



# U.S. DEPARTMENT *of* ENERGY

## DOE Efficient New Homes Multifamily California Program Requirements Version 2 (Rev. 2)

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# DOE Efficient New Homes Multifamily California Program Requirements Version 2 (Rev. 2)

These Program Requirements are only for use in the State of California.

## 1. Building Eligibility Requirements

The following multifamily building types are eligible to participate in the DOE Efficient New Homes program using the Multifamily California Version 2 program requirements:<sup>1, 2</sup>

- Any multifamily building with dwelling units<sup>3</sup> or sleeping units<sup>4</sup> that is NOT a detached dwelling (e.g., not a single-family home or a duplex) or townhouse.<sup>5</sup>
- Any mixed-use buildings with dwelling units or sleeping units, where the dwelling units, sleeping units, and common space exceed 50% of the building square footage (parking garage square footage is excluded from this calculation).<sup>6</sup>

Throughout the remainder of this document, the term 'dwelling unit' is implied to also apply to 'sleeping units' unless otherwise stated. Dwelling units in eligible multifamily and mixed-use buildings may only be certified under the DOE Efficient New Homes Multifamily program if the entire building (all dwelling units and covered common spaces) meets and is certified under the DOE Efficient New Homes Multifamily program.

Compliance with these requirements does not imply compliance with all local code requirements that may be applicable to the building to be built. In cases where local codes overlap with and/or exceed the DOE Efficient New Homes program requirements, these local requirements shall be met.<sup>7</sup>

To determine the required version and revision of DOE Efficient New Homes program requirements to use based on a project's location, building type, and permit date<sup>8</sup>, partners must reference the DOE Efficient New Homes implementation timeline information posted on the [program requirements website](#). Partners are advised to check the [DOE Efficient New Homes website](#) and IRS Guidance on the 45L tax credit for information about tax credit eligibility.

Throughout these requirements there are references to various standards, including the California 2022 Title 24, Building Energy Efficiency Standards (BEES), which may be accessed at [energy.ca.gov](#).

## 2. Partnership, Training, and Credentialing Requirements

The following requirements must be met prior to certifying multifamily buildings:

- The builder or developer must [register as a DOE Efficient New Homes partner](#) and sign the Builder Partner Agreement, available in [Partner Central](#) on the program website.
- Energy Rating Companies (e.g., rater companies and Providers<sup>9</sup>) are required to [register as a DOE Efficient New Homes partner](#) and sign a Partnership Agreement, available in [Partner Central](#) on the program website
- Raters<sup>10</sup> are required to complete all training modules applicable to DOE Efficient New Homes Multifamily Version 2 for California (according to the timeline posted on the program [website](#)) prior to completing a project's first inspection. Please note that required training modules are subject to change and Raters will have an allocated transition period to complete additional or updated training modules as they become available. If a Rater does not successfully complete these modules before the end of the allocated transition period, they may not certify DOE Efficient New Homes projects until the modules are complete.
- Raters must be credentialed by a Home Certification Organization for DOE Efficient New Homes (HCO for DOE) or meet the credential requirements of a Multifamily Review Organization for DOE Efficient New Homes (MRO for DOE). The HCO or MRO for DOE must be recognized as a group that implements the DOE Efficient New Homes Certification System in California. Learn more and find a current list of HCOs and MROs for DOE [here](#).



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## 3. DOE Efficient New Homes Multifamily Certification Process<sup>11</sup>

**3.1.** Determine through which type of oversight organization (HCO or MRO for DOE) the project must be certified:

- All low-rise multifamily buildings, as defined by the 2022 Building Energy Efficiency Standards (3 habitable stories or less), must be certified through an HCO for DOE operating in California.
- All high-rise multifamily buildings, as defined by the 2022 Building Energy Efficiency Standards (4 or more habitable stories), must be certified through an MRO for DOE operating in California. DOE recommends that Raters identify their MRO for DOE during the design stage, but at the latest, the building must be under MRO for DOE oversight prior to the first inspection. MROs for DOE have limited discretion in granting an exemption to this policy.

