



## What Are the Accessory Dwelling Unit Requirements?

The 2022 California Building Energy Efficiency Standards (Energy Code or Title 24, Part 6) includes requirements for single-family and multifamily accessory dwellings units (ADUs).

An ADU is an accessory to a primary residence and has complete independent living facilities for one or more persons. It is supported in the Energy Code as a single-family project when the ADU is associated with a single-family occupancy, and multifamily when associated with a multifamily occupancy. This fact sheet will focus on single-family ADUs.

**Single-family Building:** A residential building of Occupancy Group R-3 with two or less dwelling units; a building of Occupancy Group R-3, other than a multifamily building or hotel/ motel building; a townhouse; a building of Occupancy Group R-3.1; or a building of Occupancy Group U when located on a residential site.

## How Does this Fact Sheet Apply to Your Project?

ADU Energy Code requirements differ depending upon the ADU type. Use this fact sheet to determine your ADU type and the Energy Code compliance options and requirements applicable to that ADU type. This includes requirements for envelope, mechanical systems, renewables and electric readiness.

## **Importance of Compliance**

California continues to encourage and support ADUs through the legislative process via Assembly and Senate bills, in addition to recent changes in Government Code §65852.150. Complying with building codes assures health, safety and cost-effective energy efficiency measures, many of which aim to reduce California's greenhouse gas emissions.

It is important to confirm the ADU development and design standards of the local jurisdiction because each jurisdiction determines how compliance with California legislation supporting ADU construction impacts the local concerns such as parking, height and setback.

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#### California Department of Housing and Community Development

To learn more about ADU laws and requirements, see the California Department of Housing and Community Development (HCD) website. The HCD maintains the *Accessory Dwelling Unit Handbook* and other useful information on the HCD website at <u>https://www.hcd.ca.gov/policy-and-research/</u> <u>accessory-dwelling-units</u>

## **Key Terms**

### **Alteration ADU Type**

These are ADUs that are converting existing permitted conditioned space, such as a family room, to an ADU.



### Addition ADU Type

These are ADUs that are converting an existing space or building that was not habitable space and is considered "newly conditioned space" in the Energy Code or that are adding new conditioned floor area and volume to an existing single-family or multifamily building.



### **New Construction ADU Type**

These are ADUs that are not being attached to any other structure on the property and are all New Construction.



### Factory-built ADU Type

Typically considered a New Construction ADU type, these are factory-constructed versions of sitebuilt ADUs that are manufactured and then transported to their permanent installation locations. These are regulated by the California Department of Housing and Community Development (HCD) under Title 25, which incorporates Title 24 as the applicable building code for design and construction. These ADUs are reviewed and approved through HCD Factory-built Housing (FBH) requirements with the on-site installation and assembly under the jurisdiction of the local authority (typically the local building department). As these are constructed off-site, many of the Home Energy Rating System (HERS) verifications are performed at the factory. Information about the FBH program can be found at https://www.hcd.ca.gov/building-standards/manufactured-modular-factory-built/factory-builthousing/docs/hcdfbh314.pdf.

### Manufactured ADU Type

Previously known as mobile homes, these are ADUs that are transportable in one or more sections and include use of a permanent chassis. These are not subject to the California Building Code and must show compliance with Title 25. *Note that Title 25 requirements are not included in this fact sheet.* 



### otin California Climate Zones

To know which efficiency requirements of the Energy Code apply to a project, it is important to identify the Climate Zone where the building is located. The California Energy Commission (CEC) has developed the EZ Building Climate Zone Finder to identify the applicable Climate Zone based on the building's address: <u>bit.ly/CEC-Climate-Zone-Finder</u>.

## **Compliance Requirements**

## Mandatory Requirements

Projects must meet applicable Mandatory requirements for existing features of the conditioned building that are being altered or any features that are being added as new.

|                                     | Alteration ADU<br>Altered Features |                       | Addition ADU<br>New Features  |  | New Construction ADU              |  |
|-------------------------------------|------------------------------------|-----------------------|-------------------------------|--|-----------------------------------|--|
| Requirement Type                    | <b>Mandatory</b>                   | Prescriptive          | <b>Mandatory</b>              | Prescriptive                             | <b>Mandatory</b>                  | Prescriptive                                 |
| Envelope                            |                                    |                       |                               |  |                                   |  |
| Insulation                          | <u>Yes</u>                         | Yes for ceiling       | <u>Yes</u>                    | <u>Yes</u>                               |                                   |  |
| Fenestration                        | <u>Yes</u>                         | <u>Yes</u>            | <u>Yes</u>                    | <u>Yes</u>                               | Yes                               | <u>Yes</u>                                   |
| Rated Roofing                       | N/A                                | Yes if > 50% replaced | N/A                           | Yes if Addition<br>> 300 ft <sup>2</sup> |                                   |  |
| HVAC                                |                                    |                       |                               |  |                                   |  |
| Equipment                           | <u>Yes</u>                         | <u>Yes</u>            | <u>Yes</u>                    | <u>Yes</u>                               | <u>Yes</u>                        | <u>Yes</u>                                   |
| HERS Measures                       | <u>Yes</u>                         | <u>Yes</u>            | <u>Yes</u>                    | <u>Yes</u>                               |                                   |  |
| Indoor Air Quality                  | <u>Yes</u>                         | N/A                   | <u>Yes</u>                    | N/A                                      | <u>Yes</u>                        | N/A  |
| Water Heating                       | Yes<br>for pipe<br>insulation      | Yes<br>for equipment  | Yes<br>for pipe<br>insulation | Yes<br>for equipment                     | <u>Yes</u>                        | <u>Yes</u>                                   |
| Lighting*                           | Yes                                | N/A                   | Yes                           | N/A                                      | Yes                               | N/A  |
| Photovoltaics                       | N/A                                | N/A                   | N/A                           | N/A                                      | N/A                               | <u>Yes</u>                                   |
| Battery Storage                     | N/A                                | N/A                   | N/A                           | N/A                                      | N/A                               | Credit allowed<br>in Performance<br>Approach |
| Energy Storage<br>Systems Readiness | N/A                                | N/A                   | N/A                           | N/A                                      | Yes<br>if no battery<br>installed | N/A  |
| <b>Electric Readiness</b>           | N/A                                | N/A                   | N/A                           | N/A                                      | <u>Yes</u>                        | N/A  |
| Solar Readiness                     | N/A                                | N/A                   | N/A                           | N/A                                      | Yes**                             | N/A  |

**ADU** = accessory dwelling unit; **HERS** = Home Energy Rating System.

\*See the 2022 Residential Lighting Fact Sheet: https://www.energycodeace.com/resources/?itemId=70413

\*\* Solar readiness is required for an ADU only when the ADU is associated with a new subdivision of  $\geq$  10 homes.

