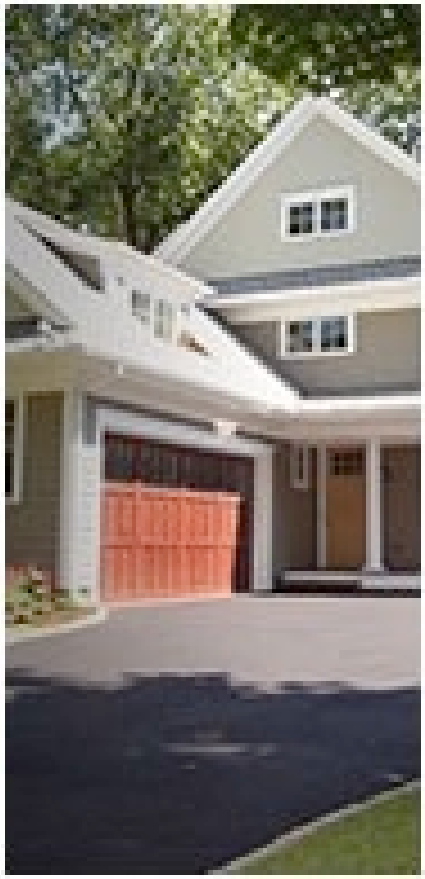
BTO Peer Review: Falls Church, VA
April 5th, 2016

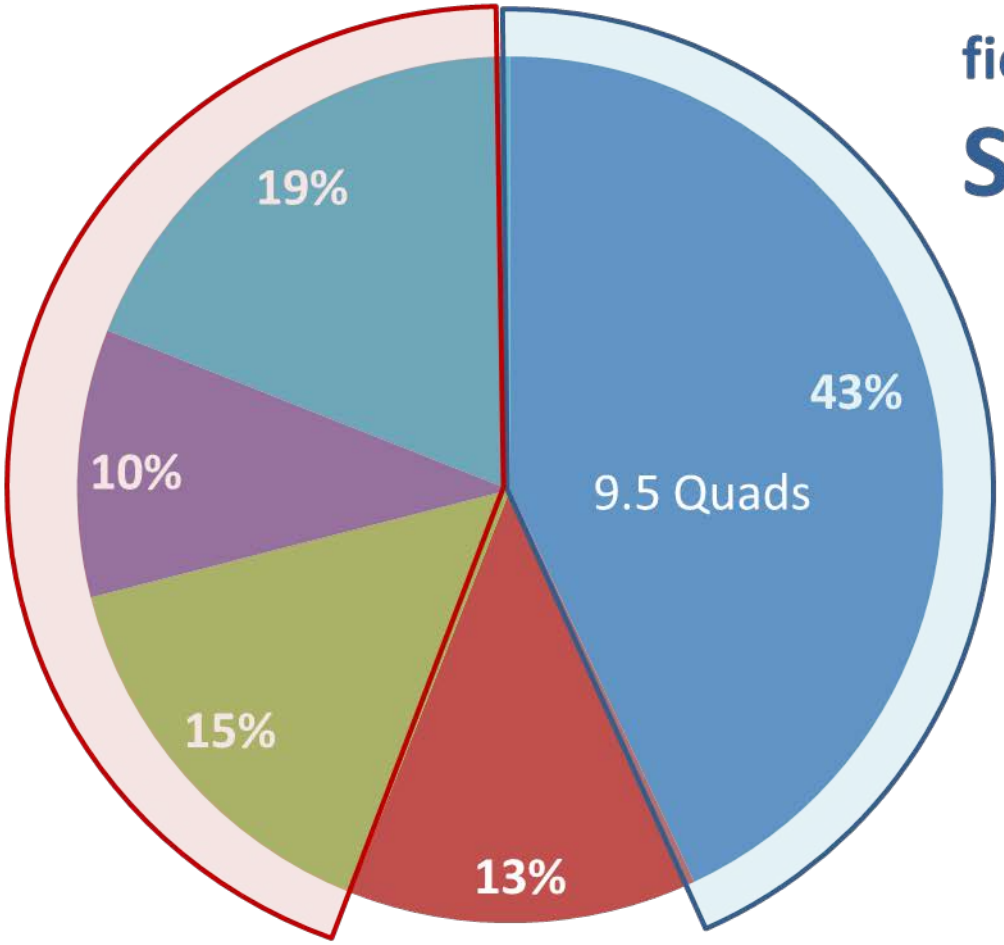
U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy



Building America Program Overview

ERIC WERLING
Building America Program Director
Building Technology Office

U.S. Residential Buildings
Primary Energy Consumption (22 Quads)*



field assembled

Systems

- Comfort (Envelope & HVAC)
- Water Heating
- Other Appliances
- Lighting
- Misc. End Uses