**3.2.** Configure the preferred set of efficiency measures in a whole-building model and verify that the resulting performance meets or exceeds the performance target, defined as a Compliance Margin (determined using the Time Dependent Valuation methodology, TDV)  $\geq 15\%$  compared to the Efficiency Compliance Total of the Standard Design (determined using TDV) corresponding to the building, as defined by the 2022 Building Energy Efficiency Standards and determined by a CEC-approved software program.<sup>12</sup>

Regardless of the measures selected, the Mandatory Requirements in Exhibit 1 are also required and impose certain constraints on the efficiency measures selected (e.g., window specifications).

**3.3.** Prior to certification, the Rater must submit design documentation is submitted to a Provider or an MRO for DOE for their review and approval. DOE strongly recommends submitting documentation before construction; however, Raters may choose to submit the design documentation at final certification.

**3.4.** Construct the building using the measures selected in Step 2 and the Mandatory Requirements from Exhibit 1.

**3.5.** Using a Rater<sup>10</sup>, verify that all requirements have been met in accordance with the Mandatory Requirements (Exhibit 1), with Data Input requirements, and with On-Site Inspection Procedures for California HERS Ratings. This will require a minimum of two inspections: one at pre-drywall and the other at final. For modular multifamily buildings, a Rater must verify any requirement in the plant not able to be verified on-site because a feature will be concealed prior to shipment.<sup>13</sup> The Rater must review all items on the California Multifamily Rater Checklist for the whole building to verify that each inspection checklist item has been met within program-defined tolerances.<sup>14</sup>

**3.6.** Once verification on all units and common spaces is complete, submit the whole building to the HCO or MRO for DOE for final certification. The Rater is required to keep electronic or hard copies of the completed and signed California Multifamily Rater checklist, PV and EV-Ready checklists, and Multifamily Workbook with DOE Efficient New Homes Addenda. Additionally, the following steps are required:

- a. Low-rise multifamily buildings: submit the building to the HCO for DOE for final certification and follow the HCO for DOE's certification and oversight procedures (e.g., quality assurance, recordkeeping, and reporting).
- b. High-rise multifamily buildings: submit the building to the MRO for DOE for final certification with the specified documentation based on as-built conditions as described in Exhibit 2, and follow the MRO for DOE's certification oversight procedures (e.g., quality assurance, recordkeeping, and supporting documentation).



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## Exhibit 1: DOE Efficient New Homes Multifamily California Mandatory Requirements

Where DOE Efficient New Homes Mandatory requirements apply only to dwelling units and not to common spaces, common space requirements shall be met through compliance with ENERGY STAR Multifamily New Construction, California Program Requirements, Version 1.4 and Indoor AirPlus program requirements. Where DOE Efficient New Homes requirements reference specific BEES requirements, the exceptions listed for those requirements in BEES shall be allowable exceptions for compliance with the DOE Efficient New Homes mandatory requirement unless noted otherwise.