Table 1. When ADU Projects Trigger the Energy Code

### Prescriptive Requirements

Using the Prescriptive Approach for compliance, projects must meet applicable Prescriptive requirements for existing features of the conditioned building that are being altered or any features that are being added as new. Altered feature requirements may differ based on the scope of work. Addition ADU types have alternate requirements for extended walls and converted walls in which the siding remains.

## Performance Requirements

Using the Performance Approach for compliance may allow more design flexibility than meeting the Prescriptive measures, although Mandatory Measures are still required. California Energy Commission (CEC)-approved software identifies Performance compliance options and can be found here: <u>bit.ly/CEC-2022-Compliance-Software</u>

Under the 2022 Energy Code, compliance is determined by assessing the Proposed Design features against the Standard Design features. A project complies when the proposed compliance values are equal to or better than the standard compliance values.

- Alteration ADU Type: Buildings comply when the altered building efficiency features (such as insulation and mechanical equipment efficiency) show compliance.
- ✦ Addition ADU Type: Buildings comply when the building efficiency features associated with the Addition (such as insulation and mechanical equipment efficiency) show compliance.
- New Construction ADU Type: Buildings comply when all of the metrics listed below show compliance:
  - Building efficiency features (such as insulation and mechanical equipment efficiency)
  - ♦ Photovoltaics (PV) and battery storage systems
  - Source energy determined by a carbon-proxy analysis of the building in kBtu/ft<sup>2</sup>-yr (to support decarbonization and electrification policy goals)

## **Alteration ADU Type**





| Envelope - Alteration ADU Type <u>§150.2(b)</u>  |   |   |  |  |  |
|--|---|---|--|--|--|
| Roof<br><u>§§150.2(b)1I-J</u>  | Wall<br><u>§150.0(c)</u>  | Floor<br><u>§§150.0(d), 150.0(f)</u>  | Fenestration<br><u>§§150.2(b)1A-B</u>  | HERS Measures<br><u>§150.2(b)</u>  |  |
| <ul> <li>Insulation at Ceiling</li> <li>CZ 1, 2, 4, 8-16</li> <li>Low-sloped roof replacements require R-14 continuous insulation or U-factor of 0.039.*</li> <li>CZ 1-4, 6, 8-16</li> <li>Altered vented attics require ≥ R-49 or equivalent U-factor ≤ 0.020.*</li> <li>CZ 2, 4, 8-16</li> <li>Vented attic air sealing and recessed downlight insulation requirements must be met.*</li> <li>CZ 1, 3</li> <li>Existing insulation ≥ R-19 is allowed to remain and exempts the project from air sealing and recessed downlight insulation requirements. If existing insulation is &lt; R-19, then ≥ R-49 is required.</li> <li>Non-vented attics require R-19, per \$150.0(a)2-4.</li> <li>CZ 5-7</li> <li>Either ≥ R-22 is required between wood framing, or the U-factor must be ≤ 0.043.</li> <li>CZ 1, 3, 6</li> <li>If existing insulation is &lt; R-19, then &gt; R-49 is required and air sealing and recessed downlighting insulation requirements must be met.</li> </ul> | <ul> <li>✓ Insulation</li> <li>Framed <ul> <li>2 x 4: Require ≥ R-13 in wood framing or equivalent U-factor ≤ 0.102.**</li> <li>2 x 6: Require ≥ R-20 in wood framing or equivalent U-factor ≤ 0.071.**</li> </ul> </li> <li>Non-Framed <ul> <li>Require U-factor ≤ 0.102 (per applicable JA4.3 table).</li> </ul> </li> <li>Masonry <ul> <li>Insulation is required with the R-value depending on CZ, location of wall and insulation placement (per Table 150.1-A).</li> </ul> </li> <li>Doors <ul> <li>For solid door requirements, see §150.1(c)5.</li> </ul> </li> </ul> | <ul> <li>✓ Insulation</li> <li>Raised</li> <li>Require ≥ R-19 in wood framing or equivalent U-factor ≤ 0.037.**</li> <li>Slab on Grade</li> <li>Heated Slab: Perimeter insulation requirements of §150.0(f) apply.</li> <li>Unheated Slab: The above perimeter insulation requirements do not apply.</li> </ul> | <ul> <li>Altered Fenestration</li> <li>✓ 75 ft² Altered Fenestration</li> <li>✓ U-factor: Require ≤ 0.40.</li> <li>SHGC: In CZ 2, 4, 6-15, require ≤ 0.35.</li> <li>Area Limits: None apply. ***</li> <li>&gt; 75 ft² Altered Fenestration</li> <li>✓ U-factor: Require ≤ 0.30.</li> <li>SHGC: In CZ 2, 4, 6-15, require ≤ 0.23.</li> <li>Area Limits: None apply. ***</li> <li>Any Skylights</li> <li>✓ U-factor: Require ≤ 0.30.</li> <li>SHGC: Require ≤ 0.30.</li> <li>Area Limits: None apply. ***</li> <li>(Continued on next page)</li> </ul> | Cuality Insulation<br>Installation (OII) ◆ OII is not Prescriptively<br>required nor allowed as a<br>Performance credit. |  |

