

U.S. DOE Zero Energy Ready Home Program Public Comment Form Manufactured Homes Version 1 Pilot Requirements.

INSTRUCTIONS: Please use the space below to provide comments, feedback, or questions regarding any of the Zero Energy Ready Home Program Manufactured Homes Version 1 Pilot Requirements. Do not feel obligated to comment on all the requirement sections. Upon completion, please email this form to zerh@doe.gov with the subject "DOE ZERH MH Public Comment Response." Please submit all responses by August 4, 2023.

Comments related to technical requirements should focus on:

1. Identification of additional efficiency packages that would achieve equivalent or better performance compared to the published V1 requirements, and that would allow for greater flexibility and more compliance option.
2. Identification of needed clarifications in the ZERH MH V1 program requirements and certification process documents.
3. Requests for technical guidance on program requirements.

Note: DOE requests that any comments that advocate for relaxing efficiency measures be accompanied with recommended alternative measures that would achieve similar or better energy performance

Feedback should refrain from

1. Comments advocating changes to the ENERGY STAR Manufactured Homes V3 requirements,
2. Comments outside of the scope of the voluntary DOE Zero Energy Ready Home Manufactured Homes specification, such as concerns about the DOE Energy Conservation Standards for Manufactured Housing.

Partner Type: Manufactured Home Builder Quality Assurance Provider Organization Other Not Currently a Partner

ZERH Manufactured Home V1 Pilot Specification Item	Comment / Feedback / Questions
Mandatory Efficiency Requirements (Exhibit 1)	
Certified ENERGY STAR Manufactured New Homes Version 3 <i>(Please Note: Exhibit 1 is an exact duplication of Exhibit 1 from the ENERGY STSAR Manufactured New Homes Version 3 requirements. By achieving Certification under ENERGY STAR Manufactured New Homes Version 3, homes will necessarily satisfy Exhibit 1)</i>	

This proposal is being issued on behalf of the Standards Committee of the Northeast Home Energy Rating System Alliance, which represents more than 260 Raters and 11 Providers from New Jersey to Maine.

Additional Efficiency Requirements (Exhibit 2)	
Mandatory Requirements	The points distribution difference between CZ1 and CZ3 is significant. Propose either including an additional CZ4 to include IECC CZs 6-8 or awarding additional points (6?) for CZ3 since it encompasses climate zones that encounter significant temperature ranges and high HDDs.
Optional Envelope Improvements	
Optional Heating and Cooling Equipment	Heat pump requirements are equivalent to current federal minimums. As an above code program, propose requiring HSPF2 ≥ 9.0 / SEER2 ≥ 15 . With the technology of split units, space constraint should not be an issue. Also recommend that if continuing to allow fossil fuel furnaces the “ ≥ 90 AFUE” option should be disallowed, and all units must be sealed combustion.
Optional Water Heater	If continuing to allow fossil fuel DHW, recommend requiring ≥ 0.95 UEF which is easily obtainable with wall hung instantaneous units that are readily available, and the best use of the constrained spaces typically found in manufactured homes. Points distribution for propane water heaters should be equivalent in all CZs, recommend 0.5.
Optional Lighting, Appliances, & Water Fixtures	
Other Comments related to the structure, overall point targets in the table, etc.	
Please Identify additional efficiency packages that would achieve equivalent or better performance compared to the published V1 requirements, and that would allow for greater flexibility and more compliance option	
Exhibit 3: Mandatory Technical Requirements (Exhibit 3)	
Factory Installed Measures	
Thermal Envelope	
1. Reduced Thermal Bridging	
1.1 Roof Truss Heel Height	
1.2 Insulation Beneath Attic Platforms	
1.3 Reduced Wall Thermal Bridging	

