U.S. DEPARTMENT of ENERGY

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

Contents

1. Building Eligibility Requirements

The following multifamily building types are eligible to participate in the DOE Efficient New Homes program using the DOE Efficient New Homes Multifamily National Program Requirements Version 2 (Rev. 2).[1, 2]

Eligible building types:

- Any multifamily building with dwelling units[3] or sleeping units[4] that is NOT a detached dwelling.[5]
- 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).[6]
- Townhouses with permit dates[7] on or before 12/31/2025. Townhouses must follow the requirements listed in the endnote.[8]

Throughout the remainder of this document, the term 'dwelling unit' is implied to also apply to 'sleeping units' unless otherwise stated.

Townhouses are eligible to participate in the DOE Efficient New Homes program, using either the DOE Efficient New Homes Multifamily Version 2 or the Single Family Version 2 National Program Requirements. For more information about DOE Efficient New Homes Single Family Version 2, visit: https://www.energy.gov/eere/buildings/zerh-single-family-version-2. Dwelling units in eligible multifamily and mixed-use buildings may only be certified under the program if the entire building (all dwelling units and covered common spaces) is certified to meet the DOE Efficient New Homes program requirements.[9] Certification under the ENERGY STAR Multifamily New Construction and Indoor AirPlus programs is also required for a building to be eligible. See Exhibit 1 below for additional details.

Compliance with these requirements does not imply compliance with all local code requirements that may be applicable to the building. In cases where local codes overlap with and/or exceed the DOE Efficient New Homes program requirements, these local requirements must be met.[10]

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 partners must reference the DOE Efficient New Homes implementation timeline information posted on the program requirements website.[7] Note that these National Program Requirements do not apply to projects located in California, where the program has state-specific requirements. Partners are advised to check the program website and IRS Guidance on the 45L tax credit for information about tax credit eligibility.

2. Partnership, Training, and Credentialing Requirements

The following requirements must be met by program participants before a multifamily building can be certified:

- The builder or developer must register as a DOE Efficient New Homes partner and sign the Builder Partner Agreement, available in Partner Central.
- Energy Rating Companies (e.g., rater companies and Providers) are required to register as a DOE Efficient New Homes partner and sign a Partnership Agreement, available in Partner Central.
- Raters[11] are required to complete all DOE Efficient New Homes training modules applicable to the DOE Efficient New Homes Multifamily Version 2 program specifications (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 time 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 time period, they may not certify DOE Efficient New Homes projects until the modules are complete.

- Raters must be (a) a Certified Rater, Approved Inspector, as defined by ANSI / RESNET / IECC 301, or (b) credentialed by a Home Certification Organization for DOE Efficient New Homes (HCO for DOE), or (c) meet the credential requirements of a Multifamily Review Organization for DOE Efficient New Homes (MRO for DOE). Learn more and find a current list of HCOs and MROs for DOE here.
- Where Functional Testing (FT) Agents are used for field verification of DOE Efficient New Homes Multifamily Version 2 HVAC requirements, the ESMFNC credentialing requirements for FT Agents shall apply. See the ENERGY STAR FT Agent requirements here.

3. Certification Process [9]

The certification process offers three paths to meet the DOE Efficient New Homes Multifamily Version 2 performance target. Each has varying levels of flexibility to select a custom combination of measures for each building. Dwellings may qualify using the Prescriptive path, the Energy Rating Index (ERI) path, or the ASHRAE 90.1 path. Regardless of the path chosen or the efficiency measures selected, the Mandatory Requirements (Exhibit 1) are also required and impose certain constraints on the efficiency measures selected (e.g., insulation levels, window specifications). On-site power generation may not be used to meet the performance target.

3.1 Prescriptive Path Certification Process

Under the Prescriptive path, each dwelling unit must be equivalent in performance to the applicable minimum requirements of the Target Dwelling Design (Exhibit 2). Dwelling units and common spaces must also meet or exceed the requirements in the DOE Efficient New Homes Multifamily Version 2 National Rater Checklist, which includes meeting the applicable mandatory requirements as shown in Exhibit 1. Buildings following this path must be certified through an MRO for DOE. DOE recommends that Raters and Builders identify their MRO for DOE during the design stage, but at the latest, projects must be under MRO for DOE oversight ***prior to the first inspection***. MROs for DOE have limited discretion to grant an exemption to the first inspection policy (e.g., when a building switches certification paths). The following process applies for certification under the Prescriptive path:

3.1.1. Select efficiency measures for dwelling units and common spaces that meet or exceed all applicable items in the DOE Efficient New Homes Multifamily Version 2 National Rater Checklist, which includes meeting the minimum requirements set in Exhibit 1. In addition, the efficiency features described in the DOE Efficient New Homes Multifamily Version 2 Target Dwelling Design (Exhibit 2) are mandatory within the dwelling units.

3.1.2. Prior to certification, the Rater must submit design documentation to an MRO for DOE for review and approval. DOE strongly recommends submitting this documentation before construction; however, Raters may instead choose to submit the design documentation at final certification. Exhibit 4, below, lists all documents required for certification,

3.1.3. Construct the building using the measures selected in Step 3.1.1, with all dwelling units meeting the minimum requirements in Exhibit 1 and the mandatory requirements in Exhibit 2, as they apply.

3.1.4. Use a Rater operating under a recognized MRO for DOE to verify that all requirements for certification have been met in accordance with the inspection procedures for minimum rated features in ANSI/RESNET/ICC 301, Appendix B.[12] 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.[13]

3.1.5. The Rater submits the whole building to the MRO for DOE for final certification once verification on all units and common spaces is complete. The submission must include the documentation specified in Exhibit 4 based on as-built conditions. The Rater is required to keep electronic or hard copies of the completed and signed National Rater Field Checklist.

