

# 45L Tax Credit Update

Prepare for the Transition to Version 3.2 of the  
ENERGY STAR Single-Family New Homes Program

---

Presented by:



Thomas Cochran  
Senior Vice President  
[tcochran@arcxis.com](mailto:tcochran@arcxis.com)

10.29.24



Taylor Short  
Partner  
[taylor.short@us.forvismazars.com](mailto:taylor.short@us.forvismazars.com)

Tricia Krajnak-Salazar  
Director  
[tricia.krajnaksalazar@us.forvismazars.com](mailto:tricia.krajnaksalazar@us.forvismazars.com)

# Arcxis – Your Partner In Homebuilding

We touch **1** in **7** new homes nationwide

Local Relationships with  
Nationwide Service Coverage



Now serving  
**28** states

–and growing!

We certify



of all  
Energy Star Homes

WE ARE THE NATION'S  
#1 INSPECTION &  
ENGINEERING COMPANY



YEARS OF INSPECTION &  
ENGINEERING SOLUTIONS

Services provided include:

#### STRUCTURAL ENGINEERING

Foundation, Frame, Wall Brace, Windstorm

#### INTEGRATED DESIGN

Mechanical, Electrical, Plumbing, Solar, and  
Fire Sprinkler

#### THIRD PARTY INSPECTIONS

Complete set of construction quality  
inspections from foundation/frame to final  
fit & finish (including insurance mandated),  
sewer scope and drone

#### ENERGY

Optimized energy features, design, and  
inspections for compliance with code, HERS,  
Energy Star, DOE Zero Energy Ready Homes,  
utility incentives, 45L tax credits, etc.

