



STAKEHOLDER
MEETING 2018

July 9 - 11 • Boston, MA

SSL V5.0: Lighting Controllability

Facilitators



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Agenda

- Introduction & Overview (5 min)
- SSL V5.0 Controllability Discussion Topics
 - Dimming Requirement (30 min)
 - Controls Reporting Requirements (20 min)
 - SSL/NLC Linkage (20 min)
 - Other Controllability Topics (10 min)
- Wrap up (5 min)

SSL V5.0 Controllability

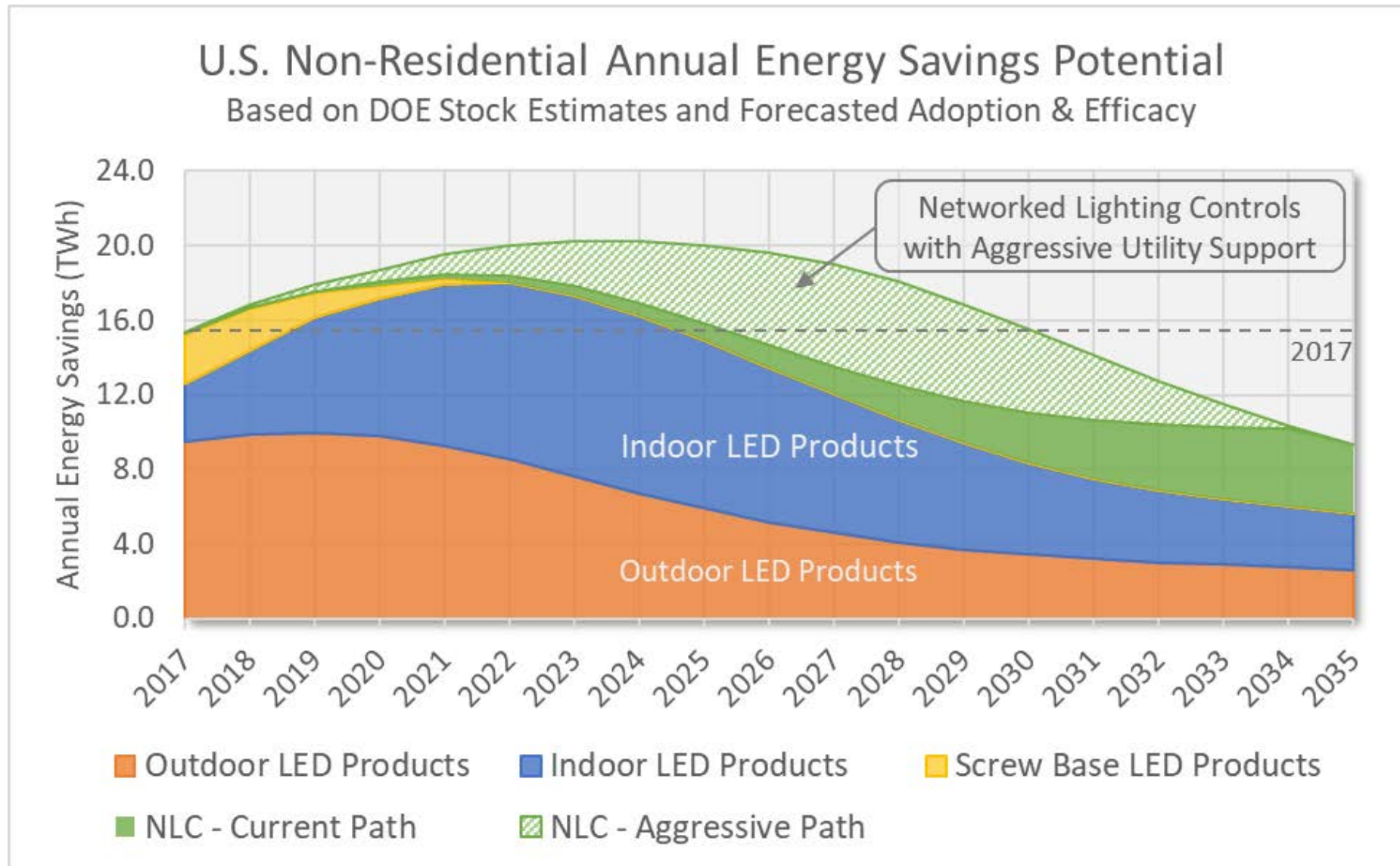
Establish
framework to link
qualified SSLs to
qualified NLCs

Additional
controls
requirements for
SSL

Why Focus on Controllability?

