A Comprehensive List of All Changes to the 2019 California CalGreen Code

Presented by
CalGreen Energy Systems

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Chapter 1 - Administration

Section 102.3

• (HCD) Documentation of conformance for applicable green building measures shall be provided to the enforcing agency. All projects shall submit a completed Residential Occupancies Application Checklist that includes Chapter 4 residential mandatory measures and Tier 1 or Tier 2, as applicable. References to the measure-specific documentation used to show compliance shall be included. Alternate methods of documentation shall be acceptable when the enforcing agency finds that the proposed alternate documentation is satisfactory to demonstrate substantial conformance with the intent of the proposed green building measure.

Note: HCD’s Residential Occupancies Application Checklist that includes the minimum criteria for documentation is available at: http://www.hcd.ca.gov/building-standards/cal-green/cal-green-forms.shtml.

Chapter 2 - Definitions

Section 202

• ACCESSORY DWELLING UNIT. [HCD] An attached or a detached residential dwelling unit, which provides complete independent living facilities for one or more persons. It shall include permanent provisions for living, sleeping, eating, cooking, and sanitation on the same parcel as the primary single-family dwelling is situated. (See Government Code Section 65852.2.)

• ACCESSORY OCCUPANCIES. [HCD] Occupancies that are ancillary to the main occupancy of residential building(s) or portions thereof. Accessory occupancies shall include, but are not limited to, Group U occupancies. (See Section 312 of the California Building Code.)

• ACCESSORY STRUCTURE. [HCD] A structure that is accessory to and incidental to that of the dwelling(s) and that is located on the same lot.

• JUNIOR ACCESSORY DWELLING UNIT. [HCD] A unit that is no more than 500 square feet in size and contained entirely within an existing single-family structure. A junior accessory dwelling unit may include separate sanitation facilities or may share sanitation facilities with the existing structure. (See Government Code Section 65852.22.)

• RECLAIMED (RECYCLED) WATER. Non-potable water that meets California State Water Resources Control Board statewide uniform criteria for disinfected tertiary recycled water. Reclaimed (recycled) water is also known as “recycled water” or “reclaimed water.”
Chapter 3 - Green Building

Section 301
• 301.4 Mandatory measures for public schools and community colleges. [DSA-SS] New building construction and site work on a new or existing site shall comply with Section 301.4.
• 301.4.1 Building and site construction on a new site shall comply with Chapter 5 as adopted by DSA-SS.
• 301.4.2 Work on an existing site shall comply with Section 301.4.2.
• 301.4.2.1 Newly constructed site work shall comply with Chapter 5 as adopted by DSA-SS.
• 301.4.2.2 Newly constructed buildings shall comply with Chapter 5 as adopted by DSA-SS and Section 301.4.3.
• 301.4.2.3 Additions to existing buildings shall comply with Section 301.4.3.
• 301.4.2.4 Rehabilitated landscape areas shall comply with Sections 5.304.6 and 5.106.12.

Section 306
• 306.1 Purpose. For public schools and community colleges, voluntary measures further encourage building practices that improve public health, safety and general welfare by promoting the use of building concepts which minimize the building’s impact on the environment and promote a more sustainable design.
• 306.1.1 Appendix A5, Divisions A5.1 through A5.5, out-line means of achieving enhanced sustainable design and construction by incorporating voluntary measures that exceed the mandatory measures.
• 306.1.2 Chapter 5 Nonresidential Mandatory Measures that are not adopted as mandatory measures by DSA-SS are voluntary measures recommended and encouraged for the design, construction, verification, and maintenance of non-energy systems.
• Note: The building commissioning requirements for energy efficiency specified in the California Energy Code are required.
Chapter 4 - Residential Mandatory Measures

Section 4.106

- Note: Refer to the State Water Resources Control Board for projects which disturb one acre or more of soil or are part of a larger common plan of development which in total disturbs one acre or more of soil. (Website: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html)

- 4.106.4 Exceptions

On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:

1. Where there is no commercial power supply.
2. Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter to increase the utility side cost to the homeowner or the developer by more than $400.00 per dwelling unit.

- 4.106.4.2 New multifamily dwellings. If residential parking is available, ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

- 4.106.4.2.1 Electric vehicle charging space (EV space) locations. Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.