3.2 Energy Rating Index (ERI) Path Certification Process

Under the ERI path, each dwelling unit must be at least equivalent in performance to the applicable minimum requirements of the DOE Efficient New Homes Multifamily Version 2 Target Dwelling Design (Exhibit 2), as assessed through energy modeling. Dwelling units and common spaces must also meet or exceed the requirements in the DOE Efficient New Homes National Rater Checklist, which includes meeting the applicable mandatory requirements as shown in Exhibit 1. On-site power generation may not be used to meet the DOE Efficient New Homes Multifamily Version 2 ERI Target. Buildings following this path must be certified through an HCO for DOE. The following process applies:

3.2.1. Obtain the ERI score for the Target Dwelling Design, which is determined using a recognized HCO for DOE's Approved Software Rating Tool.[14]

3.2.2. Using the same software program specified in Step 3.2.1, configure the preferred set of efficiency measures for the unit to be certified and verify that the resulting ERI meets or exceeds the DOE Efficient New Homes Multifamily Version 2 Target Dwelling ERI score, as determined in Step 3.2.1. Select efficiency measures for units that also meet or exceed all applicable items in Exhibit 1 (Mandatory Requirements). Select efficiency measures for common spaces that meet or exceed all items in the National Rater Checklist (which contains all Exhibit 1 Mandatory items) to the extent that they apply.

3.2.3. Prior to certification, the Rater must submit design documentation to a Provider for review and approval. DOE strongly recommends submitting this documentation before construction; however, Raters may instead choose to submit the design documentation at final certification. Exhibit 4, below, lists all documents required for certification.

3.2.4. Construct the building using the measures selected in Step 3.2.2.

3.2.5. Use a Rater operating under a recognized HCO for DOE to verify that all requirements for certification have been met in accordance with the inspection procedures for minimum rated features in ANSI/RESNET/ICC 301, Appendix B.[12] 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.[13]

3.2.6. The Rater submits the whole building to the HCO for DOE for final certification once verification on all units and common spaces is complete.[15] The submission must include all documentation specified by the HCO for DOE, based on as-built conditions. The Rater is required to keep electronic or hard copies of the completed and signed National Rater Checklist.

3.3. ASHRAE 90.1 Path Certification Process

Under the ASHRAE 90.1 compliance path, the building must meet or exceed the ASHRAE performance target, described in Exhibit 3. Buildings following this path must be certified through an MRO for DOE. DOE recommends that Raters and Builders identify their MRO for DOE during the design stage, but at the latest, projects must be under MRO for DOE oversight ***prior to the first inspection***. MROs for DOE have limited discretion to grant an exemption to the first inspection policy (e.g., when a building switches compliance paths). Buildings using this path must follow the modeling requirements in the ENERGY STAR Multifamily Simulation Guidelines, located here. The following process applies:

3.3.1. Meet or exceed the mandatory requirements specified in Exhibit 1. Following the ENERGY STAR Multifamily Simulation Guidelines, configure the preferred set of efficiency measures for the unit to be certified and verify that the resulting energy savings above the ASHRAE building baseline meets or exceeds the required performance target per Exhibit 3.

> 3.3.1.1. For buildings that are certified as Phius CORE 2021, Phius ZERO 2021, Phius CORE 2024, or Phius ZERO 2024 (using Phius modeling protocols in lieu of ENERGY STAR Multifamily Simulation Guidelines), achieving 20% less energy use than the Phius CORE 2021 or Phius CORE 2024 source energy criteria, without renewables, is accepted in lieu of achieving the ASHRAE performance target based on a baseline of ASHRAE 90.1-2019.

3.3.2. Prior to certification, the Rater must submit design documentation to an MRO for DOE for their review and approval. DOE strongly recommends submitting this documentation before construction; however, Raters may instead choose to submit the design documentation at final certification. Exhibit 4, below, lists all documents required for certification.

3.3.3. Construct the building using the measures selected in step 3.3.1 and the Mandatory Requirements in Exhibit 1.

3.3.4. Use a Rater operating under a recognized MRO for DOE to verify that all requirements have been met in accordance with the inspection procedures for minimum rated features in ANSI/RESNET/ICC 301, Appendix B.[12] 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.[13]

3.3.5. Once verification on all units and common spaces is complete, submit the whole building to the MRO for DOE for final certification with the MRO for DOE-specified documentation (Exhibit 4) based on as-built conditions. The Rater is required to keep electronic or hard copies of the completed and signed National Rater Checklist.

Exhibit 1: DOE Efficient New Homes Multifamily 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 Version 1.2 and Indoor AirPlus National Program Requirements. In all Exhibits, the term 'in-unit' references equipment that is installed within a dwelling unit or only serves a single dwelling unit.

Component	Mandatory Requirements	Applicability[16]
1. DOE Efficient New Homes National Rater Checklist	1.1 Rater completes the DOE Efficient New Homes Multifamily Version 2 (Rev. 2) National Rater Checklist.[17]	Dwelling units; common spaces
2. ENERGY STAR Baseline	2.1 Building is certified under ENERGY STAR Multifamily New Construction National Version 1.2 or 1.3.[18]	Dwelling units; common spaces
3. Building Envelope	3.1a **ERI and ASHRAE paths:** ceiling, wall, floor, and slab insulation for the building meets specified efficiency levels from the 2021 or 2024 IECC.[19, 20] 3.1b **Prescriptive path:** ceiling, wall, floor, and slab insulation for the building meets specified DOE Efficient New Homes Multifamily Version 2 Target Dwelling Design insulation levels in dwelling units, and specified efficiency levels from the 2021 or 2024 IECC in common spaces.[20, 21] 3.2 Windows, skylights, and doors in dwelling units that are ≥ 50% glazed achieve an area-weighted average SHGC less than or equal to 0.23 (Climate Zone 1-2), 0.25 (Climate Zone 3), or 0.40 (Climate Zone 4A, 4B).[22, 23]	Dwelling units; common spaces
4. Duct System	4.1 All in-unit heating and cooling system distribution ducts and in-unit heating and cooling system air-handling equipment are located within the thermal and air barrier boundary.[24]	Dwelling units
5. Hot Water Efficiency	5.1 WaterSense labeled fixtures for dwelling unit showerheads, bathroom sink faucets, and/or bathroom sink faucet accessories.[25] 5.2 Hot water delivery systems meet stored volume criteria.[26] 5.3 In-unit recirculation systems use on-demand controls.[27] 5.4 Recirculating central hot water distribution systems meet pipe insulation thickness criteria.[28]	Dwelling units

