



Who's Buying High Performance/Passive House/ Net Zero?

Peter Troast, Founder & CEO

NAPHC16 Conference

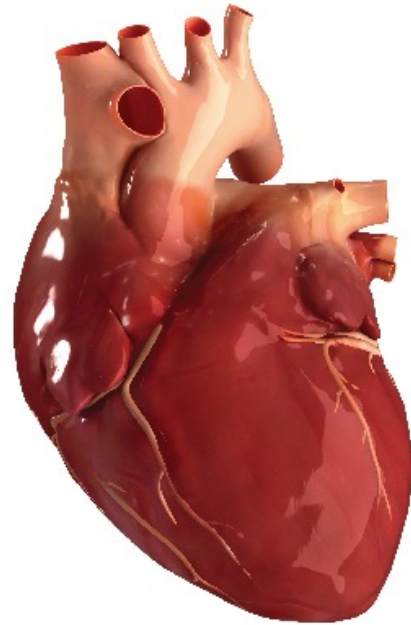
Philadelphia

September 23, 2016

What We'll Discuss

- 1 HIGH PERFORMANCE BUILDING IN CONTEXT**
- 2 DATA ON MARKET SIZE**
- 3 WHO'S BUYING HOME PERFORMANCE/HIGH PERFORMANCE?**
- 4 SOME DEMOGRAPHIC DATA (SUCH AS IT IS)**
- 5 IMPLICATIONS/DISCUSSION**

I



data.

Data on



High Performance Home Buyers

The Data Challenge

- **Little valid data on buyers**
- **Passive House, so far, is niche/elite**
- **Self serving junk data from NAHB, Realtors, etc.**
- **Old studies—very different energy prices**
- **Best data is regional. Valid nationally?**



LIES

DAMNED LIES

STATISTICS

High Performance Home Buyer Demographics

Who is buying high performance new homes/retrofits?

Research

[Residential Real Estate Sustainability Virginia Tech](#)

[Analysis of the Net Zero Home Industry IEDC](#)

[Inbound Marketing for Home Builders and Remodelers Builder Funnel](#)

[Guild Quality Green Home Buyers Study](#)

[NAHB Green MF and Single Family Homes](#)

[Residential ZNE Market Characterization, PGE](#)

[MaGrann Associates Study](#)

[As more Millennials enter the housing market, they are sharing what features are most likely to affect their home buying decisions. An NAHB survey revealed that Energy Star certifications are a priority for these home buyers. In fact, 84 percent of this group is willing to pay 2-3 percent more for an energy-efficient home as long as they can see a return on their power bills.](#)

[From 2015 National Association of Realtors® Home Buyer and Seller Generational Trends Study:](#) Younger buyers tend to buy older homes, and are more likely to buy previously owned homes. Most often they do so because the home is a better price and better overall

peter@energycircle.com



GOOGLE TRENDS:
PUTTING HIGH
PERFORMANCE BUILDINGS
IN CONTEXT

Learning from Google Search

my house needs|



my house needs **a makeover**

my house needs **insulation**

my house needs **a new roof**

my house needs **help**

my house needs **major repairs**

my house needs **a deep clean**

my house needs **a facelift**

my house needs **a new foundation**

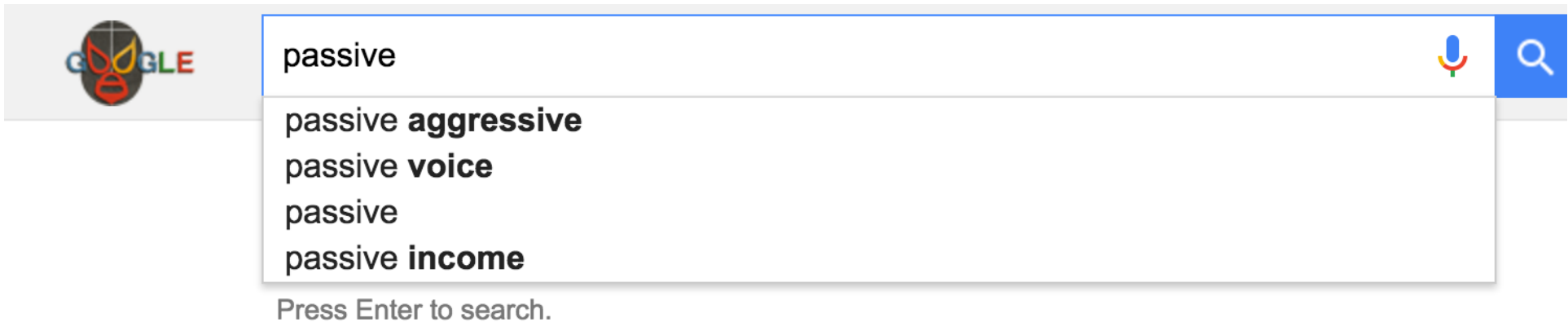
my house needs **a**

my house needs **a lot of repairs**

Google Search

I'm Feeling Lucky

Learning from Google Search

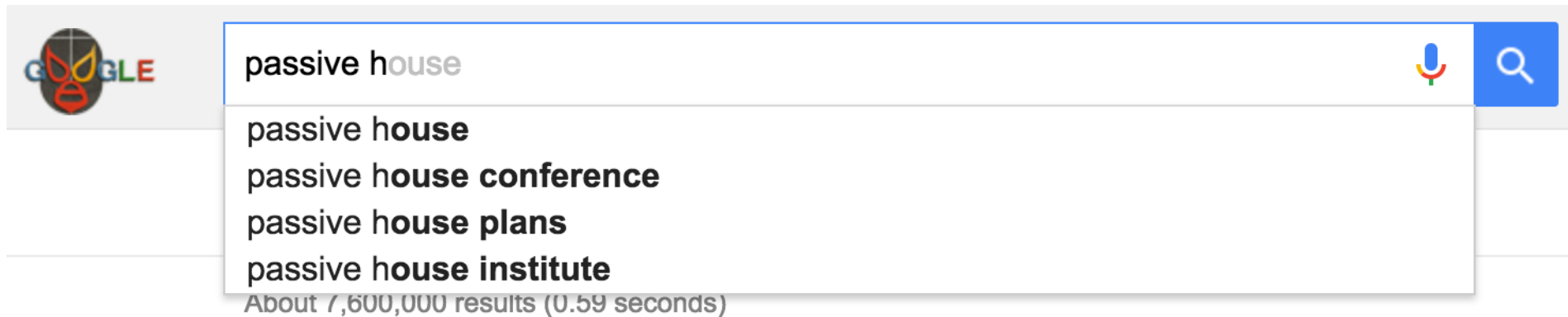


A screenshot of a Google search interface. The search bar contains the text "passive". To the left of the search bar is the Google logo, which is stylized with a red and yellow mask-like pattern. To the right of the search bar are a microphone icon and a blue search button with a magnifying glass icon. Below the search bar, a dropdown menu displays four suggestions: "passive aggressive", "passive voice", "passive", and "passive income". Below the suggestions, the text "Press Enter to search." is visible.

passive

- passive **aggressive**
- passive **voice**
- passive
- passive **income**

Press Enter to search.



A screenshot of a Google search interface. The search bar contains the text "passive house". To the left of the search bar is the Google logo, which is stylized with a red and yellow mask-like pattern. To the right of the search bar are a microphone icon and a blue search button with a magnifying glass icon. Below the search bar, a dropdown menu displays four suggestions: "passive house", "passive house conference", "passive house plans", and "passive house institute". Below the suggestions, the text "About 7,600,000 results (0.59 seconds)" is visible.

passive house

- passive **house**
- passive **house conference**
- passive **house plans**
- passive **house institute**

About 7,600,000 results (0.59 seconds)

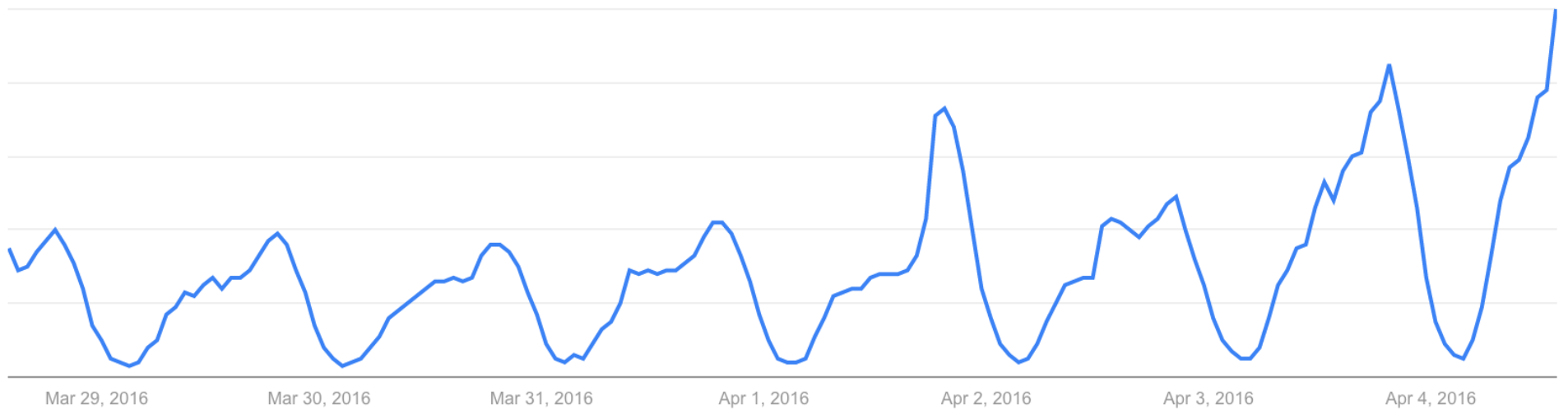
**Google Trends shows how often
a particular search-term is
entered relative to the total
search-volume across a region.**

red sox
Search term

+ Add term

Interest over time ? GMT-5

News headlines ? Forecast ?