Make it easier to promote/specify/adopt controls.

1. Reduce uncontrolled installs. They'll stay that way for a decade or more.
2. Reduce friction in the "how do I control this?" product decision and purchase chain.
3. If something does get installed without controls, at least make it *controllable* for later.
4. **Need to accelerate the adoption of controls**



Discussion Format

- Concept Introduction (5 min)
- Discussion (10-15 min)
 - Open forum
 - All feedback welcome (positive and negative)
- Idea Generation (5-10 min)
 - Input must be solution based
- Live Smartphone Polling (5 min)
 - Smartphone browser web link: PollEv.com/dm012
 - Download the Poll Everywhere app and join the presentation “dm012”



Dimming Requirement

Why Should DLC Require Dimming?

A majority of luminaires on the SSL QPL today are already dimmable

- Indoor (81%) and Outdoor (67%)

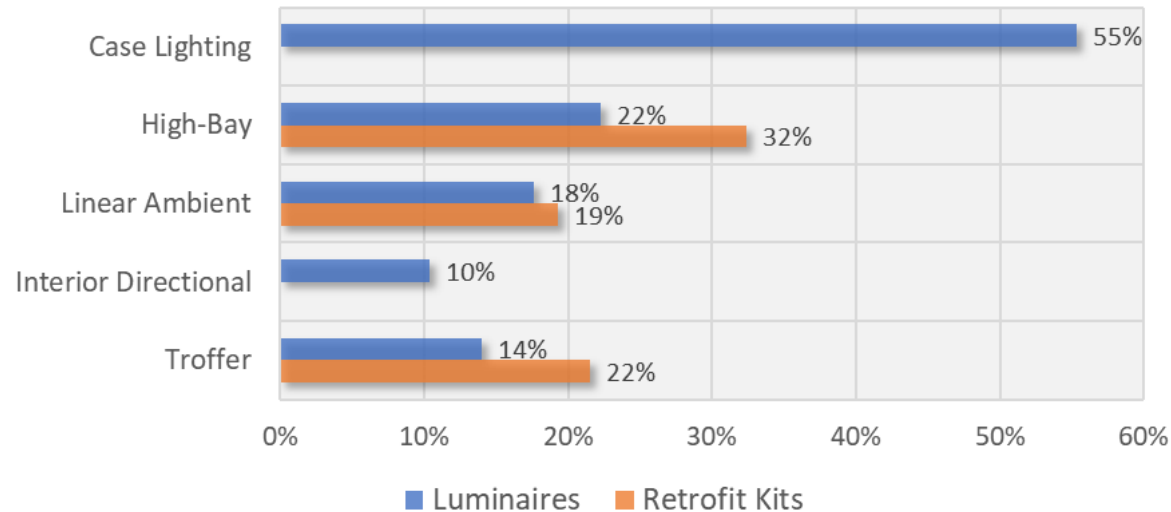
Non-dimmable fixtures can't be paired with Networked Lighting Controls

- Uncontrolled fixtures strand the opportunity for deeper energy savings
- Unable to leverage demand response

