Hobbs, Darren

From: Glenn Heinmiller <glenn@lampartners.com>
Sent: Tuesday, February 22, 2022 12:35 PM
To: CodesStandards, DAS
Subject: 2022 Codes - Public Hearing Testimony

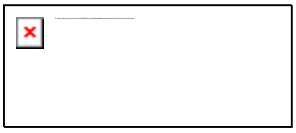
Request to give oral testimony at 2/23 hearing

(1) Glenn Heinmiller
(2) International Association of Lighting Designers
(3) CT State Building Code, Amendments to the IECC

(4) C302.2 Light pollution controls.

Glenn Heinmiller
FIALD, LEED AP, LC
Principal

84 Sherman Street
Cambridge, MA 02140
p: 617.354.4502
d: 617.702.5945
c: 617.851.4502
www.lampartners.com



From: Glenn Heinmiller <glenn@lampartners.com>
Sent: Thursday, March 17, 2022 5:00 PM
To: CodesStandards, DAS
Cc: Ashley Robbins
Subject: Comments on the Draft 2022 Connecticut State Building Code
Attachments: IALD Comment on Draft 2022 Connecticut State Building Code.pdf

Please find attached IALD's written comments on the Draft 2022 Connecticut State Building Code.

Thank you for your consideration

Glenn Heinmiller
FIALD, LEED AP, LC
Principal

84 Sherman Street
Cambridge, MA 02140
p: 617.354.4502
d: 617.702.5945
c: 617.851.4502
www.lampartners.com

INTERNATIONAL ASSOCIATION OF LIGHTING DESIGNERS IALD

Darren Hobbs | Director
Regulatory Compliance (OSBI |OSFM |OEDM)
Department of Administrative Services
State of Connecticut
450 Columbus Boulevard, Suite 1303
Hartford, CT 06103

17 March 2022

Re: Draft 2022 Connecticut State Building Code – Amendment to the IECC

Dear Mr. Hobbs:

I am writing to comment on the proposed amendment to the 2021 IECC, which adds a new section, **C302.2 Light pollution controls**.

The International Association of Lighting Designers (IALD) is the leading global organization of lighting designers. We rely on our extensive experience and knowledge of lighting technology and human visual performance to provide comfortable, safe and environmentally sensitive lighting for building occupants and the public.

Through design practice, lighting designers ensure that lighting is used in a responsible manner to minimize energy use and light pollution. IALD members advocate for energy conservation and for light pollution control, and have been major contributors to the International Energy Conservation Code (IECC) and ASHRAE/IES Standard 90.1, to the light pollution control provisions in the LEED rating system, the International Green Construction Code (IgCC), and the IDA/IES Model Lighting Ordinance (MLO). Collaborating with the International Dark-Sky Association (IDA), we drafted the model state-level dark-sky legislation, which was supported by the IDA, the Illuminating Engineering Society (IES), the National Electrical Manufacturers Association (NEMA), and the IALD, and which was adopted by the State of New York.

The IALD supports sensible and effective light pollution control regulations and the intent of this proposed amendment. However, unfortunately, we must oppose it, for reasons that are summarized below and detailed in the following pages.

- The proposed regulation does not belong in the energy code, as it will not

save energy.

- The proposed regulation would not lead to any significant reduction in light pollution. It would ban certain lighting fixtures that are allowed under LEED, the IgCC, and the MLO, and which may be necessary to provide comfortable, pleasing, and safe nighttime environments for Connecticut residents.

- The proposed regulation, if included in the State building code, could create confusing and unresolvable conflicts with existing local light pollution ordinances.