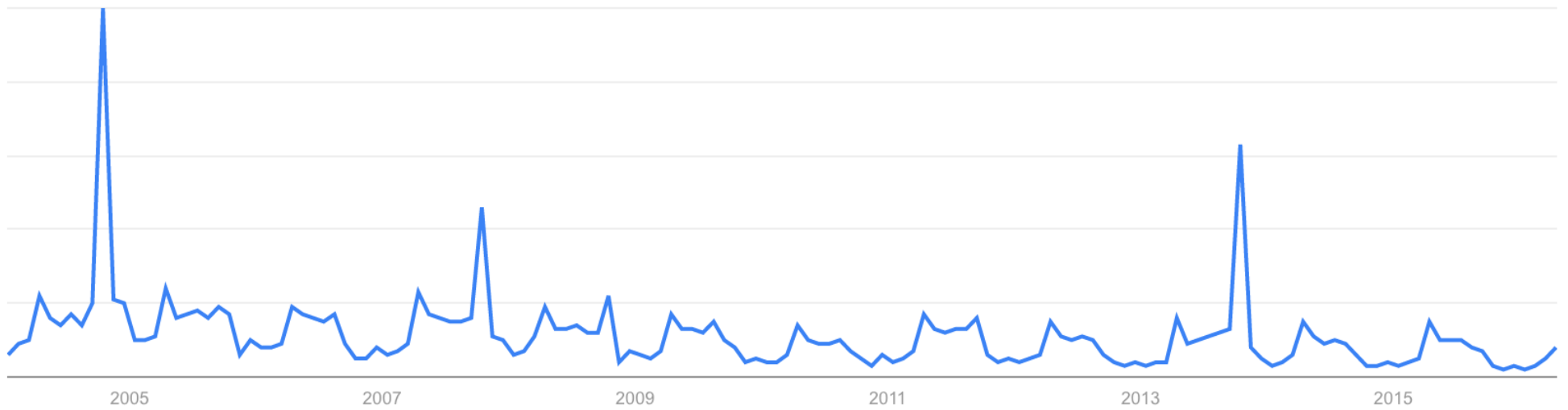


red sox
Search term

+ Add term

Interest over time ?

News headlines ? Forecast ?



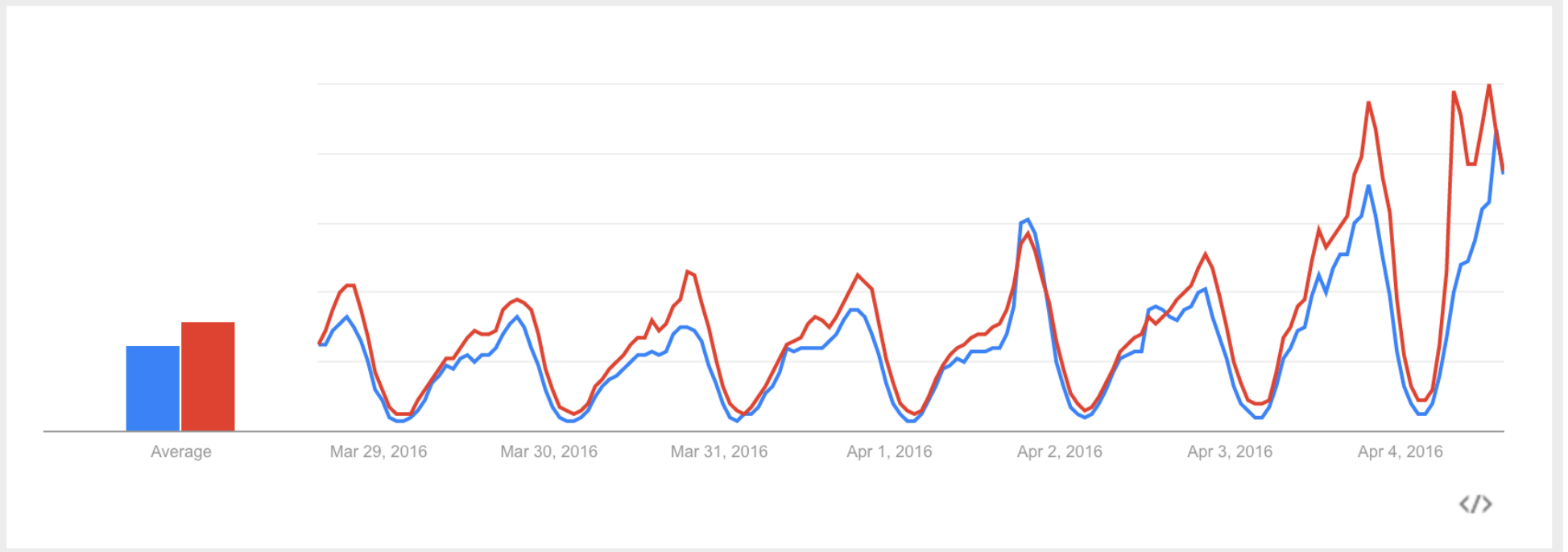
red sox
Search term

yankees
Search term

+ Add term

Interest over time ? GMT-5

News headlines ? Forecast ?



Green Building

● green building
Search term

+ Compare

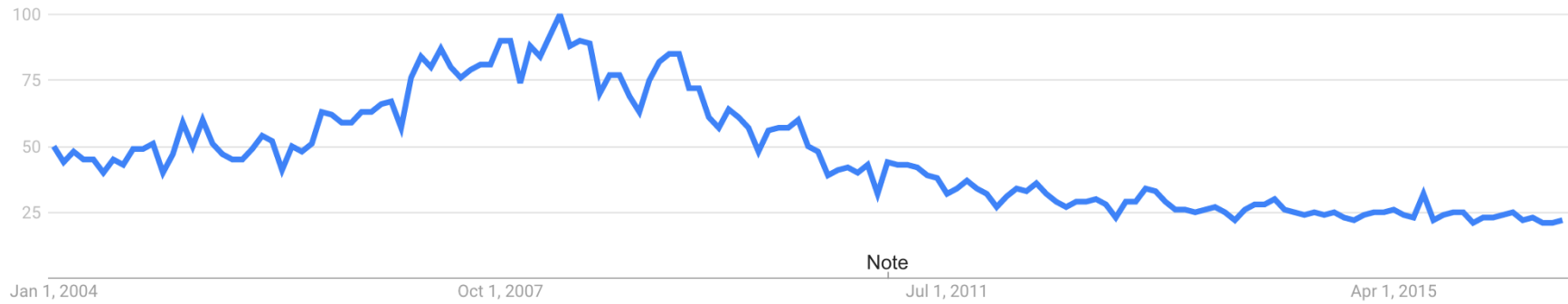
United States ▾

2004 - present ▾

All categories ▾

Web Search ▾

Interest over time ?



Note

Energy Star Homes

● Energy Star Homes

Search term

+ Compare

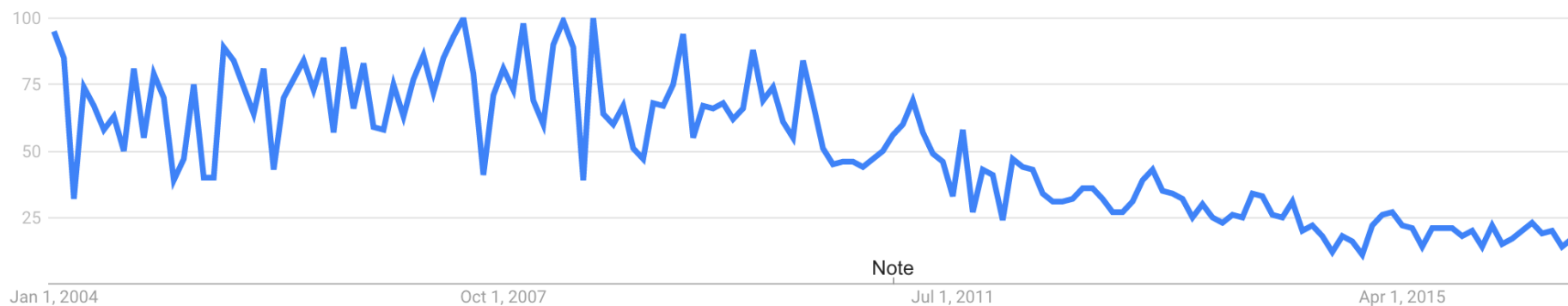
United States ▼

2004 - present ▼

All categories ▼

Web Search ▼

Interest over time ?



