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

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

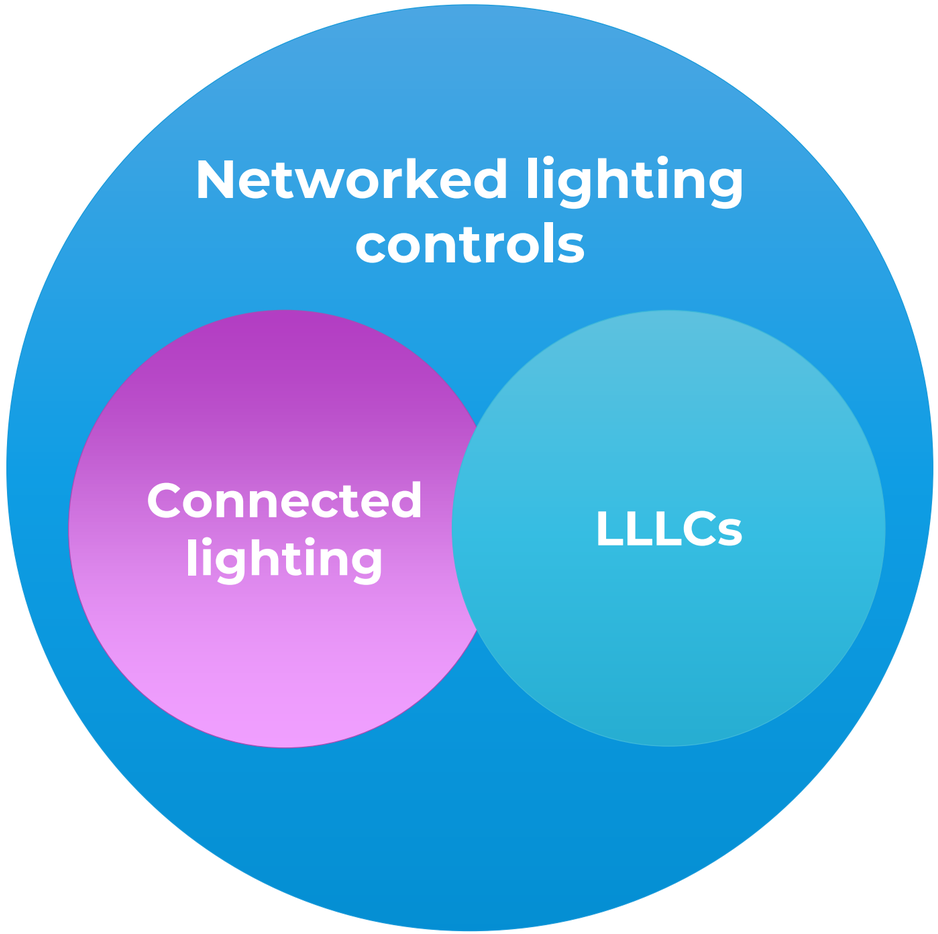
The DesignLights Consortium is an independent, nonprofit organization providing decision makers with data and resources on quality lighting, controls, and integrated building systems to reduce energy, carbon, and light pollution.





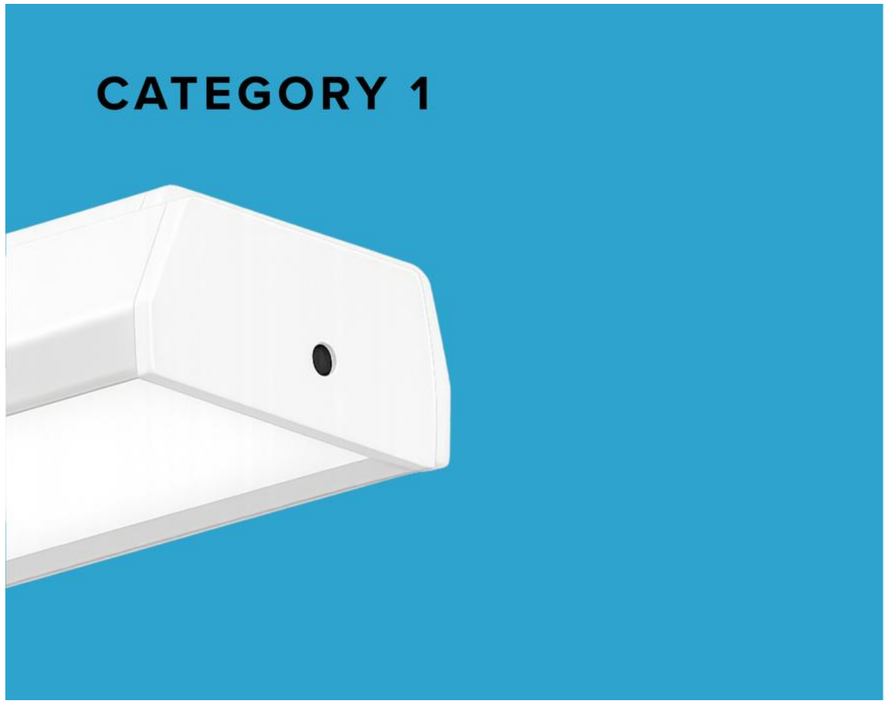


Networked Lighting Controls



- **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

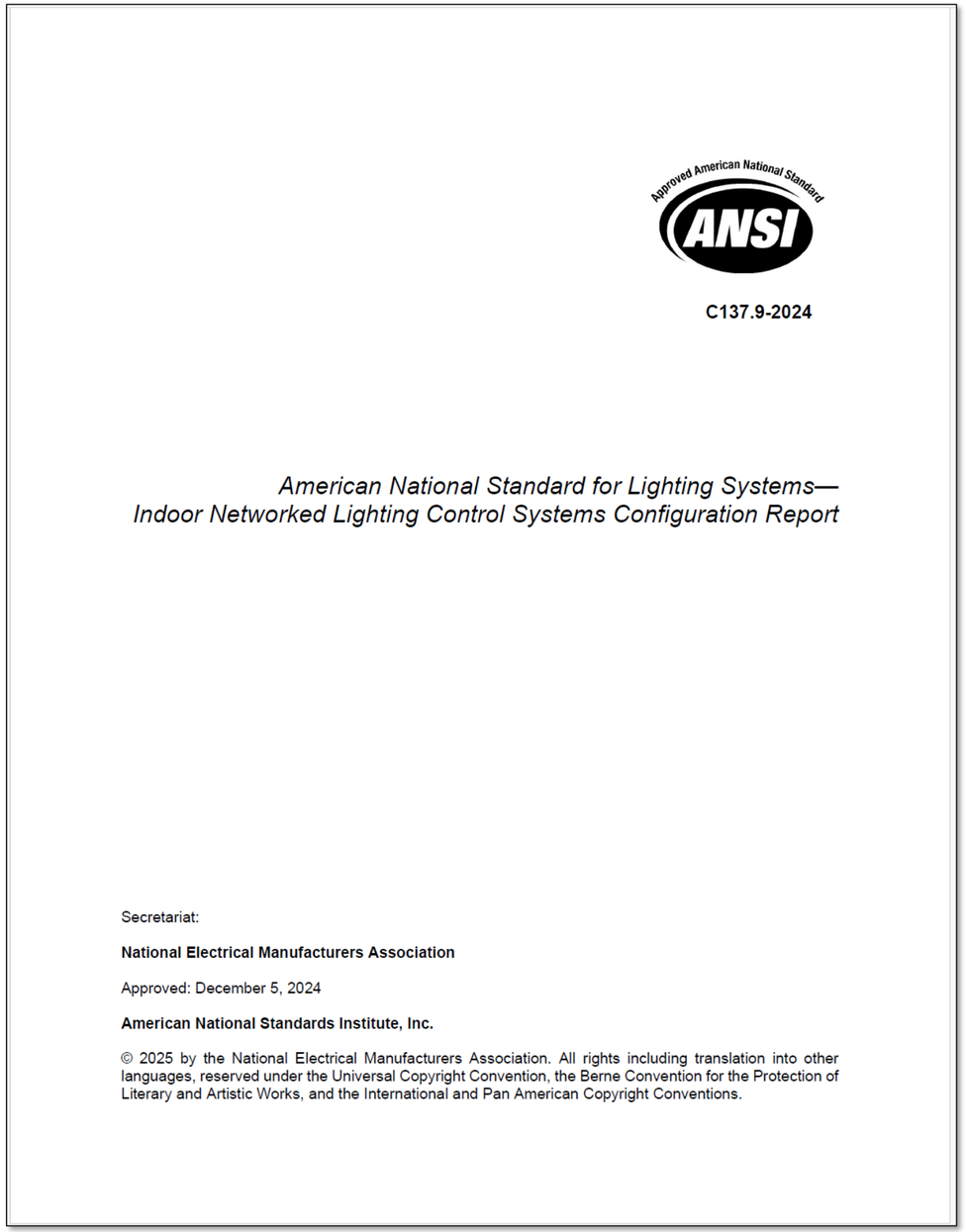
Receptacle ready for controls post-install



