High Performance Multifamily:

An Introduction to the ENERGY STAR & Zero-Energy Ready Homes (ZERH) Multifamily New Construction Programs

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October 2, 2024

Agenda

- Program Overlap
  - Eligibility, 45L tax credits

- ENERGY STAR Multifamily New Construction Program
  - Program Overview, Requirements & Documents
  - Getting Started with ENERGY STAR

- DOE Zero Energy Ready Home Multifamily Program
  - Program Overview, Requirements & Documents
  - Getting Started with ZERH

EEBA
Energy & Environmental Building Alliance

Quick Poll: Raise your hand if…

1. You are currently an ENERGY STAR Partner

2. You supported a multifamily building that was certified as ENERGY STAR (Certified Homes, MFHR, MFNC)

3. You are currently supporting the design/construction/verification of a multifamily building pursuing ENERGY STAR MFNC certification

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Eligibility Requirements

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Residential New Construction Eligibility

Single-Family New Homes:

Detached Single-Family

Detached Two-Family

Townhouses

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Residential New Construction Eligibility

Single-Family New Homes:

Detached Single-Family

Detached Two-Family

Townhouses

Multifamily New Construction:

Low-rise Multifamily

Mid-rise Multifamily

High-rise Multifamily

Mixed-Use

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45L Federal Tax Credits for Energy-Efficient Homes

§ 45 L Federal Tax Credit

- New Energy Efficient Home Credit now updated and extended through 2032
- Applies to eligible homes and apartments acquired on or after January 1, 2023

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§ 45L Federal Tax Credit

Residential Building Type	Minimum Eligible Version	ENERGY STAR MFNC	Zero Energy Ready Homes
Certified Units in Multifamily Buildings	Varies by Program, Year, and Location	$500	$1,000
Certified Units in Multifamily Buildings when prevailing wage requirements are met	Varies by Program, Year, and Location	$2,500	$5,000

§ 45L Federal Tax Credit
ENERGY STAR

For **ENERGY STAR**, the minimum eligible program version for the tax credit is determined relative to the dwelling unit's **acquisition date** (not the permit date).

Tables of minimum eligible versions are on the ENERGY STAR website for acquisitions made in 2023 – 2027 at www.energystar.gov/45Ltaxcredits.

Note that minimum eligible version for tax credit can be more stringent than what is required just for certification.

§ 45L Federal Tax Credit
ENERGY STAR

2024 Acquisition Dates
Minimum ENERGY STAR Program Versions Eligible for the § 45L Credit

State/Territory	Single-Family	Manufactured	Multifamily
AL, AK, AR, AZ, CO, CT, DC, DE, GA, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, UT, VA, VT, WI, WV, WY	SFNH National v3.1	MH v2	MFNC National v1.1
CA	SFNH California v3.3	MH v2	MFNC California v1.3
FL	SFNH Florida v.3.1; or SFNH National v3.1	MH v2	MFNC National v1.1
HI	SFNH Pacific v3	MH v2	MFNC National v1.1
OR, WA	SFNH Oregon and Washington v3.2; or SFNH National v3.2	MH v2	MFNC Oregon and Washington v1.2; or MFNC National v1.2

§ 45L Federal Tax Credit
ENERGY STAR

2027 Acquisition Dates*
Minimum ENERGY STAR Program Versions Eligible for the § 45L Credit

State/Territory	Single-Family	Manufactured	Multifamily
AL, AK, AR, AZ, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WV, WY	To be determined	To be determined	MFNC National v1.2
CA	To be determined	To be determined	MFNC California v1.4

§ 45L Federal Tax Credit
Zero Energy Ready Homes

For **Zero Energy Ready Homes**, the minimum eligible program version is determined relative to the dwelling unit's **permit date**.

Tables with minimum eligible versions are on the Zero Energy Ready Homes website at www.energy.gov/eere/buildings/45l-tax-credits-zero-energy-ready-homes. Required version is based on location, project type, and permit date.

Unlike **ENERGY STAR**, the minimum eligible version for the tax credit is the same as the minimum eligible version for **ZERH** certification.

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§ 45L Federal Tax Credit
Zero Energy Ready Homes

National (except California)

Program Version and Revision Number	Required for Use, if Home's Permit Date is on/after this Date	Project Type
Version 1, Rev. 7	6/1/2019	Single family, multifamily up to 5 stories
Version 1, Rev. 8	1/1/2023	
Version 1, Rev. 9 [a]	1/1/2024	Multifamily, any height
Single Family Version 2, Rev. 1	1/1/2024	Single Family
Multifamily Version 2	1/1/2025	Multifamily, any height

[a] Multifamily buildings of any height certified under Version 1, Rev. 9 are deemed to meet the certification requirements for Version 1, Rev. 8 wher ision is required.

California Only

Program Version and Revision Number	Required for Use, if Home's Permit Date is on/after this Date	Project Type
CA Version 1, Rev. 7	10/1/2018 [b]	gle family, multifamily up to 5 stories
CA Version 1, Rev. 8	1/1/2023 [b]	
CA Single Family Version 2	1/1/2024	Single family
CA Multifamily Version 2 [c]	1/1/2024	Multifamily, any height

[b] If both plan approval ***and*** permit date are not on/after this date the prior revision may be used.
[c] Multifamily buildings of any height certified under CA Multifamily Version 2 are deemed to meet the certification requirements for CA Version 1, Rev. 8, where that version is required.

Location

Project Type

Permit Date

Example:

MFHR in Wisconsin

Permitted Jan. 14, 2025

Must meet DOE ZERH, Multifamily V2 & ENERGY STAR V1.2

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Tax Credit Questions?

"Individuals or entities looking to claim the credit should consult with a tax professional to determine whether and how they can claim the credit and determine whether the credit can be used with other tax incentives or Federal incentives."

ENERGY STAR Multifamily New Construction Program

Program Overview & Requirements

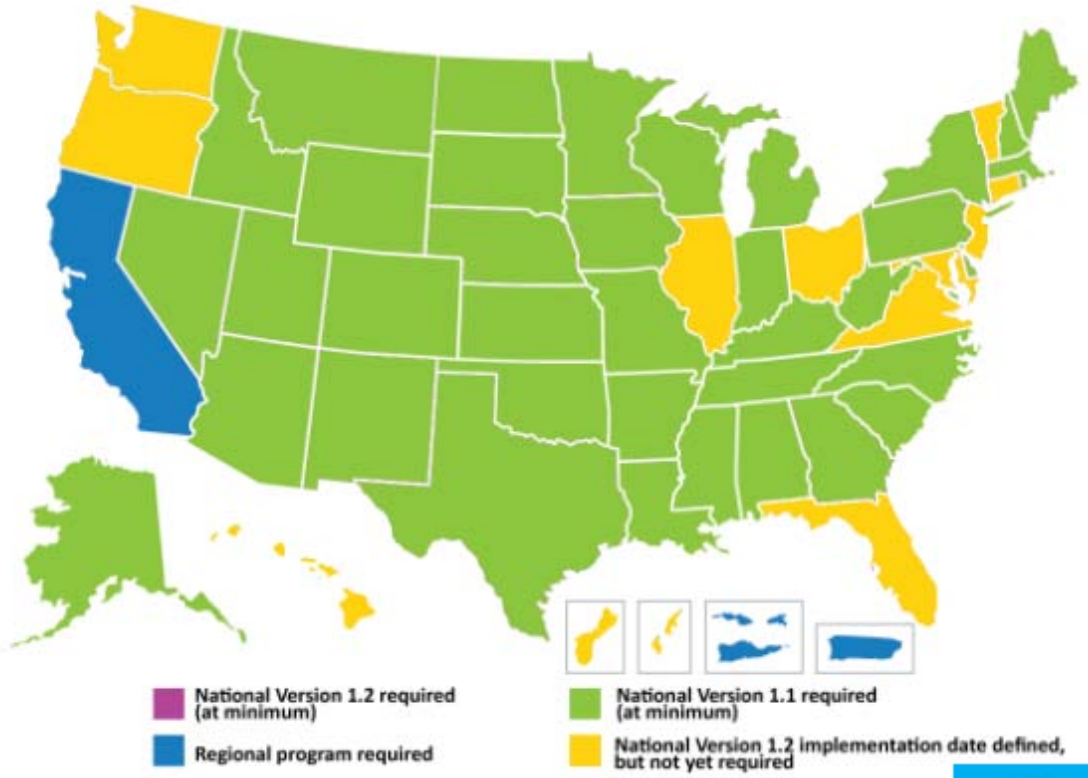
Multifamily New Construction: Key Elements

Efficiency & Testing	• Above-code performance of dwelling units and common spaces • Third-party inspection and functional tests
Comfort	• Complete thermal enclosure system • Individually-sealed dwelling units • Properly sized & installed HVAC system
Air Quality	• Dwelling-unit fresh air system • Kitchen and bath fans that perform well and exhaust outside • Combustion safety
Durability	• Complete water management system

Efficiency & Testing: Above-code performance

- Designed to be ≥ 10% above code
- Three Paths available: ERI, ASHRAE, Prescriptive

	ERI	ASHRAE	Prescriptive
National Version 1.1 Implemented in states with code less stringent than 2021 IECC	~55-65	≥15% over state code	Prescriptive Measures



- Performance target is defined differently in California and the Caribbean.

ENERGY STAR

Efficiency & Testing: Above-code performance

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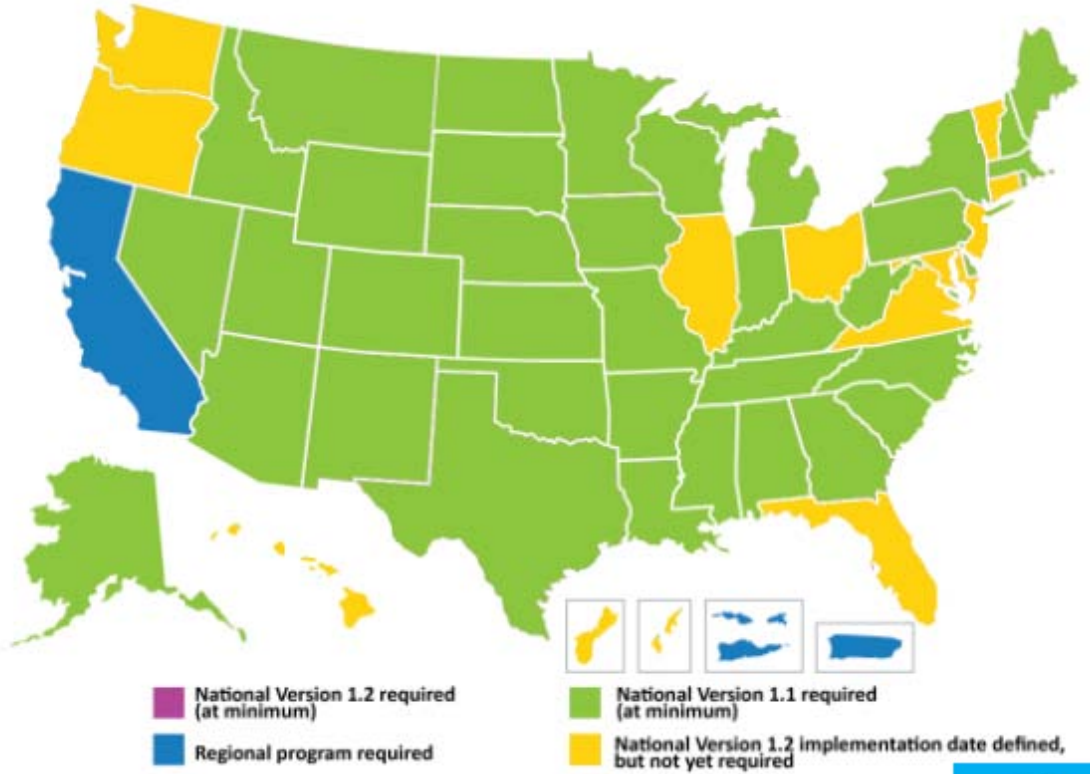
	ERI	ASHRAE	Prescriptive
National Version 1.1 Implemented in states with code less stringent than 2021 IECC	~55-65	≥15% over state code	Prescriptive Measures
National Version 1.2 Implemented in states with code equivalent to 2021 IECC	~45-55	≥15% over ASHRAE 90.1-2019	Prescriptive Measures



- Performance target is defined differently in California and the Caribbean.

ENERGY STAR

Efficiency & Testing: Above-code performance

- Designed to be ≥ 15% above 2021 IECC & 20% above ASHRAE
- Three Paths available: ERI, ASHRAE, Prescriptive

	ERI	ASHRAE	Prescriptive
National Version 1.1 Implemented in states with code less stringent than 2021 IECC	~55-65	≥15% over state code	Prescriptive Measures
National Version 1.2 Implemented in states with code equivalent to 2021 IECC	~45-55	≥15% over ASHRAE 90.1-2019	Prescriptive Measures
ZERH Multifamily Version 2	**~40-45**	≥**20**% over ASHRAE 90.1-2019	Prescriptive Measures

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phius

Exception: If certified as PHIUS+ CORE, 2015 or 2018, source energy use of ≤ 6,500 kWh/person per year, without renewables, is accepted.

If certified as Phius CORE 2021 or Phius ZERO 2021, **10%** less than the Phius CORE 2021 source energy criteria, without renewables, is accepted.

Efficiency & Testing: Above-code performance

- Designed to be ≥ 15% above 2021 IECC & 20% above ASHRAE
- Three Paths available: ERI, ASHRAE, Prescriptive

	ERI	ASHRAE	Prescriptive
National Version 1.1 Implemented in states with code less stringent than 2021 IECC	~55-65	≥15% over state code	Prescriptive Measures
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Exception: If certified as Phius CORE 2021 or Phius ZERO 2021, **15%** less than the Phius CORE 2021 source energy criteria, without renewables, is accepted.

Efficiency & Testing: Above-code performance

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- Three Paths available: ERI, ASHRAE, Prescriptive

	ERI	ASHRAE	Prescriptive
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National Version 1.2 Implemented in states with code equivalent to 2021 IECC	~45-55	≥15% over ASHRAE 90.1-2019	Prescriptive Measures
ZERH Multifamily Version 2	**~40-45**	**≥20%** over ASHRAE 90.1-2019	Prescriptive Measures

ENERGY STAR

ENERGY STAR

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Exception: If certified as Phius CORE 2021 or Phius ZERO 2021, **20%** less than the Phius CORE 2021 source energy criteria, without renewables, is accepted.

Efficiency & Testing: Above-code performance

- Requirements cover whole building – includes all dwelling units and common spaces
  - 100% dwelling units and common spaces must meet requirements; commercial spaces exempt
  - Requirements for central systems and systems serving common spaces and garages
  - ERI and Prescriptive Paths have additional efficiency measures in common spaces
  - Utility data collection strategy for buildings ≥ 50,000 ft^2

Multifamily New Construction: Key Elements

Efficiency & Testing	✓ Above-code performance of dwelling units and common spaces • Third-party inspection and functional tests
Comfort	• Complete thermal enclosure system • Individually-sealed dwelling units • Properly sized & installed HVAC system
Air Quality	• Dwelling-unit fresh air system • Kitchen and bath fans that perform well and exhaust outside • Combustion safety
Durability	• Complete water management system

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Efficiency & Testing:
Third-party inspection and functional tests

You don’t know what you don’t inspect

Efficiency & Testing:
Third-party inspection and functional tests

Rater Inspections:

- ❑ Pre-Drywall
- ❑ Final

Rater Tests:

- ❑ Dwelling-unit air tightness (blower door)
- ❑ Dwelling-unit duct blaster test
- ❑ Dwelling-unit ventilation airflow test
- ❑ Central exhaust duct tightness test
- ❑ Common space ventilation airflow tests
- ❑ Grade I or II HVAC installation (or HVAC Functional Testing by Functional Testing Agent)

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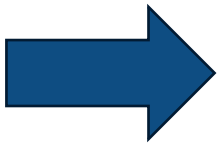
Efficiency & Testing:
Third-party inspection and functional tests

Rater submits all paperwork for the building to an oversight organization for certification

- ERI Path: Home Certification Organization (HCO)
- ASHRAE & Prescriptive Paths: Multifamily Review Organization (MRO)

Multifamily New Construction: Key Elements



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Comfort:
Complete thermal enclosure system

Effective Insulation Levels and Window Performance ('Thermal Backstop')

Grade I Insulation

Air Barriers & Sealing

Reduced Thermal Bridging

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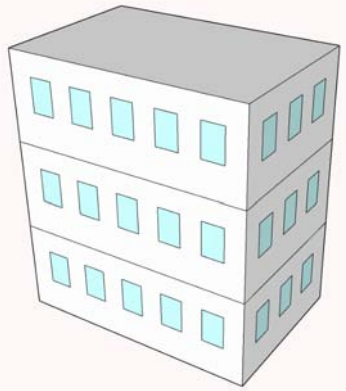
Comfort:
Thermal Backstop

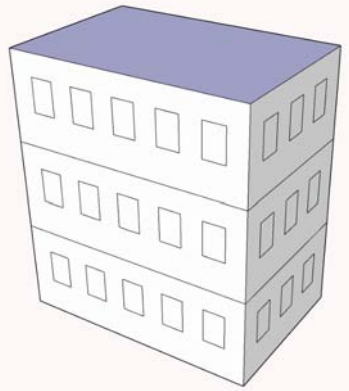
- Thermal backstop is the minimum amount of insulation and window performance that must be met, regardless of energy performance.
- To create flexibility, 'Building UA' calculation can be used. This allows trade-offs between envelope components, depending on their U-factor and areas.

