

Dwelling and Sleeping Unit Lighting Efficacy

IECC: C406.3, (New)

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2018 International Energy Conservation Code

Revise as follows:

C406.3 Reduced lighting power. Buildings shall comply with Section C406.3.1 and dwelling units and sleeping units within the building shall comply with C406.3.2.

C406.3.1 Reduced lighting power 10%. The total connected interior lighting power calculated in accordance with Section C405.3.1 shall be less than 90 percent of the total lighting power allowance calculated in accordance with Section C405.3.2.

C406.3.2 Lamp efficacy. Not less than 95 percent of the interior lighting power (watts) from lamps in permanently installed light fixtures in dwelling units and sleeping units shall be provided by lamps with a minimum efficacy of 65 lumens per watt.

Add new text as follows:

Table C406.1(1) Additional Energy Efficiency Credits for Group B Occupancies

Climate Zone:	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
C406.3.3 Lamp efficacy	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table C406.1(2) Additional Energy Efficiency Credits for Group R and I Occupancies

Climate Zone:	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
C406.3.3 Lamp efficacy	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1	1	1

Table C406.1(3) Additional Energy Efficiency Credits for Group E Occupancies

Climate Zone:	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
C406.3.3 Lamp efficacy	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table C406.1(4) Additional Energy Efficiency Credits for Group M Occupancies

Climate Zone:	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
C406.3.3 Lamp efficacy	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table C406.1(5) Additional Energy Efficiency Credits for Other Occupancies

Climate Zone:	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
C406.3.3 Lamp efficacy	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Reason Statement: Currently, a 10% lighting reduction in lighting power allowance is required for this extra efficiency option; however dwelling units and sleeping units can follow the residential lighting efficacy requirements. As a result, the applicability of option C406.3 is unclear for multi-family buildings. This measure would make clear the 10% lighting reduction applies to areas in a multi-family building that are not dwelling units and sleeping units and would apply a higher efficacy rating in the dwelling and sleeping units than is required in the residential lighting requirements. To achieve this extra efficiency credit, this measure would increase the efficacy requirement for lamps in permanently installed fixtures and make them more in line with lamps available today.

This measure provides more clarity for multi-family buildings for the extra efficiency credit. Lamps meeting the higher efficacy requirement are readily available and appropriate for an optional credit.

In the suggested code language, changes are made to allow for the following:

- A provision is added to clarify that for the reduced lighting power credit the dwelling and sleeping unit areas also require an increase in lighting efficacy.
- This proposal is designed to fit into the main C406 points based proposal or, if that proposal is disapproved, is designed to fit into the current C406 Options Packages proposal. This proposal contains contingent table rows that would be added to tables added under a main C406 Points energy efficiency credit proposal if it passes. If the C406 points proposal is disapproved, then the text portion of this proposal without the tables would stand on its own as a clarification of the C406.3 option when there are residential areas in the building.

Note: If the C406 energy efficiency credit proposal passes; renumber lamp efficacy to C406.3.3 and include the rows listed below in the energy efficiency credit tables added under that proposal:

Bibliography: www.1000bulbs.com for lamp prices

Cost Impact: The code change proposal will not increase or decrease the cost of construction. If the separate C406 additional energy efficiency credit proposal does not pass, then this proposal will require higher efficacy lamps in dwelling units and sleeping units. However, these lamps are readily available in the market place, and checking internet sources has found them to actually be less costly than the slightly lower efficacy alternative required under the residential code. LED lamps were found to be about 85% the cost of similar output compact fluorescent lamps. If compared to incandescent lamps, there may be a cost increase, but the life of either the CFL or LED lamps is 10 or 15 times as long, resulting in a much lower cost per year of service.

If the separate C406 additional energy efficiency credit proposal does pass, and tables related to that proposal are updated with added rows related to this measure, then the current proposal does not require more investment, but rather expands existing options permitted under the 2018 IECC. The intention is to assess relative savings equity amongst current options, and identify additional options to increase flexibility and more effectively utilize new technologies and construction practices. There is not expected to be an increased cost, as several of the evaluated options are included in current code. In some cases, costs may be reduced, as the outlined approach provides partial credit for selected items as well as credit for items that may have previously been included in the building design without credit. Costs, and cost effectiveness, are not evaluated for individual measures due to the vast number of potential combinations amongst building types, climates, and selected options. Actual costs will vary based on the items selected by the building designer—architects, engineers, and other involved trades—based on the needs and goals of the individual project.