



Ohio Home Energy Rating System Index Study



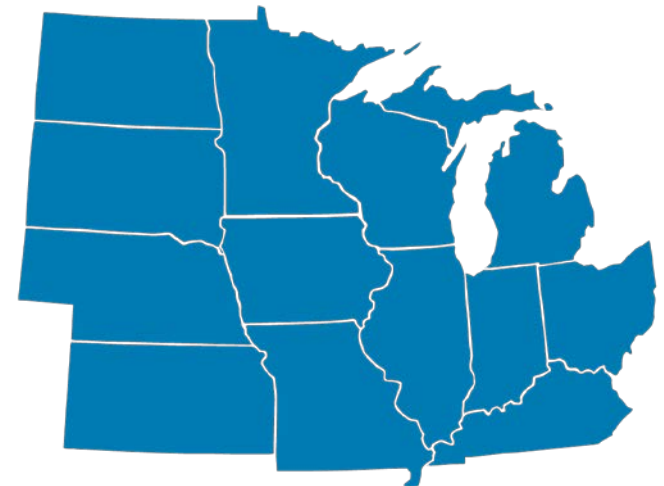
About MEEA

- The Trusted Source on Energy Efficiency

We are a nonprofit membership organization with **160+ members**, including:

- Utilities
- Research institutions and manufacturers
- State and local governments
- Energy efficiency-related businesses

As the key resource and champion for energy efficiency in the Midwest, MEEA helps a diverse range of stakeholders understand and implement cost-effective energy efficiency strategies that provide economic and environmental benefits.



HERS Data set

- New Construction (2014 – 2016)
- Home types: Single Family, Duplex
- # of homes: 10,354(roughly 25% of all building permits)
- Average size: 3700* Sq. Ft. (Conditioned)
- Code Compliance
 - 2009 IECC
- HERS Rated vs. 1 & 2-family permits statewide
 - 2014: 13%
 - 2015: 37%
 - 2016: 23%

Ratings Per Metro Area

- Columbus Metro = 42% of rated homes statewide.
 - HERS Rated vs. 1 & 2-family permits in Columbus
 - 2014: 20%
 - 2015: 57%
 - 2016: 41%
- Cleveland Metro = 19% of rated homes
 - HERS Rated vs. 1 & 2-family permits Cleveland
 - 2014: 18%
 - 2015: 39%
 - 2016: 19%

Ratings Per Metro Area

- Cincinnati Metro = 13% of rated homes
 - HERS Rated vs. 1 & 2-family permits in Cincinnati
 - 2014: 7%
 - 2015: 31%
 - 2016: 17%
- Toledo Metro = 1.4% of rated homes
 - HERS Rated vs. 1 & 2-family permits in Toledo
 - 2014: 8%
 - 2015: 6%
 - 2016: 9%

Ohio Code Requirements

2009 IECC w/ Ohio Amendments

- **2009 IECC Amended**
 - Foundation Insulation: R-13
 - Wall Insulation: R-20
 - Ceiling Insulation: R-38
 - Windows: U - .35
 - Air Sealing: 7 ACH50
 - High Efficacy Lighting: 50%

HERS Data set

Home Components

- Conditioned Sq. Ft.
- Wall Insulation – R-Value
- Ceiling Insulation – R-Value
- Windows – U-Factor
- Air Sealing Leakage – ACH50
- High Efficacy Lighting – CFL/LED
- AC Efficiency – Seasonal Energy Efficiency Ratio (SEER)
- Furnace Efficiency – Annual Fuel Utilization Efficiency (AFUE)

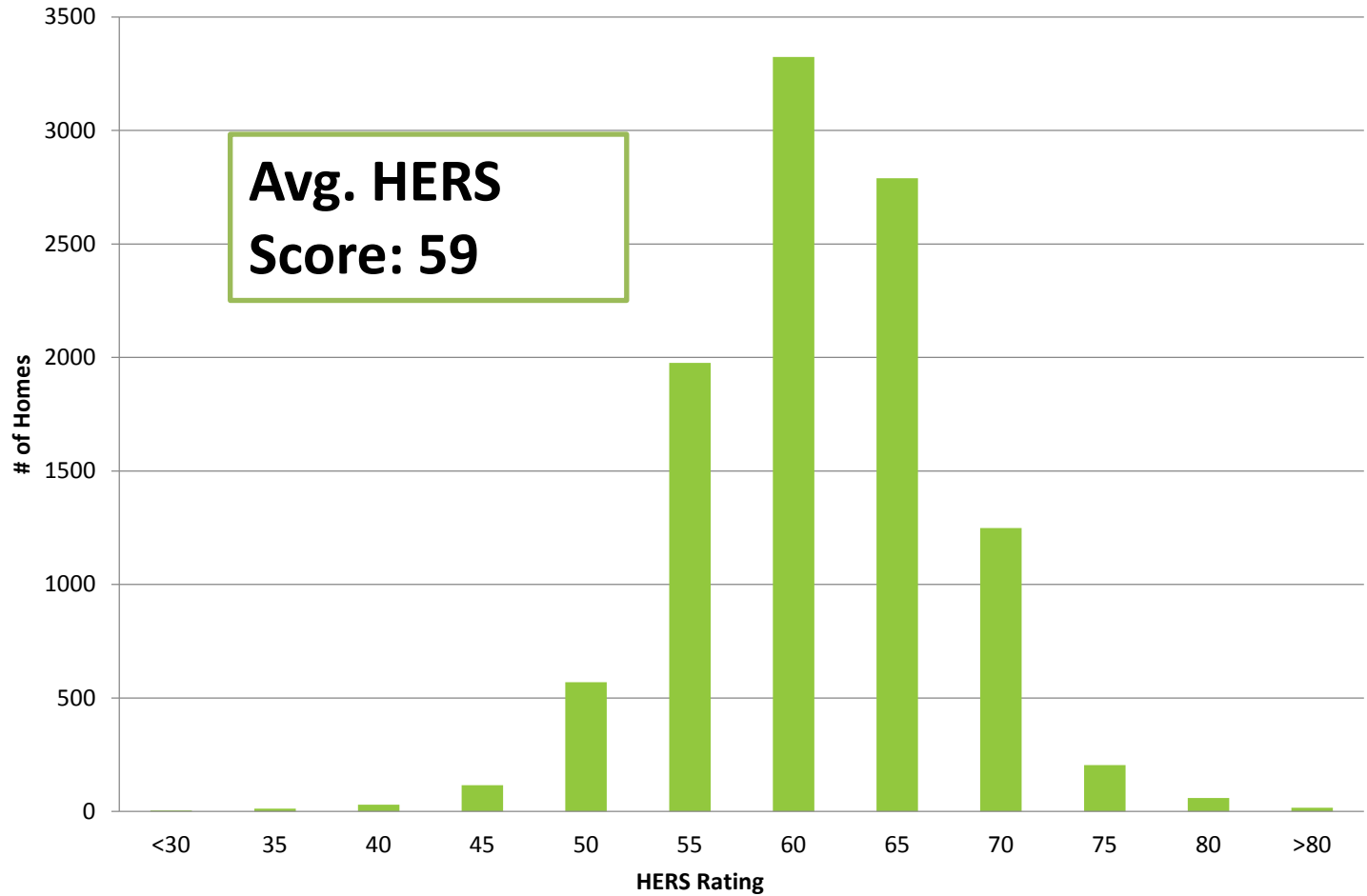
Using the Data

ERI Compliance, Stretch Code, Zero Energy Code

- The following slides can help us determine how homes are currently being built and how they can meet the ERI compliance pathway in the IECC.
- We will gain an understanding of which primary energy code components have a big impact on HERS scores in Iowa.
- Comparing homes with a low HERS score (50 or below) provides insight when developing a residential stretch code and zero energy ready code.

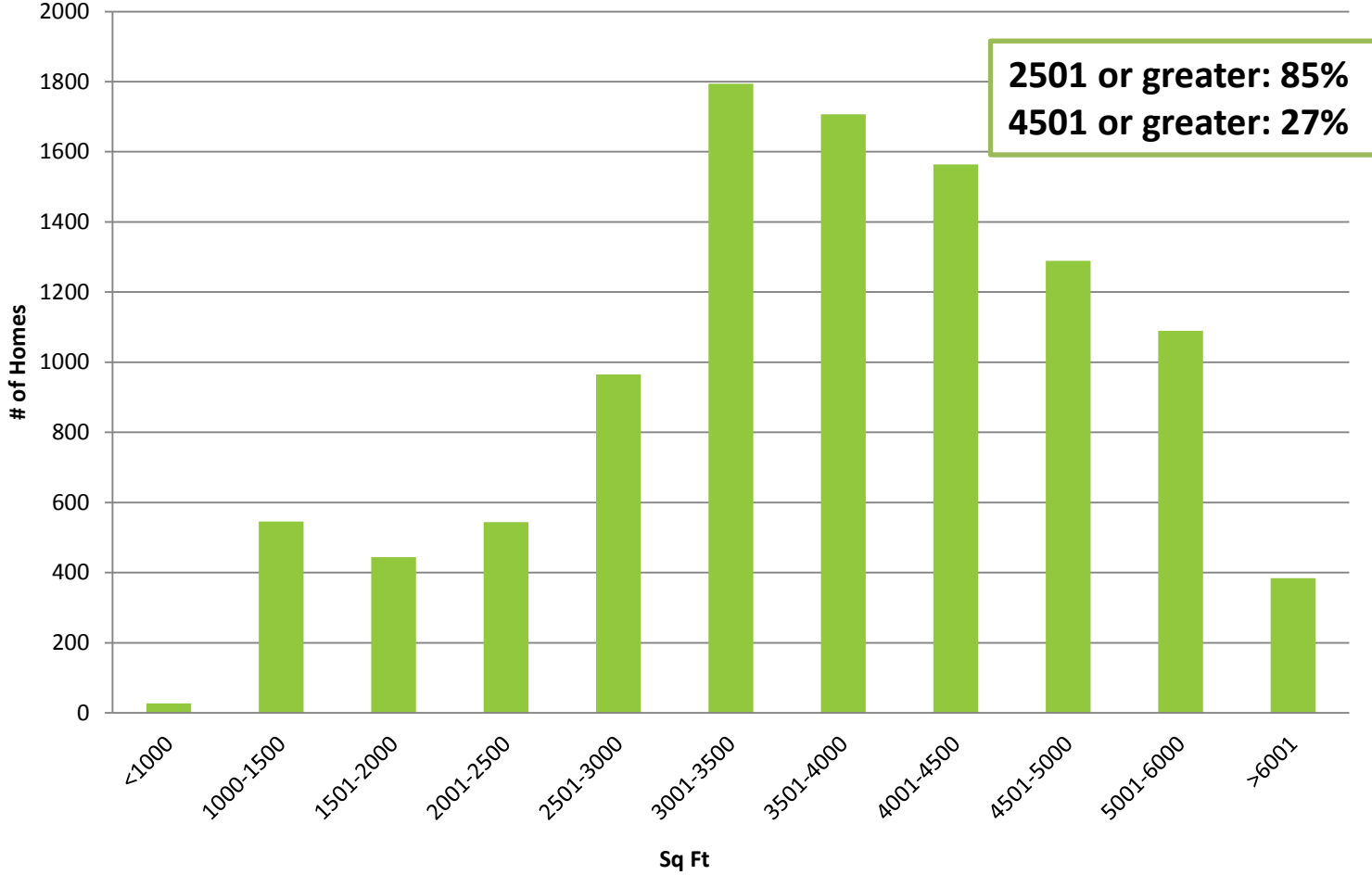
HERS Score Breakdown

All Homes



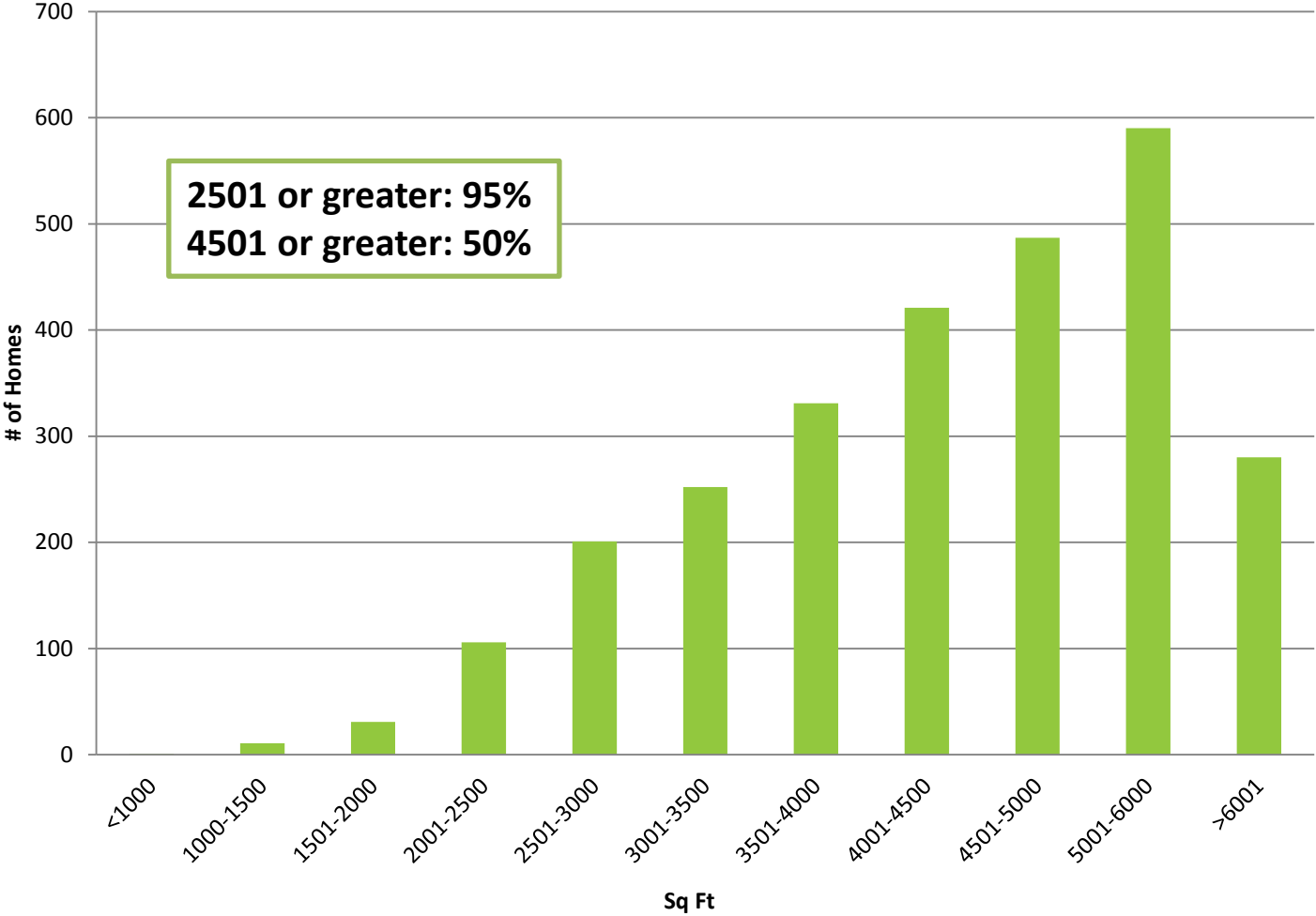
Conditioned Sq. Ft.

