
2022 CA Energy Efficiency Standards PART-6 (High Level list of Changes)

Taken from: 2022 Multifamily and Nonresidential Compliance Manual.

What's New for 2022 High Level

1.51 Envelope ***

1. Steep-sloped cool roof prescriptive requirements, increase in solar reflectance and thermal emittance in Climate Zones 2 and 4 through 16.
2. Added a new prescriptive requirement for continuous above roof deck insulation for roof alterations.
3. Prescriptive fenestration requirements (U-factor and RSHGC) now vary by climate zone.
4. Revised the RSHGC equation (Equation 140.3-A) to provide credit for exterior horizontal slats, in addition to overhangs.
5. Reduced the prescriptive U-factor requirement for metal framed walls equivalent to an additional R-2 continuous insulation.

1.5.2 Lighting

1. Changes to indoor and outdoor lighting power allowances to be based on light-emitting diode (LED) lighting technologies (§140.6 and §140.7) Revisions to lighting power density (LPD) values in Table 140.6-B, 140.6-C, 140.6-D, 140.7-A, and 140.7-B. 2. Revision and streamlining luminaire classification and wattage requirements.
3. New lighting power adjustment for small-aperture tunable white and dim-to-warm LED luminaires.
4. New power adjustment factors (PAFs) for daylighting devices including horizontal slats, light shelves, and clerestory fenestrations (§140.6[a]2L). New prescriptive requirements of daylighting devices including horizontal slats, light shelves, and clerestory fenestrations (§140.3[d]).
5. Clarification and streamlining of manual area controls requirements, multilevel lighting controls requirements, and automatic daylighting control requirements. Restrooms to comply with occupancy sensing control requirements. A new section for indoor lighting control interactions (§130.1).
6. Revision and streamlining of outdoor lighting control requirements (§130.2[c]).
7. Revision and streamlining of requirements for alterations, including the merging of three sections into a single "Altered Indoor Lighting Systems" section, the alignment of two reduced-power options on controls, and trigger threshold of projects more than 5,000 sq. ft. (§141.0[b]2l). Revised and consolidated Table 141.0-F.

1.5.3 Mechanical

1. New mandatory requirements for demand response HVAC controls (§110.12[a] and §110.12[b]).
2. New mandatory requirements for ventilation and indoor air quality (§120.1).
3. Revision of the mandatory requirements for demand control ventilation (§120.1[d]).
4. Healthcare buildings overseen by the California Department of Health Care Access and Information (HCAI) (formerly the Office of Statewide Health Planning and Development (OSHPD)) shall comply with the Energy Code. However, there are exceptions for healthcare facilities to avoid conflicting requirements.
5. Revision of the requirements for occupancy-sensing zone controls (§120.2[e]3).



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6. Revision of the mandatory requirements for economizer fault detection and diagnostics (§120.2[i] and §140.9[a]1A).
 7. New mandatory requirements for adiabatic condensers for heat rejection for refrigeration systems (§120.6).
 8. Revision of the prescriptive requirements for fan power limitation (§140.4[c]).
 9. New prescriptive requirements for space-conditioning zone controls (§140.4[d]).
 10. New prescriptive requirements for water economizers (§140.4[e]3).
 11. New prescriptive requirements for cooling tower efficiency (§140.4[h]5).
 12. New prescriptive requirements for exhaust system transfer air (§140.4[o]).
 13. New prescriptive requirements calling for heat pump water heaters for smaller school buildings, higher efficiency for high-capacity gas water heating; hotel/motels are required to meet reorganized multifamily water heating requirements. (§140.5)
 14. New requirements for Dedicated Outside Air Systems (§140.4[p]).
 15. New requirements for Exhaust Air Heat Recovery (§140.4[q]).

1.5.4 Electrical

1. Healthcare facilities overseen by the (OSHPD) have to comply with the applicable requirements of Section 130.5 for electrical power distribution systems. There are exceptions for healthcare facilities to avoid potentially conflicting requirements for healthcare facilities.