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

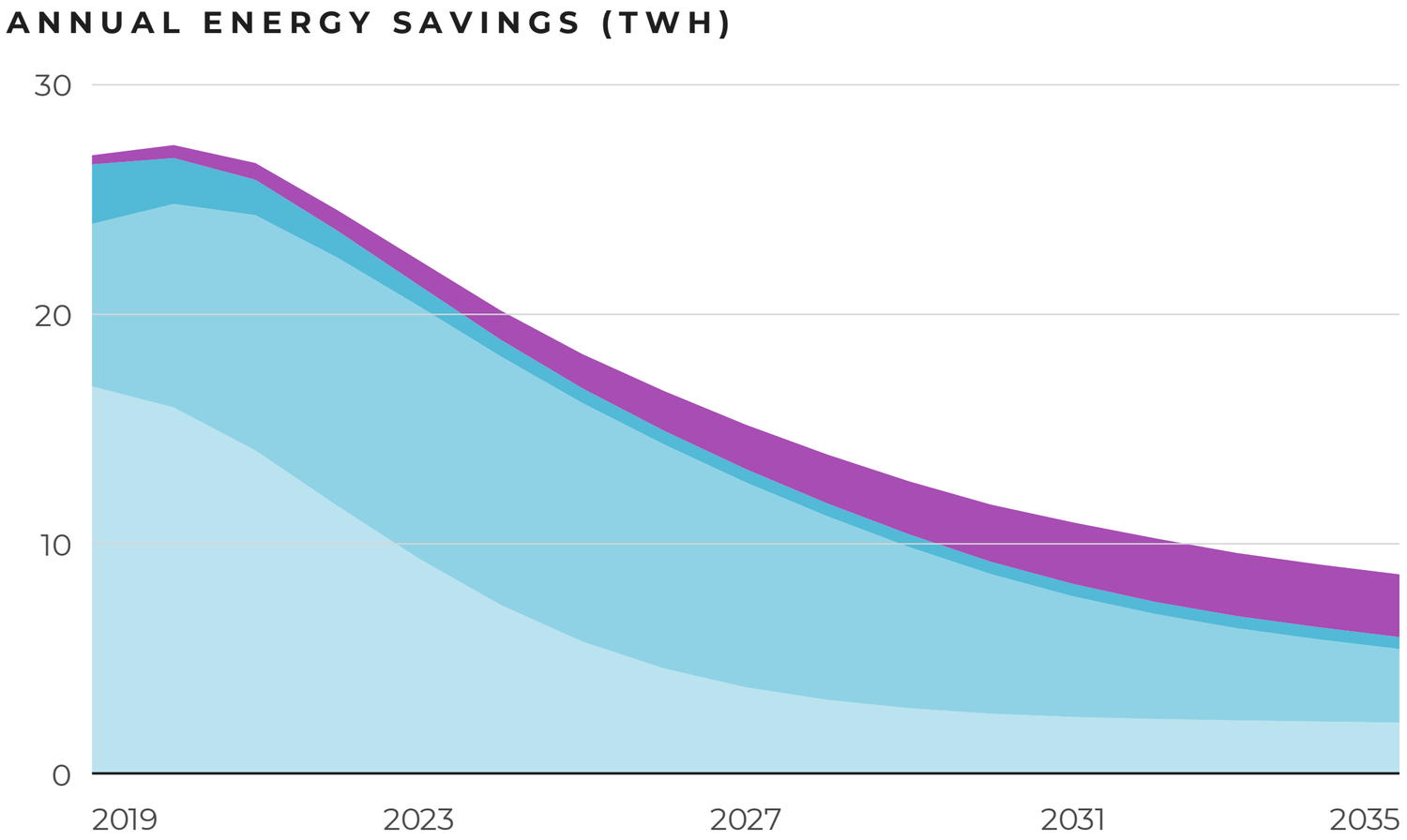
2021 DLC analysis, based on DOE 2019

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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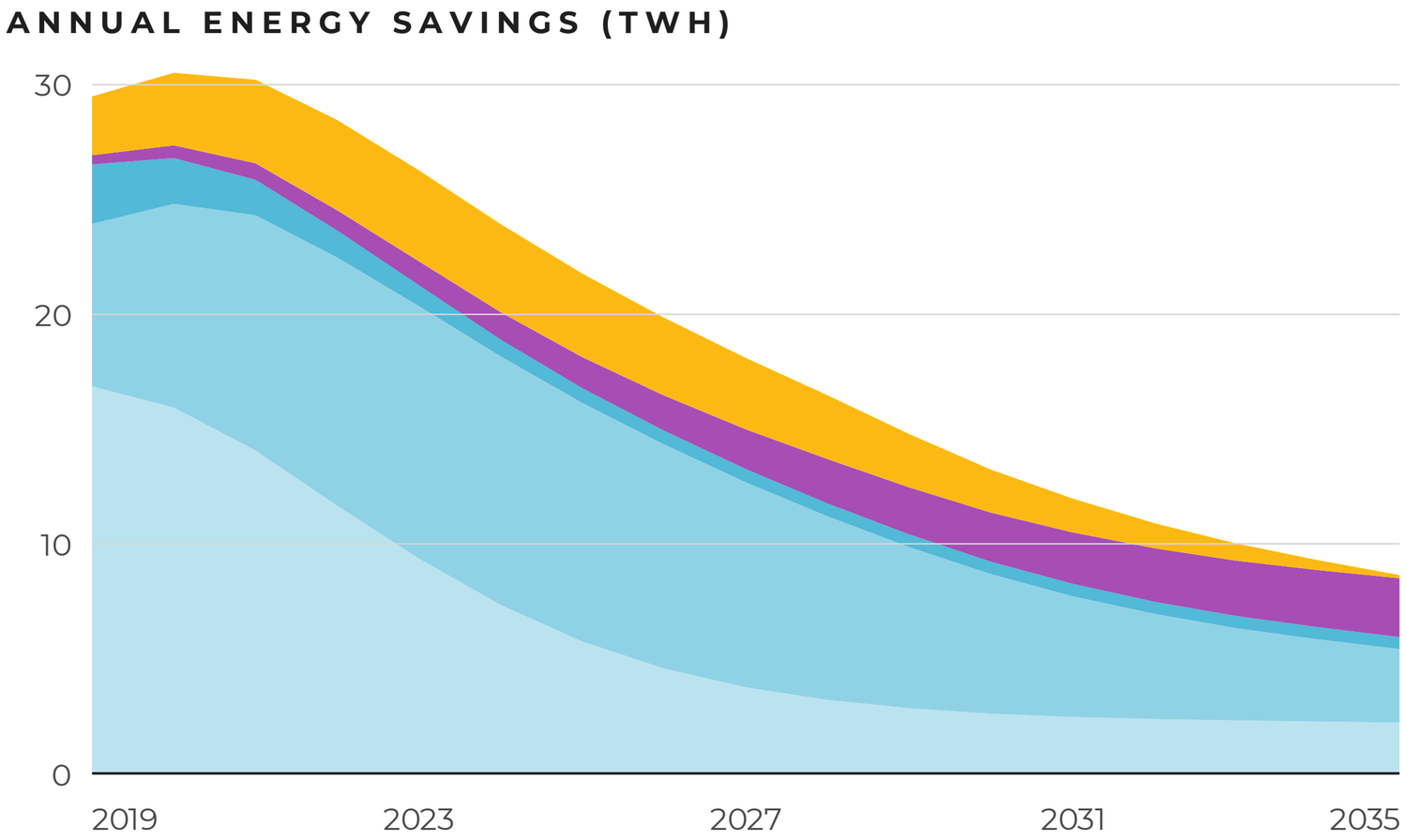
- Screw-base LED products
- NLC – current path
- NLC – DOE program goal



US non-residential annual energy savings potential

2021 DLC analysis, based on DOE 2019

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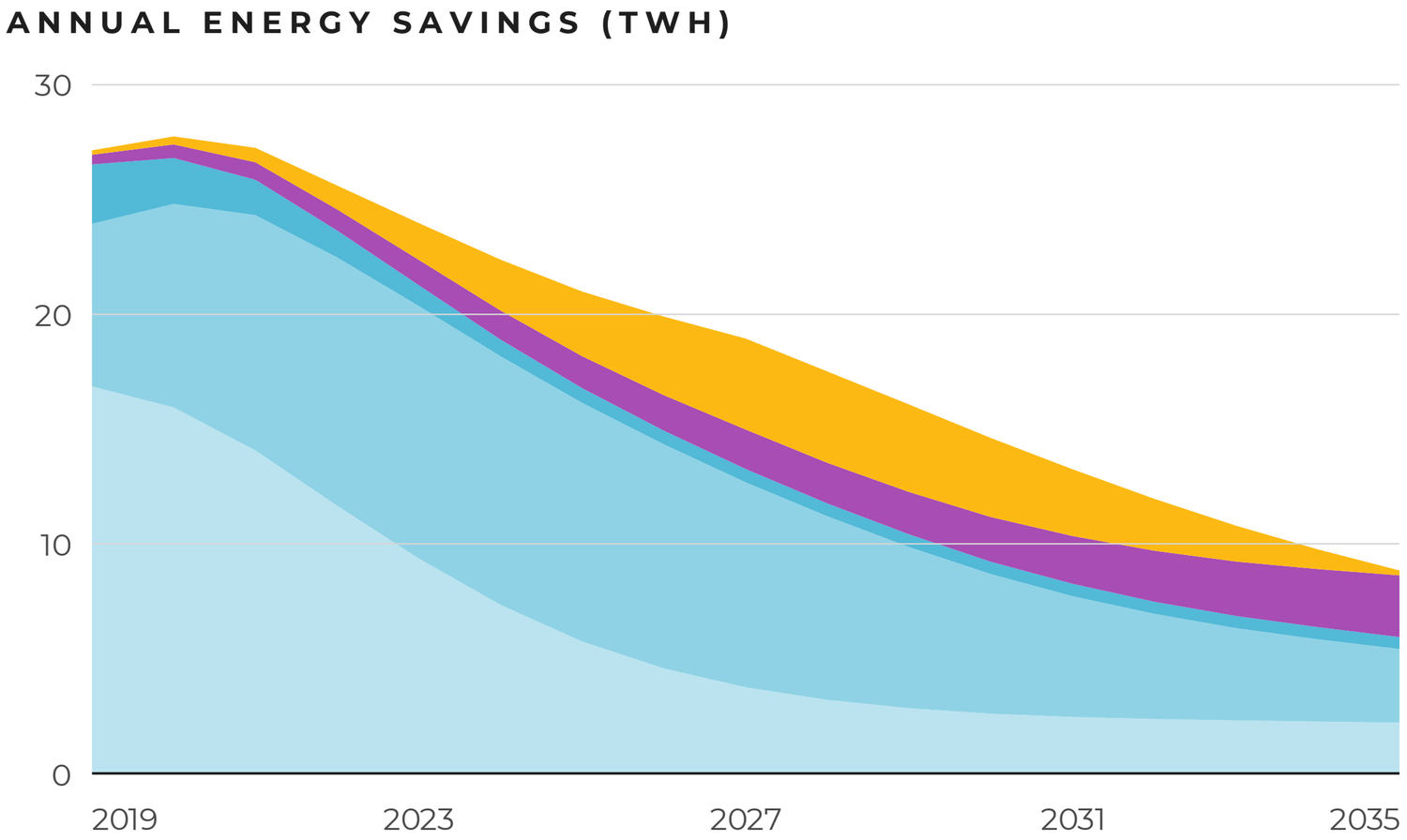
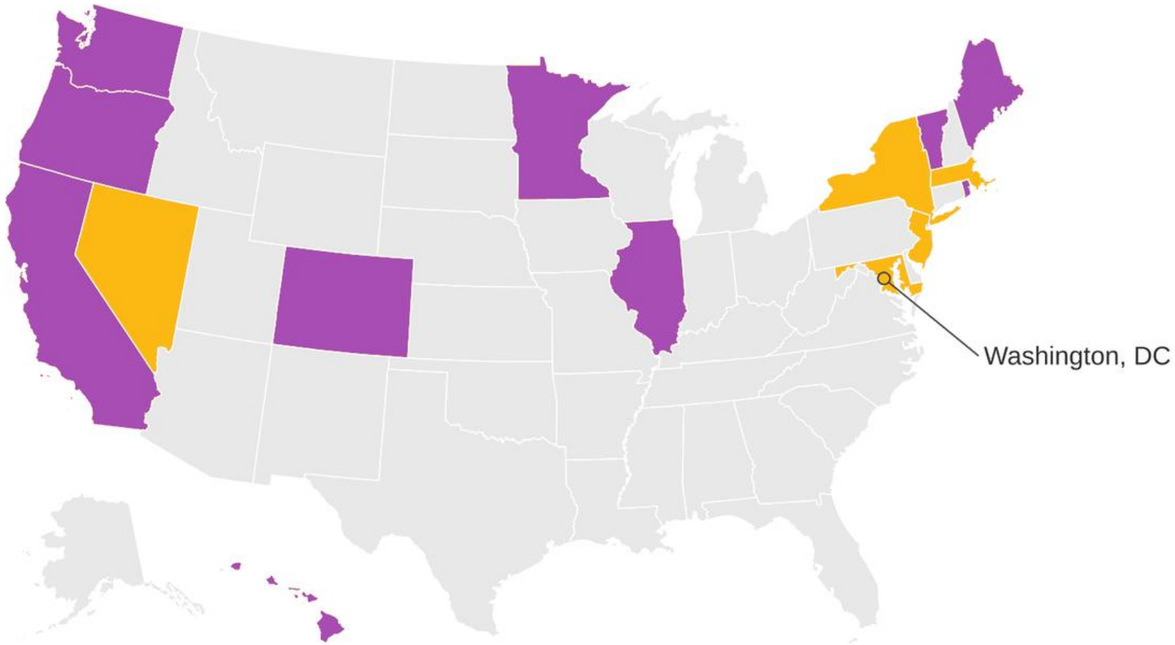
- NLC – market intervention