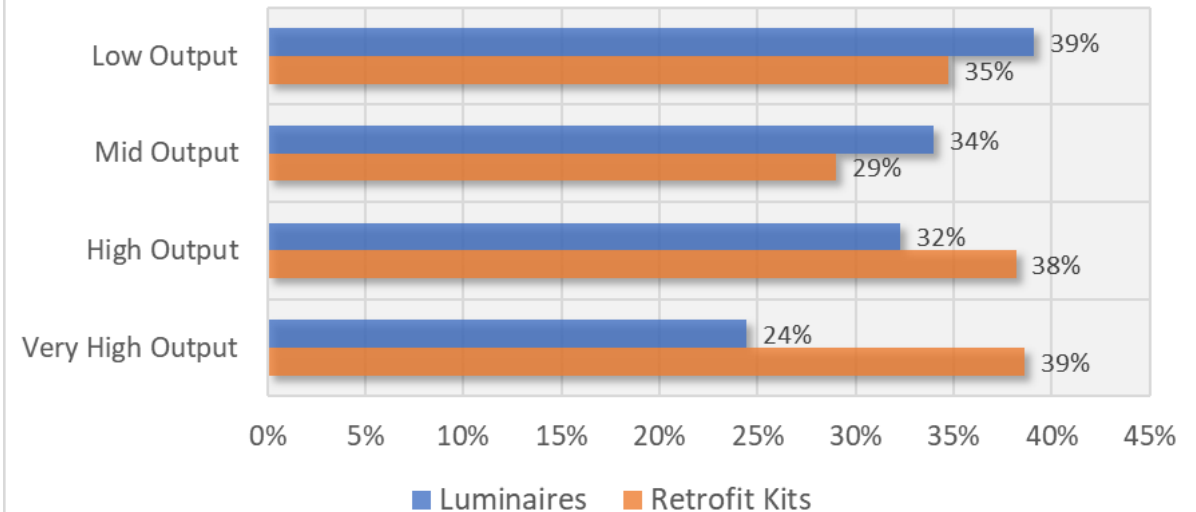
Dimming can be a tool for managing light quality

- Helps occupants manage issues with glare and over-lighting

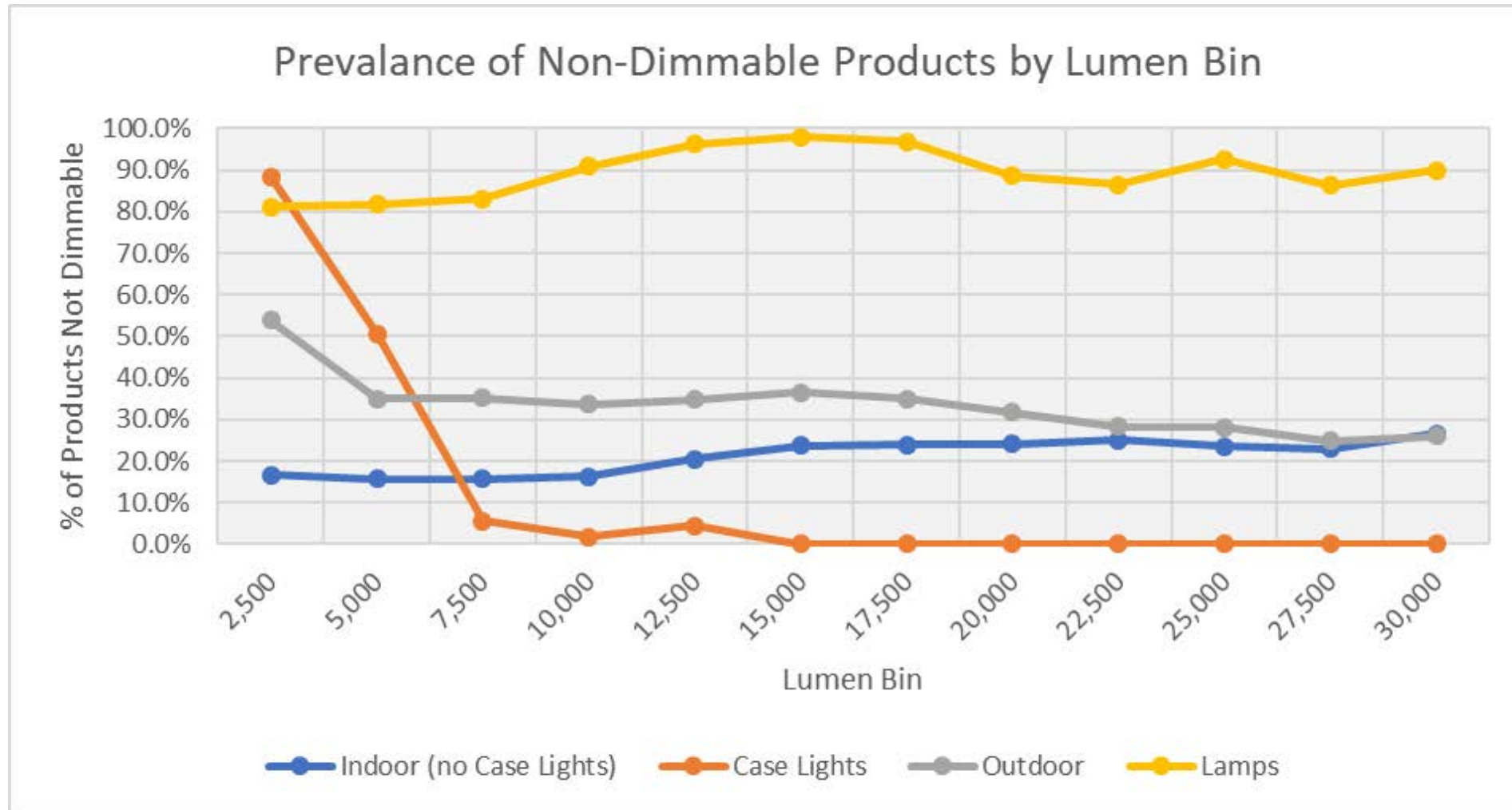
INDOOR: Prevalence of Non-Dimmable Products by General Application