Windows: U-0.30



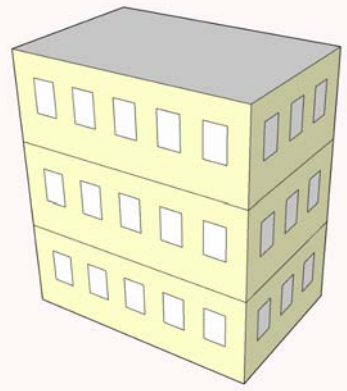
Windows: U-0.28

Roof: U-0.026 (R-49)



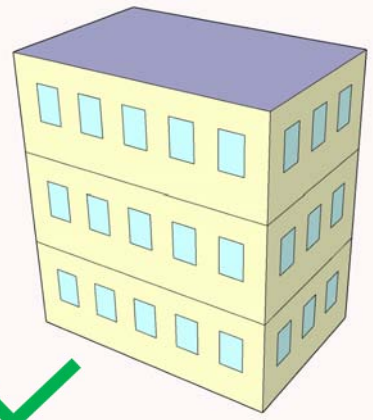
Roof: U-0.024 (R-60)

Walls: U-0.060 (R-20)



Walls: U-0.072 (R-15)

UA < $UA_{ENERGY\ STAR}$

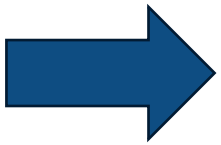


Comfort:
Thermal Backstop

- Under National Version 1.1, the thermal backstop is primarily tied to the 2009 IECC prescriptive path, or UA equivalent.

- Under National Version 1.2, the thermal backstop is more stringent and aligned with the 2021 IECC prescriptive path, or UA equivalent*
  - *For buildings permitted before 01/01/25, 105% x 2021 IECC UA is allowed in ENERGY STAR (but not allowed for ZERH V2).

Multifamily New Construction: Key Elements



Efficiency & Testing	✓ Above-code performance of dwelling units and common spaces ✓ Third-party inspection and functional tests
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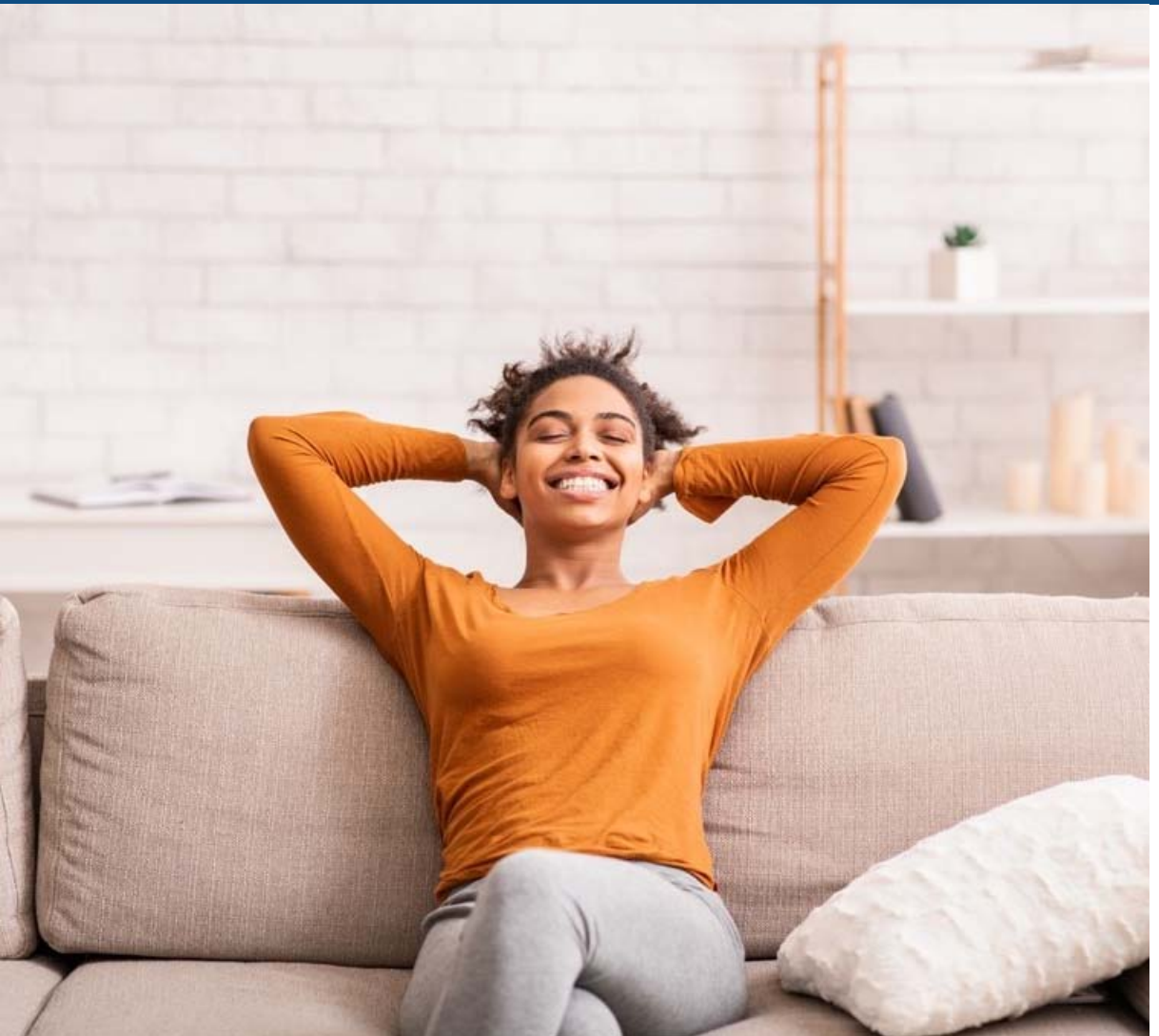
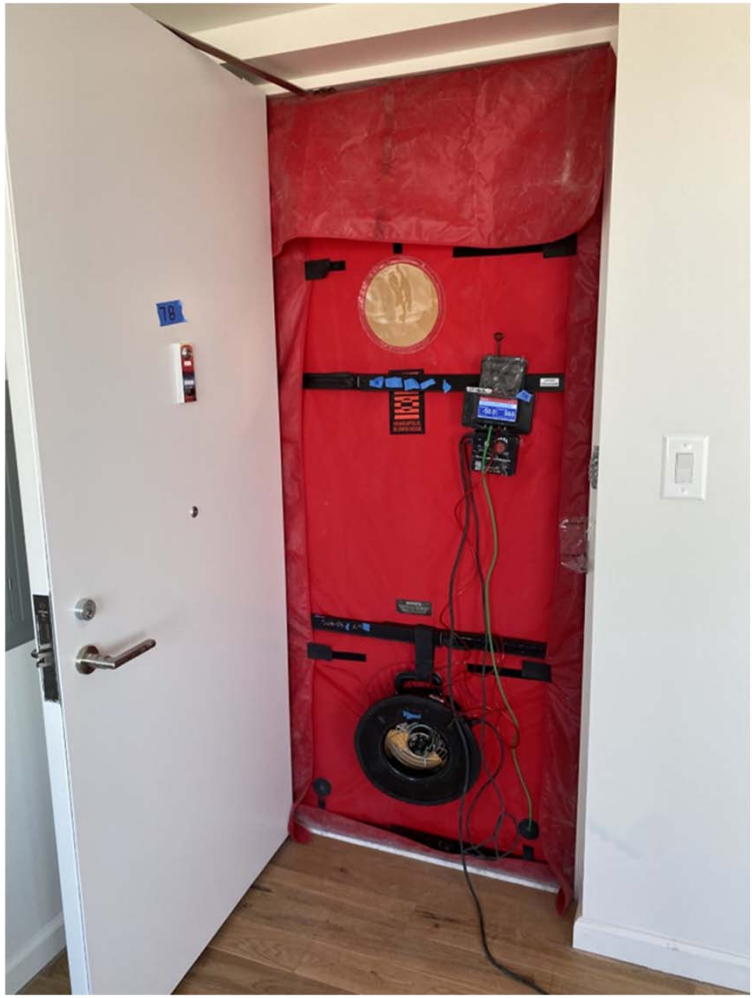
Comfort:
Individually-sealed dwelling units

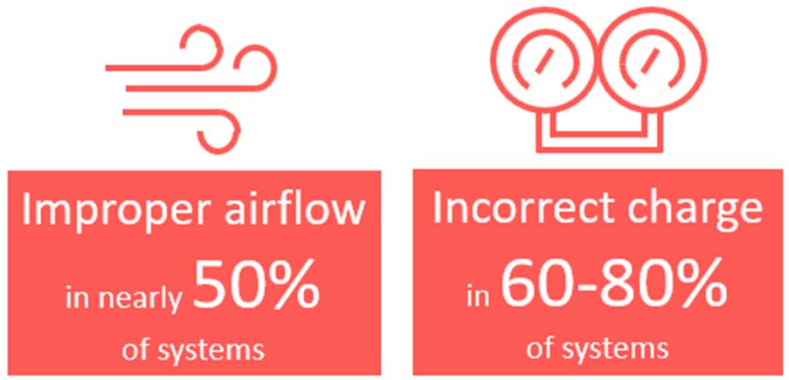




Comfort:
Properly sized and installed HVAC system

Comfort:
Properly sized and installed HVAC system

Grade I or II HVAC installation (or HVAC Functional Testing)



The Five Key Rater Tasks in HVAC Grading

Task 1	Task 2	Task 3	Task 4	Task 5
Design Review	Total Duct Leakage	Blower Fan Airflow	Blower Fan Watt Draw	Refrigerant Charge

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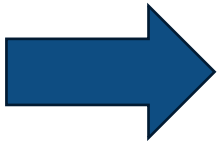
Multifamily New Construction: Key Elements



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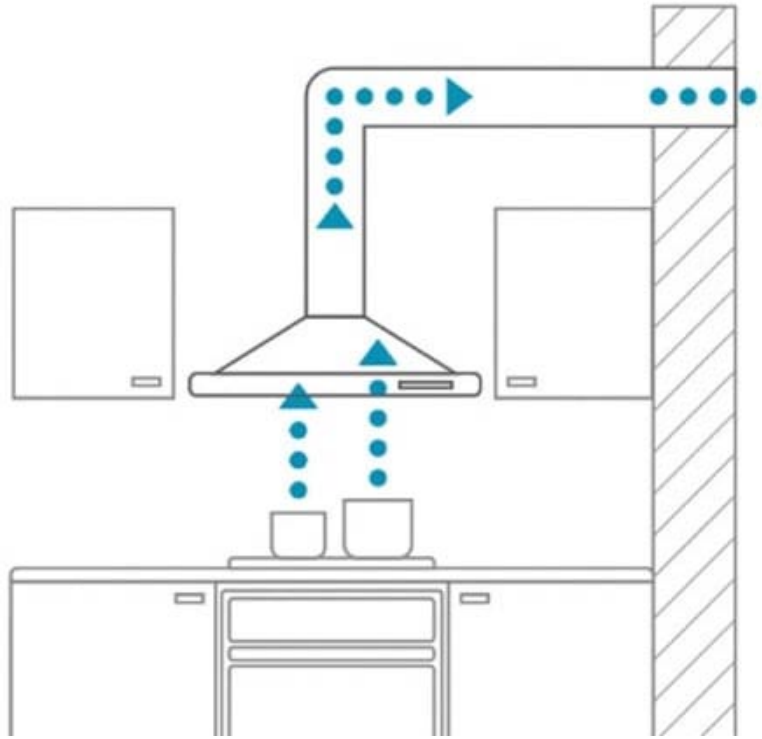
Air Quality:
Dwelling-unit fresh air system

Exhaust Fan

Supply Fan

ERV / HRV

Air Quality:
Kitchen & bath fans that perform well & exhaust outside



Kitchen & Bath Fans Must Exhaust Outside and Meet Airflow & Sound Limits

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Air Quality: Combustion safety

Power-Vented Water Heater

Electric Water Heater

- Other option - combustion appliances moved outside building pressure boundary

Multifamily New Construction: Key Elements

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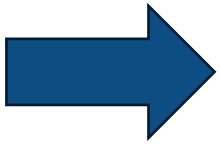


ENERGY STAR

ENERGY STAR Certification Process Overview

ENERGY STAR MFNC Partners & Participants

Builder/
Developer

Architect

HVAC
Designer

Functional Testing
(Cx) Agent

ASHRAE Modeler
(ASHRAE Path)

Rater

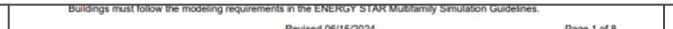
Multifamily Oversight Orgs

Home Certification Org (ERI Path)
Multifamily Review Org (ASHRAE / Prescriptive Paths)

ENERGY STAR MFNC Program Docs & Tools

ENERGY STAR Multifamily New Construction Policy Record

ID	Log Date	Program Document	Classification	Topic
00646	12/01/2023	All National and Regional Program Requirements (Rev. 03)	Clarification	**Partnership, Training, and Credentialing Requirements Section – Raters must be credentialed by oversight organization and complete training prior to inspections**
				Issue: Partners have asked about the intent of the requirement that Energy Rating Companies (ERC's) "operate under either a Home Certification Organization (HCO) or Multifamily Review Organization (MRO)" because the requirements for training, credentials, and oversight generally relate to individual Raters rather than their company. In addition, partners have asked when Raters must complete their EPA-recognized training - prior to conducting any field inspections, prior to filling out either Rater checklist, or prior to certification of the dwelling unit.
				Resolution: EPA agrees that the oversight requirements are better stated as a requirement of individual Raters, rather than ERC's. Furthermore, EPA's intent is for the Rater to complete training prior to filling out either Rater checklist or conducting any inspections. The closest associated documentation of these events is the Date of Review and Inspection Date entered on the Rater Design Review Checklist and Rater Field Checklist, respectively. Therefore, Rater training must be completed prior to these dates. To clarify this intent, the language in this Section will be adjusted as follows:


Buildings must follow the modeling requirements in the ENERGY STAR Multifamily Simulation Guidelines.

ENERGY STAR MFNC Program Docs & Tools

PROGRAM REQUIREMENTS

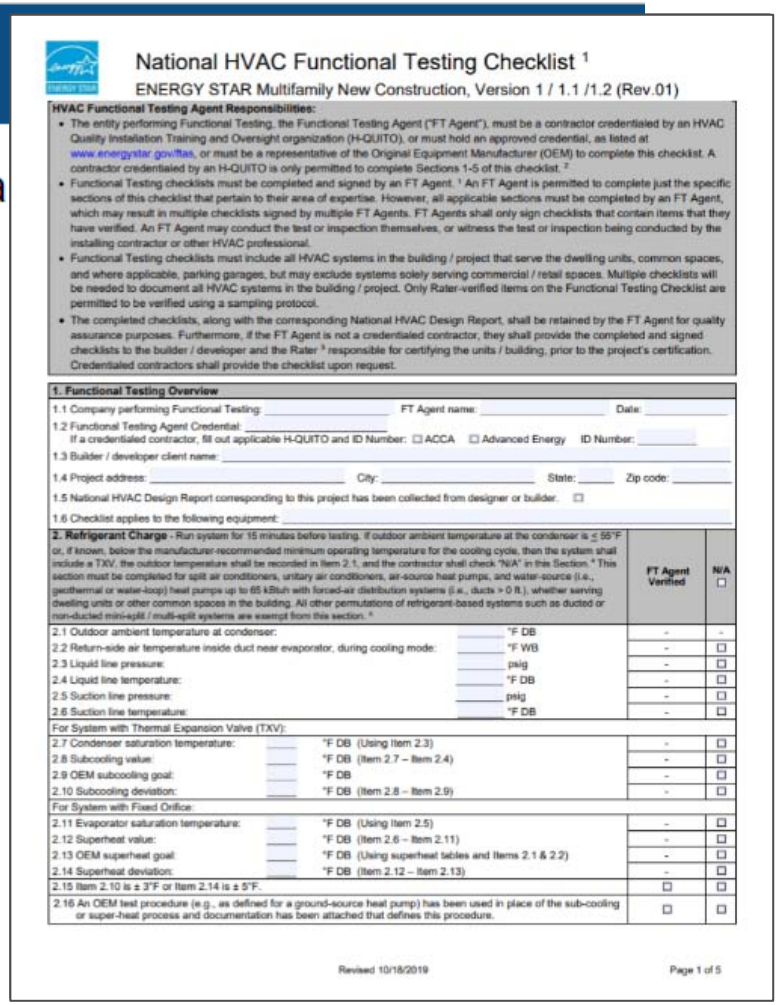
Program documents reflect Revision 04. Find details in the Policy Record. Historica
the Archives.

