DOE Zero Energy Ready Home –
Single Family Version 2, 45L, & What's Next

Monday, January 27th
2:30 pm MST

Jamie Lyons
DOE ZERH Technical Director
(Newport Partners)

Joe Nebbia
DOE ZERH Operations Manager
(Newport Partners)

Session Overview

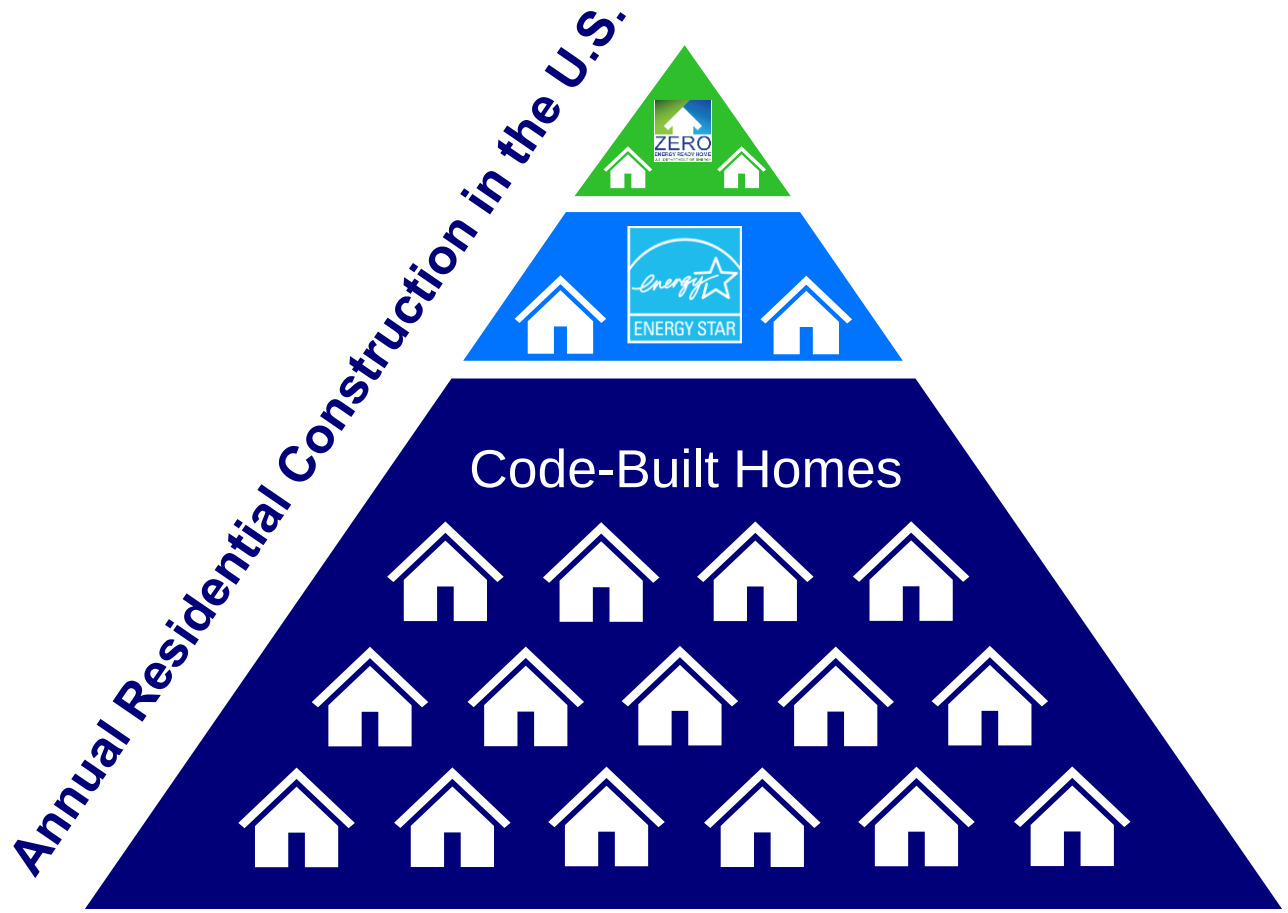
- ZERH Program Overview
- ZERH & 45L
- Single Family V2 Requirements
- Compliance Strategies & Example Projects
- Looking Ahead to Version 3

ZERH Program Overview

U.S. Department of ENERGY | Office of Energy Efficiency & Renewable Energy

Building Technologies Office

DOE ZERH: The Most Rigorous Federal Efficiency Certification for Homes



Provides Americans with homes that are:

- ✓ **EFFICIENT**
- ✓ **SAVE $**
- ✓ **HEALTHY**
- ✓ **SAFE**
- ✓ **RELIABLE**

ZERO ENERGY READY HOMES… LIVE BETTER

"Going from ***paying $2500 a year for utilities to getting a $260 check back*** from the utility company is another benefit which we love..."
- *ZERH Homeowner*

"***Our lives are healthier*** because of the great effort from the builders to eliminate or minimize harmful materials during construction."
- *ZERH Homeowner*

"Since moving into the ZERH Home, we have found a vast improvement in indoor air quality. One of the occupants suffers from asthma. ***Since moving into the home, the asthma symptoms have been dramatically reduced***; enough that daily medication has been eliminated."
- *ZERH Homeowner*

ZERH IS WIDELY LEVERAGED WITHIN THE INDUSTRY

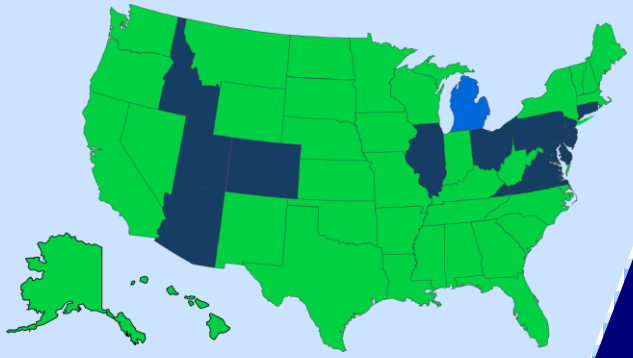
Tax Credits

Green Financing

Utility Incentives

Housing Standards & Green Building Programs

Affordable Housing



ZERH and the 45L Tax Credit

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TAX INCENTIVES – 45L TAX CREDIT

Credits Available:

Certified Single-Family Homes, Duplexes, and Townhomes	**$5,000** each
Certified Units in Multifamily Buildings	**$1,000** each
Certified Units in Multifamily Buildings ***when prevailing wages are met***	**$5,000** each

IRS Notice 2023-65

https://www.irs.gov/credits-deductions/credit-for-builders-of-energy-efficient-homes

Section 45L Tax Credits for Zero Energy Ready Homes

https://www.energy.gov/eere/buildings/45l-tax-credits-zero-energy-ready-homes

Need to Know:

- Project Type
- Project Location
- Project Permit Date

ZERH PROGRAM VERSIONS

DOE ZERH | Program Version Effective Dates

National (Except California)		Required for Use, if Home or Unit's Permit Date* is on/after this Date
Single Family National	**Multifamily National**	
Version 1 (Rev. 7)	Version 1 (Rev. 7) *Buildings up to 5 stories only*	6/1/2019
Version 1 (Rev. 8)	Version 1 (Rev. 8) *Buildings up to 5 stories only*	1/1/2023
Single Family Version 2 (Rev. 1)	Version 1 (Rev. 9.0) [A]	1/1/2024
Single Family Version 2 (Rev. 2)	Multifamily Version 2 (Rev. 1)	1/1/2025
Single Family Version 2 (Rev. 3)	Multifamily Version 2 (Rev. 2)	1/1/2026 *(not yet published)*

[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		Required for Use, if Home or Unit's Permit Date* is on/after this Date
Single Family California	**Multifamily California**	
Version 1 (Rev. 7)	Version 1 (Rev. 7) *Buildings up to 5 stories only*	10/1/2018 [B]
Version 1 (Rev. 8)	Version 1 (Rev. 8) *Buildings up to 5 stories only*	1/1/2023 [B]
Single Family Version 2	Multifamily Version 2 [C]	1/1/2024
Single Family Version 2 (Rev. 1)	Multifamily Version 2 (Rev. 1)	1/1/2025
Single Family Version 2 (Rev. 2)	Multifamily Version 2 (Rev. 2)	1/1/2026 *(not yet published)*

[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/revision is required.

- ZERH Program Version determination depends on building type, location, & permit date
- ZERH Program Requirements webpage determines program version for 45L eligibility
- Program Versions in effect 1/1/2025 are "Version 2" programs

ZERH Single Family Version 2 Program Requirements

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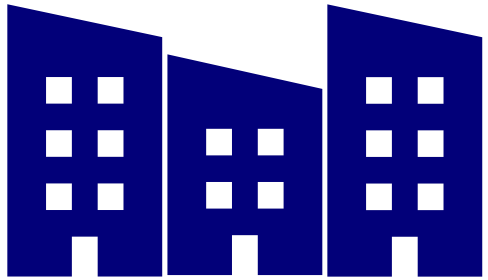
PROGRAM REQUIREMENTS

BUILDING ELIGIBILITY

Single Family Homes

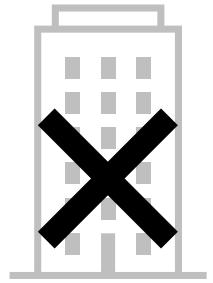
Duplexes



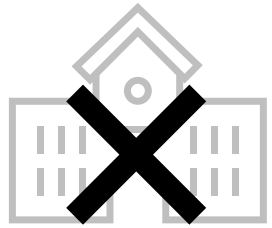
Townhouses

There are specific requirements for projects in California that differ from the National Program. California program requirements are NOT covered in this training material.