#### WATER

HERS H2O / EPA WaterSense

*Services for both multifamily and single family*



# Today's Agenda

**01** **The Total Value of Energy Star**

---

**02** **Version 3.2 Program Timeline and Transition**

---

**03** **Known Challenges**

---

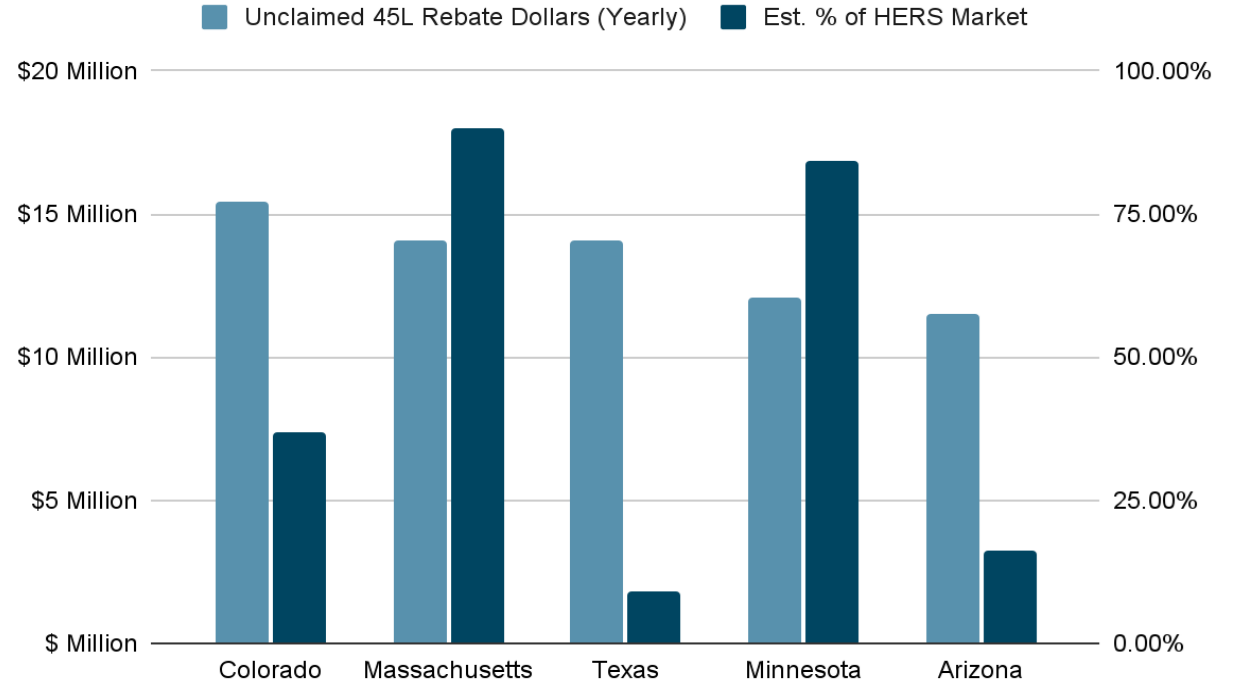
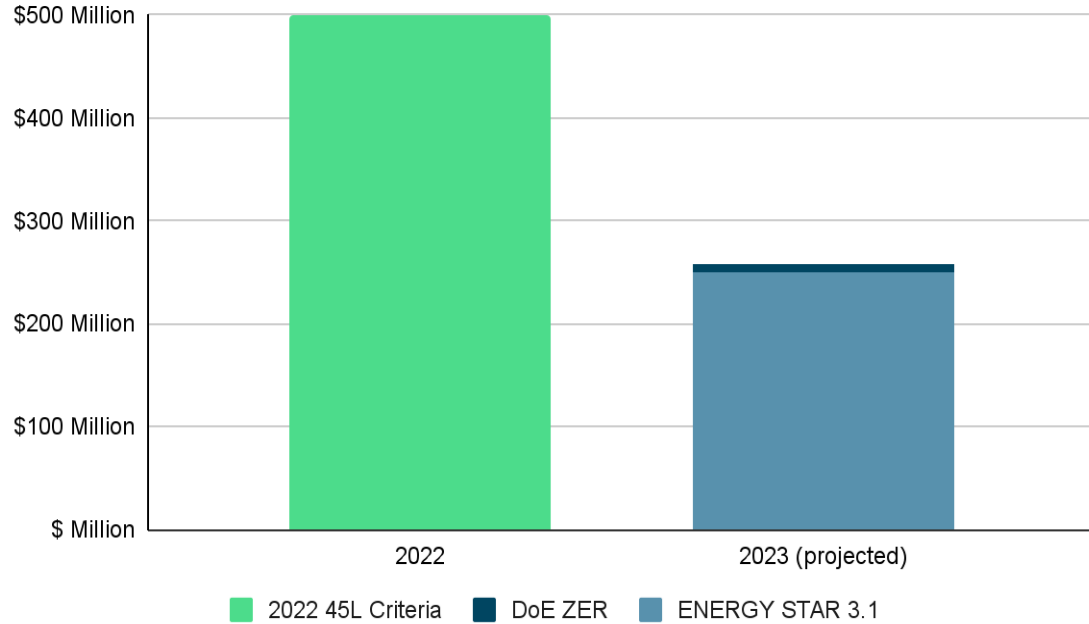
**04** **Strategic Considerations- Compliance is Within Reach**  
DOE Zero Energy Ready Homes, HUD/USDA Energy Minimums

---

**05** **What Can You Do Next?**

# 45L 2022 vs. 2023 Comparison: A \$200M+ Drop

Estimated Total Market 45L Tax Rebate Dollars



Ekotrope estimates that the 2023 total claimed 45L rebate dollars will show a drop of over **\$242,000,000 for homebuilders.**

The image features a dark grey background with a white border at the bottom. On the left side, there is a partial view of a modern glass skyscraper. Overlaid on this are several blue geometric shapes: a large trapezoidal shape, a thin diagonal line, and a smaller trapezoidal shape. The main title is centered in white text.

# The Value of Energy Star

# Above Code Home Value

- ✓ **Maximize Ancillary Revenue**
  - Capture market incentives and rebates
  - Capture the 45L Tax Credit - \$2,500-\$5,000 per home
- ✓ **Increase Construction Quality**
  - Minimize warranty and customer service issues
- ✓ **Minimize Disruptions to Purchasing and Construction Processes**
  - Utilize Tax Credits and other incentives to achieve code compliance, select high performance energy features and construction processes that minimize the impact of market code adoptions
- ✓ **Marketing and Sales Value**
  - Buyers are expecting high performance homes
  - Lower operating costs help homebuyer affordability
  - Energy efficient homes typically have higher resale values
- ✓ **Value to Investors**
  - With an increasing focus on sustainability and carbon initiatives, high-performance certified homes offer value from an ESG reporting and investor perspective





# ENERGY STAR v3.2 Timeline

How Soon Do  
You Need to  
Transition to  
E\* 3.2?