All Homes



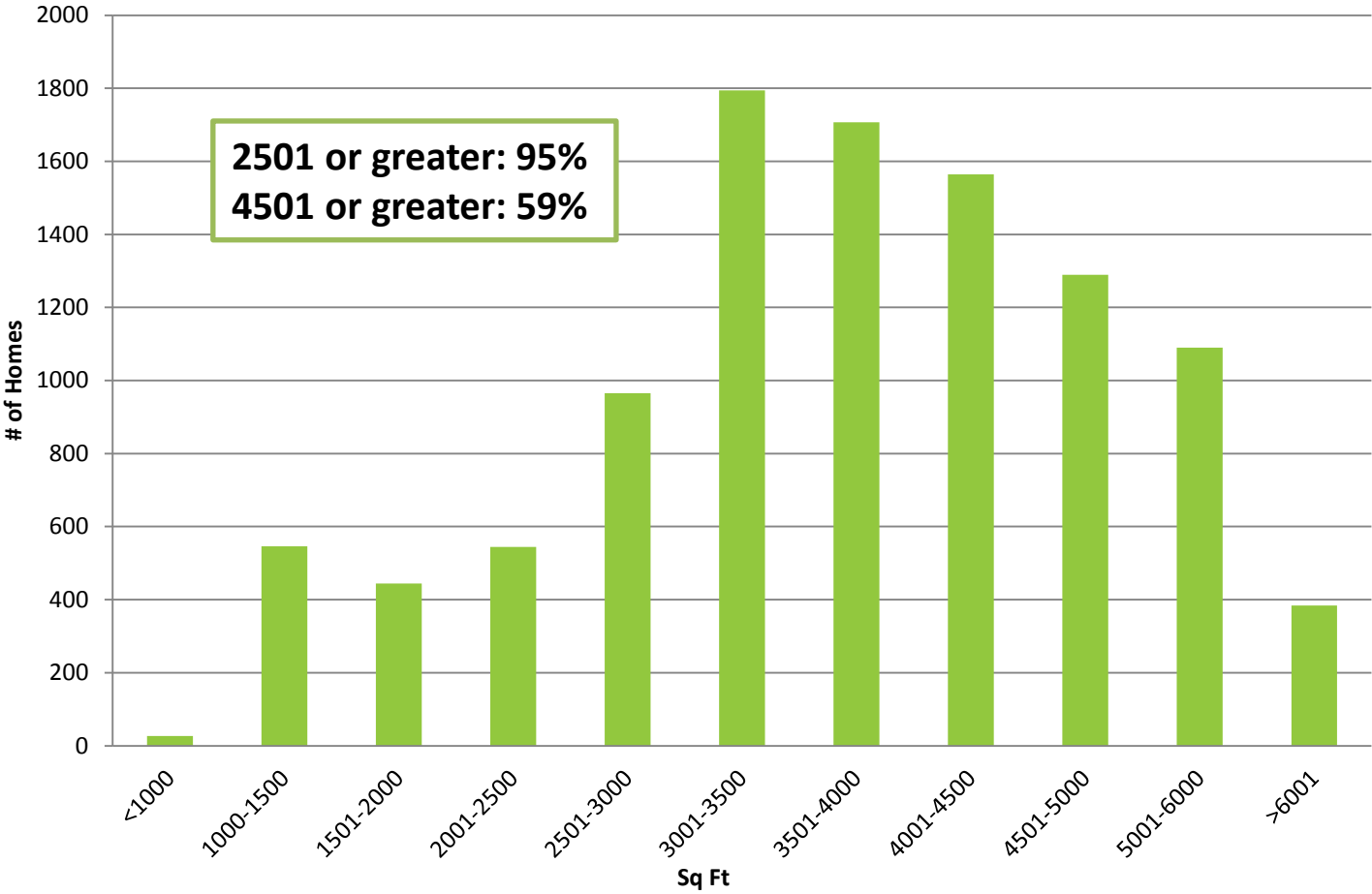
Conditioned Sq. Ft.

HERS ≤ 55



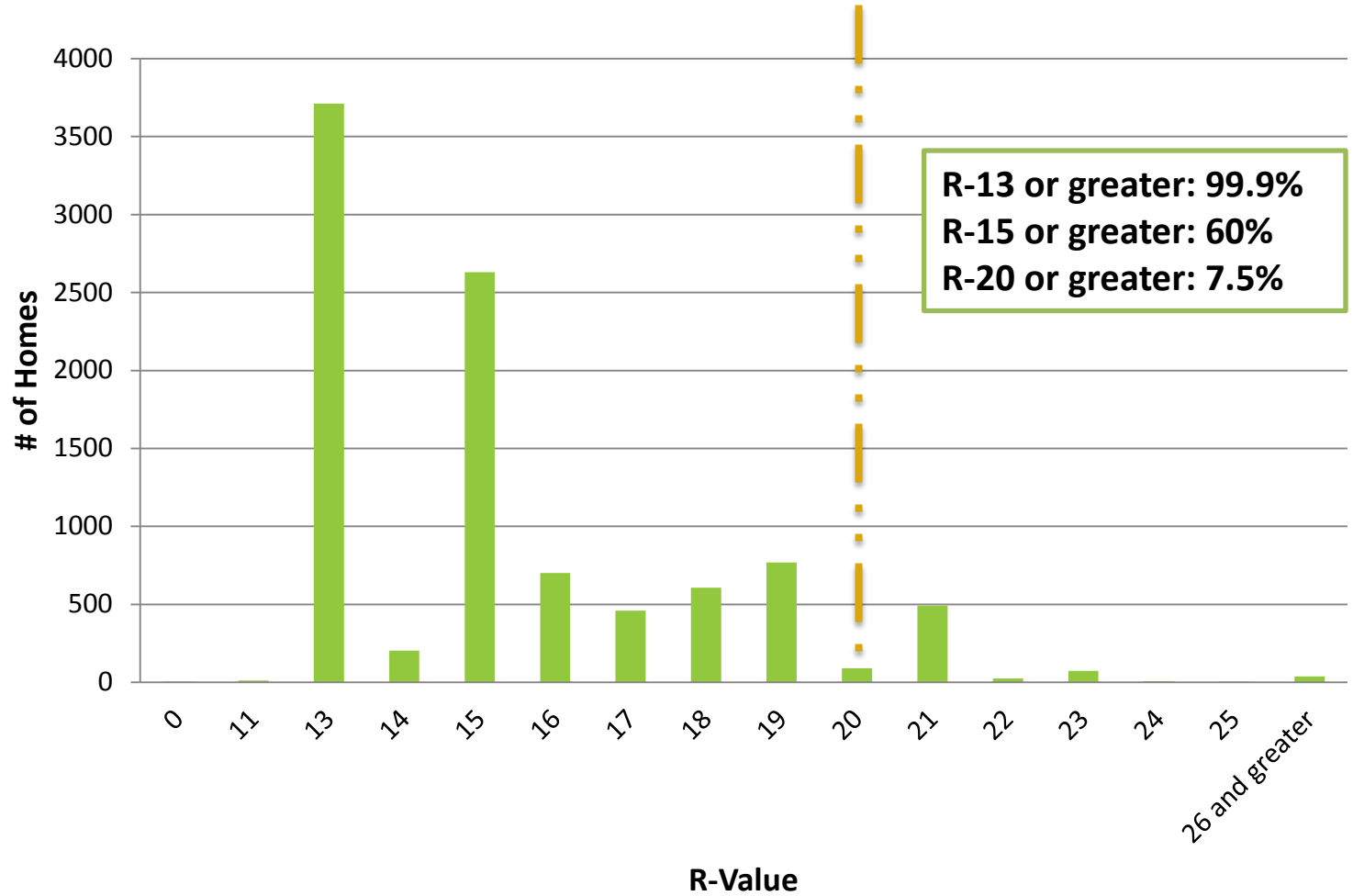
Conditioned Sq. Ft.

HERS ≤ 47



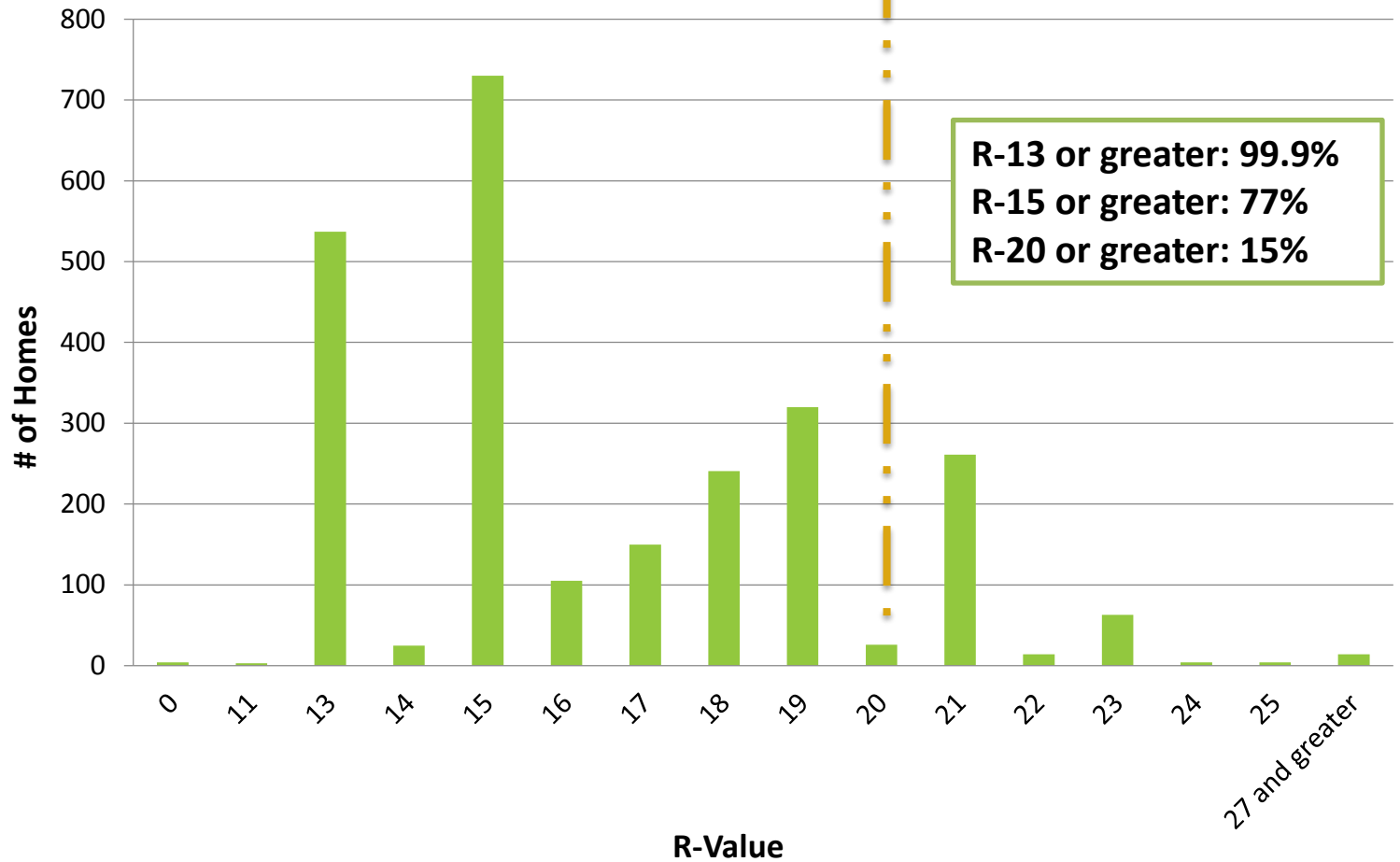
Above Grade Wall Insulation (Cavity Only)