Linear fluorescent lamp bans: US and Canada

UNITED STATES



CANADA



Already enacted linear fluorescent ban

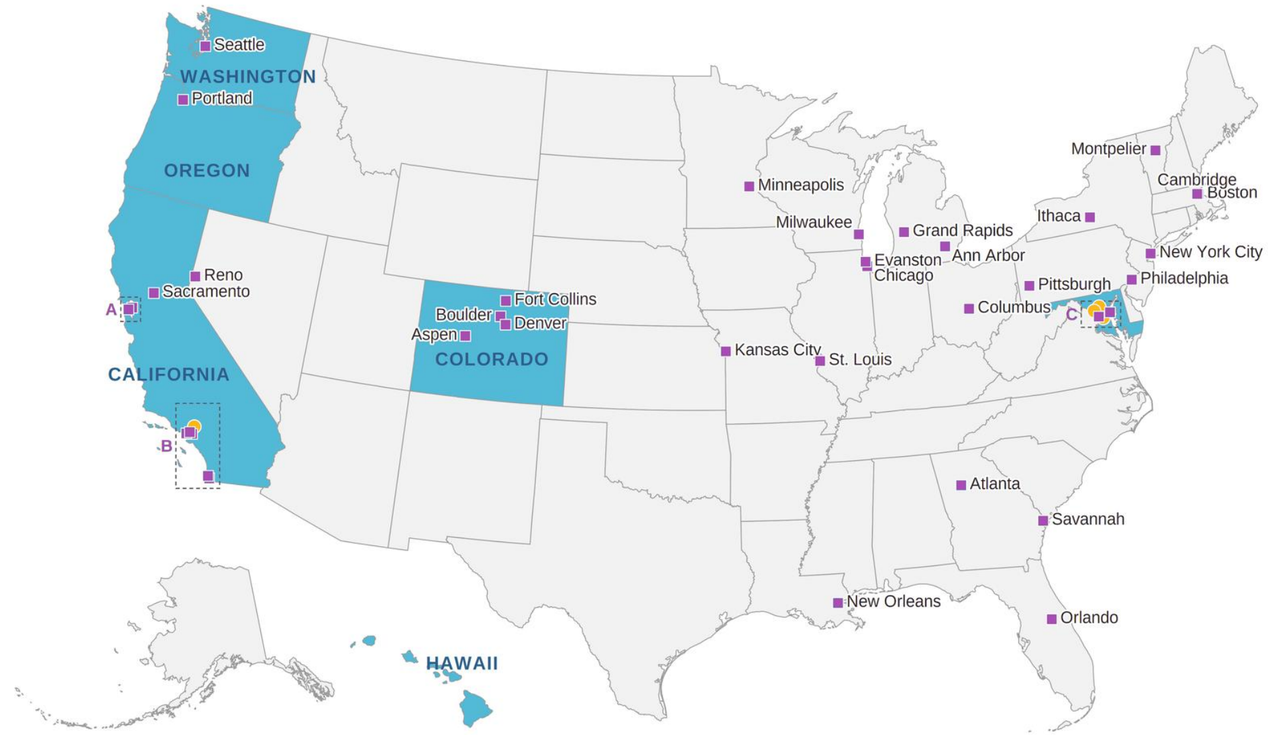
Targeted restriction (high CRI > 87)

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.