OUTDOOR: Prevalence of Non-Dimmable Products by General Application



- High prevalence of non-dimmability within case lights and low output outdoor
- Most linear ambient and troffer luminaires are dimmable
- Dimmability improves with light output for outdoor luminaires (but not kits)
- Retrofit kits fare slightly worse for most categories



Potential Dimming Requirements

Dimming Requirement	Luminaires & Retrofit Kits	Lamps
DLC Standard	Stepped or Continuous	Undetermined
DLC Premium	Continuous $\leq 10\%$	N/A
Possible Exemptions	Indoor Case Lights Outdoor Low Output Hazardous Specialty PUDs	Undetermined

Top Impacted PUDs

- Exemptions applied for case lights, outdoor low, and specialty hazardous
- Excludes lamps

DLC QPL Prevalence of Non-Dimmable Products	Not Dimmable Products	Exempt Products	% Not Dimmable
Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted	3,300	1,754	63%
Fuel Pump Canopy Luminaires	2,818	615	44%
Linear Retrofit Kits for 2x4 Luminaires	1,021	0	43%
Retrofit Kits for Outdoor Pole/Arm-Mounted Area and	1,444	161	41%
Retrofit Kits for High-Bay Luminaires for Commercial	313	0	39%
Linear Retrofit Kits for 2x2 Luminaires	492	0	37%
High-Bay Aisle Luminaires	748	0	36%
Outdoor Full-Cutoff Wall-Mounted Area Luminaires	7,150	2,558	31%
Linear Retrofit Kits for 1x4 Luminaires	151	0	30%
Retrofit Kits for Fuel Pump Canopy Luminaires	14	1	29%
Architectural Flood and Spot Luminaires	5,601	2,182	28%
Outdoor Pole/Arm-Mounted Area and Roadway Lumi	16,306	1,800	25%
Linear Ambient Luminaires w/ Indirect component	886	0	24%
High-Bay Luminaires for Commercial and Industrial Bu	12,038	0	23%

Discussion (15 min)

Idea Generation (5-10 min)

Live Polling

Dimming Questions for Discussion

- How to define dimming?
- What minimum level is right for continuous dimming?
- Cost impact?
- Outdoor concerns?
- Should some categories be exempted?
- Treat standard and premium differently?
- Should lamps be included (now or delayed?)
- Will adoption shift to lamps?



Do you support a DIMMING requirement for products on the SSL QPL?

Strongly
Support

Support

Neutral

Object

Strongly
Object



Which LUMINAIRE categories should include a DIMMING requirement?