6. Lighting & Appliances [29]	6.1 All builder-supplied and builder-installed in-unit refrigerators,[30] dishwashers, clothes washers, and clothes dryers are ENERGY STAR certified.[31] 6.2 100% of in-unit, builder-installed lighting fixtures and lamps are LEDs.[32, 33] 6.3 All in-unit, builder-installed bathroom ventilation fans are ENERGY STAR certified.[34]	Dwelling units
7. Indoor Air Quality	7.1 Certified under EPA Indoor AirPlus (Version 1 or Version 2 (Certified or Gold), determined by permit date).[35]	Dwelling units; common spaces
	7.2 Either in-unit or centralized energy efficient balanced ventilation (HRV or ERV) is provided for dwelling units in Climate Zones 6, 7, and 8.[36, 37]	Dwelling units
8. Renewable Ready	8.1 Provisions of the DOE Efficient New Homes Multifamily PV-Ready Checklist Version 2 (Rev. 1) are completed.	See Checklist
9. Electric Vehicle Ready	9.1 Provisions of the DOE Efficient New Homes Multifamily EV-Ready Checklist Version 2 (Rev. 1) are completed.	See Checklist
10. Heat Pump Water Heater Ready	10.1 Dwelling units with in-unit water heaters meet minimum electric and space requirements.[38] 10.2 Dwelling units with in-unit water heaters have a condensate drain installed within three feet of existing water heater.[39]	Dwelling units
11. Heat Pump Space Heating Ready	11.1 For units with in-unit combustion space heaters, individual branch circuit outlet is installed, or conduit is installed to facilitate future wiring for a heat pump installation. Circuit or conduit labeled as “For future heat pump.” [40]	Dwelling units
12. HPWH Installation Quality ***Advisory Only***	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: 12.1 HPWH has direct access to manufacturer-specified volume of ambient air (typical specs range from 450 to 1200 ft3), 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. 12.2 HPWH installation complies with the manufacturer’s minimum clearance requirements to make the unit accessible for maintenance and filter cleaning/replacement. 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). *DOE will consider making these installation practices requirements in a future program update.*	

Exhibit 2: DOE Efficient New Homes Target Dwelling Design

The following requirements apply to all dwelling units, as well as to equipment, fixtures, building envelope assemblies, and appliances that serve both dwelling units *and* common spaces, unless otherwise specified. For equipment, fixtures, building envelope assemblies, and appliances serving *only* common spaces, follow ENERGY STAR Multifamily New Construction Version 1.2 National Program Requirements. This Exhibit does not apply to projects pursuing the ASHRAE path. For ASHRAE path projects, see Exhibit 3.

Residential Cooling Equipment (where provided) serving Dwelling Units[17, 41]
If specified equipment type is not listed here, see Exhibit A.

2021 IECC Climate Zone	Unit	1	2	3	4A, 4B	4C, 5	6	7	8
Ductless Air Conditioner	SEER2	18	18	16	16	14	14	14	14
Ducted Split Air Conditioner	SEER2	18	18	16	16	16	16	16	16
Single Packaged Air Conditioner	SEER2	17.1	17.1	15.2	15.2	13.3	13.3	13.3	13.3
Ductless Air Source Heat Pump (HP)	SEER2	18	18	16	16	16	16	16	16
Ducted Split Air Source HP	SEER2	17.1	17.1	15.2	15.2	15.2	15.2	15.2	15.2
Ducted Single Packaged Air Source HP	SEER2	17.1	17.1	15.2	15.2	15.2	15.2	15.2	15.2
Ductless Ground Source HP	EER2	16	16	14	14	14	14	14	14
Ducted Split Ground Source HP	EER2	15.2	15.2	13.3	13.3	13.3	13.3	13.3	13.3
Single Packaged Ground Source HP	EER2	15.2	15.2	13.3	13.3	13.3	13.3	13.3	13.3

Residential Heating Equipment (where provided) serving Dwelling Units[17, 41]
If specified equipment type is not listed here, see Exhibit A.

2021 IECC Climate Zone	Unit	1, 2	2	3	4A, 4B	4C, 5	6	7	8
Gas Furnace, Gas Boiler	AFUE	90%	90%	90%	95%	95%	95%	95%	95%
Ductless Air Source Heat Pump (HP)	HSPF2	8.2	8.2	8.2	8.2	8.5	8.5	8.5	8.5
Ducted Split Air Source HP	HSPF2	7.8	7.8	7.8	7.8	8.0	8.0	8.0	8.0
Ducted Single Packaged Air Source HP	HSPF2	7.7	7.7	7.7	7.7	7.9	7.9	7.9	7.9
Ground Source Heat Pump	COP	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8

HVAC Grading for Residential Heating and Cooling Equipment (where provided) in Dwelling Units

Total Duct Leakage	Airflow Deviation	Watt Draw Efficiency	Refrigerant Grade
Grade I [42]	Grade 1, -7.5%	Grade I, 0.45 W/cfm	Grade III (as applicable)

Infiltration and Mechanical Ventilation in Dwelling Units[17]

2021 IECC Climate Zone	1	2	3	4A, 4B	4C, 5	6	7	8
Mech. Ventilation Efficacy (cfm/W) [43]	2.9	2.9	2.9	2.9	1.2	1.2	1.2	1.2
Heat Recovery	None				Balanced, 65% ASRE			
Infiltration Rate [44]	0.25 CFM50/ft^2 of enclosure surface							
Mechanical Ventilation Rate	CFM = (0.01 x CFA) + (7.5 x (Nbr +1)); CFA = Conditioned Floor Area; Nbr = Number of Bedrooms; Runtime: 24 hours/day							
Mechanical Ventilation Fan Watts	Watts = CFM Rate/Ventilation Efficacy, where CFM Rate and Ventilation Efficacy are determined above							

Dwelling unit insulation levels modeled to 2021 IECC levels (Residential, wood-frame) and Grade I installation per ANSI/RESNET/ICC 301.[19]

2021 IECC Climate Zone	1	2	3	4A, 4B	4C, 5	6	7	8
Slab Insulation R-value	0	0	10	10	10	10	10	10
Slab insulation Depth (ft)	0	0	2	4	4	4	4	4
Basement Wall U-Factor	0.360	0.360	0.091	0.059	0.050	0.050	0.050	0.050
Wood Framed Floor Assembly U-Factor [45]	0.064	0.064	0.047	0.047	0.033	0.033	0.028	0.028
Mass Floor U-Factor	0.322	0.087	0.074	0.051	0.051	0.051	0.042	0.038
Wall Assembly U-Factor	0.084	0.084	0.060	0.045	0.045	0.045	0.045	0.045
Celling Assembly U-factor	0.035	0.026	0.026	0.024	0.024	0.024	0.024	0.024

Dwelling Unit Windows Except Class AW (Prescriptive pathway: meet SHGC requirements in Exhibit 1, Item 3.2 in place of SHGC requirements below.)