| Component                                                    | Mandatory Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Applicability <sup>15</sup>      |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>1. DOE Efficient New Homes California Rater Checklist</b> | 1.1 Rater completes the DOE Efficient New Homes Multifamily Version 2 (Rev. 2) California Rater Checklist.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dwelling units;<br>common spaces |
| <b>2. ENERGY STAR Baseline</b>                               | 2.1 Building is certified under ENERGY STAR Multifamily New Construction California, Version 1.4 or 1.5. <sup>16</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Dwelling units;<br>common spaces |
| <b>3. Building Envelope</b>                                  | 3.1 Windows meet high performance requirements based on climate zone. <sup>17</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Dwelling units;<br>common spaces |
| <b>4. Duct System and Air Handler Location</b>               | 4.1 All heating and cooling distribution ducts and the space-conditioning system air handler are located within the thermal and air barrier boundary. <sup>18</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Dwelling units                   |
| <b>5. Hot Water Efficiency</b>                               | 5.1 Hot water distribution system (HWDS) qualifies as HERS-Verified Compact HWDS as specified in BEES Reference Appendix (RA) RA3.6.5 <sup>19</sup> for units with in-unit water heaters <b>or</b> hot water delivery systems (in-unit or central) meet stored volume criteria. <sup>20</sup><br>5.2 WaterSense labeled <sup>21</sup> fixtures for dwelling unit showerheads and bathroom sink faucets and/or aerators.<br>5.3 In-dwelling unit recirculation systems use on-demand controls. <sup>22</sup><br>5.4 For buildings with a continuously operating central recirculation loop, compliance with BEES Section 160.4(f)1 (Piping for Multifamily Domestic Hot Water Systems) is required. | Dwelling units                   |
| <b>6. Lighting and Appliances<sup>23</sup></b>               | 6.1 All builder-supplied and builder-installed in-dwelling refrigerators <sup>24</sup> , dishwashers, clothes washers, and clothes dryers are ENERGY STAR certified. <sup>25</sup><br>6.2 All builder-installed bathroom ventilation fans are ENERGY STAR certified. <sup>26</sup><br>6.3 100% of builder-installed lighting fixtures and lamps (bulbs) are LEDs. <sup>27, 28</sup>                                                                                                                                                                                                                                                                                                                | Dwelling units                   |



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|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| <b>7. Indoor Air Quality</b>                       | 7.1 Certified under EPA Indoor AirPlus (Version 1 or Version 2 (Certified or Gold), determined by permit date). <sup>29</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Dwelling units; common spaces |
|                                                    | 7.2 Either in-dwelling or centralized energy efficient balanced ventilation (HRV or ERV) is provided for dwelling units in 2021 International Energy Conservation Code Climate Zones 6-8. <sup>30, 31</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Dwelling units                |
| <b>8. Renewable Ready</b>                          | 8.1 Provisions of the DOE Efficient New Homes Multifamily PV-Ready Checklist Version 2 (Rev. 1) are completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | See Checklist                 |
| <b>9. Electric Vehicle Ready</b>                   | 9.1 Provisions of the DOE Efficient New Homes Multifamily EV-Ready Checklist Version 2 (Rev. 1) are completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | See Checklist                 |
| <b>10. Heat Pump Water Heating Ready</b>           | 10.1 Dwelling units with in-unit water heaters meet minimum electric and space requirements. <sup>32</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Dwelling units                |
|                                                    | 10.2 Dwelling units with in-unit water heaters have a condensate drain installed within three feet of existing water heater. <sup>33</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               |
| <b>11. Heat Pump Space Heating Ready</b>           | 11.1 For dwelling units with in-unit gas or propane heating systems, compliance with BEES Section 160.9(a): Mandatory Requirements for Electric Ready Buildings – Heat pump space heater ready is required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Dwelling units                |
| <b>12. HPWH Installation Quality Advisory Only</b> | <p>Where heat pump water heaters are installed in dwelling units, partners are encouraged, but not required, to adhere to these installation practices to achieve optimal performance:</p> <p>12.1 HPWH has direct access to manufacturer-specified volume of ambient air (typical specs range from 450 to 1200 ft<sup>3</sup>), free of major dust sources, in the space surrounding the water heater through the mechanical room volume or the use of a louvered door, wall vents, ducting, or other strategy.</p> <p>12.2 HPWH installation complies with the manufacturer's minimum clearance requirements to make the unit accessible for maintenance and filter cleaning/replacement.</p> <p>12.3 HPWH has a sound rating of ≤ 55 dBA and a louvered door is not used to separate the unit from living space, or the HPWH has a sound rating of ≤ 35 dBA when a louvered door is used. Alternately, the HPWH is separated from living spaces by sound-attenuating assemblies with STC 35 or greater (i.e., by adding batt insulation to the surrounding wall assembly).</p> <p><i>DOE will consider making these installation practices requirements in a future program update.</i></p> |                               |



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## Exhibit 2: Documentation Requirements for All Certified Multifamily Buildings