2025 **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, 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 v3.2	MH v2	MFNC National v1.1
CA	SFNH California v3.3	MH v2	MFNC California v1.3
HI	SFNH Pacific v3	MH v2	MFNC National v1.1
OR, WA	SFNH National 3.2	MH v2	MFNC Oregon and Washington v1.2; or MFNC National v1.2

# Challenges in Achieving ENERGY STAR

Achieving Corporate Goals While Honoring Division Autonomy

Builder divisions may perceive 45L as hurting division performance

Financial Alignment and Budgets

Who Pays?

How does the 45L tax credit benefit the divisional teams?

IRS Audit Risk

Quality of Program Execution

Proper credentialing, documentation, and maintenance





# Challenges in Achieving ENERGY STAR

Inaccurate Local Opportunity  
Analysis and Costing

Builders, Raters, Trades,  
unfamiliar with the program  
*Cost of Change Fee*

HVAC Design and  
Commissioning

Design Capabilities  
Design criteria perceived as  
too stringent  
Installation process changes

Program Requirements  
Outside of Energy Features

Beyond Energy Features:  
Framing, ventilation, bath  
fans, drywall ...oh my!



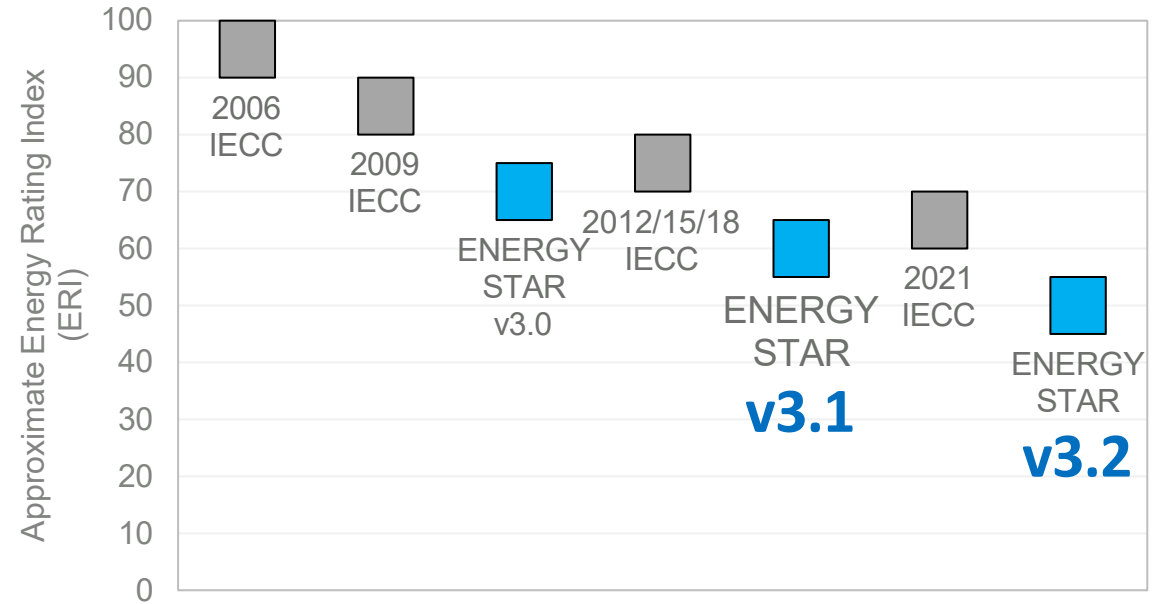
The image features a dark grey background. On the left side, there is a partial view of a modern glass skyscraper. Overlaid on this and extending into the grey area are several blue geometric shapes: a large trapezoid, a thin diagonal line, and a smaller trapezoid. The text 'Compliance is within reach.' is centered in the grey area in a white, bold, sans-serif font.

**Compliance is  
within reach.**

# Key Changes

## Target HERS score

- The rough estimate in required ERI target is roughly 10 points lower.
- Energy Star Version 3.1 had a typical scoring range of 65-55, version 3.2 generally falls within the range of 55-45 points.