#### (Continued)

| Envelope - Alteration ADU Type <u>§150.2(b)</u>   |  |  |   |                                   |  |
|---|--|--|---|-----------------------------------|--|
| Roof<br><u>§§150.2(b)1I-J</u>   | Wall<br><u>§150.0(c)</u>   | Floor<br><u>§§150.0(d), 150.0(f)</u>   | Fenestration<br><u>§§150.2(b)1A-B</u>   | HERS Measures<br><u>§150.2(b)</u> |  |
| <ul> <li>All CZs Vented attics are exempt from the above requirements in any of the following situations: <ul> <li>R-38 or greater ceiling insulation exists.</li> <li>Asbestos would be disturbed.</li> <li>Knob and tube wiring is located in the vented attic.</li> <li>When the accessible space does not support R-49, it must be filled with what is allowed per Title 24, Part 2.5.</li> <li>The attic space above the altered dwelling unit is shared with unaltered attic space of other dwelling units.</li> </ul> Exemp-sloped: CZ 4, 8-15 <ul> <li>Low-sloped: CZ 4, 6-15</li> <li>Rated roofing material must be CRRC certified.</li> <li>Minimum requirements differ based on roof slope.* See §150.2(b)11.</li> </ul> Steep-sloped: CZ 4, 6-15 <ul> <li>The above roofing material requirements do not apply.</li> </ul> CZ 1, 2, 4, 8-16 <ul> <li>See insulation requirements on p. 4 when reroofing low-sloped roofs.</li> </ul></li></ul> |  |  | <ul> <li>Added Fenestration</li> <li>Any ft<sup>2</sup> Added Fenestration <ul> <li>U-factor: Require ≤ 0.30.</li> <li>SHGC: In CZ 2, 4, 6-15, require ≤ 0.23.</li> <li>Area Limits: ***</li> <li>≤ 75 ft<sup>2</sup>: None apply.</li> <li>&gt; 75 ft<sup>2</sup>: In all CZ: Limited to whole building total ≤ 20% of the CFA. In CZ 2, 4, 6-15: Also limited to whole building west-facing ≤ 5% of the CFA.</li> </ul> </li> <li>Skylights ≤ 16 ft<sup>2</sup> <ul> <li>U-factor: Require ≤ 0.30.</li> <li>Area Limits: None apply. ***</li> </ul> </li> <li>Skylights &gt; 16 ft<sup>2</sup> <ul> <li>Skylights &gt; 16 ft<sup>2</sup></li> <li>See Any ft<sup>2</sup> Added Fenestration above.</li> </ul> </li> <li>Note: Total fenestration area includes skylights. Total west-facing fenestration area includes skylights with pitch &lt; 1:12 facing any direction, and west-facing skylights with pitch ≥ 1:12.</li> </ul> |                                   |  |
| <b>ADU</b> = accessory dwelling<br><b>SHGC</b> = solar heat gain co<br><i>* Exceptions may apply.</i><br><i>** Non-wood-framed asse.</i><br><i>*** "Area limits" refers to b</i>  | unit; <b>CFA =</b> conditioned floor area; <b>CRF</b><br>efficient.<br>mblies (such as metal-framed) must sho<br>Prescriptive maximum total fenestration | <b>RC =</b> Cool Roof Rating Council; <b>CZ =</b> Clim<br>w compliance with the required U-factor<br>and total west-facing fenestration area | hate Zone; <b>QII =</b> quality insulation installatio<br>:<br><i>Limits for the whole building.</i>  | n;                                |  |

Table 2. Alteration ADU Type - Energy Code Envelope Requirements



Figure 1. National Fenestration Rating Council (NFRC) Label

### $\epsilon$ Fenestration

U-factor of 0.40 and solar heat gain coefficient (SHGC) of 0.35 represent a National Fenestration Rating Council (NFRC)-rated dual-paned, non-metal-framed, low-e<sup>2</sup> product that was required by previous Energy Code cycles. This requirement allows a home that is altering or adding a minimum amount of fenestration to look cohesive.

U-factor of 0.30 and SHGC of 0.23 represent an NFRC-rated dual-paned, non-metal-framed, low-e<sup>3</sup> product which may have an appearance that differs from fenestration meeting low-e<sup>2</sup> requirements.

### st HERS-verified Existing Conditions

Performance compliance credit can be gained for single-family buildings when existing building features are improved and their existing conditions are Home Energy Rating System (HERS) verified before going for permit. For more information, see the *2022 Single-family Residential Alternative Calculation (ACM) Reference Manual* at bit.ly/CEC-2022-SF-ACM-Ref-Manual.

|  | Mechanical Systems - Alteratio  | n ADU Type   |   |
|--|---|--|---|
| Heating or Cooling Systems<br><u>§§150.2(b)1C-G</u>  | IAQ Systems<br><u>§150.2(b)1M</u>   | Water-heating Systems<br><u>§150.2(b)1H</u>  | Electric<br>Readiness                           |
| <ul> <li>Extension of Existing Ducted HVAC System for ADU</li> <li>Return air from one dwelling unit shall not discharge into another dwelling unit through the heating or cooling air system per 2022 California Mechanical Code §311.4.</li> <li>Added Ducted HVAC System for ADU</li> <li>This system has the same requirements as New Construction except that heat pump space heating is not required.</li> <li>Added Ductless HVAC System for ADU</li> <li>This system has the same requirements as New Construction that include minimum equipment efficiency and HERS refrigerant charge testing in CZ 2, 8-15.</li> </ul> | <ul> <li>Addition of New Dwelling Unit to an Existing Home</li> <li>Whole-building IAQ System</li> <li>Required to be sized per §150.0(o)1C and meet the sone requirements.</li> <li>When an IAQ system is installed, airflow must be verified by a HERS Rater.</li> <li>Required when replacing or altering and IAQ system.</li> <li>Not applicable to replaced IAQ systems not previously subject to these requirements which started in the 2008 Energy Code.</li> <li>Local Exhaust</li> <li>Vented kitchen hoods can be used instead of local exhaust at the kitchen.</li> <li>For new kitchen hoods, minimum airflow must be based on cooktop fuel source and minimum sone rating in §150.0(o)1G. This does not apply to replaced kitchen hoods that were subject to these requirements which started in the 2008 Energy Code.</li> <li>Bathroom local exhaust requirements may apply.</li> </ul> | <ul> <li>Water-heating System</li> <li>Extended Hot Water Piping to Serve ADU</li> <li>Must meet pipe insulation requirements.</li> <li>Added Water Heater</li> <li>The Performance Approach is required when adding a new water heater of any type to serve an ADU alteration project.</li> <li>Recirculation Pump</li> <li>If a recirculation pump is installed, manual-ON control is required for the Prescriptive Approach or use the Performance Approach for other control options.</li> </ul> | Not required for Alterations to existing homes. |
| <b>Notes</b> <i>ADU</i> = accessory dwelling un<br><i>NEEA</i> = Northwest Energy E  | nit;  | ) Program; <b>IAQ =</b> indoor air quality;  |   |