Energy Efficiency

● energy efficiency
Search term



+ Compare

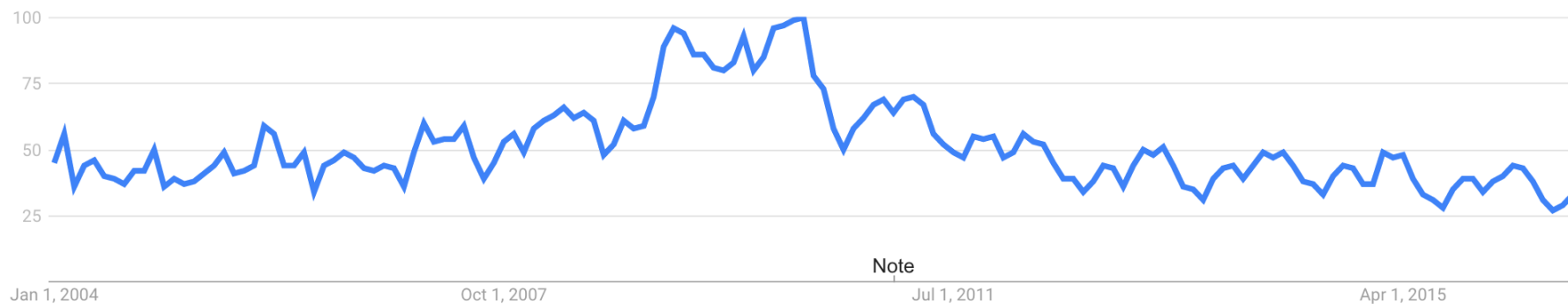
United States ▾

2004 - present ▾

All categories ▾

Web Search ▾

Interest over time ?



Note

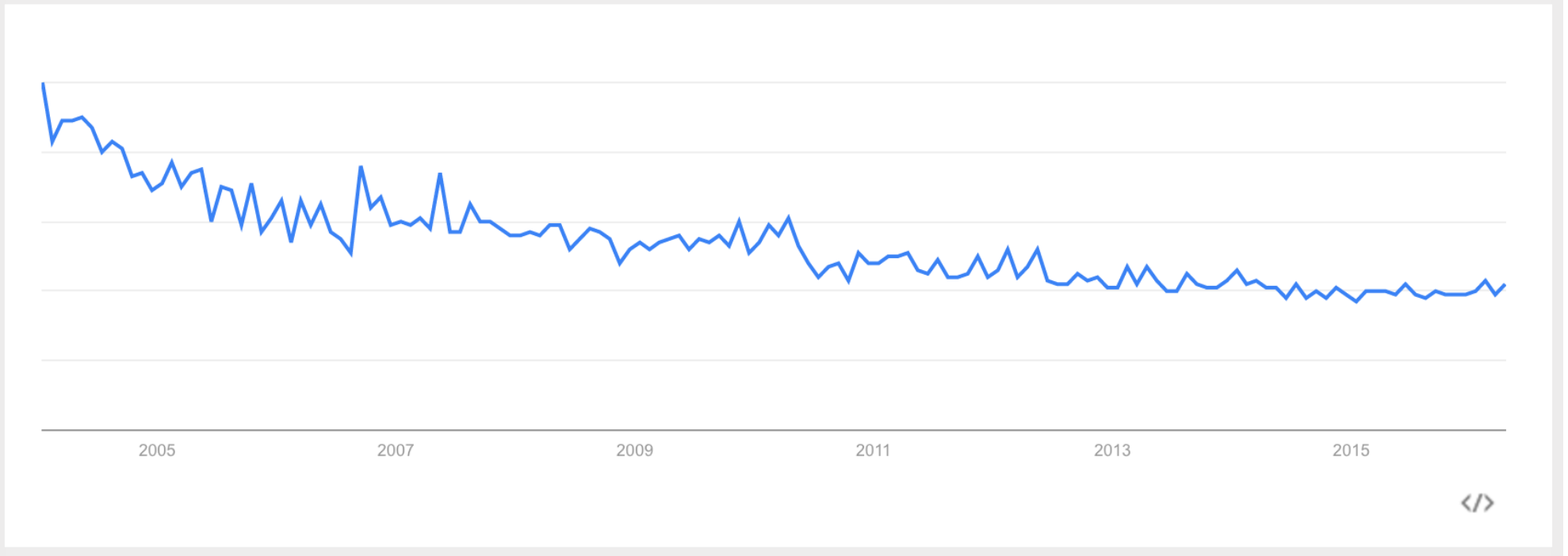
Home Performance

home performance
Search term

+ Add term

Interest over time ?

News headlines ? Forecast ?



Passive House

● Passive house
Topic

+ Compare

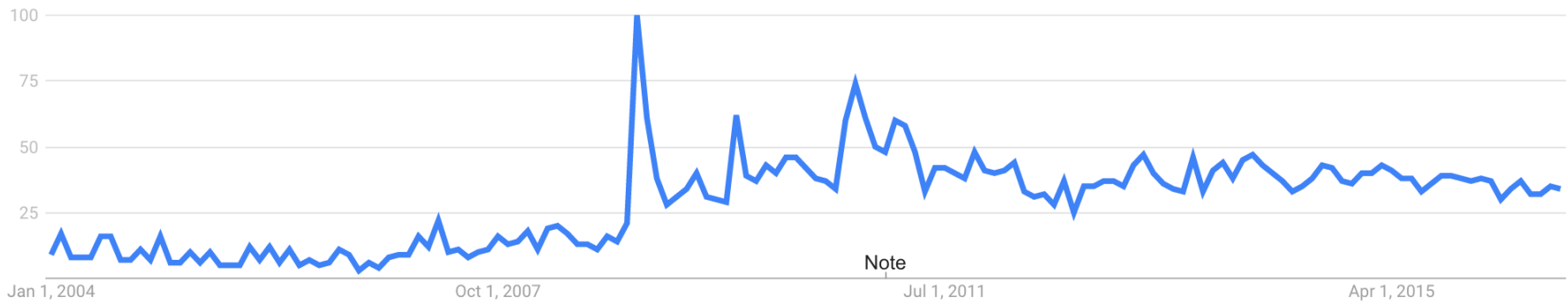
United States ▼

2004 - present ▼

All categories ▼

Web Search ▼

Interest over time ?



Net Zero/Zero-Energy Building

● Zero-energy building
Topic



+ Compare

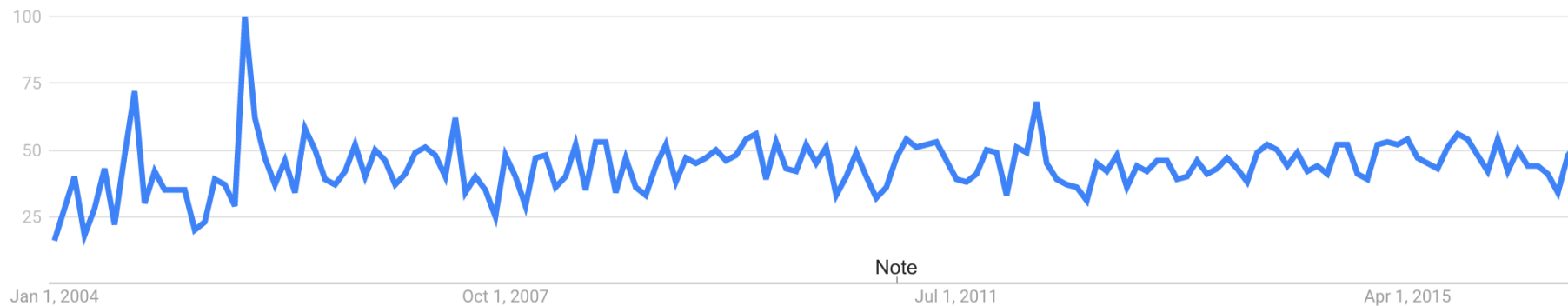
United States ▼

2004 - present ▼

All categories ▼

Web Search ▼

Interest over time ?



Net Zero vs Passive House (topics)

● Passive house
Topic

● Zero-energy building
Topic

+ Add comparison

United States ▼

2004 - present ▼

All categories ▼

Web Search ▼

Interest over time ?