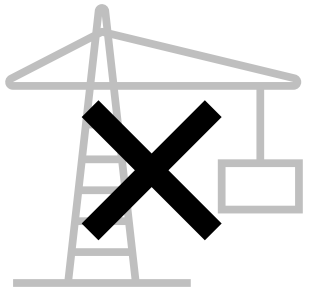
NOT ELIGIBLE



Multifamily Buildings



Mixed-Use Buildings



Manufactured Homes

NATIONAL PROGRAM REQUIREMENTS, EXHIBIT 1

Exhibit 1: DOE Zero Energy Ready Home Mandatory Requirements

Component	Mandatory Requirements
1. ZERH V2 National Rater Field Checklist	☐ Rater completes the DOE ZERH – Single Family Homes Version 2 National Rater Field Checklist
2. ENERGY STAR Single Family New Homes Baseline	☐ Certified under ENERGY STAR Single Family New Homes Version 3.2 [11]
3. Envelope	☐ Ceiling, wall, floor, & slab insulation meet or exceed 2021 IECC UA[12,13,14] ☐ Windows meet high performance requirements based on climate zone [15] *Advisory*: DOE is monitoring the implementation of ENERGY STAR product specifications for residential windows (V7.0), and plans to adopt these in a future program version update[16]
[illegible]	☐ All heating and cooling distribution ducts and heating and cooling air-handling equipment

PROGRAM REQUIREMENTS

EXHIBIT 1, MANDATORY REQUIREMENTS

- Co-Requisite Certifications
- Envelope – 2021 IECC UA
- High-Performance Windows
- Ducts & AHUs in Conditioned Space
- Water Heating Efficiency
- Lighting and Appliances
- Indoor Air Quality
- Electric Space Heating Ready
- Electric Water Heating Ready
- Photovoltaic (PV) - Ready
- Electric Vehicle (EV) - Ready

MANDATORY REQUIREMENTS

CO-REQUISITE CERTIFICATIONS

ENERGY STAR

Increases efficiency & establishes sound building science

Indoor AirPlus

adds a complete package of IAQ measures

DOE's Zero Energy Ready Home Program

provides a blueprint for cost-saving, high efficiency homes in a voluntary, nationally recognized certification

Versions Required for ZERH MF V2
ENERGY STAR
Single Family Version 3.2 ***(or 3.3)***
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*

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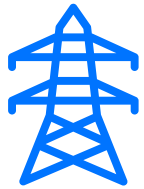
MANDATORY REQUIREMENTS

2021 IECC INSULATION LEVELS

Lower energy bills

Consistent temperature throughout home

No drafts

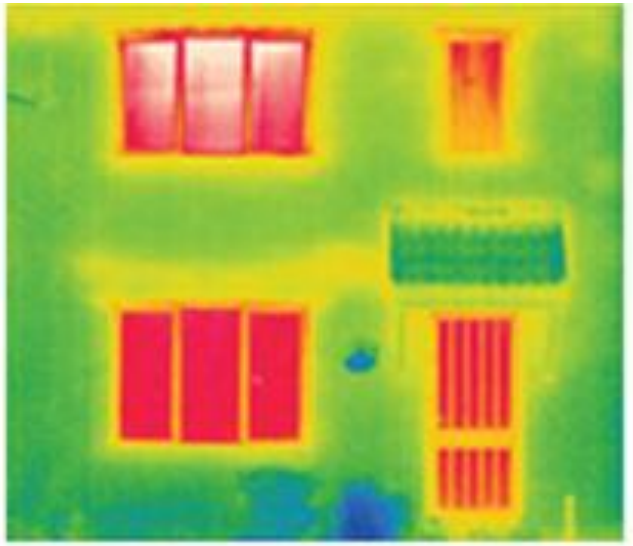


Comfort and safety during power outages

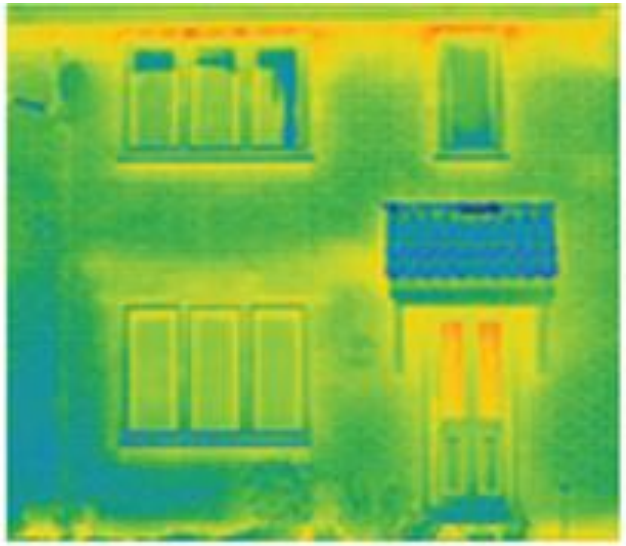
> *As soon as you walk into this house ... you feel like you're wrapped in 100 wool blankets. It's so warm, you would never know that it's been below zero these past few weeks.*
>
> **- ZERH Homeowner**

MANDATORY REQUIREMENTS

HIGH-PERFORMANCE WINDOWS



What we're trying to avoid



An envelope with high-performance windows

> *...it is difficult to explain what it is like to live in a home without drafts, cold spots, and heating/cooling losses through inefficient windows.*
>
> **— ZERH Homeowner**

WINDOW U & SHGC REQUIREMENTS BY CLIMATE ZONE

- ❑ **Windows meet high performance requirements based on climate zone.**

Window Specs Required for DOE ZERH Projects	IECC CZ 1-2		IECC CZ 3,4A, 4B		IECC CZ 4C, 5 (SHGC values listed below may be paired with the U-value in the same row)		IECC CZ 6-8	
	U-Value	SHGC	U-value	SHGC	U-Value	SHGC	U-Value	SHGC
	≤ 0.40	≤ 0.23	[CZ 3] ≤ 0.30 [CZ 4] ≤ 0.30	[CZ 3] ≤ 0.25 [CZ 4] ≤ 0.40	≤ 0.27 = 0.28 = 0.29 = 0.30	Any ≥ 0.32 ≥ 0.37 ≥ 0.42	≤ 0.25	Any

*Alternate criteria for high altitude projects and designs using passive solar designs – see NPRs

MANDATORY REQUIREMENTS

DUCTS & AIR HANDLERS IN CONDITIONED SPACE

Our energy bills are less than half of our previous home with 20% more square footage.

- ZERH Homeowner

Ducts in an unconditioned attic add 25% to the cooling load in hot climates.

(Source: National Renewable Energy Laboratory)

NEW CONSTRUCTION IS THE TIME TO GET DUCT DESIGN RIGHT

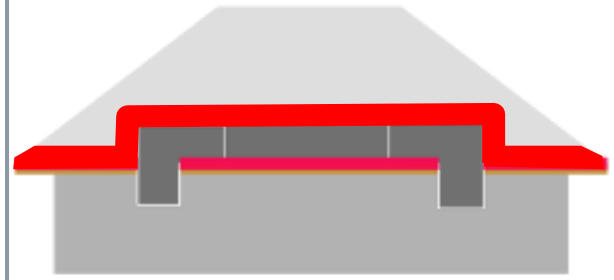
- ❑ All heating and cooling distribution ducts and heating and cooling air-handling equipment are located within the thermal and air barrier boundary

DESIGN OPTIONS FOR LOCATING DUCTS IN OPTIMIZED LOCATIONS

Ductless Systems

Mini-split Systems

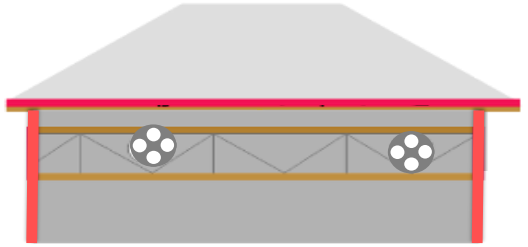
Buried Ducts



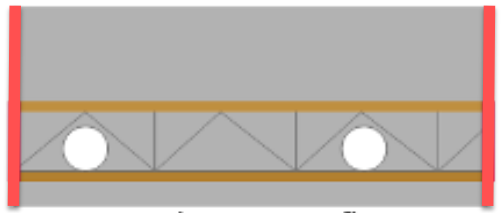
Ducts in *Vented* Attic

- Buried & SPF encapsulated (Humid Climates)
- Buried (Dry Climates)