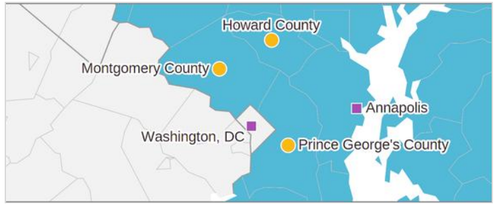
A · SAN FRANCISCO BAY AREA



B · SOUTHERN CALIFORNIA



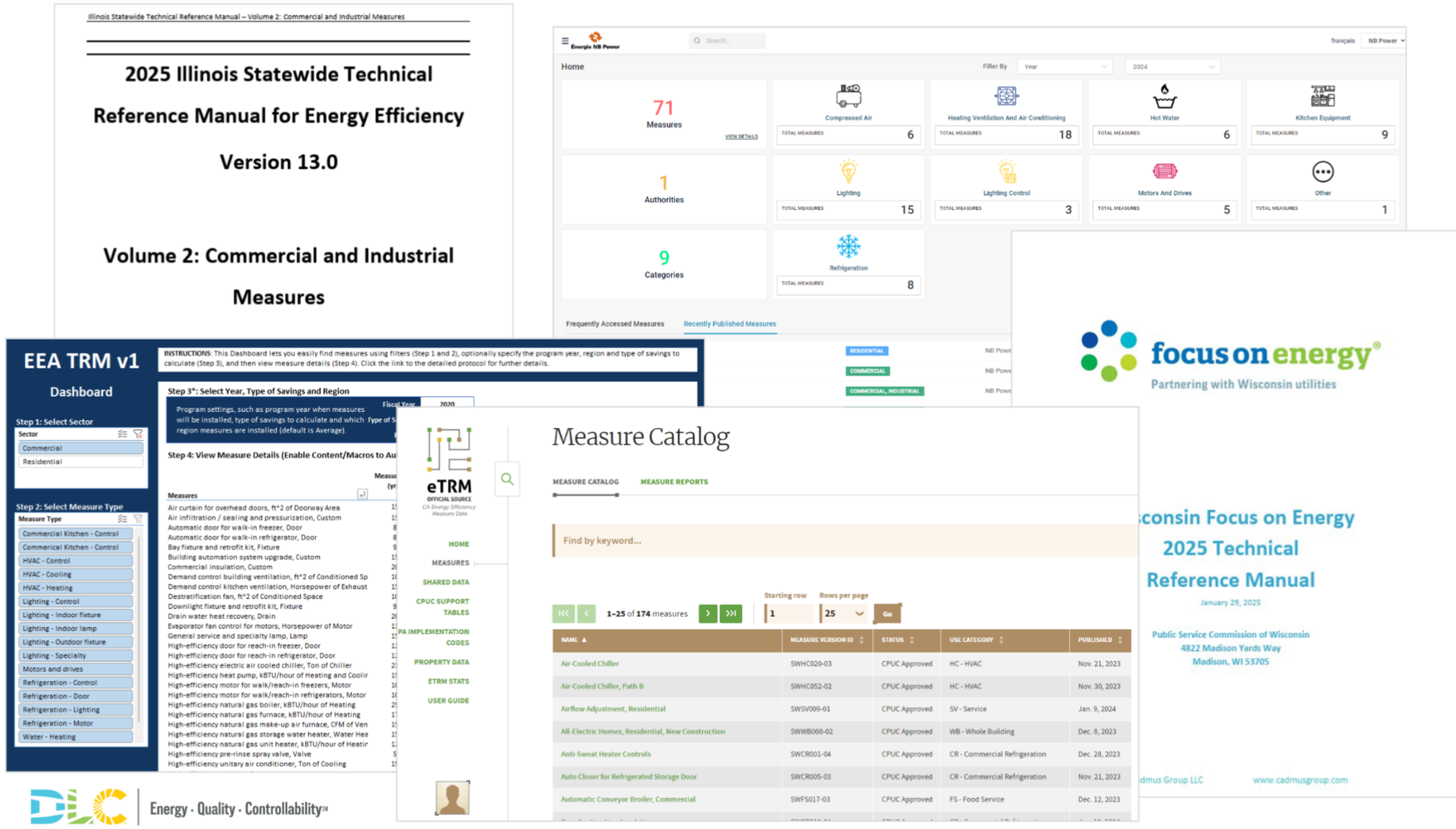
C · WASHINGTON, DC – MARYLAND



Technical Reference Manuals & DLC Controls Categories

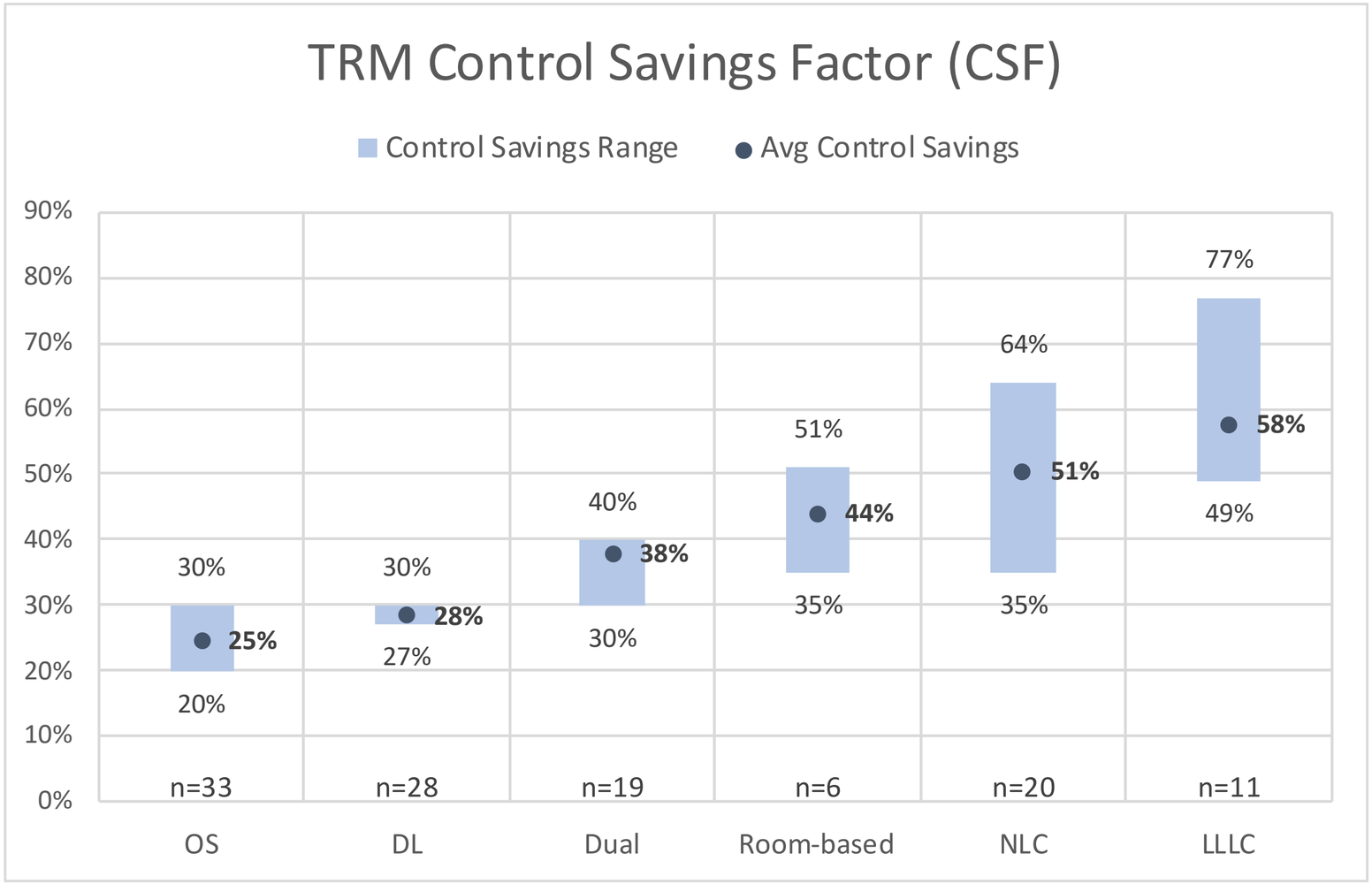
Technical Resource Manuals

Measures govern incentives/rebates based on deemed savings.



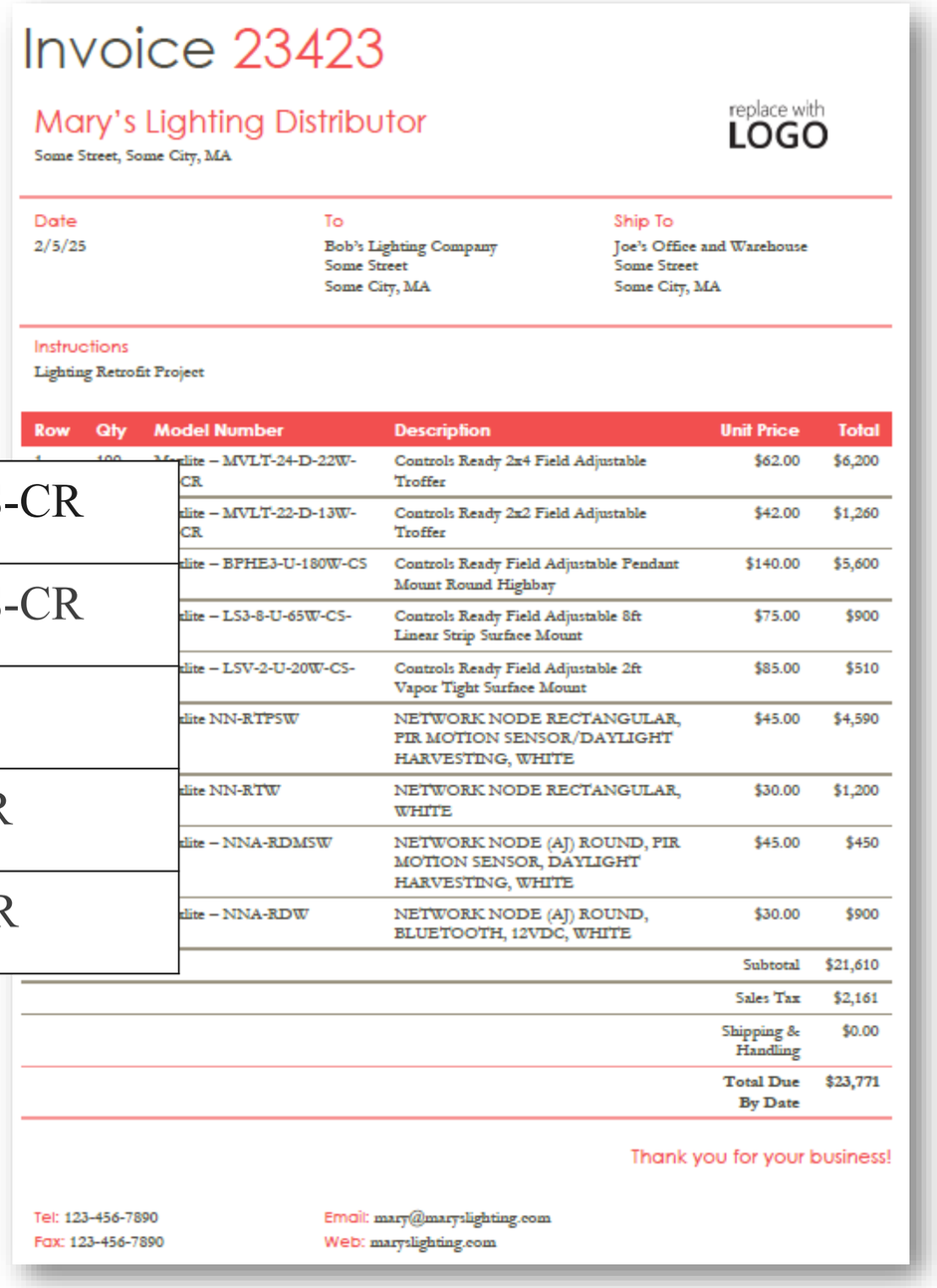
Technical Resource Manuals - Controls Measures

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

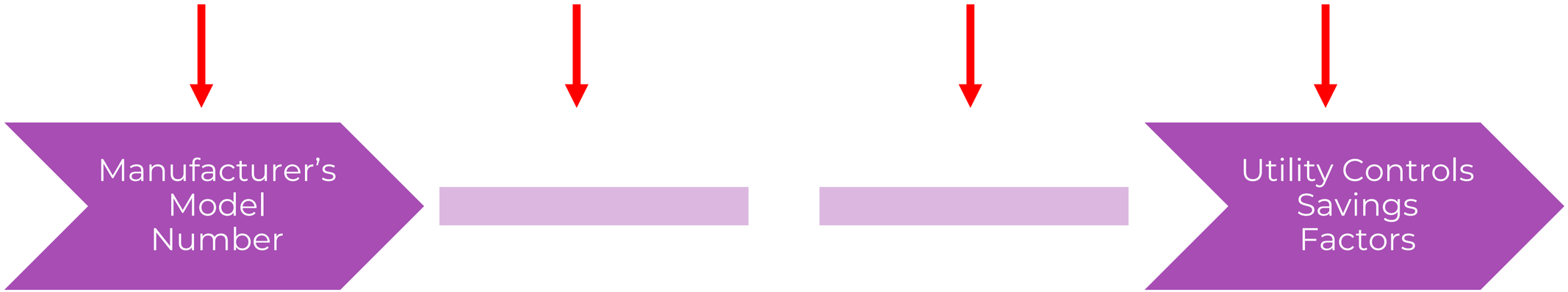
Row	Qty	Model Number	Description	Unit Price	Total
		lite – MVLT-24-D-22W-CR	Controls Ready 2x4 Field Adjustable Troffer	$62.00	$6,200
		lite – MVLT-22-D-13W-CR	Controls Ready 2x2 Field Adjustable Troffer	$42.00	$1,260
		lite – BPHE3-U-180W-CS	Controls Ready Field Adjustable Pendant Mount Round Highbay	$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