Energy Star Homes vs Passive House

● Energy Star Homes
Search term

● passive house
Search term

+ Add comparison

United States ▼

2004 - present ▼

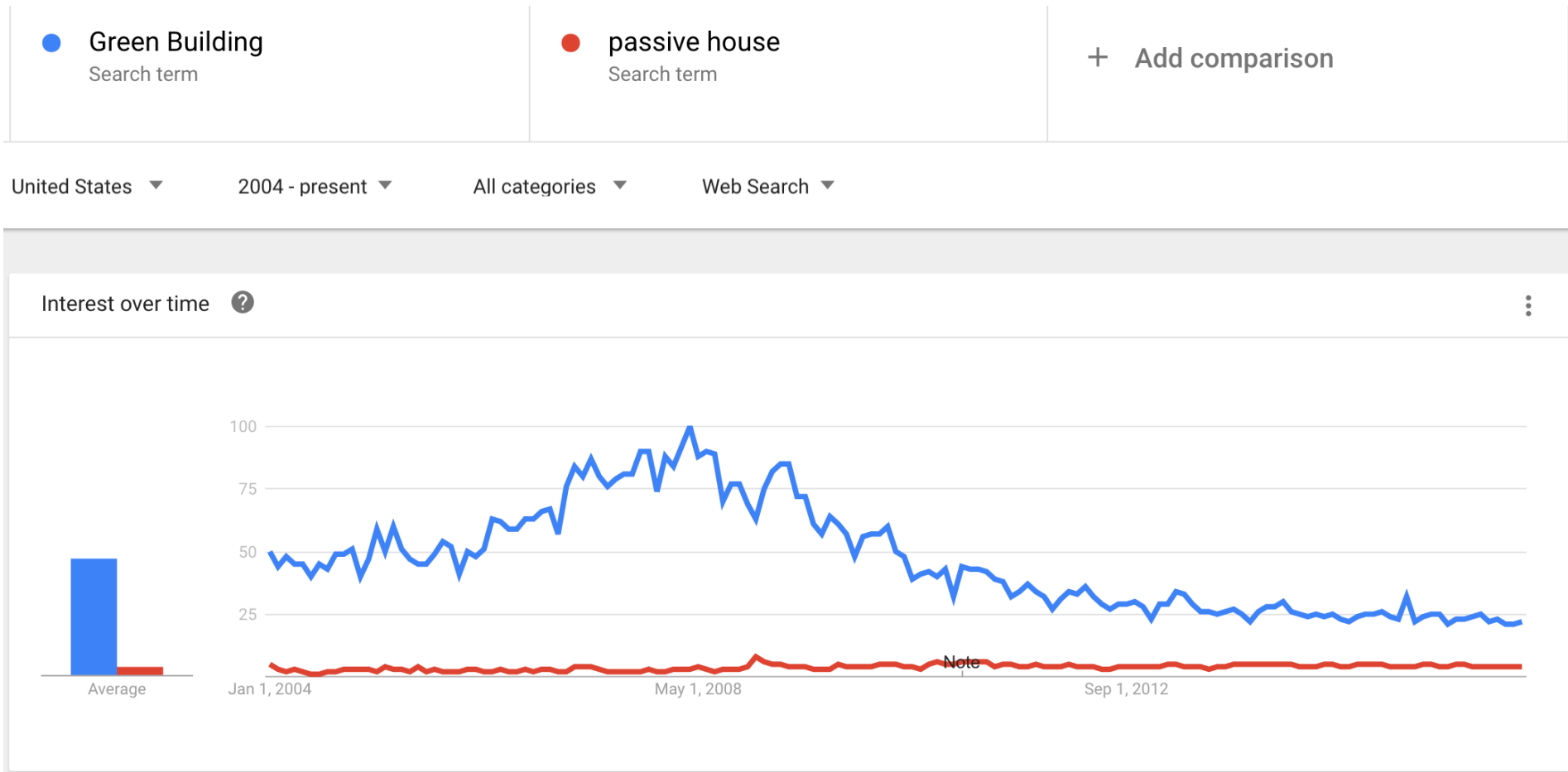
All categories ▼

Web Search ▼

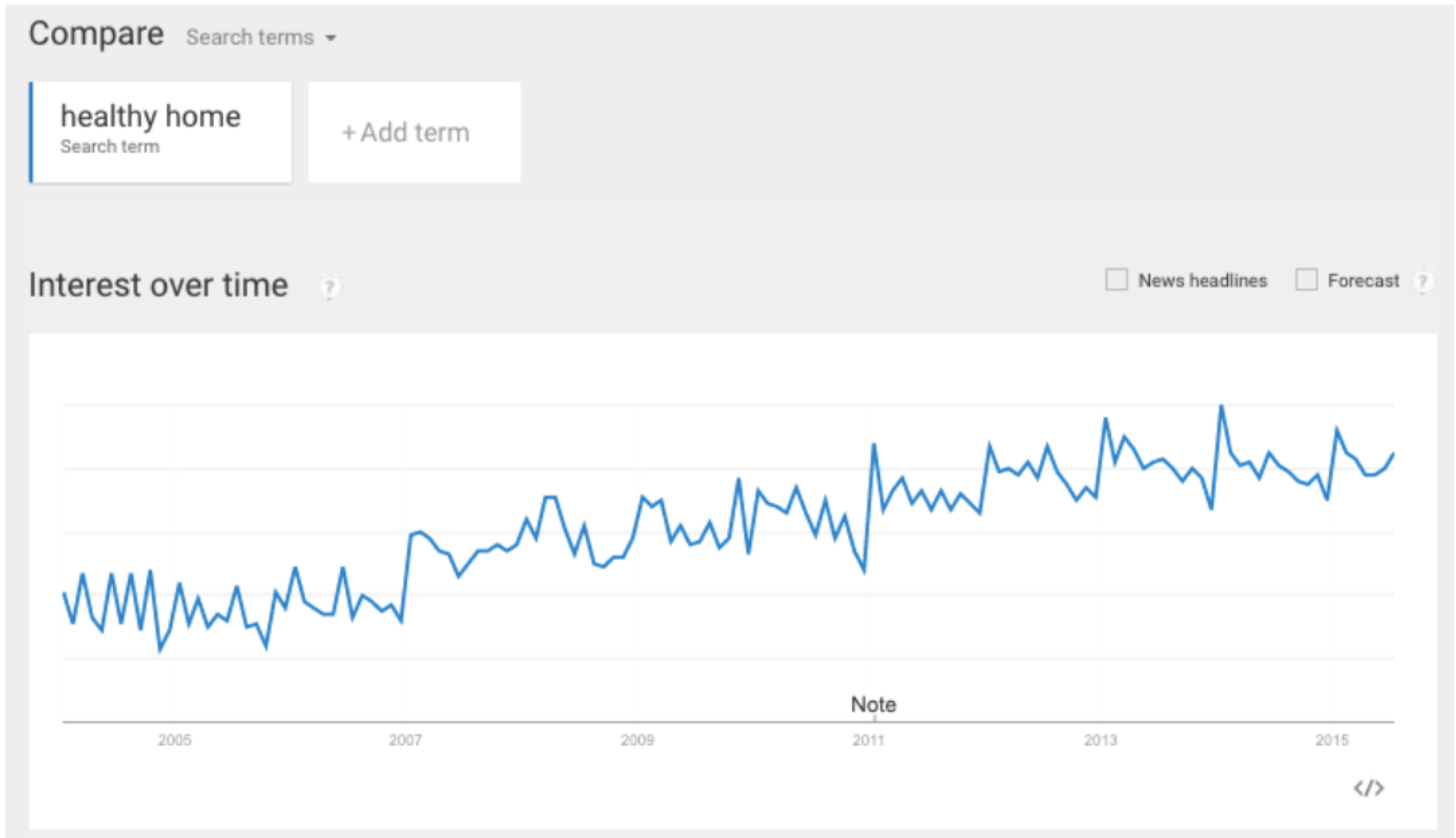
Interest over time ?