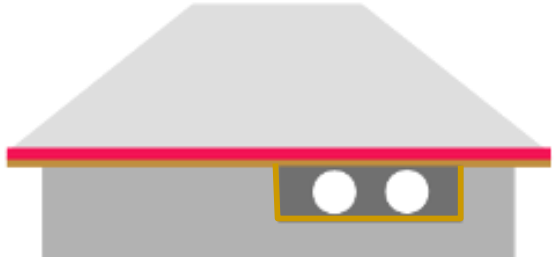
Ducts in Conditioned Space



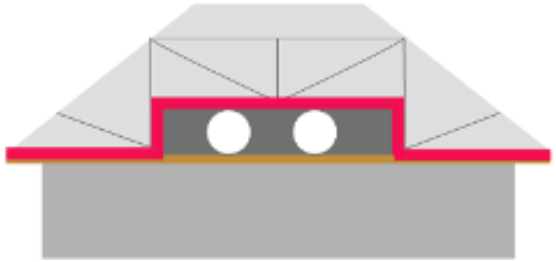
Small Diameter Ducts



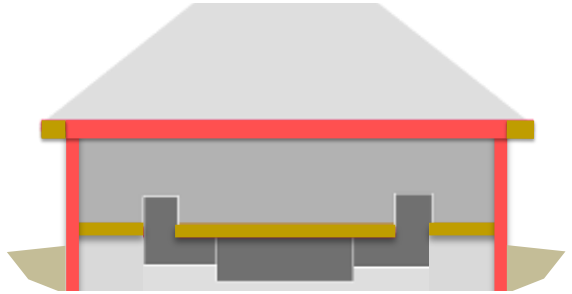
Ducts Between Floors



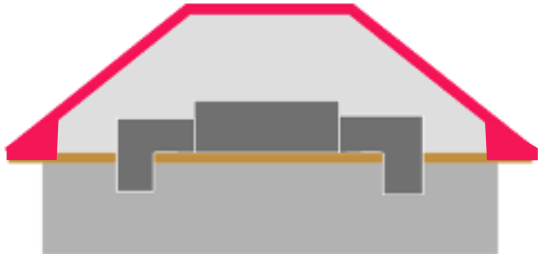
Dropped Ceiling



Modified Attic Truss



Unvented Crawl Sp./Basement



Ducts in Unvented Attic

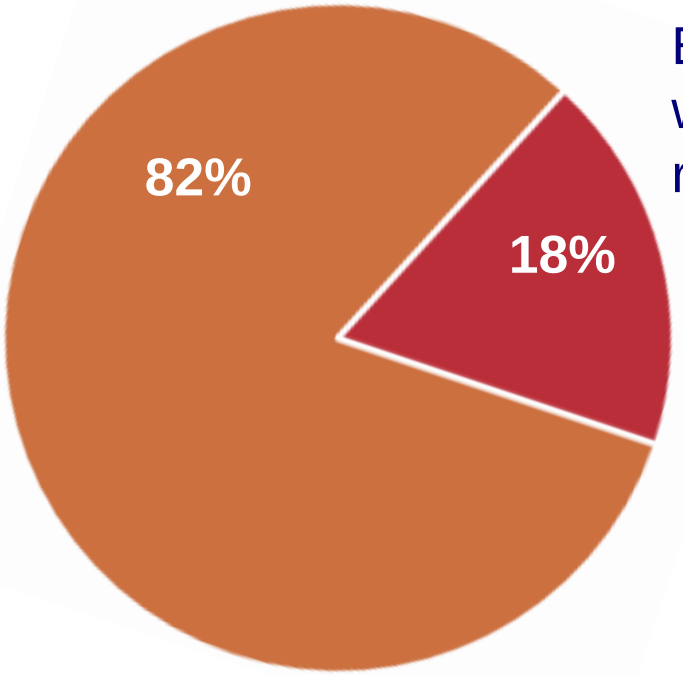
MANDATORY REQUIREMENTS

WATER HEATING EFFICIENCY

Energy and water savings

Hot water in seconds, not minutes

Saves "upstream" energy at the utility level



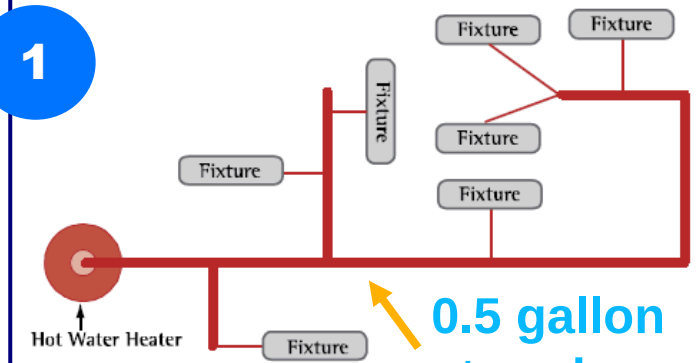
(Source: Energy Information Administration, 2020)

MANDATORY REQUIREMENTS

3 OPTIONS FOR ACHIEVING WATER HEATING EFFICIENCY

- ❑ Hot water delivery systems meet efficient design requirements
  - ❑ 0.5 - gallon hot water stored volume limit
- ❑ Water heater and fixtures meet efficiency criteria
  - ❑ Gas UEF ≥ 0.87, Electric UEF ≥ 2.2
  - ❑ 1.8 - gallon hot water stored volume limit
  - ❑ Showerheads, sink faucets, and aerators WaterSense labeled
- ❑ WaterSense Labeled Homes Version 2.0 certification

1



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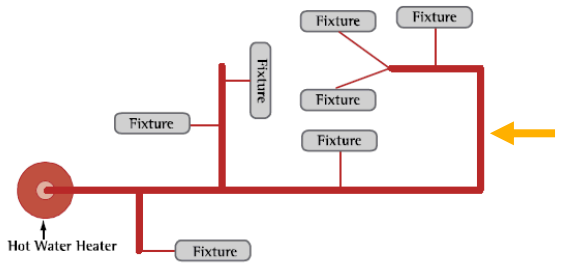

3

we build WaterSense Meets EPA Criteria

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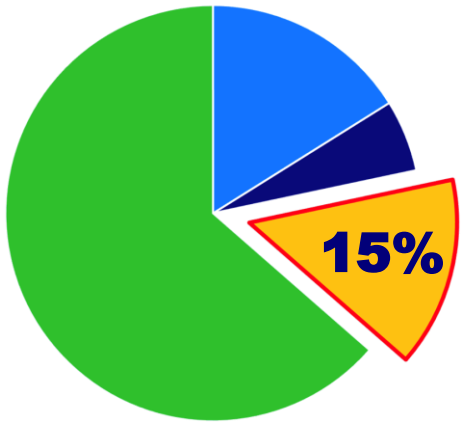
MANDATORY REQUIREMENTS

ENERGY EFFICIENT APPLIANCES & LIGHTING

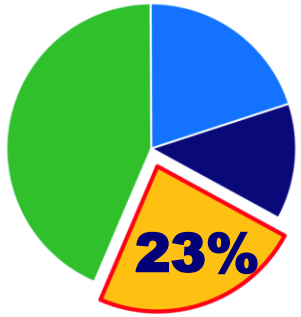
Energy Use 1950 vs 2020

Avg per household:

90.6 MBTU



62.3 MBTU



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

eia *Energy Information Administration*

> *The energy efficiency of my home has truly blown me away. One power bill totaled $3.64 and another totaled $7.96. As far as I'm concerned, you can't beat that.*
>
> **- ZERH Homeowner**

MANDATORY REQUIREMENTS

OFF-THE-SHELF ENERGY SAVINGS WITH EFFICIENT APPLIANCES

- ❑ **ENERGY STAR refrigerators, dishwashers, clothes washers, clothes dryers, bathroom ventilation fans**
- ❑ **100% LEDs**

100% LED Exceptions:

- 5% allowance for task or decorative lighting (target home still configured with 100% LEDs)
- Lighting inside appliances

ENERGY STAR Appliance Exceptions:

- Refrigerators, dishwashers, clothes washers, and clothes dryers which are ***NOT*** supplied or installed by the builder
- H/ERVs used to provide exhaust ventilation for bathrooms do not need to be ENERGY STAR certified

MANDATORY REQUIREMENTS

INDOOR AIR QUALITY PROVISIONS

Reasons Indoor Air Quality Matters:

- Promotes healthy living
- Minimizes and protects against pollutants
- Improves Comfort

Since moving into [our] Zero Energy Ready Home, we have found a vast improvement in indoor air quality. One of the occupants suffers from asthma. Since moving into the home, the asthma symptoms have been dramatically reduced; enough that daily medication has been eliminated.

- ZERH Homeowner

INDOOR AIR QUALITY PROVISIONS FOR HEALTH AND WELLNESS

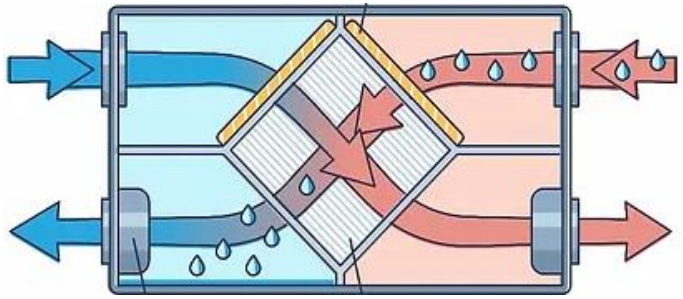
❑ Certified under EPA Indoor AirPlus (IAP)

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

❑ Energy efficient balanced ventilation (HRV or ERV) is provided for dwelling units in Climate Zones 6-8.

- IAP Version 1 is the *current requirement*
- ZERH requires **IAP Version 2** Certified (or Gold) Tier starting **1/1/2026** (permit date)

IAP V2 Session Tomorrow @ 1pm



MANDATORY REQUIREMENTS

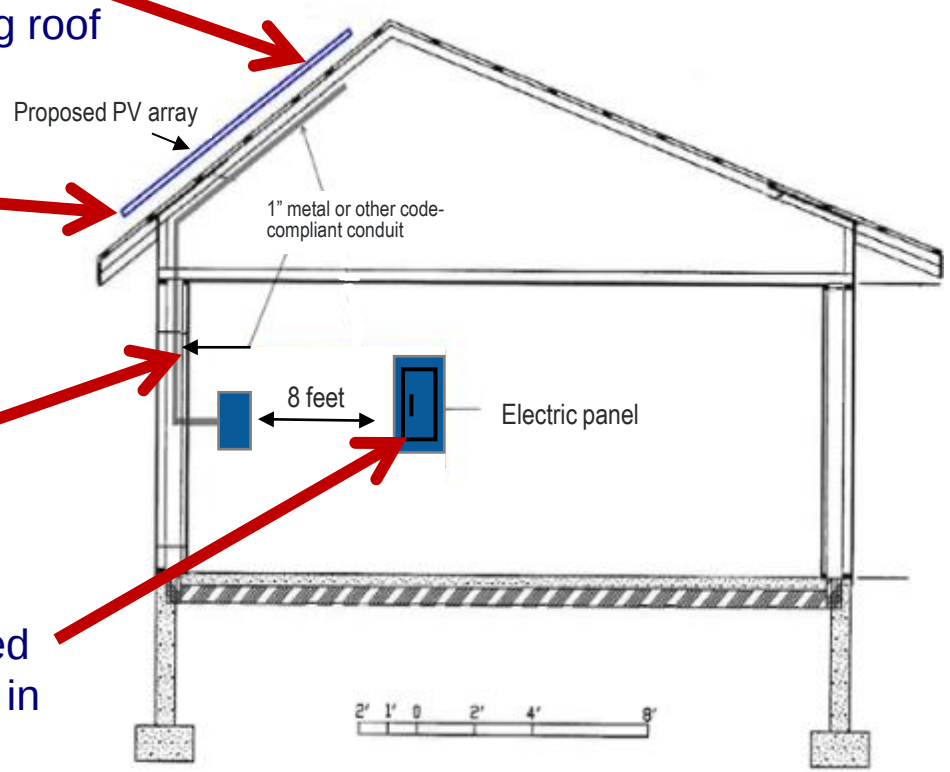
PV-READY

Record the maximum allowable dead load and live load ratings of the existing roof

Propose an array's potential location, orientation, and inclination

Conduit to run wire from attic to panel or sub-panel location

Circuit Breaker designated and/or installed for use by the PV system in the electric panel