All Homes



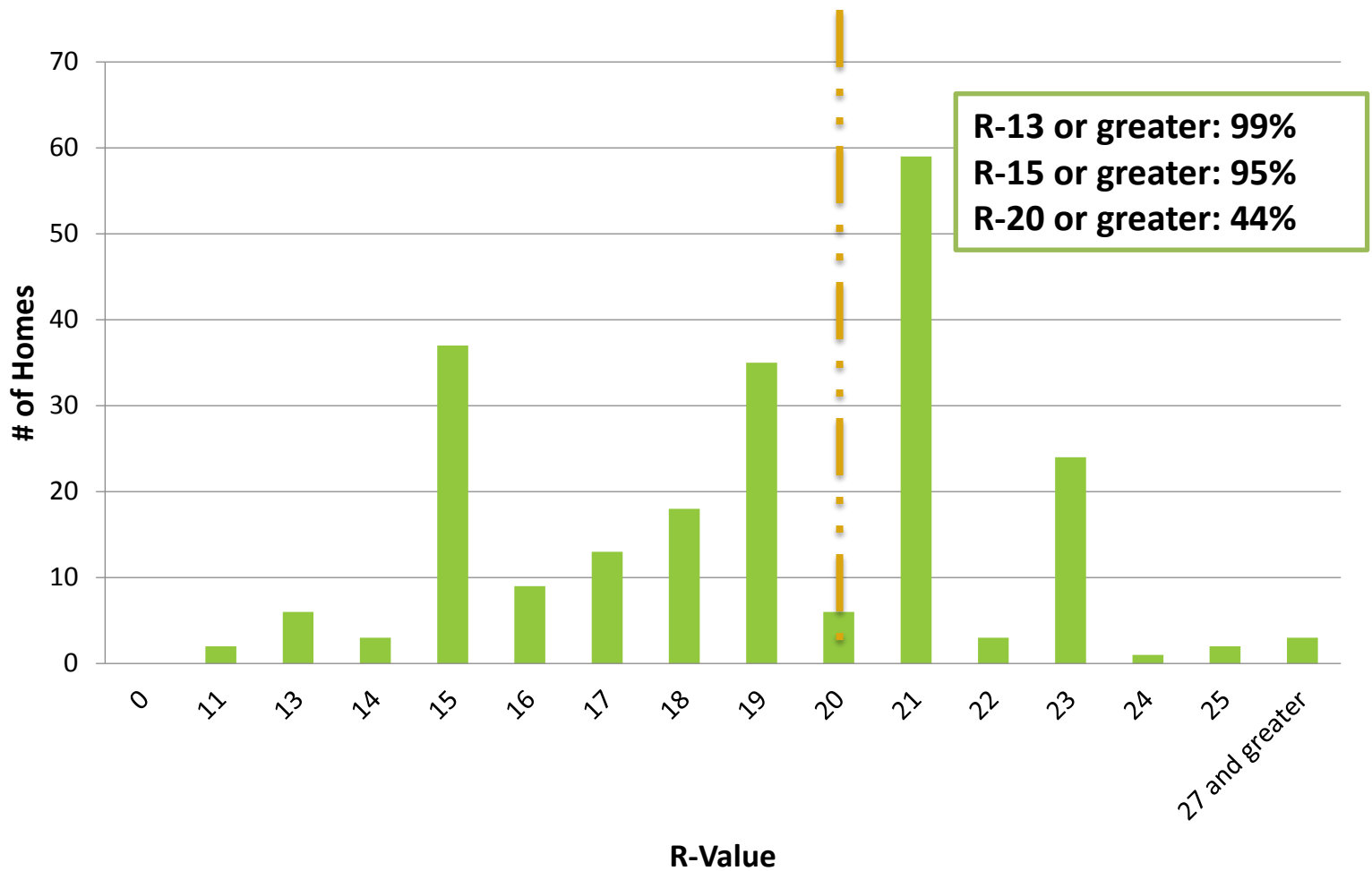
Above Grade Wall Insulation (Cavity Only)

HERS ≤ 55



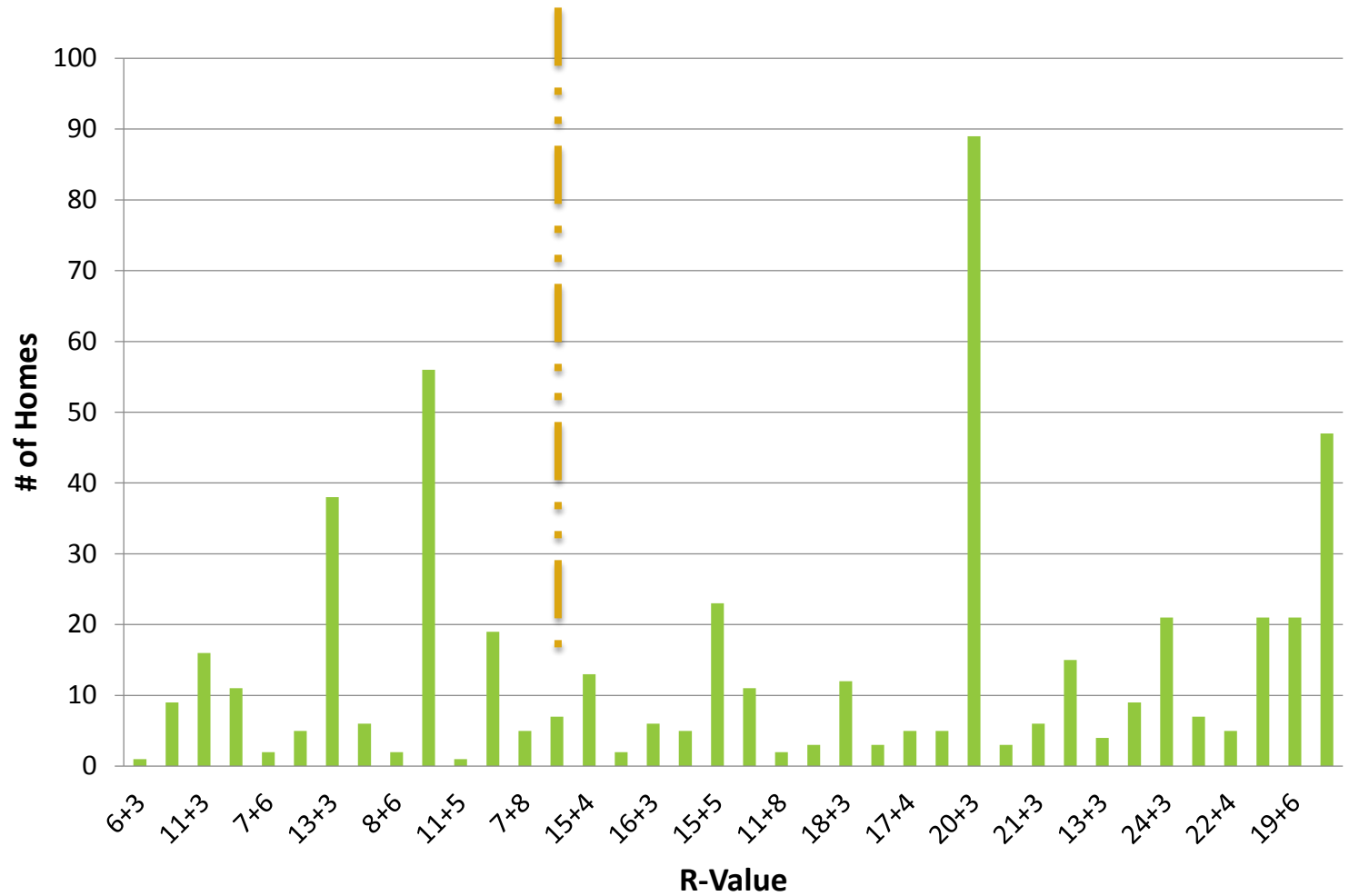
Above Grade Wall Insulation (Cavity Only)

HERS ≤ 47



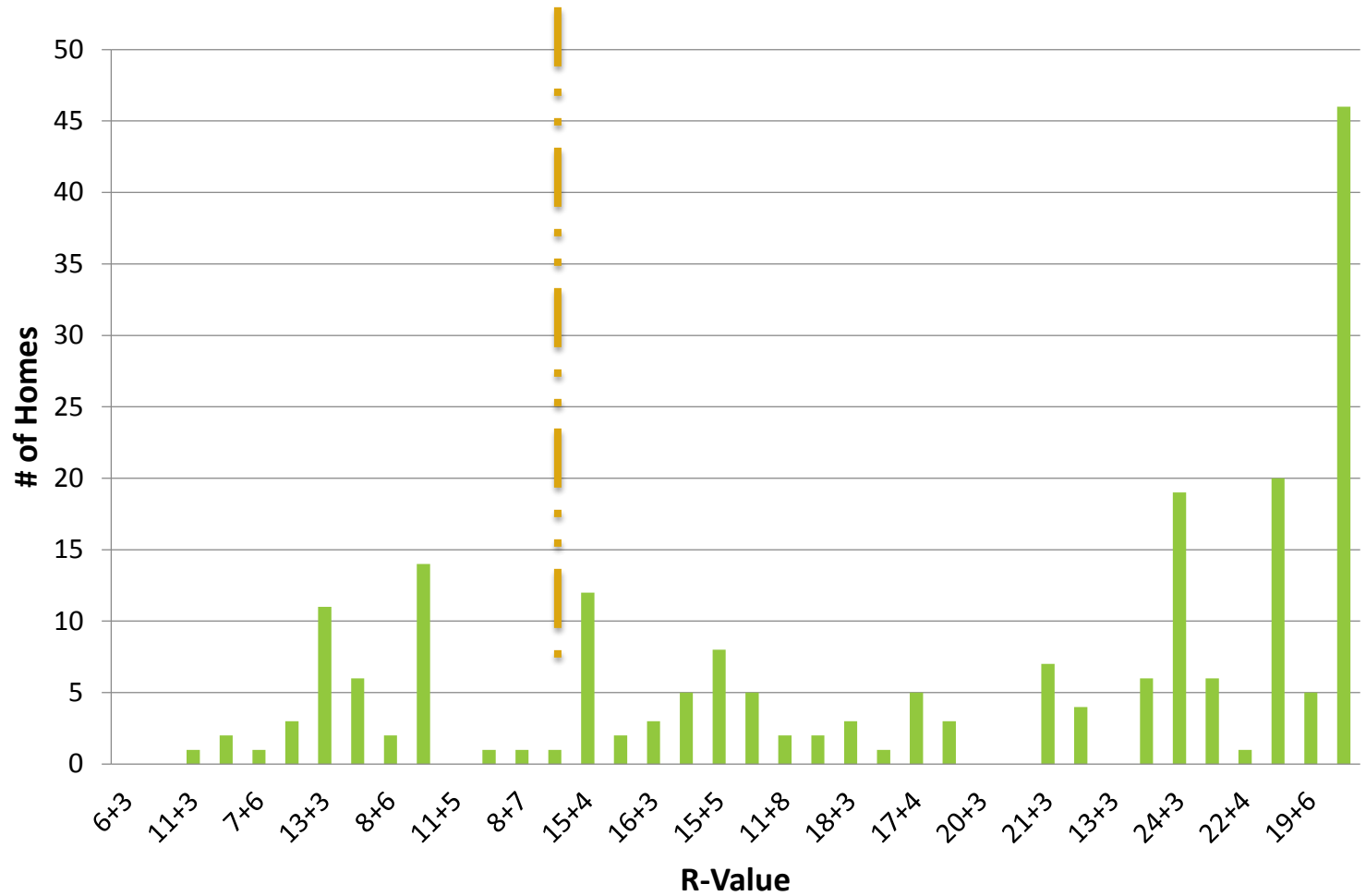
Above Grade Wall Insulation (Cavity + Cont.)

All Homes



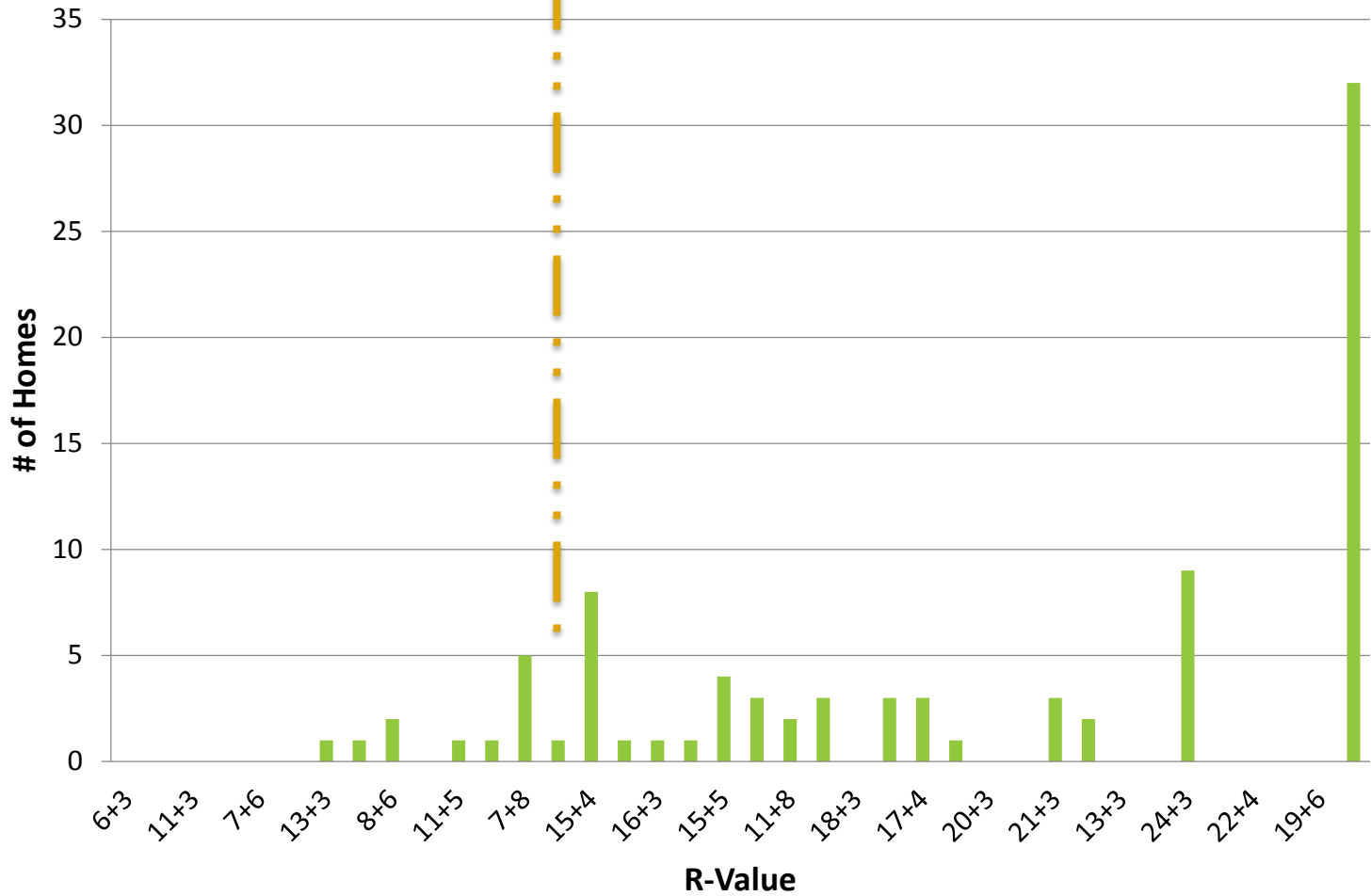
Above Grade Wall Insulation (Cavity + Cont.)

