

RE148-19

IECC@: R404.1.1 (IRC N1104.1.1) (New)

Proposed Change as Submitted

Proponents: Eric Makela, representing New Buildings Institute (ericm@newbuildings.org)

2018 International Energy Conservation Code

Add new text as follows:

R404.1.1 (IRC N1104.1.1) Exterior lighting.

Connected exterior lighting for Group R-2, R-3 and R-4 buildings shall comply with Section C405.4 of the International Energy Conservation Code—Commercial Provisions.

Exceptions:

- 1.Solar-powered lamps not connected to any electrical service.
- 2.Luminaires controlled by a motion sensors.

Reason: The IECC does not have any specific requirements for exterior lighting for residential buildings. This may not be a significant issue for single-family homes, duplexes and townhomes, but it is quite significant for Type-R occupancies like multifamily that are far more likely to have parking lots and other exterior lighting like their counterparts subject to the commercial code. A 4-story multifamily building with exactly the same systems and layout would therefore be subject to exterior lighting requirements while a 3-story variation would not. This creates a loophole in the code for low-rise R-occupancies.

This proposal directs exterior lighting for these occupancies to the commercial code and its LPD requirements. Small R-occupancy buildings are little different than small commercial buildings which are already subject to those requirements. The proposal exempts solar-powered lighting and any lighting controlled by a motion sensor.

When applied to the low-rise multifamily prototype developed by Pacific Northwest National Laboratories for the code determination studies, this requirement saved up to 0.5% (based on climate zone) whole building energy over the 2015 IECC. Since both 2018 and 2015 lack exterior lighting requirements, this is a reasonable approximation of savings.

Cost Impact: The code change proposal will increase the cost of construction

This will increase the cost of construction. However, the proposal refers only R-occupancies to the existing commercial exterior lighting requirements, which already cover smaller commercial buildings.

For example, a base light fixture cost for a 70 W halogen fixture is \$118 .00 (<https://www.lightingsupply.com/stonco-sla71mal-6>) and the cost for an enhanced 80 W LED light fixture that will meet the proposed efficacy requirements is \$158.33 (<https://www.lightingsupply.com/best-lighting-products-ledmpal80-t-5k>)

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Public Hearing Results

Committee Action:

Disapproved

Committee Reason: It references commercial provisions some of which do not apply. Recommended return with a public comment fine-tuning the proposal (Vote 7-4).

Assembly Action:

None

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Individual Consideration Agenda

Public Comment MAKELA-2:

IECC®: R404.1.1 (New)

Proponents: Eric Makela, representing New Buildings Institute (ericm@newbuildings.org) requests As Modified by Public Comment

2018 International Energy Conservation Code

R404.1.1 (IRC-N1104.1.1) Exterior lighting. Connected exterior lighting for ~~Group R-2, R-3 and R-4 buildings~~ residential buildings shall comply with Section C405.4 of the International Energy Conservation Code—Commercial Provisions.

Exceptions:

1. One and two family residential
- ~~2.~~ Solar-powered lamps not connected to any electrical service.
- ~~3.~~ Luminaires controlled by a motion sensors.
4. Lamps and luminaires that comply with Section R404.1.

Commenter's Reason: The Public Comment makes two modifications based on the IECC Residential Code Development Committee feedback. The first modification deletes the reference to the International Residential Code as this requirement is focused on residential buildings with common parking areas and shared walkways found in multifamily projects. The second correction of the proposal recognizes that exterior lighting in dwelling units, e.g. patio lighting, will need to comply with Section R404.1 high efficacy lighting. Lighting that complies with this requirement should not be required to comply with exterior lighting power allowances as required by the commercial provisions of the IECC.

The IECC does not have any specific requirements for exterior lighting for residential buildings. This may not be a significant issue for single-family homes, duplexes and townhomes, but it is quite significant for Type-R occupancies like multifamily that are far more likely to have parking lots and other grounds lighting like their counterparts subject to the commercial code. This proposal introduces an efficiency requirement for large wattage exterior luminaires. The 50W threshold ensures that this requirement will apply almost exclusively to lighting used in a commercial-like site lighting application and not the smaller lights common in single-family homes, duplexes and townhomes and other lighting that serves a more decorative function. The proposal also exempts solar-powered lighting and any lighting controlled by a motion sensor.

The proposal is modeled on language was in the 2012 version of the IECC for commercial buildings. It defines the building grounds lighting, which was used in the IECC but not defined, with a definition utilized in ASHRAE Standard 90.1.

When applied to the low-rise multifamily prototype developed by PNNL for the code determination studies, this requirement saved up to 0.5% whole building energy.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. This will increase the cost of construction. However, the proposal refers only R-occupancies to the existing commercial exterior lighting requirements, which already cover smaller commercial buildings.

For example, a base light fixture cost for a 70 W halogen fixture is \$118 .00 (<https://www.lightingsupply.com/stonco-sla71mal-6>) and the cost for an enhanced 80 W LED light fixture that will meet the proposed efficacy requirements is \$158.33 (<https://www.lightingsupply.com/best-lighting-productsledmpal80-t-5k>).

When applied to the low-rise multifamily prototype developed by Pacific Northwest National Laboratories for the code determination studies, this requirement saved up to 0.5% (based on climate zone) whole building energy over the 2015 IECC. Since both 2018 and 2015 lack exterior lighting requirements, this is a reasonable approximation of savings.