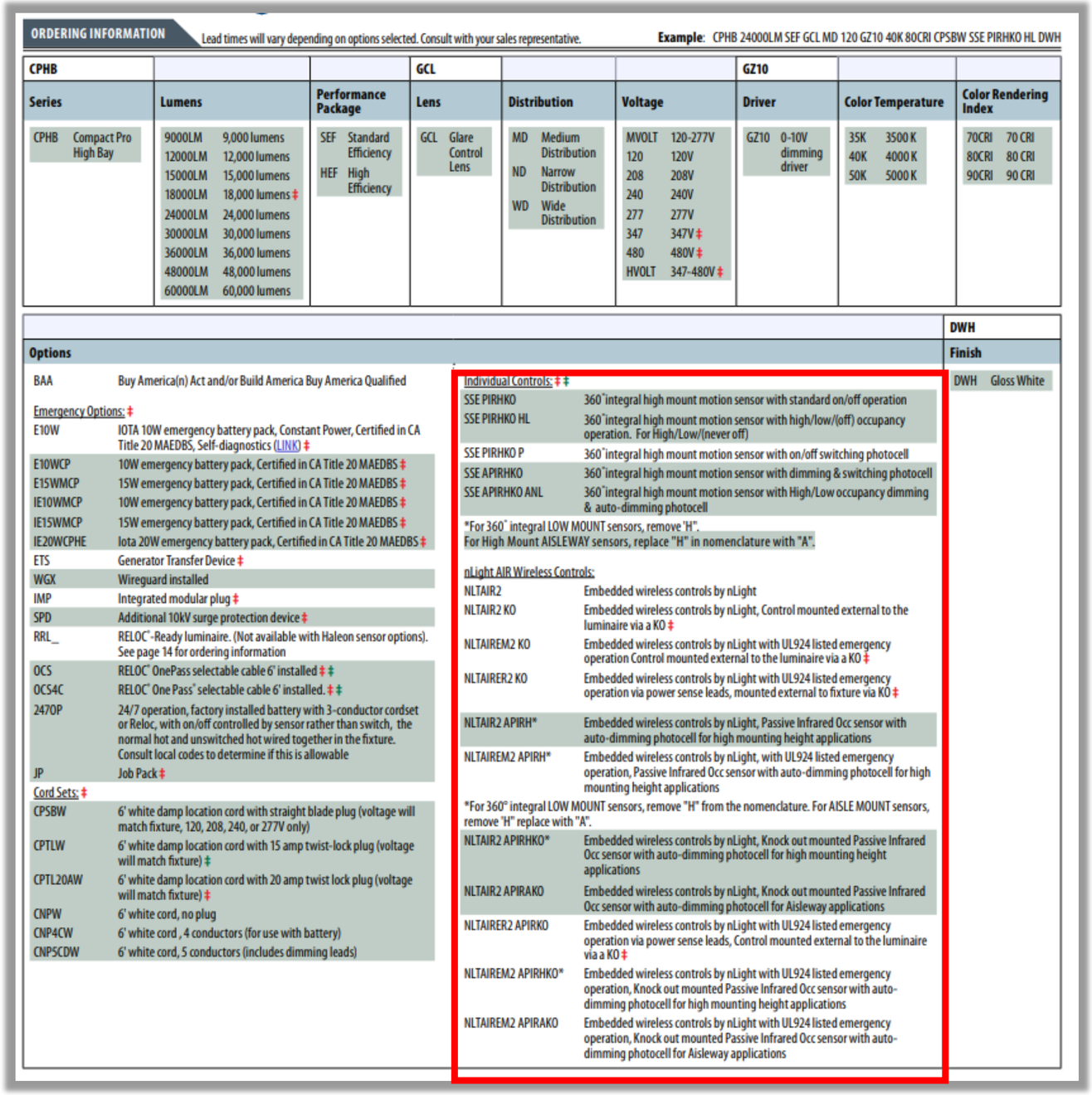
Email: mary@maryslighting.com
Web: maryslighting.com