National Program Requirements

- National Program Requirements Version 1 (PDF, 250 KB)
- National Program Requirements Version 1.1 (PDF, 353 KB)
- National Program Requirements Version 1.2 (PDF, 316 KB)

National Mandatory Measures

Download All



National HVAC Functional Testing Checklist [1]

ENERGY STAR Multifamily New Construction, Version 1 / 1.1 /1.2 (Rev.01)

HVAC Functional Testing Agent Responsibilities:

- The entity performing Functional Testing, the Functional Testing Agent ("FT Agent"), must be a contractor credentialed by an HVAC Quality Installation Training and Oversight organization (H-QUITO), or must hold an approved credential, as listed at www.energystar.gov/ftas, or must be a representative of the Original Equipment Manufacturer (OEM) to complete this checklist. A contractor credentialed by an H-QUITO is only permitted to complete Sections 1-5 of this checklist. [2]
- Functional Testing checklists must be completed and signed by an FT Agent. [3] An FT Agent is permitted to complete just the specific sections of this checklist that pertain to their area of expertise. However, all applicable sections must be completed by an FT Agent, which may result in multiple checklists signed by multiple FT Agents. FT Agents shall only sign checklists that contain items that they have verified. An FT Agent may conduct the test or inspection themselves, or witness the test or inspection being conducted by the installing contractor or other HVAC professional.
- Functional Testing checklists must include all HVAC systems in the building / project that serve the dwelling units, common spaces, and where applicable, parking garages, but may exclude systems solely serving commercial / retail spaces. Multiple checklists will be needed to document all HVAC systems in the building / project. Only Rater-verified items on the Functional Testing Checklist are permitted to be verified using a sampling protocol.
- The completed checklists, along with the corresponding National HVAC Design Report, shall be retained by the FT Agent for quality assurance purposes. Furthermore, if the FT Agent is not a credentialed contractor, they shall provide the completed and signed checklists to the builder / developer and the Rater [4] responsible for certifying the units / building, prior to the project's certification. Credentialed contractors shall provide the checklist upon request.

1. Functional Testing Overview

1.1 Company performing Functional Testing: _____ FT Agent name: _____ Date: _____

1.2 Functional Testing Agent Credential: _____
If a credentialed contractor, fill out applicable H-QUITO and ID Number: ☐ ACCA ☐ Advanced Energy ID Number: _____

1.3 Builder / developer client name: _____

1.4 Project address: _____ City: _____ State: _____ Zip code: _____

1.5 National HVAC Design Report corresponding to this project has been collected from designer or builder. ☐

1.6 Checklist applies to the following equipment: _____

2. Refrigerant Charge - Run system for 15 minutes before testing. If outdoor ambient temperature at the condenser is ≤ 55°F or, if known, below the manufacturer-recommended minimum operating temperature for the cooling cycle, then the system shall include a TXV, the outdoor temperature shall be recorded in Item 2.1, and the contractor shall check "N/A" in this Section. [5] This section must be completed for split air conditioners, unitary air conditioners, air-source heat pumps, and water-source (i.e., geothermal or water-loop) heat pumps up to 65 kBtuh with forced-air distribution systems (i.e., ducts > 0 ft.), whether serving dwelling units or other common spaces in the building. All other permutations of refrigerant-based systems such as ducted or non-ducted mini-split / multi-split systems are exempt from this section. [6]			FT Agent Verified	N/A ☐
2.1 Outdoor ambient temperature at condenser:	_____	°F DB	-	-
2.2 Return-side air temperature inside duct near evaporator, during cooling mode:	_____	°F WB	-	☐
2.3 Liquid line pressure:	_____	psig	-	☐
2.4 Liquid line temperature:	_____	°F DB	-	☐
2.5 Suction line pressure:	_____	psig	-	☐
2.6 Suction line temperature:	_____	°F DB	-	☐
For System with Thermal Expansion Valve (TXV):				
2.7 Condenser saturation temperature:	_____	°F DB (Using Item 2.3)	-	☐
2.8 Subcooling value:	_____	°F DB (Item 2.7 – Item 2.4)	-	☐
2.9 OEM subcooling goal:	_____	°F DB	-	☐
2.10 Subcooling deviation:	_____	°F DB (Item 2.8 – Item 2.9)	-	☐
For System with Fixed Orifice:				
2.11 Evaporator saturation temperature:	_____	°F DB (Using Item 2.5)	-	☐
2.12 Superheat value:	_____	°F DB (Item 2.6 – Item 2.11)	-	☐
2.13 OEM superheat goal:	_____	°F DB (Using superheat tables and Items 2.1 & 2.2)	-	☐
2.14 Superheat deviation:	_____	°F DB (Item 2.12 – Item 2.13)	-	☐
2.15 Item 2.10 is ± 3°F or Item 2.14 is ± 5°F.			☐	☐
2.16 An OEM test procedure (e.g., as defined for a ground-source heat pump) has been used in place of the sub-cooling or super-heat process and documentation has been attached that defines this procedure.			☐	☐

Revised 10/18/2019 Page 1 of 5

Certification Process

JOIN

- Builder signs a free **partnership agreement** and selects a **Rater**.

DESIGN

- Builder selects **efficiency measures** and ensures compliance with ENERGY STAR durability details
- HVAC designer completes **HVAC design report**
- Rater completes preliminary **energy model** (if applicable) and **ENERGY STAR design review**

BUILD

- Builder **constructs** building
- Rater completes **on-site inspections** to verify ENERGY STAR requirements
- HVAC contractor installs system per design; Functional Testing Agent **completes testing** (if applicable)

CERTIFY

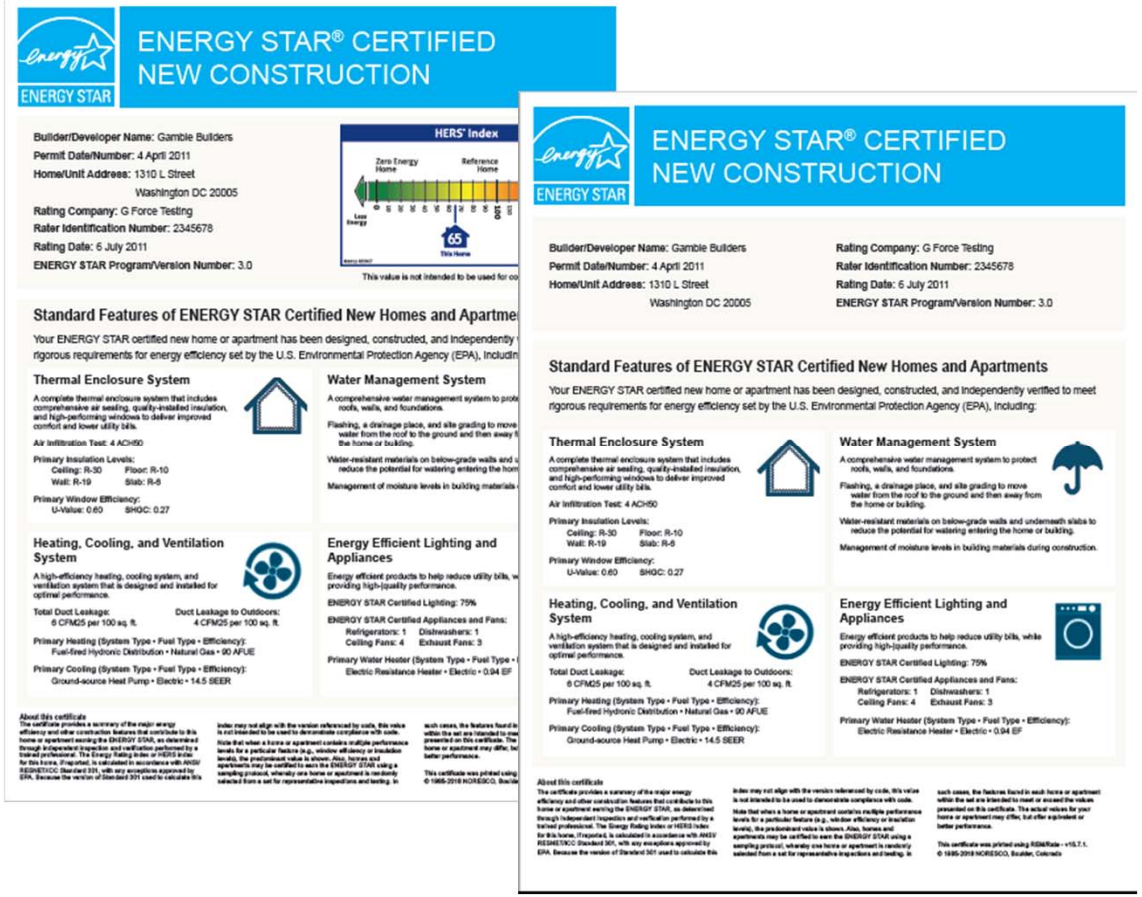
- Rater completes **final energy model** (if applicable), submits all documentation to **oversight organization**, and provides documentation of certification to builder.

MARKET

- ENERGY STAR **certificate** for each dwelling unit.
- ENERGY STAR plaques can be purchased.

Certificate

Unit (Required)



ENERGY STAR® CERTIFIED
NEW CONSTRUCTION

ENERGY STAR

Builder/Developer Name: Gamble Builders
Permit Date/Number: 4 April 2011
Home/Unit Address: 1310 L Street
Washington DC 20005
Rating Company: G Force Testing
Rater Identification Number: 2345678
Rating Date: 6 July 2011
ENERGY STAR Program/Version Number: 3.0

HERS® Index
Zero Energy Home
Reference Home
65
This Home

This value is not intended to be used for co

Standard Features of ENERGY STAR Certified New Homes and Apartme

Your ENERGY STAR certified new home or apartment has been designed, constructed, and independently
rigorous requirements for energy efficiency set by the U.S. Environmental Protection Agency (EPA), includin

Thermal Enclosure System

A complete thermal enclosure system that includes comprehensive air sealing, quality-installed insulation, and high-performing windows to deliver improved comfort and lower utility bills.

Air Infiltration Test: 4 ACH50

Primary Insulation Levels:
Ceiling: R-30 Floor: R-10
Wall: R-19 Slab: R-8

Primary Window Efficiency:
U-Value: 0.60 SHGC: 0.27

Water Management System

A comprehensive water management system to prote
roofs, walls, and foundations.

Flashing, a drainage place, and site grading to move
water from the roof to the ground and then away f
the home or building.

Water-resistant materials on below-grade walls and
reduce the potential for watering entering the hom

Management of moisture levels in building materials

Heating, Cooling, and Ventilation System

A high-efficiency heating, cooling system, and ventilation system that is designed and installed for optimal performance.

Total Duct Leakage: 6 CFM25 per 100 sq. ft.
Duct Leakage to Outdoors: 4 CFM25 per 100 sq. ft.

Primary Heating (System Type • Fuel Type • Efficiency):
Fuel-fired Hydronic Distribution • Natural Gas • 90 AFUE

Primary Cooling (System Type • Fuel Type • Efficiency):
Ground-source Heat Pump • Electric • 14.5 SEER

Energy Efficient Lighting and Appliances

Energy efficient products to help reduce utility bills, w
providing high-quality performance.

ENERGY STAR Certified Lighting: 75%

ENERGY STAR Certified Appliances and Fans:
Refrigerators: 1 Dishwashers: 1
Ceiling Fans: 4 Exhaust Fans: 3

Primary Water Heater (System Type • Fuel Type •
Electric Resistance Heater • Electric • 0.94 EF

About this certificate
The certificate provides a summary of the major energy efficiency and other construction features that contribute to this home or apartment earning the ENERGY STAR, as determined through independent inspection and verification performed by a trained professional. The Energy Rating Index or HERS Index for this home, if reported, is calculated in accordance with ANSI/ RESNET/ICC Standard 301, with any exceptions approved by EPA. Because the version of Standard 301 used to calculate this index may not align with the version referenced by code, this value is not intended to be used to demonstrate compliance with code.

Note that when a home or apartment contains multiple performance levels for a particular feature (e.g., window efficiency or insulation levels), the predominant value is shown. Also, homes and apartments may be certified to earn the ENERGY STAR using a sampling protocol, whereby one home or apartment is randomly selected from a set for representative inspections and testing. In such cases, the features found in each home or apartment within the set are intended to meet or exceed the values presented on this certificate. The actual values for your home or apartment may differ, but offer equivalent or better performance.

This certificate was printed using RSMRate - v15.7.1.
© 1995-2018 NORESCO, Boulder, Colorado

ENERGY STAR® CERTIFIED
NEW CONSTRUCTION

ENERGY STAR

Builder/Developer Name: Gamble Builders
Permit Date/Number: 4 April 2011
Home/Unit Address: 1310 L Street
Washington DC 20005
Rating Company: G Force Testing
Rater Identification Number: 2345678
Rating Date: 6 July 2011
ENERGY STAR Program/Version Number: 3.0

Standard Features of ENERGY STAR Certified New Homes and Apartments

Your ENERGY STAR certified new home or apartment has been designed, constructed, and independently verified to meet rigorous requirements for energy efficiency set by the U.S. Environmental Protection Agency (EPA), including:

Thermal Enclosure System

A complete thermal enclosure system that includes comprehensive air sealing, quality-installed insulation, and high-performing windows to deliver improved comfort and lower utility bills.

Air Infiltration Test: 4 ACH50

Primary Insulation Levels:
Ceiling: R-30 Floor: R-10
Wall: R-19 Slab: R-8

Primary Window Efficiency:
U-Value: 0.60 SHGC: 0.27

Water Management System

A comprehensive water management system to protect roofs, walls, and foundations.

Flashing, a drainage place, and site grading to move water from the roof to the ground and then away from the home or building.

Water-resistant materials on below-grade walls and underneath slabs to reduce the potential for watering entering the home or building.

Management of moisture levels in building materials during construction.

Heating, Cooling, and Ventilation System

A high-efficiency heating, cooling system, and ventilation system that is designed and installed for optimal performance.

Total Duct Leakage: 6 CFM25 per 100 sq. ft.
Duct Leakage to Outdoors: 4 CFM25 per 100 sq. ft.

Primary Heating (System Type • Fuel Type • Efficiency):
Fuel-fired Hydronic Distribution • Natural Gas • 90 AFUE

Primary Cooling (System Type • Fuel Type • Efficiency):
Ground-source Heat Pump • Electric • 14.5 SEER

Energy Efficient Lighting and Appliances

Energy efficient products to help reduce utility bills, while providing high-quality performance.

ENERGY STAR Certified Lighting: 75%

ENERGY STAR Certified Appliances and Fans:
Refrigerators: 1 Dishwashers: 1
Ceiling Fans: 4 Exhaust Fans: 3

Primary Water Heater (System Type • Fuel Type • Efficiency):
Electric Resistance Heater • Electric • 0.94 EF

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Building (Optional)

ENERGY STAR® CERTIFIED
NEW CONSTRUCTION

ENERGY STAR

The U.S. Environmental Protection Agency awards the ENERGY STAR to

L Street Building
1310 L Street, Washington, DC, 20005

Certification Date:
January 1, 2023

ENERGY STAR

ENERGY STAR certified multifamily buildings are designed, constructed, and independently verified to meet rigorous requirements for energy efficiency set by the U.S. Environmental Protection Agency.