## Thermal Envelope Minimum Requirements

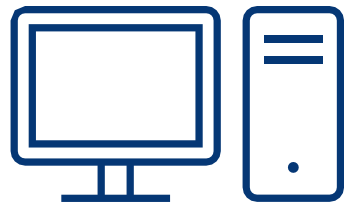
- The change in mandatory thermal envelope minimums has been updated from referencing the 2009 IECC, to referencing the 2021 IECC.
- There is good news, this change does not mean the 2021 values are required, instead a builder can use the Total UA calculation to meet or beat the performance of the 2021 IECC thermal envelope table.

CZ	Code	Windows	Ceiling	Wall: Cavity + Cont	Frame Floor	Basement Wall	Crawlspace Wall	Slab
1	2009 IECC	1.2	30	13	13	0	0	0
	2021 IECC	0.50	30	13	13	0	0	0
2	2009 IECC	0.65	30	13	13	0	0	0
	2021 IECC	0.40	49	13	13	0	0	0
3	2009 IECC	0.50	30	13	19	13	13	0
	2021 IECC	0.30	49	20	19	13	13	10, 2ft
4	2009 IECC	0.35	38	13	19	13	13	10, 2ft
	2021 IECC	0.30	60	20 + 5	19	13	13	10, 4ft
4C & 5	2009 IECC	0.35	38	20	30	13	13	10, 2ft
	2021 IECC	0.30	60	20 + 5	30	19	19	10, 4ft
6	2009 IECC	0.35	49	20	30	19	13	10, 4ft
	2021 IECC	0.30	60	20 + 5	30	19	19	10, 4ft
7 & 8	2009 IECC	0.35	49	21	38	19	13	10, 4ft
	2021 IECC	0.30	60	20 + 5	38	19	19	10, 4ft

# 45L Changes

## PREVIOUS

- Certifying that the home has an annual level of heating and cooling energy consumption that is at least 50% less than that of a comparable home that meets certain energy standards, with building envelope component improvements accounting for at least 1/5 of the reduction



## CURRENT

- The 45L Tax Credit has shifted to above code program certifications rather than energy modeling analysis
  - \$2,500 for Energy Star Certified Homes
  - \$5,000 for DOE Zero Energy Ready Certified Homes
- **To claim the credit a homebuilder must proactively register, design, build, inspect, and certify their homes.**
  - Historically 45L was reviewed post-closing as the tax credit was often retroactive, it is now proactive and in effect through 2032
- Must use a HERS rater to participate in the above code program certifications and capture tax credits

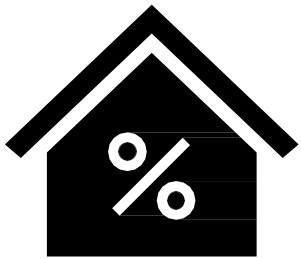
# IRS Clarification – Notice 2023-65

**The phrase "meets ENERGY STAR program requirements" means that a home must be certified.**

- Where EPA has defined a newer version of the ENERGY STAR program requirements applicable to the location, the new version is also deemed to meet these minimum requirements.
  - For example, a home that is certified to the National SFNH v3.2 program requirements also meets the National SFNH v3.1 program requirements.
- A dwelling unit built in a location where EPA has defined regional program requirements must meet both national and applicable regional ENERGY STAR program requirements to qualify for the § 45L credit.

# Another Key Change - Sampling

The EPA has historically allowed sampling using the RESNET sampling protocol which mandated a minimum of 1 in 7 production homes be inspected. This is **not** an aspect of Energy Star version 3.2 but is almost guaranteed as of 1/1/2025



This is great from a quality and compliance standpoint, as all homes certified will be inspected and therefore confirmed to meet the tax credit, it will have a cost and scheduling impact

**To provide greater assurance that all program requirements have been met in every certified home, EPA is proposing to sunset the allowance to use sampling inspection protocols in the ENERGY STAR Single-Family New Homes program for homes permitted on or after 01/01/2025.**

Further, townhouses will not be allowed to use sampling inspection protocols, even when certified using the ENERGY STAR Multifamily New Construction (MFNC) program. However, all other building types eligible to be certified using the ENERGY STAR MFNC program will continue to be permitted to use sampling inspection protocols.



# What's Staying the Same as v3.1?

## Everything Else!

The good news is the Energy Star for Homes program requirements are not changing.

There are **NO** new checklist or additional program requirements  
The program also **does not require** you to put your ducts in conditioned space (although it is likely).