Prior to Certification, the Rater must submit all documents listed to a Provider or MRO for DOE for review and approval. Where noted in these documents, Raters are also required to submit evidence (e.g., construction documents, modeling files) showing that program requirements have been met.

| Party Responsible     | Documents                                                                |
|-----------------------|--------------------------------------------------------------------------|
| Rater                 | DOE Efficient New Homes Multifamily California Rater Checklist Version 2 |
|                       | DOE Efficient New Homes Multifamily PV-Ready Checklist Version 2         |
|                       | DOE Efficient New Homes Multifamily EV-Ready Checklist Version 2         |
|                       | ESMFNC Workbook with DOE Efficient New Homes Addenda                     |
|                       | DOE Efficient New Homes Multifamily Version 2 Photo Documentation        |
| Modeler <sup>34</sup> | California Compliance Report                                             |

### Notes:

- For multifamily projects with multiple buildings, each building must demonstrate compliance with the program requirements but can be documented using on Multifamily Workbook per project.
- While Partners are encouraged to always use the newest versions of the Excel-based Multifamily Workbook available online, file updates between Program revisions will not be required unless otherwise specified. After a Program revision, Raters will be required to use the updated Workbook based on the enforcement timeline set for the revision.



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## Endnotes

<sup>1</sup> Buildings that do not contain dwelling or sleeping units are not eligible for certification under DOE Efficient New Homes. Hotels, motels, and assisted living or skilled nursing facilities that meet the definition of senior care facilities are also not eligible for certification under MFNC. Dormitories, residence halls, buildings with single-room occupancies, supportive housing, cohousing, and other senior housing not meeting the definition of senior care facilities are eligible for the DOE Efficient New homes program. DOE adopts these parameters from the ENERGY STAR program, thus, building type eligibility for certification under DOE Efficient New Homes Multifamily Version 2 is the same as building type eligibility for certification under ENERGY STAR Multifamily New Construction, California Version 1.4. Visit [https://www.energystar.gov/partner\\_resources/residential\\_new/program\\_reqs/mfnc\\_building\\_eligibility](https://www.energystar.gov/partner_resources/residential_new/program_reqs/mfnc_building_eligibility) for more information.

<sup>2</sup> The term 'building' refers to a structure that encompasses dwelling/sleeping units and (if present) common spaces, sharing one or more of the following attributes: a common street address, a common entrance or exit, central/shared mechanical systems, or structurally interdependent wall or roof systems. Attached structures such as 4-story two-unit structures (commonly referred to as "2-over-2s") may be considered separate buildings if they are divided by a vertical fire separation wall from the foundation to the roof sheathing and share none of the other attributes listed above. A skyway or a breezeway that connects to structures is not considered a common entrance or exit.

<sup>3</sup> A dwelling unit, as defined by the ANSI/RESNET/ICC 301, is a single unit that provides complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

<sup>4</sup> A sleeping unit, as defined by ANSI/RESNET/ICC 301, is a room or space in which people sleep, that can also include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are part of a dwelling unit are not *sleeping units*.

<sup>5</sup> A dwelling, as defined by ANSI/RESNET/ICC 301, is any building that contains one or two dwelling units used, intended, or designed to be built, used, rented, leased, let, or hired out to be occupied, or that are occupied for living purposes.

<sup>6</sup> The term 'common space' refers to any spaces in the building being certified that serve a function in support of the residential part of the building that is not part of a dwelling or sleeping unit. This includes spaces used by residents, such as corridors, stairs, lobbies, laundry rooms, exercise rooms, residential recreation rooms, and dining halls, as well as offices and other spaces used by building management, administration, or maintenance in support of the residents.

<sup>7</sup> While certification will result in compliance with many code requirements, a Rater is not responsible for ensuring that all code requirements have been met prior to certification. In the event that a code requirement, a manufacturer's installation instructions, and/or an engineering document conflict with a requirement of the DOE Efficient New Homes program, then the conflicting requirement within these program requirements shall not be met. Certification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the conflicting requirement (e.g., switching from exterior to interior slab edge insulation). Note that a dwelling unit must still meet its energy performance target. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.