Table 3. Alteration ADU Type - Energy Code Mechanical Requirements

| Renewable Energy Systems - Alteration ADU Type  |   |   |  |  |  |  |
|---|---|---|--|--|--|--|
| Photovoltaics   | Battery Storage<br>Systems  | ESS Readiness   | Solar Readiness  |  |  |  |
| There are no<br>requirements for<br>photovoltaics and<br>no ability to take<br>Performance credit<br>for new or altered<br>systems. | There are no<br>requirements for<br>battery storage<br>systems and no ability<br>to take Performance<br>credit for new or<br>altered systems. | Alterations to existing<br>homes are not<br>required to be energy<br>storage system (ESS)<br>ready. | Alterations to existing<br>homes are not<br>required to be solar<br>ready. |  |  |  |

Single-family Buildings HVAC Additions and Alterations Fact Sheet

For more information on altered or added HVAC systems, see the Energy Code Ace<sup>TM</sup> Single-family Buildings HVAC Additions and Alterations Fact Sheet at <u>bit.ly/ECA-building-fact-sheets.</u>

Table 4. Alteration ADU Type - Energy Code Renewable Requirements

## Addition ADU Type



| Envelope - Addition ADU Type <u>§150.2(a)</u>  |   |   |   |   |  |
|--|---|---|---|---|--|
| Roof<br><u>§150.2(a)</u>   | Wall<br><u>§150.2(a)</u>  | Floor<br><u>§150.2(a)</u>   | Fenestration<br><u>§150.2(a)1</u>   | HERS Measures<br><u>§150.2(a)1</u>  |  |
| <ul> <li>Roof and Ceiling Insulation<br/>CZ 1-2, 4, 8-16</li> <li>✓ Vented Attic Roof</li> <li>✓ ≤ 700 ft² require ≥ R-38 in wood<br/>framing at ceiling or equivalent<br/>U-factor ≤ 0.025** with radiant<br/>barrier in CZ 2, 4, 8-15.*</li> <li>✓ &gt; 700 ft² covered below in<br/>New Construction ADU Type.</li> <li>CZ 3, 5-7</li> <li>✓ Vented Attic Roof</li> <li>✓ ≤ 700 ft² require ≥ R-30 in wood<br/>framing at ceiling or equivalent<br/>U-factor ≤ 0.031** with radiant<br/>barrier.*</li> <li>✓ &gt; 700 ft² covered below in<br/>New Construction ADU Type.*</li> <li>✓ Unvented Attic or Rafter Roof</li> <li>Use the Performance Approach.</li> <li>(Continued on next page)</li> </ul> | <ul> <li>insulation</li> <li>Framed: New</li> <li>CZ 1-5, 8-16: Require U-factor ≤ 0.048 for all framed walls. Example: R-21 in 2x6 wood framing + R-5 continuous per JA4.3.1-D7. See JA4.3.4 for metal-framed wall examples.</li> <li>CZ 6-7: Require U-factor ≤ 0.065 for all framed walls. Example: R-13 in 2x4 wood framing + R-5 continuous per JA4.3.1-D3. See JA4.3.4 for metal-framed wall examples.</li> <li>Wood-framed: Extended or Converted</li> <li>2 x 4: Require ≥ R-15.</li> <li>2 x 6: Require ≥ R-21.</li> <li>Masonry</li> <li>Insulation is required with the R-value depending on CZ, location of wall and insulation placement (per Table 150.1-A).</li> <li>Other Wall Types</li> <li>See Table 150.1-A or use the Performance Approach.</li> <li>(Continued on next page)</li> </ul> | Insulation<br>Raised<br>Framed<br>• Require $\geq$ R-19 in wood framing or<br>equivalent U-factor $\leq 0.037$ .**<br>( $\bigcirc$ Raised Mass<br>• CZ 1-2,11,13-14,16: Require $\geq$ R-8.<br>• CZ 12 and 15: Require $\geq$ R-4.<br>Slab on Grade<br>( $\bigcirc$ All CZs<br>• Heated slab floors must meet<br>perimeter insulation requirements<br>of $\leq 150.0$ (f). The perimeter<br>insulation requirements do not<br>apply to unheated slab floors.<br>( $\bigcirc$ CZ 16<br>• Require R-7 or equivalent U-factor<br>$\leq 0.58$ . | <ul> <li>All Addition Type ADUs</li> <li>U-factor <ul> <li>Require ≤ 0.30.</li> </ul> </li> <li>SHGC <ul> <li>CZ 2, 4, 6-15: Require ≤ 0.23.</li> </ul> </li> <li>Area Limits <ul> <li>Additions ≤ 400 ft<sup>2</sup></li> <li>All CZ: Limited to total ≤ 75 ft<sup>2</sup> or 30% of the CFA, whichever is greater.</li> <li>CZ 2, 4, 6-15: Also limited to westfacing ≤ 60 ft<sup>2</sup>.</li> </ul> </li> <li>Additions ≤ 700 ft<sup>2</sup> and &gt; 400 ft<sup>2</sup> <ul> <li>All CZ: Limited to total ≤ 120 ft<sup>2</sup> or 25% of the CFA, whichever is greater.</li> </ul> </li> <li>CZ 2, 4, 6-15: Also limited to westfacing ≤ 60 ft<sup>2</sup>.</li> </ul> | Quality Insulation<br>Installation (QII) Additions ≤ 700 ft <sup>2</sup> <ul> <li>Coll is not required.</li> </ul> Additions > 700 ft <sup>2</sup> <ul> <li>QII is required.</li> </ul> When an ADU is converted from existing space: The following QII measures are not required: <ol> <li>Insulated headers on existing door or windows</li> </ol> Air barrier when existing air barrier is not being removed or replaced |  |