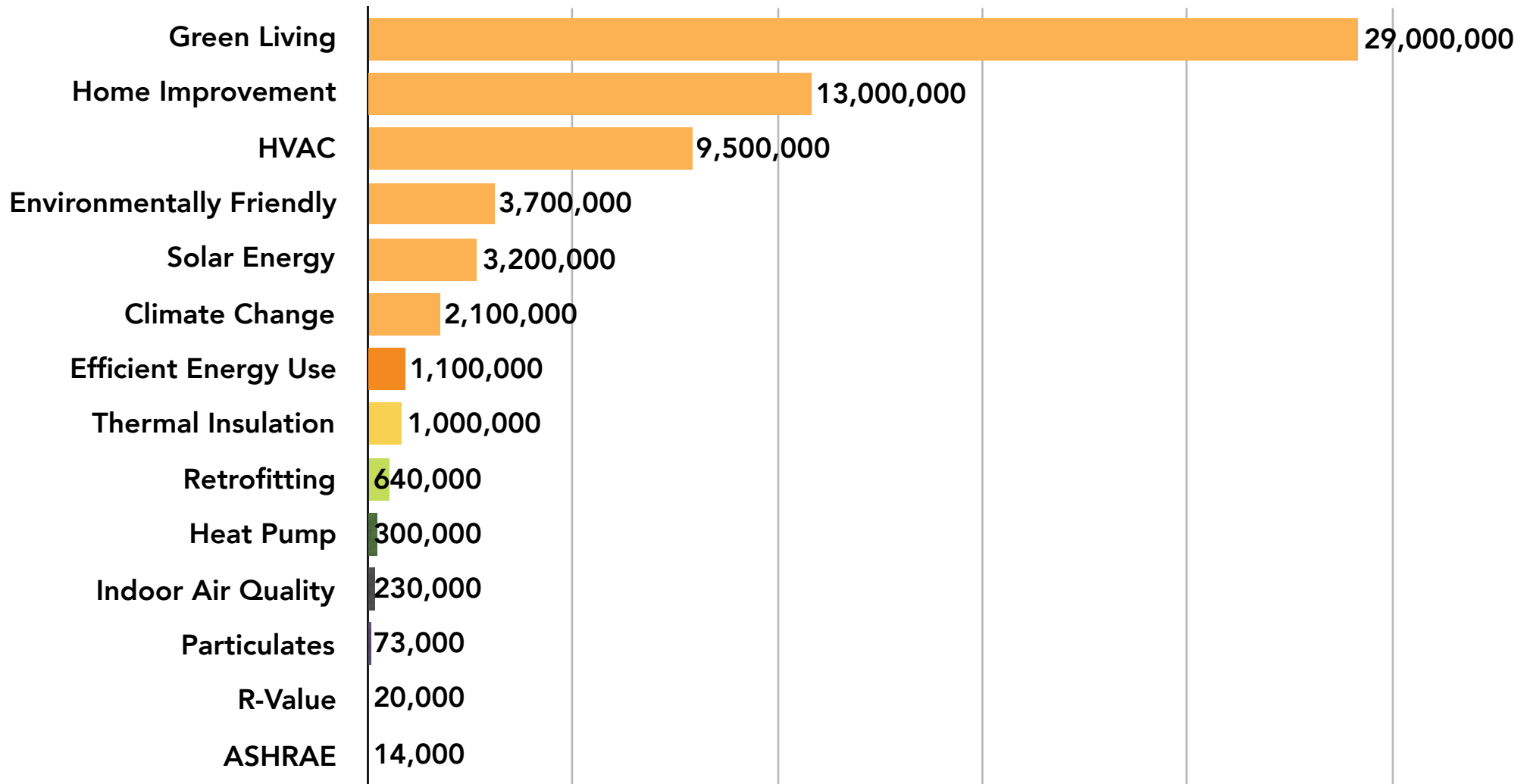
But...It's All Relative



“skate to where the puck is going to be”



Facebook “Interests” Volume



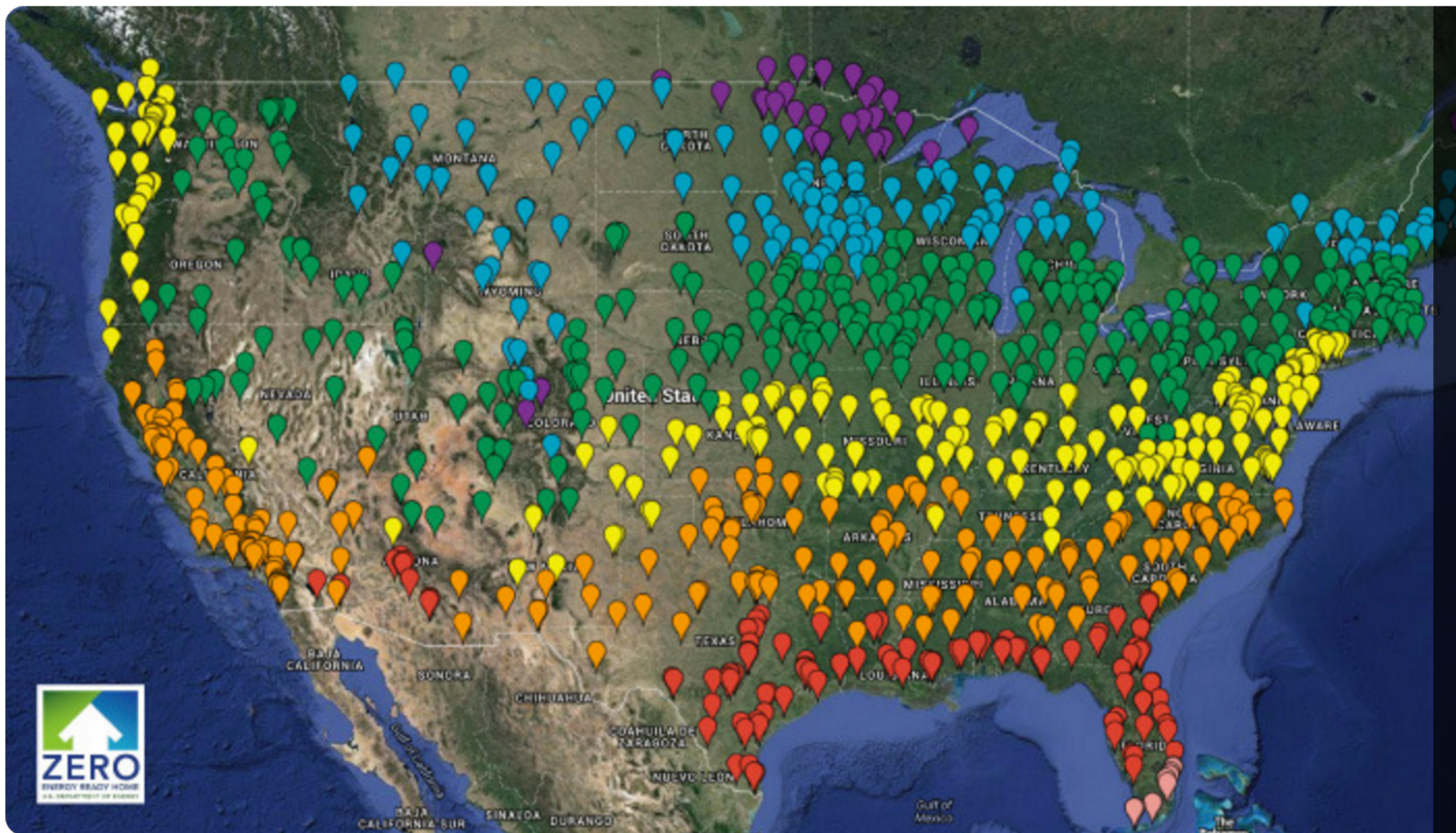
Data from Facebook Interests, US, April 2016



