



# U.S. DOE Zero Energy Ready Home Multifamily Quality Assurance Checklist (ERI Path) Version 2 (Rev. 1)

A Zero Energy Ready Home Quality Assurance Checklist shall be completed during each quality assurance file review and field review (QA review) of homes being certified through the DOE Zero Energy Ready Home (ZERH) program in accordance with the policies and procedures of the DOE-recognized Home Certification Organization for the Zero Energy Ready Home program (HCO for ZERH). This edition of the QA checklist is mandatory for homes certified under ZERH Multifamily Version 2 (Rev. 1).

## Instructions for Performing Quality Assurance Review

- Instructions for All Reviews:
  - An ENERGY STAR Multifamily New Construction Quality Control Review must be completed on the unit in question in order for a Quality Assurance Review for ZERH Multifamily Version 2, Revision 1 to be completed.
  - One checklist shall be used to document all applicable items for one dwelling unit. Where more than one unit in a building is being reviewed, additional checklists shall be used for the additional dwelling units. However, Table 9 is only required for the first dwelling unit reviewed in a building. Where additional checklists are used for additional dwelling units, Table 9 is not required.
  - Items found to be out of compliance, in accordance with the HCO for ZERH policies, shall be corrected. If correction is not possible, the unit's certification is required to be withdrawn (please contact [zerh@doe.gov](mailto:zerh@doe.gov) for guidance).
  - Additional items may be reviewed and reported in Table 11: Additional Checklist Items and Exemptions.
- Instructions for File Review:
  - Complete Tables 1 through 9 and 11 below, except where marked "For Field Review Only."
- Instructions for Field Review:
  - Complete all items in Tables 1 through 11 below. Complete all File Review items **before** completing "For Field Review Only" items.
  - Where a National Rater Checklist item cannot be verified because it is not visible, not accessible, cannot be tested, or there are other extenuating circumstances, mark the box in the column "Not Verified" and include an explanation in an attached document.
  - In accordance with the HCO for ZERH policies, a limited amount of the required QA Field Reviews may be performed at the pre-drywall stage. Mark items that are not yet installed as "Not Verified." If any items are "Not Verified," attach an action/explanation summary document.



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**1. Project Information**

Building Address	City	State
Building Name	Number of Units	Permit Date

**2. Original Rating Information**

Energy Rating Company Name			<a href="#">ZERH partner status</a> confirmed?	
			<input type="checkbox"/>	Yes
			<input type="checkbox"/>	No
Pre-Drywall Inspection Rater Name	Rater ID #	Date of Pre-Drywall Inspection	Completion dates of <a href="#">ZERH training</a> and assessments	
			V2 Orientation	
			MF V2 Training	
Final Inspection Rater Name	Rater ID #	Date of Final Inspection	Completion dates of <a href="#">ZERH training</a> and assessments	
			V2 Orientation	
			MF V2 Training	

**3. QA Review Information**

QA Reviewer Name	File Review or Field Review?	Unit Number	Date of Review
<i>For Field Review Only</i>	Field Review Rater Name	Pre-drywall or final construction/completed?	Date of Review

**4. Action Items / Summary of QA**

	Yes	No
All items in Tables 5 – 10 are marked “Yes” or “N/A.”		
If any items in Tables 5 – 10 are marked “No” or “Not Verified,” a document explaining these items is attached to this file. (If all items in Tables 5-7 are marked “Yes,” mark N/A.)		



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**5. Documentation Collection**

All items below must be collected as part of the QA data file for <u>both file and field reviews</u> .		Yes	No
A	Energy rating file (model).		
B	Documentation that the builder is a ZERH Partner. If documentation of active partnership cannot be verified, contact zerh@doe.gov.		
C	Documentation that the building is certified under ENERGY STAR Multifamily New Construction Version 1.2.		
D	Documentation that the building is certified under EPA Indoor AirPlus (permit date before 1/1/2026: Version 1; permit date on/after 1/1/2026: Version 2 Certified or Gold).		
E	DOE Zero Energy Ready Home Multifamily PV-Ready Checklist Version 2 (Rev. 1) is collected, with all applicable items marked “Verified,” or the building meets an exemption or alternative as specified in the National Program Requirements (see Table 8, below).		
F	DOE Zero Energy Ready Home Multifamily National Rater Checklist Version 2 (Rev. 1) is collected, with no items left blank or marked “Must Correct.”		
G	DOE Zero Energy Ready Home Multifamily EV-Ready Checklist Version 2 (Rev. 1) is collected, with all applicable items marked “Verified,” or the building meets an exemption or alternative as specified in the National Program Requirements (see Table 8, below).		
I	Photo documentation is collected that complies with the Rater’s HCO for ZERH’s documentation requirements.		