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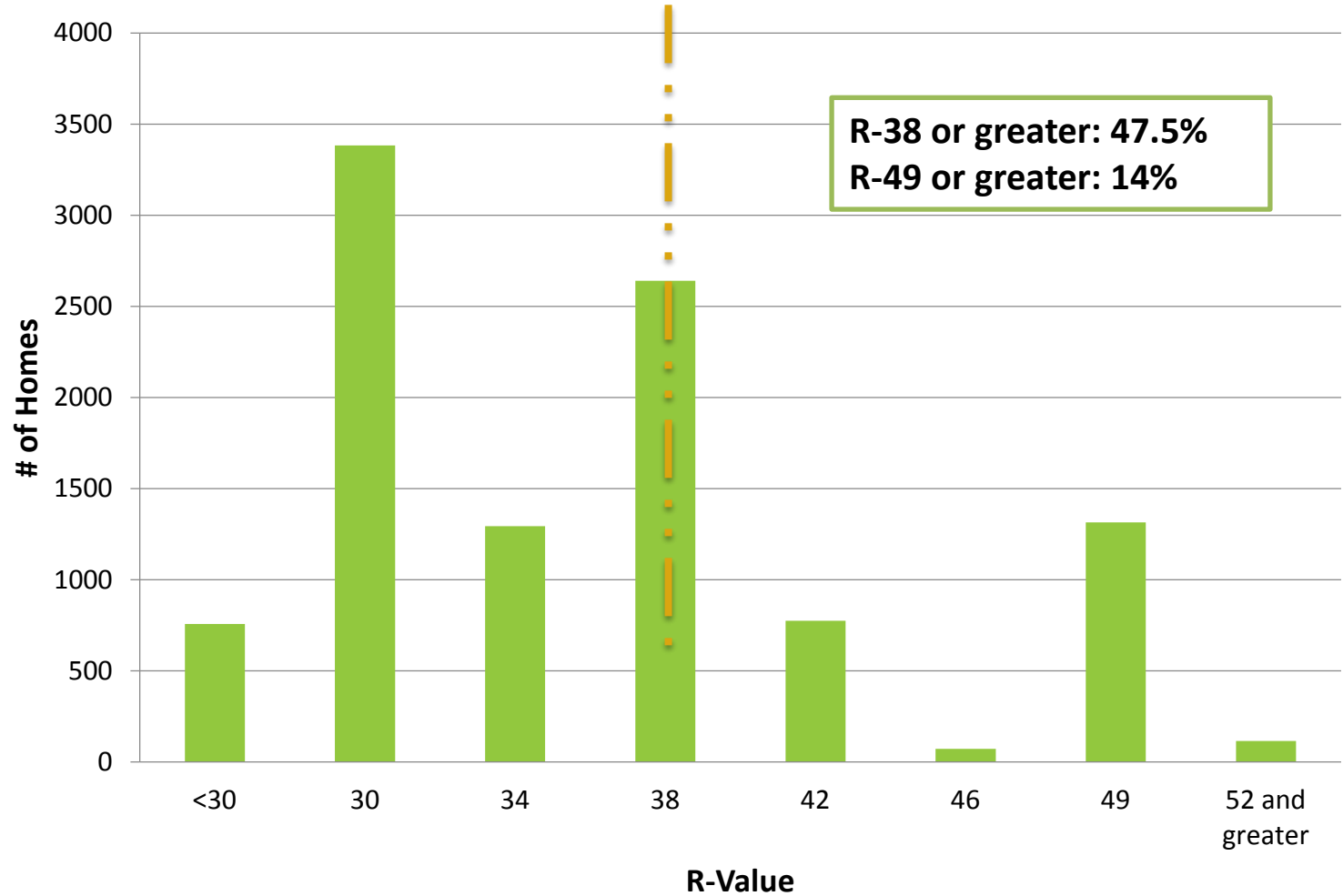
Above Grade Wall Insulation (Cavity + Cont.)

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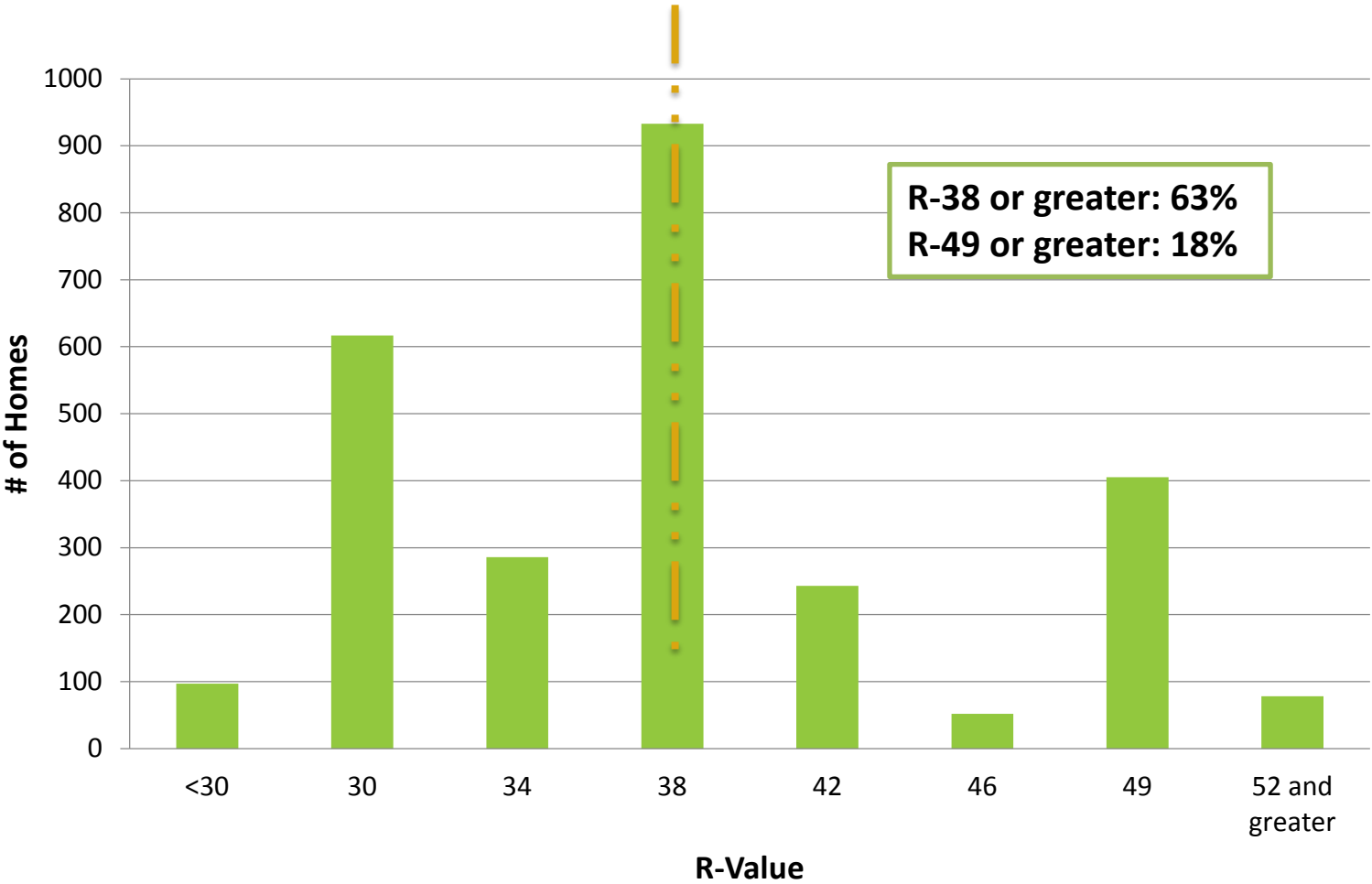
Ceiling Insulation