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| Envelope - Addition ADU Type <u>§150.2(a)</u>   |  |  |   |                                    |  |
|---|--|--|---|------------------------------------|--|
| Roof<br><u>§150.2(a)</u>  | Wall<br><u>§150.2(a)</u>   | Floor<br><u>§150.2(a)</u>                                | Fenestration<br><u>§150.2(a)1</u>   | HERS Measures<br><u>§150.2(a)1</u> |  |
| <ul> <li>Roofing Products</li> <li>300 ft<sup>2</sup></li> <li>Steep-sloped: CZ 10-15</li> <li>Low-sloped: CZ 13, 15</li> <li>Rated roofing material must be CRRC certified.</li> <li>Minimum requirements differ based on roof slope.* See <u>\$150.1(c)11</u>.</li> <li>Steep-sloped: CZ 1-9, 16</li> <li>Low-sloped: CZ 1-12, 14, 16</li> <li>The above roofing material requirements do not apply.</li> </ul> | <ul> <li>★ For solid door requirements, see<br/><u>\$150.1(c)5</u>.</li> </ul> |  | <ul> <li>Additions &gt; 700 ft<sup>2</sup></li> <li>All CZ: Limited to total ≤ 175 ft<sup>2</sup> or 20% of the CFA, whichever is greater.</li> <li>CZ 2, 4, 6-15: Also limited to westfacing ≤ 70 ft<sup>2</sup> or 5% of the CFA, whichever is greater.</li> <li>Skylights</li> <li>Total fenestration area includes skylights. West-facing fenestration area includes skylights with pitch &lt; 1:12 facing any direction, and west-facing skylights with pitch ≥ 1:12.</li> </ul> |                                    |  |
| ADU = accessory dww<br>* Exceptions may app   | elling unit;   | <b>C</b> = Cool Roof Rating Council; <b>CZ</b> = Climate | Zone; <i>QII</i> = quality insulation installation; <i>SH</i>   | GC = solar heat gain coefficient.  |  |

\*\* Non-wood-framed assemblies (such as metal-framed) must show compliance with the required U-factor.

 Table 5.
 Addition ADU Type - Energy Code Envelope Requirements



Figure 2. Walls and Insulation Allowance

Figure 3. High-performance Attic Features

| Mechanical Systems - Addition ADU Type   |   |   |  |  |  |
|--|---|---|--|--|--|
| Heating or Cooling System<br><u>§150.2(a)</u>  | ms IAQ Systems<br><u>§150.2(a)1C</u>  | Water-heating Systems<br><u>§150.2(a)1D</u>   | Electric Readiness<br><u>§150.0(n)</u>   |  |  |
| <ul> <li>Extension of Existing Ducted System for ADU</li> <li>Return air from one dwelling unit s discharge into another dwelling un the heating or cooling air system p California Mechanical Code \$311.4</li> <li>Added Ducted HVAC System</li> <li>This system has the same requirem New Construction except that heat space heating is not required.</li> <li>Added Ductless HVAC System</li> <li>This system has the same requirem New Construction that include min equipment efficiency and HERS refucharge testing in CZ 2, 8-15.</li> <li>Ventilation cooling is not required for Additions ≤ 1,000 ft<sup>2</sup>.</li> </ul> | <ul> <li>HVAC</li> <li>hall not<br/>it through<br/>er 2022<br/>k.</li> <li>for ADU<br/>nents as<br/>it pump</li> <li>n for ADU<br/>nents as<br/>imum<br/>rigerant</li> <li>Addition of New Dwelling Unit to<br/>an Existing Home</li> <li>Whole-building IAO System</li> <li>Required to be sized per §150.0(o)1C<br/>and meet the sone requirements.</li> <li>Airflow must be verified by a HERS<br/>Rater.</li> <li>Local Exhaust</li> <li>Yented kitchen hoods can be used<br/>instead of kitchen local exhaust.</li> <li>For kitchen hoods, minimum airflow<br/>must be based on cooktop fuel<br/>source and minimum sone rating in<br/>§150.0(o)1G.</li> <li>Bathroom local exhaust requirements<br/>may apply.</li> </ul> | <ul> <li>Water-heating System</li> <li>Extended Hot Water Piping to Serve ADU<br/><ul> <li>Must meet pipe insulation requirements.</li> </ul> </li> <li>A single 240-volt heat pump water heater is allowed, but additional requirements apply if not using a NEEA Tier 3 unit.</li> <li>A gas or propane instantaneous water heater with an input ≤ 200,000 Btuh is allowed.</li> <li>For ADU Additions ≤ 500 ft², an instantaneous electric water heater with point-of-use distribution as specified in RA4.4.5 is allowed.</li> <li>If a recirculation Pump</li> <li>If a recirculation pump is installed, manual-ON control is required.</li> </ul> | <ul> <li>Water Heating</li> <li>Each electric-ready item requires breaker space and labeling in the panel.</li> <li>Gas or propane water heaters must be installed in or adjacent to a space large enough to accommodate a heat pump water heater (HPWH) (2.5' x 2.5 x 7').</li> <li>HPWH Space ≤ 3 ft from Gas-fired Water Heater</li> <li>A dedicated 125-volt/20- amp outlet with a 120/240-volt 3 conductor branch circuit is required.</li> <li>HPWH Space &gt; 3 ft from Gas-fired Water Heater</li> <li>A 240-volt/30-amp electrical feed is required.</li> <li>Either a dedicated cold water supply must be installed, or the cold water supply must be routed through the designated HPWH location just before reaching the gas or propane water heater.</li> <li>The hot water supply pipe coming out of the gas or propane water heater.</li> <li>Hot and cold water piping must be exposed and readily accessible at the designated HPWH.</li> </ul> |  |  |
| NotesADU = accessor<br>NEEA = Northw   | y dwelling unit; <b>CZ =</b> Climate Zone; <b>HERS =</b> Home Energ<br>est Energy Efficiency Alliance.  | y Rating System (HERS) Program; <b>IAQ =</b> indoor air quali   | ity;   |  |  |