**6. Energy Rating File (Model) Review**

All items below must be verified as part of the QA process for <u>both file and field reviews</u> .		Yes	No
J	Energy rating file (model) passes the HCO for ZERH’s quality assurance review checklist.		
K	ERI of the modeled unit meets or exceeds the DOE ZERH ERI Target for the program version applicable at the time of certification.		
L	Energy rating file (model) is consistent with the National Rater Checklist (see items 3.1 – 7.2 below).		
3.1a	Modeled or calculated whole building thermal envelope total UA is equal to or lower than the UA value calculated as the sum of each envelope assembly component multiplied by its respective U factor from the 2021 IECC as specified in the National Program Requirements. Note that a dwelling unit UA calculated by ERI software does not demonstrate compliance with the ZERH requirement for a <i>whole-building UA</i> .		
3.2	Dwelling unit’s modeled windows meet the high-performance requirements based on climate zone.		
4.1	Dwelling unit’s in-unit heating and cooling distribution ducts and heating and cooling air handling equipment are modeled as located within the thermal and air barrier boundary or meet an alternative as specified in the National Program Requirements (see Table 8, below).		
5.1	Dwelling unit’s domestic hot water fixtures are modeled as low-flow (if software allows).		
5.3	In-dwelling unit recirculation systems, if present, are modeled with on-demand controls.		



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5.4	Central recirculating hot water distribution systems serving the dwelling unit, if present, is modeled to meet pipe insulation thickness criteria as specified in the National Program Requirements (if software allows).		
6.2	Modeled lighting is at least 95% LEDs.		
7.2	If the project is located in 2021 IECC Climate Zones 6-8, dwelling unit is modeled with energy efficient balanced ventilation that meets or exceeds 65% SRE (@32 °F) and 1.2 CFM/Watt or meets an alternative as specified in the National Program Requirements (see Table 8, below). If the project is located in 2021 IECC Climate Zones 1-5, mark this item as "N/A."		

**7. DOE Zero Energy Ready Home Multifamily National Rater Checklist Review**

All items below must be verified as part of the QA process <u>for both file and field reviews</u> .		Yes	No
M	Rater name(s) is/are recorded.		
N	Rater inspection dates are recorded.		
O	Rater signature(s) is/are recorded.		
P	ZERH Builder ID is accurately recorded on the Rater Checklist.		
Q	Documentation collected on alternative UA calculations, if used for compliance.	N/A	
R	If any Builder Verified items are used, builder employee, inspection date, and initials are recorded.		
S	If any LP Verified items are used, Licensed Professional, LP inspection date, and initials are recorded.		
All items below must be verified, with applicable documentation collected, as part of the QA process <u>for field reviews only</u> . As an alternative, complete and attach the DOE Zero Energy Ready Home Multifamily National Rater Checklist.		Not Verified	No
T	As-built unit is consistent with the National Rater Checklist and Energy Rating File (Model) (see items 3.1 – 11.1, below).		
3.1	Insulation which is accessible for inspection matches the corresponding insulation value used in the energy rating file (model).		
3.2	U and SHGC values of windows in rated unit match corresponding values in the energy rating file (model).		
4.1	All accessible heating and cooling distribution ducts and heating and cooling air-handling equipment within the dwelling unit are located within the thermal and air barrier boundary or meet an alternative as specified in the National Program Requirements (see Table 8, below).		
5.1	Installed water heater efficiency matches corresponding efficiency value used in the energy rating file (model), and installed showerheads and bathroom sink faucets and accessories which are accessible for inspection are WaterSense labeled. WaterSense label can be verified using the item's serial number (if available) if the fixture's label has been removed since installation.		
5.2	Hot water delivery systems within the dwelling unit meet stored volume criteria based on a review of submitted construction documents. If compliance cannot be		