Built by: Gamble Builders
Verified by: G Force Testing
Units: 100
Oversight by: Generic HCO
Version: MFNC v1.1

Labeling

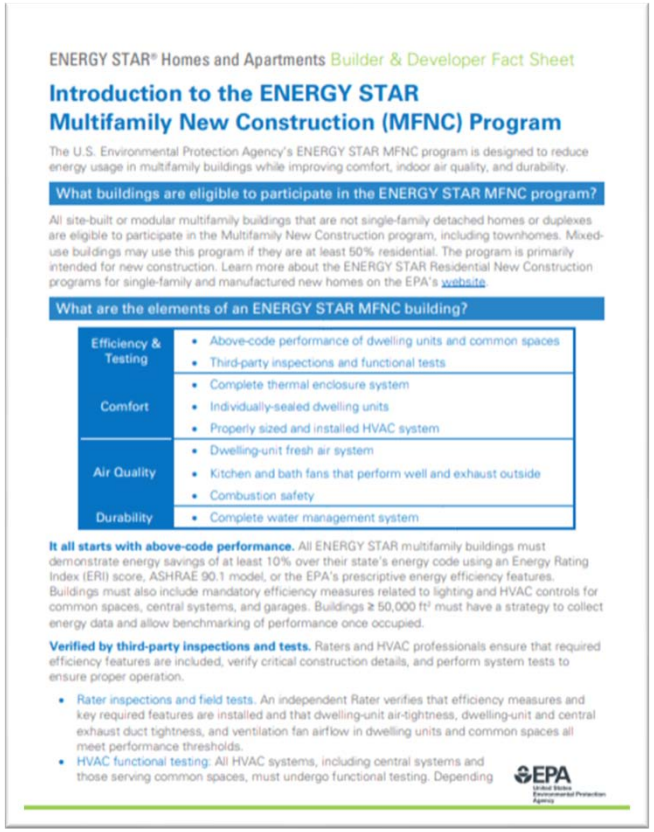
Unit (Optional)

Building (Optional)

How to Get Started

How to Get Started

1. Visit us at www.energystar.gov/mfnc
2. If you are a Builder or Developer, download our ENERGY STAR Fact Sheet.



ENERGY STAR® Homes and Apartments Builder & Developer Fact Sheet

Introduction to the ENERGY STAR Multifamily New Construction (MFNC) Program

The U.S. Environmental Protection Agency's ENERGY STAR MFNC program is designed to reduce energy usage in multifamily buildings while improving comfort, indoor air quality, and durability.

What buildings are eligible to participate in the ENERGY STAR MFNC program?

All site-built or modular multifamily buildings that are not single-family detached homes or duplexes are eligible to participate in the Multifamily New Construction program, including townhomes. Mixed-use buildings may use this program if they are at least 50% residential. The program is primarily intended for new construction. Learn more about the ENERGY STAR Residential New Construction programs for single-family and manufactured new homes on the EPA's website.

What are the elements of an ENERGY STAR MFNC building?

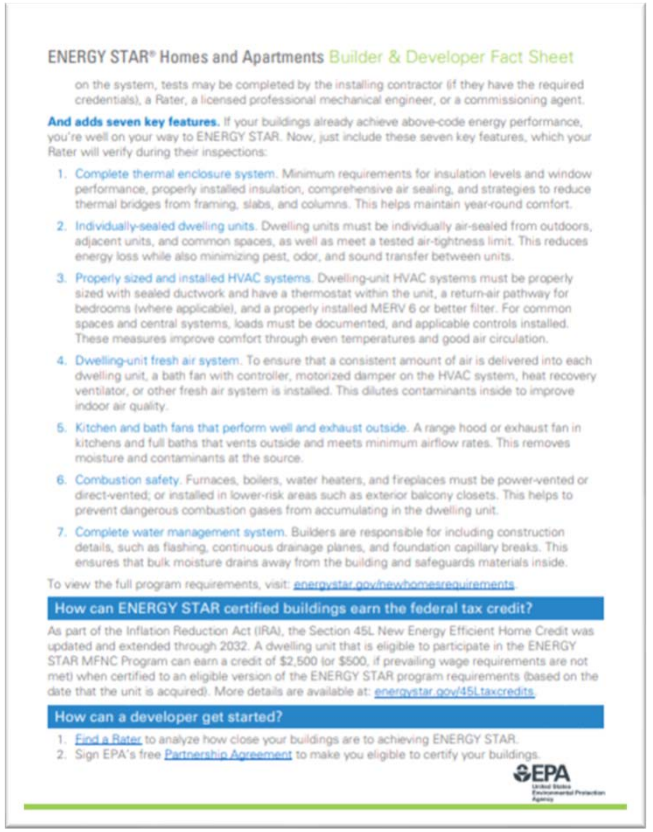
Efficiency & Testing	• Above-code performance of dwelling units and common spaces • Third-party inspections and functional tests
Comfort	• Complete thermal enclosure system • Individually-sealed dwelling units • Properly sized and installed HVAC system
Air Quality	• Dwelling-unit fresh air system • Kitchen and bath fans that perform well and exhaust outside • Combustion safety
Durability	• Complete water management system

It all starts with above-code performance. All ENERGY STAR multifamily buildings must demonstrate energy savings of at least 10% over their state's energy code using an Energy Rating Index (ERI) score, ASHRAE 90.1 model, or the EPA's prescriptive energy efficiency features. Buildings must also include mandatory efficiency measures related to lighting and HVAC controls for common spaces, central systems, and garages. Buildings ≥ 50,000 ft² must have a strategy to collect energy data and allow benchmarking of performance once occupied.

Verified by third-party inspections and tests. Raters and HVAC professionals ensure that required efficiency features are included, verify critical construction details, and perform system tests to ensure proper operation.

- Rater inspections and field tests. An independent Rater verifies that efficiency measures and key required features are installed and that dwelling-unit air-tightness, dwelling-unit and central exhaust duct tightness, and ventilation fan airflow in dwelling units and common spaces all meet performance thresholds.
- HVAC functional testing. All HVAC systems, including central systems and those serving common spaces, must undergo functional testing. Depending

EPA



ENERGY STAR® Homes and Apartments Builder & Developer Fact Sheet

on the system, tests may be completed by the installing contractor (if they have the required credentials), a Rater, a licensed professional mechanical engineer, or a commissioning agent.

And adds seven key features. If your buildings already achieve above-code energy performance, you're well on your way to ENERGY STAR. Now, just include these seven key features, which your Rater will verify during their inspections:

1. Complete thermal enclosure system. Minimum requirements for insulation levels and window performance, properly installed insulation, comprehensive air sealing, and strategies to reduce thermal bridges from framing, slabs, and columns. This helps maintain year-round comfort.
2. Individually-sealed dwelling units. Dwelling units must be individually air-sealed from outdoors, adjacent units, and common spaces, as well as meet a tested air-tightness limit. This reduces energy loss while also minimizing pest, odor, and sound transfer between units.
3. Properly sized and installed HVAC systems. Dwelling-unit HVAC systems must be properly sized with sealed ductwork and have a thermostat within the unit, a return-air pathway for bedrooms (where applicable), and a properly installed MERV 6 or better filter. For common spaces and central systems, loads must be documented, and applicable controls installed. These measures improve comfort through even temperatures and good air circulation.
4. Dwelling-unit fresh air system. To ensure that a consistent amount of air is delivered into each dwelling unit, a bath fan with controller, motorized damper on the HVAC system, heat recovery ventilator, or other fresh air system is installed. This dilutes contaminants inside to improve indoor air quality.
5. Kitchen and bath fans that perform well and exhaust outside. A range hood or exhaust fan in kitchens and full baths that vents outside and meets minimum airflow rates. This removes moisture and contaminants at the source.
6. Combustion safety. Furnaces, boilers, water heaters, and fireplaces must be power-vented or direct-vented; or installed in lower-risk areas such as exterior balcony closets. This helps to prevent dangerous combustion gases from accumulating in the dwelling unit.
7. Complete water management system. Builders are responsible for including construction details, such as flashing, continuous drainage planes, and foundation capillary breaks. This ensures that bulk moisture drains away from the building and safeguards materials inside.

To view the full program requirements, visit: energystar.gov/newhomesrequirements

How can ENERGY STAR certified buildings earn the federal tax credit?

As part of the Inflation Reduction Act (IRA), the Section 45L New Energy Efficient Home Credit was updated and extended through 2032. A dwelling unit that is eligible to participate in the ENERGY STAR MFNC Program can earn a credit of $2,500 (or $500, if prevailing wage requirements are not met) when certified to an eligible version of the ENERGY STAR program requirements (based on the date that the unit is acquired). More details are available at: energystar.gov/45Ltaxcredits.

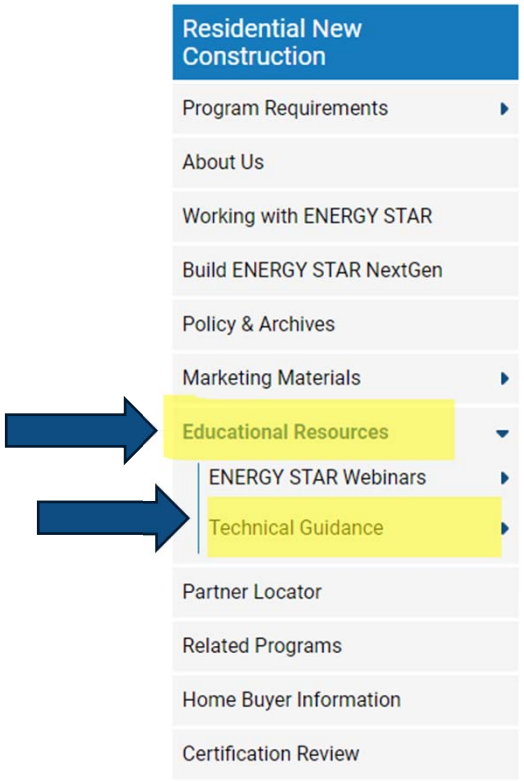
How can a developer get started?

1. Find a Rater to analyze how close your buildings are to achieving ENERGY STAR.
2. Sign EPA's free Partnership Agreement to make you eligible to certify your buildings.

EPA

How to Get Started

1. Visit us at www.energystar.gov/mfnc
2. If you are a Builder or Developer, download our ENERGY STAR Fact Sheet.



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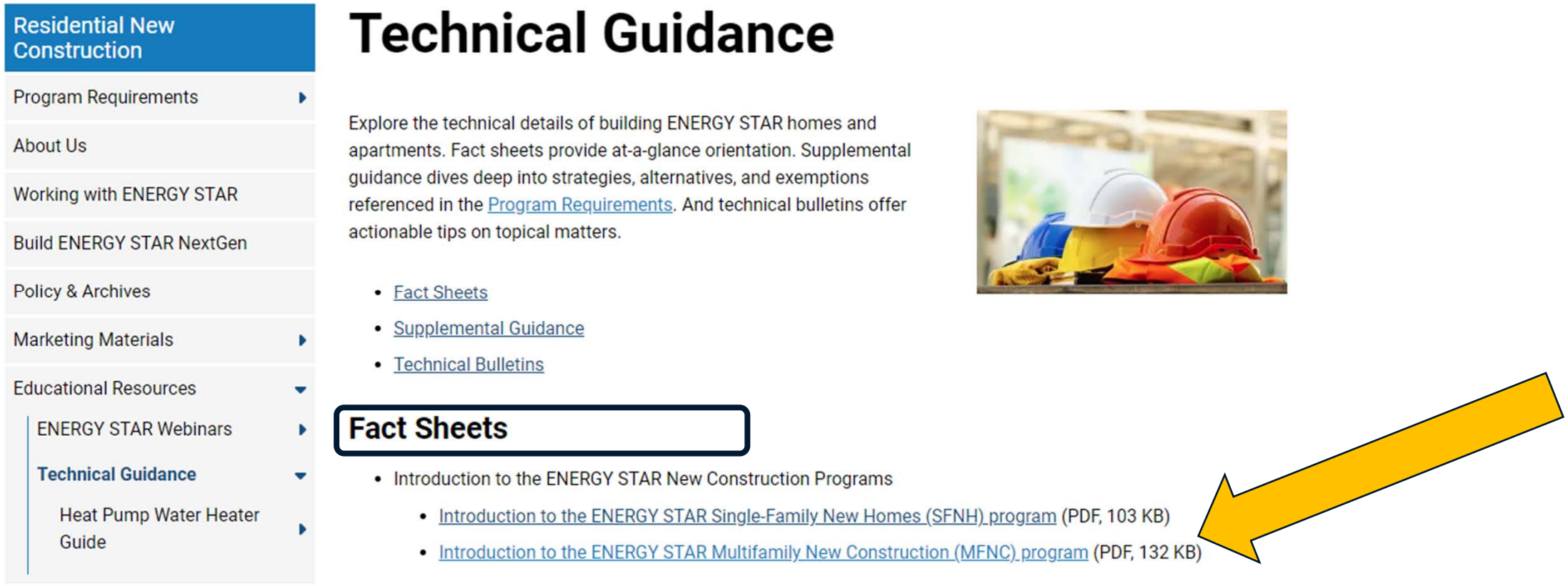
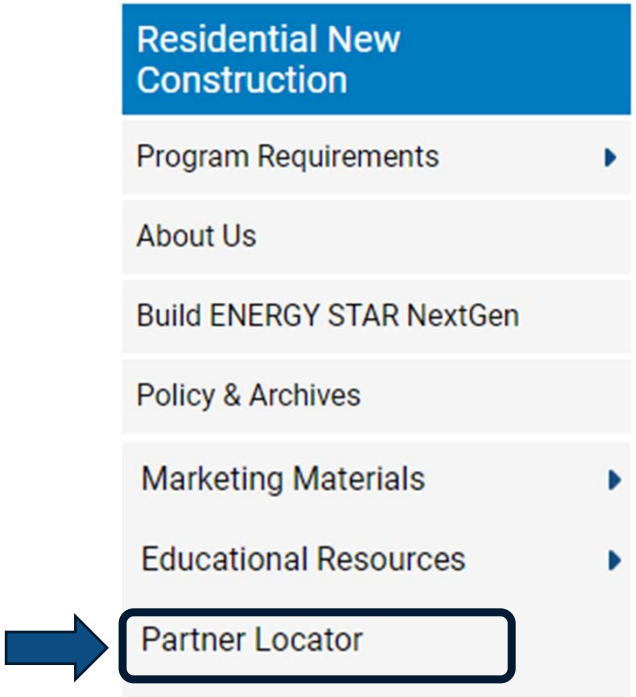


How to Get Started

1. Visit us at www.energystar.gov/mfnc
2. If you are a Builder or Developer, download our ENERGY STAR Fact Sheet.
3. Then, find a Rater to analyze your building plans for ENERGY STAR.



