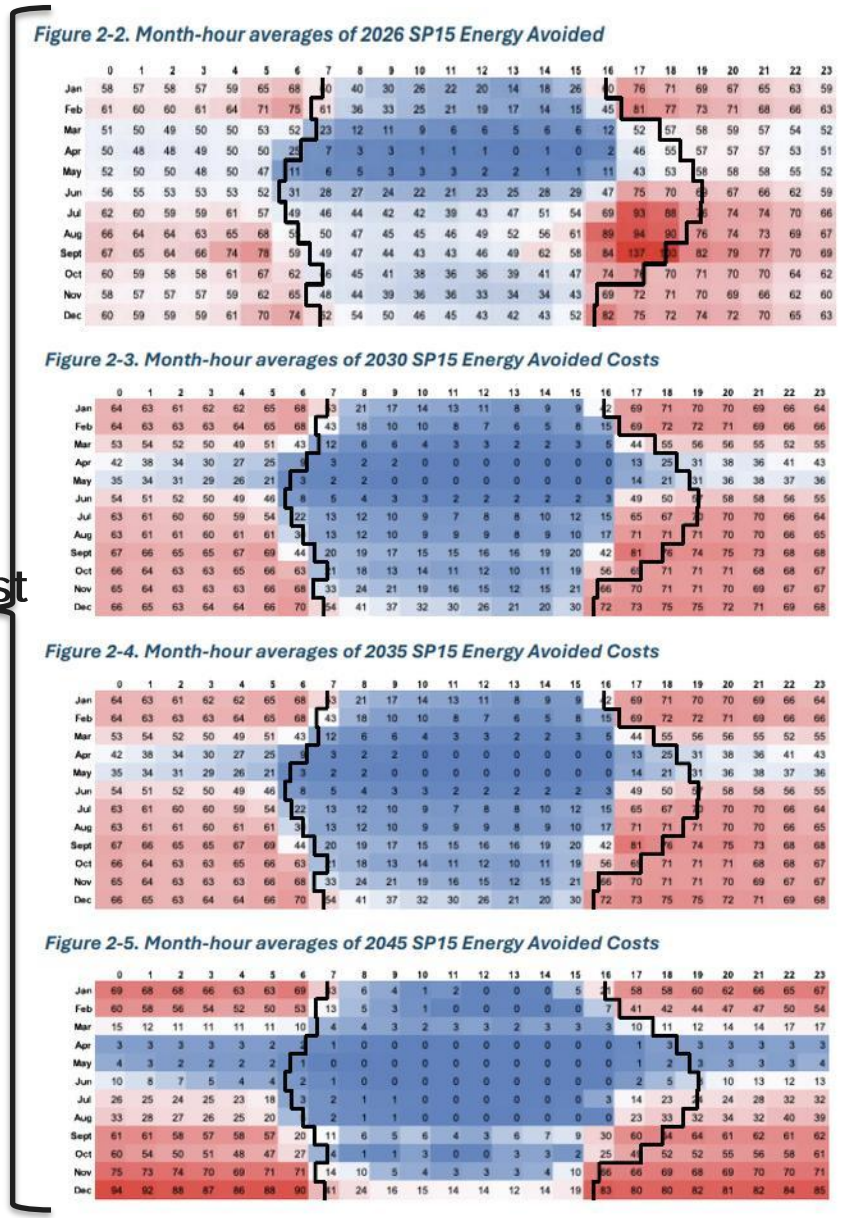
Figure 2-5. Month-hour averages of 2045 SP15 Energy Avoided Costs

	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

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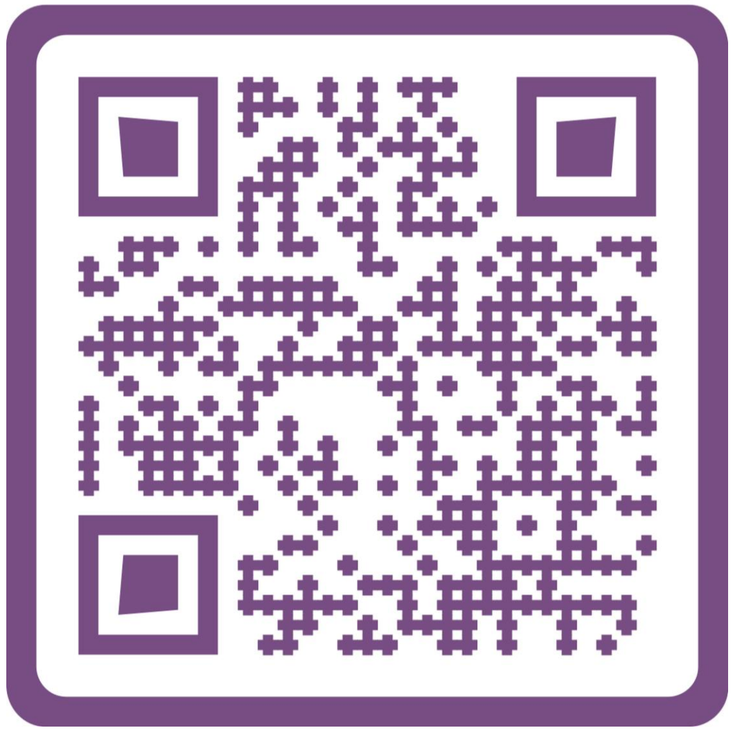
Closing Survey



Panelists



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Tyson Taussig

Lighting Specialist
Broken Arrow Electric



Matt Bouchard

Controls Specialist &
Licensed Master Electrician
Wesco



Andrew Antares

Project Manager
DLC

Small Group Discussion Questions

- What is one barrier you heard about?
- What is a solution to a barrier you heard about?
- How could my organization contribute to the solutions?
- What is one thing I need so that I can address the solution/barrier?