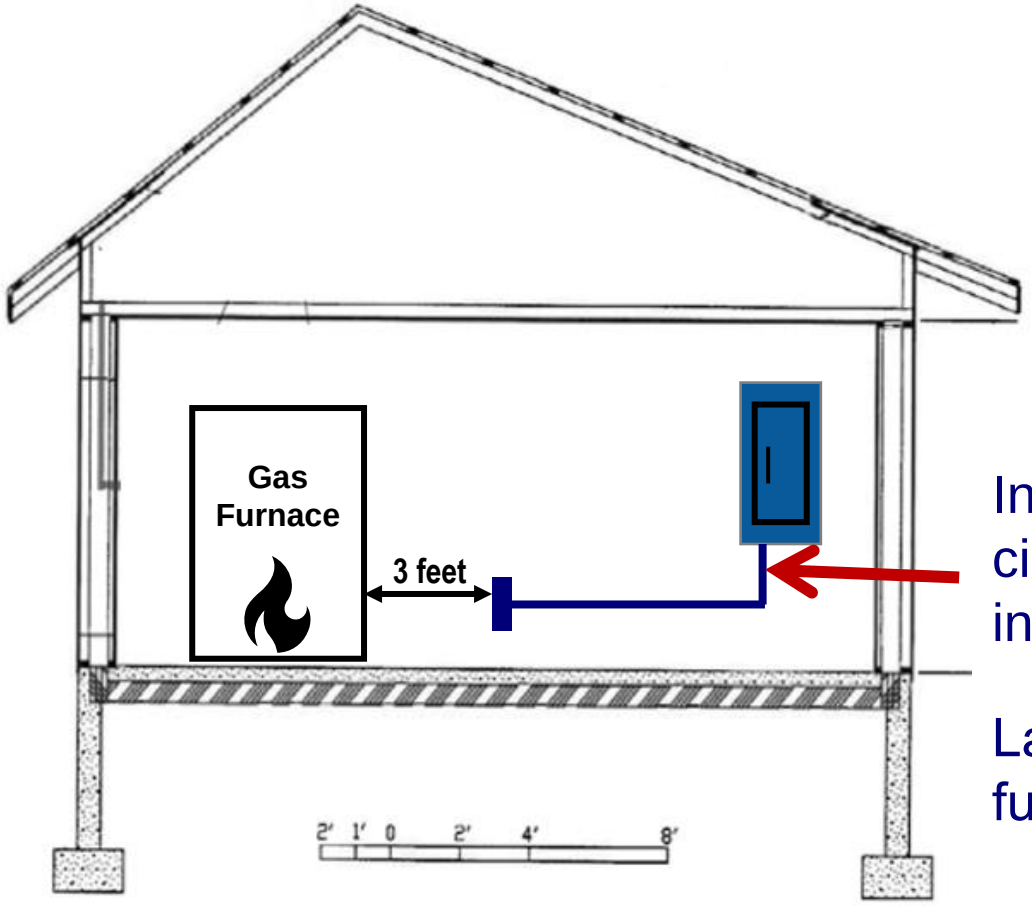


Exceptions:

- Home already includes on-site PV
- Home receives energy from community solar system
- Site is naturally shaded
- Home does not have at least 500 ft^2 of roof oriented between 110 and 270 degrees of true north

MANDATORY REQUIREMENTS

ELECTRIC SPACE HEATING READY



Individual branch circuit or conduit installed

Labeled “For future heat pump”

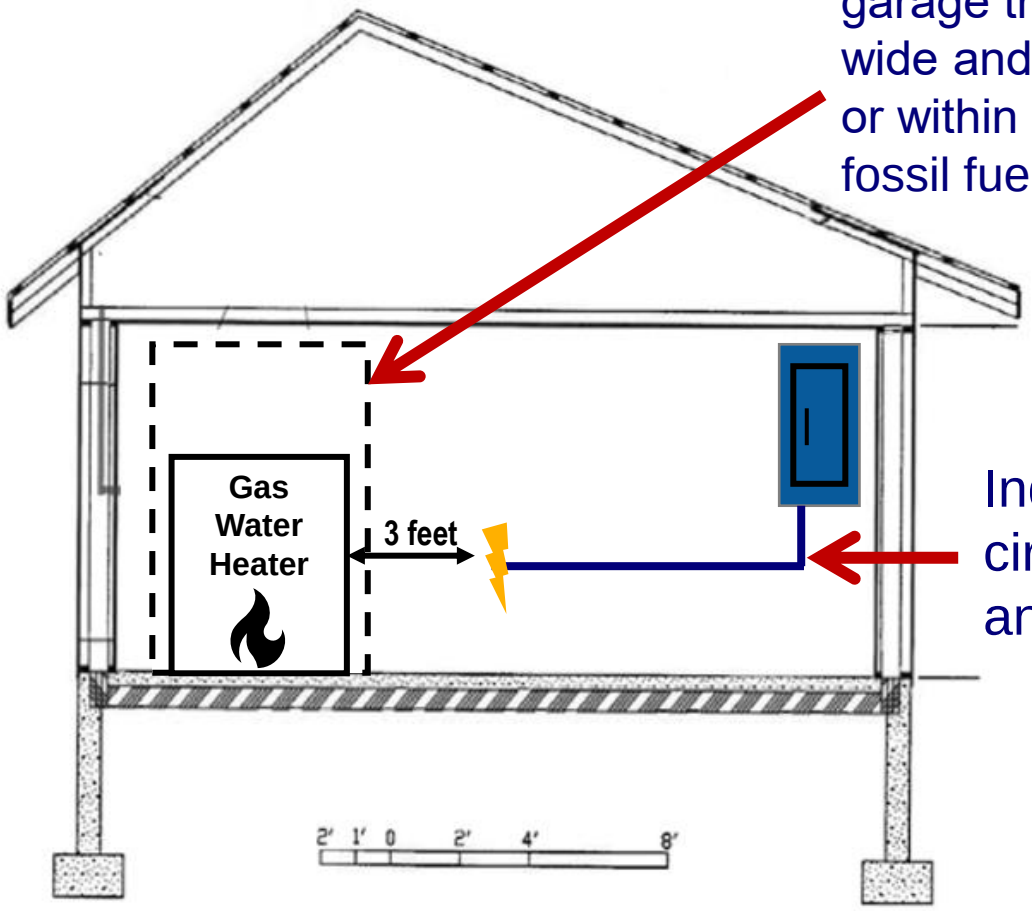
Exception:

- Home already includes electric heating system as primary heating

MANDATORY REQUIREMENTS

ELECTRIC WATER HEATING READY

A space in the home or garage 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**

Circuit exceptions:

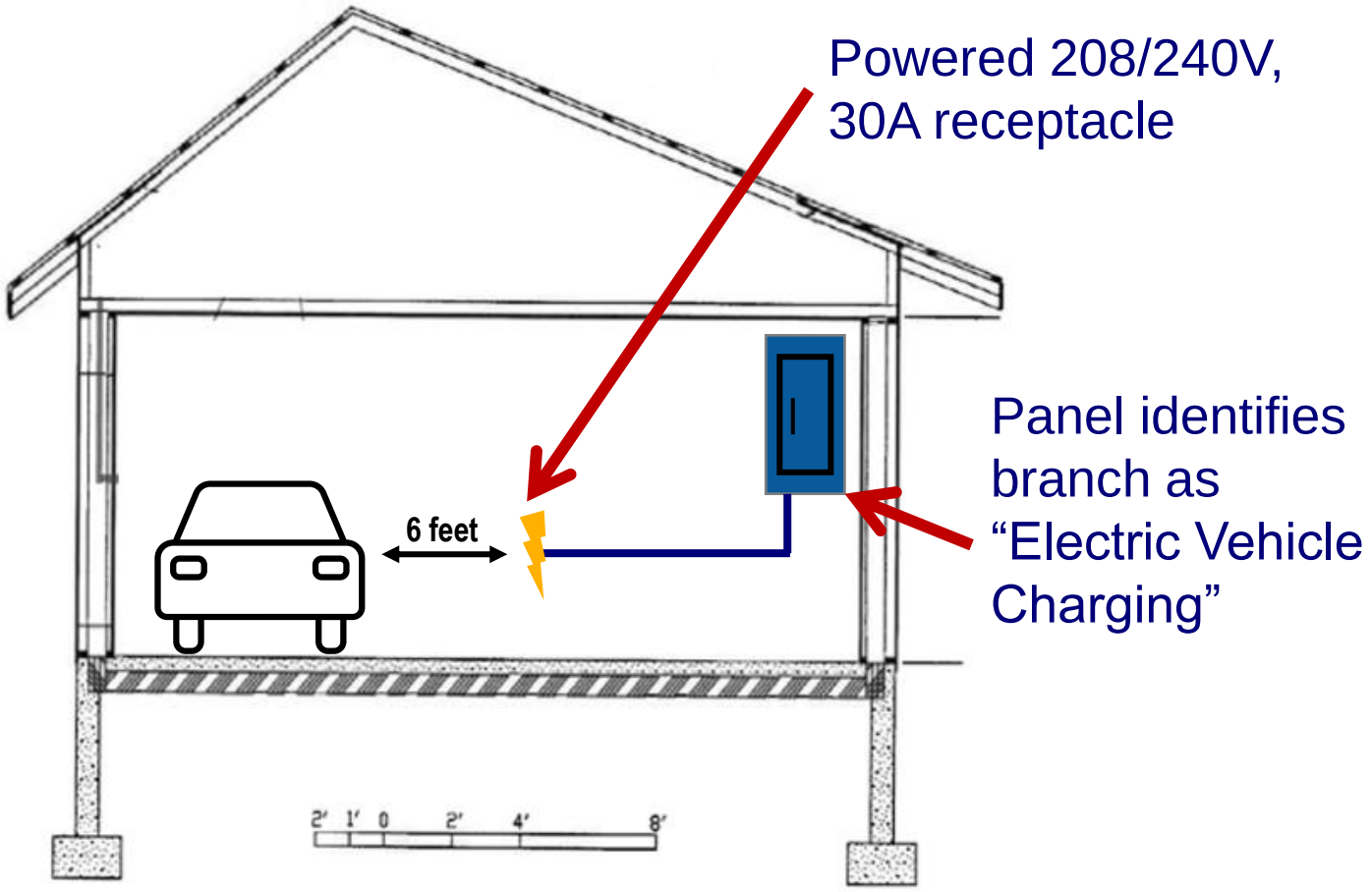
- Existing water heater already uses an individual branch circuit with a rating not less than 240V/30A or 120V/20A

Space exceptions:

- Installed water heater is gas tankless or electric (with or without tank)

MANDATORY REQUIREMENTS

ELECTRIC VEHICLE READY



Exceptions:

- If adding a 30-amp branch circuit increases the electrical service to the next nominal size, **connecting the circuit to the electrical panel is *not* required**
- Building does not provide parking
- Local electric utility is not able to provide necessary distribution capacity
- Capacity requirements increases utility side cost to the builder or developer by more than $450 per dwelling unit
- **Alternate requirements for projects with shared parking lots**

Target Home Requirements

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Performance Threshold for ZERH Certification