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

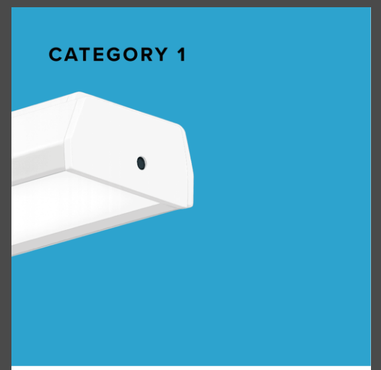
DWH	
Finish	
DWH	Gloss White

31

Controls Categories



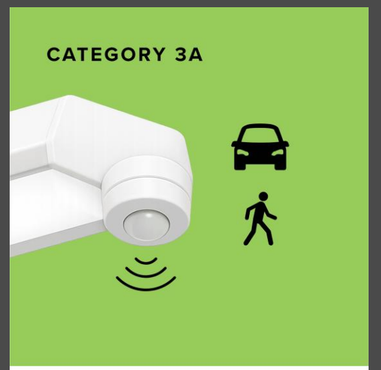
No Integral Controls



Controls Ready



Non-DLC Listed NLC Controller

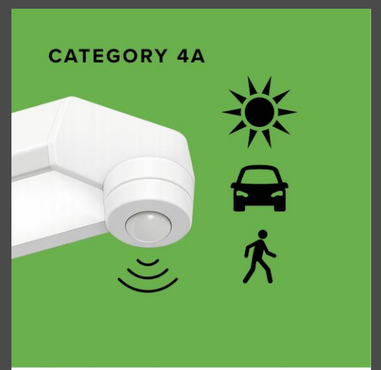


Integral Occupancy or Traffic* Sensor Function Only

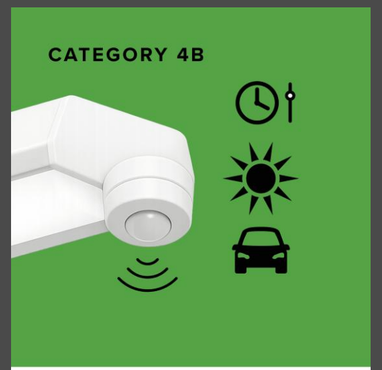


Integral Daylight/Photocell Sensor Function Only

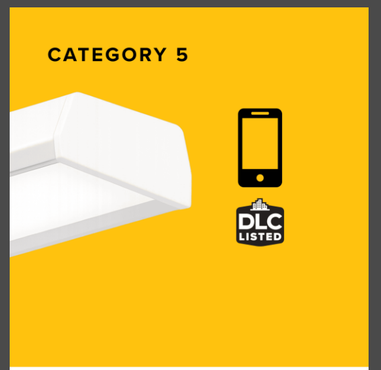
Eligible for Premium



Occupancy or Traffic* and Daylight or Photocell Integral Sensor Functions



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



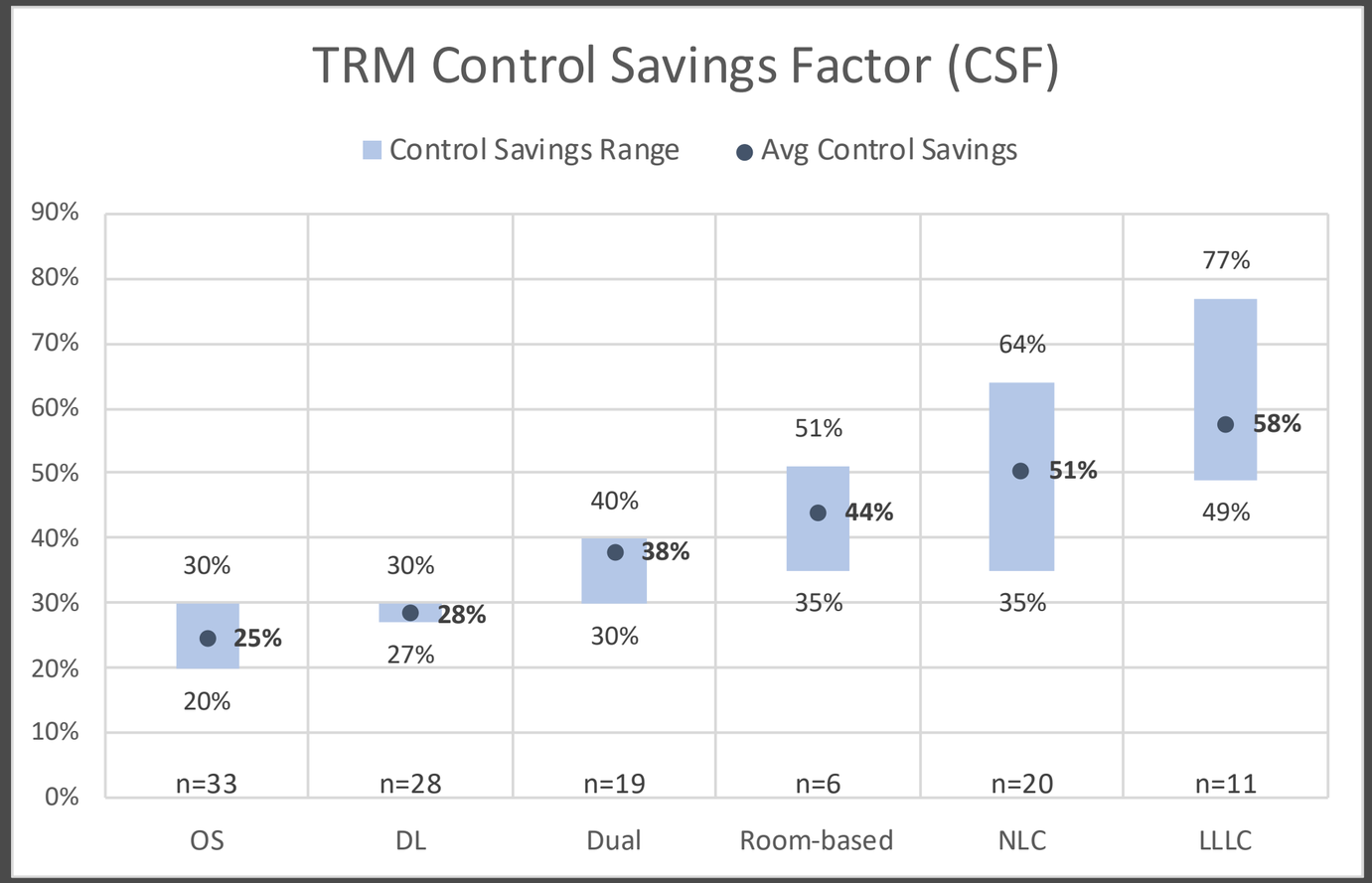
DLC NLC QPL Listed Networked Controller



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



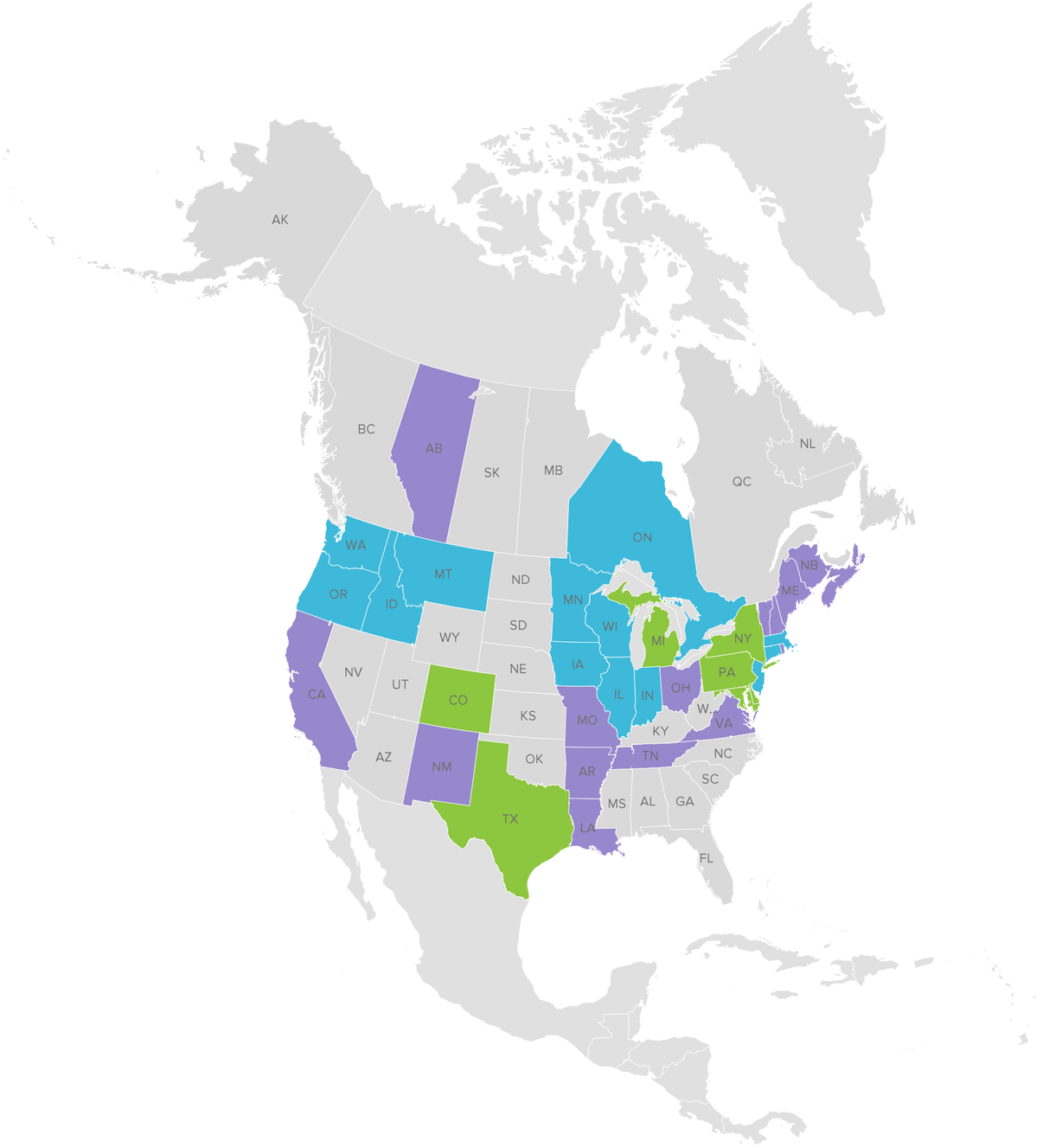
Controls Category:	3	3	4	3 or 4	5	6

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

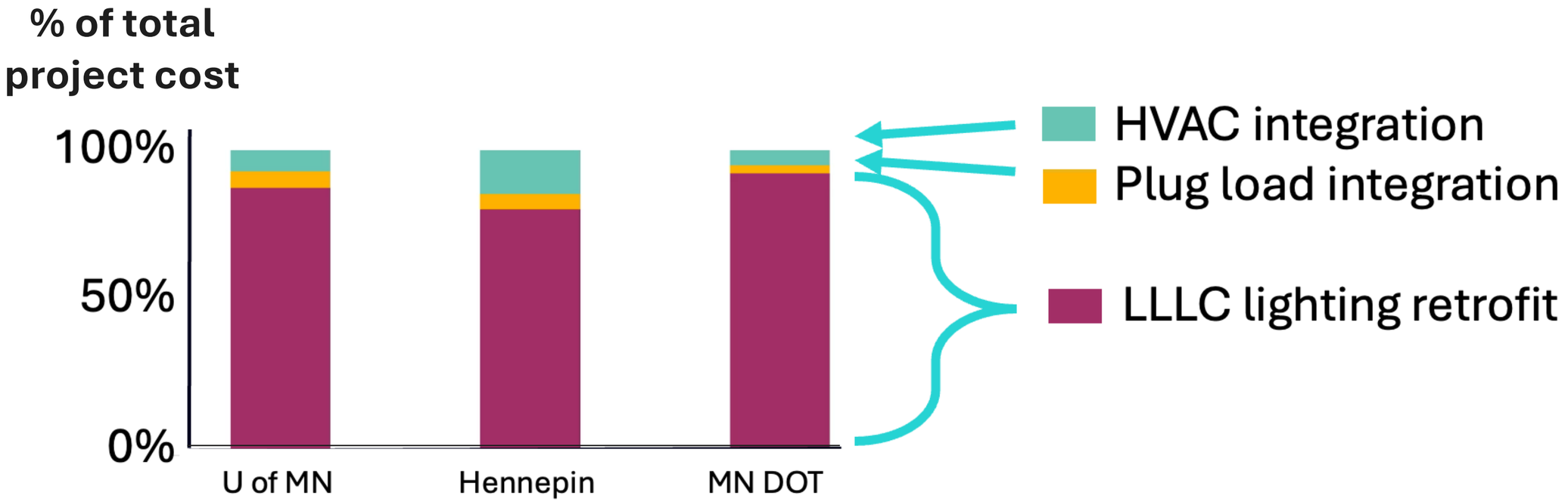
Fresh Local Veggies in School Lunches Throughout the Year



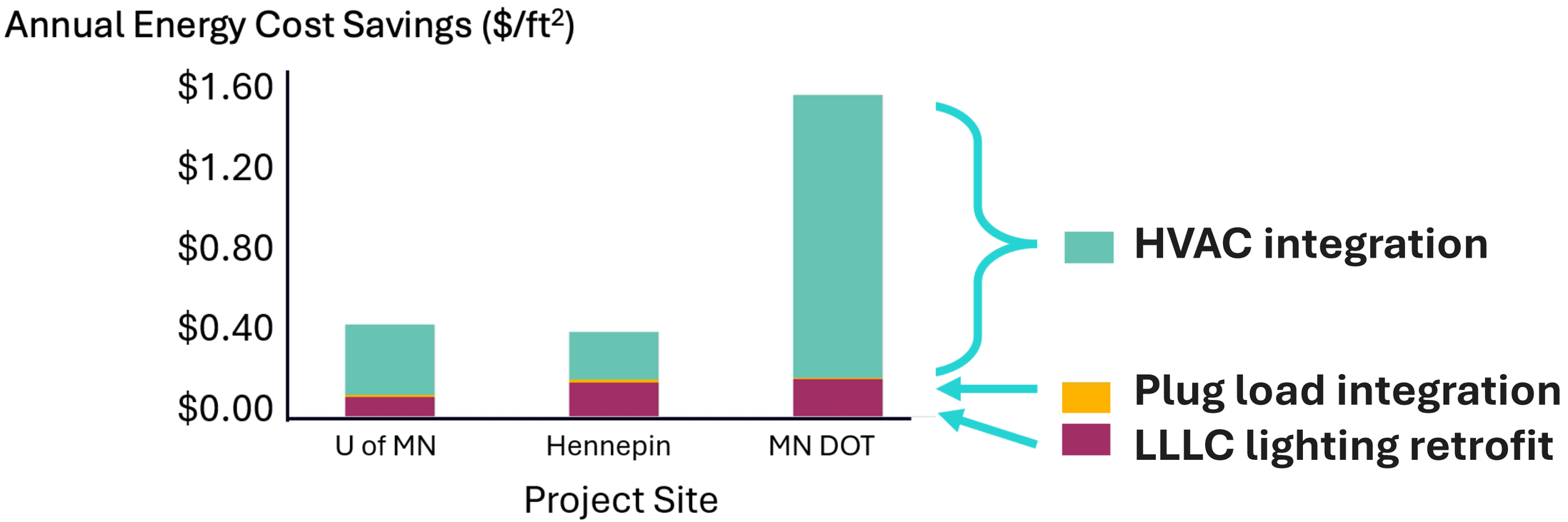


https://www.iowasource.com/2014/04/08/fairfield2014_04_greenhouse/
Photos and story from “The Iowa Source”, April 8, 2014