1.5.5 Covered Processes

1. New mandatory requirements for controlled environmental horticulture systems (§120.6[h]).
2. New mandatory requirements for steam traps (§120.6[i]).
3. New mandatory requirements for compressed air systems (§120.6[e]).
4. New mandatory requirements for computer rooms, including uninterruptible power supplies, and revisions to existing prescriptive requirements for economizers for computer rooms (§120.6[j], §140.9[a], and §141.1[b]).
5. New mandatory requirements for transcritical CO2 refrigeration systems (§120.6[b]).

1.5.7 Multifamily

1. The new chapter 11 of this manual consolidates multifamily compliance into one chapter.
2. The 2022 Energy Code grouped all multifamily building requirements together, regardless of number of stories, and relocated all relevant multifamily code to sections § 160.0 through 180.2.
3. Revisions to language and content to §160.0

Description of Major Changes for 2022 by Chapter & Section

Building Envelope

3.1.1 What's New for 2022

The 2022 Building Energy Efficiency Standards (Energy Code) include several important changes to the building envelope component requirements as described below:

- Steep-sloped cool roof prescriptive requirements were increased from a solar reflectance of 0.20 and thermal emittance of 0.75 to solar reflectance of 0.25 and thermal emittance of 0.85 in Climate Zones 2 and 4 through 16.



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- Added a new prescriptive requirement for continuous above roof deck insulation for roof alterations. For roof replacements the requirement is R-23 in Climate Zones 1 through 5 and 9 through 16, and R-17 in Climate Zones 6 through 8. For roof recovers, the requirement calls for a minimum R-10 insulation be added or to meet the insulation requirements for roof replacements, whichever is less.
 - Prescriptive fenestration requirements (U-factor and RSHGC) now vary by climate zone, but visible transmittance (VT) remains the same. For fixed windows, the U-factor and RSHGC requirements were reduced in Climate Zones 9 and 11 through 15. For curtain wall and storefront windows, the U-factor and RSHGC requirements were reduced in Climate Zones 1 and 7.
 - Revised the RSHGC equation (Equation 140.3-A) to provide credit for exterior horizontal slats, in addition to overhangs.
 - Reduced the prescriptive U-factor requirement for metal framed walls equivalent to an additional R-2 continuous insulation.

Mechanical Systems

4.1.1 What's New for 2022

- New prescriptive requirements for single zone space conditioning system types for certain space categories (Retail, grocery, school, office, financial institution, and library)
- New prescriptive requirements for heat pump water heating systems for small schools in climate zones 2 through 15
- Adjustments to the VAV airflow deadband controls
- Economizer Changes:
 - Expanded airside economizer requirements
 - New economizer exceptions:
 - Exception for certain dedicated outside air system configurations
 - Exception for controlled environment horticulture using carbon enrichment
- New requirements for Dedicated Outside Air Systems
- Expansion of scope of Occupant Sensor Ventilation Control (Occupied-Standby) to large office spaces
- New requirements for Exhaust Air Heat Recovery
- Changes to the fan power requirements
- Changes to duct leakage testing requirements

Nonresidential Indoor Lighting

5.1.1 What's New for the 2022

- Significant changes for indoor lighting systems in the 2022 update to the Energy Code include:
- Mandatory occupant sensing controls for office spaces greater than 250 square feet.
- Requirements for high-rise residential buildings that are moved to new multifamily chapters in the Energy Code.



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- Automatic daylighting controls that must reduce controlled lighting power to 10 percent or less when adequate daylighting is available in a space.
 - Automatic daylighting controls for secondary sidelit daylit zones becoming a mandatory requirement (previously prescriptive).
 - Updates to the power adjustment factors in Table 140.6-A for daylight continuous dimming plus OFF controls, occupant sensing controls in offices larger than 250 sq. ft., and demand-responsive lighting controls.
 - Lighting power allowances in the Area Category Method that have been combined for greater flexibility.
 - Updates to lighting power density allowances in Table 140.6-B for the Complete Building Method.
 - Updates to lighting power density allowances in Table 140.6-C for the Area Category Method.
 - Updates to lighting power density allowances in Table 140.6-D and Table 140.6-G for the Tailored Method.
 - Additional testing method for partial daylighting acceptance testing.