2021 IECC Climate Zone	1	2	3	4A, 4B	4C, 5	6	7	8
Window U-Value	0.40	0.40	0.30	0.30	0.27	0.25	0.25	0.25
Window SHGC	0.23	0.23	0.25	0.30	0.30	0.30	0.30	0.30

Dwelling Unit Doors (for Class AW, see below)

Door type[46]	Opaque	≤ ½ Lite	> ½ Lite	
2021 IECC Climate Zone	Any	Any	1 – 3	4 – 8
Whole Door U-Factor	0.17	0.25	0.30	0.30
Door SHGC	Any	0.25	0.25	0.40

Dwelling Unit Class AW Fenestration
(Prescriptive pathway: meet SHGC requirements in Exhibit 1, Item 3.2 in place of SHGC requirements below.)

2021 IECC Climate Zone	1	2	3	4A, 4B	4C, 5	6	7	8
Fixed Window U-Factor	0.48	0.43	0.40	0.34	0.34	0.32	0.28	0.27
Operable Window U-Factor	0.59	0.57	0.51	0.43	0.43	0.40	0.34	0.30
Glazed Entrance Door U-Factor	0.79	0.73	0.65	0.60	0.60	0.60	0.60	0.60
SHGC	0.25	0.25	0.25	0.40	0.40	0.40	any	any

Water Heater Serving Dwelling Units

In-Unit Gas Water Heater: UEF = 0.95	In-Unit Electric Water Heater: UEF = 1.95
Central System Gas Water Heater: E_t = 95%	Central System Electric Water Heater: COP = 1.6

In-Unit Solar Water Heating System SF [47]

1	2	3	4A, 4B	4C, 5	6	7	8
0.80	0.80	0.64	0.64	0.47	0.47	0.28	0.28

Thermostat and Ductwork

Programmable thermostat

All ducts and air handlers located in conditioned space, uninsulated.[48]

Dwelling Unit Lighting, Appliances, and Fixtures

Lighting	ENERGY STAR light bulbs or fixtures with Tier II efficiency in 100% of Qualifying Light Fixture Locations, as defined by ANSI/RESNET/ICC 301.
ENERGY STAR Certified Appliances	Refrigerator, Dishwasher, Ceiling Fans (if used)
WaterSense Fixtures	WaterSense bathroom faucets, aerators, showerheads

Exhibit 3: DOE Efficient New Homes ASHRAE Path Performance Targets

ASHRAE Energy Savings Requirements
20% energy cost savings or 20% source energy savings above ASHRAE 90.1-2019. The use of on-site renewable energy, including cogeneration, photovoltaics, or wind turbines, may not contribute to meeting the Performance Target (but may be used to exceed it).

Appendix G from ASHRAE 90.1 must be used, along with the ASHRAE Standard 90.1 Performance Based Compliance Form and ENERGY STAR's Multifamily Simulation Guidelines_AppG2016, available on the ENERGY STAR Guidance Documents page which can be found at www.energystar.gov/mfguidance at the bottom of the page under 'Supporting Documents.' DOE encourages the use of Appendix G from ASHRAE 90.1-2022, but will accept the use of Appendix G-based modeling for 90.1-2016 and 90.1-2019 until further notice.

Projects must demonstrate that a proposed building achieves a Performance Cost Index less than or equal to 80% of the Performance Cost Index Target calculated in accordance with Section 4.2.1.1c of ASHRAE 90.1. Regardless of which version of Appendix G is used, the modeling must demonstrate a Performance Cost Index that is ≤ 80% of the Performance Cost Index Target calculated using the following Building Performance Factors from 90.1-2019.

For energy cost savings use the BPFs from the Building Performance Factor (BPF) Energy Cost table and for source energy savings use the BPFs from the Building Performance Factor (BPF) Source Energy table:

Building Performance Factor (BPF) Energy Cost from ASHRAE 90.1-2019																
CZ	0A, 1A	0B, 1B	2A, B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
BPF, MF	0.68	0.70	0.66	0.69	0.68	0.59	0.74	0.76	0.74	0.70	0.73	0.75	0.68	0.71	0.68	0.72
Building Performance Factor (BPF) Source Energy from ASHRAE 90.1-2019																
CZ	0A, 1A	0B, 1B	2A, 2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
BPF, MF	0.68	0.71	0.66	0.70	0.69	0.60	0.72	0.76	0.74	0.68	0.73	0.75	0.66	0.70	0.66	0.70

Exhibit 4: Documentation Requirements

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
Requirements Applicable to all Building	
Rater	ENERGY STAR Multifamily Workbook, including ZERH addenda
	DOE Efficient New Homes Multifamily National Rater Checklist Version 2[49]
	DOE Efficient New Homes Multifamily PV-Ready Checklist Version 2[49]
	DOE Efficient New Homes Multifamily EV-Ready Checklist Version 2[49]
	DOE Efficient New Homes Multifamily Version 2 Photo Documentation (final only)
Requirements Applicable to the ASHRAE Path Only	
ASHRAE Modeler	ASHRAE Standard 90.1 Performance-Based Compliance Form (Compliance Form)
	ESMFNC/DOE Efficient New Homes MF Companion Tool (Companion Tool)

Exhibit 5: Additional Dwelling Unit HVAC Efficiency Levels

For any equipment not listed, minimum efficiencies shall be based on 10**%** improvement over those listed in ASHRAE 90.1-2019. Use the values for "after 1/1/2023" where listed. For equipment types listed below that serve only common spaces, requirements may be found in the ESMFNC V1.2 National Program Requirements, Table 2. Use the values that apply to common spaces.