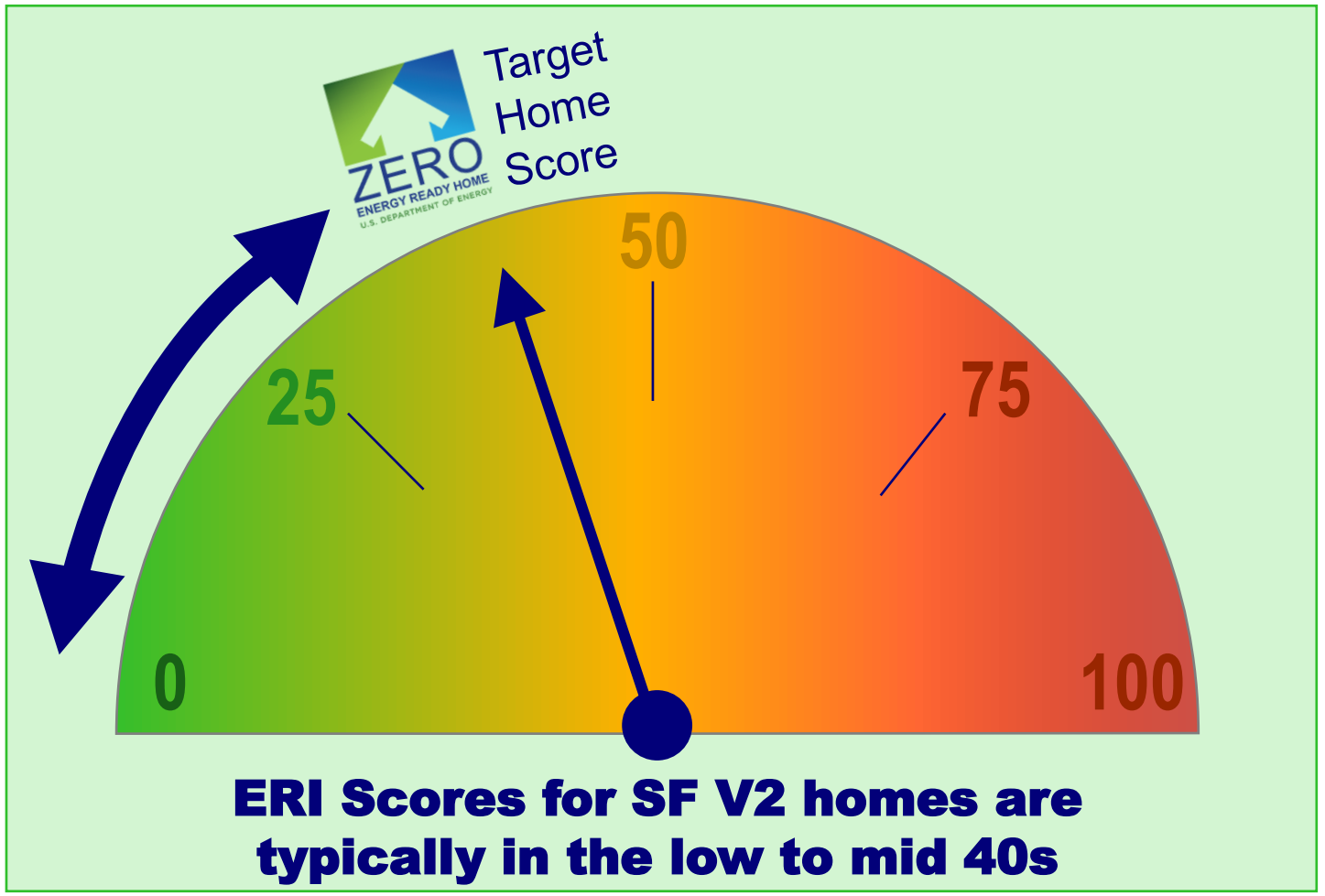
ZERH performance is assessed using a **Target Home**.

National Program Requirements Exhibit 2

Exhibit 2: DOE Zero Energy Ready Home Target Home [30]

HVAC Equipment[31]			
	Very Hot & Hot Climates (2021 IECC Climate Zones 1,2)	**Warm & Mixed Climates** (2021 IECC Climate Zones 3, 4A, 4B)	**Cold & Very Cold Climates** (2021 IECC Climate Zones 4C, 5,6,7,8)
Furnace AFUE	80%	CZ3: 92%; CZ4: 95%	95%
SEER	18	16	16 (ASHP); 14 (A/C)
HSPF	9.2	9.2	9.5
Boiler AFUE	80%	CZ3: 92%; CZ4: 95%	95%
Whole-House Mechanical Ventilation System Efficiency	2.9 cfm/W no heat exchange	2.9 cfm/W no heat exchange	1.2 cfm/W; balanced with heat exchange, 65% ASRE

HOW DOES THE ZERH ERI TARGET WORK?



ERI Scores for SF V2 homes are typically in the low to mid 40s

ERI = Energy Rating Index

- Lower ERI means increased efficiency

ERI Software

- Reviewed and approved by DOE to configure Target Home
- Automatically generates the ZERH Target Home ERI

PV does not contribute to achieving the ERI Target

Compliance Strategies & Example Projects

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PARTNER REGISTRATION

User Account

- Create User Account
- This is personal access to the DOE Partner system

MFA

- Multi-factor authentication required
- This means it doesn’t work for a rater to create a builder’s account for them

Organization Account

- Link user account to an existing organization
- Create a new organization

Create new account

First Name *

Last Name *

Title

Phone Number *

Phone number

Ext.

Email *

The email address is not made public. It will only be used if you need to be contacted about your account or for opted-in notifications.

Password *

Password strength:

Confirm password *

Passwords match:

Provide a password for the new account in both fields.

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Create new account

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Partner Contact

Title	content administrator
Email	partnercontact@gmail.com
Phone Number	+1 914-967-5555

Enroll Company

If your company is not currently listed

Register Your Organization

- OR -

Request Access

If your company already is already enrolled

Request Access To An Existing Account

YOUR USER ACCOUNT IS ACTIVATED, BUT IT DOES NOT YET HAVE ACCESS TO AN ORGANIZATION YET.

Return to top

Request Access

Enter your company's Organization ID *

Submit

Return to top

Register Organization

Basic Information

Organization Name *

Complete Legal Name.

Example: Acme, LLC

Organization Type *

- None -

Add another item

Organization Phone Number *

1-###-###-####

Organization Web Address

Your Organization's Website Address, including the "http://" or "https://" portion of the url.

Example: "https://www.acme.com" or "https://acme.com"

Location

Primary Address

Street address *

City *

State *

- Select -

Zip code *

Additional Locations Served

List any other onsite locations your organization conducts business. You may add to this list after your Organization Registration has completed the approval process.

Show row weights

	Country	
+	- None -	⊕ ⊖

Agreements

- [ ] I have read and agree to the terms and conditions outlined in the appropriate partnership agreement package listed on DOE Zero Energy Ready Home Partner Central. *
- [ ] I certify that I am authorized to register this organization with this program, and may agree to the program's terms and conditions on behalf of this organization. *

Submit Reset

ZERH CERTIFICATION DATA AND PROCESS ERRORS

Partner ID

- Missing Partner ID
- Incorrect Partner ID

Builder Registration

- Builder not Registered
- Builder registered under a different name

Rater Registration

- Rating Organization not Registered
- Rating Organization not Working under Approved HCO

Software

- Software not Approved for V2
- ZERH not Indicated
- V2 not Indicated

HOW TO FIND PARTNER ID

Housing Innovation Awards

Certification Organizations

Log In to the ZERH Partner Portal →

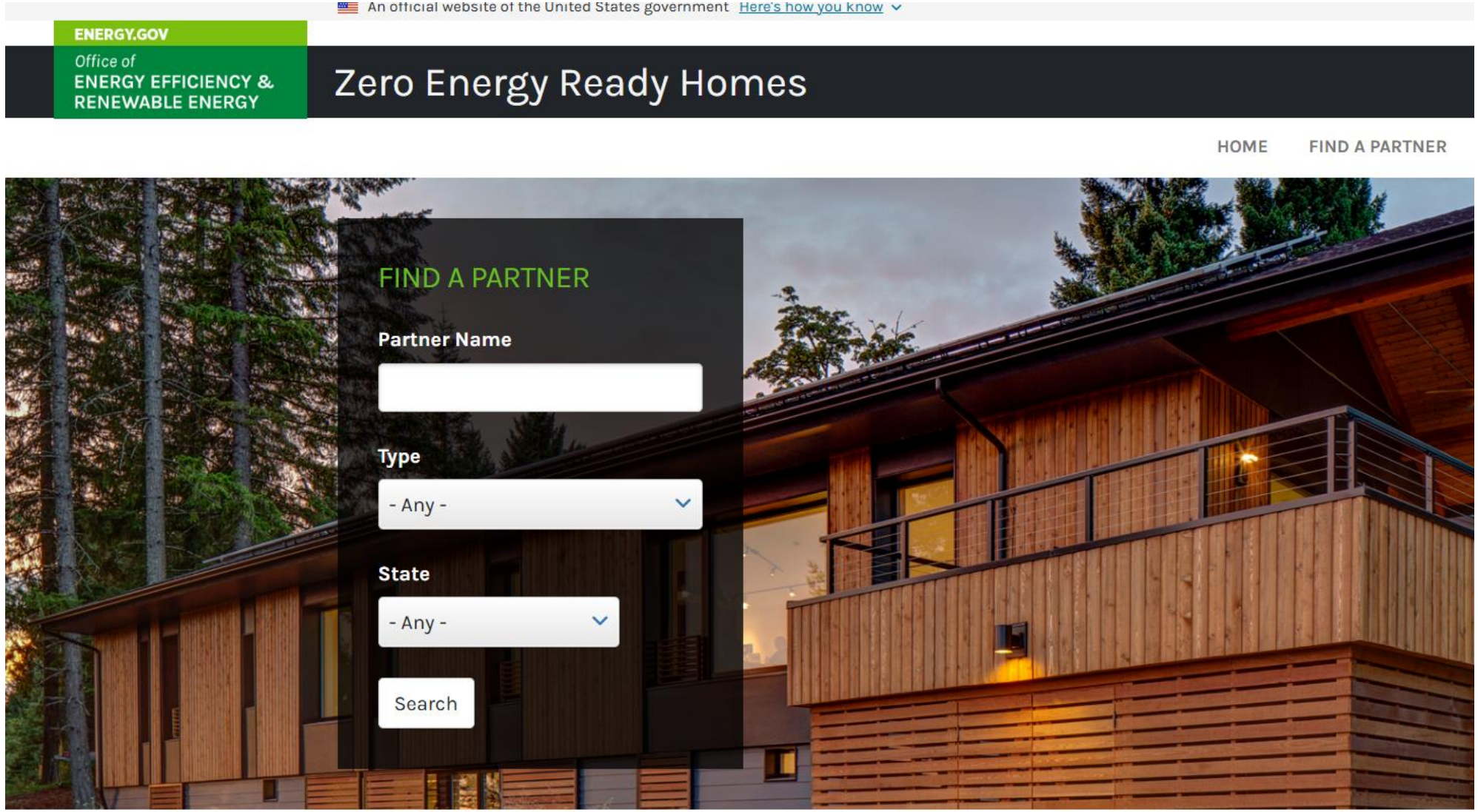
See inside homes nationwide and find partners near you!

