



U.S. DOE Zero Energy Ready Home Program
 Multifamily California Rater Checklist
 Version 2

This Checklist is only for use in the State of California.

The program requirements in this checklist must be verified based on as-built conditions unless noted otherwise. Project teams are strongly encouraged to use this checklist during the project design phase as well. Raters are reminded that these checklist items must be completed in addition to the items required by ENERGY STAR Multifamily New Construction California Version 1.4 and Indoor airPLUS. Overlapping requirements are not repeated in this checklist.¹ 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.

DOE Zero Energy Ready Home – Multifamily Version 2 California Rater Checklist						
Home Address:			Must Correct	Rater ² Verified	Verified by Builder or Licensed Professional ³	Exception or Alternate Used ⁴ (Enter endnote #)
City:	State:	Permit Date:				
1. Partnership Status						
1.1 Rater has verified that builder is a registered DOE ZERH Builder Partner and identified the builder’s Partner ID. ⁵			<input type="checkbox"/>	<input type="checkbox"/>		
1.2 Rater has verified and documented that their company has a ZERH partnership agreement using the ZERH Partner Locator . ⁶			<input type="checkbox"/>	<input type="checkbox"/>		
1.3 Rater(s) signing checklists attest that they have completed DOE-recognized training (according to the timeline posted on the ZERH website) and are credentialed by a Home Certification Organization for ZERH (HCO for ZERH) or meet the credential requirements for a Multifamily Review Organization for ZERH (MRO for ZERH).			<input type="checkbox"/>	<input type="checkbox"/>		
2. ENERGY STAR Multifamily New Construction Baseline						
2.1 Unit is certified under ENERGY STAR Multifamily New Construction, California Version 1.4. ⁷			<input type="checkbox"/>	<input type="checkbox"/>		
3. Building Envelope						
3.1 Windows meet high performance requirements based on climate zone. ⁸			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
4. Duct System						
4.1 All heating and cooling distribution ducts and the space-conditioning system air handler are located within the thermal and air barrier boundary. ⁹			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
5. Water Heating Efficiency						
5.1 Hot water distribution system HWDS qualifies as HERS-Verified Compact HWDS as specified in BEES Reference Appendix RA3.6.5 ¹⁰ for units with in-unit water heaters or hot water delivery systems (in-unit or central) meet stored volume criteria. ¹¹			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
5.2 WaterSense labeled ¹² fixtures for dwelling unit showerheads, bath faucets, and aerators.			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
5.3 In-dwelling unit recirculation systems use on-demand controls. ¹³			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>



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5.4 Buildings with a continuously operating central recirculation loop comply with BEES Section 160.4(f)1 (Piping for Multifamily Domestic Hot Water Systems).	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
6. Lighting & Appliances¹⁴				
6.1 All builder-supplied and builder-installed in-dwelling refrigerators, ¹⁵ dishwashers, clothes washers, and clothes dryers are ENERGY STAR certified. ¹⁶	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
6.2 100% of builder-installed lighting fixtures and lamps (bulbs) are LEDs. ^{17 18}	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
6.3 All builder-installed bathroom ventilation fans are ENERGY STAR certified. ¹⁹	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
7. Indoor Air Quality				
7.1 Certified under EPA Indoor airPLUS (version determined by permit date). ²⁰	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
7.2 Either in-dwelling or centralized energy efficient balanced ventilation (HRV or ERV) is provided for dwelling units in 2021 IECC Climate Zones 6 – 8. ²¹	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
8. Renewable Ready				
8.1 Provisions of the DOE Zero Energy Ready Home Multifamily PV-Ready Checklist Version 2 are completed.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
9. Electric Vehicle Ready				
9.1 Provisions of the DOE Zero Energy Ready Home Multifamily EV-Ready Checklist Version 2 are completed.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
10. Heat Pump Water Heating Ready				
10.1 Dwelling units with in-unit water heaters meet minimum electric and space requirements. ²²	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2 Dwelling units with in-unit water heaters have a condensate drain installed within three feet of existing water heater. ²³	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
11. Heat Pump Space Heating Ready				
11.1 Dwelling units with in-unit gas or propane heating systems comply with 2022 BEES Section 160.9(a): Mandatory Requirements for Electric Ready Buildings – Heat pump space heater ready.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Energy Efficiency Threshold				
12.1 Compliance Margin (determined using the Time Dependent Valuation methodology, TDV) is greater than 15% compared to the Efficiency Compliance total of the Standard Design (determined using TDV).	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>



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Inspection Signoffs		
Rater Name: _____ Rater Company Name: _____	Rater Pre-Drywall Inspection ²⁴ Date(s): _____	Rater Initials: _____
Rater Name: _____ Rater Company Name: _____	Rater Final Inspection ²⁵ Date(s): _____	Rater Initials: _____
Builder/Developer Employee: _____ Builder/Developer Company Name: _____	Builder Inspection Date(s): _____	Builder Initials: _____
Licensed Professional: _____	LP Inspection Date(s): _____	LP Initials: _____

Endnotes:

The following endnotes are intended to relate the same exemptions and clarifications as noted in the ZERH Multifamily California Program Requirements Version 2. However, if there are any inconsistencies, the endnotes in the ZERH Multifamily California Program Requirements Version 2 shall take precedence.