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<sup>8</sup> The 'permit date' is the date on which the permit authorizing construction of the building was issued. In cases where multiple permits are issued for a project (E.g., footing permits, building permits), the 'permit date' is the date on which the permit authorizing construction of the building, including the building features affecting energy use (e.g., insulation levels, window U/SHGC specifications, mechanical equipment efficiency), was issued. Alternatively, the application date of the permit authorizing construction of the building or the date that the Rater first verifies a DOE Efficient New Homes program provision requiring an on-site inspection (E.g., inspection of slab insulation) is allowed to be used as the 'permit date.'

<sup>9</sup> The term 'Provider' refers to an Approved Rating Provider responsible for the certification of raters working under its auspices and who is responsible for the Quality Assurance of such Certified Raters and for the Quality Assurance of Energy Ratings produced by such Certified Raters.

An Energy Rating is defined as an unbiased indication of a Dwelling Unit's relative energy performance based on consistent inspection procedures, operating assumptions, climate data and calculation methods in accordance with the Data Input requirements and On-Site Inspection Procedures for California HERS Ratings.

<sup>10</sup> The term 'Rater' refers to the person(s) completing the third-party verification required for certification.

Raters who operate under an MRO or HCO for DOE with a Sampling Protocol are permitted to verify the minimum rated features of the building and to verify any Checklist Item designated "Rater Verified" using an MRO or HCO-approved sampling protocol. No parties other than Raters are permitted to use sampling to complete the Checklist. All other items shall be verified for each certified building. For example, no builder verified items are permitted to be verified using a sampling protocol. Apartments participating in sampling must be within the same building, be the same construction type, and include the same envelope systems.

<sup>11</sup> These requirements apply to all dwelling units and common spaces covered by the program, and garages (open or enclosed, shared or individual) in the building being certified, and where specified, parking lots. These requirements do not apply to commercial or retail spaces. These requirements do not apply to common spaces that are located in buildings on the property without any dwelling units. These requirements do not apply to parking garages or lots where the cost of the energy use of the parking garage or lot is not the responsibility of the builder/developer, building owner, or property manager.

<sup>12</sup> CEC-approved computer programs can be found at: <https://www.energy.ca.gov/programs-and-topics/programs/building-energyefficiency-standards/2022-building-energy-efficiency-1>. Any measure that contributes to the Compliance Margin (TDV), as recognized by CEC-approved computer programs, is permitted to be used to meet these performance targets.

<sup>13</sup> A modular building is a prefabricated building that is made of multiple modules or sections that are manufactured and substantially assembled in a manufacturing plant. These pre-built sections are transported to the building site and constructed by a builder to meet all applicable building codes for site-built buildings.

<sup>14</sup> In the event that a Rater determines that a program requirement has not been met, the building cannot earn DOE Efficient New Homes certification until the item is corrected. If correction of the item is not possible, the building cannot earn certification and individual units in the multifamily building also cannot be certified. In the event that an item on the California Multifamily Rater checklist cannot be inspected by the Rater, the building also cannot earn certification.

In the event that a Rater is not able to determine whether a program requirement has been met (e.g., an alternative method of meeting a checklist requirement has been proposed), then the Rater shall consult their



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Provider or MRO for DOE. If the Provider or MRO for DOE also cannot make this determination, then the Rater, Provider, or MRO for DOE shall report the issue to DOE prior to building completion at [EfficientNewHomes@doe.gov](mailto:EfficientNewHomes@doe.gov) and will receive an initial response within 5 business days. If DOE believes the current program requirements are sufficiently clear to determine whether the item in question has been met, then this guidance will be provided to the partner and enforced beginning with the building in question. In contrast, if DOE believes the program requirements require revisions to make the intent clear, then this guidance will be provided to the partner but only enforced for buildings permitted after a specified transition period after the release of the revised program requirements, typically 60 days in length. This will allow DOE to make formal policy decisions as partner questions arise and to disseminate these policy decisions through the Policy Record and the periodic release of revised program documents to ensure consistent application of the program requirements.