Explore ZERH

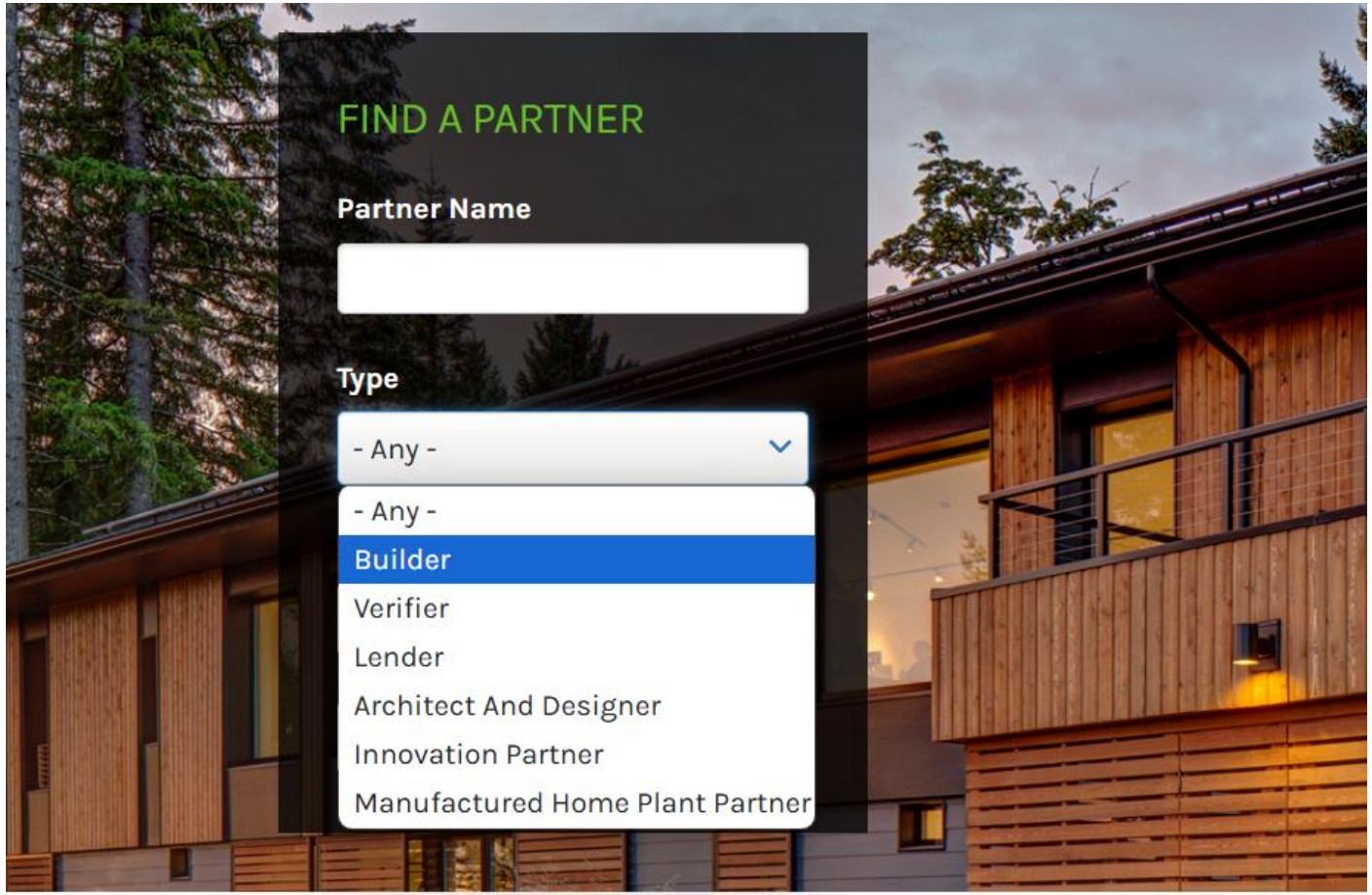
"The savings are real, the quality is real, and the performance and comfort are beyond what I ever imagined."

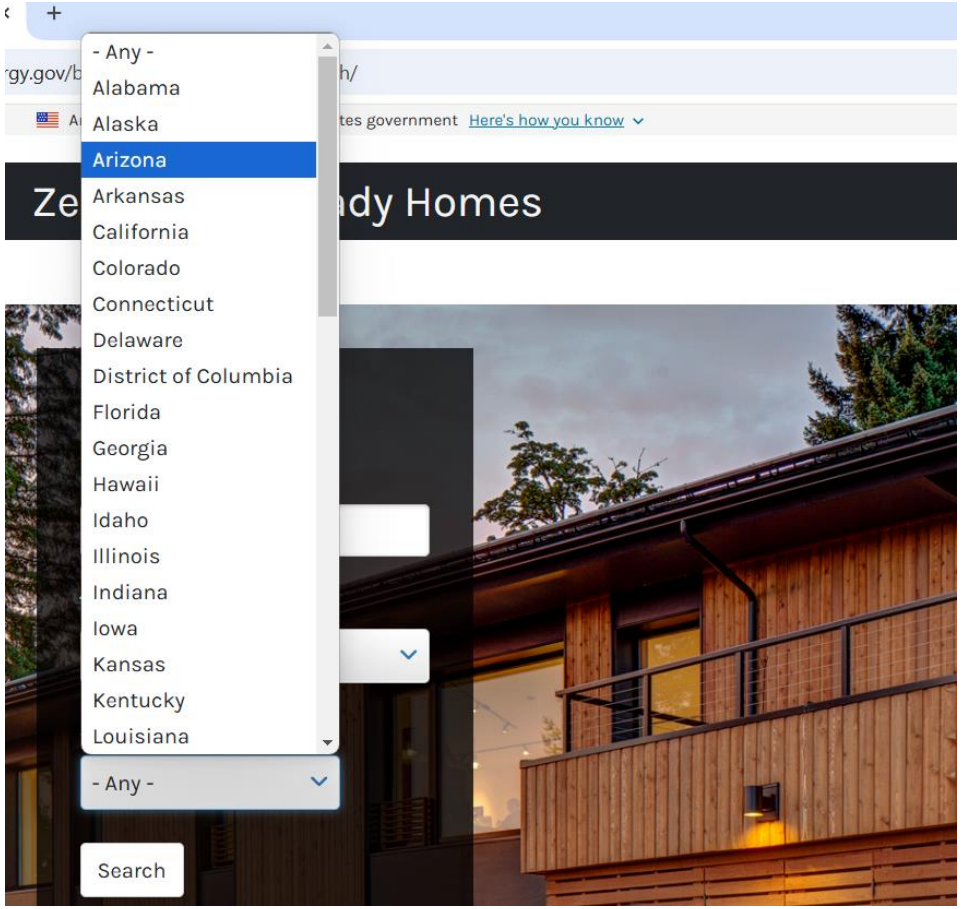
Read More Testimonials

HOW TO FIND PARTNER ID



HOW TO FIND PARTNER ID





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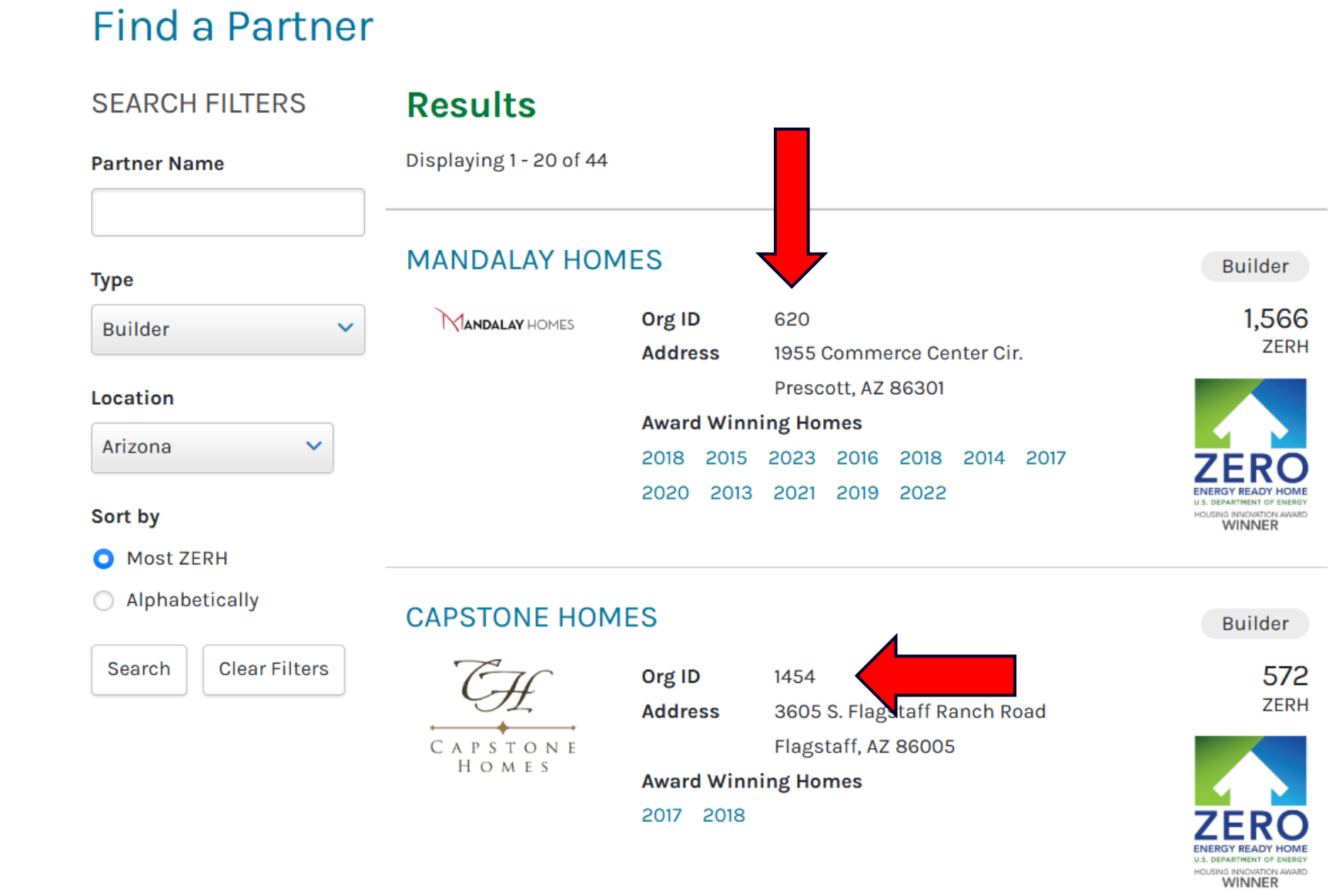