All Homes



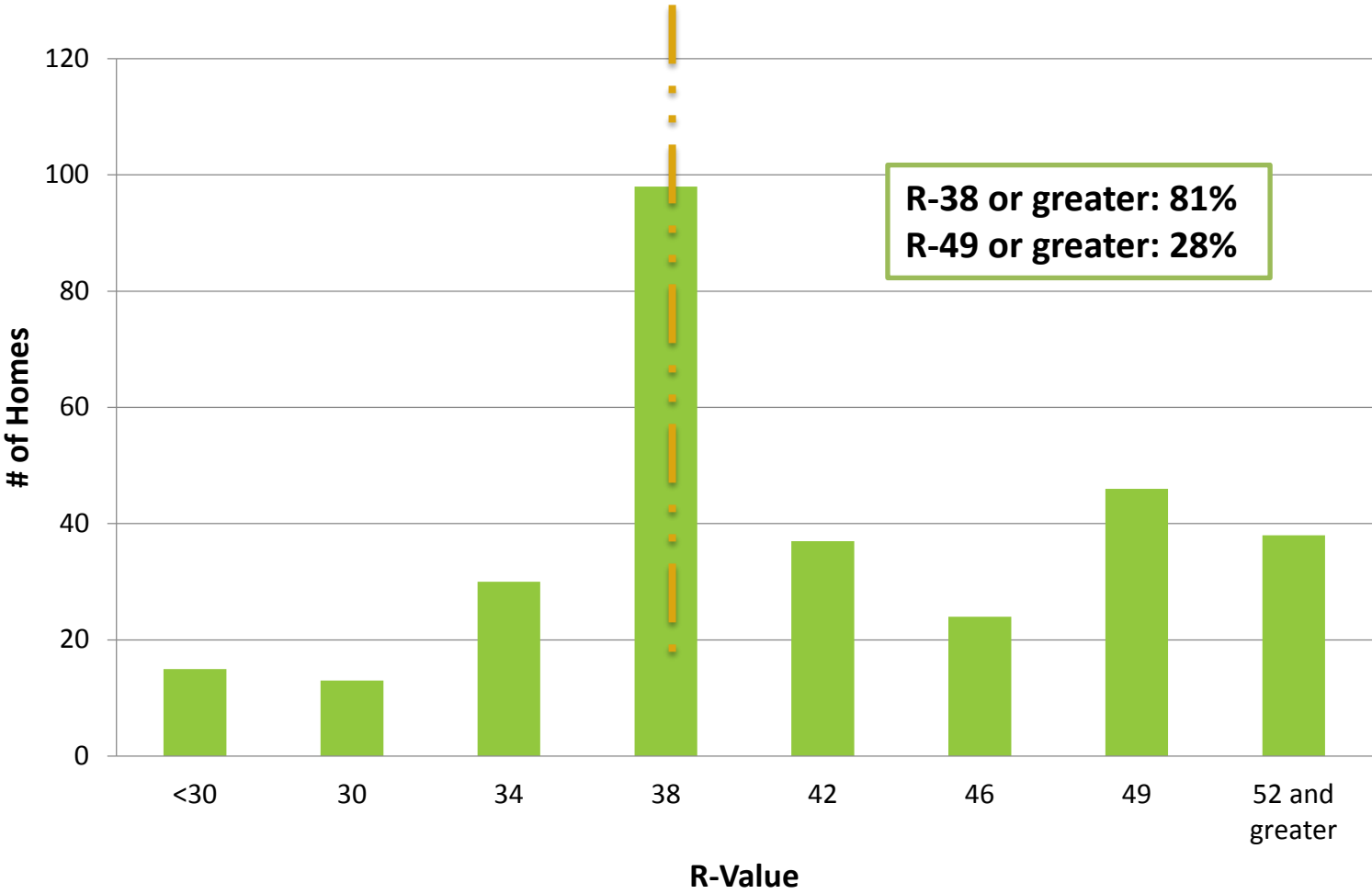
Ceiling Insulation

HERS ≤ 55



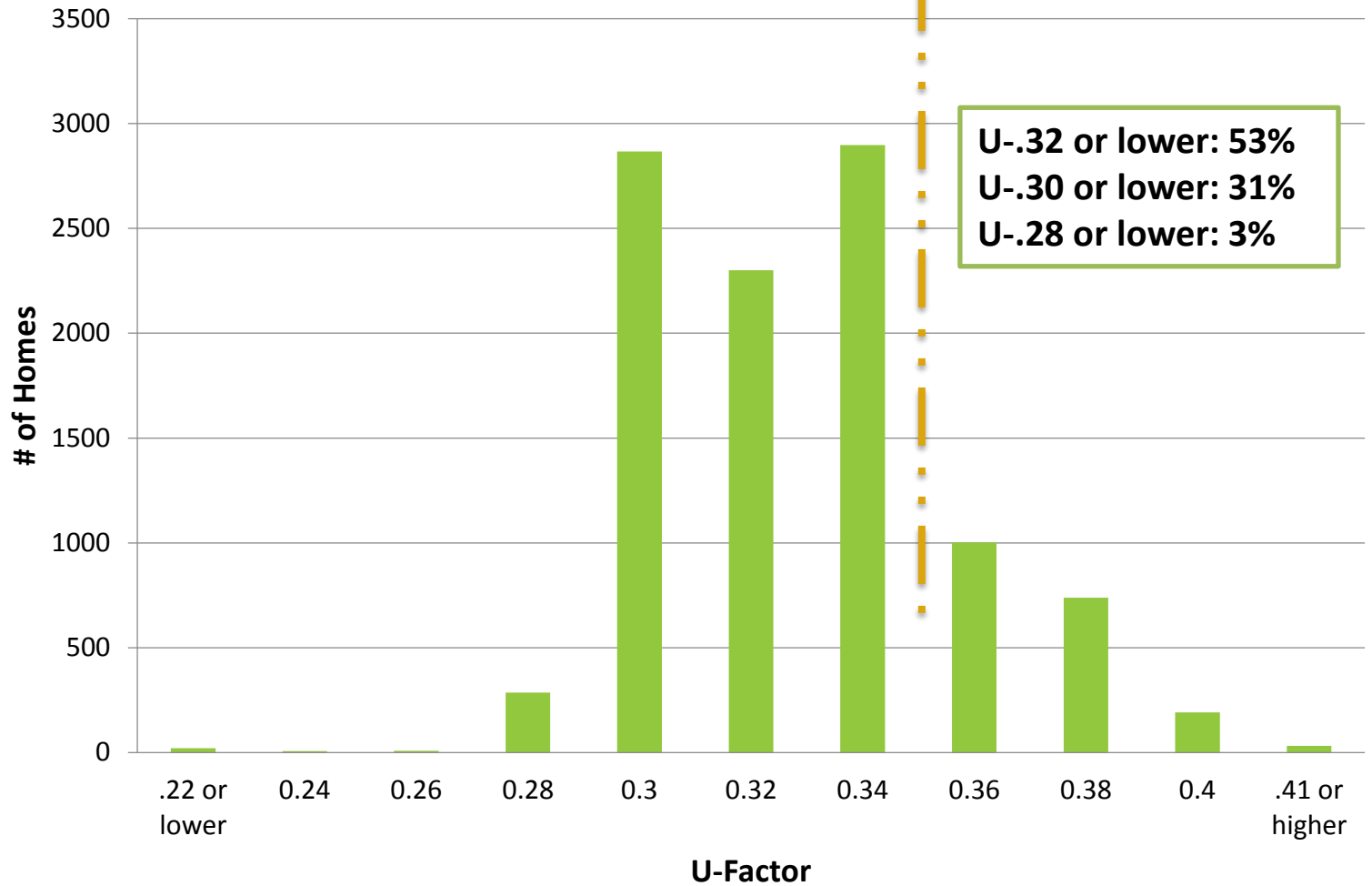
Ceiling Insulation

HERS ≤ 47



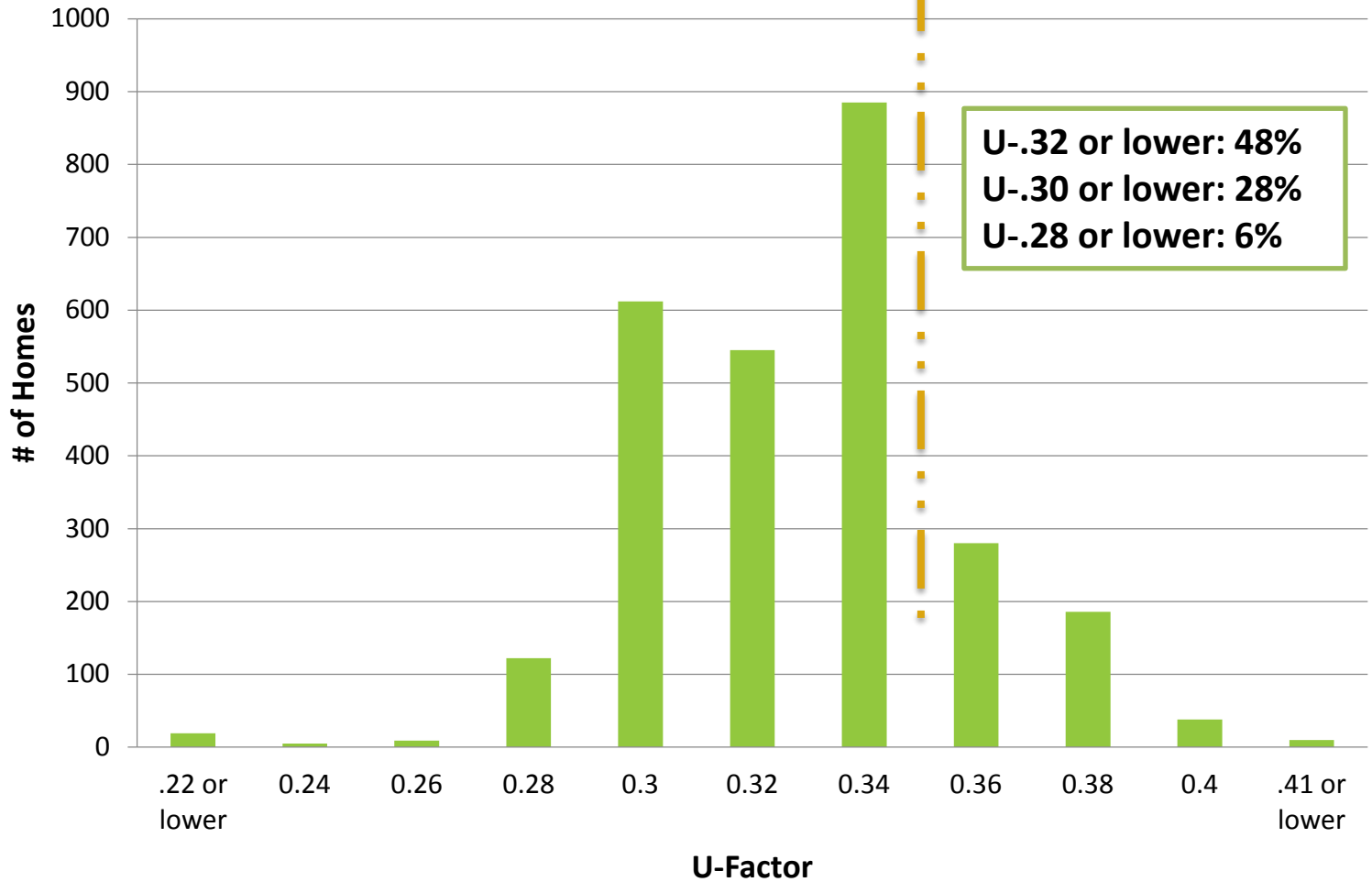
Window U-Factor

All Homes



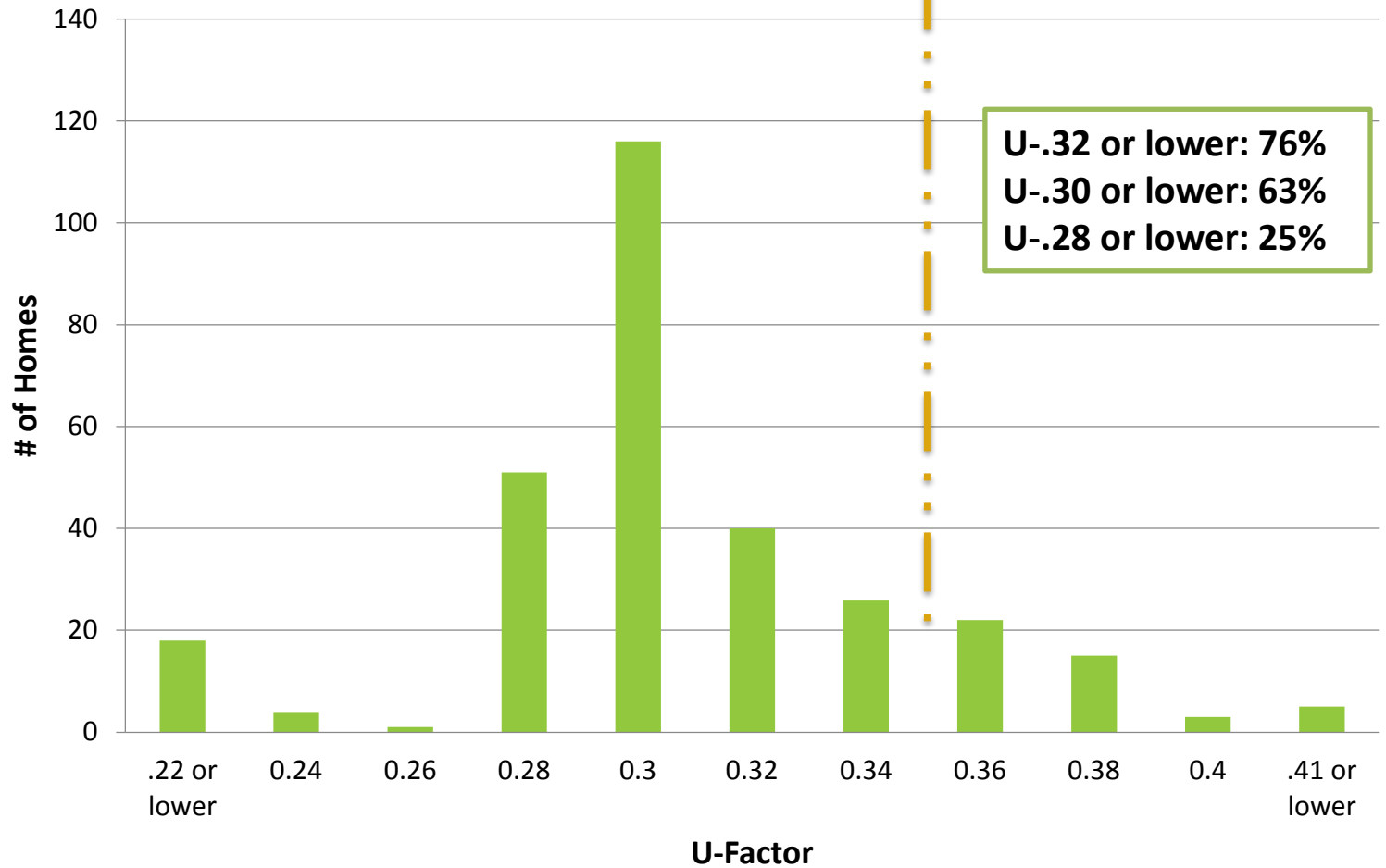
Window U-Factor

HERS ≤ 55



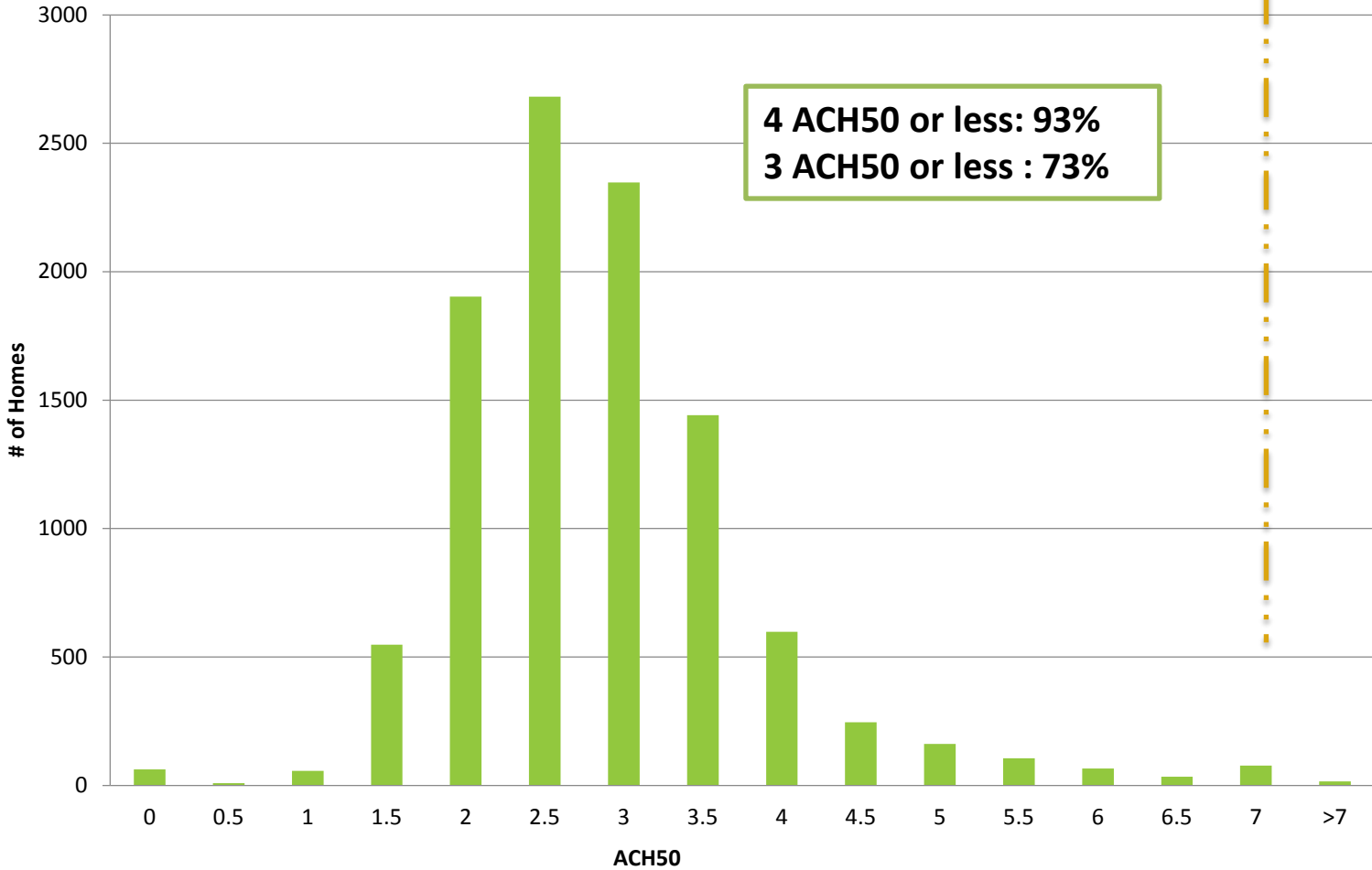
Window U-Factor

HERS ≤ 47



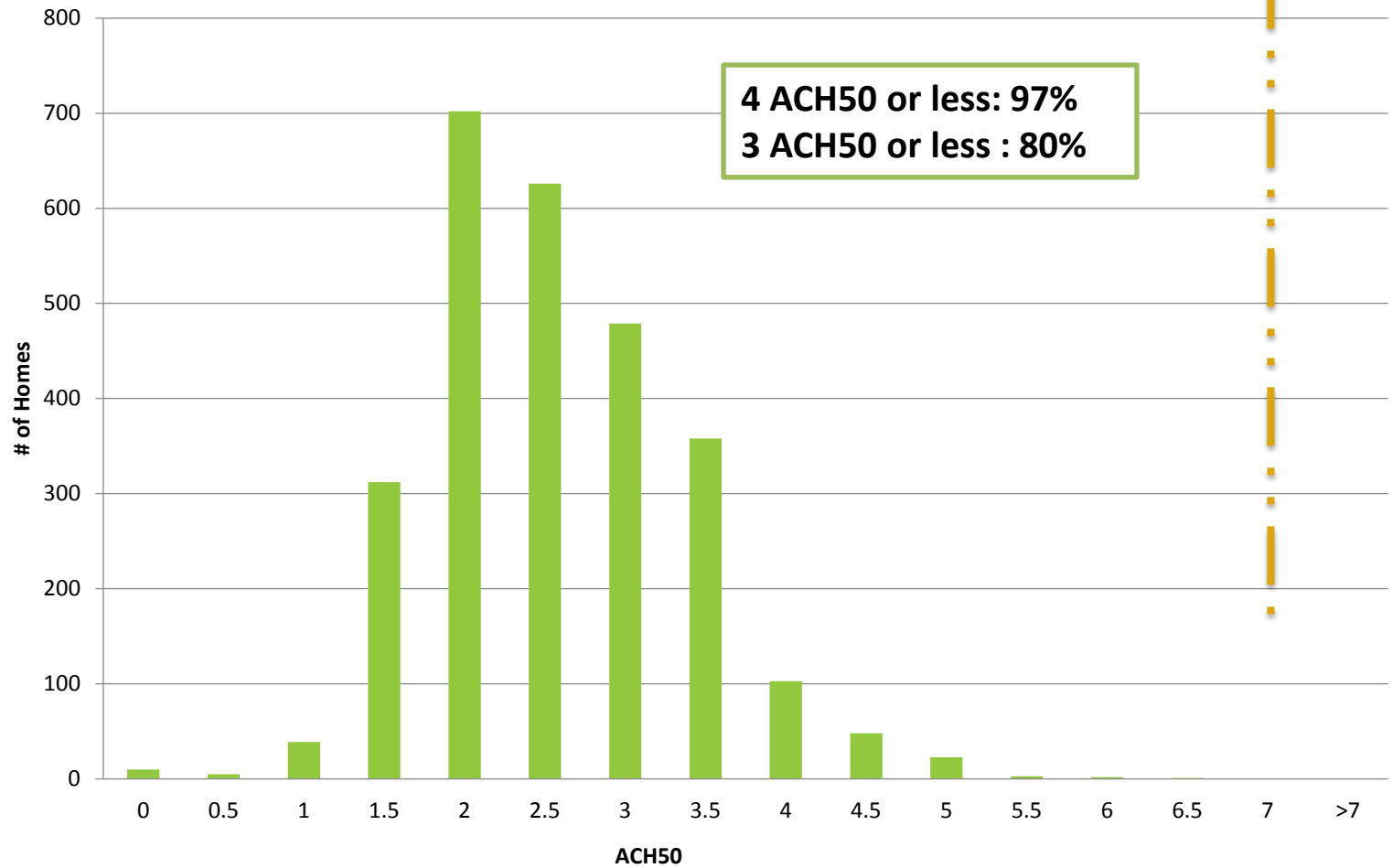
Air Leakage (ACH50)