ENERGY STAR Single-Family New Homes (SFNH) Certification Process		
Getting Started	<ul style="list-style-type: none"><li>✓ Rater confirms that the Builder has signed a <a href="#">partnership agreement</a> with EPA by checking the <a href="#">energystar.gov/ResPartnerDirectory</a>.</li><li>✓ The Energy Rating Company (ERC) signs a <a href="#">partnership agreement</a> with EPA (which can be checked at <a href="#">energystar.gov/ResPartnerDirectory</a>), and becomes credentialed by a <a href="#">Home Certification Organization (HCO)</a>.</li><li>✓ Once Track A or B has been selected for the project, Rater confirms that the applicable training or credential requirements have been met:</li></ul>	
	Track A – HVAC Grading	Track B – HVAC Credential
	<ul style="list-style-type: none"><li>✓ Rater confirms that they have completed any HCO-mandated training on ANSI / RESNET / ACCA / ICC 310.</li></ul>	<ul style="list-style-type: none"><li>✓ Rater confirms that the HVAC Installer is an <a href="#">HVAC Credentialed Contractor</a>. Recognized companies can be found in the <a href="#">HVAC Credentialed Contractor directories</a>.</li></ul>
	<ul style="list-style-type: none"><li>✓ Optional: Hold kick-off meeting and/or provide <a href="#">program documents</a> to design team.</li></ul>	
Design	<ul style="list-style-type: none"><li>✓ Rater creates a preliminary energy model to ensure the design meets or exceeds ENERGY STAR's performance target.</li><li>✓ Rater collects the applicable HVAC design documentation from the HVAC system designer for the selected track:</li></ul>	
	Track A – HVAC Grading	Track B – HVAC Credential
	<ul style="list-style-type: none"><li>✓ An HVAC design report compliant with ANSI / RESNET / ACCA / ICC 310, and,</li><li>✓ The ENERGY STAR SFNH / MFNC National HVAC Design Supplement to Std. 310 for Dwelling &amp; Units</li></ul>	<ul style="list-style-type: none"><li>✓ ENERGY STAR SFNH National HVAC Design Report</li></ul>
	<ul style="list-style-type: none"><li>✓ Rater completes Rater Design Review Checklist.</li><li>✓ Optional: Review construction drawings for compliance with program requirements in the Rater Field Checklist.</li></ul>	
Build	<ul style="list-style-type: none"><li>✓ At Pre-drywall: Rater verifies that all items on the Rater Field Checklist that will be concealed by drywall have been met via on-site inspection and testing.</li><li>✓ At Final: Rater verifies that all remaining items on Rater Field Checklist have been met via on-site inspection and testing.</li><li>✓ Builder ensures that home is constructed to meet the Water Management System Builder Requirements.</li><li>✓ If pursuing Track B - HVAC Credential, the HVAC contractor completes the HVAC Commissioning Checklist.</li></ul>	
	Post-Construction	<ul style="list-style-type: none"><li>✓ Rater completes final energy model to reflect as-built conditions.</li><li>✓ Rater submits the home's energy model to the HCO.</li><li>✓ Rater follows HCO's certification and oversight procedures (e.g., quality assurance, recordkeeping, and reporting).</li></ul>
Marketing & Labeling	<ul style="list-style-type: none"><li>✓ Rater sends ENERGY STAR certified home labels and certificates to Builder (who will affix the completed ENERGY STAR label to the circuit breaker box or other suitable location).</li><li>✓ Rater coordinates with HCO to report certified homes to EPA.</li></ul>	