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	determined based on a review of construction documents, mark this item “not verified.”			
5.3	In-dwelling unit recirculation systems, if present, use on-demand controls.			
5.4	Piping which is part of a central recirculating hot water distribution system and that is accessible for inspection matches the corresponding insulation value used in the energy rating file (model).			
6.1	All builder-supplied and builder-installed in-dwelling refrigerators, dishwashers, clothes washer, and clothes dryers are ENERGY STAR certified, or all builder-supplied and builder-installed in-dwelling dishwashers, clothes washers, and clothes dryers are ENERGY STAR certified and refrigerator meets an alternative as specified in the National Program Requirements (see Table 8, below).			
6.2	100% of builder-installed lighting fixtures and lamps (bulbs) within the dwelling unit are LEDs or the lighting meets an alternative as specified in the National Program Requirements (see Table 8, below).			
6.3	All installed bathroom ventilation fans in dwelling units are ENERGY STAR certified.			
7.2	Installed energy efficient balanced ventilation (HRV or ERV) matches the corresponding efficiency values in the energy rating file (model). If no balanced ventilation system is present in the unit, mark this item “N/A.”			
8.1	Provisions of the DOE Zero Energy Ready Home Multifamily PV-Ready Checklist Version 2 (Rev. 1) marked as “Verified” are present in the rated building or the project meets an alternative as specified in the Multifamily PV-Ready Checklist.			
10.1	a. Individual branch circuit outlet is installed, energized, and terminates within 3 feet of each installed fossil fuel water heater in a dwelling unit, or the water heater meets an alternative as specified in the National Program Requirements (see Table 8, below).			
	b. A volume of open space that is at least 3’ x 3’ wide and 7’ high is located within the dwelling unit surrounding or within 3 feet of the installed fossil fuel water heater in the dwelling unit, or the water heater meets an alternative as specified in the National Program Requirements (see Table 8, below).			
10.2	Dwelling units with in-unit water heaters have a condensate drain installed within three feet of existing water heater, or the water heater meets an alternative as specified in the National Program Requirements (see Table 8, below). If dwelling unit is served by a central domestic hot water system, mark this item “N/A.”			
11.1	For dwelling units with in-unit combustion space heaters, individual branch circuit outlet or conduit is installed to facilitate future wiring for a heat pump installation. Circuit or conduit is labeled as “For future heat pump.” Or, the space conditioning equipment meets an alternative as specified in the National Program Requirements (see Table 8, below).			



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**8. DOE Zero Energy Ready Home Multifamily Rater Checklist Exemptions and Alternatives**

Mark any exemptions or alternatives used during the original rating. If exemption is NOT used, leave that row blank.		Exemption accurately recorded?	
		Yes	No
3.1	Slab edge insulation allowance for jurisdictions designated as having Very Heavy Termite Infestation.		
	ENERGY STAR insulation allowances, exceptions, and compliance alternatives (e.g., for slab edge (above-grade and on-grade), columns, balcony details) recognized by the most recent national version and revision of ENERGY STAR Multifamily New Construction (ESMFNC) are used.		
3.2	Windows are exempted from U/SHGC requirements because they are utilized as part of a passive solar design.		
	Windows are permitted to meet different U values based on climate zone and project site elevation.		
	Class AW windows are included in the area-weighted window calculation and meet U/SHGC requirements noted in the National Program Requirements.		
4.1	Distribution ducts and/or heating and cooling air-handling equipment serves multiple dwelling units or is not located in the rated unit.		
	Jump ducts that do not directly deliver conditioned air from heating/cooling equipment may be located in attics if all joints are air sealed, and duct is fully buried under attic insulation.		
6.2	Up to 5% of lighting, for task or decorative lighting, is not LED lighting. The remaining builder-installed lighting is LED.		
7.2	The dwelling unit is served by a centralized HRV or ERV.		
10.1	a. Dwelling unit utilizes an electric water heater or is served by a central water heating system.		
	b. Dwelling unit utilizes an electric water heater, is served by a central water heating system, or utilizes a tankless water heater system.		
10.2	The installed water heater is tankless or an electric system with a tank volume of less than 50 gallons and the condensate drain is not provided.		
11.1	The installed primary heating system for the dwelling unit is electric or the dwelling unit is served by a central heating system.		