Equipment Type	Equipment Size	CZ: 1-2	3	4A, B	4C, 5, 6, 7, 8
Room A/C (window, through-wall)		Certified under ENERGY STAR Version 5.0 (or later) Requirements for Room Air Conditioners			
Air conditioners, air cooled (split system and single package)	< 65 kBtu/h	See Exhibit 2			
	≥ 65 and < 135 kBtu/h	16.3 IEER	15.7 IEER		14.6 IEER
	≥ 135 and < 240 kBtu/h	15.6 IEER	15.1 IEER		14.0 IEER
	≥ 240 and < 760 kBtu/h	14.5 IEER	14.1 IEER		13.0 IEER
Warm-air furnace (gas)		See Exhibit 2			
Gas heating component of a Packaged Terminal Air Conditioner (PTAC)		80% Et	82% Et, with infiltration rate of 0.25 cfm50/ft^2 of enclosure area, (average across all units)		
Packaged Terminal Air Conditioner cooling efficiency		12.7 EER	12.5 EER		11.9 EER
Packaged Terminal Heat Pump (PTHP) cooling efficiency*	< 7 kBtu/h	13.0 EER	12.5 EER		11.9 EER
	≥ 7 and ≤ 10 kBtu/h CZ 1-4 ≥ 7 and ≤ 15 kBtu/h CZ 4C-8	15.0 - (0.340 x Cap/1000) EER	14.7 - (0.320 x Cap/1000) EER		14.0 - (0.300 x Cap/1000) EER
	> 10 kBtu/h CZ 1-4 > 15 kBtu/h CZ 4C-8	11.6 EER	11.5 EER		9.5 EER
PTHP heating efficiency*	< 8 kBtu/h	3.3 COP			3.6 COP
	≥ 8 kBtu/h	3.7 - (0.052 x Cap/1000) COP			3.5 COP
Air cooled heat pump (split system and single package) cooling efficiency*	< 65 kBtu/h	See Exhibit 2			
	≥ 65 and < 135 kBtu/h	15.5 IEER	15.1 IEER		
	135 and < 240 kBtu/h	14.9 IEER	14.4 IEER		
Air cooled heat pump (split system and single package) heating efficiency*	< 65 kBtu/h	See Exhibit 2			
	≥ 65 and < 135 kBtu/h	3.5 COP			3.7 COP
	135 and < 240 kBtu/h	3.4 COP			3.6 COP
VRF air conditioners and heat pumps, cooling efficiency*		16.6 IEER	16.2 IEER		
VRF heat pumps, heating efficiency*		3.3 COP			3.5 COP
Water-loop heat pump (WLHP) cooling efficiency*	< 135 kBtu/h	15.0 EER			
WLHP heating efficiency*	< 135 kBtu/h	4.5 COP			
Boilers, hot water	< 300 kBtu/h	See Exhibit 2			
	≥ 300 kBtu/h	80% Et	86% Et (89% Et with WLHP)		95% Et (90% Et with WLHP)

Cap means the rated capacity of the product in Btu/h

*For buildings where dwelling units are served by a heat pump water heater, space conditioning equipment that is marked with an asterisk in Exhibit 5 may instead meet the efficiency listed in ASHRAE 90.1-2019. Use the values for "after 1/1/2023" where listed.

Endnotes

[1] 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 Version 1.2 (California: ENERGY STAR Multifamily New Construction, California Version 1.4). Visit the ENERGY STAR website for more information.

[2] 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 to structures is not considered a common entrance or exit.

[3] A dwelling unit, as defined by 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.

[4] 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 considered sleeping units, but rather part of the dwelling unit.

[5] 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.

[6] 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. For the ASHRAE path, the requirements for 'common spaces' apply to commercial or retail spaces where they are included in the energy model and savings contribute to achieving the Performance Target.

[7] 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 or 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'.

[8] A 'townhouse,' as defined by ANSI/RESNET/ICC 301, is a single-family dwelling unit constructed in a group of three or more attached units in which each unit extends from the foundation to the roof and has open space on at

least two sides. They must use the ERI path of the DOE Efficient New Homes Multifamily program, as they are not eligible to use the Prescriptive path or the ASHRAE 90.1 path. However, the ERI Target for townhouses must be determined using Exhibit 2 of the DOE Efficient New Homes Single Family Homes National Program Requirements Version 2. In addition, all program requirements shall be verified for each certified townhouse and sampling protocols shall not be used to verify DOE Efficient New Homes requirements in any townhouse.

[9] 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, except in the ASHRAE path, if included in the energy model and the savings contribute to achieving the Performance Target. 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.

Sampling of those requirements for ENERGY STAR Multifamily New Construction (ESMFNC) and Indoor AirPlus certification is allowed to the extent permitted by their respective program requirements and allowances for sampling. Sampling of these DOE Efficient New Homes requirements may be allowed if the Multifamily Review Organization (MRO) for DOE or Home Certification Organization (HCO) for DOE overseeing the project's certification has a sampling protocol approved by DOE as part of the MRO/HCO for DOE approval process. Apartments participating in sampling must be within the same building, be the same construction type, and include the same envelope systems.

[10] 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, or an engineering document conflicts 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. 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.

[11] The Rater is defined as the person(s) completing the third-party verification required for certification.

[12] The Rater must review all items on the DOE Efficient New Homes Multifamily Version 2 National Rater Checklist for the whole building to verify that each inspection checklist item has been met within program-defined tolerances. If 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. If an item on the National Rater Checklist cannot be inspected by the Rater, the building as well as individual dwelling units also cannot earn certification.

If 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 Provider (e.g., rating company) or MRO for DOE. If the Provider or MRO for DOE also cannot make this determination, then the Rater, MRO for DOE, or Provider shall report the issue to DOE prior to building completion at EfficientNewHomes@doe.gov and will typically receive an initial response within 10 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. However, if DOE believes the program requirements need 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 following the release of the revised requirements, typically 60 days in length. This process 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 guidelines.

[13] 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.