- 4.106.4.2.1.1 Electric vehicle charging stations (EVCS). When EV chargers are installed, EV spaces required by Section 4.106.4.2.2, Item 3, shall comply with at least one of the following options:

  **Exception:** Electric vehicle charging stations designed and constructed in compliance with the California Building Code, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.

  **Note:** Electric vehicle charging stations serving public housing are required to comply with the California Building Code, Chapter 11B.

  Why do Architects laugh three times when they hear a joke?
  Once when it is told, once when it is explained to them, and once when they understand it.
Chapter 4 - Residential Mandatory Measures - Continued

Section 4.303

- 4.303.1 Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with Sections 4.303.1.1, 4.303.1.2, 4.303.1.3, and 4.303.1.4. Note: All noncompliant plumbing fixtures in any residential real property shall be replaced with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy, or final permit approval by the local building department. See Civil Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types of residential buildings affected and other important enactment dates.

- 4.303.1.4.3 Metering faucets. Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.

Section 4.304

- Notes:

The Model Water Efficient Landscape Ordinance (MWELO) is located in the California Code of Regulations, Title 23, Chapter 2.7, Division 2. MWELO and supporting documents, including a water budget calculator, are available at: https://www.water.ca.gov/

Section 4.507

- 4.507.2 Heating and air-conditioning system design. Heating and air-conditioning systems shall be sized, designed and have their equipment selected using the following methods:

  1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J—2016 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.

  2. Duct systems are sized according to ANSI/ACCA 1 Manual D—2016 (Residential Duct Systems), ASHRAE handbooks or other equivalent design soft-ware or methods.

An engineer is someone that is good with figures but doesn’t have the personality of an accountant.
Chapter 5 - Non-Residential Mandatory Measures

Section 5.106

- 5.106.5.3.5 [N] Future charging spaces. Future charging spaces qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.
- 5.106.12 Shade trees. [DSA-SS] Shade trees shall be planted to comply with Sections 5.106.12.1, 5.106.12.2, and 5.106.12.3. Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6.

5.106.12.1 Surface parking areas. Shade tree plantings, minimum #10 container size or equal, shall be installed to provide shade over 50 percent of the parking area within 15 years. Exceptions: The surface parking area covered by solar photovoltaic shade structures, or shade structures, with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.

5.106.12.2 Landscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade of 20% of the landscape area within 15 years. Exception: Playfields for organized sport activity are not included in the total area calculation.

5.106.12.3 Hardscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade over 20 percent of the hardscape area within 15 years. Exception: Walks, hardscape areas covered by solar photovoltaic shade structures, and hardscape areas covered by shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.
Chapter 5 - Non-Residential Mandatory Measures - Continued

Section 5.304

- 5.304.1 Outdoor potable water use in landscape areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources’ Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.

Notes:
The Model Water Efficient Landscape Ordinance (MWELO) is located in the California Code of Regulations, Title 23, Chapter 2.7, Division 2. MWELO and supporting documents, including a water budget calculator, are available at: https://www.water.ca.gov/.

Section 5.504

- 5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

  • Exception: Existing mechanical equipment.

How many commissioning agents does it take to change a light bulb?

Two. One to note the problems with the light bulb, the design of the lighting controls, the light shelves, and the shading system, and one to change the light bulb.
How many daylighting consultants does it take to change a light bulb? None—the sun will be back up in exactly 10 hours.
Section A4.106

- SRI values used to comply with this section shall be calculated using the Solar Reflectance Index (SRI) Calculation Worksheet (SRI-WS) developed by the California Energy Commission or in compliance with ASTM E1980-01 as specified in the 2019 California Energy Code. Solar reflectance values used in the SRI-WS shall be based on the aged reflectance value of the roofing product or the equation in Section A4.106.5.1 if the CRRC certified aged solar reflectance are not available. Certified thermal emittance used in the SRI-WS may be either the initial value or the aged value listed by the CRRC.

- Tier 1. Fifteen (15) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

- Tier 2. Twenty (20) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

- A4.106.8.2.1 Technical requirements. The EV spaces required by Section A4.106.8.2 shall be designed and constructed in accordance with Sections 4.106.4.2.1, 4.106.4.2.2, 4.106.4.2.3, 4.106.4.2.4, and 4.106.4.2.5.