<sup>15</sup> “Applicability” is defined as the systems located within the listed spaces as well as the systems serving those spaces. The term ‘dwelling unit’ in Exhibit 1 includes both sleeping and dwelling units, unless otherwise noted.

<sup>16</sup> Regardless of the ENERGY STAR program version required for ENERGY STAR certification, DOE Efficient New Homes Multifamily California Version 2 requires certification under ENERGY STAR Multifamily New Construction California Version 1.4 or 1.5.

<sup>17</sup> Windows in dwelling units and common spaces shall meet selected U-factor and RSHGC specifications of 2022 BEES Table 170.2-A Envelope Component Package, “Fenestration” as noted in the chart below.

| Window Type                    | Window Property                      | CA Climate Zone |      |      |      |      |      |      |      |        |      |
|--------------------------------|--------------------------------------|-----------------|------|------|------|------|------|------|------|--------|------|
|                                |                                      | 1               | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9 – 15 | 16   |
| NAFS 2017 Performance Class AW | Maximum U-factor                     | 0.38            | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40   | 0.38 |
|                                | Maximum RSHGC (≤3 habitable stories) | NR              | 0.24 | NR   | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24   | NR   |
|                                | Maximum RSHGC (≥4 habitable stories) | 0.35            | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24   | 0.24 |
| All Other Fenestration         | Maximum U-factor                     | 0.30            | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.34 | 0.34 | 0.30   | 0.30 |
|                                | Maximum RSHGC (≤3 habitable stories) | NR              | 0.23 | NR   | 0.23 | NR   | 0.23 | 0.23 | 0.23 | 0.23   | NR   |
|                                | Maximum RSHGC (≥4 habitable stories) | 0.35            | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23   | 0.23 |

RSHGC is equivalent to SHGC or may optionally be calculated using 2022 BEES Equation 170.2-A, which accounts for exterior window shading.

The following exceptions to the DOE Efficient New Homes window performance criteria apply:

- An area-weighted average of windows (for dwelling unit and common space windows) shall be permitted to satisfy the U-factor requirements;
- An area-weighted average of windows (for dwelling unit and common space windows) shall be permitted to satisfy the RSHGC requirements;
- Windows used as part of a passive solar design shall be exempt from the U-factor and RSHGC requirements and shall be excluded from area-weighted averages calculated using a) and b), above. Exempt windows shall be facing within 45 degrees of true South and directly coupled to thermal storage



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mass that has a heat capacity  $> 20 \text{ btu} / \text{ft}^3 \times \text{F}$  and provided in a ratio of at least 3 sq. ft. per sq. ft. of South facing windows. Generally, thermal mass materials will be at least 2 in. thick.

- d. In Phius or PHI certified buildings, where triple-glazed window assemblies with thermal breaks / spacers between the panes are used, such windows meet the intent of Item 3.1 and may be excluded from the area-weighted averages calculated.

## <sup>18</sup> Exceptions and alternative compliance paths:

- a. Ducts and/or the space-conditioning system air handler may be located in ventilated attic spaces when the roof and ceiling insulation level from 2022 BEES Table 170.2-A, Option B are met, as specified in 2022 BEES Section 170.2(c)3Bii. Duct insulation levels must also meet the requirements in 2022 BEES Table 170.2-K, "Duct Insulation: Ducts in Unconditioned Space."
- b. Ducts and/or the space-conditioning air handler may be located within an unvented, insulated attic assembly.
- c. Jump ducts which do not directly deliver conditioned air from the heating/cooling equipment may be located in attics if all joints, including boot-to-drywall, are air sealed and the jump duct is fully buried under the attic insulation. If the jump ducts are located in a ventilated attic space meeting the roof and ceiling insulation level from the 2022 BEES Table 170.2-A, Option B, and the jump duct insulation levels meet the Option B duct insulation requirements in Table 170.2-K, then the jump ducts do not have to be fully buried under the attic insulation.
- d. Ducts and air-handling equipment associated with rooftop make-up air units or dedicated outdoor air systems (DOAS) that provide ventilation, and may also provide supplemental heating and cooling, are permitted to be outside of the building's thermal and air barrier boundary.