Table 6. Addition ADU Type – Energy Code Mechanical Requirements

# Variable Capacity Heat Pump HERS-verified Performance Credit (per <u>RA3.4.4.3</u>)



#### Figure 4. Variable Capacity Heat Pumps

| Renewable Energy Systems - Addition ADU Type  |   |   |   |  |  |
|---|---|---|---|--|--|
| Photovoltaics   | Battery Storage Systems   | ESS Readiness   | Solar Readiness   |  |  |
| There are no requirements for photovoltaics and<br>no ability to take Performance credit for new or<br>altered systems. | There are no requirements for battery storage systems and no ability to take Performance credit for new or altered systems. | Additions to existing homes are not required to be energy storage system (ESS) ready. | Additions to existing homes are not required to be solar ready. |  |  |

Table 7. Addition ADU Type – Energy Code Renewables Requirements

#### **Wall Assembly Examples**



High-performance walls have a U-factor that reflects insulation within the framed cavity in addition to a layer of continuous insulation that is not interrupted by framing. This continuous insulation can be installed by placing rigid insulation outside the framing on the inside or outside face of the wall.

Figure 5. High-performance walls



Figure 6. Staggered Stud Wall with Continuous Insulation



Another option is to look at alternative wall assemblies such as structurally insulated walls panels (SIPS), insulated concrete forms (ICF) or dual-panel hollow wall (DPH per CEC-400-2020-009) that have little to no framing. See the CEC BamCore Prime Wall Exceptional Method Compliance Option web page at bit.ly/CEC-BamCore-PrimeWall-Method.

#### Figure 7. Structurally Insulated Wall Panels

## **New Construction ADU Type**





| Envelope - New Construction ADU Type  |   |  |  |   |  |  |
|---|---|--|--|---|--|--|
| Roof<br><u>§§150.0(a), 150.1(c)1A, 150.1(c)2</u>  | Wall<br><u>§150.1(c)1B</u>  | Floor<br><u>§§150.1(c)1C-D</u>   | Fenestration<br><u>§§150.1(c)3-4</u>   | HERS Measures<br><u>§150.1(c)1E</u>   |  |  |
| <ul> <li>Noof and Ceiling Insulation</li> <li>Vented Attic Roof</li> <li>High-performance attic measures are required per Option B.</li> <li>CZ 1-2: Require ≥ R-38 at ceiling and radiant barrier.</li> <li>CZ 3, 5-7: Require ≥ R-30 at ceiling and radiant barrier.</li> <li>CZ 4, 8-16: Require ≥ R-38 at ceiling and ≥ R-19 below roof deck.</li> <li>Vented Attic Roof</li> <li>CZ 4, 8-16: The roof deck U-factor must be ≤ 0.184 if the HVAC system is ducted and has ducts outside of conditioned space.</li> <li>Unvented Attic or Rafter Roof</li> <li>Use the Performance Approach.</li> <li>Roofing Products</li> <li>Steep-sloped: CZ 10-15 Low-sloped: CZ 13, 15</li> <li>Rated roofing material must be CRRC certified.</li> <li>Minimum requirements differ based on roof slope.* See §150.1(c)11.</li> <li>Steep-sloped: CZ 1-9, 16 Low-sloped: CZ 1-12, 14, 16</li> <li>The above roofing material requirements do not apply.</li> </ul> | <ul> <li>Insulation</li> <li>Framed: New</li> <li>CZ 1-5, 8-16: Require U-factor ≤ 0.048 for all framed walls. Example: R-21 in 2x6 wood framing + R-5 continuous per JA4.3.1-D7. See JA4.3.4 for metal-framed wall examples.</li> <li>CZ 6-7: Require U-factor ≤ 0.065 for all framed walls. Example: R-13 in 2x4 wood framing + R-5 continuous per JA4.3.1-D3. See JA4.3.4 for metal-framed wall examples.</li> <li>Masonry</li> <li>Insulation is required with the R-value depending on CZ, location of wall and insulation placement (per Table 150.1-A).</li> <li>AII Other Wall Types</li> <li>See Table 150.1-A or use the Performance Approach.</li> <li>Doors</li> <li>For solid door requirements, see \$150.1(c)5.</li> </ul> | Insulation<br>Raised<br>Framed<br>• Require $\geq$ R-19 in wood<br>framing or equivalent U-factor<br>$\leq$ 0.037.**<br>• CZ 1-2,11,13,16: Require $\geq$ R-8.<br>• CZ 12 and 15: Require $\geq$ R-8.<br>• CZ 12 and 15: Require $\geq$ R-4.<br>Slab on Grade<br>• All CZS<br>• Heated slab floors must<br>meet perimeter insulation<br>requirements of $\S150.0(f)$ .<br>• The perimeter insulation<br>requirements do not apply to<br>unheated slab floors.<br>• The perimeter insulation<br>requirements do not apply to<br>unheated slab floors.<br>• Require R-7 or equivalent<br>U-factor $\leq$ 0.58. | <ul> <li>All New Construction<br/>Type ADUs</li> <li>U-factor <ul> <li>Require ≤ 0.30.</li> </ul> </li> <li>SHGC <ul> <li>CZ 2, 4, 6-15: Require ≤ 0.23.</li> </ul> </li> <li>Area Limits <ul> <li>All CZ: Limited to total ≤ 20% of the CFA.</li> </ul> </li> <li>CZ 2, 4, 6-15: Also limited to west-facing ≤ 5% of the CFA.</li> </ul> <li>CZ 2, 4, 6-15: Also limited to west-facing ≤ 5% of the CFA.</li> <li>Skylights <ul> <li>Total fenestration area includes skylights. West-facing fenestration area includes skylights with pitch &lt; 1:12 facing any direction, and west-facing skylights with pitch ≥ 1:12.</li> </ul></li> | Cuality Insulation<br>Installation (QII)<br>Our requirements apply to<br>newly constructed ADUs of<br>any size. |  |  |

\*\* Non-wood-framed assemblies (such as metal-framed) must show compliance with the required U-factor.