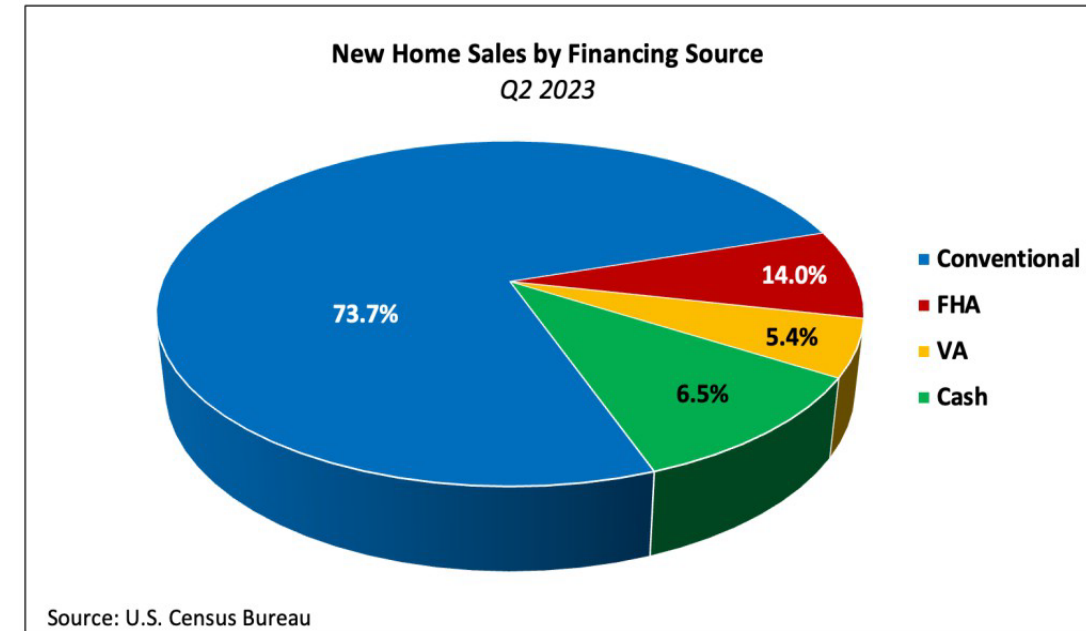
The image features a dark grey background with a white and blue geometric design on the left side. The design includes a white diagonal line, a blue diagonal line, and a large blue trapezoidal shape. In the background, a portion of a modern glass skyscraper is visible, showing its grid-like structure and reflective windows.

# USDA/HUD Energy Minimums Update

# Technical Update - HUD No. 24-089

- Adoption of the 2021 IECC as the required energy minimum when using HUD/USDA Financed Housing
- ASHRAE 2019 – 90.1 for Mid/High Rise MF
- The FHA Loan Program is directly impacted by this update
- Minimum is the key word
- The previous requirement was 2009 IECC which was adopted in 2015
- Enforceable 18 months after notification
  - For SFD - November 2025 based on permit date
- [https://www.hud.gov/press/press\\_releases\\_media\\_advisories/HUD\\_No\\_24\\_089](https://www.hud.gov/press/press_releases_media_advisories/HUD_No_24_089)

**FOR SOME BUILDERS OVER  
40% OF THEIR HOMES  
SALES UTILIZE FHA LOANS**



# Potential Housing Impact

- Most Production Builders will need to update all of their homes to these minimums to continue to sell to FHA buyers.
- Negative impact on Housing Affordability as construction costs increase
- Homeowners will see reduced operating costs BUT will struggle to realize those savings as these changes' impact housing attainability and buyer qualification.
- Narrowing of the gap to 45L via Energy Star 3.2 and DOE ZERH V2 Certifications
- Additional Risk to the Builder if they do not meet all elements of the code
  - Usings above code programs and 3<sup>rd</sup> party verification provides an additional layer of protection

# 2009 vs. 2021

... and beyond

- Estimated to be a 34.3% increase in energy efficiency from previous HUD requirements
- Studies have estimated a range of cost increases of \$2.6k-\$11.8k to update to 2021 code from 2018 IECC
- Updated minimum ALLOWS additional builder's options like above code certifications and 2024 IECC
- Source: Builder's Daily - <https://www.thebuildersdaily.com/energy-efficient-tax-credit-changes-are-coming-ready-or-not/>