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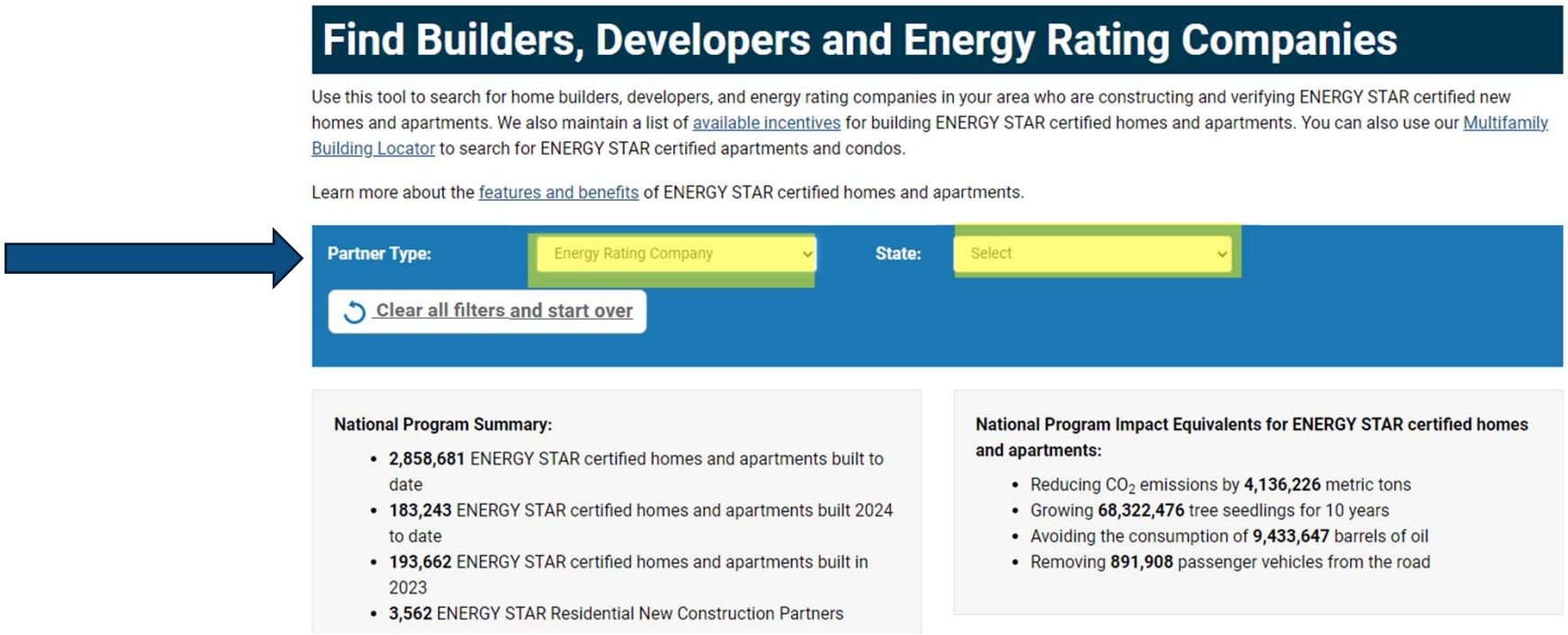

How to Get Started

4. Raters & Builders: Sign EPA's free Partnership Agreement to make you eligible to certify buildings.

How to Get Started

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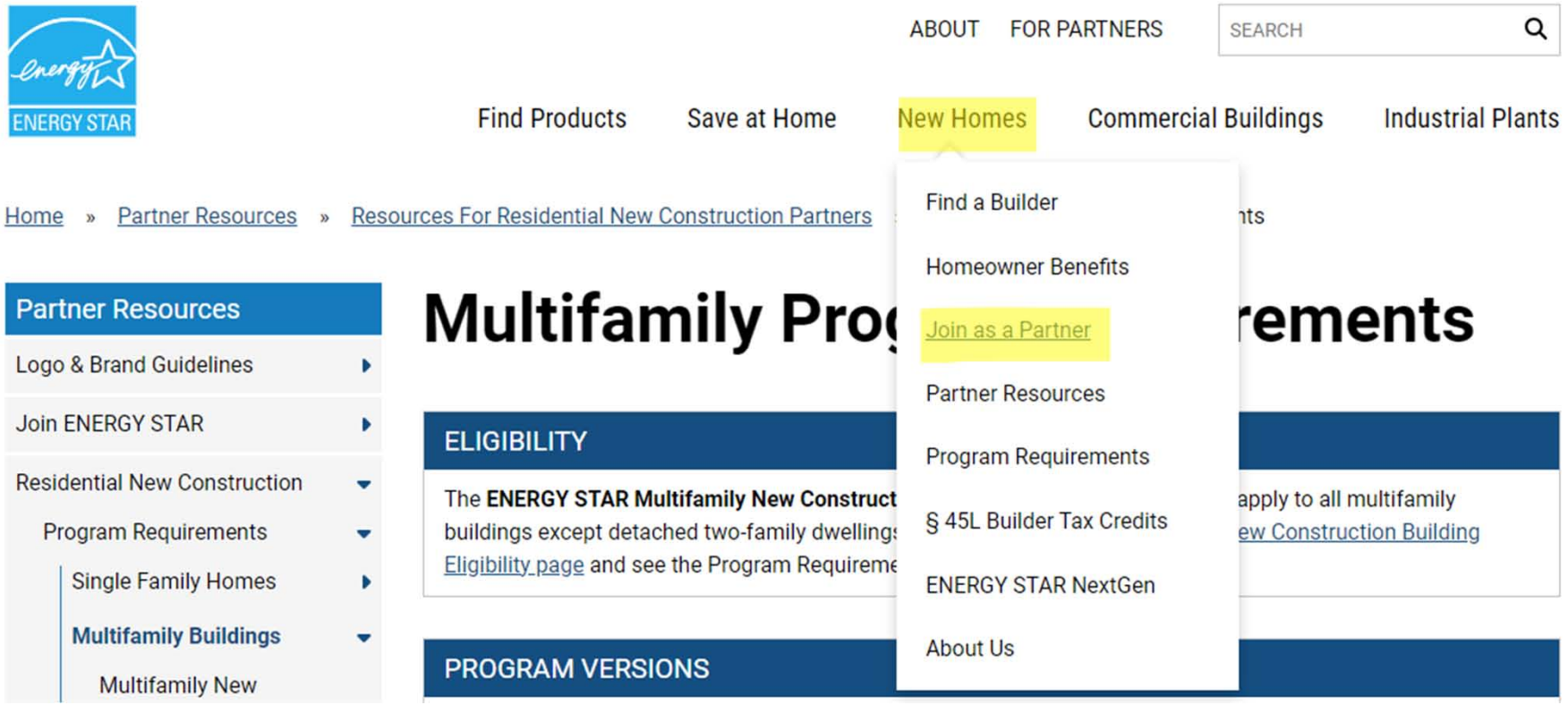


How to Get Started

Who can partner with ENERGY STAR?

Home Builders & Developers

Energy Rating Companies

Utilities / Program Sponsors

Other organizations can also work with ENERGY STAR, such as Multifamily Professionals (e.g., Architects and Designers, ASHRAE Path Modelers, HVAC Contractors); Oversight Organizations; and Real Estate Professionals. See a full list >>

Join Now

How to Get Started

Join ENERGY STAR as a Residential New Construction Partner

Becoming an ENERGY STAR partner is easy. Simply fill out an ENERGY STAR Partnership Agreement by following the appropriate link below. There is no cost to partner with ENERGY STAR or use ENERGY STAR promotional materials.

- SINGLE-FAMILY HOMEBUILDERS, MULTIFAMILY BUILDERS AND DEVELOPERS, AND FACTORY BUILDERS/PLANTS ▶
- RESIDENTIAL ENERGY RATING COMPANIES (E.G., ENERGY RATERS, RATING PROVIDERS) ▶
- UTILITIES AND OTHER PROGRAM SPONSORS ▶

Agenda

- ✓ Program Overlap
  - ✓ Eligibility, 45L tax credits

- ✓ ENERGY STAR Multifamily New Construction Program
  - ✓ Program Overview, Requirements & Documents
  - ✓ Getting Started with ENERGY STAR

    Contact us! energystarhomes@energystar.gov

- ➢ DOE Zero Energy Ready Home Multifamily Program
  - ➢ Program Overview, Requirements & Documents
  - ➢ Getting Started with ZERH

EEBA
Energy & Environmental Building Alliance

DOE Zero Energy Ready Home

Multifamily Program Overview

Program Structure: Program Version Effective Dates

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

DOE ZERH

Program Version Effective Dates

National (except California)

Program Version and Revision Number	Required for Use, if Home's Permit Date is on/after this Date	Project Type
Version 1, Rev. 7	6/1/2019	Single family, multifamily up to 5 stories
Version 1, Rev. 8	1/1/2023	
Version 1, Rev. 9 [a]	1/1/2024	Multifamily, any height
Single Family Version 2, Rev. 1	1/1/2024	Single Family
Multifamily Version 2	1/1/2025	Multifamily, any height

[a] Multifamily buildings of any height certified under Version 1, Rev. 9 are deemed to meet the certification requirements for Version 1, Rev. 8 where that revision is required.

California Only

Program Version and Revision Number	Required for Use, if Home's Permit Date is on/after this Date	Project Type
CA Version 1, Rev. 7	10/1/2018 [b]	Single family, multifamily up to 5 stories
CA Version 1, Rev. 8	1/1/2023 [b]	
CA Single Family Version 2	1/1/2024	Single family
CA Multifamily Version 2 [c]	1/1/2024	Multifamily, any height

[b] If both plan approval ***and*** permit date are not on/after this date the prior revision may be used.

[c] Multifamily buildings of any height certified under CA Multifamily Version 2 are deemed to meet the certification requirements for CA Version 1, Rev. 8, where that version is required.

ZERH Multifamily Version 2

Low-Rise

Mid-Rise

High-Rise

Mixed Use

Program Structure: Program Version Effective Dates

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

DOE ZERH

Program Version Effective Dates

Required for Use, if Building's Permit Date is on/after this Date

Program Version and Revision Number	Required for Use, if Building's Permit Date is on/after this Date	Project Type
Version 1, Revision 9.0	1/1/2024	Single family, multifamily up to 5 stories
Multifamily Version 2	1/1/2025	Multifamily, any height

certification requirements for Version 1, Rev. 8 where that revision is required.

California Only

Program Version and Revision Number	Required for Use, if Home's Permit Date is on/after this Date	Project Type
CA Version 1, Rev. 7	10/1/2018 [b]	Single family, multifamily up to 5 stories
CA Version 1, Rev. 8	1/1/2023 [b]	
CA Single Family Version 2	1/1/2024	Single family
CA Multifamily Version 2 [c]	1/1/2024	Multifamily, any height

[b] If both plan approval ***and*** permit date are not on/after this date the prior revision may be used.
[c] Multifamily buildings of any height certified under CA Multifamily Version 2 are deemed to meet the certification requirements for CA Version 1, Rev. 8, where that version is required.

ZERH Multifamily Version 2

Low-Rise

Mid-Rise

High-Rise

Mixed Use

Program Structure: Program Version Effective Dates

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Required for Use, if Building's Permit Date is on/after this Date	
Version 1, Revision 9.0	1/1/2024
Multifamily Version 2	1/1/2025

3-Story Apartment Building

Rochester, New York

Permit Application November 2024

Building Permit Issued February 2025

ZERH Multifamily Version 2

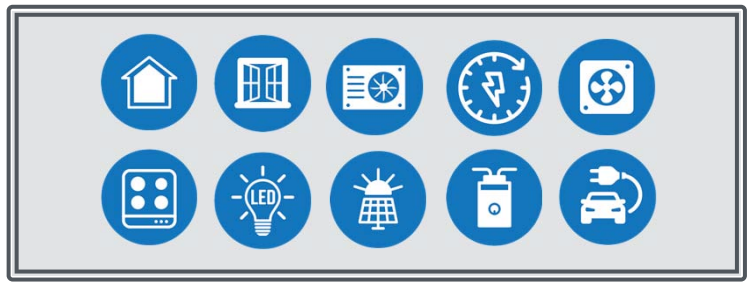
Low-Rise

Mid-Rise

High-Rise

Mixed Use

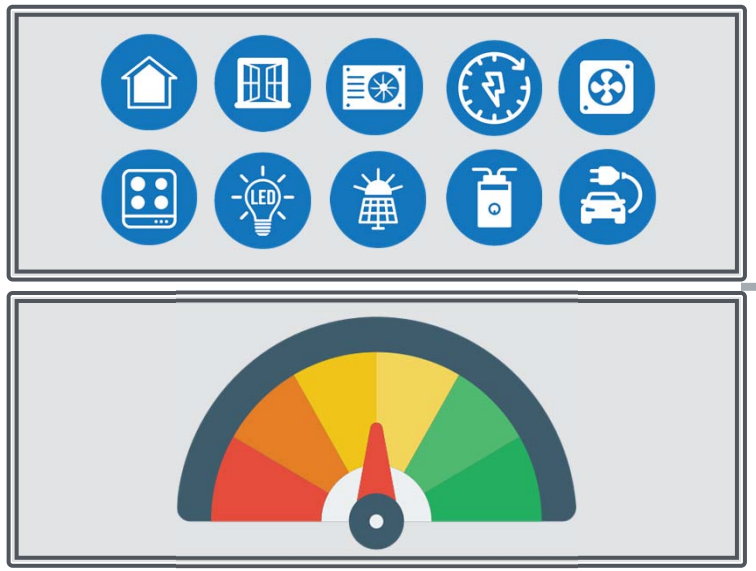
Structure of Program Requirements



Mandatory Requirements

- *Co-requisite certifications*
- *Must-have efficiency measures*

Structure of Program Requirements



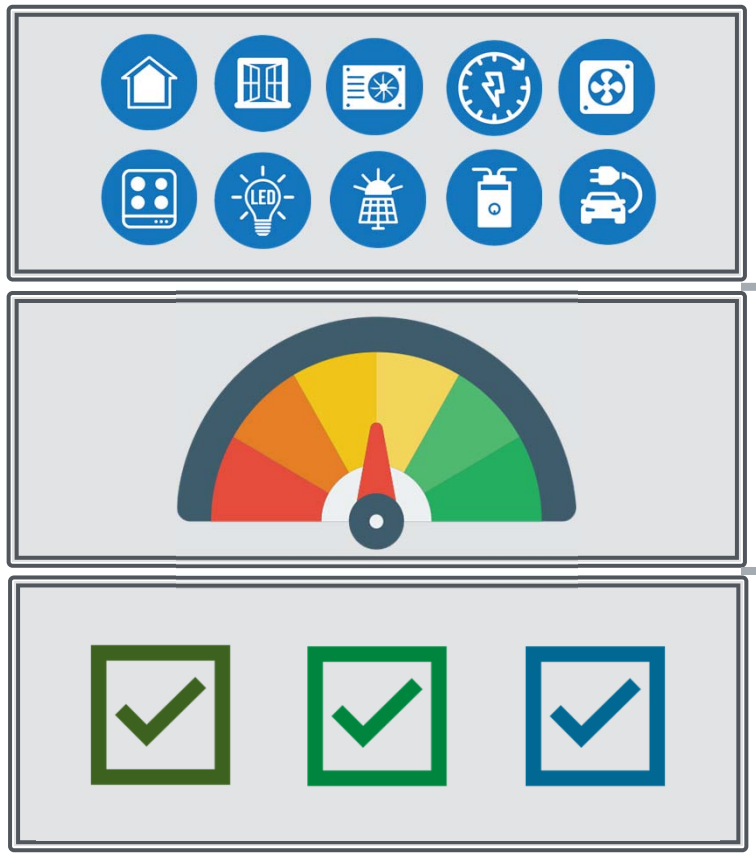
Mandatory Requirements

- *Co-requisite certifications*
- *Must-have efficiency measures*

Performance Threshold

- *Defines minimum energy efficiency*
- *Three compliance paths*

Structure of Program Requirements



Mandatory Requirements

- *Co-requisite certifications*
- *Must-have efficiency measures*

Performance Threshold

- *Defines minimum energy efficiency*
- *Three compliance paths*

Checklists and Verification

- *Rater checklists*
- *Field verification of critical efficiency measures*

Compliance Paths & Energy Efficiency Thresholds

	Benefits of Path	Efficiency Threshold
ERI Modeling	Flexible	Design Unit ERI ≤ Target ERI
Prescriptive	No modeling	Efficiency Specs ≥ Target Design
ASHRAE 90.1	Reuse Model	Cost or Source Energy ≤ 90.1-2019

ENERGY STAR

ZERO ENERGY READY HOME U.S. DEPARTMENT OF ENERGY

or PHIUS CORE 2021

DOE Zero Energy Ready Home

Multifamily Requirements & Documents

Co-Requisite Certifications

ENERGY STAR

Increases efficiency & integrates building science

Indoor airPLUS

Integrates indoor air quality measures

DOE's Zero Energy Ready Home Program

establishes the highest energy efficiency levels of federal programs to advance the housing industry.