Building AMERICA
U.S. Department of Energy

Goal: 50% Savings

factory assembled

Products

* Source: U.S. EIA

Modern Housing Trends

1. Homes Are “Greener”

Total New Green Building Market 2005-2010

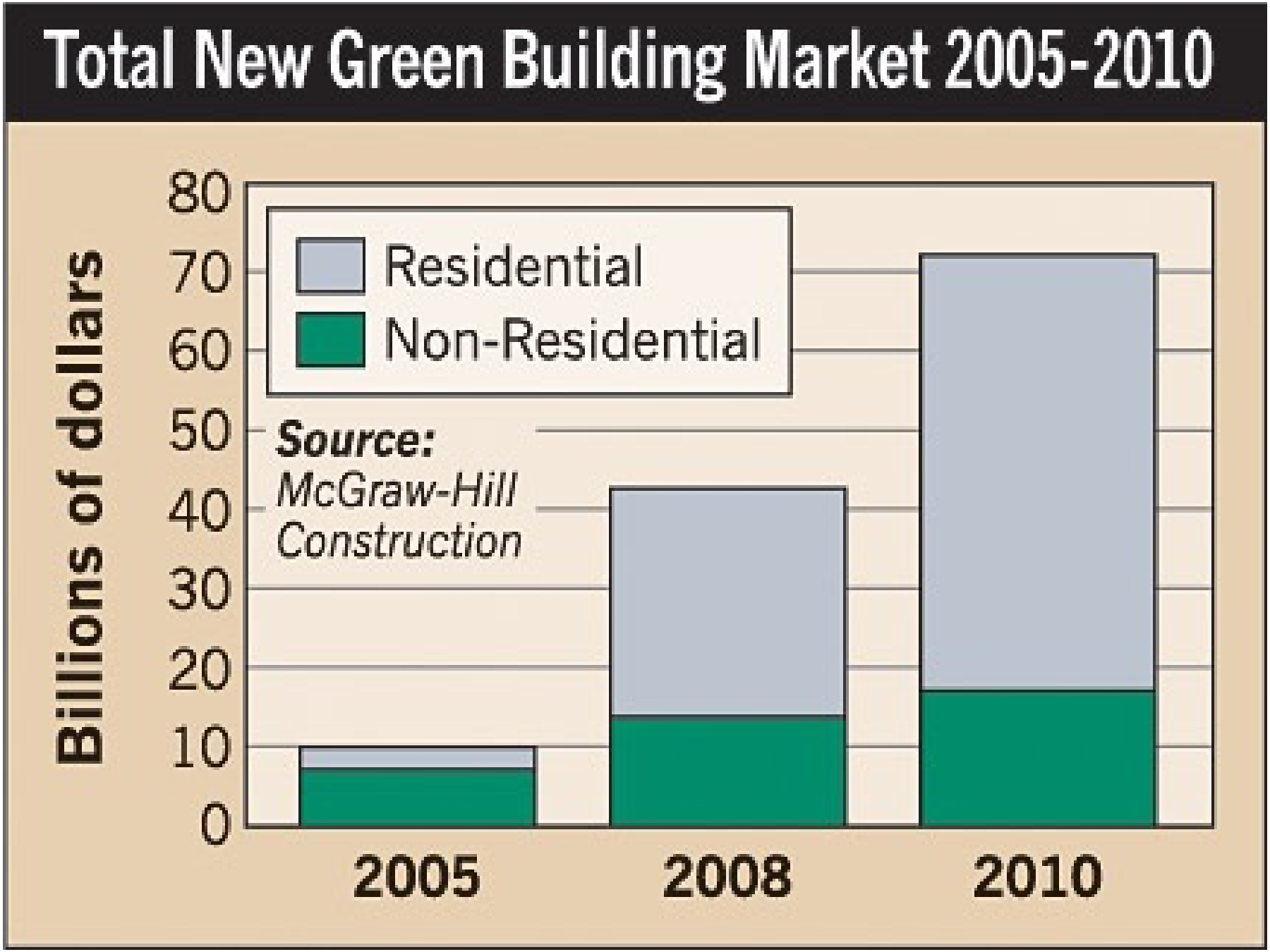
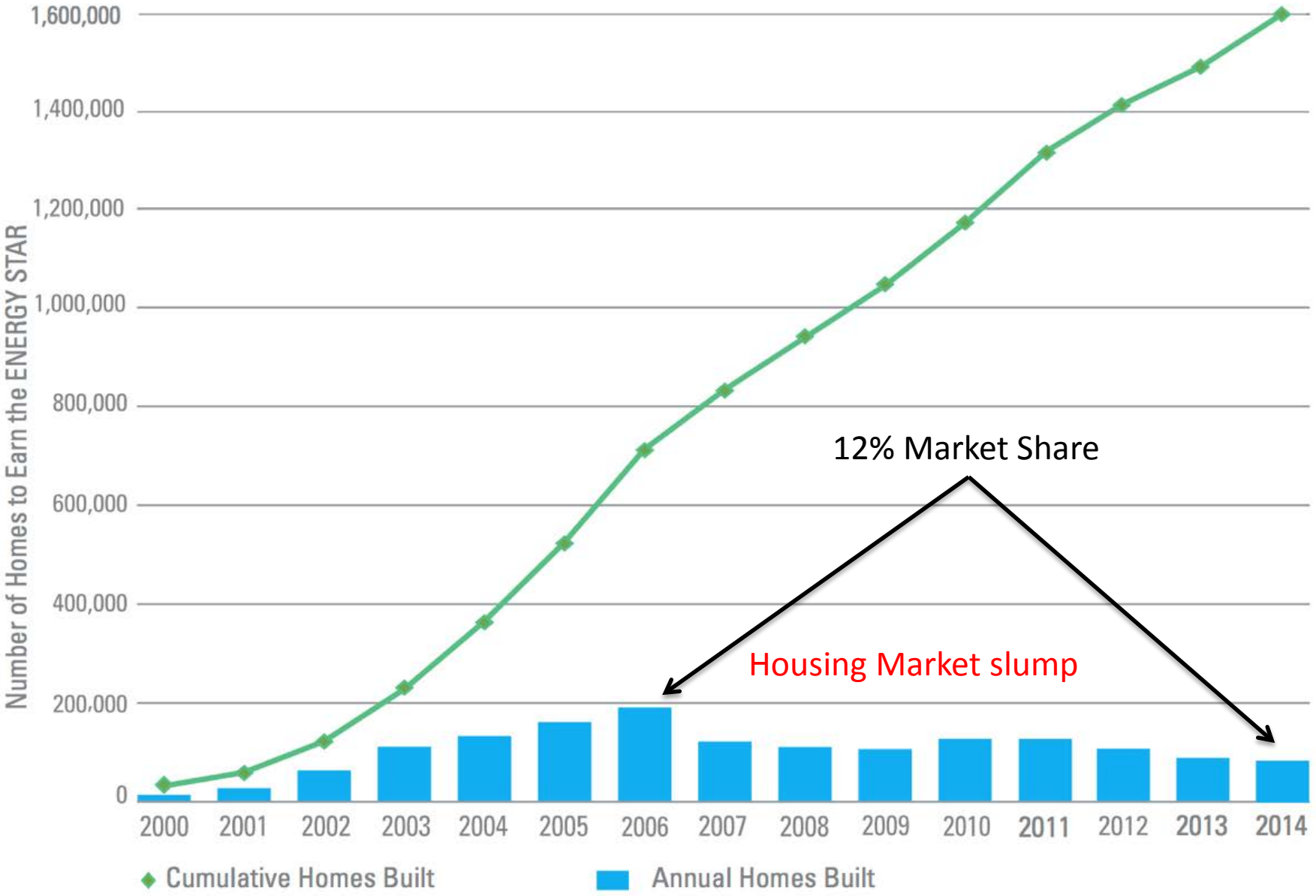