## 2009 vs 2021 IECC Prescriptive Insulation Requirements

		Climate Zone						
		1	2	3	4 except Marine	5 & Marine 4	6	7 & 8
Ceiling R-Value	2009	30	30	30	38	38	49	49
	2021	30	49	49	60	60	60	60
Wood Frame Wall R-Value	2009	13	13	13	13	20 or 13+5h	20 or 13+5h	21
	2021	13 or 0+10ci	13 or 0+10ci	20 or 13+5ci or 0+15	30 or 20+5ci or 13+10ci- or 0+20ci	30 or 20+5ci or 13+10ci- or 0+20ci	30 or 20+5ci or 13+10ci- or 0+20ci	30 or 20+5ci or 13+10ci- or 0+20ci
Mass Wall R-Value	2009	3ci or 4	4ci or 6	5ci or 10	5ci or 10	13ci or 17	15ci or 19	19ci or 21
	2021	3ci or 4	4ci or 6	8ci or 13	8ci or 13	13ci or 17	15ci or 20	19ci or 21
Floor R-Value	2009	13	13	19	19	30	30	38
	2021	13	13	19	19	30	30	38
Basement Wall R-Value	2009	0	0	5ci or 13	10ci or 13	10ci or 13	15ci or 19	15ci or 19
	2021	0	0	5ci or 13	10ci or 13	15ci or 19 or 13+5ci	15ci or 19 or 13+5ci	15ci or 19 or 13+5ci
Slab R-Value & Depth	2009	0	0	0	10ci, 2ft	10ci, 2ft	10ci, 4ft	10ci, 4ft
	2021	0	0	10ci, 2ft	10ci, 4ft	10ci, 4ft	10ci, 4ft	10ci, 4ft
Crawl Space Wall R-Value	2009	0	0	5ci or 13	10ci or 13	10ci or 13	10ci or 13	10ci or 13
	2021	0	0	5ci or 13	10ci or 13	15ci or 19 or 13+5ci	15ci or 19 or 13+5ci	15ci or 19 or 13+5ci

Ci = continuous insulation



## TIER 2 *MAY* PRODUCE BEST ROI


- **Baseline:** Energy Star (Version 3.2 Required for DOE ZERH V2 on all acquired homes as of 1/1/2024)



- **Indoor Air Quality:** Indoor airPLUS
- **Envelope:** ERI at DOE ZERH Target Home
- **Mechanical:** Equipment & ducts in conditioned space
- **Plumbing:** Minimum water heater efficiency and  $\leq 1.2$  gal between water heater and farthest fixture OR WaterSense
- **Electrical:** Solar ready design, panel space & conduit
- **Lighting & Appliances:**
  - Lighting 80%+ LED
  - Key appliances & bath fans Energy Star qualified







# Roadmap to Success

# Roadmap to Success

1

Energy Feature  
Gap Analysis

2

Division  
Preparedness  
Review

3

Trade Partner  
Preparedness  
Review



# Roadmap to Success

## Phase 1: Energy Feature Gap Analysis

- Analyze baseline features & cost-effective scenarios to ENERGY STAR & DOE ZERH
- Identify markets / divisions closest to program compliance
  - Local codes & incentives may have narrowed the gap
  - Market program participation increases likelihood of building feature & trade availability
- Multiple scenarios allow for flexibility in pricing exercises & competitive trade feedback



# Roadmap to Success

## Phase 2: Division Preparedness Review

- Program requirements & implementation planning
- Scope of work / contracting review
- HVAC design & specifications (design criteria & min. requirements)
- Non-feature program requirements (framing, above code air sealing / air barriers, construction details, HVAC, field testing requirements)
- Inspection scheduling & standard reports