Main cost of an integration project: the LLLC retrofit

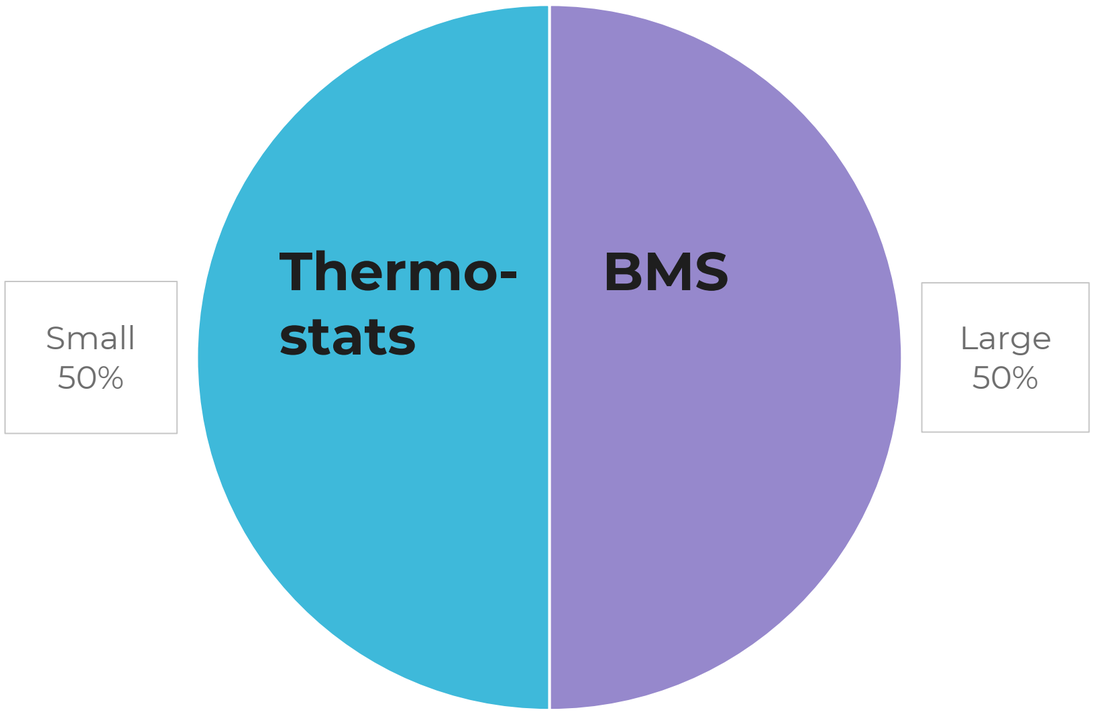


3 Case Studies by Slipstream, in DoD Free Online Training
https://www.wbdg.org/ce/dod/estcpalc

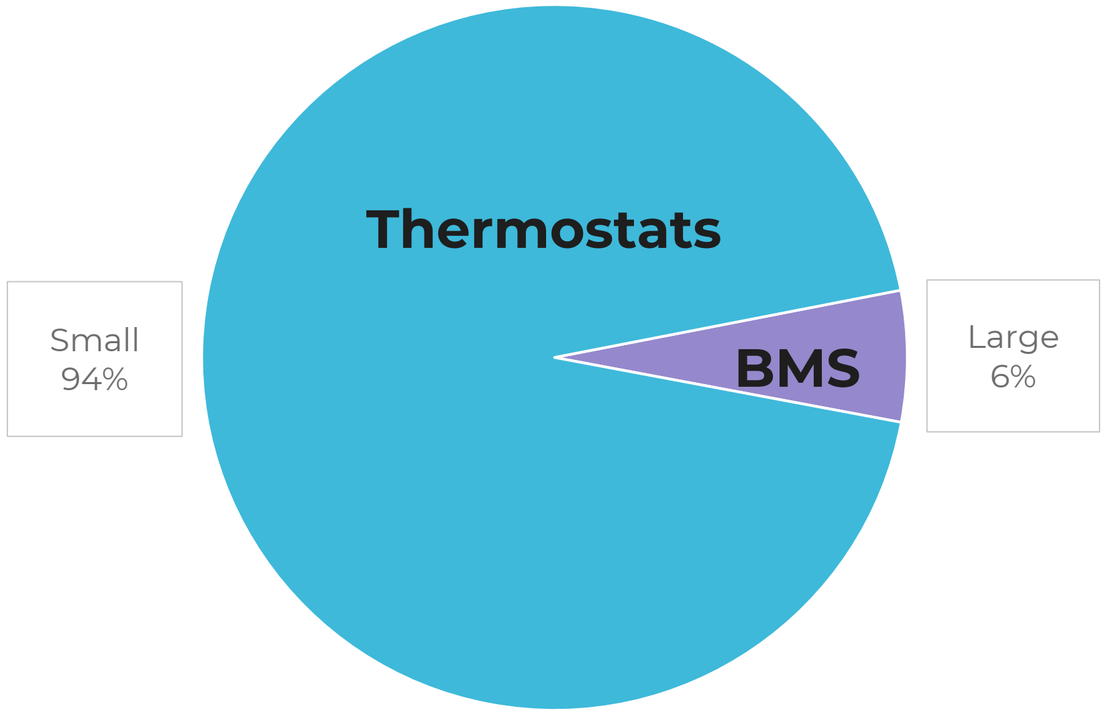


3 Case Studies by Slipstream, in DoD Free Online Training
https://www.wbdg.org/ce/dod/estcpalc

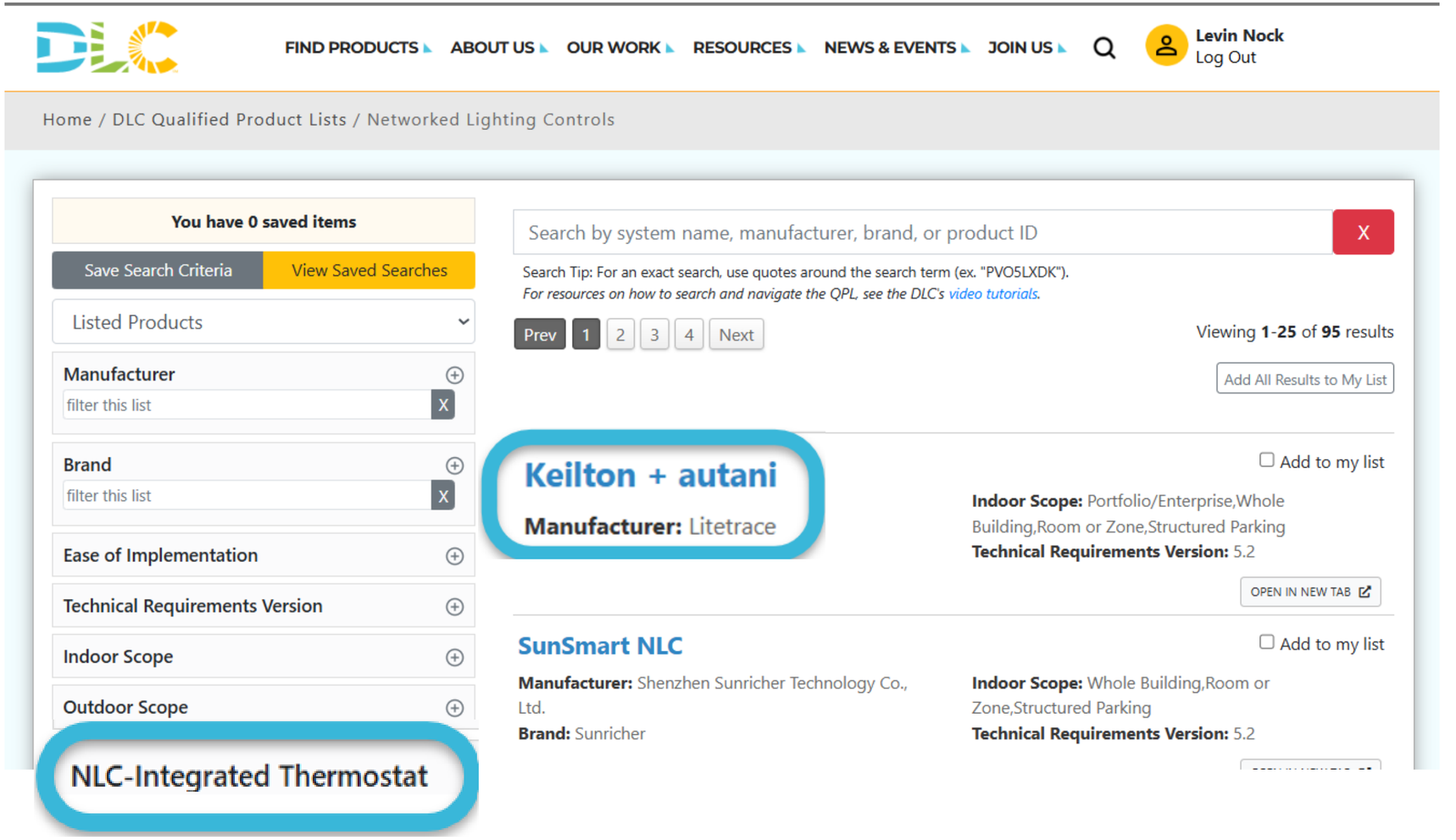
Building Stock (CBECS 2018)



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

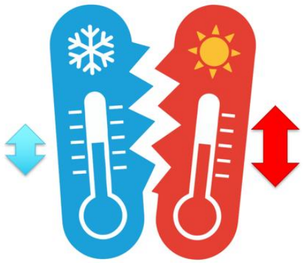
SOME REASONS WHY

Energy Savings Will Vary



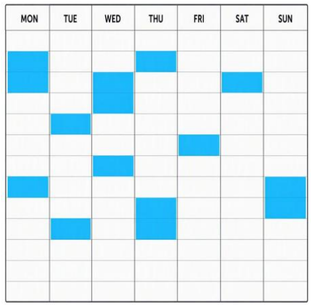
Climate

Ratio of Heating vs Cooling



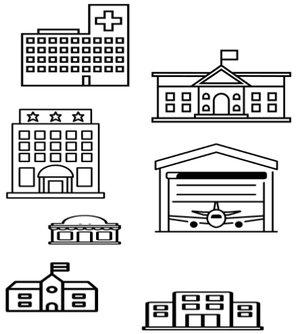
Cooling setpoints less flexible than heating

Humidity, solar gain



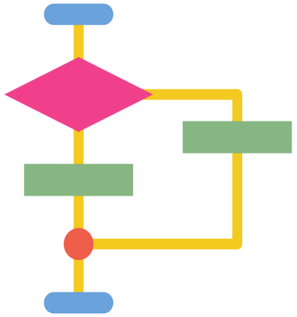
Baseline

Schedule accurate or forgotten long ago?