[14] The software program shall automatically determine (i.e., without relying on a user-configured DOE Efficient New Homes Multifamily Target Dwelling Design) the ERI target for each rated unit by following the DOE Efficient New Homes Multifamily National Program, Version 2 ERI Target Procedure. DOE will review an HCO for DOE's software tool(s) prior to the software being approved for use for certifications.

[15] Generally, buildings must be submitted for certification after verification on all units and common spaces is complete. Alternatively, at the discretion of the Provider, individual dwelling units that are part of ERI path projects may be conditionally certified prior to the building completion if the following process is observed:

i. The Provider must generate a Conditional DOE Efficient New Homes Certification Disclosure letter to be included with the label and certificate for the homebuyer of each conditionally certified unit.
ii. Once verification on all dwelling units and common spaces is complete and the whole building is certified, the Provider must generate a DOE Efficient New Homes Certification Confirmation letter, for the building to deliver to the applicable homebuyers.

If any dwelling unit or common space in the building is ultimately unable to be verified, the building will not be able to earn certification, the Provider must decertify any conditionally certified units, and the builder must notify the applicable homebuyers.

[16] "Applicability" refers to the space types covered by the provision, including the systems located within the listed spaces as well as the systems serving those spaces. The term 'dwelling unit' in Exhibits 1 and 2 includes both sleeping and dwelling units, unless otherwise noted.

[17] Two tracks are provided for satisfying the DOE Efficient New Homes Multifamily National Version 2 Rater Checklist item for HVAC Systems. Track A – HVAC Grading by Rater allows a Rater to utilize ANSI/RESNET/ACCA 310 for grading the installation of residential HVAC systems serving individual spaces and a Functional Testing (FT) Agent to verify commercial and central systems and systems serving common spaces. Track B – HVAC Testing by FT Agent uses an FT agent to assessing all HVAC systems. Either track may be selected, but all requirements within that track must be satisfied for the building to be certified. See the ZERH MF V2 Rater Checklist for specific requirements for both tracks.

[18] DOE Efficient New Homes Multifamily Version 2 requires certification under ESMFNC V1.2 or 1.3, including in states where ESMFNC V1.1 (or an earlier version) is effective. In states where the ENERGY STAR Residential New Construction program requires additional measures or efficiency levels beyond ESMFNC V1.2, these measures are also mandatory for compliance with the DOE Efficient New Homes Multifamily Version 2 National Program.

[19] ERI and ASHRAE path projects may use a whole-building 2021 IECC UA calculation or whole-building 2024 IECC TC calculation to demonstrate compliance with the mandatory envelope insulation requirements. When using the 2021 UA approach, the total building envelope UA must be less than or equal to the sum of UA values that result from multiplying the U factors specified in Table 3.1a below (for the 2021 IECC) by the same exterior assembly areas as the building being certified. When using the 2024 TC approach, the total building envelope TC

must be less than or equal to the total TC resulting from using the assembly factors specified in Table 3.1a below for the 2024 IECC and Equation 4-1 in the Residential chapter of that code.

ERI path projects may also meet the thermal backstop on a unit-by-unit basis but must document common space compliance using the Multifamily Workbook.

Table 3.1a: Mandatory Envelope Insulation Requirements for ERI and ASHRAE Path Projects

Space Type	Opaque assemblies (including opaque doors and opaque spandrel panels)	Windows and glazed doors (except Class AW)	Class AW windows and glazed doors	Skylights
Mandatory Building Envelope Requirements, 2021 IECC UA Option (Table references found in the 2021 IECC)				
Dwelling Units	Table R402.1.2 [a] or Table C402.1.4 (Group R) [b]	Table R402.1.2	Table C402.4	Table C402.4
Common Spaces	Table R402.1.2 [a] or Table C402.1.4 (All Other) [c]		**ERI path:** DOE Efficient New Homes Reference Design (Exhibit 2) **ASHRAE path:** Table C402.4	
Mandatory Building Envelope Requirements, 2024 TC Option (Table references found in the 2024 IECC)				
Dwelling Units	Table R402.1.2 or Table C402.1.2 (Group R) [b]	Table R402.1.2	Table C402.5	Table C402.5
Common Spaces	Table R402.1.2 or Table C402.1.2 (All Other) [c]		**ERI path:** DOE Efficient New Homes Reference Design (Exhibit 2) **ASHRAE path:** Table C402.5	

[a] For steel-frame ceilings, walls, and floors, use 2021 IECC Table R402.2.6.

[b] The same chapter must be used for all opaque dwelling unit envelope components.

[c] The same chapter must be used for all opaque common space envelope components.

[20] Compliance notes and alternatives:

a. The calculations shall be done using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials. The calculation for a steel-frame envelope assembly shall use the ASHRAE zone method or a method providing equivalent results, and not a series-parallel path calculation method.
b. Where documenting UA within the workbook, F-factors and slab perimeter lengths will be used in place of U-factors and areas.
c. The 2021 UA or 2024 TC calculation (and energy model) for the dwelling unit must accurately reflect all envelope details assessed in Items 3.1 through 3.6 of the ESMFNC National Rater Field Checklist.
d. If no NFRC rating is noted on a window or in its product literature (e.g., for site-built fenestration), select the U factor from Tables 4 and 10, respectively, in 2013 ASHRAE Fundamentals, Chapter 15. Select the highest U-factor among the values listed for the known window characteristics (e.g., frame type, number of panes, glass color, and presence of low-e coating).
e. In jurisdictions designated by a code official as having Very Heavy Termite Infestation, the slab edge insulation value and depth shall be adjusted in the target UA or TC calculation for all paths. The slab insulation level and depth used in the UA or TC limit calculation and the energy model shall be set to the insulation level and depth found in the Rated Dwelling Unit. However, these projects are still required to achieve the DOE Efficient New Homes Target ERI, which assumes the use of slab edge insulation per Exhibit 2.

[21] Prescriptive path projects may meet these requirements in one of two ways. The calculations below are integrated into the ENEGY STAR Multifamily Workbook with DOE Efficient New Homes addenda, which must be used to demonstrate compliance with this requirement for Prescriptive path projects.