- A4.106.8.3 New hotels and motels.

  - Tier 1. Number of required EV spaces. The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table A4.106.8.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

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<tr>
<th>Tier 1</th>
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- A4.106.8.3.2.1 General.

  - A4.106.8.3.1 Technical requirements. The EV spaces required by Section A4.106.8.3 shall be designed and constructed in accordance with Sections 4.106.4.3, 4.106.4.3.2, 4.106.4.3.3, 4.106.4.3.4, 4.106.4.3.5, and 4.106.4.3.6.
Section A4.203

- A4.203.1.1 Tier 1 and Tier 2 prerequisites. A4.203.1.1.1 Energy design ratings and A4.203.1.1.2 Quality Insulation Installation are required for all applicable components of the building project. A4.203.1.1.1 Energy design ratings: Total Energy Design Rating (Total EDR) and Energy Efficiency Design Rating (Efficiency EDR). Total EDR and Efficiency EDR ratings for the Proposed Design Building shall be computed by Compliance Software certified by the Energy Commission as described in Title 24, Part 6, Section 100.1 and 150.1(b), and these ratings shall be included in the Certificate of Compliance documentation.
- A4.203.1.1.2 Quality Insulation Installation (QII). The QII procedures specified in the Building Energy Efficiency Standards Reference Appendices RA3.5 shall be completed.
- A4.203.1.2 Tier 1 and Tier 2 prerequisite options. In addition, ONE of the following efficiency measures will be required: A4.203.1.2.1 Roof deck insulation, or ducts in conditioned space; OR A4.203.1.2.2 High Performance Walls; OR A4.203.1.2.3 HERS-Verified Compact Hot Water Distribution System; OR A4.203.1.2.4 HERS-Verified Drain Water Heat Recovery.
- A4.203.1.2.1 Roof deck insulation, or ducts in conditioned space. Meet one of the three options for the location of ducts and air handlers as well as insulation R-values and installation of a radiant barrier as specified in Title 24, Part 6, Section 150.1(c)9A or B:
  1. Below roof deck insulation with a minimum R-value of 19; or
  2. Continuous above deck insulation with a minimum R-value of 8 and with an air space present between the roofing and the roof deck; or
  3. All ducts and air handlers in conditioned space as specified in the Title 24, Part 6 Reference Appendices RA3.6.
- A4.203.1.2.2 High Performance Walls (HPW). HPW meet the climate zone dependent U-factor and insulation values for either 2x6 or 2x4 framing as specified in Title 24, Part 6, Section 150.1(c)1B: maximum U-factor of 0.048.
- A4.203.1.2.3 HERS-Verified Compact Hot Water Distribution System (CHWDS-H). CHWDS-H shall be installed as specified in the Title 24, Part 6 Reference Appendix RA3.6.5.
Appendix A4 - Residential Voluntary Measures - Continued

Section A4.203

- **A4.203.1.2.4** HERS-Verified Drain Water Heat Recovery (DWHR-H). DWHR-H shall be installed as specified in Title 24, Part 6 Reference Appendix RA4.4.21.

- **A4.203.1.3** Performance standard. Comply with one of the advanced efficiency levels, either A4.201.1.3.1 OR A4.201.1.3.2, indicated below (see new table in code).

- **A4.203.1.3.1 Tier 1**. Buildings complying with the first level of advanced energy efficiency shall have additional integrated efficiency and onsite renewable energy generation sufficient to achieve a Total EDR of the Tier 1 value indicated by Table A4.203.1.1.1 or lower as calculated by Title 24, Part 6 Compliance Software approved by the Energy Commission. This requirement is in addition to meeting the Efficiency EDR required for compliance with Title 24, Part 6. Measures considered to meet the Total EDR targets calculated by the compliance software include, but are not limited to, the prerequisite options specified in Section A4.203.1.2, use of Demand Response, additional energy efficiency measures (e.g., triple-pane windows), as well as onsite electric battery and/or thermal storage.