Versions Required for ZERH MF V2

ENERGY STAR

Multifamily New Construction Version 1.2

Indoor airPLUS

Version 1, Revision 4 or 5

for projects permitted on or before 12/31/2025

Version 2, Certified (or Gold)

for projects permitted on or after 1/1/2026

Key Mandatory Measures for ZERH

Envelope

Windows

Duct Design

Water Efficiency

Ventilation

Appliances

Lighting

Electric Ready

PV-Ready

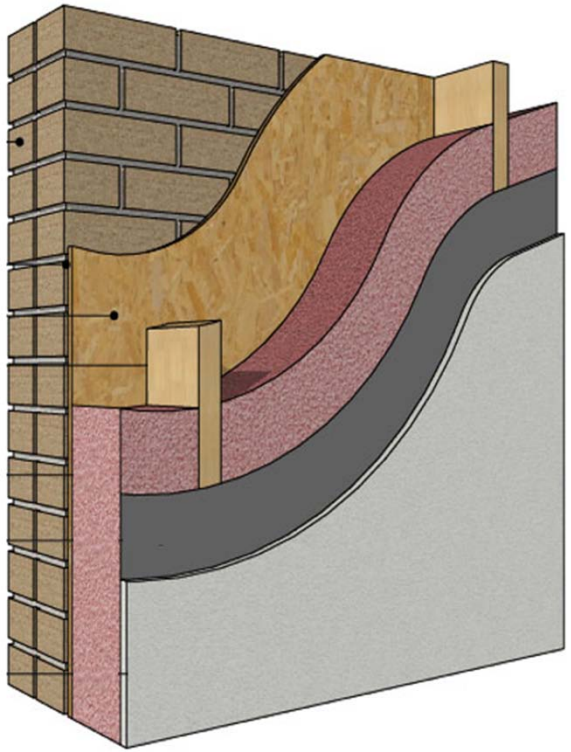
EV-Ready

2021 IECC Insulation Levels

Same as

ENERGY STAR

(after 1/1/25)



Compliance Options:

- ✓ Tradeoffs between different envelope components
- ✓ Optional whole-building UA (including common spaces)

Window U & SHGC Requirements by Climate Zone

Residential Windows in Dwelling Units

Climate Zone	1, 2	3	4A, 4B	4C, 5				6, 7, 8
U	≤ 0.40	≤ 0.30	≤ 0.30	= 0.30	= 0.29	= 0.28	≤ 0.27	≤ 0.25
SHGC	≤ 0.23	≤ 0.25	≤ 0.40	≥ 0.42	≥ 0.37	≥ 0.32	Any	Any

Architectural Windows in Dwelling Units

Climate Zone		1, 2	2	3	4, 5	6	7	8
U	Fixed	0.48	0.43	0.40	0.34	0.32	0.28	0.27
	Operable	0.59	0.57	0.51	0.43	0.40	0.34	0.30
SHGC		0.25	0.25	0.25	0.40	0.40	Any	Any

Window U & SHGC Requirements by Climate Zone

Residential Windows in Dwelling Units

Climate Zone	1, 2	3	4A, 4B	4C, 5				6, 7, 8
U	≤ 0.40	≤ 0.30	≤ 0.30	= 0.30	= 0.29	= 0.28	≤ 0.27	≤ 0.25
SHGC	≤ 0.23	≤ 0.25	≤ 0.40	≥ 0.42	≥ 0.37	≥ 0.32	Any	Any

ZERO ENERGY READY HOME
U.S. DEPARTMENT OF ENERGY

Architectural Windows in Dwelling Units

Climate Zone		1, 2	2	3	4, 5	6	7	8
U	Fixed	0.48	0.43	0.40	0.34	0.32	0.28	0.27
	Operable	0.59	0.57	0.51	0.43	0.40	0.34	0.30
SHGC		0.25	0.25	0.25	0.40	0.40	Any	Any

Same as ENERGY STAR Target Dwelling

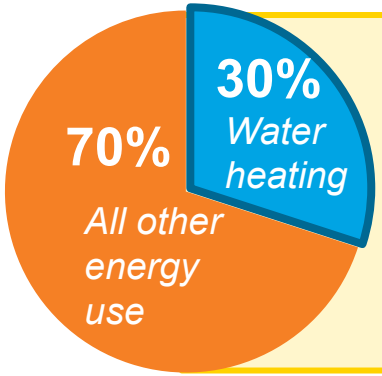
Ducts & Air Handlers in Conditioned Space

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Ducts in an unconditioned attic add 25% to the cooling load in hot climates.
(National Renewable Energy Laboratory)

- ✓ All **in-unit** heating and cooling system distribution ducts and air-handling equipment are located within the thermal and air barrier boundary.

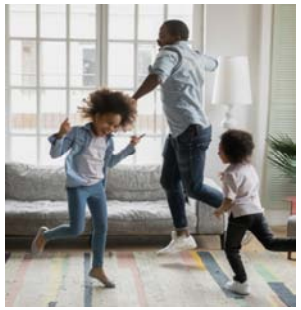
Water Heating Efficiency



Energy use in apartment buildings with 5+ units
(Energy Information Administration 2020)

- ✓ WaterSense labeled fixtures for dwelling unit showerheads, bath faucets, and/or accessories.
- ✓ Hot water delivery systems meet stored volume criteria (1.8 gallons)
- ✓ In-dwelling unit recirculation systems (if used) use on-demand controls.
- ✓ Recirculating central hot water distribution systems meet pipe insulation thickness criteria

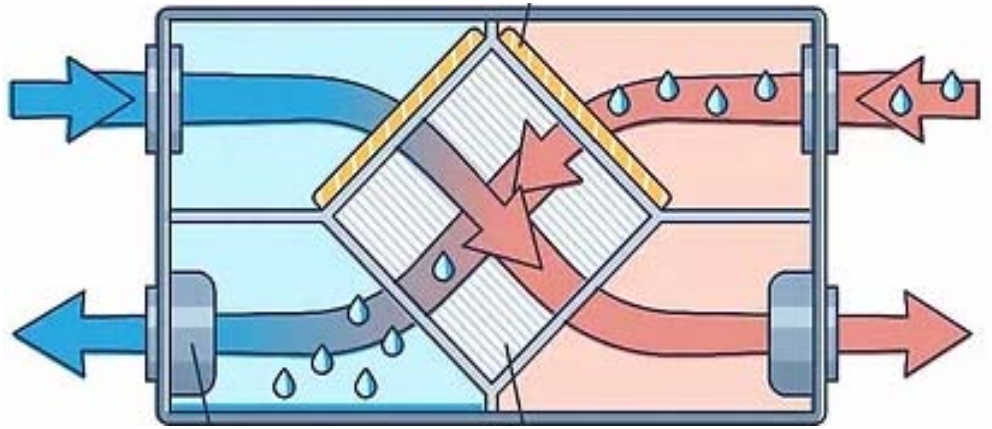
Indoor Air Quality Provisions



"It is great peace of mind to know that the air quality is good, and I don't have to worry about my children's health." – *ZERH Homeowner*

U.S. ENVIRONMENTAL PROTECTION AGENCY
Indoor AirPlus

- ✓ *Ventilation*
- ✓ *Pest management*
- ✓ *Combustion safety*
- ✓ *Low-emissions materials*
- ✓ *Radon control*
- ✓ *Moisture control*



- ✓ Either in-unit or centralized energy efficient balanced ventilation (HRV or ERV) is required for dwelling units in Climate Zones 6-8.

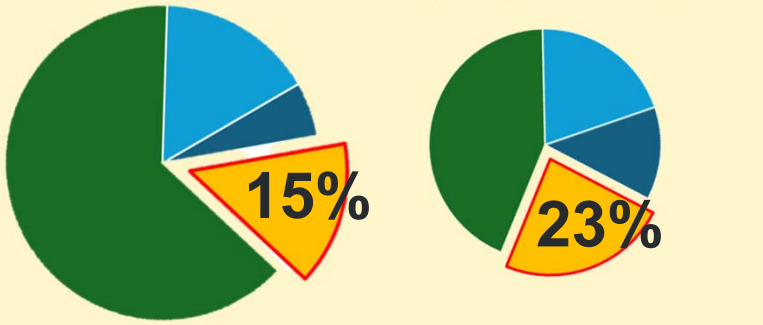
Energy Efficient Appliances & Lighting

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Energy Use 1950 vs 2020

Avg per household:

90.6 MBTU *62.3 MBTU*

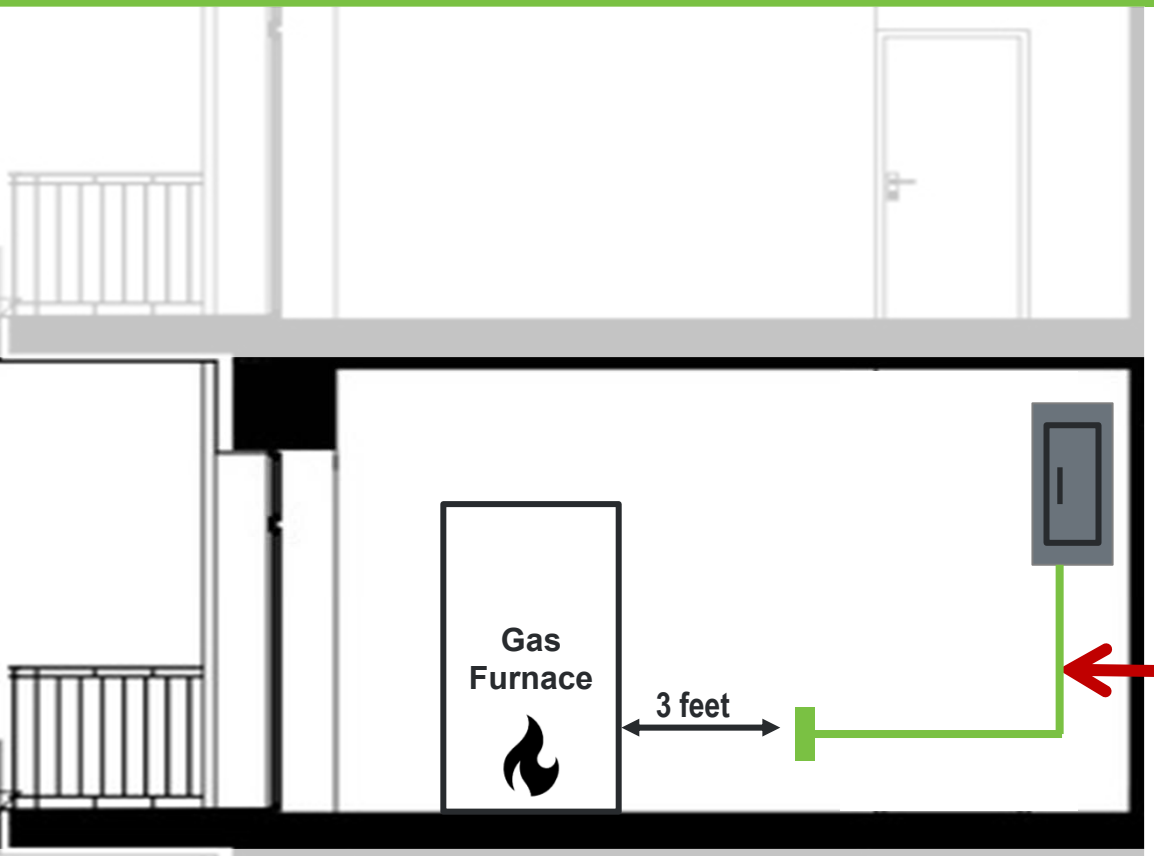


(Energy Information Administration)

- Heating & Cooling
- Hot Water
- Misc. Electrical Loads
- Lighting & Appliances

- ✓ All builder-supplied and builder-installed in-dwelling refrigerators, dishwashers, clothes washers, clothes dryers, and bathroom ventilation fans are ENERGY STAR certified.
- ✓ 100% of in-dwelling, builder-installed lighting fixtures and lamps are LEDs.

Heat Pump Space Heating Ready

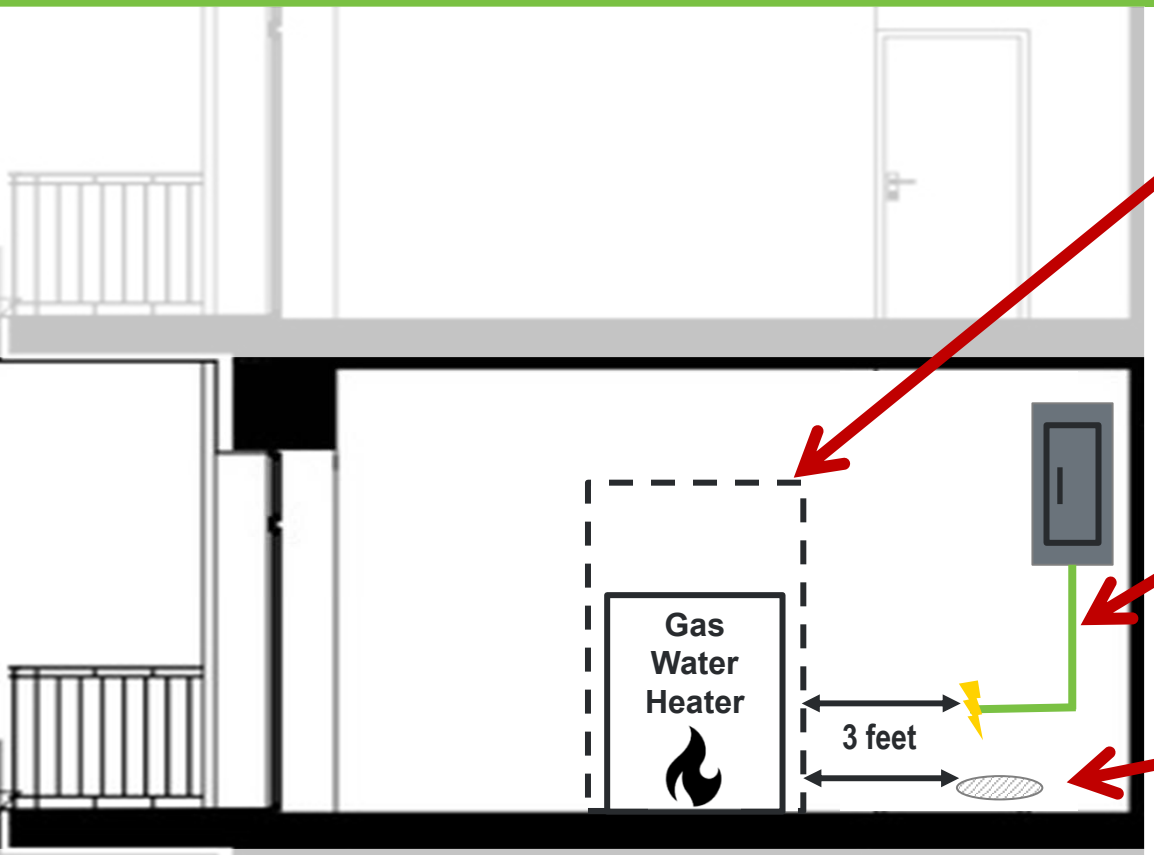


- ✓ Individual branch circuit or conduit installed
- ✓ Labeled “For future heat pump”

Exceptions:

- Dwelling unit already includes electric heating system as primary heating
- Dwelling unit is served by a central system

Heat Pump Water Heating Ready

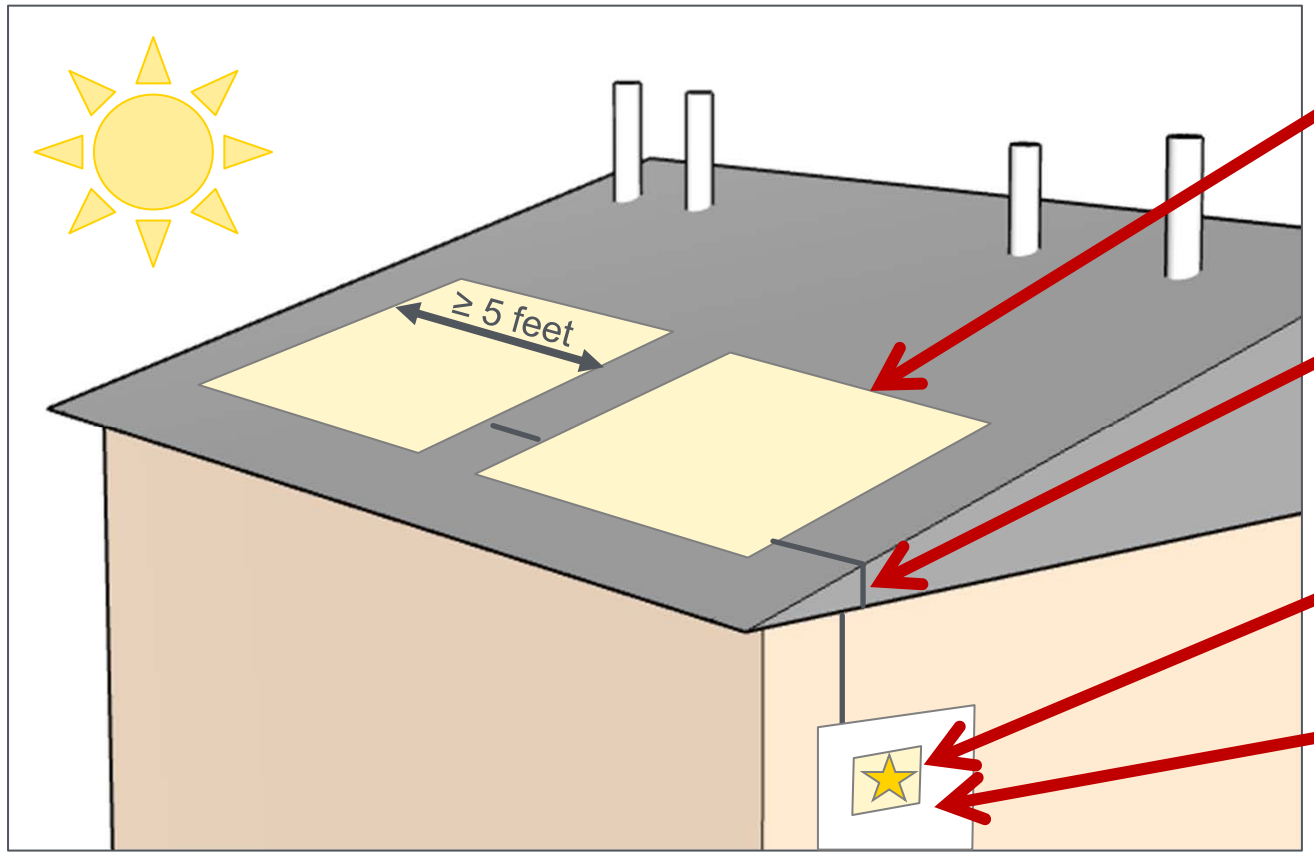


- ✓ A space in the dwelling unit that is at least 3’ x 3’ wide and 7’ high surrounding or within 3’ of the installed fossil fuel water heater
- ✓ Individual branch circuit is installed and **energized**
- ✓ Condensate drain installed within 3’ of existing water heater