**9. DOE Zero Energy Ready Home Multifamily EV-Ready Checklist**

All items below must be verified as part of the QA process for both file and field reviews. This table is required for the first dwelling unit reviewed in a building. Where additional checklists are used for additional dwelling units, this table is not required.		Yes	No
U	Rater name(s) is/are recorded.		
V	Rater inspection dates are recorded.		
W	Rater initials are recorded.		



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X	If any Builder Verified items are used, builder employee, inspection date, and initials are recorded.		N/A		
Y	If any LP Verified items are used, Licensed Professional, LP inspection date, and initials are recorded.				
Z	If exception A, B, and/or C is used, documentation is provided which supports the claim.				
All items below must be verified, with applicable documentation collected, as part of the QA process for field reviews only. As an alternative, complete and attach the DOE Zero Energy Ready Home Multifamily EV-Ready Checklist. <i>If Exception A is claimed, this section is not required.</i>			Not Verified	Yes	No
1	Exceptions A, B, and C are <u>not</u> claimed, and allocated parking for dwelling units in multifamily or mixed-use buildings are provided with an EV Capable, EV Ready, or EVSE space for 20% of units or automobile parking spaces, whichever is less. (If Exception A, B, or C is claimed, mark this item "N/A.")				
	Exception B or C <u>is</u> claimed and documented, and allocated parking for dwelling units in multifamily or mixed-use buildings are provided the percentage of EV Capable, EV Ready, or EVSE spaces indicated on the EV-Ready checklist. (If neither exception is claimed, mark this item "N/A.")				
	The Low-Power Level 2 (L2) alternative is used, and all spaces provided are EVSE. (If the alternative is not used, mark this item "N/A.")				
For all EV Capable spaces provided:					
2a	A continuous raceway or cable assembly is installed between a panelboard (or other on-site electrical distribution equipment) and an enclosure or outlet located within 6 feet of the space.				
2c	The panelboard to which the raceway or cable assembly connects has sufficient dedicated space for a two-pole circuit breaker or set of fuses.				
2d	The electrical enclosure or outlet and the panelboard are both marked "For electrical vehicle supply equipment (EVSE)."				
For all EV Ready spaces provided:					
3a	A branch circuit is installed and terminates at an enclosure or outlet located within 6 feet of the space.				
3c	The branch circuit termination (electrical enclosure or outlet) and the panelboard are both marked "For electrical vehicle supply equipment (EVSE)."				
For all EVSE spaces provided:					
4a	EVSE is installed within 6 feet of the space.				
4c	Only one of the three items to the right is required. For the two options which are not used, mark those items "N/A."	Nameplate charging capacity of installed EVSE is not less than 6.2 kVA (30A and 208/240V).			
		An energy management system (EMS) is installed. The nameplate charging capacity of installed EVSE is not less than 2.1 kVA per space (10A at 208/240V).			
		The Rater has indicated that the L2 alternative is used. The nameplate charging capacity of installed EVSE is not less than 3.3 kW (16A at 208/240V).			
4d	Installed EVSE is listed and labeled in accordance with UL 2202 or UL 2594.				





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### 10. Verification of Key Equipment Performance

All items below must be verified, with applicable documentation collected, as part of the QA process <i>for field reviews only.</i>		Not Verified	Yes	No
O	Installed residential heating equipment has specifications which match the efficiency levels used in the energy rating file (model).			
P	Installed residential cooling equipment has specifications which match the efficiency levels used in the energy rating file (model).			
Q	Installed domestic water heating equipment has specifications which match the efficiency levels used in the energy rating file (model).			

### 11. Additional Checklist Items and Exemptions

Use this space to list additional items reviewed and describe any other exemptions or alternatives that were used (attach additional pages, if needed).		
Checklist/Section Name	Item #	Notes