- **A4.203.1.3.2 Tier 2**. Buildings complying with this second elective designation shall have additional integrated efficiency and onsite renewable energy generation sufficient to achieve a Total EDR of the Tier 2 value indicated by Table A4.203.1.1.1 or lower as calculated by Title 24, Part 6 Compliance Software approved by the Energy Commission. This may be reached by various paths, including improved space and water heating efficiencies, advanced electric battery controls, as well as modest oversizing of the photo-voltaic system. This requirement is in addition to meeting the Efficiency EDR required for compliance with Title 24, Part 6. Measures considered to meet the Total EDR targets calculated by the compliance software include, but are not limited to, the prerequisite options specified in Section A4.203.1.2, use of Demand Response, additional energy efficiency measures (e.g., triple-pane windows), as well as onsite electric battery and/or thermal storage.

- **A4.203.1.4 Consultation with local electric service provider.** Local jurisdictions considering adoption of Tier I as specified by A4.203.1.3.1 or Tier II as specified by A4.203.1.3.2, including local jurisdictions considering community shared solar or storage options consistent with Part 1 Section 10-115, shall consult with the local electric service provider to ensure that solar system sizing required to comply will be acceptable to the local electric service provider. The local jurisdiction shall not require onsite renewable energy generation systems that are larger than the local electric service provider will allow to be inter-connected.
Appendix A4 - Residential Voluntary Measures - Continued

Section A4.304
- A4.304.2 Potable water elimination. When landscaping is provided and as allowed by local ordinance, a water efficient landscape irrigation design that eliminates the use of potable water beyond the initial requirements for plant installation and establishment shall be provided. Methods used to accomplish the requirements of this section shall comply with the requirements of the California Building Standards Code and shall include, but not be limited to, the following:
  5. Use of drought tolerant plants.

Section A4.405.3
- Notes:
  Sample forms which allow user input and automatic calculation are located at http://www.hcd.ca.gov/building-standards/calgreen/cal-green-form.shtml and may be used to simplify documenting compliance with this section and for calculating recycled content value of materials or assembly products.

Section A4.506.2
- A4.506.2 Construction filter. [HR] Provide filters on return air openings rated at MERV 8 or higher during construction.

What’s the one thing that two building inspectors can agree on? That the third inspector doesn’t know what he’s talking about.
Appendix A5 - Non-Residential Voluntary Measures

Section A5.203.1

- A5.203.1 Energy efficiency. Nonresidential, high-rise residential and hotel/motel buildings that include lighting and/or mechanical systems shall comply with Sections A5.203.1.1 and A5.203.1.2. Newly constructed buildings and additions are included in the scope of these sections. Buildings permit-ted without lighting or mechanical systems shall comply with Section A5.203.1.1 but are not required to comply with Section A5.203.1.2.

- A5.203.1.1 Tier 1 and Tier 2 prerequisites. To comply with Tier 1, ONE of the following efficiency measures is required for all applicable components of the building project. To comply with Tier 2, TWO of the following efficiency measures are required.

- A5.203.1.1.1 Outdoor lighting. Newly installed out-door lighting power shall be no greater than 90 percent of the Allowed Outdoor Lighting Power, and general hard scape lighting within the scope of Title 24, Part 6, Section 140.7(b)1 shall have a color temperature no higher than 3000K. The Allowed Outdoor Lighting Power calculation is specified in Title 24, Part 6, Section 140.7, Requirements For Outdoor Lighting. Exception: The color temperature requirement is not applicable to the applications identified in the exceptions to Section 140.7(a) nor to the applications identified as “specific applications” in Section 140.7(b)2 and Table 140.7.

- A5.203.1.1.3 Warehouse dock seal doors. Exterior loading dock doors that are adjacent to conditioned or indirectly conditioned spaces shall have dock seals or dock shelters installed at the time of permitting. This requirement shall apply to newly constructed buildings and to loading dock doors added to existing buildings.

- A5.203.1.1.4 Daylight Design Power Adjustments Factors (PAFs). Daylighting devices shall be installed as specified in Title 24, Part 6, Section 140.3(d).
Appendix A5 - Non-Residential Voluntary Measures - Continued

Section A5.203.1

- A5.203.1.1.5 Exhaust air heat recovery. Heat recovery requirements based on ASHRAE 90.1, Section 6.5.6.1 are adapted and modified for California climate zones as described below.