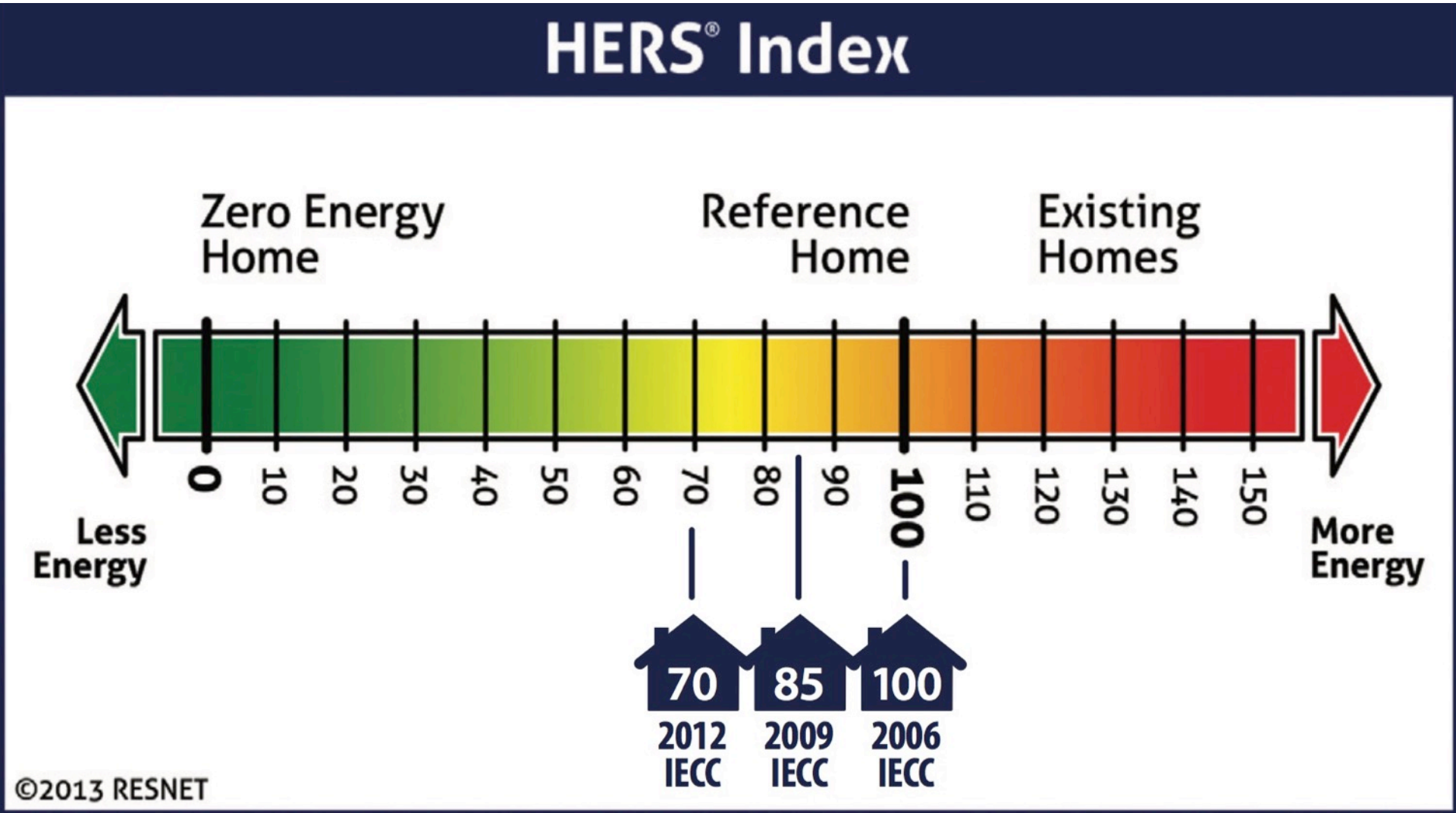
Fig. 3. Nearly 1.6 Million Homes Nationwide Have Earned the ENERGY STAR Label