Exceptions:

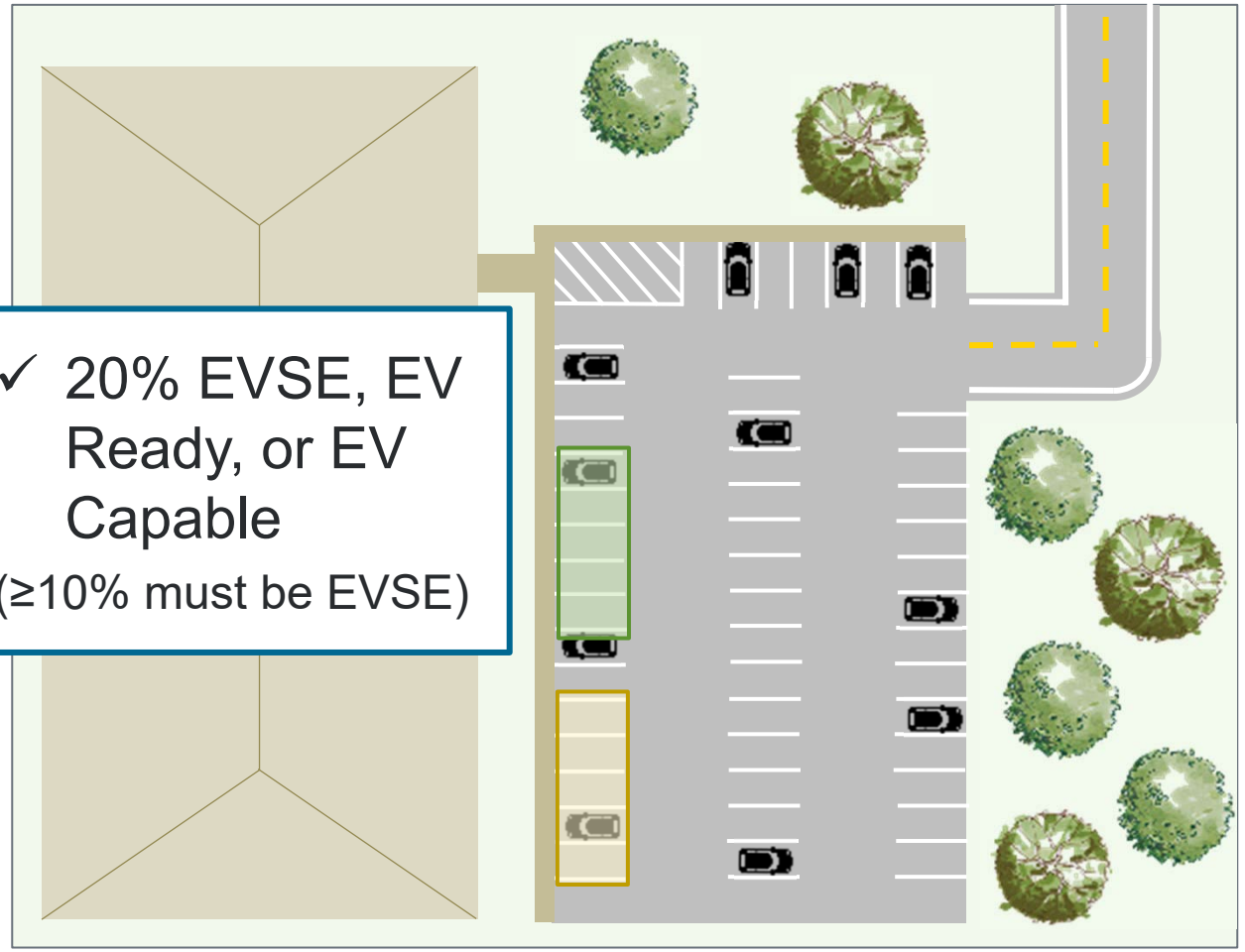
- Installed water heater is electric or gas tankless
- Dwelling unit is served by a central system

Photovoltaic (PV) Ready



- ✓ Designate and Reserve a Solar Ready Zone
  - Not less than **40%** of available roof
- ✓ Documents indicate pathway for conduit or piping to main service panel
- ✓ Certificate indicating solar ready zone and conduit pathway
- ✓ Panel has reserved space for future solar electric system

Electric Vehicle (EV) Ready



✓ 20% EVSE, EV Ready, or EV Capable
(≥10% must be EVSE)

50 Total Spaces

5 EVSE

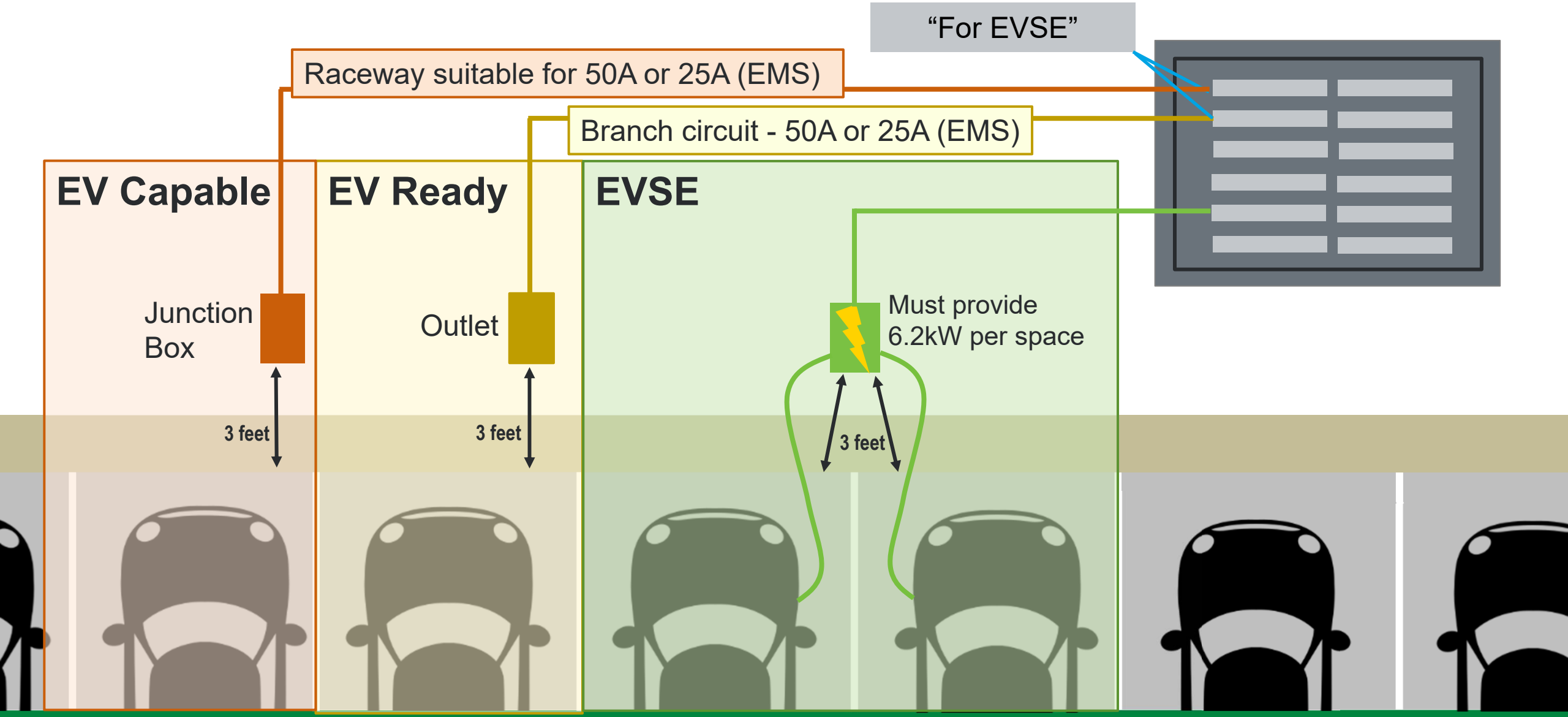
+

5 EV Ready/ Capable

Exceptions:

- Builder does not provide parking
- Energy use of parking lot/garage is not the responsibility of the builder/property manager
- Local electric utility is not able to provide capacity
- Capacity requirements increases utility side cost to the builder by more than $450 per dwelling unit

What are EV-Capable, EV-Ready, and EVSE?



Compliance Documentation

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

National Rater Checklist

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

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 Version 1.2 and Indoor airPLUS. Overlapping requirements are not repeated in this checklist.[1] For items that do not apply based on selected compliance path (ERI, ASHRAE, or Prescriptive) the Rater may enter "N/A." This checklist must be completed for each certified dwelling unit.

DOE Zero Energy Ready Home – Multifamily Version 2
National Rater Checklist

Home Address:
City: | State: | Permit Date:

	Must Correct	Rater[2] Verified	Verified by Builder or Licensed Professional[3]	Exception or Alternate Used[4] (Enter endnote #)
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]	☐	☐		
1.2 Rater has verified and documented that their company has a ZERH partnership agreement using the ZERH Partner Locator.[6]	☐	☐		
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 of a Multifamily Review Organization for ZERH (MRO for ZERH).	☐	☐		
2. ENERGY STAR Multifamily New Construction Baseline				
2.1 Unit is certified under ENERGY STAR Multifamily New Construction Program Version 1.2.[7]	☐	☐		
3. Building Envelope				
3.1a ERI and ASHRAE paths only: ceiling, wall, floor, and slab insulation for the building meets specified efficiency levels from the 2021 IECC.[8, 9, 10]	☐	☐		
3.1b Prescriptive path only: ceiling, wall, floor, and slab insulation for the building meets or exceeds specified ZERH MF V2 Target Dwelling Design insulation levels in dwelling units, and specified efficiency levels from the 2021 IECC in common spaces.[8, 9, 11]	☐	☐		
3.2 Windows in dwelling units meet high performance requirements based on climate zone.[12]	☐	☐		
4. Duct System				
4.1 All in-unit heating and cooling distribution ducts and in-unit heating and cooling air handling equipment are located	☐	☐		

PV-Ready Checklist

U.S. DOE Zero Energy Ready Home Program
Multifamily PV-Ready Checklist Version 2

Item #	Requirement	Rater Verified[1]
	One or more of the exceptions listed above applies and required documentation is retained by the rater. If this box is checked, the remaining items on this list are not required and the rater may mark the PV-Ready checklist as complete on the Rater Checklist.	☐
1	A solar-ready zone (a section or sections of the roof or building overhang designated and reserved for the future installation of a solar PV system) is located on the roof and/or other viable building surfaces (which may include awnings and the roofs of ancillary buildings including carports). For buildings where solar-ready zone(s) are located on roof slopes of 4:12 or greater, solar-ready zone is located in between 110 degrees to 270 degrees of true north.	☐
2	The total solar-ready zone area is not less than 40 percent of the roof area calculated as the horizontally projected gross roof area less the area covered by skylights, occupied roof decks, vegetated roof areas and mandatory access or set back areas required by the International Fire Code (IFC). For buildings with roof slopes of 4:12 or greater, the solar-ready zone is not less than 40 percent of the horizontally projected gross roof area with an orientation between 110 degrees to 270 degrees of true north (less the area covered by skylights, occupied roof decks, vegetated roof areas and mandatory access or set back areas required by the IFC).	☐
3	The solar-ready zone is either a single area or several smaller, separated sub-zone areas not less than 5 feet (1524 mm) in width in the narrowest dimension.	☐
4	The solar-ready zone is free from obstructions, including pipes, vents, ducts, HVAC equipment, skylights, and roof-mounted equipment.	☐
5	A collateral dead load[2] of not less than 5 pounds per square foot (PSF) shall be included in the gravity and lateral design calculations for the solar-ready zone. The structural design loads for roof dead load and roof live load are indicated on construction documents.	☐
6	Construction documents indicate pathways for routing of conduit or piping from the solar-ready zone(s) to the main electrical service panel.[3]	☐
7	The main electrical service panel[3] has a reserved space to allow installation of a dual-pole circuit breaker for future solar electric system. This space is labeled "For Future Solar Electric." The reserved space is positioned at the end of the panel that is opposite from the panel supply conductor connection. ***Field Verify***.	☐

EV-Ready Checklist

U.S. DOE Zero Energy Ready Home Program
Multifamily EV-Ready Checklist Version 2[1]

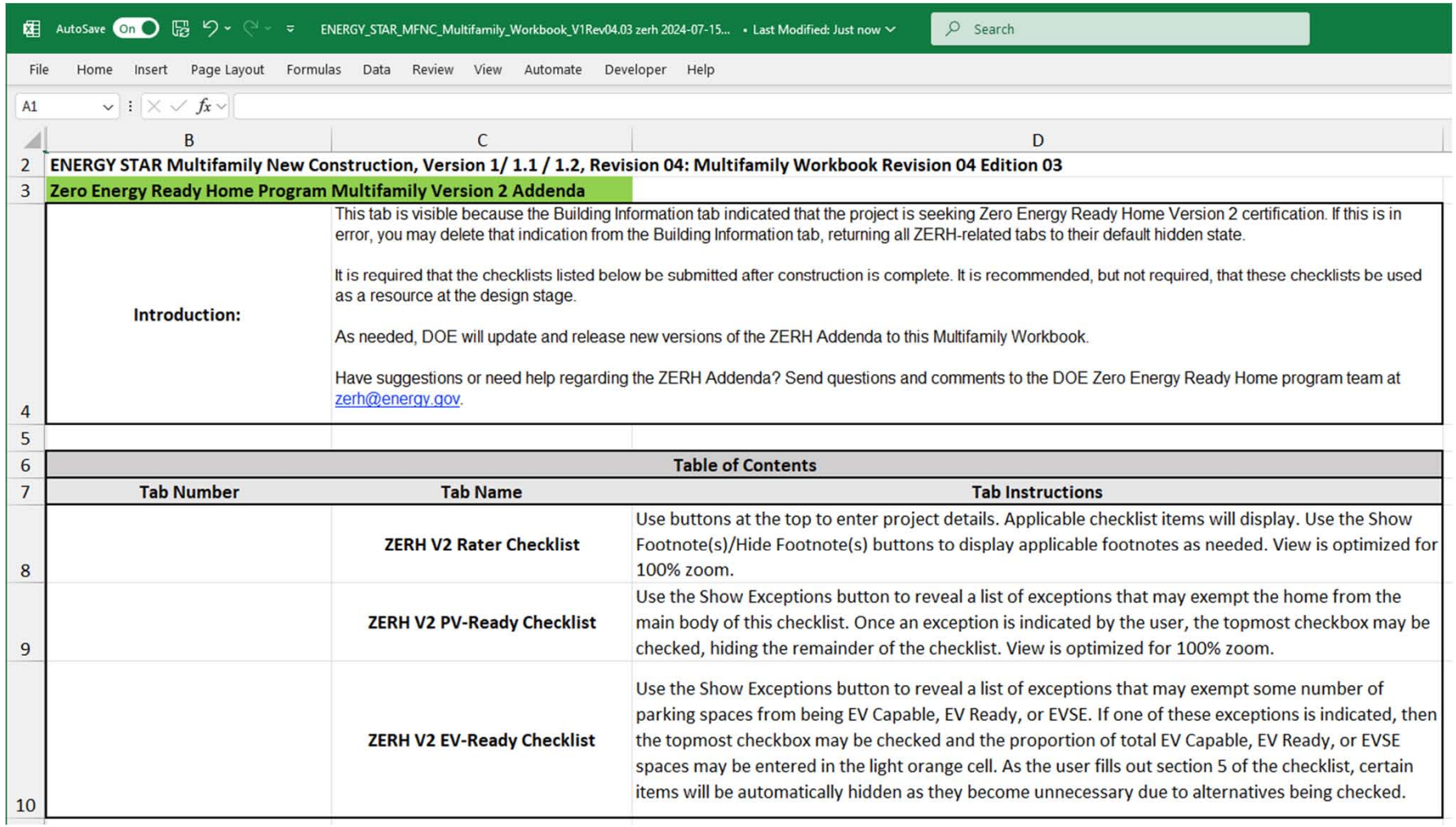
Item #	Requirement	Rater Verified[2]	Verified by Builder or Licensed Professional[3]
	Exception A or B applies, and required documentation is retained by the rater. Because both Exception A and B require that EV charging infrastructure is installed based on the available existing electric distribution capacity, document the percentage of total automobile parking spaces which are EV Capable, EV Ready, or EVSE spaces. If this box is checked, the remaining items on this list are not required and the rater may mark the EV-Ready checklist as complete on the Rater Checklist.	☐ ___%	
1*	Allocated parking for dwelling units[4] in multifamily or mixed-use buildings shall be provided with an EV Capable space[5], EV Ready space[6], or EVSE space[7] for 20% of units or automobile parking spaces, whichever is less. For parking that is shared by multiple buildings, see endnote.[8] To meet this 20% threshold, the following minimum types of spaces are provided: • 10% of the total (based on units or automobile parking spaces) must be EVSE spaces. • The remaining 10% of the total may be any combination of EVSE, EV Capable, or EV Ready spaces. The number of required compliant spaces shall be rounded up to the nearest whole number. Townhouses certifying under the ZERH Multifamily V2 program must meet alternative EV Ready requirements.[9] *Advisory:* DOE intends to raise the percentages of EVSE, EV Ready, and EV Capable spaces in a future program update.	☐	
2. All **EV Capable** spaces comply with the following:			
2a*	A continuous raceway or cable assembly is installed between an enclosure or outlet located within 3 feet of the EV Capable space and electrical distribution equipment. The following exceptions to the 3 feet requirement apply: • Parking spots in a covered garage are deemed EV-Capable if the conduit terminates anywhere within the garage on that parking level. • Projects with a common area electrical room may have the conduit terminate anywhere within the electrical room.	☐	☐
2b	Installed raceway or cable assembly is sized and rated to supply a minimum circuit capacity as described Item 5 below.	☐	☐
2c	The electrical distribution equipment to which the raceway or cable assembly connects has dedicated overcurrent protection device space	☐	☐

Find program documents

These documents are required for all three paths. There are additional documentation requirements specific to each path.