All Homes



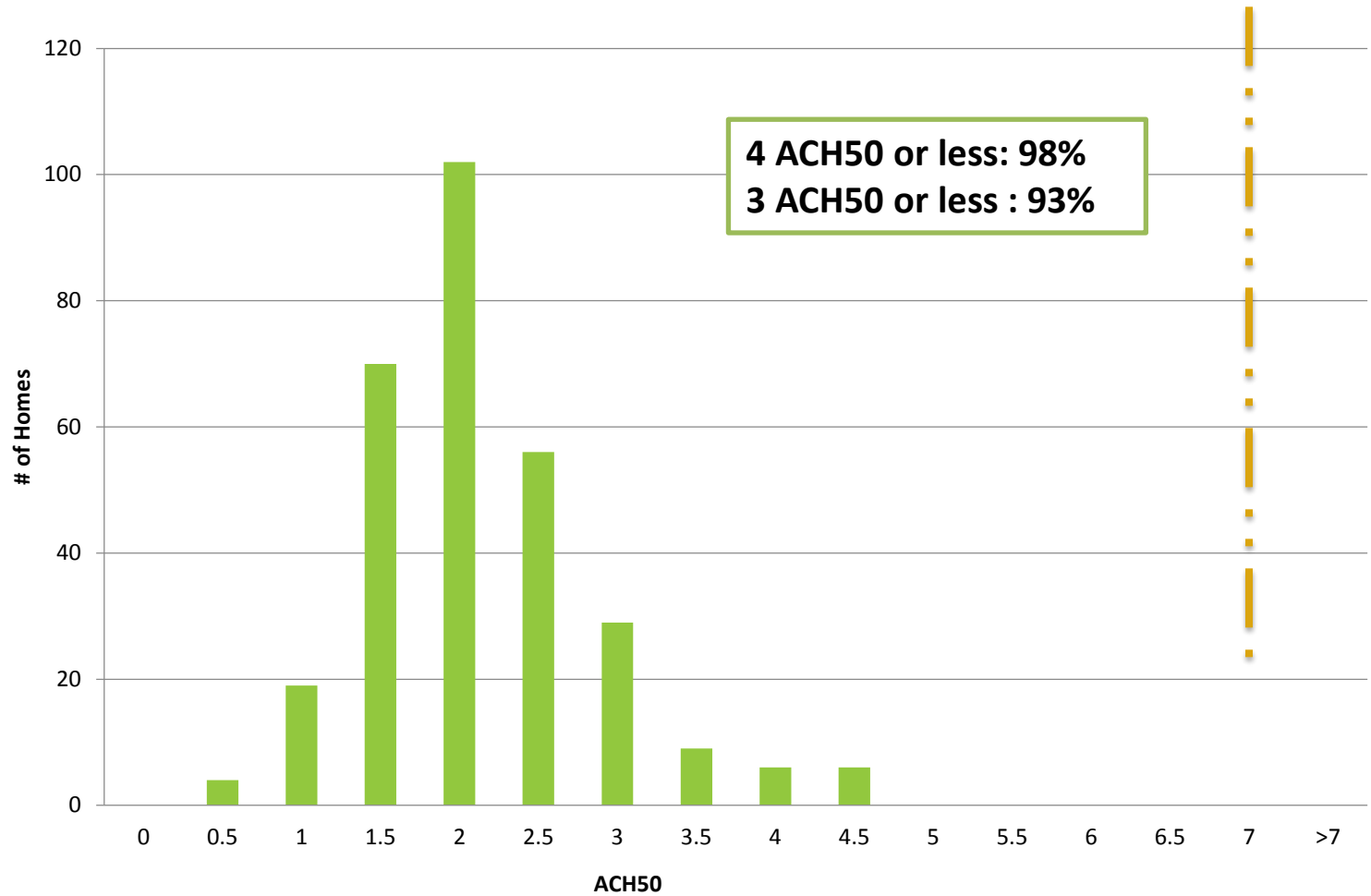
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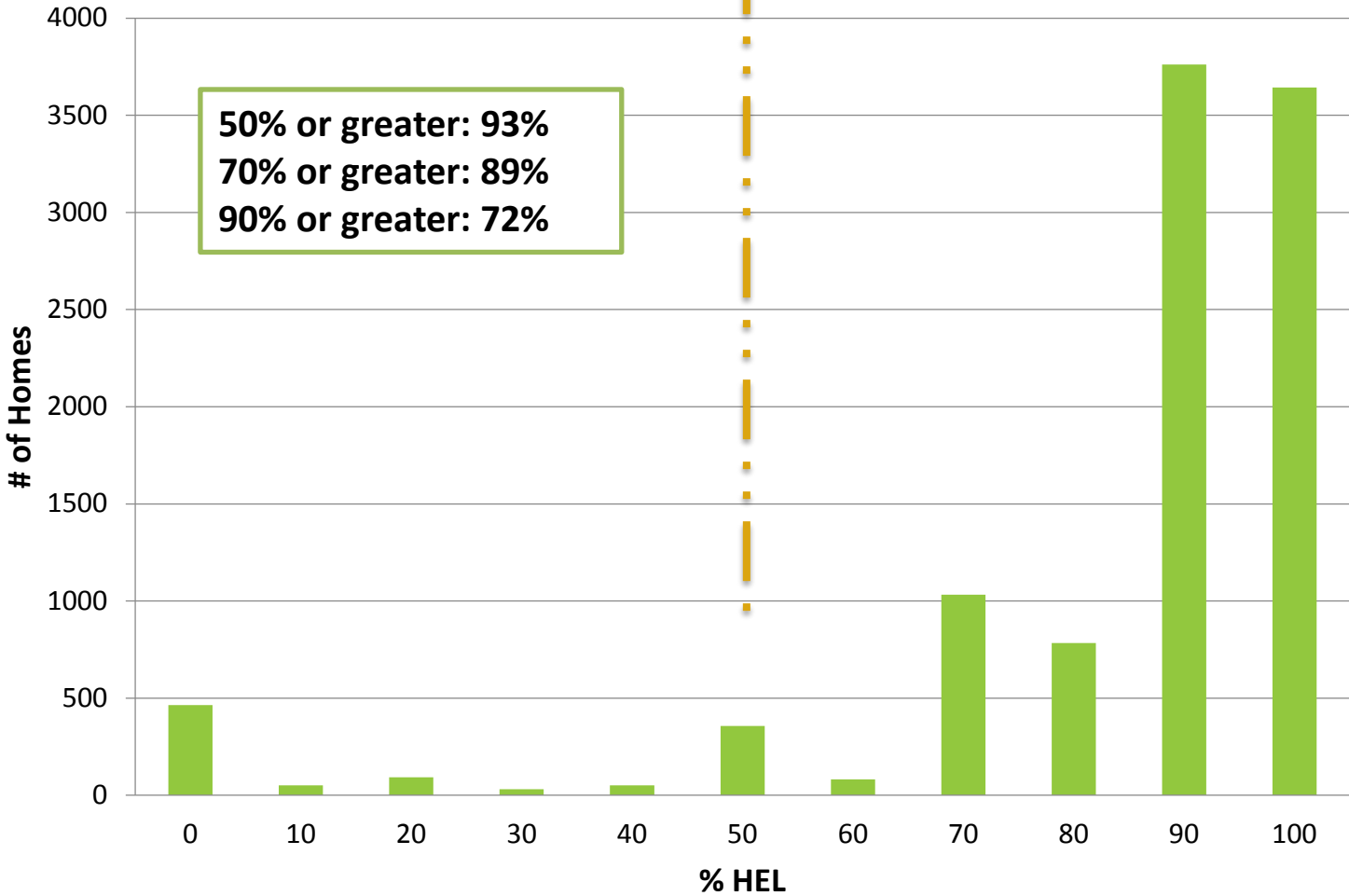
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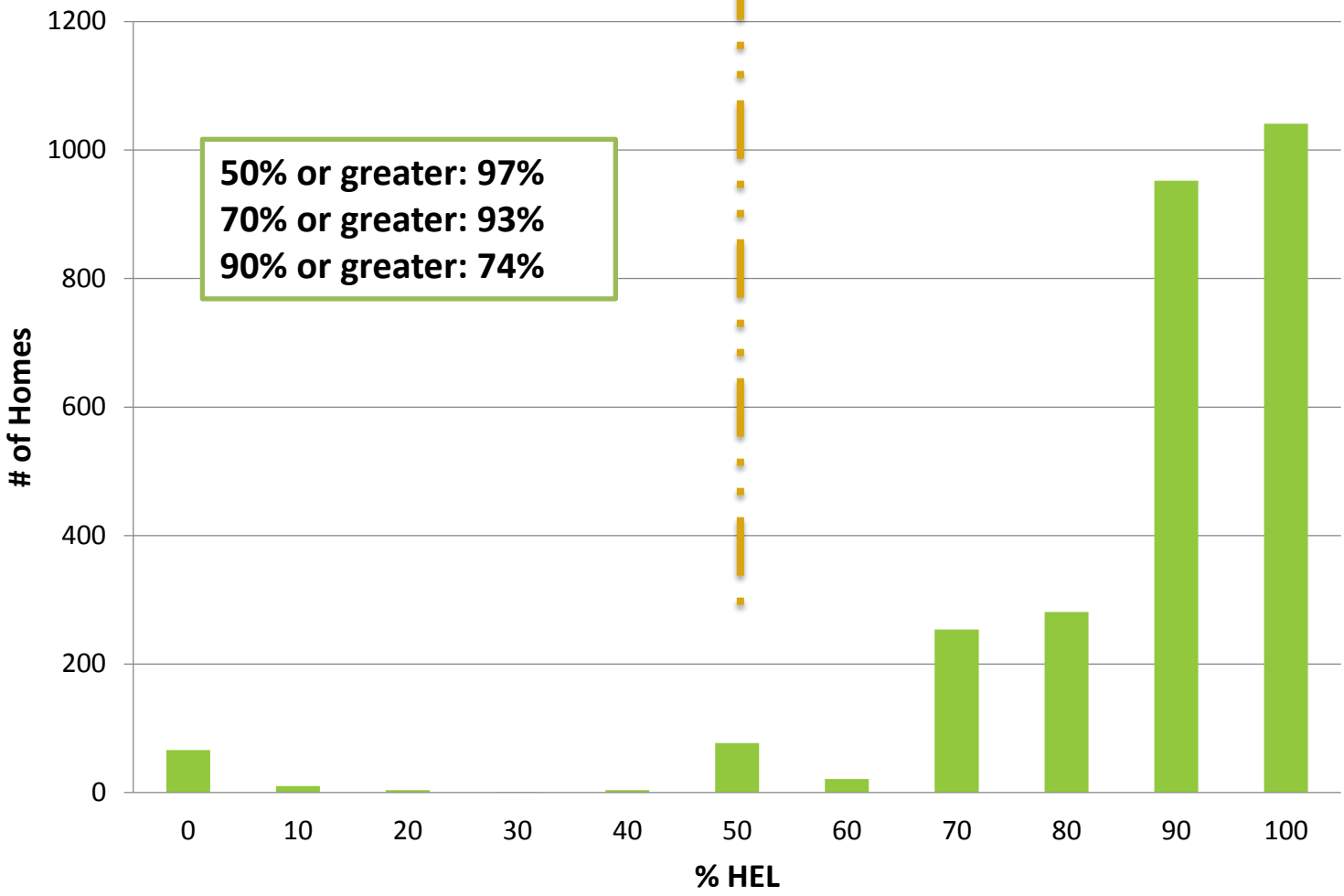
High Efficacy Lighting