This provision does not apply to equipment or ductwork that only provides ventilation, including make-up air systems. This requirement does not apply to air handling equipment or ductwork serving multiple dwelling units. This requirement does not apply to through-wall systems (i.e., packaged terminal heat pumps (PTHPs), packaged terminal air conditioners (PTACs), and vertical terminal air conditioners (VTACs)).

## <sup>19</sup> To meet the Compact Hot Water Distribution System credit requirements, the system's Weighted Distance must be less than the Qualification Distance based on the calculation procedures in RA4.4.6 of the 2022 Building Energy Efficiency Standards Reference Appendices. In addition, these HERS field verifications are required:

- a. No hot water piping larger than 1 inch diameter is allowed.
- b. Length of 1 inch diameter piping is limited to 8 ft or less.
- c. Two and three story buildings do not have hot water distribution piping in the attic, unless the water heater is also located in the attic.
- d. Eligible recirculating systems must be HERS-Verified Demand Recirculation: Manual Control conforming to RA4.4.17

## <sup>20</sup> To minimize water wasted while waiting for hot water and water heating energy, the hot water distribution system shall store no more than 1.8 gallons (4.5 liters) of water in any piping/manifold between the hot water source and any hot water fixture. This provision applies to in-dwelling unit plumbing systems and central hot water distribution systems. System options include manifold-fed systems; structured plumbing systems; core plumbing layouts, and recirculation systems. This provision does not apply to fixtures in dwelling unit bathrooms without a shower or bathtub.



# DOE Efficient New Homes Multifamily California Program Requirements Version 2 (Rev. 2)

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To verify that the distribution system stores no more than 1.8 gallons (6.8 liters), raters shall either use the Calculation method **or** the Field Verification method. In the Calculation method, the rater shall calculate the stored volume between the hot water source and the furthest fixture from the source using the piping or tubing inside diameter and the length of the piping/tubing. In the case of recirculation systems, the 1.8-gallon (68 liter) storage limit shall be measured from the point where the branch feeding the furthest fixture branches off the recirculation loop, to the fixture itself. An Excel-based tool is available on the DOE Efficient New Homes website for this calculation.

Using the Field Verification method, no more than 2.0 gallons (7.6 liters) of water shall be collected from the hot water fixture before hot water is delivered. This accounts for any water stored in the fixture in addition to the 1.8-gallon limit on pipe storage. Only the fixture with the greatest stored volume between the fixture and the hot water source (or recirculation loop) needs to be tested. To field-verify that the system meets the 2.0-gallon (7.6 liter) limit, raters shall first initiate operation of recirculation systems, if present, and let such systems run for at least 40 seconds. Next, a bucket or flow measuring bag (pre-marked for 2.0 gallons) shall be placed under the hot water fixture. The hot water shall be turned on completely and a digital temperature sensor used to record the initial temperature of the water flow. Once the water reaches the pre-marked line at 2.0 gallons, the water shall be turned off and the ending temperature of the water flow (not the collection bucket) shall be recorded. The final temperature of the water flow must increase by  $\geq 10^{\circ}\text{F}$  in comparison to the initial temperature reading.

<sup>21</sup> WaterSense label may be verified in one of two ways:

- a. A cut sheet for the installed product indicates that it is WaterSense labeled and field verification shows that the installed product is the one described on the cut sheet.
- b. The installed product can be found in the most recent WaterSense Product Search tool (<https://lookforwatersense.epa.gov/products/>) and field verification shows that the installed product matches the product described in the search tool.