Modern Housing Trends

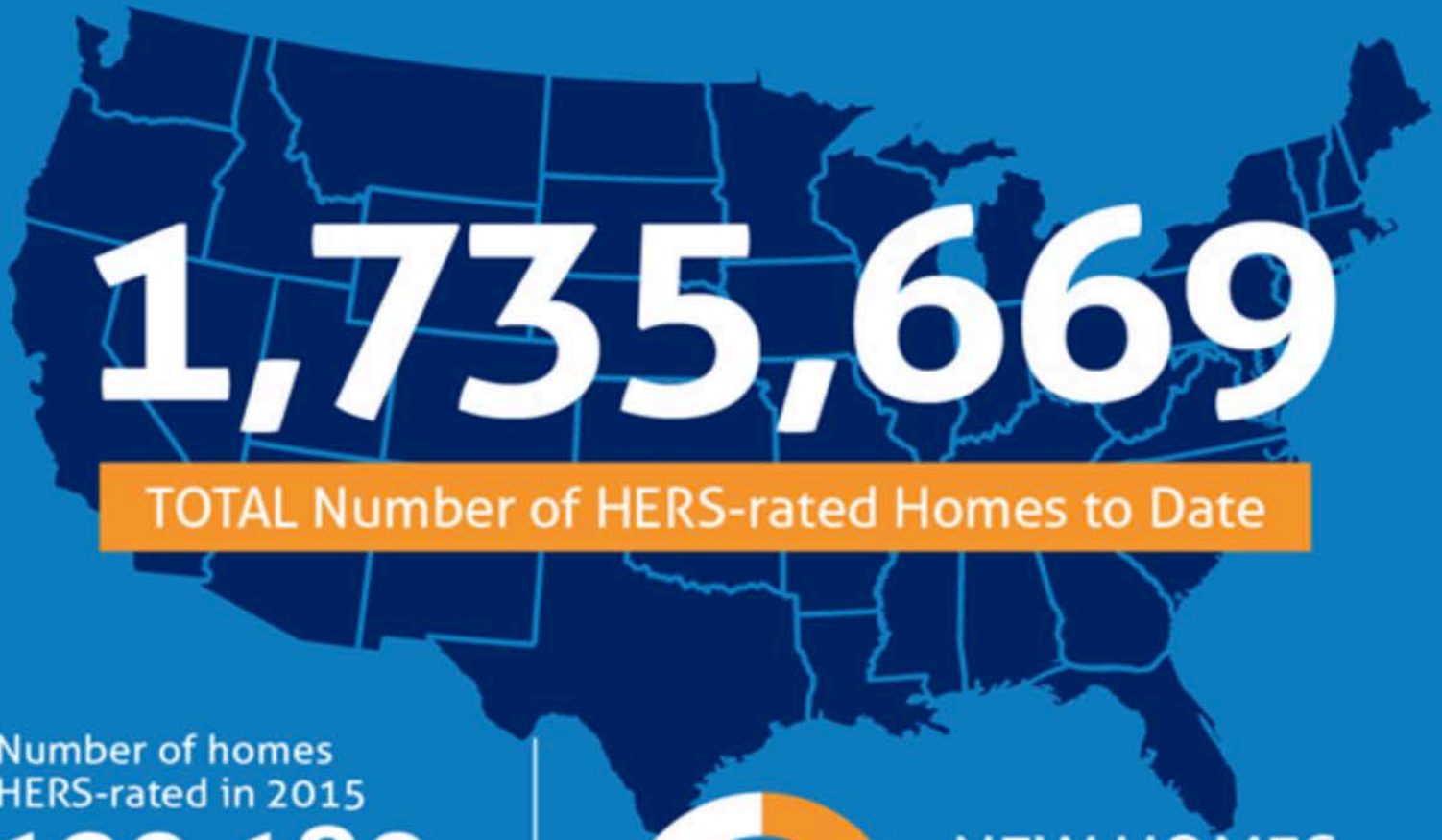
2. Home Energy Efficiency Is Being Measured