(1) Meet the requirements for all individual building envelope components using the U or R method:

- When using the 2021 IECC for common spaces, equivalent R values to the U factors provided for dwelling units in Exhibit 2 may be taken from the 2021 IECC, Table R402.1.3. When using R values to demonstrate compliance for steel-frame assemblies, the steel-frame equivalent R-value from Table 402.2.6 must be used.
- *Note: When individual U factors are used, each component must have a U-factor* ***less than or equal to*** *what is prescribed by the table below. When individual R values are used, each component must have an R-value* ***greater than or equal to*** *what is prescribed by the references in the above bullets.*

(2) Meet the requirements by using the whole building UA or TC. When using the UA or TC method, the as-built UA shall be less than or equal to the target UA or TC. When using the 2021 UA approach, the total building envelope UA must be less than or equal to the sum of UA values that result from multiplying the U factors specified in the table below for the 2021 IECC by the same exterior assembly areas as the building being certified. When using the 2024 TC approach, the total building envelope TC must be less than or equal to the total TC resulting from using the assembly factors specified below for the 2024 IECC and Equation 4-1 in the Residential chapter of that code.

Table 3.1b: Mandatory Envelope Insulation Requirements for Prescriptive path projects

Space Type	Opaque assemblies (including opaque doors and opaque spandrel panels)	Windows and glazed doors (except Class AW)	Class AW windows and glazed doors	Skylights
Mandatory Building Envelope Requirements, 2021 IECC UA Option (Table references found in the 2021 IECC)				
Dwelling Units	DOE Efficient New Homes Reference Design (Exhibit 2)	DOE Efficient New Homes Reference Design (Exhibit 2)	DOE Efficient New Homes Reference Design (Exhibit 2)	Table C402.4
Common Spaces	Table R402.1.2 [a] or Table C402.1.4 (All Other) [c]	ENERGY STAR MFNC 1.2 Reference Design		
Mandatory Building Envelope Requirements, 2024 TC Option (Table references found in the 2024 IECC)				
Dwelling Units	DOE Efficient New Homes Reference Design (Exhibit 2)	DOE Efficient New Homes Reference Design (Exhibit 2)	DOE Efficient New Homes Reference Design (Exhibit 2)	Table C402.5
Common Spaces	Table R402.1.2 or Table C402.1.2 (All Other) [c]	ENERGY STAR MFNC 1.2 Reference Design		

[a] For steel-frame ceilings, walls, and floors, use 2021 IECC Table R402.2.6.
[b] The same chapter must be used for all opaque dwelling unit envelope components.
[c] The same chapter must be used for all opaque common space envelope components.

[22] Exceptions:
a. Fenestration used as part of a passive solar design is exempt from the SHGC requirements and may be excluded from area-weighted average. fenestration must be facing within 45 degrees of true south and directly coupled to thermal storage mass that has a heat capacity > 20 btu / ft^3x˚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.

b. In Phius or PHI certified homes, where triple-glazed window assemblies with thermal breaks/spacers between the panes are used, such windows meet the intent of Item 3.2 and may be excluded from the area-weighted average SHGC.
c. Structural dwelling unit windows and doors that are classified as "Class AW" under the North American Fenestration Standard may use the following SHGC values:

Climate Zone	1-3	4A, 4B	4C, 5-8
Class AW SHGC	≤ 0.25	≤ 0.40	Any

[23] If no NFRC rating is noted on the window or in product literature (e.g., for site-built fenestration), select the SHGC value from Tables 4 and 10, respectively, in 2013 ASHRAE Fundamentals, Chapter 15. Select the highest SHGC value among the values listed for the known window characteristics (e.g., frame type, number of panes, glass color, and presence of low-e coating). Alternatively, where the U-factor is determined in accordance with NFRC 100 by a laboratory accredited by a nationally recognized accreditation organization, such as the NFRC, documentation provided by the laboratory or manufacturer listing the assembly U-factor and SHGC can be used in lieu of NFRC labels.

[24] Exceptions and alternative compliance paths to this requirement are:

a. Up to 10 ft. of total duct length is permitted to be outside of the thermal and air barrier boundary. Jump ducts are not included as part of this duct length and are covered by exception (d).
b. Ducts (but not air handlers) may be located in a vented attic if minimum R-8 duct insulation is used, duct leakage to outdoors is measured ≤ 3 CFM25 per 100ft2 of conditioned floor area, and:
    i. In Moist (A) climate zones (per 2021 IECC Table R301.1), an additional 1.5 in. (min.) of closed-cell spray foam encapsulates the ducts and ductwork is buried under 2 in. (min.) of blown-in insulation; OR
    ii. In Dry (B) and Marine (C) climate zones (per 2021 IECC Table R301.1, ductwork is buried under at least 3.5 in. of blown-in insulation.
c. Ducts which meet the criteria for "Ducts Located in Conditioned Space" as defined by the 2021 IECC Section R403.3.2.
d. 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.
e. Ducts and air-handling equipment associated with dedicated outdoor air systems (DOAS), which may also provide supplemental heating and cooling, are permitted to be outside of the building's thermal and air barrier boundary.

This requirement 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)).

[25] WaterSense labelling of products 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.

[26] 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 (6.8 liters) of water in any piping/manifold between the hot water source (e.g., central or in-unit hot water tank, central or in-unit recirculation loop) and any in-unit hot water fixture. This provision applies to in-unit plumbing systems and central hot water distribution systems. In-unit 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.

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 (either within the dwelling or central systems), the 1.8 gallon (6.8 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 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-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 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 gallons, the water shall be turned off and the ending temperature of the water flow (not the collection bucket) shall be recorded. The temperature of the water flow must increase by ≥ 10 °F in comparison to the final to the initial temperature reading.

[27] In-unit hot water recirculation systems meet the following requirements:

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 within a room (e.g., a bathroom 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-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-unit recirculation systems that are activated based **solely** on a timer and/or temperature sensor are not eligible.

These provisions do not apply to recirculating central hot water distribution systems.

[28] For recirculating central hot water distribution systems, the following pipe insulation thickness levels or R-values must be met or exceeded. Additionally, pipe insulation shall cover the entire length of the recirculation loop to the extent possible. If piping is routed in building cavities that prevent the noted thickness or R-value from being used due to space constraints, then the maximum thickness of insulation possible within the space shall be used.