Table 8. New Construction ADU Type - Energy Code Envelope Requirements

| Mechanical Systems - New Construction ADU Type   |  |  |  |  |  |
|--|--|--|--|--|--|
| Heating or Cooling Systems<br><u>§§150.0(h), (i), (m); 150.1(c)6, 7, 9, 12, 13</u>   | IAO Systems<br><u>§§150.0(o), 150.1(c)10</u>   | Water-heating Systems<br><u>§§150.0(n)</u> , <u>150.1(c)8</u>  | Electric Readiness<br><u>§§150.0(n), 150.0(t)-(v)</u>  |  |  |
| | <ul> <li>Addition of New Dwelling to an Existing Home</li> <li>Whole-building IAO System</li> <li>Required to be sized per \$150.0(o)1C and meet the sone requirements.</li> <li>Airflow must be verified by a HERS Rater.</li> <li>Local Exhaust</li> <li>Vented kitchen hoods can be used instead of kitchen local exhaust.</li> <li>For kitchen hoods, minimum airflow must be based on cooktop fuel source and minimum sone rating in \$150.0(o)1G.</li> <li>Bathroom local exhaust requirements apply.</li> </ul> | <ul> <li>♦ Required to meet pipe insulation requirements.</li> <li>♥ Water Heater Options</li> <li>♦ One of the following water heaters is required in New Construction:</li> <li>♦ A 240-volt heat pump water heater (Additional requirements apply if not using a NEEA Tier 3 unit.)</li> <li>♦ A 120-volt heat pump water heater when serving an ADU with ≤ 1 bedrooms</li> <li>♦ For a new dwelling unit ≤ 500 ft², an instantaneous electric water heater with point-of-use distribution as specified in RA4.4.5 is allowed</li> <li>♦ Electric resistance solar system with solar fraction ≥ 70%</li> <li>In CZ 3, 4, 13-14, a gas or propane instantaneous water heater with an input ≤ 200,000 Btuh may be used when a heat pump space heater is installed.</li> <li>Recirculation Pump</li> <li>♦ If a recirculation pump is installed, manual-ON control is required.</li> </ul> | <ul> <li>Each electric-ready item requires breaker space and labeling in the panel.</li> <li>Space Heating (Furnace)</li> <li>Requires a 240-volt/30-amp electrical feed to the furnace for a future heat pump.</li> <li>Cooktop</li> <li>Requires a 240-volt/50-amp feed for a future cooktop.</li> <li>Dryers or Gas Hookups</li> <li>Requires 240-volt/30-amp feed for future installation of an electric dryer if the unit has a gas line for a dryer.</li> <li>Water Heating</li> <li>Gas or propane water heaters must be installed in or adjacent to a space large enough to accommodate a heat pump water heater (HPWH) (2.5' x 2.5' x 7').</li> <li>HPWH Space ≤ 3 ft from Gas-fired Water Heater</li> <li>A dedicated 125-volt/20-amp outlet with 120/240-volt 3 conductor branch circuit is required.</li> <li>Hither a dedicated cold water supply must be installed, or the cold water supply must be routed through the designated HPWH location just before reaching the gas or propane water heater.</li> <li>The hot water supply pipe coming out of the gas or propane water heater must be routed through the designated HPWH location before serving any fixtures.</li> <li>Hot and cold water piping must be exposed and readily accessible at the designated HPWH location for future installation of a HPWH.</li> </ul> |  |  |
| <b>Notes</b> indoor air quality; <b>NEEA</b> = North   | west Energy Efficiency Alliance.   | <b>UZ –</b> Gimale Zone, <b>ALNS =</b> Nome Energy na  | ting System (HENS) Hogrann, <b>AF WA</b> = heat pump water heater, <b>IAU</b> =  |  |  |

Table 9. New Construction ADU Type - Energy Code Mechanical Requirements

### **Renewable Energy Systems - New Construction ADU Type**

#### Photovoltaics §150.1(c)14

The required PV kW can be installed anywhere on the property, including being added to the system serving the main.

A CEC-approved community solar program may also be used.

"Green" utility programs are NOT a means to satisfy the PV kW requirements.

§110.10



The minimum required PV size for compliance is the lesser of the PV requirement as calculated in Equation 150.1-C (Prescriptive Approach)/CF1R-PERF (Performance Approach) and the maximum installable PV in the SARA.

Note that SARA-limited projects can input maximum installable PV in the Performance Approach using Exception 5.

1. **SARA includes** the area of the building's roof space capable of structurally supporting a PV system and the area of all roof space on covered parking areas, carports and all other newly constructed structures on the site that are compatible with supporting a PV system per Title 24, Part 2, §1511.2.

SARA does NOT include: 2

- + Any roof area < 70% annual solar access using CEC-approved solar assessment tools. See the CEC Solar Assessment Tools web page at bit.ly/CEC-Solar-Assessment-Tools.
- + Steep-sloped roofs: Shading from existing permanent natural or manmade obstructions that are external to the dwelling, including but not limited to trees, hills and adjacent structures, are considered.
- + Low-sloped roofs: Shading from all obstructions, including those that are external to the dwelling unit, and obstructions that are part of the building design and elevation features are considered.
- + Occupied roof areas as specified by California Building Code §503.1.4.
- + Roof area that is otherwise not available due to compliance with other building code requirements if confirmed by the CEC.