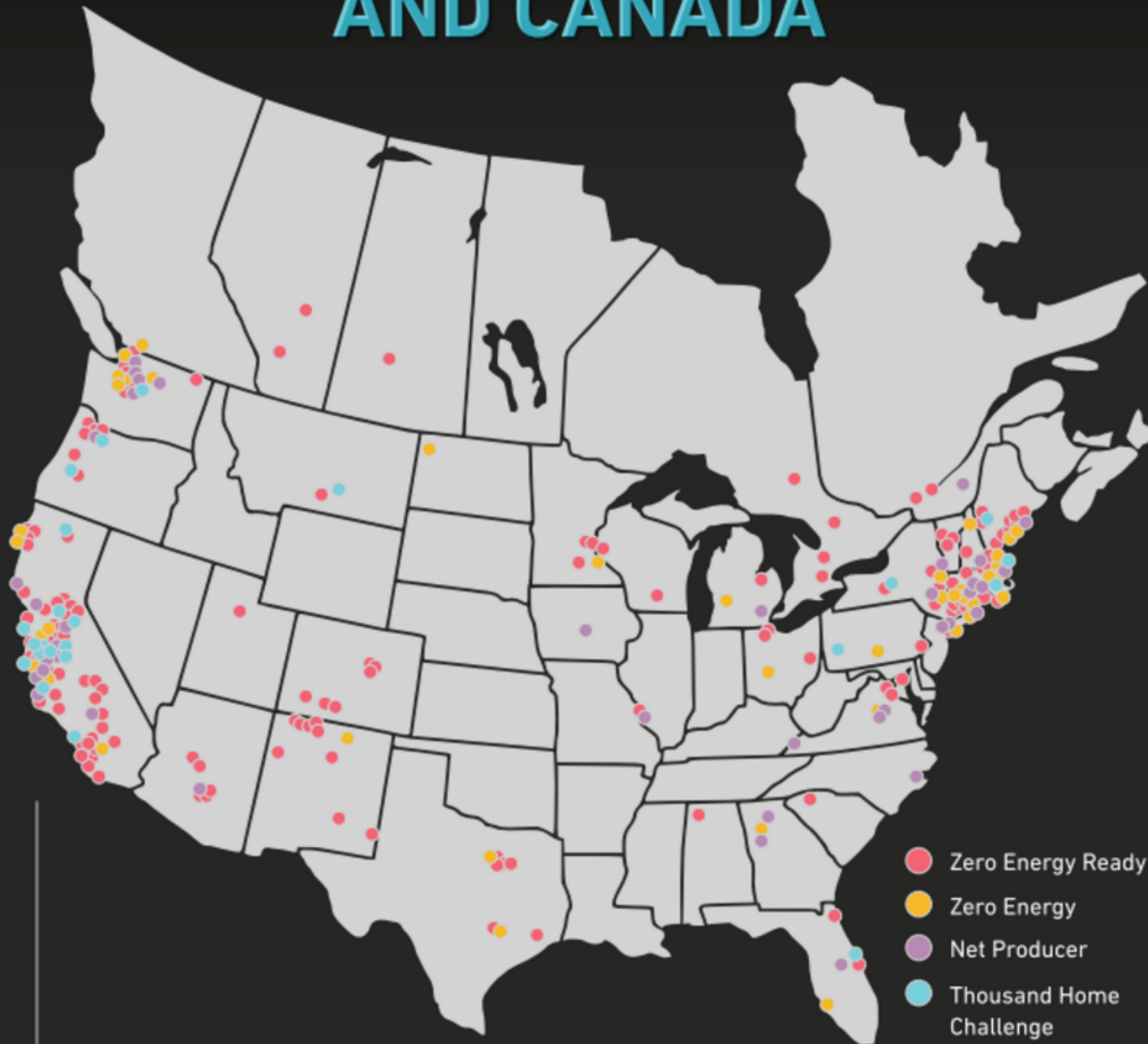
MARKET SIZE



Passive House Institute US



PATH TO ZERO IN THE U.S. AND CANADA



408
PROJECTS

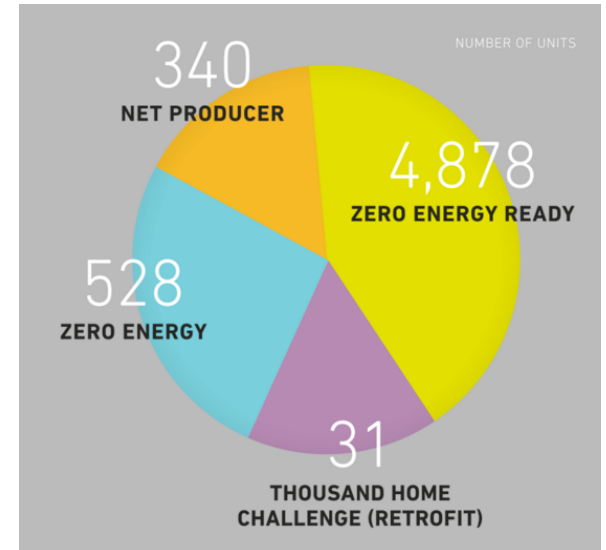
3,339
BUILDINGS

6,177
UNITS

- Zero Energy Ready
- Zero Energy
- Net Producer
- Thousand Home Challenge



January 2016



TOP 10 STATES BY NUMBER OF BUILDINGS

EXHIBIT 6

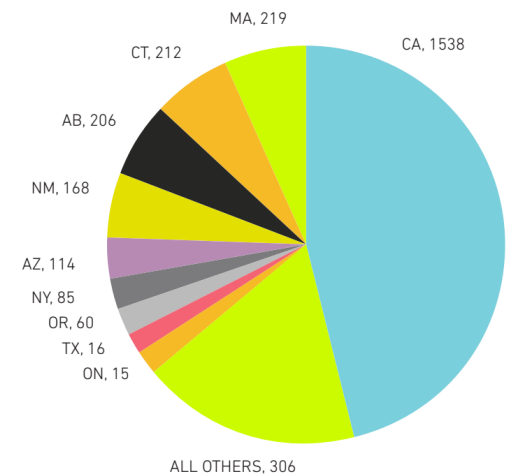
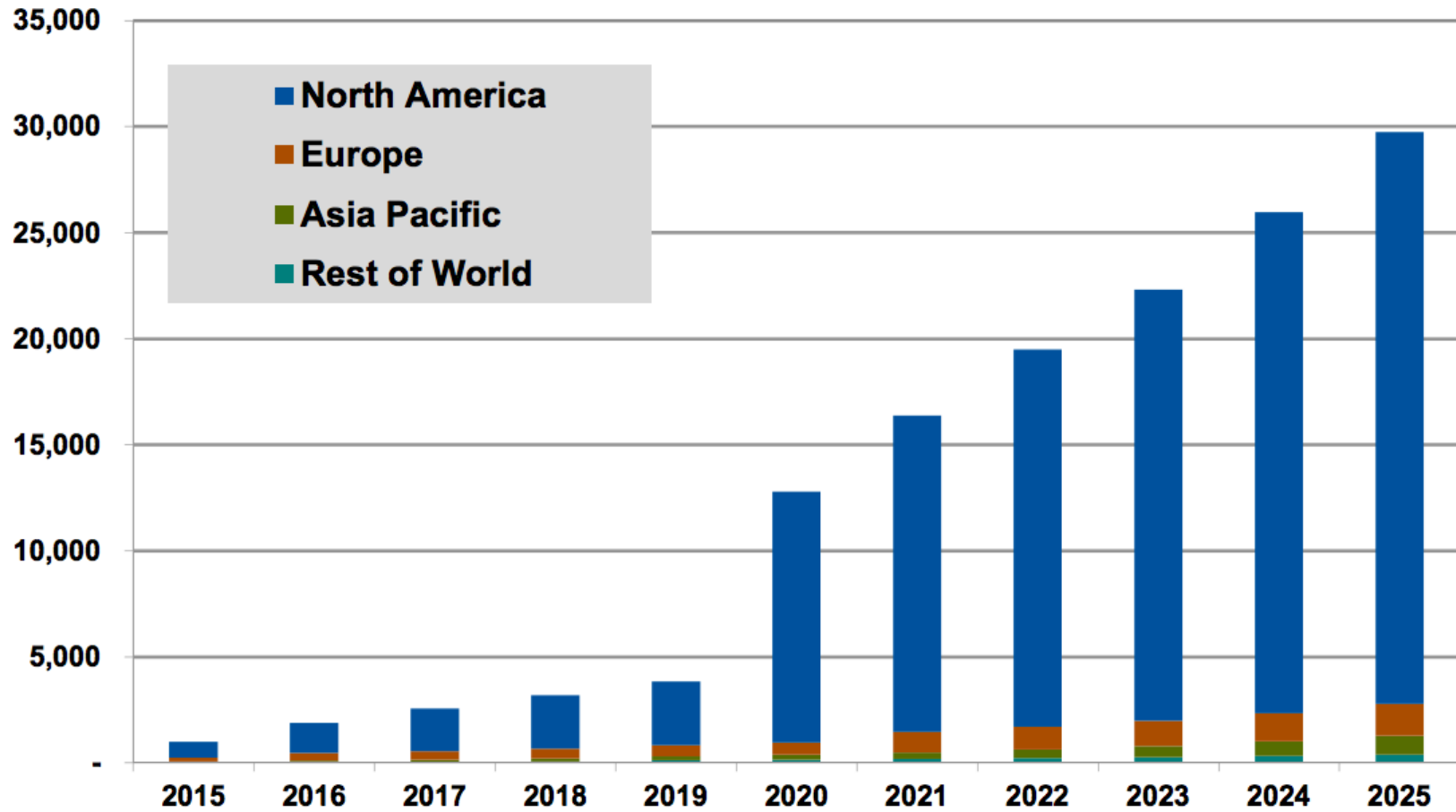


Chart 1.1 Total ZNEH Units by Region, All Categories, World Markets: 2015-2025



(Source: Navigant Research)