It's official:
ANSI/RESNET Standard 301-2014



RESNET®
RESIDENTIAL ENERGY SERVICES NETWORK

2015 Annual Report



1,735,669

TOTAL Number of HERS-rated Homes to Date

Number of homes HERS-rated in 2015

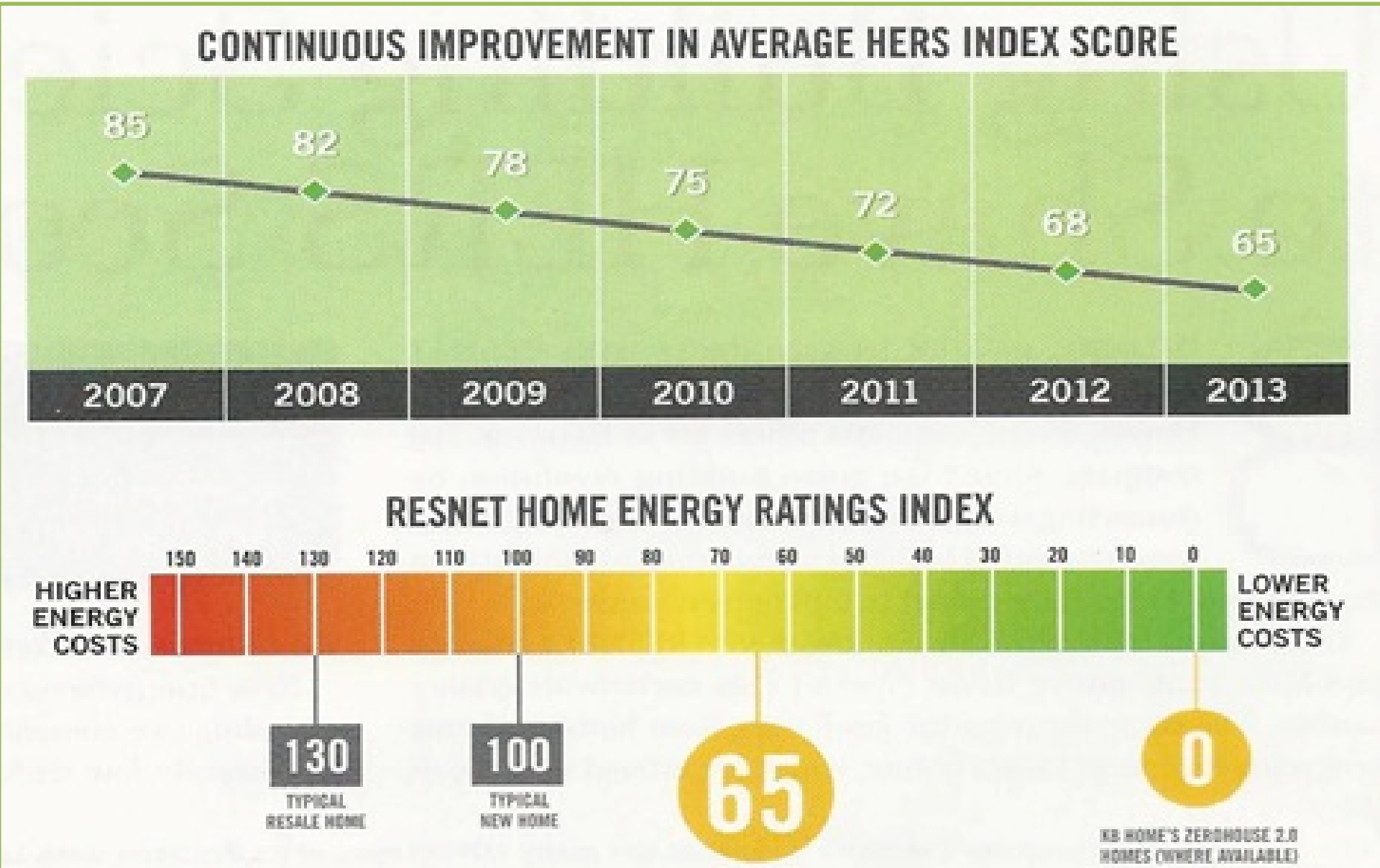
190,180

30% increase from 2014

NEW HOMES sold in the US are HERS-rated

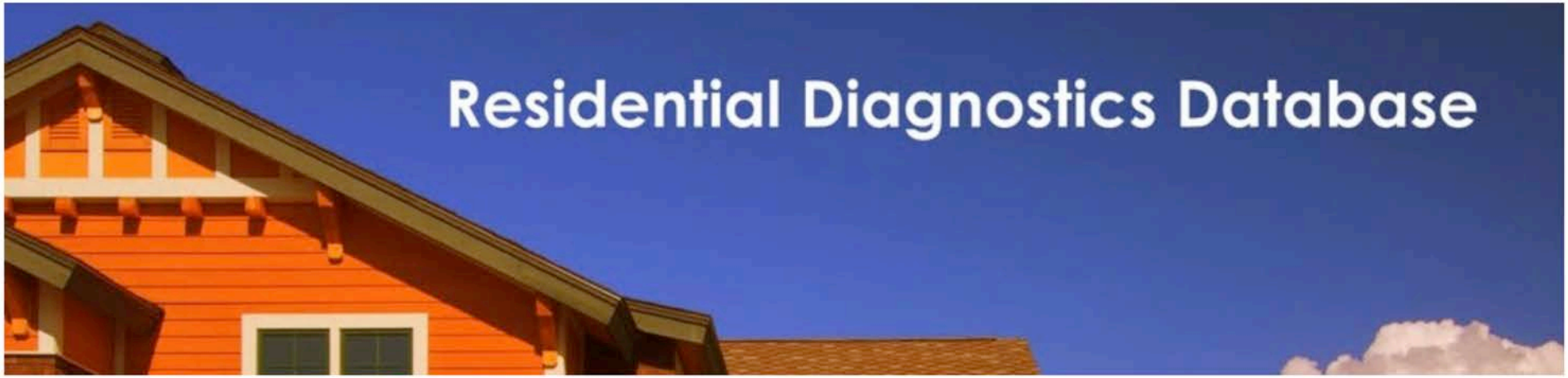
HERS Scores keep improving …

Builders use it …



Modern Housing Trends

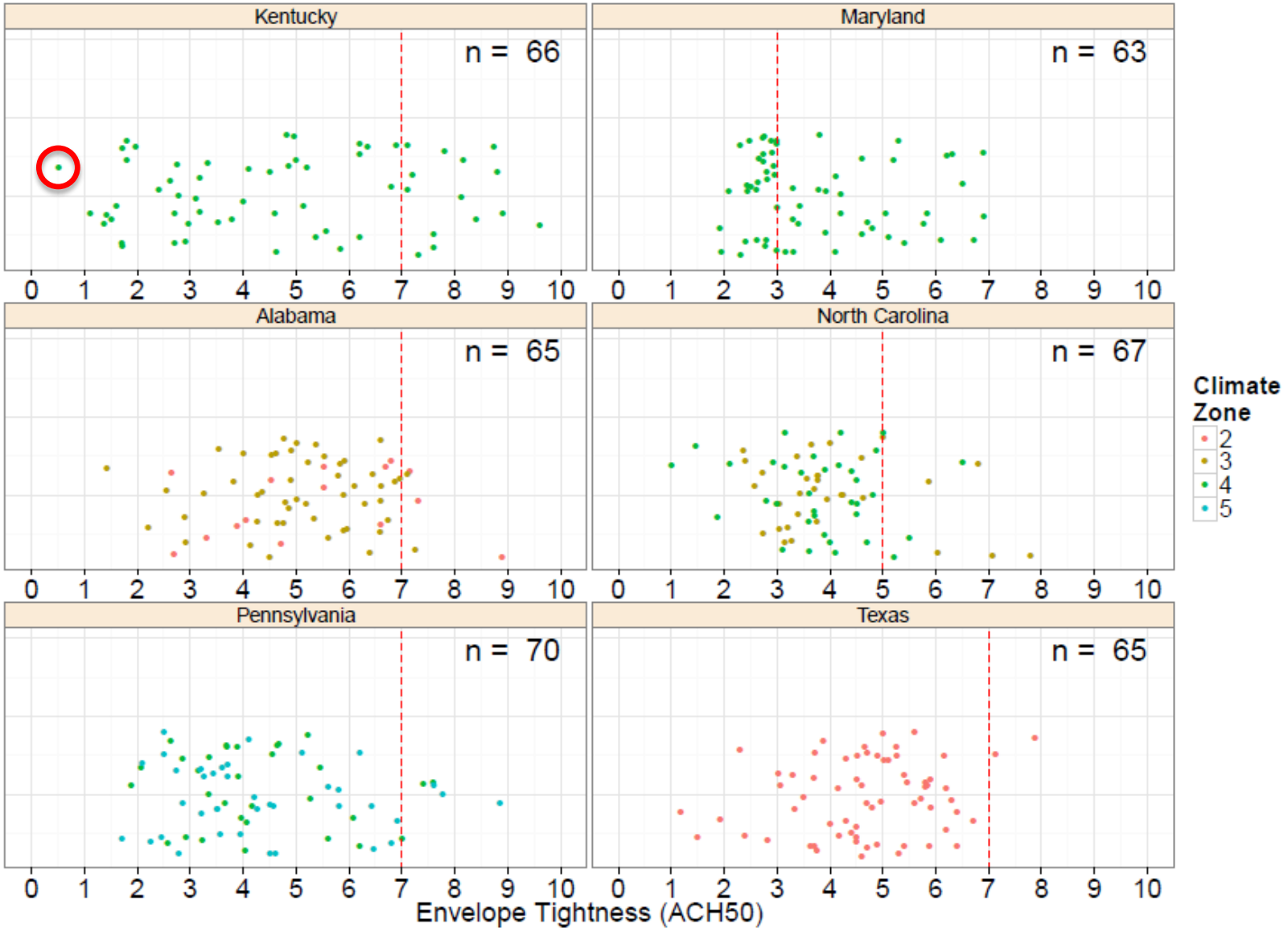
3. Homes are Getting Tighter



CONCLUSIONS:

- Mean air-leakage of U.S. homes **>10 ACH50 (147,000 house measurements)**
- Post-2000 homes have **half** the air-leakage of Pre-1960 homes
- Rated homes (e.g., HERS) have air-leakage **30% lower** than typical homes

Envelope Tightness (from DOE Code Study)



The Next Housing Trend

4. Building ~~Science~~

The Next Housing Trend

4. Building Engineering

(based on building science!)