1. Systems with minimum design outdoor air fraction of 80 percent or greater and supply air flow of 200 cfm or greater in climate zones 2, 9, 10, 11, 12, 13, 14, 15 shall have a heat recovery system.

2. Heat recovery systems required by this section shall result in a net sensible energy recovery ratio of at least 60 percent for both heating and cooling as tested using AHRI 1060-2014 or 1061-2014 and certified by AHRI. A 60 percent sensible energy recovery ratio shall mean a change in the dry-bulp of the outdoor supply air equal to 60 percent of the difference between the outdoor air and exhaust air dry-bulp at design conditions. Provisions shall be made to bypass or control the energy recovery system to permit air economizer operation as required by Title 24, Part 6, Section 140.4(e), Economizers.

Exceptions:
- 1. Systems serving spaces that are not cooled and that are heated to less than 60°F.
- 2. Where more than 60 percent of the outdoor air heating energy is provided from site-recovered energy.
- 3. Where the sum of the airflow rates exhausted and relieved within 20 feet of each other is less than 75 percent of the design outdoor air-flow rate, excluding exhaust air that is:
  - Used for another energy recovery system;
  - Not allowed by ASHRAE Standard 170 for use in energy recovery systems with leakage potential; or
  - Of Class 4 as defined in ASHRAE Standard 62.1.
- 4. Systems expected to operate less than 20 hours per week.
Appendix A5 - Non-Residential Voluntary Measures - Continued

Section A5.203.1

A5.203.1.2.1 Tier 1. Buildings complying with the first level of advanced energy efficiency shall have an Energy Budget that is no greater than indicated below, depending on building type and the type of energy systems included in the building project. If the newly constructed building or addition does not include indoor lighting or mechanical systems, then no additional performance requirements above Title 24, Part 6 are required.

1. For nonresidential building projects that include indoor lighting or mechanical systems, but not both: No greater than 95 percent of the Title 24, Part 6 Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.

2. For nonresidential building projects that include indoor lighting and mechanical systems: No greater than 90 percent of the Title 24, Part 6 Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.

3. For high-rise residential and hotel/motel building projects: No greater than 95 percent of the Title 24, Part 6, Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.

A5.203.1.2.2 Tier 2. Buildings complying with the second level of advanced energy efficiency shall have an Energy Budget that is no greater than indicated below, depending on building type and the type of energy systems included in the building project. If the newly constructed building or addition does not include indoor lighting or mechanical systems, then no additional performance requirements above Title 24, Part 6 are required.

1. For nonresidential building projects that include indoor lighting or mechanical systems, but not both: No greater than 90 percent of the Title 24, Part 6, Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.

2. For nonresidential building projects that include indoor lighting and mechanical systems: No greater than 85 percent of the Title 24, Part 6, Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.

3. For high-rise residential and hotel/motel building projects: No greater than 95 percent of the Title 24, Part 6, Energy Budget for the Standard Design Building as calculated by compliance software certified by the Energy Commission.
Appendix A5 - Non-Residential Voluntary Measures - Continued

Section A5.211
• A5.211.1.1 Documentation. Using a calculation method approved by the California Energy Commission, calculate the renewable onsite energy system to meet the requirements of Section A5.211.1, expressed in kW. Factor in net-metering, if offered by local utility, on an annual basis.

Section A5.601
• From Division A5.2 comply with TWO of the following:
  3. Warehouse Dock Seal Doors A5.203.1.1.3.
  5. Exhaust Air Heat Recovery A5.203.1.1.5.

From Division A5.5,
  a. Comply with resilient flooring systems for 90 percent of resilient flooring in Section A5.504.4.7.
  b. Comply with thermal insulation meeting 2009 CHPS low-emitting materials list in Section A5.504.4.8.
  c. Comply with one elective measure selected from this division.
  6. Comply with one additional elective measure selected from any division.

• 2. From Division A5.2 comply with ONE of the following:
  2.3. Warehouse Dock Seal Doors A5.203.1.1.3.
  2.4. Daylight Design Power Adjustments 5.203.1.1.4.
  2.5 Exhaust Air Heat Recovery A5.203.1.1.5.

Does not include tables, changes that just add referenced section numbers, checklist revisions and other minor revisions.