Compliance Documentation

ESMFNC Multifamily Workbook with ZERH Addenda



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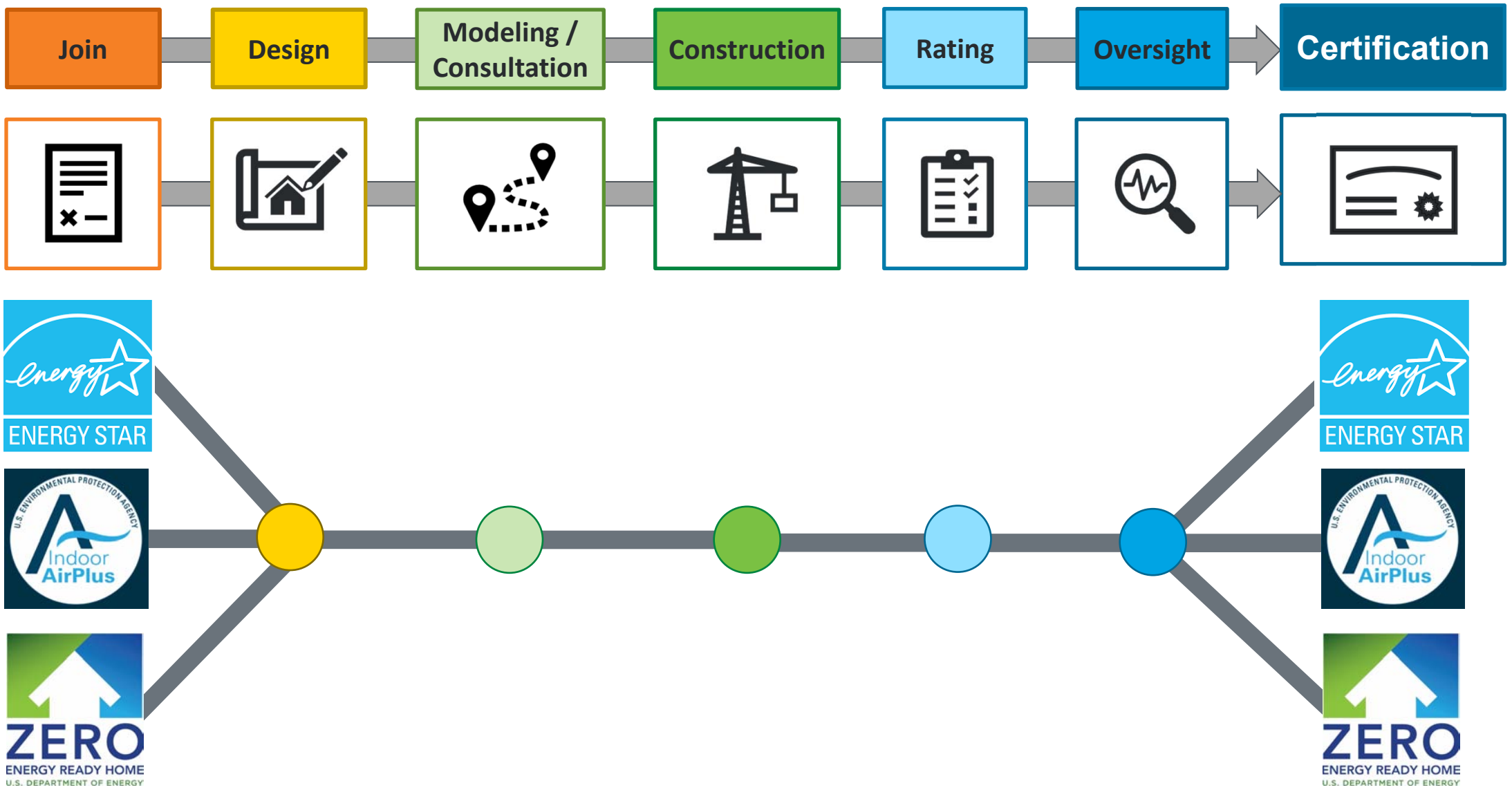
	B	C	D
2	**ENERGY STAR Multifamily New Construction, Version 1/ 1.1 / 1.2, Revision 04: Multifamily Workbook Revision 04 Edition 03**		
3	**Zero Energy Ready Home Program Multifamily Version 2 Addenda**		
4	**Introduction:**	This tab is visible because the Building Information tab indicated that the project is seeking Zero Energy Ready Home Version 2 certification. If this is in error, you may delete that indication from the Building Information tab, returning all ZERH-related tabs to their default hidden state. It is required that the checklists listed below be submitted after construction is complete. It is recommended, but not required, that these checklists be used as a resource at the design stage. As needed, DOE will update and release new versions of the ZERH Addenda to this Multifamily Workbook. Have suggestions or need help regarding the ZERH Addenda? Send questions and comments to the DOE Zero Energy Ready Home program team at zerh@energy.gov.	
5			
6	**Table of Contents**		
7	**Tab Number**	**Tab Name**	**Tab Instructions**
8		**ZERH V2 Rater Checklist**	Use buttons at the top to enter project details. Applicable checklist items will display. Use the Show Footnote(s)/Hide Footnote(s) buttons to display applicable footnotes as needed. View is optimized for 100% zoom.
9		**ZERH V2 PV-Ready Checklist**	Use the Show Exceptions button to reveal a list of exceptions that may exempt the home from the main body of this checklist. Once an exception is indicated by the user, the topmost checkbox may be checked, hiding the remainder of the checklist. View is optimized for 100% zoom.
10		**ZERH V2 EV-Ready Checklist**	Use the Show Exceptions button to reveal a list of exceptions that may exempt some number of parking spaces from being EV Capable, EV Ready, or EVSE. If one of these exceptions is indicated, then the topmost checkbox may be checked and the proportion of total EV Capable, EV Ready, or EVSE spaces may be entered in the light orange cell. As the user fills out section 5 of the checklist, certain items will be automatically hidden as they become unnecessary due to alternatives being checked.

Find program documents

DOE Zero Energy Ready Home

Getting Started with ZERH

Certification Process

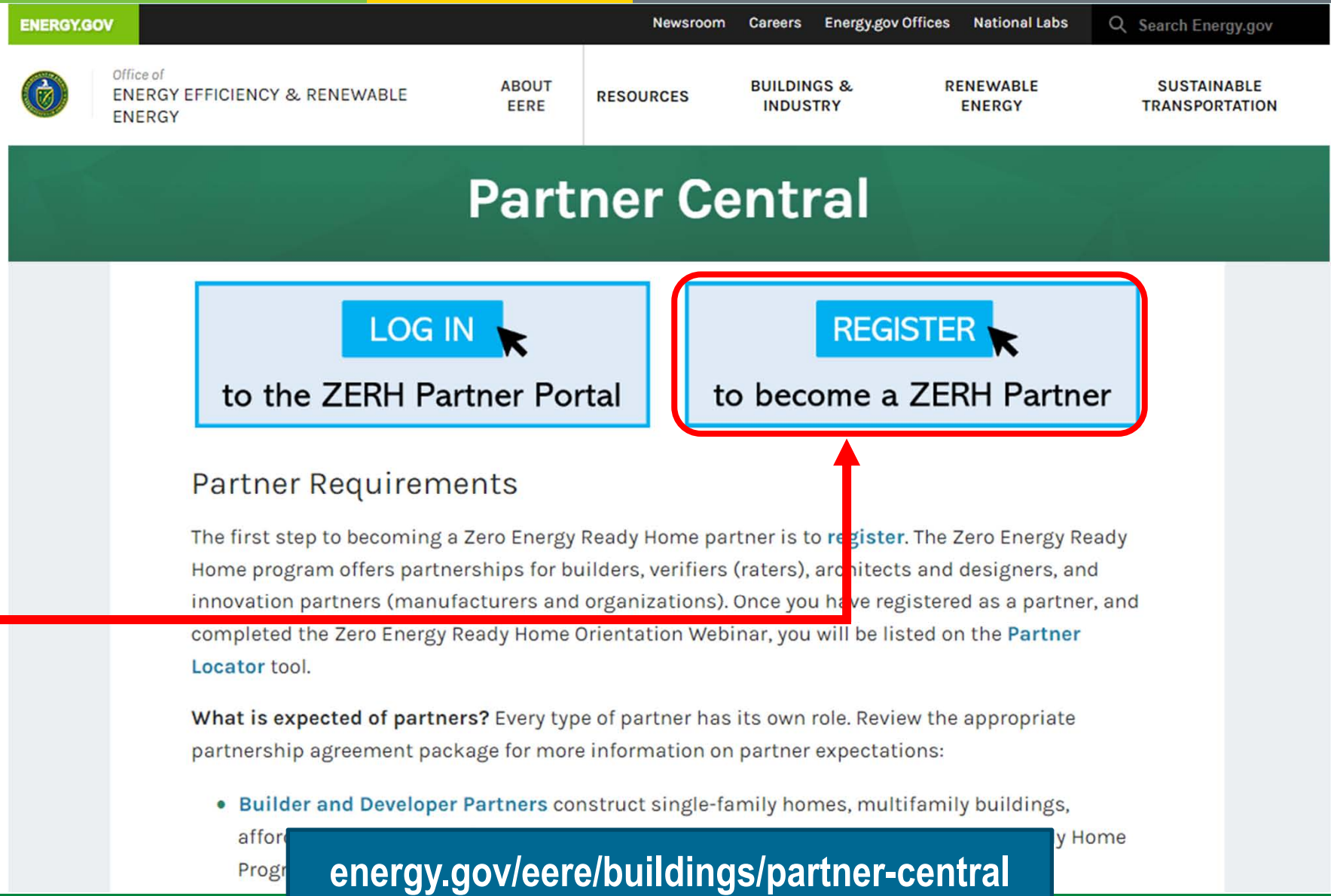


Register as a Partner

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Partner Central

If you have not yet registered, go to Partner Central on the ZERH website



energy.gov/eere/buildings/partner-central

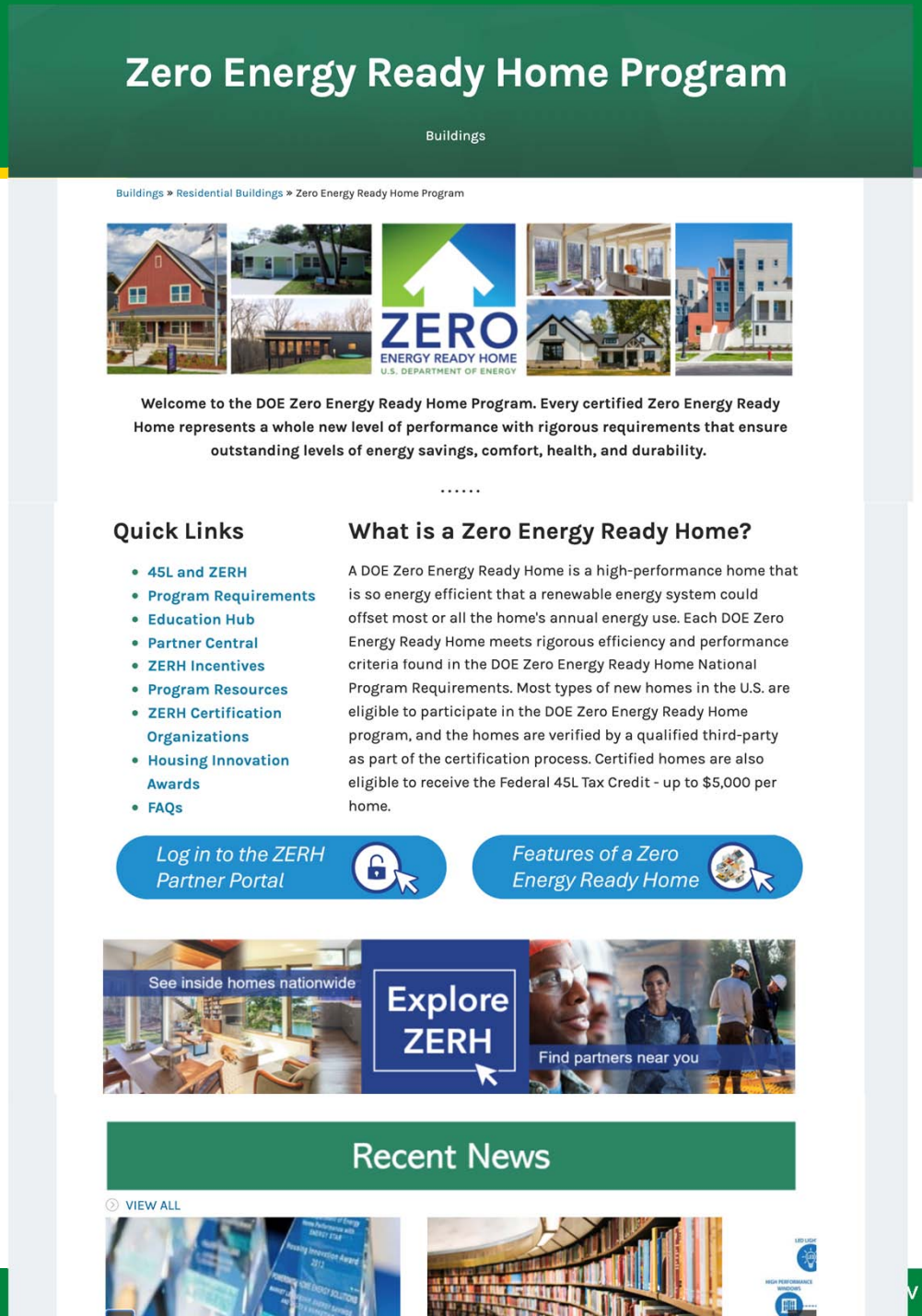
For More Information

DOE Zero Energy Ready Home Webpage

www.buildings.energy.gov/zero

- DOE Tour of Zero
- ZERH Training Videos
- 45L and ZERH

ZERH@doe.gov



Summary: ZERH Multifamily Version 2 and ENERGY STAR Multifamily New Construction, Version 1.2

	ENERGY STAR Multifamily New Construction, Version 1.2	ZERO ENERGY READY HOME Multifamily, Version 2
Eligible Buildings	Multifamily, Mixed Use, Townhouses (using ERI pathway)	
Certification Pathways	ERI, Prescriptive, ASHRAE 90.1	
Target Dwelling Unit ERI Scores	High 40s to Low 50s	Low to Mid 40s
Savings above 2021 IECC	≥ 10%	≥ 15%
Savings above ASHRAE 90.1-2019	≥ 15%	≥ 20%
Prerequisite Certifications	None	ENERGY STAR, Indoor AirPlus

For more information:

energystar.gov/mfnc

energystarhomes@energystar.gov

buildings.energy.gov/zero

ZERH@doe.gov