Building America's Top 3 Building Science Challenges for High Performance Homes:

Solutions for New and Existing Homes with …

1. Moisture Managed High-R Envelopes

- Less Likely to Get/Stay Wet
  High performance homes with increased insulation, reduced infiltration, reduced risk of condensation, & adequate drying potential inside building assemblies

2. Optimized Low-Load Comfort Solutions

- Effectively Manage Airflow & Indoor RH for Comfort
  High efficiency comfort systems for homes with low thermal loads, including optimal efficiency, managed air flow and RH control at all part load conditions

3. Smarter Indoor Air Quality Solutions

- Control Fresh Air Supply & Contaminant Removal
  Added tightness with improved source control, dilution, and high efficiency filtration, with little or no energy penalty

Smarter, Healthier Homes

Live better.

Work better.

Last better.

Brought to you by a

Smarter, Healthier Housing Industry

Brought to you by

Building America U.S. Department of Energy

RESNET® RESIDENTIAL ENERGY SERVICES NETWORK

ENERGY STAR

EPA Indoor airPLUS

ZERO ENERGY READY HOME U.S. DEPARTMENT OF ENERGY

U.S. DOE Building America
Research to Market Plan

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

Building America Research-to-Market Plan

November 2015

Prepared by Confluence Communications and Energetics Incorporated for:
The Building America Program
Residential Buildings Integration
Building Technologies Office
Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy

Project Manager and Technical Editor:
Eric Werling
Building America Program Director

Building America
U.S. Department of Energy

Building America Integrated Roadmaps

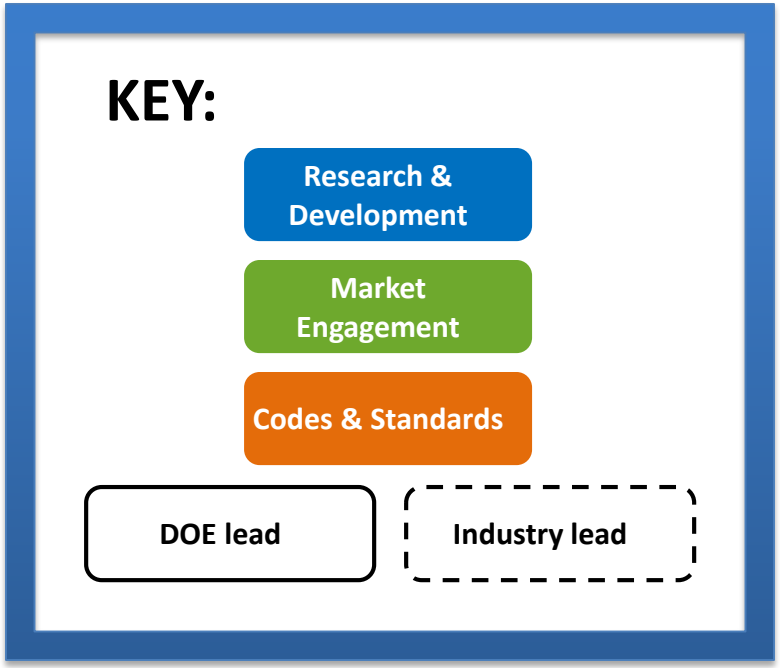
A. High Performance, Moisture Managed Envelope Systems