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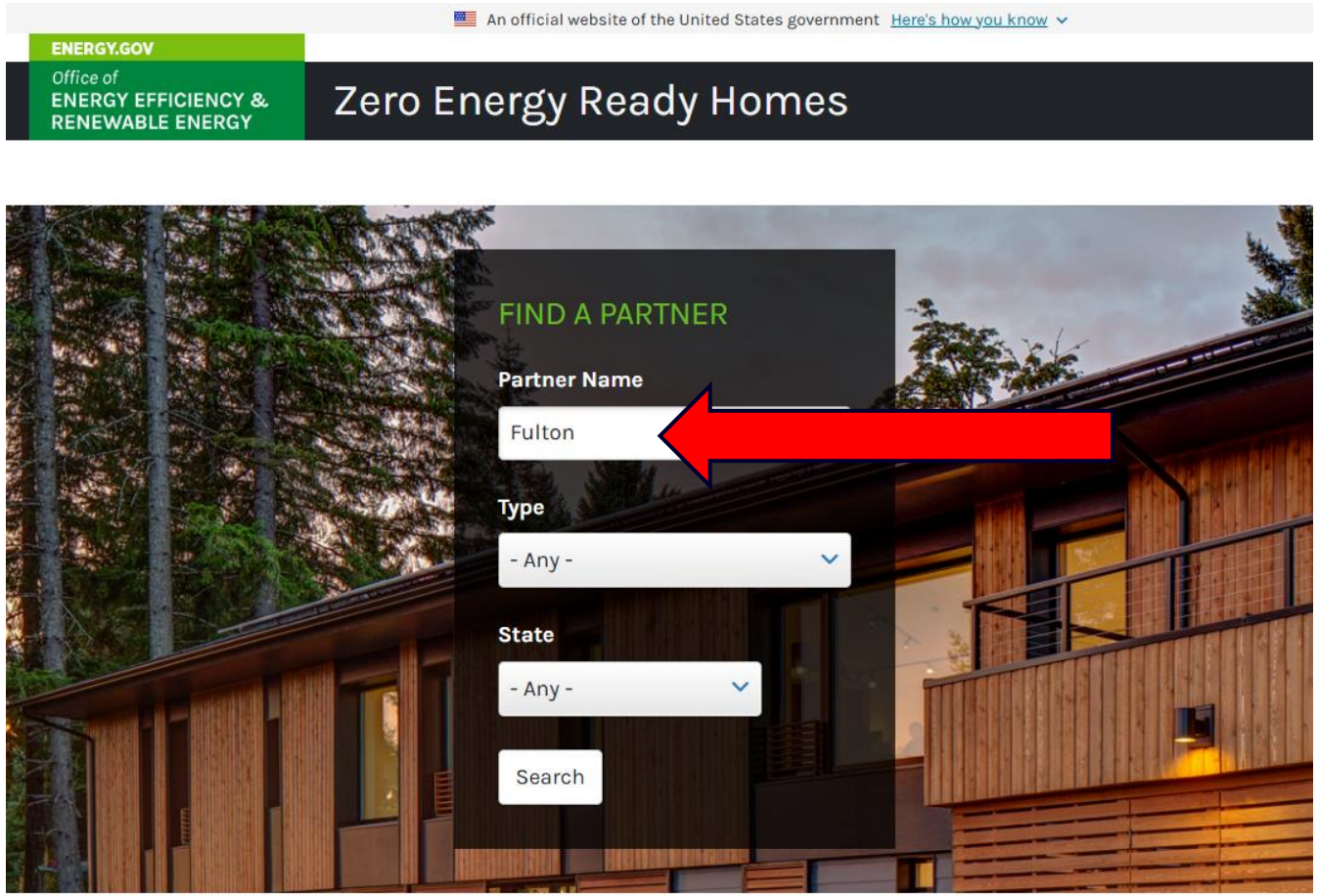

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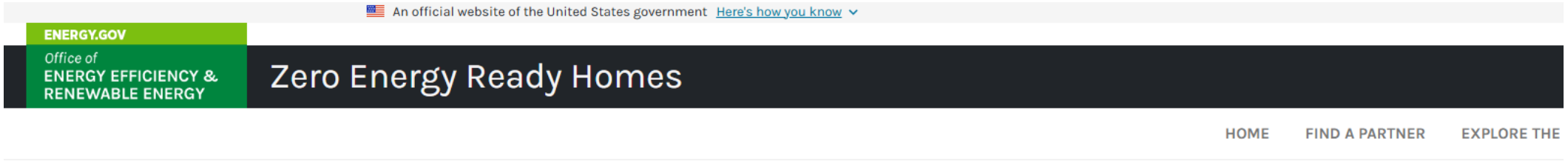
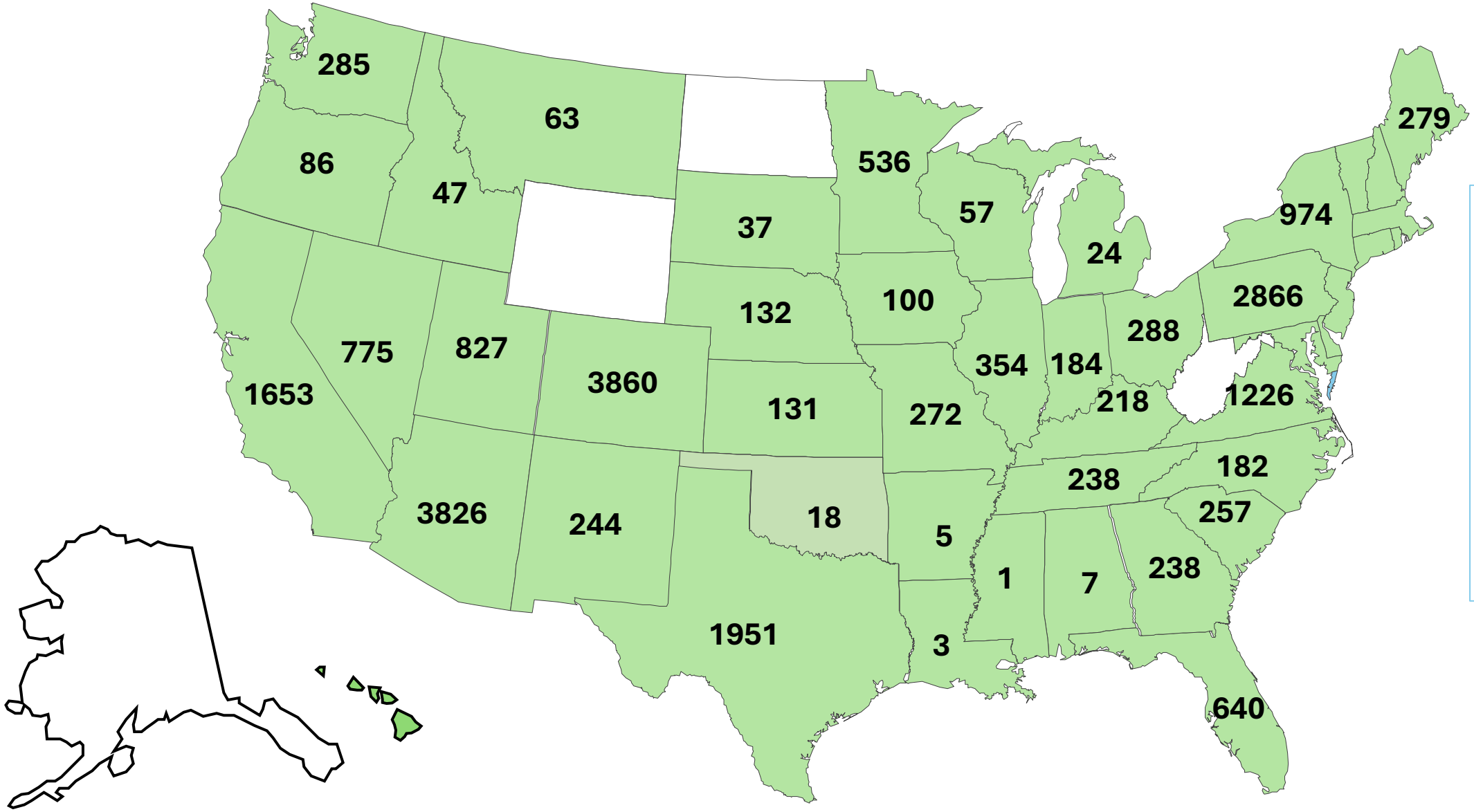
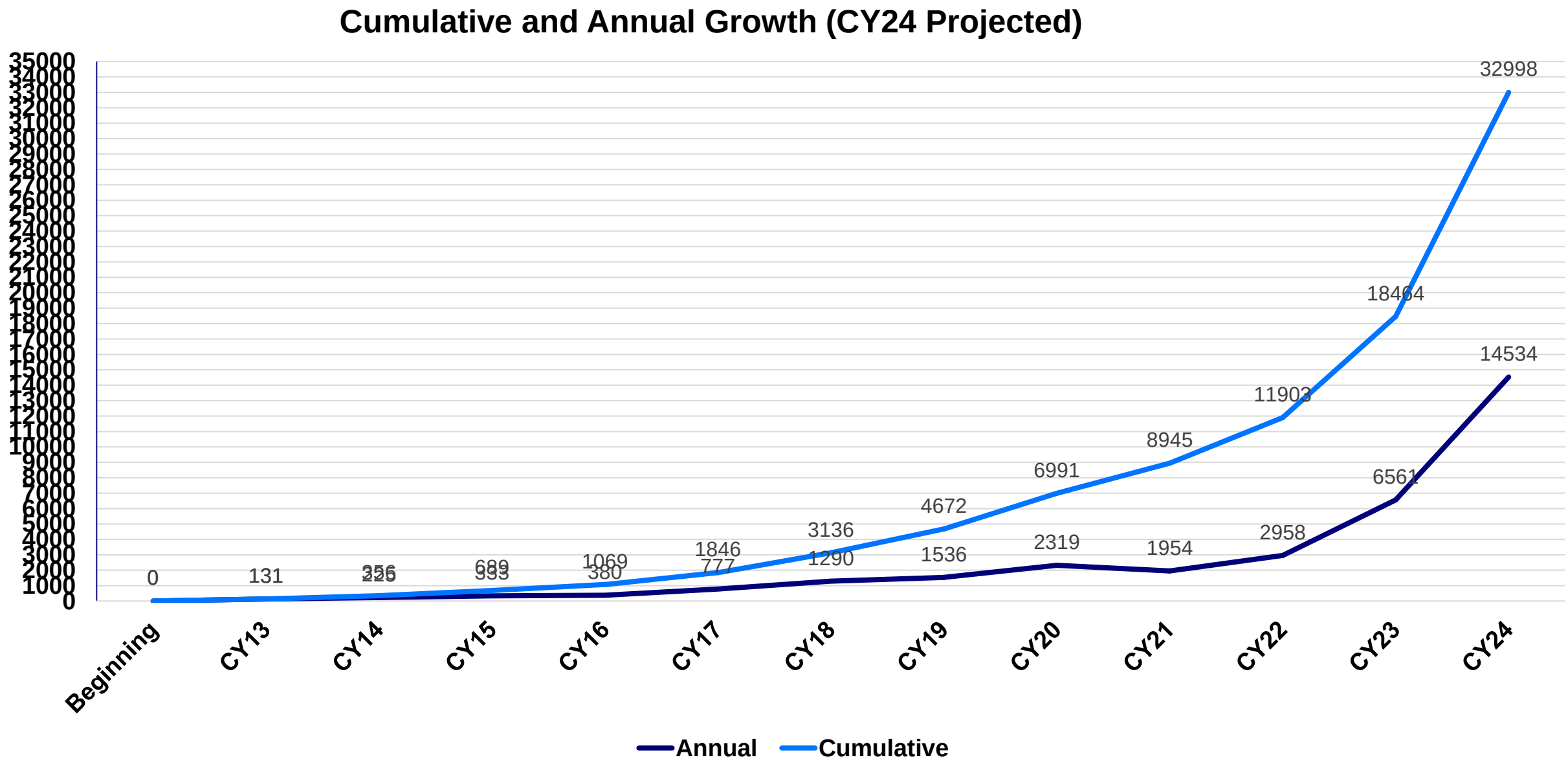