Variable-occupancy patterns vary

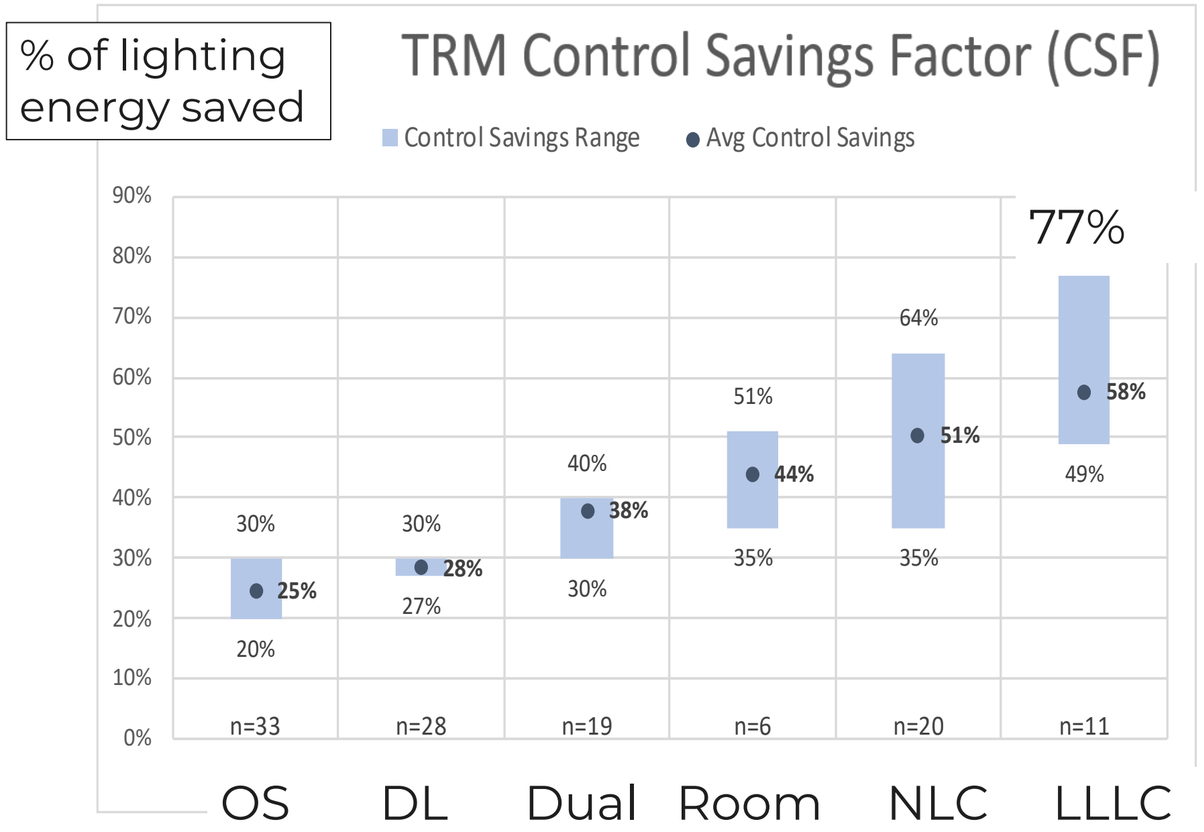
Building type, Individual building



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

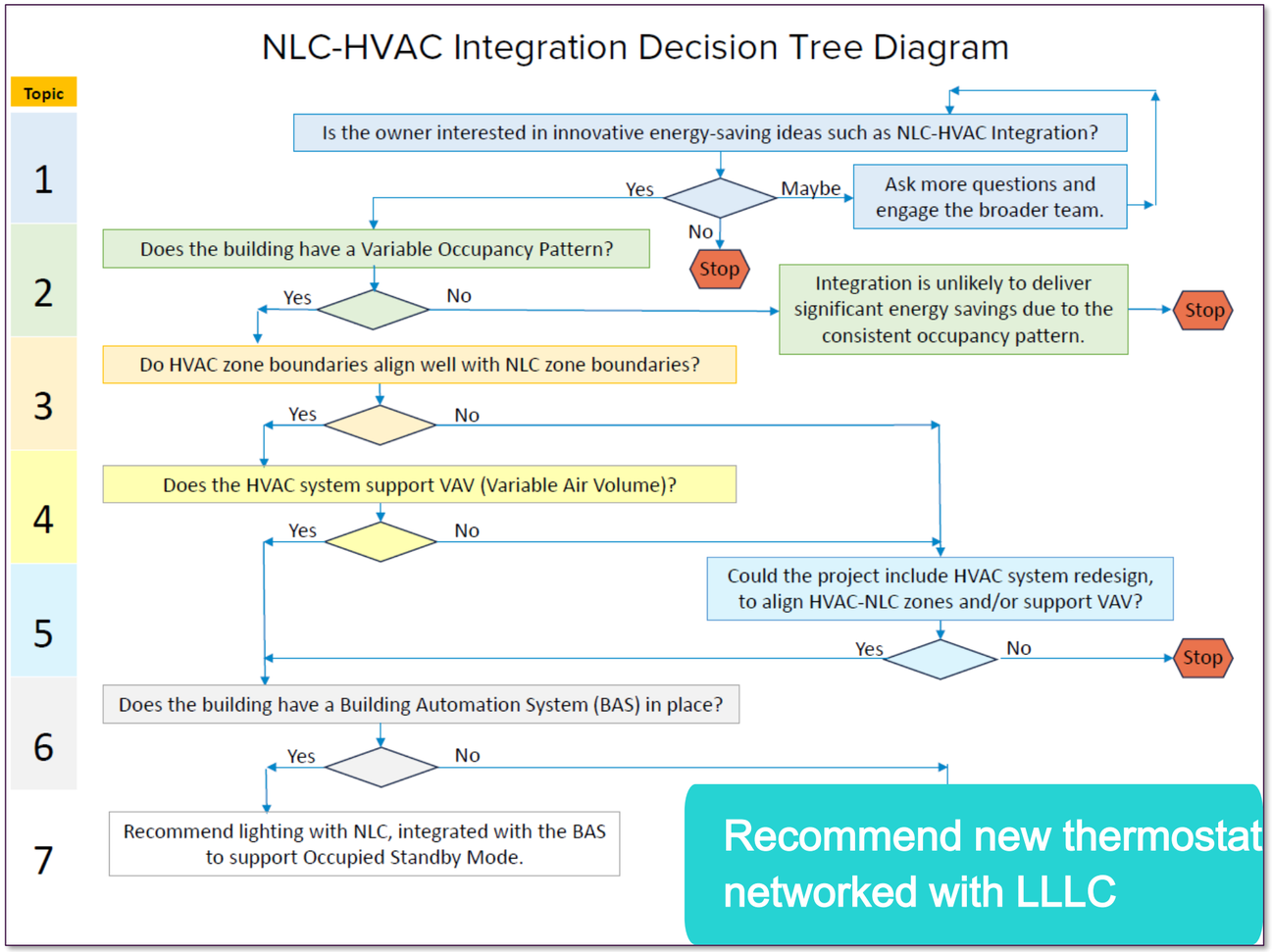


- Goals for future (if pilots deliver promising data)
  - Easy project approvals, not rejections
  - Scalable prescriptive incentives



DLC NLC-HVAC Integration Toolkit

Integration Tool Kit



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

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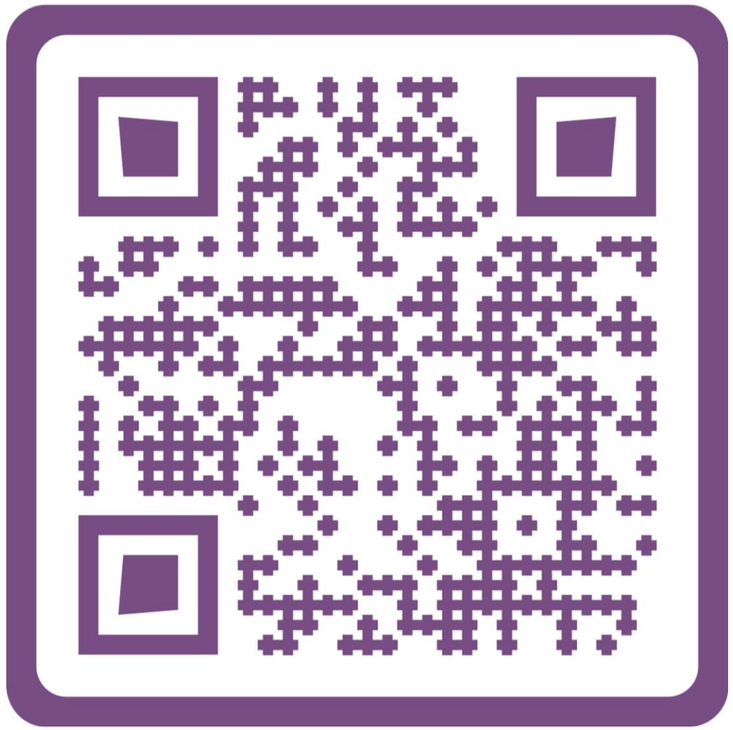
Closing Survey



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?