

When do the Standards Apply?

The 2022 Building Energy Efficiency Standards (Energy Code) apply to all controlled environment horticulture (CEH) spaces including conditioned greenhouses. Section 100.1 in the 2022 Energy Code defines a CEH space as a building space dedicated to plant production by manipulating indoor environmental conditions, such as through electric lighting, irrigation, mechanical heating, mechanical cooling, or dehumidification. A CEH space does not include building space where plants are grown solely to decorate that space.

The requirements for a CEH space can be found in Section 120.6(h) of the Energy Code. These requirements are mandatory and cannot be traded off. Also, CEH spaces must meet the applicable envelope, mechanical, lighting requirements for nonresidential buildings.

For additions and alterations, the requirements in Section 141.1(c) do not apply to any alteration limited to adding lighting controls or replacing lamps, ballasts, or drivers. However, when adding more horticultural lighting to the existing spaces, the requirements in Section 141.1(c) will apply.

What Is Covered in a CEH space?

The Energy Code has requirements for indoor growing dehumidification equipment, horticulture lighting, and electrical power distribution systems. For conditioned greenhouses there are requirements for building envelope, space-conditioning systems, and horticultural lighting.

Indoor growing, dehumidification

Dehumidification equipment shall be one of the following:

- Dehumidifiers subject to regulation under federal appliance standards tested in accordance with 10 CFR 430.23(z) and Appendix X or X1 to Subpart B of 10 CFR Part 430 as applicable, and complying with 10 CFR 430.32(v)2. (Note: Commercial dehumidifiers do not need to be listed in the Department of Energy compliance certification database. Additionally, the California Energy Commission does not maintain a list for commercial dehumidifiers, and the units do not need to be listed in the Title 20 appliance database (MAEDbS) since dehumidifiers are a federally regulated consumer product); or
- Integrated HVAC or chilled water system with on-site heat recovery designed to fulfill at least 75 percent of the annual energy for dehumidification reheat; or
- Solid or liquid desiccant dehumidification system for system designs that require dewpoint of 50°F or less.

Indoor growing and Greenhouses, horticultural lighting

In a building with CEH spaces with more than 40 kW of aggregate horticultural lighting load, the electric lighting systems used for plant growth and plant maintenance shall meet all of the following requirements:

- The horticultural lighting systems shall have a photosynthetic photon efficacy (PPE) rated in accordance with ANSI/ASABE S640 for wavelengths from 400 to 700 nanometers and shall have either:
 - » Integrated, non-serviceable luminaires shall have a rated PPE of at least 1.9 micromoles per joule for indoor growing and at least 1.7 micromoles per joule for greenhouses; or
 - » Luminaires with removable or serviceable lamps shall have lamps with a rated PPE of at least 1.9 micromoles per joule for indoor growing and at least 1.7 micromoles per joule for greenhouses.
- Time-switch lighting controls shall be installed and comply with Section 110.9(b)1, Section 130.4(a)4, and applicable sections of NA7.6.2.
- Multilevel lighting controls shall be installed and comply with Section 130.1(b).

Indoor growing, electrical power distribution systems

Electrical power distribution systems serving CEH spaces shall be designed so that a measurement device is capable of monitoring the electrical energy usage of aggregate horticultural lighting load.

Conditioned greenhouses, building envelope

Conditioned greenhouses shall meet the following requirements:

- Opaque wall and opaque roof assembly shall meet the requirements of Section 120.7.
- Nonopaque envelopes shall have two or more glazings separated by either air or gas fill.

Conditioned greenhouses, space-conditioning systems

Space-conditioning systems used for plant production shall comply with all applicable requirements.

Additions and alterations to CEH spaces

- Indoor growing, space-conditioning systems and dehumidification: All newly installed heating, ventilation, air conditioning systems or dehumidification systems in buildings with indoor growing shall meet the applicable requirements of Section 120.6(h)1 and 120.6(h)2.
- Greenhouses, building envelope and space-conditioning systems: A greenhouse being converted to a conditioned greenhouse or additions to a conditioned greenhouse shall meet the requirements of Section 120.6(h)5 and 120.6(h)6.
- Indoor growing and greenhouses, horticultural lighting: When alterations to horticultural lighting systems increase lighting wattage or include adding, replacing, or altering 10 percent or more of the horticultural luminaires serving an enclosed space, the newly installed, replaced, or altered lighting shall meet the requirements of Section 120.6(h)3 for indoor growing or Section 120.6(h)6 for greenhouses.

Exception: Any alteration limited to adding lighting controls or replacing lamps, ballasts, or drivers.



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