Nominal Pipe or Tube Size (inches)	Insulation Thickness (inches)
< 1.5	1.5 (or R10 minimum)
≥ 1.5	2.0 (or R12 minimum)

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

[30] Due to industry supply chain challenges, DOE is temporarily allowing the use of non-ENERGY STAR certified refrigerators for projects using the ERI and ASHRAE compliance paths. Any project utilizing this temporary alternative must account for the non-ENERGY STAR certified refrigerator in the energy model and still achieve the required performance threshold. DOE advises partners that this alternative may be rescinded in a future program update.

[31] Products in categories which are not covered by ENERGY STAR product criteria are exempt.

[32] Up to 5% of lighting, for task or decorative lighting, may be exempt from this provision. The Target Dwelling specification for lighting will remain at 100% regardless of whether this exemption is used. Projects following the prescriptive path may not use this 5% exemption.

[33] This requirement does not apply to lighting inside appliances (e.g., refrigerator, laundry, microwave, cooking equipment).

[34] This provision does not apply to H/ERVs that are used to provide exhaust ventilation for bathrooms or to exhaust ventilation systems serving more than one dwelling unit.

[35] 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.

[36] An in-unit HRV or ERV is required to provide whole-dwelling mechanical ventilation for dwelling units in Climate Zones 6 – 8 and must meet or exceed the following specifications: ≥ 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 with any efficacy and recovery efficiency.

[37] 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.

[38] Each dwelling unit with an in-unit fossil fuel water heater must have:

a. An individual branch circuit outlet that is installed and energized and terminates within 3 feet of each installed fossil fuel water heater. The individual branch circuit shall have a rating not less than 240V/30A or 120V/20A.
b. A volume of open space located within the dwelling unit that is at least 3’ x 3’ wide and 7’ high available surrounding or within 3 feet of the installed fossil fuel water heater, to facilitate future heat pump water heater installation. The 3’ x 3’ x 7’ volume may contain the existing water heater. The 3’ x 3’ x 7’ space does not need to be provided if the installed water heater is a tankless water heater system.

Dwelling units utilizing an electric water heater are exempt from these requirements.

[39] 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 or an electric system with a nominal tank volume less than 50 gallons.

[40] If a branch circuit outlet is installed, it shall be in compliance with 2021 IRC Section E3702.11 based on heat pump space heating equipment sized in accordance with 2021 IECC R403.7 and shall terminate within three feet

of each fossil fuel space heater. Alternatively, code-compliant wiring conduit to facilitate future wiring for a heat pump installation may be installed and shall terminate within three feet of each fossil fuel space heater.

Dwelling units utilizing in-unit electric heating systems as the primary heating for the dwelling unit are exempt from this requirement.

[41] While the corresponding ERI Target Procedure specifies air conditioners and heat pumps using SEER and HSPF, in this document they have been converted to the current rating metrics, SEER2 and HSPF2.

[42] The Target Dwelling's duct leakage shall be configured as the maximum allowable total duct leakage to achieve Grade I, per Standard 310, section 5.4.1, Table 2a (shown below):

Time of Test	Number of Returns	Leakage Limit (CFM at 25 Pa)
Rough-In	< 3	The greater of ≤ 4 per 100 ft^2 of CFA or ≤ 40
Rough-In	≥ 3	The greater of ≤ 6 per 100 ft^2 of CFA or ≤ 60
Final	< 3	The greater of ≤ 8 per 100 ft^2 of CFA or ≤ 80
Final	≥ 3	The greater of ≤ 12 per 100 ft^2 of CFA or ≤ 120

[43] Prescriptive path projects using in-unit H/ERVs in Climate Zones 1-4B may utilize an H/ERV with an SRE ≥ 65% (@ 32 °F) and CFM/Watt ≥ 1.2 (at one or more rating points) in lieu of meeting the 2.9 CFM/W requirement in the Target Dwelling Design. Prescriptive path projects in *all* climate zones may also use centralized H/ERVs serving multiple dwelling units with any efficacy and recovery efficiency.

[44] Field verification of infiltration levels must be done on a unit-by-unit basis. Infiltration requirements may not be verified with whole-building testing or with an average of results across all units.

[45] For all floor assemblies other than mass floors, prescriptive path projects must use the U-factor requirements listed in this row.

[46] DOE Efficient New Homes has adopted the following definitions for door types (from the ENERGY STAR eligibility criteria in the Version 6.0 Product Specification for Residential Windows, Doors, and Skylights):

Door or Sidelite Type	Glazing Area (per NFRC 100)	Notes
Opaque	None	
≤ ½-Lite Door	≤ 900 in^2 (6.25 ft^2, 0.581 m^2)	Includes ¼- and ½-lite Doors and Sidelites
≤ ½-Lite Sidelite	≤ 281 in^2 (1.95 ft^2, 0.181m^2)	
> ½-Lite Door	> 900 in^2 (6.25 ft^2, 0.581 m^2)	Includes ¾-lite and fully glazed Doors and Sidelites.
> ½-Lite Sidelite	> 281 in^2 (1.95 ft^2, 0.181m^2)	

[47] The solar water heating system's Solar Fraction (SF) must be documented by an OG-300 certification. Alternatively, projects may find an equivalent system in the OG-300 directory which contains the same OG-100 elements as the chosen system and meets or exceeds the minimum required solar fraction. In this situation, documentation of the OG-100 elements and the comparable OG-300 system must be provided. All systems must be made up of OG-100 tested components.

When a solar water heating system meeting these specifications is used in a Prescriptive path project, gas and electric water heaters used for backup are exempt from the Uniform Energy Factor requirements of 0.95 and 1.95, respectively.

The Solar Fractions listed in Exhibit 2 are for Prescriptive path projects only and are not included in the ERI Target Dwelling.

[48] While the Target Dwelling Design for ERI path projects must be configured with uninsulated ducts in conditioned space, Prescriptive path projects are permitted, but not required, to insulate ducts in conditioned space.

[49] When submitting the DOE Efficient New Homes Checklists as part of a proposed design submittal (i.e., prior to construction), the Rater may indicate that checklist items have been completed if they have verified the intent to complete via a review of construction documents. The Rater shall provide a written explanation for all items that have been verified in this way.