All Homes



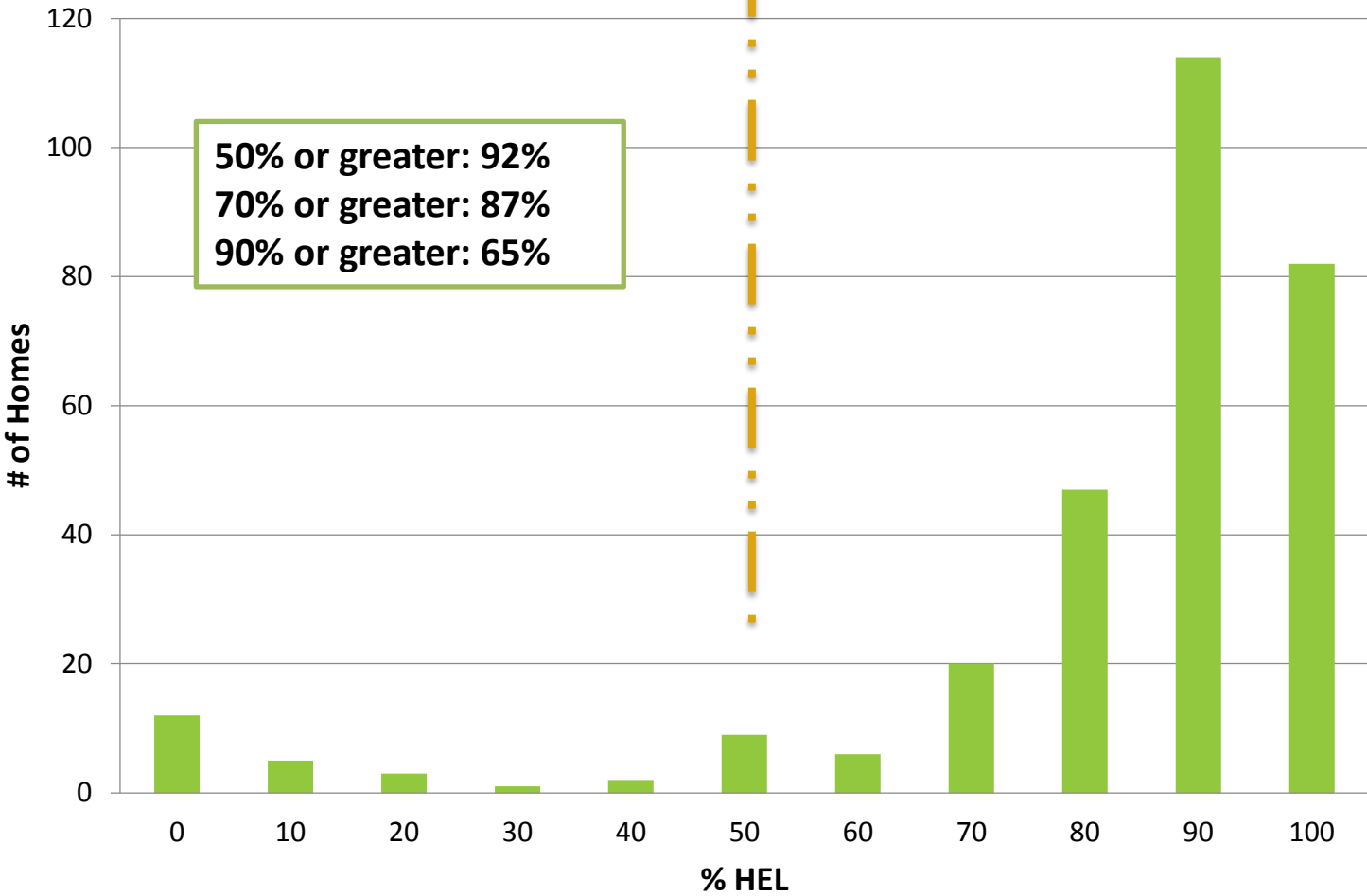
High Efficacy Lighting

HERS ≤ 55



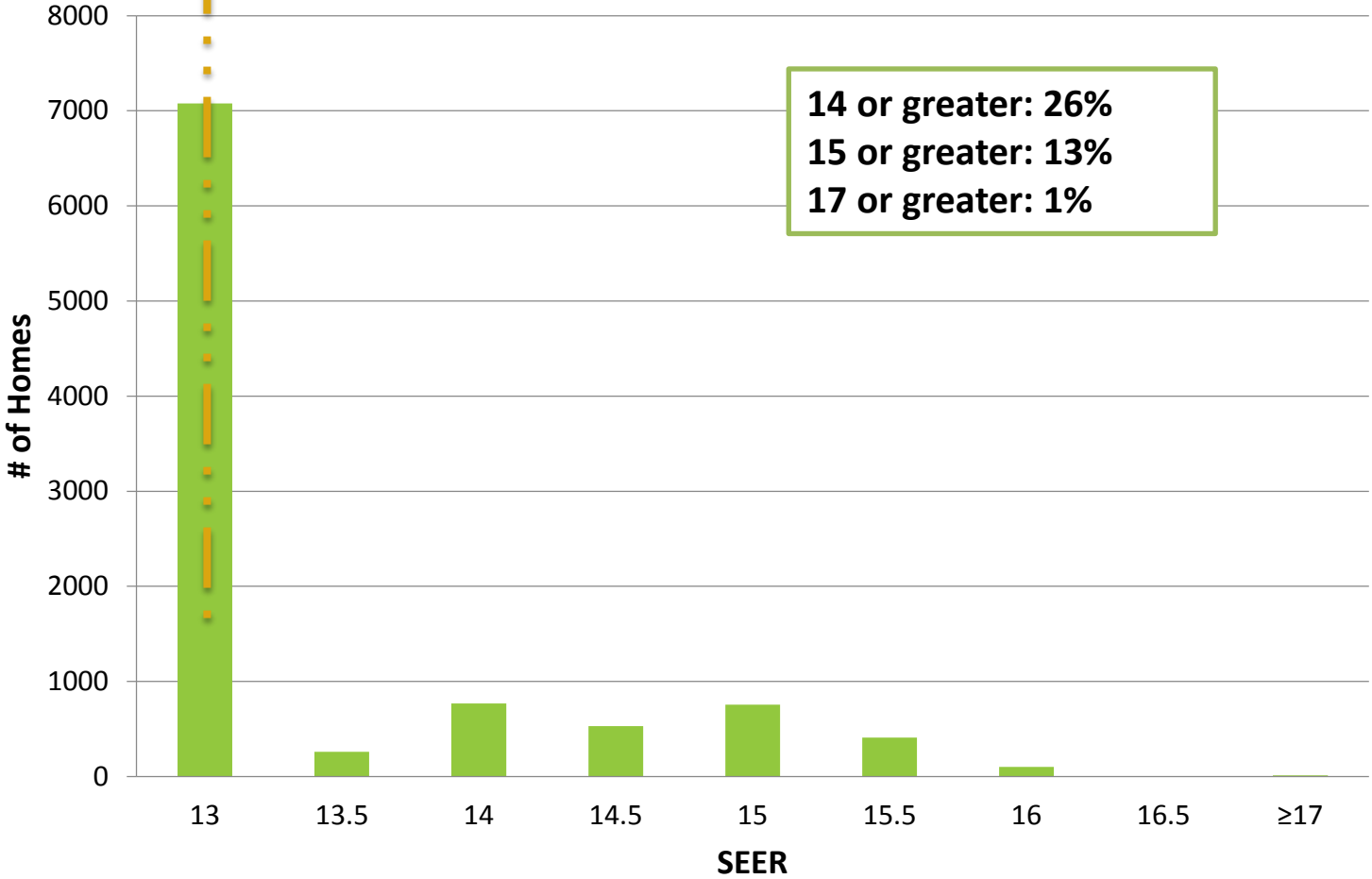
High Efficacy Lighting

HERS ≤ 47



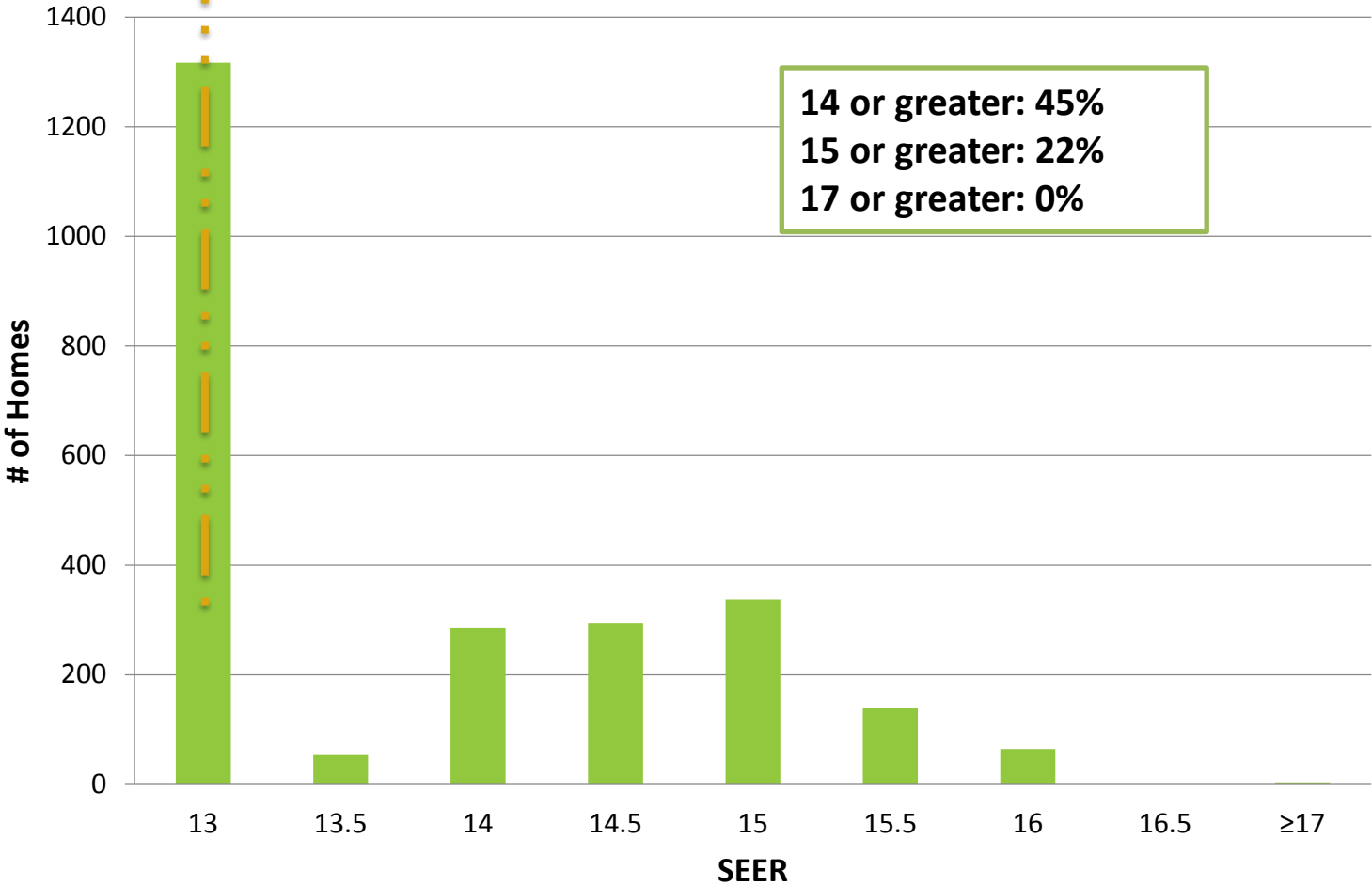
Cooling Efficiency (SEER)

All Homes



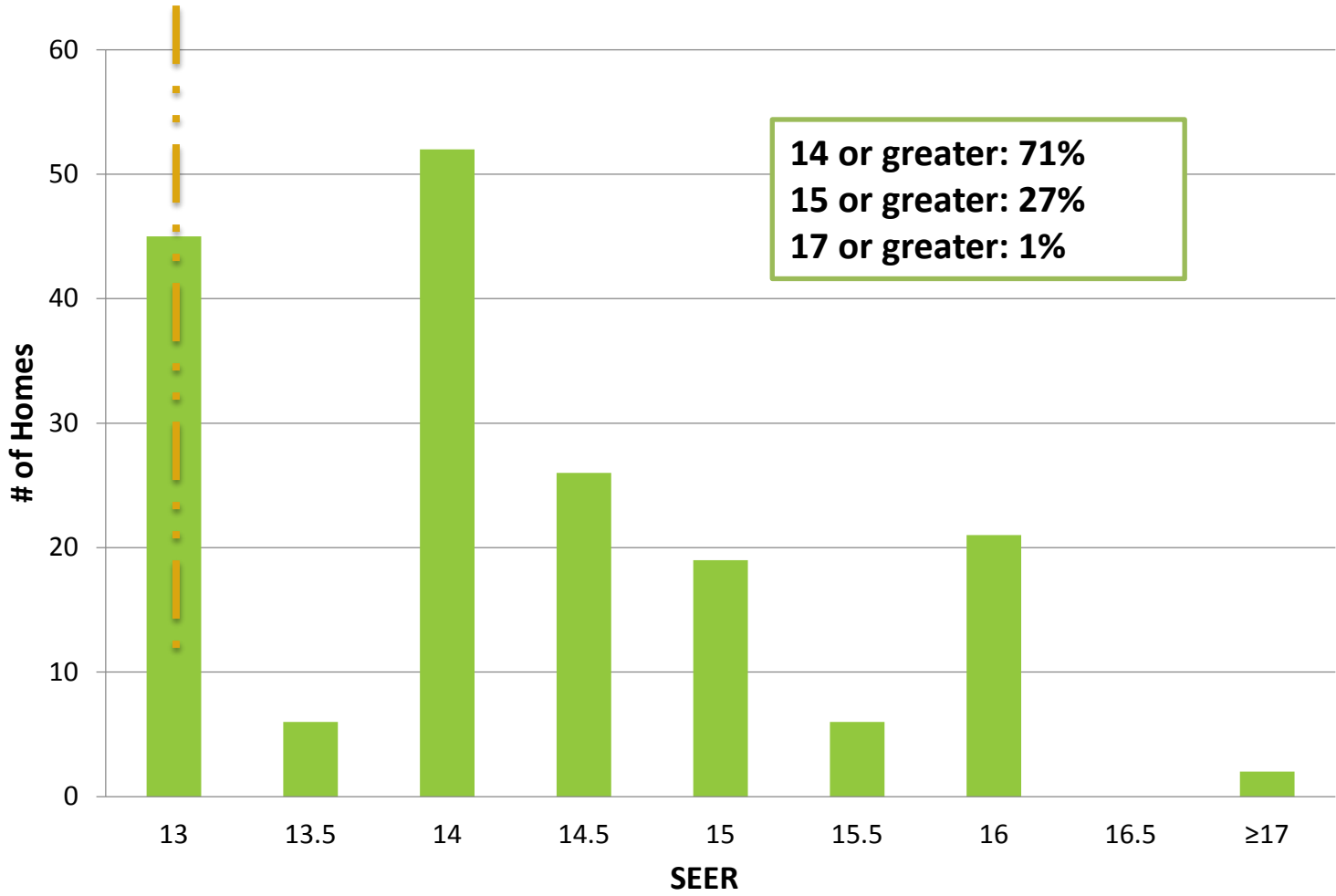
Cooling Efficiency (SEER)