# Roadmap to Success

## Phase 3: Trade Partner Preparedness Review

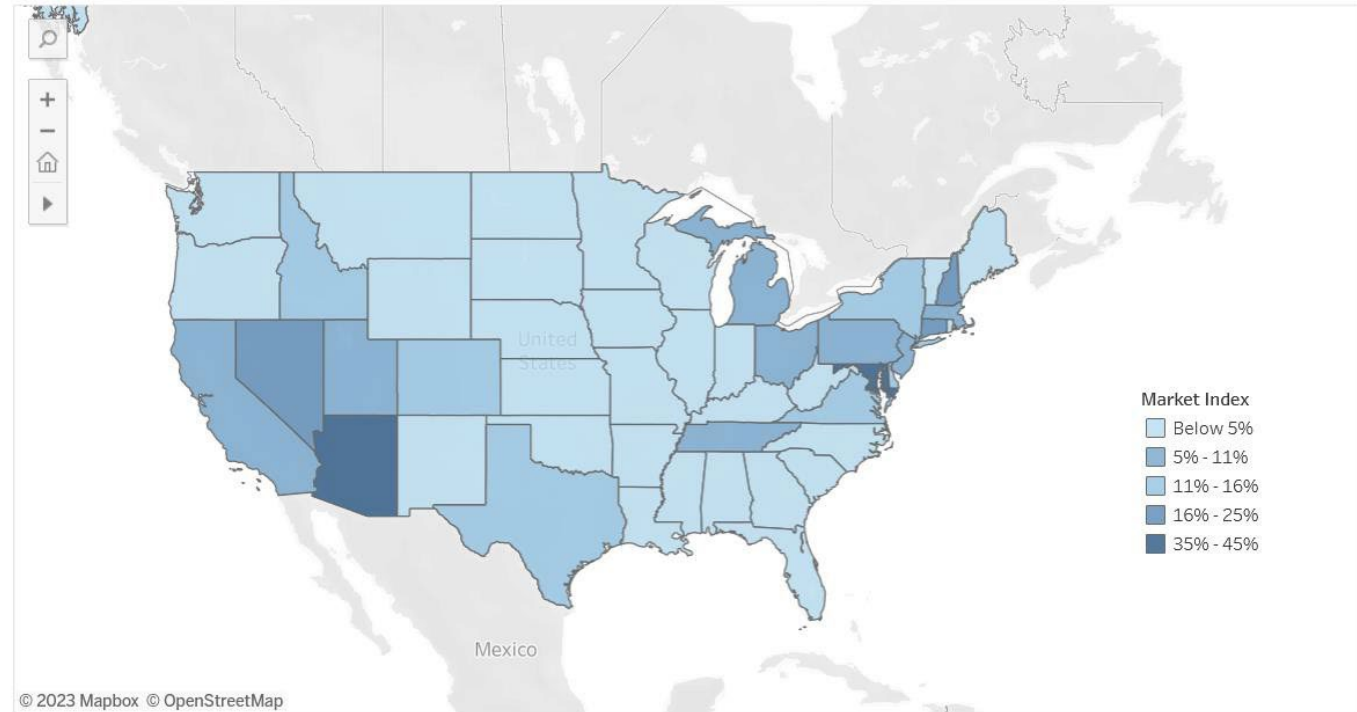
- Trade training & resources
- Review program requirements with key trades:
  - Framing
  - HVAC
  - Insulation
  - Drywaller
- Inspection protocols & expectations
- Inspection reports & trade performance



# STRATEGIC CONSIDERATIONS

- ✓ **Not All Markets Are Created Equal**
  - Local Incentives May Align With Programs/Tax Credits
  - Locally Adopted and Enforced Codes May Have Narrowed the Gap
  
- ✓ **2<sup>nd</sup> Opinion on Total Cost of Compliance May Be Necessary**
  
- ✓ **Does the Tax Credit expedite your path to the “All-Electric” Home?**

2022 ENERGY STAR Site-Built New Homes & Apartments Map





# STRATEGIC CONSIDERATIONS

- ☑ Prioritize Markets with Longest Cycle Time
- ☑ Ducts in Conditioned Space Strategy
- ☑ Pay Attention to Windows – New Energy Star Certification Requirements May Quickly Improve Window Market
- ☑ Consider HVAC Grading (Standard 310) as a Compliance Pathway OR as cost-effective HERS points
- ☑ Discover the “EASY” Buttons

## Windows

Climate Zone	U-Factor <sup>1</sup>	SHGC <sup>2</sup>	
Northern	≤ 0.22	≥ 0.17	Prescriptive
	= 0.23	≥ 0.35	Equivalent Energy Performance
	= 0.24		
	= 0.25		
	= 0.26		
North-Central	≤ 0.25	≤ 0.40	
South-Central	≤ 0.28	≤ 0.23	
Southern	≤ 0.32	≤ 0.23	

**RESNET**  
RESIDENTIAL ENERGY SERVICES NETWORK

**ACCA**  
Air Conditioning Contractors of America

**ANSI**  
American National Standards Institute

June 23, 2020

Residential Energy Services Network, Inc.  
P.O. Box 4561  
Oceanside, CA 92052-4561  
<http://resnet.us/>

Air Conditioning Contractors of America  
2800 Shirlington Road, Suite 300  
Arlington, VA 22203  
[www.acca.org](http://www.acca.org)

©Residential Energy Services Network, 2018. All rights reserved.

# Thank you!

Prepare for the 45L Transition and review the options at maximizing tax credit returns!

---

Presented by:



Thomas Cochran  
Senior Vice President  
[tcochran@arcxis.com](mailto:tcochran@arcxis.com)

10.29.24



Taylor Short  
Partner  
[taylor.short@us.forvismazars.com](mailto:taylor.short@us.forvismazars.com)

Tricia Krajnak-Salazar  
Director  
[tricia.krajnaksalazar@us.forvismazars.com](mailto:tricia.krajnaksalazar@us.forvismazars.com)