Outdoor Lighting

6.1 What's New for 2022

The significant changes for outdoor lighting systems in the 2022 update to the Energy Code include:

- Lighting Zones 1-4 have new definitions according to U.S. Census designations for rural, urban cluster, and urban areas.
- Updates to lighting power allowances for general hardscape lighting in Table 140.7-A including reduction in lighting power allowances and using a single allowance for all hardscape surfaces instead of separate allowances for concrete and asphalt surfaces. Allowances follow IES RP-8 recommended practices.
- Updates to specific applications in Table 140.7-B, including addition of security camera application.
- All instances of the term “cutoff” have been updated to the term “shielding”; these terms refer to the same luminaire distribution features.
- See Section 11.6 for changes to the Multifamily Outdoor Lighting Compliance Manual.
- Reorganization of and improvement in phrasing of the outdoor lighting control requirements in §130.2(c) to enhance readability

Electrical Power Distribution

8.1 What's New for 2022

- The significant change for electrical power distribution systems in the 2022 update to the Energy Code is demand-responsive controls for controlled receptacles. See Appendix D for demand-responsive controls and equipment.



Photovoltaic, Community Shared Solar, Battery Storage, and Solar-Ready Buildings

9.1.1 What's New for 2022

9.1.1.1 Photovoltaic, Community Shared Solar, Battery Storage, and Solar-Ready (Prescriptive Measures)

Photovoltaic (PV) and battery storage systems are now required for some nonresidential building categories and hotel/motel buildings. See Section 9.2 for details.

9.1.1.2 Performance Compliance

PV and battery storage system requirements also can be met by using the performance approach. See Section 9.3.1. A community-shared solar electric generation system, or other renewable electric generation system, and/or community shared battery storage system can be used to offset the solar electric generation system or battery storage system TDV energy required to comply using the performance compliance method. See Section 9.4.

Commercial Refrigeration

10.5 What's New in the 2022

Commercial Refrigeration (Mandatory measures).

In the 2022 Energy Code, adiabatic condenser efficiency and size requirements have been added. Section 120.6(b) 1D and 1E along with Table 120.6 – D have been updated with new requirements for adiabatic condenser systems using halocarbon refrigerant.

Refrigerated Warehouses

10.6 What's New in the 2022

Refrigerated Warehouses (Mandatory measures).

- Transcritical carbon dioxide (CO₂) refrigeration systems in refrigerated warehouses:
- Minimum condensing temperature
- Transcritical gas coolers — sizing requirements, minimum efficiency and air-cooled gas coolers prohibited in some climate zones.
- Minimum condensing temperature
- Automatic door closers in refrigerated warehouses

Compressed air systems

10.8 What's New in the 2022

Compressed air systems (mandatory measures).

- Compressed air systems (mandatory measures). o Base-compressed air-system requirements on total horsepower of compressors connected to compressed air piping.
- Energy and air demand monitoring systems capable of measuring and logging pressure, compressor power and compressor airflow of the compressed air systems.
- Leak testing requirements for compressed air piping.
- Compressed air system pipe sizing requirements to minimize frictional losses in the distribution system.



Controlled Environment Horticulture

10.12 What's New in the 2022

Controlled environment horticulture (Mandatory measures).

- Electric lighting for growing plants now must have high photosynthetic photon efficacy (PPE), which is spectrum-efficient for growing plants, and must have dimming and timeclock controls.
- Dehumidifiers must meet federal dehumidifier standards or recover at least 75 percent of the heat used for reheating.
Conditioned greenhouses must have at least two glazing layers

Steam Traps

10.13 What's New in the 2022

Steam traps (Mandatory measures).

- Steam trap monitoring system which provides status updates of steam trap fault detection sensors.

Steam traps must have an integral strainer and blow-off valves, or a strainer and blow-off valve must be installed within 3 feet upstream of the steam trap

Multifamily Building Requirements

11.1.3 What's New for the 2022

The most significant change in the 2022 Energy Code affecting multifamily buildings is the consolidation of dwelling unit and common use area requirements into three standalone subchapters. These changes result in consistent requirements across multifamily buildings, while the 2019 Energy Code had separate requirements for multifamily buildings up to three habitable stories and buildings with four or more habitable stories. There are also changes in requirements related to indoor air quality, space conditioning, and domestic hot water. These are further described in the What's New for the 2022 Energy Code section and in each technical Section 11.3 through 11.9

**** this section was corrected based on communication with CEC and in view of apparent incorrect entry in current publication: TN243495_20220609T115907_Final 2022*