US CAGR 43.1%

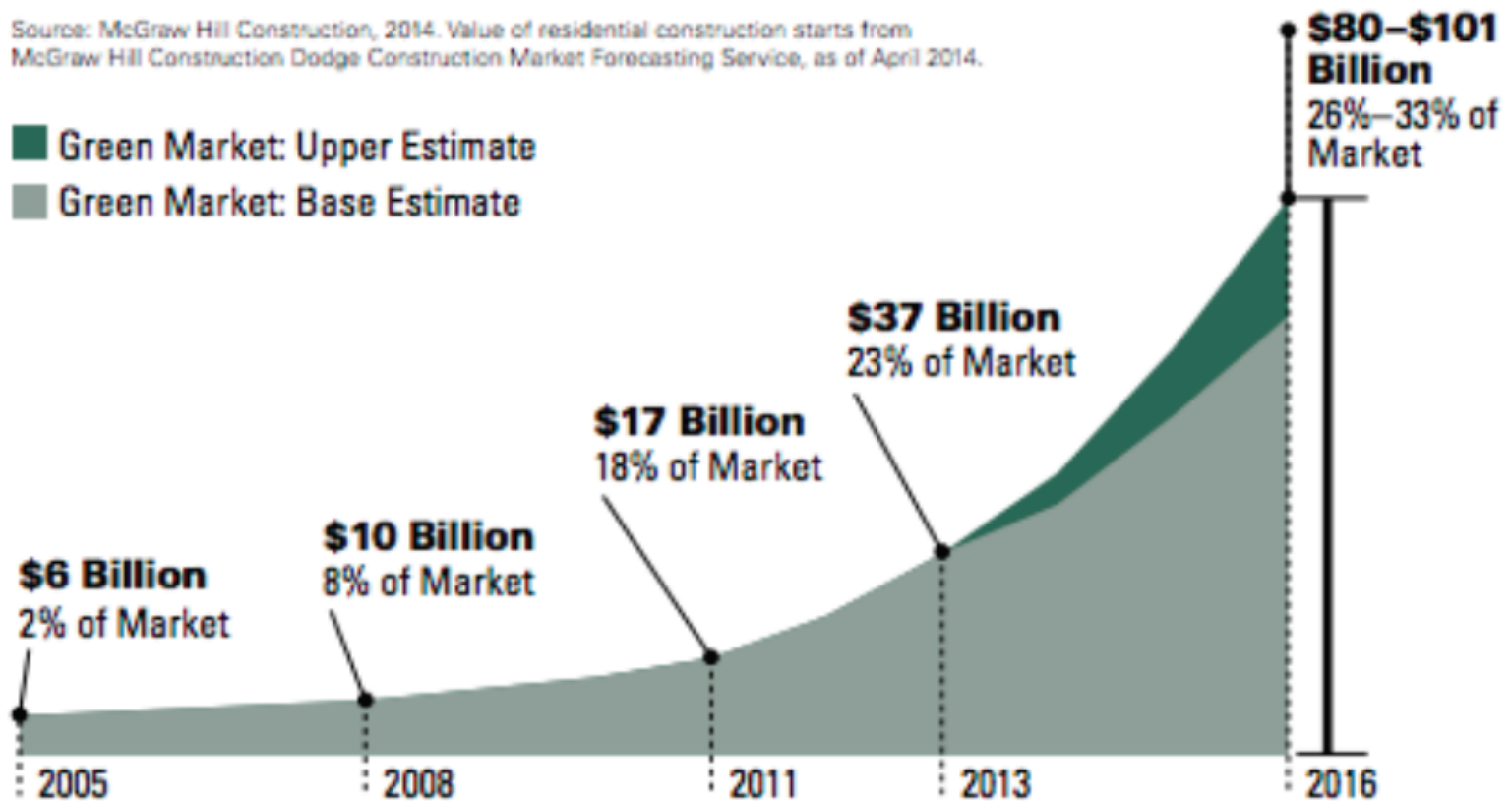
December 2015

Big Market?

U.S. Single Family Housing Green Residential* Market (Billions of Dollars)

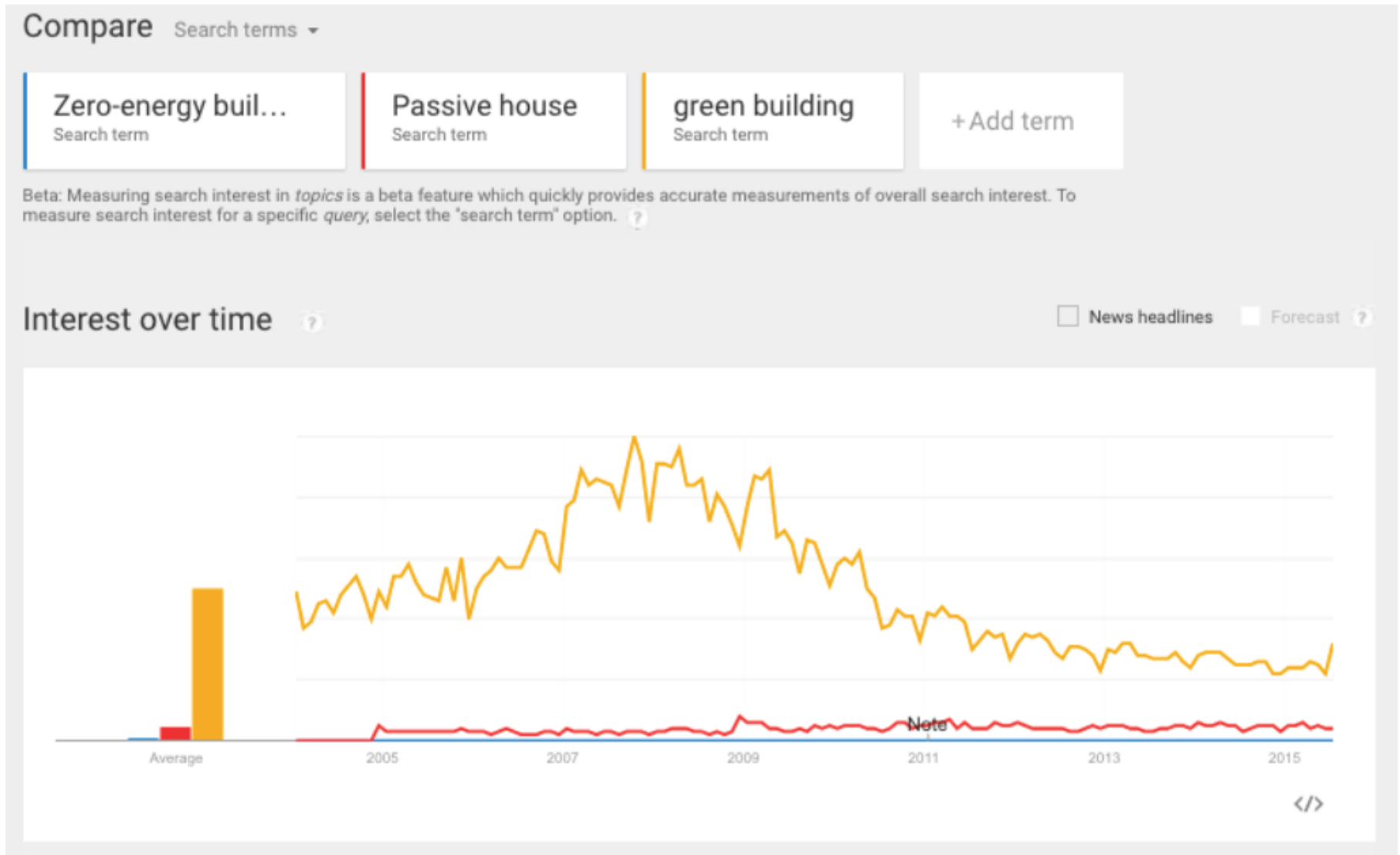
Source: McGraw Hill Construction, 2014. Value of residential construction starts from McGraw Hill Construction Dodge Construction Market Forecasting Service, as of April 2014.

- Green Market: Upper Estimate
- Green Market: Base Estimate



*MHC defines a green home as one that is either built to a recognized green building standard or an energy- and water-efficient home that also addresses indoor air quality and/or resource efficiency.

Market Size for What?



The Label Challenge

NAMES

Green

Sustainable

Low Energy

Healthy Home

High Performance

The Label Challenge

NAMES	CERTIFICATIONS ↔ "BRANDS"	
Green	Energy Star	Passive House
Sustainable	LEED	Net Zero
Low Energy	NAHB	Deep Energy Retrofit
Healthy Home	Energy Fit	Pretty Good House
High Performance	Earthcraft	
	Pearl Certified	
	Etc	

Do We Have an “Energy” Crisis?



"I'm right there in the room, and no one even acknowledges me."



WHO IS BUYING HIGH PERFORMANCE HOMES? SOME DEMOGRAPHICS

(such as they are)



McKinsey Segmentation

Green Advocates

"care about energy-saving behavior as a goal in its own right." Motivated by environmental factors. About 20% of the total population.

Disengaged Energy Wasters

"don't care about saving energy or saving money." Not interested in the environment, and not interested in saving money. 20%.

Traditionalist Cost-focused Energy Savers

motivated entirely by cost savings.

Home-Focused Selective Energy Savers

motivated primarily by home improvement, which may involve a cost-savings or technological element.

Non-Green Selective Energy Savers

happy to improve their homes' energy efficiency, as long as they don't have to think about it. "Set it and forget it."