ZERH By State as of December 2024– Total 32998



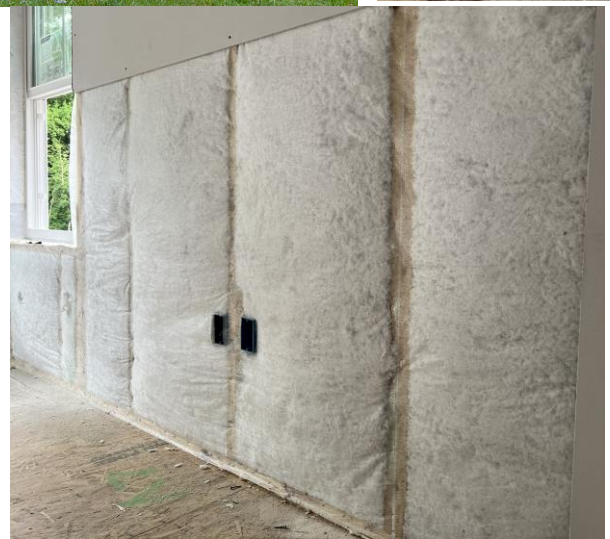
NH – 174
VT – 213
MA – 1215
CT – 992
RI – 49
NJ – 3517
MD – 2321
DE – 1355
DC – 153
HI – 53

SFH CALENDAR YEAR CERTIFICATION GROWTH




A.O.Smith


TESLA
TESLA



CLIMATE ZONE 4; ERI 36 W/O PV; ERI 4 W/PV

Envelope

- Walls R18.5 Closed Cell, R12.5 Blown-in
- Ceiling R60 Blown-in with Raised Heel Truss
- Windows U 0.28
- 1.09 ACH50

Mechanical

- Heat Pump 8.1 HSPF, 16.7 SEER
- Compact Duct Design
- ERV
- 80 Gal HPWH 3.45 COP
- Central Plumbing Design

Generation & Storage

- Solar Shingles 10.08 kW
- 27 kWh Batteries
- EV Charger


Rheem
Beebe Plumbing Services
623-376-0440

CLIMATE ZONE 2; ERI W/O 39 PV; ERI W/PV

Envelope

- 2x4 and 2x6 Walls closed cell; 1” EPS CI
- Attic Open Cell R22
- Windows U 0.33

Mechanical

- Heat Pump 7.5 HSPF 15.2 SEER
- 50 Gal HPWH 3.5 UEF
- Exhaust Ventilation w/ passive makeup

Generation & Storage

- Solar Ready
- EV Pre-wire

Looking Ahead to Single Family Version 3

U.S. Department of ENERGY | Office of Energy Efficiency & Renewable Energy

Building Technologies Office

LOOKING AHEAD

ZERH SINGLE FAMILY VERSION 3 OVERVIEW

Goal: Drive progress toward increased energy savings in healthy, comfortable, and durable homes.

Outcomes:

1. Build on the efficiency and performance levels in V2.
2. Provide builder flexibility in design approaches and energy sources, while ensuring efficiency, cost savings, and excellent performance.

Strategy:

- Establish updated program specs that are both rigorous and attainable, and offer distinction for leading builders, developers, and program partners.
- Incorporate partner feedback

LOOKING AHEAD

SF V3 TECHNICAL CRITERIA UNDER CONSIDERATION

- Energy Efficiency (ERI Target)
- Thermal Backstop (envelope, windows)
- PV, EV, and Electric Readiness
- Operational Energy Impacts
- Building Material Resource Efficiency
- Storage Readiness
- Role of Renewables

Single Family Version 3 for California: many of the technical issues presented here will also apply to SF V3 for California, while a few others (ERI Target, envelope UA requirement) will not. ZERH V3 for CA development will follow a similar development path to V3 National and will account for the 2025 California Building Energy Efficiency Standards (BEES).

U.S. Department of ENERGY | Office of Energy Efficiency & Renewable Energy
Building Technologies Office

NOTE: The technical considerations are drafts and subject to change.

LOOKING AHEAD

SF V3 TECHNICAL CRITERIA ASSESSMENT FACTORS

Program Criteria	Assessment Factors & Draft Proposals
ERI Target	Consider 2024 IECC, ENERGY STAR V3.3, cost/constructability impacts of more efficient target.

Draft - subject to change.

LOOKING AHEAD

SF V3 TECHNICAL CRITERIA ASSESSMENT FACTORS

Program Criteria	Assessment Factors & Draft Proposals
ERI Target	Consider 2024 IECC, ENERGY STAR V3.3, cost/constructability impacts of more efficient target.
Thermal Backstop	**Envelope:** Align with 2021 or 2024 IECC **Windows:** Assess current backstop vs. 2024 IECC, ES V3.3, and ES V7.0 windows • maintain focus on overall envelope performance

Draft - subject to change.

LOOKING AHEAD

SF V3 TECHNICAL CRITERIA ASSESSMENT FACTORS

Program Criteria	Assessment Factors & Draft Proposals
ERI Target	Consider 2024 IECC, ENERGY STAR V3.3, cost/constructability impacts of more efficient target.
Thermal Backstop	**Envelope:** Align with 2021 or 2024 IECC **Windows:** Assess current backstop vs. 2024 IECC, ES V3.3, and ES V7.0 windows • maintain focus on overall envelope performance
PV, EV, and Electric Readiness	Consider adjustments to harmonize with 2024 IECC Appendices

Draft - subject to change.

LOOKING AHEAD

SF V3 TECHNICAL CRITERIA ASSESSMENT FACTORS

Program Criteria	Assessment Factors & Draft Proposals
ERI Target	Consider 2024 IECC, ENERGY STAR V3.3, cost/constructability impacts of more efficient target.
Thermal Backstop	**Envelope:** Align with 2021 or 2024 IECC **Windows:** Assess current backstop vs. 2024 IECC, ES V3.3, and ES V7.0 windows • maintain focus on overall envelope performance
PV, EV, and Electric Readiness	Consider adjustments to harmonize with 2024 IECC Appendices
Operational Energy Impacts	(1) All-electric design (2) Next Gen (mixed fuel option) (3) Achieving a Target Index score per RESNET Std. 301-2022 Section 8 • Mixed fuel option; Target TBD

Draft - subject to change.

LOOKING AHEAD

SF V3 TECHNICAL CRITERIA ASSESSMENT FACTORS

Program Criteria	Assessment Factors & Draft Proposals
ERI Target	Consider 2024 IECC, ENERGY STAR V3.3, cost/constructability impacts of more efficient target.
Thermal Backstop	**Envelope:** Align with 2021 or 2024 IECC **Windows:** Assess current backstop vs. 2024 IECC, ES V3.3, and ES V7.0 windows • maintain focus on overall envelope performance
PV, EV, and Electric Readiness	Consider adjustments to harmonize with 2024 IECC Appendices
Operational Energy Impacts	(1) All-electric design (2) Next Gen (mixed fuel option) (3) Achieving a Target Index score per RESNET Std. 301-2022 Section 8 • Mixed fuel option; Target TBD
Building Material Resource Efficiency	Prescriptive requirement with more than one option to build literacy with material resource efficiency and embodied carbon. Plan to utilize the RESNET 1550 Standard as one option.

Draft - subject to change.

SF V3 TECHNICAL CRITERIA ASSESSMENT FACTORS

Program Criteria	Assessment Factors & Draft Proposals
ERI Target	Consider 2024 IECC, ENERGY STAR V3.3, cost/constructability impacts of more efficient target.
Thermal Backstop	**Envelope:** Align with 2021 or 2024 IECC **Windows:** Assess current backstop vs. 2024 IECC, ES V3.3, and ES V7.0 windows • maintain focus on overall envelope performance
PV, EV, and Electric Readiness	Consider adjustments to harmonize with 2024 IECC Appendices
Operational Energy Impacts	(1) All-electric design (2) Next Gen (mixed fuel option) (3) Achieving a Target Index score per RESNET Std. 301-2022 Section 8 • Mixed fuel option; Target TBD
Building Material Resource Efficiency	Prescriptive requirement with more than one option to build literacy with material resource efficiency and embodied carbon. Plan to utilize the RESNET 1550 Standard as one option.
Others	**Energy Storage Ready:** Assess value proposition for storage readiness. **Role of Renewables:** Allow them to contribute to ERI?

Draft - subject to change.

LOOKING AHEAD

VERSION 3 TIMING

2024-2025:

Research and Analysis

2025:

Initial Public Comment Period

2026:

Earliest timeframe for *optional* use

U.S. Department of ENERGY | Office of Energy Efficiency & Renewable Energy
Building Technologies Office

NOTE: Timelines presented are tentative and subject to change.

THANK YOU

Contact

zerh@doe.gov

www.buildings.energy.gov/zero