Indoor and outdoor

Indoor and outdoor
with exemptions

Indoor only

Indoor only with
exemptions



How should a DIMMING requirement be applied to LAMPS?

All lamps, at the same time
as luminaires

All lamps, trailing luminaires
by 1 year

Linear lamps only, at the
same time as luminaires

Linear lamps only, trailing
luminaires by 1 year

None, dimming should not be
a requirement for lamps



**Regarding a DIMMING requirement, rank the following topics in order of concern
(top = most concerning)**

Lack of industry standards for dimming

Added product cost

Potential for delisted products

Customers may not want/need dimming

Customers may opt for exempted products
(e.g. lamps) or non-DLC products



Controls Reporting Requirements

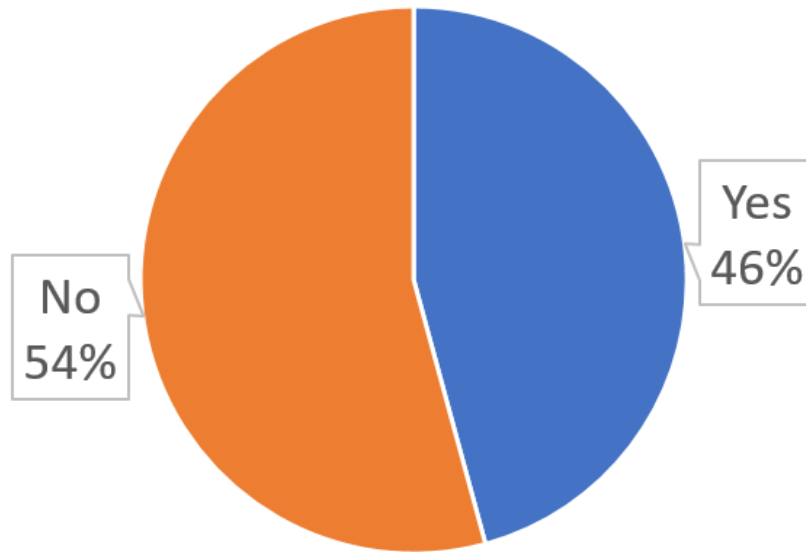
Controls Reporting Requirements

Reported Information	Current State
Type of Dimming	<ul style="list-style-type: none"> • Dimmable (yes/no) • Dimming type (continuous, step)
Integral Controls	<ul style="list-style-type: none"> • Has integral controls (yes/no) • Optional for DLC standard • The mere presence of integrated controls isn't helpful to specifiers, utilities, or customers

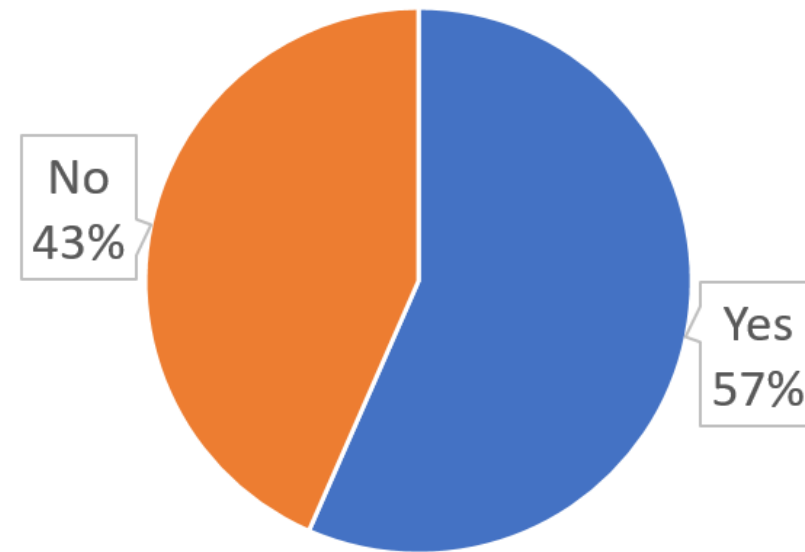
Primary Use	Classification	Dimming Type	Dimming Status	Has Integral Controls
Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Lumina Standard		Continuous Below 10	Dimmable	YES
High-Bay Luminaires for Commercial and Industrial Buildings	Standard	Not Dimmable	Not Dimmable	NO
Outdoor Pole/Arm-Mounted Area and Roadway Luminaires	Standard	Continuous Above 10	Dimmable	YES
Replacement Lamps for Outdoor Pole/Arm-mounted Decorative L Standard	Standard	Not Dimmable	Not Dimmable	NO
Replacement Lamps for Outdoor Pole/Arm-mounted Decorative L Standard	Standard	Not Dimmable	Not Dimmable	NO
Outdoor Pole/Arm-Mounted Area and Roadway Luminaires	Premium	Continuous Below 10	Dimmable	YES
High-Bay Luminaires for Commercial and Industrial Buildings	Premium	Stepped	Dimmable	NO

