

## C405.4

### Lighting for Plant Growth

**CHANGE TYPE:** Addition

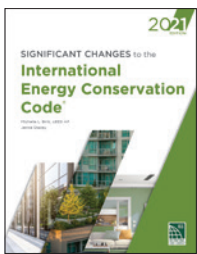
**CHANGE SUMMARY:** A provision regulating lighting for plant growth and maintenance has been added to ensure indoor agriculture operations are energy efficient.

**2021 CODE:** **C405.4 Lighting for plant growth and maintenance.** Not less than 95 percent of the permanently installed luminaires used for plant growth and maintenance shall have a photon efficiency of not less than 1.6  $\mu\text{mol}/\text{J}$  as defined in accordance with ANSI/ASABE S640.

**CHANGE SIGNIFICANCE:** Previous editions of the IECC have not addressed lighting requirements for indoor agriculture plant growth and maintenance, yet indoor growing operations are becoming increasingly common for both traditional farming crops and marijuana. Indoor agriculture energy usage is projected to grow substantially over the next several years due in part to the legalization of medicinal and recreational marijuana growth and sales. The Northwest Power and Conservation Council projects that indoor marijuana growing operations alone will add as much as 300 average megawatts by 2030. This is equivalent to 1.5 percent of total regional electricity demand. Other studies have shown that lighting for indoor agriculture has accounted for 45 percent of the electric load growth in some states.

This new provision and associated standard—ANSI/ASABE S640—require 95 percent of the lighting used for plant growth or maintenance to meet an efficiency metric of 1.6  $\mu\text{mol}/\text{J}$  (micromoles per joule). The metric was developed in collaboration with the American Society of Agricultural and Biological Engineers specifically for lighting used for plant growth. It measures the number of photons emitted from the fixture per joule of energy consumed. This minimum photon efficiency is consistent with the Conservation Practice Standard Energy Efficient Lighting System Code 670 issued by the U.S. Department of Agriculture in January 2020.

This provision is applicable to both IECC compliance paths.



This excerpt is taken from *Significant Changes to the International Energy Conservation Code®, 2021*

#### Edition.

The Significant Changes series takes you directly to the most important changes that impact projects. Key changes are identified then followed by in-depth discussion of how the change affects real-world application. Photos, tables and illustrations are included to further clarify application. Available for the IBC, IRC, IFB, IECC and IPC/IMC/IFGC, the Significant Changes publications are very useful training and review tools for transitioning to a new code edition.



Photo courtesy of James O'Neil/The Image Bank/Getty Images

Lighting for plant growth is regulated by the IECC.