Not an Energy Code Provision

The proposed code provision does not belong in the Connecticut energy code because it will not save energy. IECC-2021 section C101.3 states:

> "***Intent****. This code shall regulate the design and construction of buildings for the effective use and* ***conservation of energy*** *over the useful life of each building.*"

The clearly stated purpose of the proposed amendment is to control light pollution, not to save energy. Any claims of energy savings should be supported with evidence or analysis. General statements such as: "wasted" light is also wasted energy are insufficient and likely incorrect. This may be true on a conceptual level, but lacks an understanding of how lighting works in reality. Consider these two examples:

- A contractor intends to install a 100-watt/10,000 lumen floodlight on the side of a building to light a parking lot, and 30% of the output of the fixture will be uplight. The proposed amendment would not allow this, and the contractor would have to install a "full cutoff" fixture. The wasted-light energy savings concept assumes that the contractor would install a 70-watt "full cutoff" floodlight (saving 30 watts) instead—but this is unlikely to happen. The contractor would probably just install a 100-watt/10,000 lumen "full cutoff" fixture, or possibly use a higher wattage fixture in a futile attempt to push more light out into the parking lot. The 'no uplight' requirement would be met, but there would be no energy savings, and perhaps an increase.

- A lighting designer might typically recommend a pole-mounted fixture, designed to provide an attractive glow for aesthetic effect and to provide a sense of brightness. Let's say this fixture is 30-watts/3000 lumens and emits 5% of its output (150 lumens) as uplight. Under this proposed regulation, this fixture would be banned. The wasted-light energy savings concept assumes that the designer would now select a different fixture with no uplight that is 28-watts/2850 lumens or less (saving 2-watts) —but it just doesn't work that way. We do not have that kind of control over the wattage of a fixture. The wattage of the replacement fixture might be more, might be less.

The wattage of the fixtures used will be regulated by the lighting power density limits in the energy code, not by a light pollution regulation that restricts uplight.

If you want to save energy *and* reduce light pollution significantly, then you limit the total amount of light generated, and require that lights be shut off or dimmed when not needed. Of course, this is exactly what the energy code already does with lighting power limits and lighting shutoff requirements. Reducing the energy used reduces light pollution—not the other way around.

Would Ban Lighting Fixtures Allowed Under LEED, the IgCC and the MLO

Pedestrian-scale, pole-mounted and wall-mounted fixtures are used to light walkways, plazas and building entries. These fixtures might emit a small amount of uplight for aesthetic appearance, to provide a sense of brightness, to enhance wayfinding and sense of security, or because they are of a specific style that is compatible with the building. These types of fixtures are effective tools to provide comfortable, pleasing, and safe nighttime environments for the public. The small amount of uplight is useful and is not “wasted”.

Please see the attached Appendix for examples of fixtures and applications that would be prohibited by the proposed amendment.

It is important to note that these types of fixtures are permitted in some cases under LEED Light Pollution Reduction credit, the IgCC, and the IDA/IES MLO, and California’s CALGreen. This is because these standards utilize the Lighting Zone (LZ) concept and the Backlight, Uplight and Glare (BUG) rating system. This method prohibits excessive amounts of uplight (such as the aforementioned floodlight on the side of a building) but allows small amounts of useful uplight.

Could Increase the Cost of Construction

In some applications, the use of “fully cutoff” fixtures could require more fixtures and poles to achieve the vertical illuminance (lighting of faces) and uniformity (minimizing dark spots) required to provide for security and comfort.

Could Conflict with Local Ordinances, Creating Compliance and Enforcement Problems

If the state building code preempts a local regulation that covers the same scope (light pollution control), then this amendment to the state building code could completely replace any local ordinance, even if the local ordinance is more stringent.

If a state regulation does not preempt a local regulation (or vice versa), then the designer and the local code official would be faced with a daunting, perhaps impossible task. They would have to figure out how to comply with and enforce both regulations simultaneously, or try to evaluate relative stringency and pick the most stringent regulation to comply with and enforce. The difficulty of these problems would vary depending on the specifics of each local ordinance.

Thank you for your consideration. If you have any questions, please contact me by email.

Respectfully submitted,

Glenn Heinmiller, FIALD
Chair, IALD Energy + Sustainability Committee
glenn@lampartners.com

IALD Comment on Draft 2022 Connecticut State Building Code
Appendix 1

Example of the types of fixtures that could be banned under the proposed IECC amendment C302.2 Light pollution controls