HERS ≤ 55



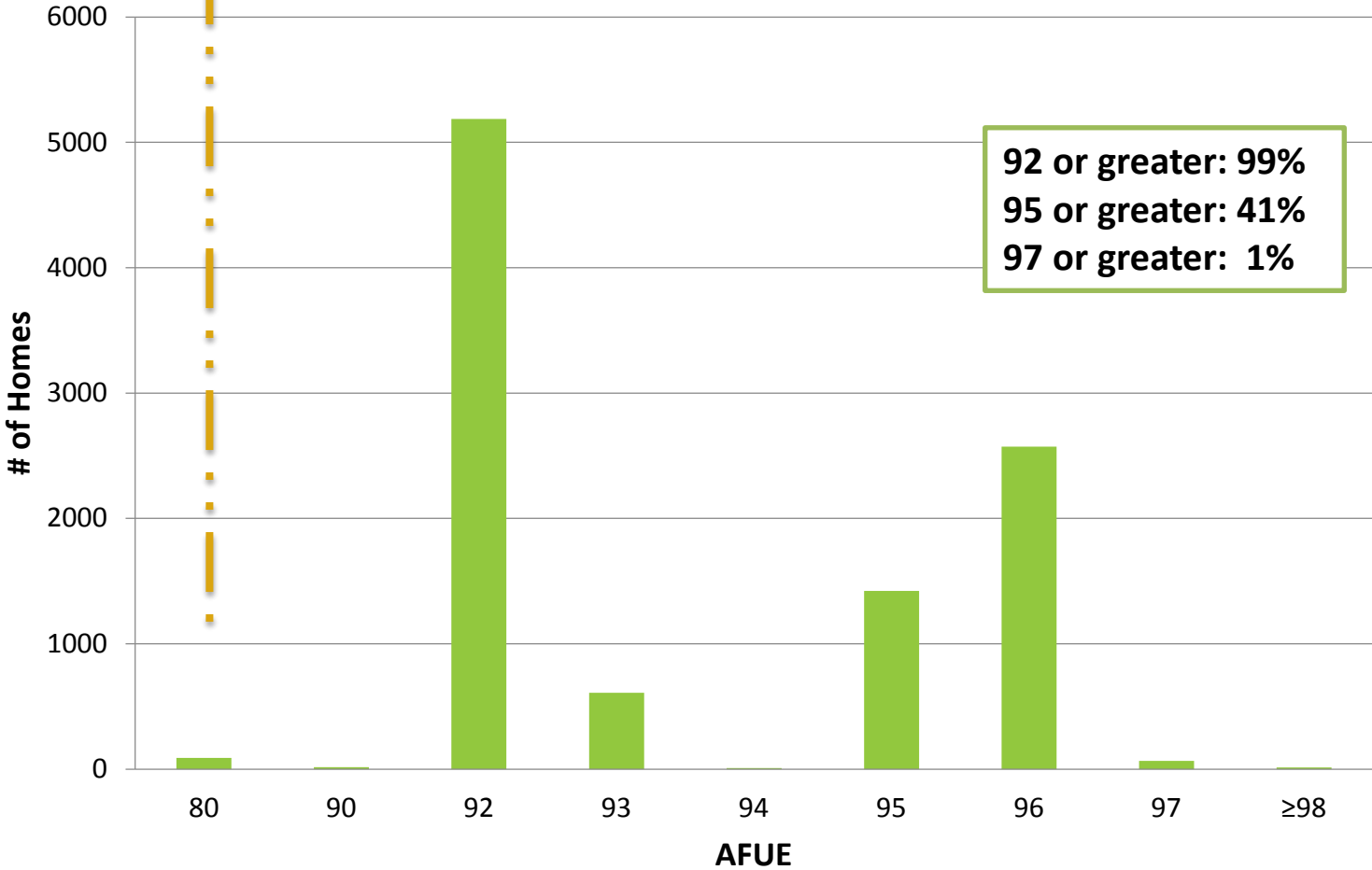
Cooling Efficiency (SEER)

HERS ≤ 47



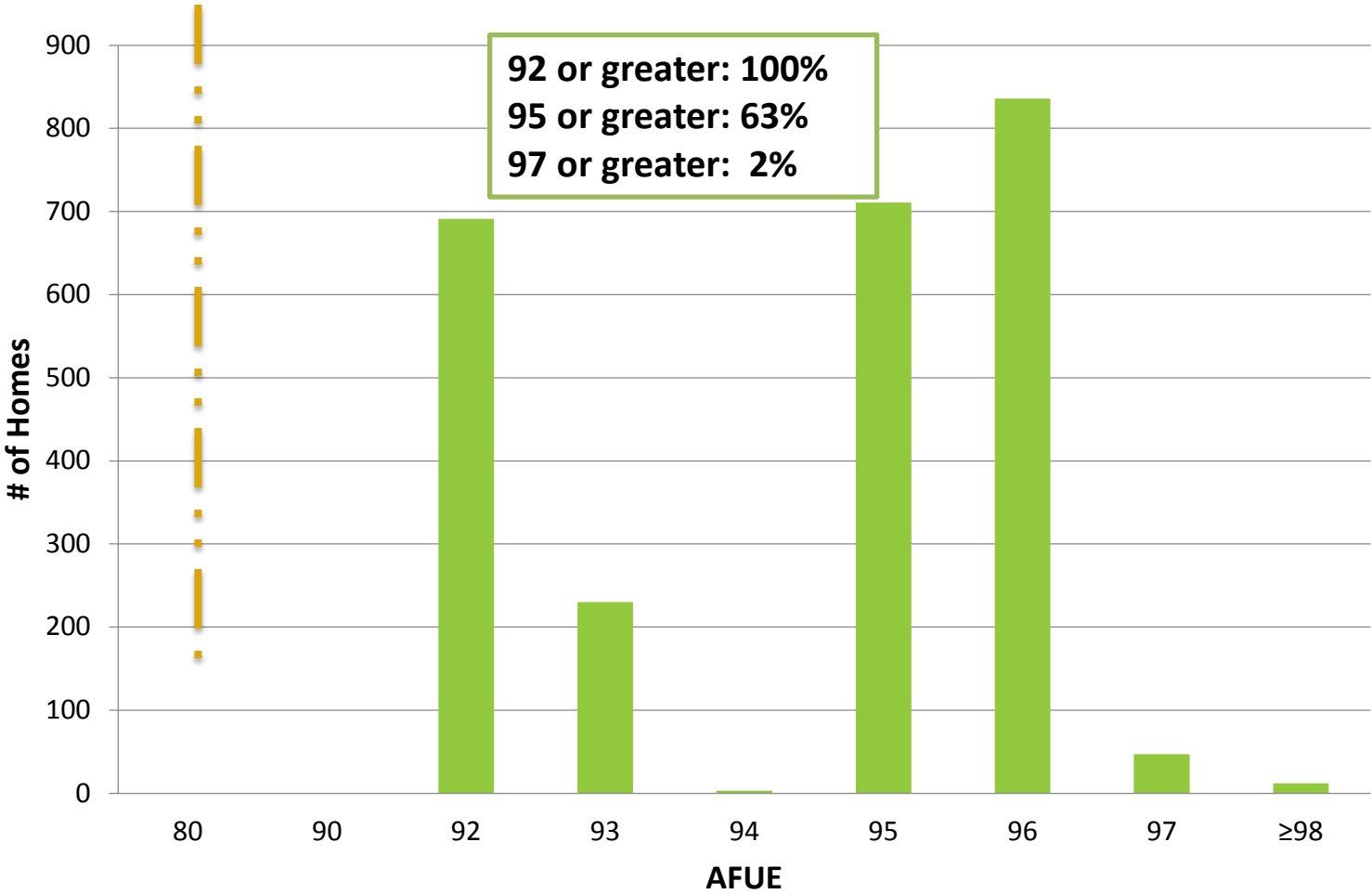
Heating Efficiency (AFUE)

All Homes



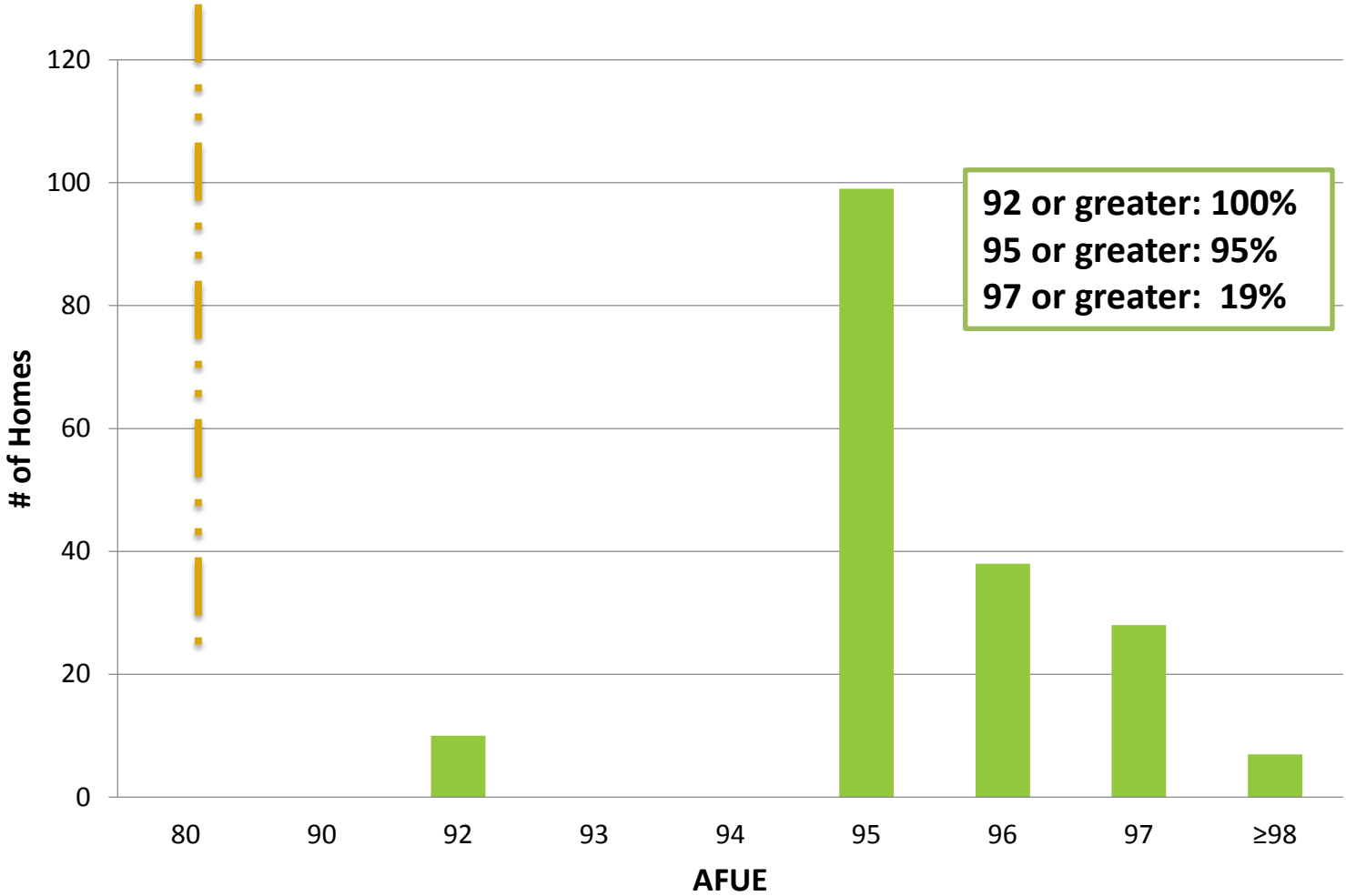
Heating Efficiency (AFUE)

HERS ≤ 55



Heating Efficiency (AFUE)

HERS ≤ 47



HERS 60

Home Components

Home	1	2	3	4	5	Avg. w/ Cont. Insul	Avg. w/ Cavity only	CZ 5 2009 IECC
Cond. Area (sq. ft.)	5659	4521	4376	3786	2572	3515	3299	
BSMT: Cont.						3	2	
BSMT: Batt	10	10	10	5	4	8	6	10/13
AGW: Cont.						2		
AGW: Batt	15	15	15	15	17	15	15.1	20
Ceiling: Blown	31	31	31	30	31	46	39	38
Window: U-Factor	.34	.36	.36	.33	.33	.29	.33	.35
HEL: %	95	100	95	95	95	49	84	50
Air Leakage	2.8	2.6	2.5	2.4	3.8	2.7	3.0	7
AC (SEER)	13	13	13	13	13	14.5	13.5	13
Furnace (AFUE)	92	92	92	92.1	93	94	93.5	80

HERS 55

Home Components

Home	1	2	3	4	5	Avg. w/ Cont. Insul	Avg. w/ Cavity only	CZ 5 2009 IECC
Cond. Area (sq. ft.)	6363	4651	4033	3486	1696	4075	4336	
BSMT: Cont.	4	5	5	8	0	2	1	
BSMT: Batt	7	4	4	6	0	8	5	10/13
AGW: Cont.				1	10	2		
AGW: Batt	13	14	14	15	14	15	16	20
Ceiling: Blown	31	31	31	33	39	40	37	38
Window: U-Factor	.36	.36	.33	.30	.30	.32	.34	.35
HEL: %	95	95	95	90	95	91	89	50
Air Leakage	1.8	2.6	2.5	2.1	3.3	2.7	2.8	7
AC (SEER)	14.5	13	13	13	14.5	13.5	13.5	13
Furnace (AFUE)	95	92	92	96.1	95	95.5	93.5	80

HERS 47

Home Components

Home	1	2	3	4	5	Avg. w/ Cont. Insul	Avg. w/ Cavity only	CZ 5 2009 IECC
Cond. Area (sq. ft.)	6046	5683	4105	3278	2416	5220	4865	
BSMT: Cont.	0		4	7		0	4	
BSMT: Batt	11	8	7	5	21	9	7	10/13
AGW: Cont.						3		
AGW: Batt	16	23	21	21	19	18	19	20
Ceiling: Blown	36	39	39	39	50	41	42	38
Window: U-Factor	.32	.28	.32	.31	.35	.33	.32	.35
HEL: %	75	100	100	100	100	85.5	84	50
Air Leakage	2.8	1.6	1.5	1.5	2.9	2.2	2.2	7
AC (SEER)	13	14.5	13	14	14.5	14.5	14	13
Furnace (AFUE)	96	95.5	95.5	95.5	92.1	95.5	95	80

Insulation Quality

Percentage of Installations Rated with a Value of 1

Above Grade Wall Insulation Installations: 10,354

**Number of Above Grade Wall Insulation Installations
Rated as Grade 1: 10,128**

**Percentage of Above Grade Wall Insulation
Installations Rated as Grade 1: 98%**

Contact Information

Isaac Elnecave
Senior Policy Manager
312-784-7253
ielnecave@mwalliance.org

Ian Blanding
Senior Building Policy Associate
312-784-7269
iblanding@mwalliance.org