#### **PV Exceptions**

- + When the required PV system size is  $< 1.8 \text{ kW}_{dc}$
- + When the building has an enforcement authority-approved roof design and the enforcement authority determines it is not possible for the PV system to meet ASCE 7-16, Chapter 7, Snow Loads

Solar Readiness **Solar readiness** is required when PV is not being installed via use of an exception and is associated with a new subdivision of  $\geq$  10 homes. Solar-ready requirements do not apply to newly constructed ADUs built on an existing lot if the project is not required to install a PV system.

Continued on next page 🛁



#### (Continued)



Table 10. New Construction ADU Type - Energy Code Renewable Requirements

## **Compliance Forms**

| Single-family Energy Code Compliance Forms for Accessory Dwelling Units |  |   |                              |
|---|--|---|------------------------------|
|   | Certificates of Completion                                 | Certificates of Installation  | Certificates of Verification |
| Requirement Type  | Provided at Plan Check<br>Kept Current During Construction | <b>Provided On Site During Construction</b><br>Supporting Certificate of Compliance Building Features (or better) |                              |
| Performance Method  | CF1R-PRF-01-E  |   |                              |
| Prescriptive Method   |  |   |                              |
| New Construction ADU  | CF1R-NCB-01-E  | See below   | See below                    |
| Addition ADU - HERS   | CF1R-ADD-01-E  |   |                              |
| Alteration ADU - HERS   | CF1R-ALT-01-E  |   |                              |
| Envelope  |  |   | CF3R-ENV-##-H                |
| Alteration ADU - Non-HERS Related                                       | CF1R-ALT-05-E  |   |                              |
| HERS Related  | -  | CF2R-ENV-##-H   |                              |
| Non-HERS Related  |  | CF2R-ENV-##-E   |                              |
| Mechanical Systems  |  |   | CF3R-MCH-##-H                |
| HERS Related  | -  | CF2R-MCH-##-H   |                              |
| Non-HERS Related  |  | CF2R-MCH-##-E   |                              |
| Plumbing  |  |   | CF3R-PLB-##-H                |
| Water Heating - HERS Related  | Included in applicable CF1R listed above                   | CF2R-PLB-##-H   |                              |
| Water Heating - Non-HERS Related  |  | CF2R-PLB-##-E   |                              |
| Solar Thermal   |  | CF2R-STH-##-E   |                              |
| Pool and Spa Heating  |  | CF2R-PLB-03-E   |                              |
| Lighting  |  | CF2R-LTG-##-E   |                              |
| Solar PV and Battery Storage Systems                                    |  | CF2R-PVB-##-E   | N/A                          |
| Electric Readiness  |  | CF2R-ELC-01-E   |                              |

Forms must be registered with a HERS Provider when HERS measures are required. The CF1R-ALT-01-E form may need to be registered via a HERS provider. Other CF1R forms require registration via a HERS provider.

**HERS** = Home Energy Rating System; **PV** = photovoltaic.

Table 11. Single-family Energy Code Compliance Forms for Accessory Dwelling Units

## \* HERS Providers and Raters

To find a HERS Rater, contact one of the HERS providers shown below. Each provider is approved to perform specific services. **Check the CEC website to see if new providers have been approved:** <u>bit.ly/CEC-HERS-Providers.</u>

### **CalCERTS**

#### www.calcerts.com/

#### Approved for field verification on:

- Newly constructed buildings
- ♦ Additions
- Alterations of residential and nonresidential buildings
- ♦ California whole-house home energy ratings
- ♦ HERS building performance contractors

### **CHEERS**

#### www.cheers.org/

Approved for field verification on:

- Newly constructed buildings
- ♦ Additions
- Alterations of residential and nonresidential buildings

## **For More Information**

### CALIFORNIA ENERGY COMMISSION

#### www.energy.ca.gov

Learn more about the California Energy Commission (CEC) and its programs on its website.

#### **Online Resource Center**

#### bit.ly/CEC-ORC

Use these online resources developed for building and enforcement communities to learn more about the Energy Code.

#### 2022 Single-family Residential Compliance Manual

bit.ly/single-family-compliance-manual

Read this comprehensive explanation of the Energy Code requirements for single-family buildings.

#### **Energy Code Hotline**

Call: 1-800-772-3300 (Free) Email: Title24@energy.ca.gov

### **ADDITIONAL RESOURCES**

## California Department of Housing and Community Development (HCD)

Download the Accessory Dwelling Unit Handbook and other useful information on the HCD website at hcd.ca.gov/policy-and-research/accessory-dwelling-units



#### www.energycodeace.com

Stop by this online "one-stop-shop" for no-cost tools, training and resources designed to help you comply with California's Title 24, Part 6 and Title 20.



#### www.energycodeace.com/tools

Explore this suite of interactive tools to understand the compliance process, required forms, installation techniques and energy efficiency regulations in California.

#### **Reference Ace**

www.energycodeace.com/content/reference-ace-2022-tool

Navigate the Title 24, Part 6 Energy Code using an index, keyword search and hyperlinked text.

#### Q&Ace

#### www.energycodeace.com/QAndAce

Search our online knowledge base or submit your question to Energy Code Ace experts.

# D Training

#### www.energycodeace.com/training

On-demand, live in-person and online training alternatives are tailored to a variety of industry professionals and address key measures.

Of Special Interest:

2022 Title 24, Part 6 Essentials – Residential Standards: What's New

bit.ly/ECA-training-2022-res-whats-new



#### www.energycodeace.com/resources

Downloadable materials provide practical and concise guidance on how and when to comply with California's building and appliance energy efficiency standards. Of Special Interest:

#### **Fact Sheets for Buildings**

bit.ly/building-fact-sheets

♦ Single-family Envelope

Create an account on the Energy Code Ace site and select an industry role for your profile in order to receive messages about all our offerings!



Pacific Gas and

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