<sup>22</sup> In-dwelling unit hot water recirculation systems meet the following control requirements (these provisions do not apply to recirculating central hot water distribution systems):

- a. Must be based on an occupant-controlled switch or an occupancy sensor. A sensor or switch must be installed for each fixture or set of fixtures (e.g., bathrooms with multiple fixtures) in the dwelling unit located beyond a 1.8 gallon stored-volume range from the water heater or central recirculation loop.
- b. In-dwelling unit recirculation systems which operate based on “adaptive” scheduling, meaning that they “learn” the hot water demand profile in the dwelling unit and adapt their operation to anticipate this profile, are permitted at this time, and do not require the use of occupant-controlled switches or occupancy sensors.
- c. In-dwelling unit recirculation systems that are activated based **solely** on a timer and/or temperature sensor are not eligible.

<sup>23</sup> ENERGY STAR product certification must be verified with a visual confirmation that installed product is listed in the online ENERGY STAR product registry.

<sup>24</sup> Due to industry supply chain challenges, DOE is temporarily allowing the use of non-ENERGY STAR certified refrigerators. DOE advises partners that this alternative may be rescinded in a future program update.

<sup>25</sup> Products in categories which are not covered by ENERGY STAR product criteria are exempt.

<sup>26</sup> This provision does not apply to H/ERVs that are used to provide exhaust ventilation for bathrooms.



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<sup>27</sup> Up to 5% of lighting, for task or decorative lighting, may be exempt from this provision.

<sup>28</sup> Builder-installed lighting does not include lighting inside appliances (e.g., refrigerator, laundry, microwave, cooking equipment).

<sup>29</sup> Buildings permitted on or before 12/31/2026 must certify under either Indoor airPLUS (IAP) Version 1 (Rev 4), or the IAP Version 2 Certified or Gold tier. Buildings permitted on or after 1/1/2027 must certify under the IAP Version 2 Certified or Gold tier. See the Indoor airPLUS program site for information on Version 2 requirements: <https://www.epa.gov/indoorairplus/indoor-airplus-version-2>.

<sup>30</sup> An in-unit HRV or ERV is required to provide whole-dwelling mechanical ventilation for dwelling units in 2021 IECC Climate Zones 6 – 8 and must meet or exceed the following specifications:  $\geq 65\%$  SRE (@ 32 °F) and  $\geq 1.2$  CFM/Watt (at one or more rating points). Alternatively, projects may use centralized H/ERVs serving multiple dwelling units. Note that in California, only Mono County and Alpine County are located in Climate Zone 6, and no California counties are located in Climate Zones 7 or 8. 2021 IECC climate zones may be determined by using the published IECC at the following link: <https://codes.iccsafe.org/content/IECC2021P2/chapter-3-ce-general-requirements>.

<sup>31</sup> Advisory: DOE encourages, but does not require, that partners use equipment listed in the Home Ventilating Institute (HVI) Certified Products Directory (CPD) to comply with this requirement. The listing may be used to demonstrate compliance with this program requirement.

<sup>32</sup> Each dwelling unit with an in-unit water heater has an individual branch circuit outlet that is installed, energized, and terminates within 3 feet of each installed fossil fuel water heater, and a space located within the dwelling unit that is at least 3' x 3' wide and 7' high shall be available surrounding or within 3 feet of the installed fossil fuel water heater, to facilitate future heat pump water heater installation. The individual branch circuit shall have a rating not less than 240V/30A or 120V/20A. The 3' x 3' x 7' volume may contain the existing water heater. An exception to the requirement for the 3' x 3' x 7' space is provided when the installed water heater is an electric system or a fossil fuel tankless water heater.

Dwelling units using an electric water heater are exempt from this requirement.

<sup>33</sup> Drain is no more than two inches higher than the base of the installed water heater and allows draining without pump assistance. Drain is not required to be reserved exclusively for use with a future heat pump water heater. Drain does not need to be provided if the installed water heater is a tankless water heater system or an electric system with a nominal tank volume less than 50 gallons.

<sup>34</sup> A Modeler is defined as an individual responsible for conducting energy simulation analysis of the project to demonstrate compliance with the energy performance target.