2. Air Sealing	
2.1 Sealing Recessed Lighting	
2.2 Sealing Exterior Doors	
2.3 Sealing Floor Penetrations	
2.4 Sealing Bottom Board or Belly Board	Additional language should be included to disallow belly paper to mitigate rodent and similar intrusion. All ZERH manufactured homes should be required to utilize belly board with a minimum thickness of ½", are decay and rot resistant, and air sealed as mitigate wind washing of insulation. Access panels can be utilized where needed to provide maintenance access.
HVAC/Air Distribution Systems	
3. Mechanical Ventilation System Design	
3.1 Ventilation Air Flow Rate	
3.2 Ventilation Control	Revise language: "System has controls that allow automatic operation or are wired to run continuously".
3.3 Ventilation Inlet	Additionally, should require CAR adapters to control airflow when in use.
3.4 Whole House Ventilation Fan and Sound Level	
3.5 Integrated Vent Controller	
3.6 Bathroom Ventilation Fans	
4. Duct Quality Installation	
4.1 Air Handler Location	
4.2 Duct Installation Quality	
4.3 Measured Duct Leakage	In-plant personnel conducting duct testing should hold specific certification such as BPI, RESNET, etc.
5. Local Mechanical Exhaust	
5.1 Kitchen Exhaust Airflow Rate	
5.2 Bath Exhaust Airflow Rate and Sound Level	
6. Air Filtration	

6.1 Air Filtration	With systems that do not allow for MERV 8 filters (mini-splits, etc.), a filtration system such as a stand-alone system or utilizing transfer grill fans with filters should be used. If filtration is present in the ventilation system, it may be used to meet this requirement.
6.2 Sealing of the Filter Access Panel	
6.3 All Return Air Passes Through Filter	
7. Combustion Appliances	
7.1 Drafted or Direct Vented Appliances	
7.2 Other Unvented Combustion	Due to typical space constraints and small air volume, any combustion appliance should be vented to the outside.
8. Air Circulation	
8.1 Ceiling Fans	
Water Efficiency and Water Management	
9. Hot Water Distribution Efficiency, Water Fixtures	
9.1 Domestic Hot Water Distribution Efficiency and Water Fixtures	
10. Water-Managed Building Assembly	
10.1 Flashed window/door openings	
10.2 Step and kick-out flashing	
10.3 Bituminous Membrane	
11. Water-Managed Building Materials	
11.1 Building Material Integrity	
11.2 Drain Pan and Backflow Prevention	
Indoor Air Quality	
12. Moisture Control	
12.1 Supply Piping Insulation	
12.2 Hard-Surface Flooring	

13. HVAC System	
13.1 Relative Humidity Level	
13.2 Ductwork in Cavities	
13.3 Ozone Generators	
14. Materials	
14.1 Low-Emission Carpet	
14.2 Low-Emission Wood Product	
15. Final	
15.1 Dry and Clean HVAC System	
Renewable-Ready Features	There appears to be no requirement for roof space and/or load requirements to allow for rooftop installed PV panels. Given the nature of these dwellings, it is likely rooftop installation would be preferable over ground units as this would require additional land space.
16. PV-Ready	
16.1 Documentation	
16.2 Conduit to Inverter	
16.3 Conduit to Service Panel	
16.4 Circuit Breaker Slot Requirement	
Field Installed Measures	
1. Envelope and Foundation System	
1.1 Radon Mitigation	
1.2 Sealing Common Walls	
2. HVAC and Electric System	
2.1 Outdoor Packaged HVAC Units	Additional language: Packaged system may only be installed on a roof deck if the remainder of exposed roof area, not covered by the unit or ducts, allows for the required space for PV ready installation as necessary to meet the required size of the array based on load calculations.
2.2 Garage HVAC Equipment	
2.3 Ventilation Before Occupancy	

3. Water Management Moisture Control	
3.1 For Expansive or Collapsible Soils	
3.2 Capillary Break Beneath Slabs	
3.3 Capillary Break at Crawlspace	
3.4 Below-Grade Walls and Crawlspace	
3.5 Vapor Retarder at Below Grade Wall	
3.6 Sump Pump Cover	
3.7 Drain Tiles	
3.8 Drain or Sump Pump and Check Valve	
3.9 Below Slab Layer Requirement	
3.10 Sealed Basements / Crawlspaces	
3.1 Water Splash Damage Protection	
DOE ZERH MH Certification Reporting and Enforcement Guide	
Please provide any comments on the process and roles explained in the DOE ZERH MH Certification Reporting and Enforcement Guide	Requirements for photographic evidence of the inspection of rated features should be required in addition to the certifying documentation. This aligns with other program policies, including upcoming changes to other ENERGY STAR programs.
Other Comments, Feedback, or Questions	
A note of thanks is in order to the DOE for rolling out this program to pave the way for stakeholders to utilize tax credits and other rebate programs to better serve our communities, specifically LMI who would in most cases be occupying these dwellings when utilized for primary residences.	
<i>DOE is interested in comments on the following questions:</i>	

Please identify any research needs to support program implementation and participation.	
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