*last 3 = 60%, not broken down

Unlocking Energy Efficiency in the US Economy, 2009

CA CPUC/Opinion Dynamics 2009

Leading Achievers 22% of sample

Psychographics (Top 2 Box)

	Segment	Others
Recycles	90% ↑	74%
Deals well with unexpected events	68% ↑	56%
Can solve problems	78% ↑	67%
Happy with life	69% ↑	59%
Practical outlook	84% ↑	72%

Political Affiliation (% of Total)

	Segment	Others
Liberal	39%	32%
Moderate	25%	31%
Conservative	36%	37%

Perceived Energy Use Compared to Neighbors (% of Total)

	Segment	Others
Uses more energy	16%	12%
Uses as much energy	25%	30%
Uses less energy	52%	47%
Don't know	6% ↓	11%

Demographics and Geographic Location (% of Total)

	Segment	Others		Segment	Others
Gender			Children in Household		
Male	43%	44%	None	61%	53%
Female	57%	56%	1	19%	17%
Age			2-3	17% ↓	26%
24 or younger	5% ↓	14%	4 or more	3%	3%
25-34	9% ↓	20%	Annual Household Income		
35-44	20%	21%	Less than \$30K	15% ↓	27%
45-54	30% ↑	17%	\$30K-\$49,999	17% ↓	28%
55-64	22% ↑	11%	\$50K-\$74,999	15%	16%
65 or older	14%	17%	\$75K-\$99,999	19% ↑	11%
Ethnicity			\$100K-\$149,999	18% ↑	12%
White or Caucasian	76% ↑	49%	\$150K-\$249,999	11% ↑	6%
Black or African American	3% ↓	8%	\$250,000 or more	5%	1%
Hispanic or Latino	13% ↓	31%	Annual Income Level		
Asian	5% ↓	10%	Low (State standard)	21% ↓	41%
Other	2%	2%	Medium (>L.I.-\$200K)	69% ↑	55%
Education			High (\$200K+)	10% ↑	3%
High school or less	7% ↓	30%	IOU Territory		
Some college/associate degree	37%	35%	PG&E	42%	37%
College graduate	23%	18%	SCE	40%	42%
Graduate degree	33% ↑	17%	LADWP	4% ↓	8%
Own/Rent			SDG&E	10%	9%
Own	84% ↑	58%	Other	3%	5%
Rent	16% ↓	42%	Urban/Rural		
			Urban	83%	85%
			Rural	16%	15%

Arrows indicate statistically significant difference at 95% confidence

The Wisdom of Sam Rashkin

“Actually I work hard to not let Data get in the way of Wisdom. We know who the next home buyers are with or without the data...78 million gen-y young buyers with massive pent-up demand from delaying commitments, living with parents, and accumulating resources after assuming \$1 trillion of college debt. More importantly this is the demographic that demands technical innovation and is demonstrating incredible willingness to pay more for a better experience.”

**Sam Rashkin, Chief Architect,
Building Technologies Office, DOE
July 2015**

State of the Nation's Housing, 2016 (6-22-16)

MILLENNIALS COMING OFF THE SIDELINES

The recent slowdown in household growth was remarkable given that it corresponded with the coming of age of the millennials (born 1985–2004), the largest generation in history. Over the past 10 years, the number of adults under age 30 increased by roughly 5 million but the number of households in that age group rose by just 200,000. Indeed, if young adults headed households at the same rates that they did in 2005, there would be 1.7 million more households in this age group today.

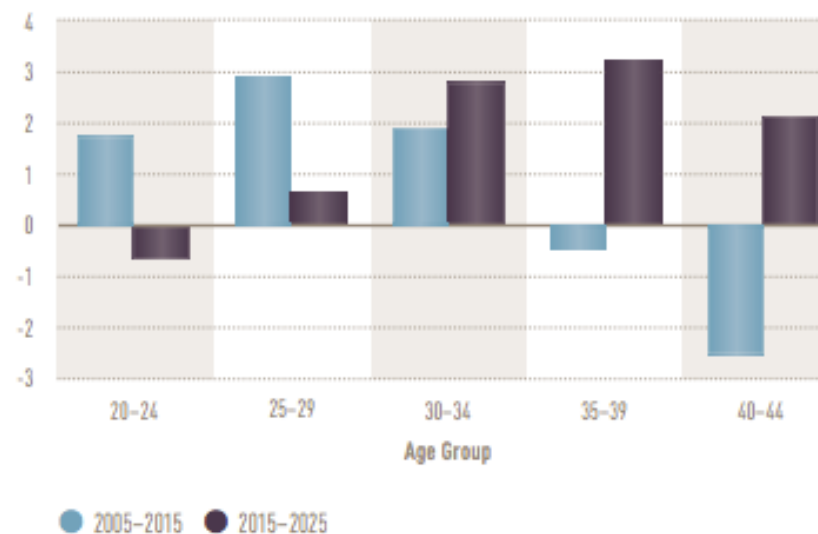
Over the next decade, however, the aging of the millennial generation will be a boon to household growth (Figure 14). Household headship rates rise from about 25 percent for adults in their early 20s to about 50 percent for those in their 30s.

As they move further into these age groups, millennials are expected to form well over 2 million new households each year on average, raising their numbers from 16 million in 2015 to a projected 40 million in 2025.

FIGURE 14

Over the Next Ten Years, the Aging of the Millennial Generation Will Boost the Population in Their 30s

Population Growth (Millions)



Source: JCHS tabulations of US Census Bureau, United States Population Estimates and 2014 Population Projections.

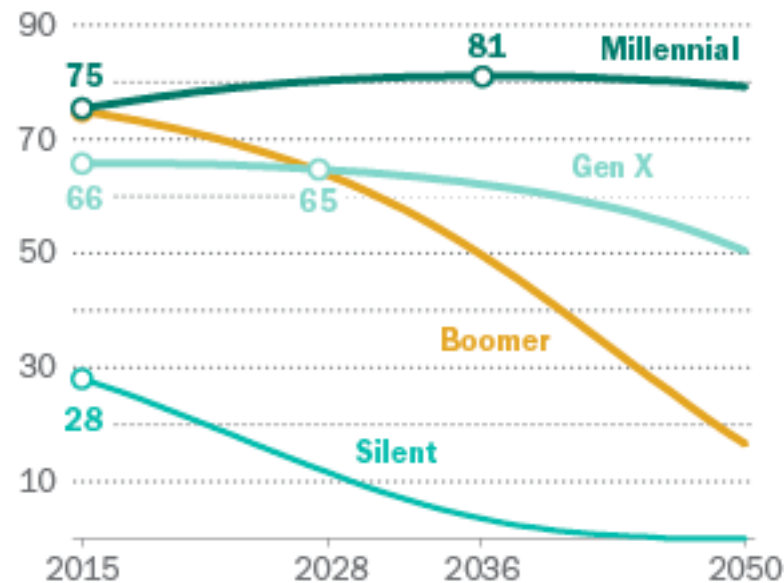


JOINT CENTER FOR HOUSING STUDIES OF HARVARD UNIVERSITY

Waiting for the Millennials

Projected population by generation

In millions



Note: Millennials refers to the population ages 18 to 34 as of 2015.

Source: Pew Research Center tabulations of U.S. Census Bureau population projections released December 2014 and 2015 population estimates

PEW RESEARCH CENTER

High Performance Home Buyers

AGE DEMOGRAPHICS

Baby Boomers—Last Home Phenomenon

Gen X (35-55 yrs)

Millennials (15-35 yrs)

OTHER CATEGORIES

Academics

Technologists (Engineers, Medical, Technology, Software)

Upscale/Wealthy

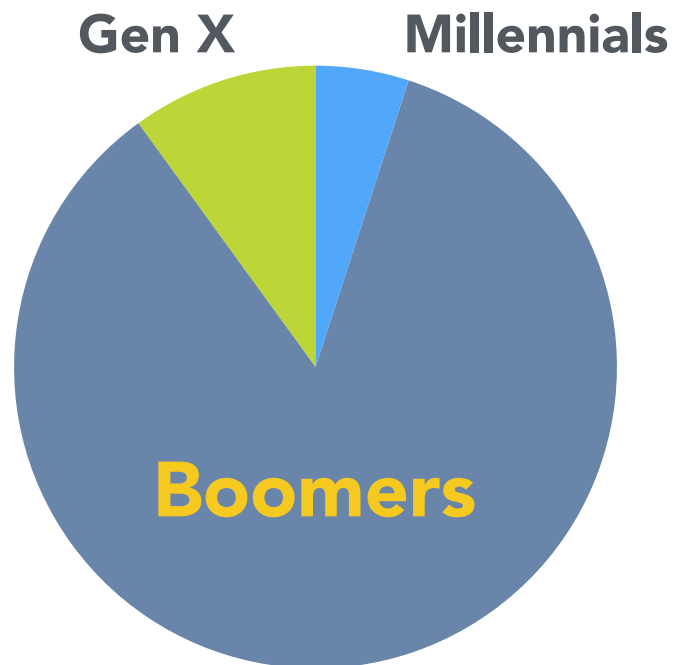
Green/Left Leaning

Health Focused

First Home

High Performance Home Buyers

AGE DEMOGRAPHICS



OTHER CATEGORIES

Academics

Technologists (Engineers, Medical, Technology, Software)

Upscale/Wealthy

Green/Left Leaning

Health Focused

First Home

Implications/Discussion

10 Year Baby Boomer Skew

Aging in place

Healthy home emphasis

Value of comfort

Preparing for Millennials

Happy to rent?

Financially challenged

Passive House Positioning

Beyond energy

Healthy home vs ultra-tight: dissonance?

Your Marketing, Outreach & Education

Targeted or Generic?



QUESTIONS?

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