Prevalence of Integral Controls

Prevalence of Integral Controls - DLC Standard



Prevalence of Integral Controls - DLC Premium



Controls Reporting Requirements

Reported Information	Current State	Desired State
Type of Dimming	<ul style="list-style-type: none"> • Dimmable (yes/no) • Dimming type (continuous, step) 	<ul style="list-style-type: none"> • Type of dimming control (<i>0-10V, IoT Ready, DALI, Zigbee etc.</i>)
Integral Controls	<ul style="list-style-type: none"> • Has integral controls (yes/no) • Optional for DLC standard • The mere presence of integrated controls isn't helpful to specifiers, utilities, or customers 	<ul style="list-style-type: none"> • Type of integral sensor (<i>None, Occupancy, Daylight, Occ + Day</i>) • NLC not a prerequisite

Discussion (10 min)

Idea Generation (5-10 min)

Live Polling

Controls Reporting Questions for Discussion

- Types of dimming control?
- Impact to number of listings?
- Integral sensor configurations?



Regarding CONTROL REPORTING requirements, rank the following topics in order of concern

(top = most concerning)

Maintenance of product listings

Potential for more listing fees

Lack of industry standards for dimming

Multiple integral sensor configurations



Other (from discussion)



SSL/NLC Linkage

SSL/NLC Linkage

- Optionally list product name(s) of NLC systems that are interoperable with qualified SSL products

Linkage	SSL QPL	NLC QPL
OEM Compatibility	Compatible OEM NLC System	 Name of Control System
Non-OEM Compatibility	Type(s) of Dimming Control <ul style="list-style-type: none"> • 0-10V • DALI SR • IoT Ready • Zigbee 	 Type(s) of Dimming Control <ul style="list-style-type: none"> • 0-10V • DALI SR • IoT Ready • Zigbee

SSL/NLC Linkage

MFR A TR24-50L-35K

Integral Controls

- ✓ Occupancy
- ✓ Daylight
- ☐ None

Dimming

- ✓ Continuous $\leq 10\%$
- ☐ Continuous $> 10\%$
- ☐ Step
- ☐ Not Dimmable
- ☐ Not Verified

Networked Lighting Controls Interoperability

OEM

MFR A System 1

Non-OEM

MFR B System 1
MFR B System 2
MFR C System 1

...

Discussion (10 min)

Idea Generation (5-10 min)

Live Polling

Discussion Questions for SSL/NLC Linkage

- How is interoperability evaluated?
- How often does this information change?
- Concerns about list maintenance?
- OEM and non-OEM?
- How to ensure non-OEM consent/agreement?
- Alternatives for Non-OEM connection?
- Can industry standards such as IoT Ready or DALI SR predict a confident linkage?

What product LINKAGES should be possible between the SSL and the NLC QPLs?

OEM only

OEM and non-OEM with 2-party consent

OEM and industry standards such as IoT-Ready or SR-Certified

All of the above

None

**Regarding SSL-NLC QPL LINKAGE, rank the following topics in order of concern
(top = most concerning)**

Maintenance of listed products

Ensuring that linked products are
compatible and interoperable

Non-OEM relationships may
change

Lack of industry standards

Other (from discussion)



Other Controllability Topics