¹ This Checklist applies to all dwelling units, sleeping units, common spaces, and garages (open or enclosed) in the building being certified, and where specified, parking lots. 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. This Checklist does not apply to commercial or retail spaces. This Checklist does not apply to common spaces that are located in buildings on the property without any dwelling or sleeping units. A 'sleeping unit' as defined by ANSI / RESNET / ICC 301, is a room or space in which people sleep, which 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. Where the term 'dwelling unit' is used in this Checklist, the requirement is also required of 'sleeping' units. 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 townhouses and 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 two structures is not considered a common entrance or exit.

² The term 'Rater' refers to the person(s) completing the third-party verification required for certification. The person(s) shall be a Certified Rater as defined below and have successfully completed all required DOE-recognized training as posted on the ZERH website. Raters may contact their HCO or MRO for ZERH to access this training. A Certified Rater is defined as an individual who has become qualified to conduct California HERS Ratings through certification under an HCO for ZERH



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recognized by DOE to implement a ZERH certification program in California or an equivalent designation as determined by a DOE-recognized MRO for ZERH.

As stated in the Program Requirements, Raters who operate under an MRO or HCO for ZERH with a Sampling Protocol are permitted to verify any Checklist Item designated “Rater Verified” using an MRO or HCO for ZERH-approved sampling protocol. No parties other than Raters are permitted to use sampling to complete this 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.

³ At the discretion of the Rater, a licensed professional (LP) may verify those line items in this Checklist where a checkbox is in the “Licensed Professional” column. A Licensed Professional must be a Professional Engineer Registered Architect, or other industry professional (e.g., electrician) in good standing and possess a current license. When exercised, the LP’s responsibility will be formally acknowledged by the LP signing off on the checklist for the item(s) that they verified. However, if a quality assurance review indicates that Items have not been successfully completed, the Rater will be responsible for facilitating corrective action.

⁴ If an exception for a program requirement or an alternate compliance method is used, enter the number of the corresponding endnote from this document that lists the exception or alternate.

⁵ The DOE ZERH Partner ID number for the builder may be obtained from the builder or found on the [Partner Locator tool](#) on the DOE ZERH program website.

⁶ Raters are only required to document the partnership status of their company once, for the first home that the Rater certifies for them.

⁷ Regardless of the ENERGY STAR program version required for ENERGY STAR certification, ZERH Multifamily California Version 2 requires certification to ENERGY STAR Multifamily New Construction California Version 1.4.

⁸ 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 Equation 170.2-A, which accounts for exterior window shading.

The following exceptions to the ZERH Window performance criteria apply:

- a. An area-weighted average of windows (for dwelling unit and common space windows) shall be permitted to satisfy the U-factor requirements;



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- b. An area-weighted average of windows (for dwelling unit and common space windows) shall be permitted to satisfy the RSHGC requirements;
- c. Windows utilized 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 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.

Advisory: DOE is monitoring the implementation of ENERGY STAR product specifications for residential windows (V7.0), and may adopt these in a future program version update.

⁹ 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 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.
- 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.

¹⁰ 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

¹¹ Hot water delivery systems meet the following efficiency requirements:

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.

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 ZERH website for this calculation.



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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 ≥ 10 °F in comparison to the initial temperature reading.

¹² 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.

¹³ In-dwelling unit hot water recirculation systems meet the following 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, installed in each bathroom in the dwelling unit which is 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.

¹⁴ ENERGY STAR product certification must be verified with a visual confirmation that installed product is listed in the online ENERGY STAR product registry.

¹⁵ 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.

¹⁶ Products in categories which are not covered by ENERGY STAR product criteria are exempt.

¹⁷ Up to 5% of lighting, for task or decorative lighting, may be exempt from this provision.

¹⁸ Builder-installed lighting does not include lighting inside appliances (e.g., refrigerator, laundry, microwave, cooking equipment).

¹⁹ This provision does not apply to H/ERVs that are used to provide exhaust ventilation for bathrooms.

²⁰ Buildings permitted on or before 12/31/2025 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 1/1/2026 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>.

²¹ 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 ≥ 1.2 CFM/Watt (at one or more rating points). Alternatively, projects may utilize 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.



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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>.

²² 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 utilizing an electric water heater are exempt from this requirement.

²³ 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.

²⁴ Any Item that will be concealed by drywall (e.g., wall insulation) must be verified during the pre-drywall inspection. If drywall is installed prior to the inspection, then it must be entirely removed to fully verify all Items. It is not sufficient to remove only portions of drywall to inspect a subset of areas. Furthermore, it is not acceptable to complete a Sampled Rating on a home that has missed the pre-drywall inspection. Additional information is available in the ENERGY STAR Technical Bulletin: Pre-Drywall Inspection Is Always Required.

²⁵ Some Items can typically only be verified at a later stage of construction than when the pre-drywall inspection occurs (e.g., bath fan airflow). Any Item that has not been verified during the pre-drywall inspection must be verified prior to or during the final inspection.