B. Optimal Comfort Systems for Low Load Homes

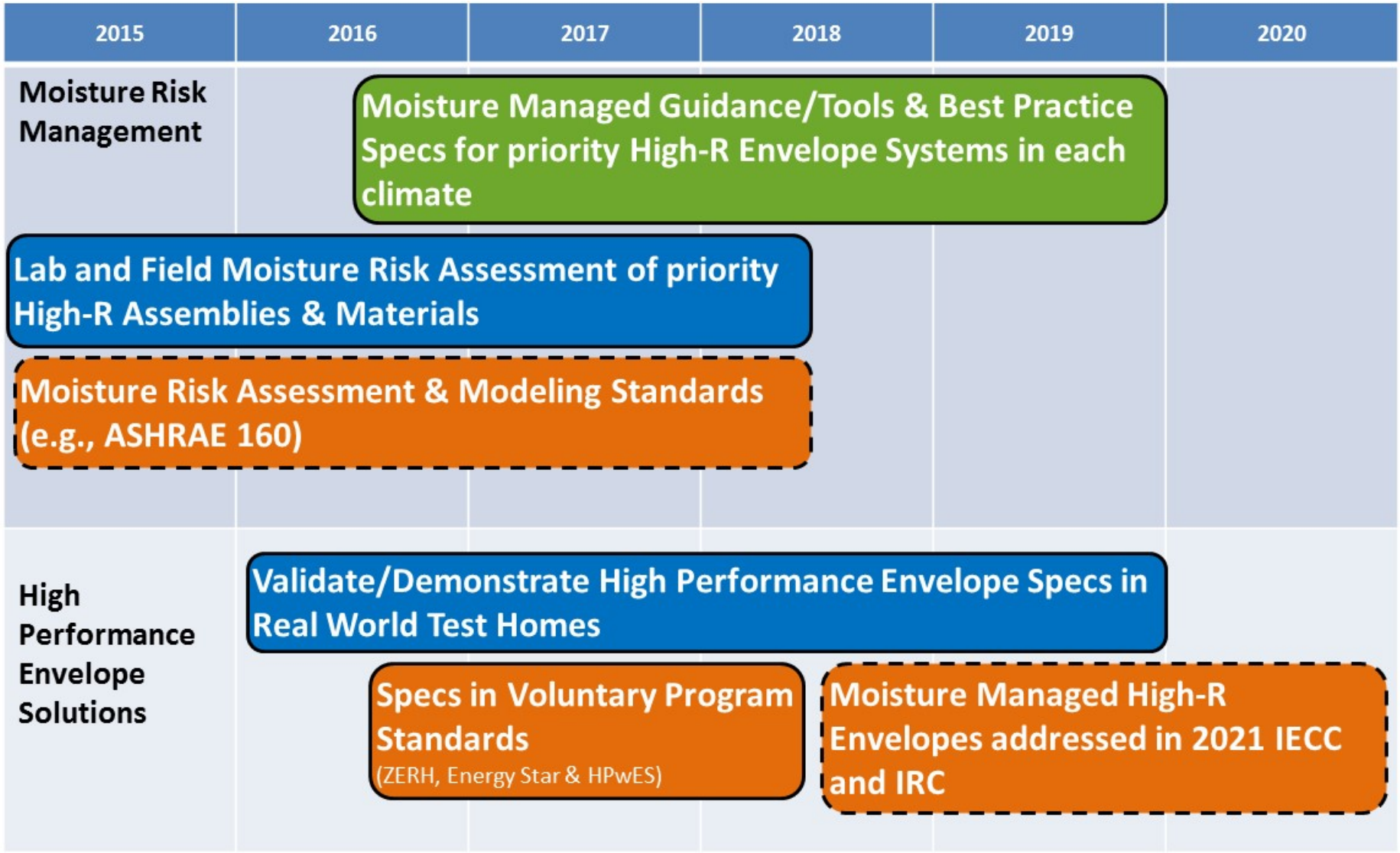
C. Optimal Ventilation Systems and IAQ Solutions for Low Load Homes

Overall Roadmap Objectives:

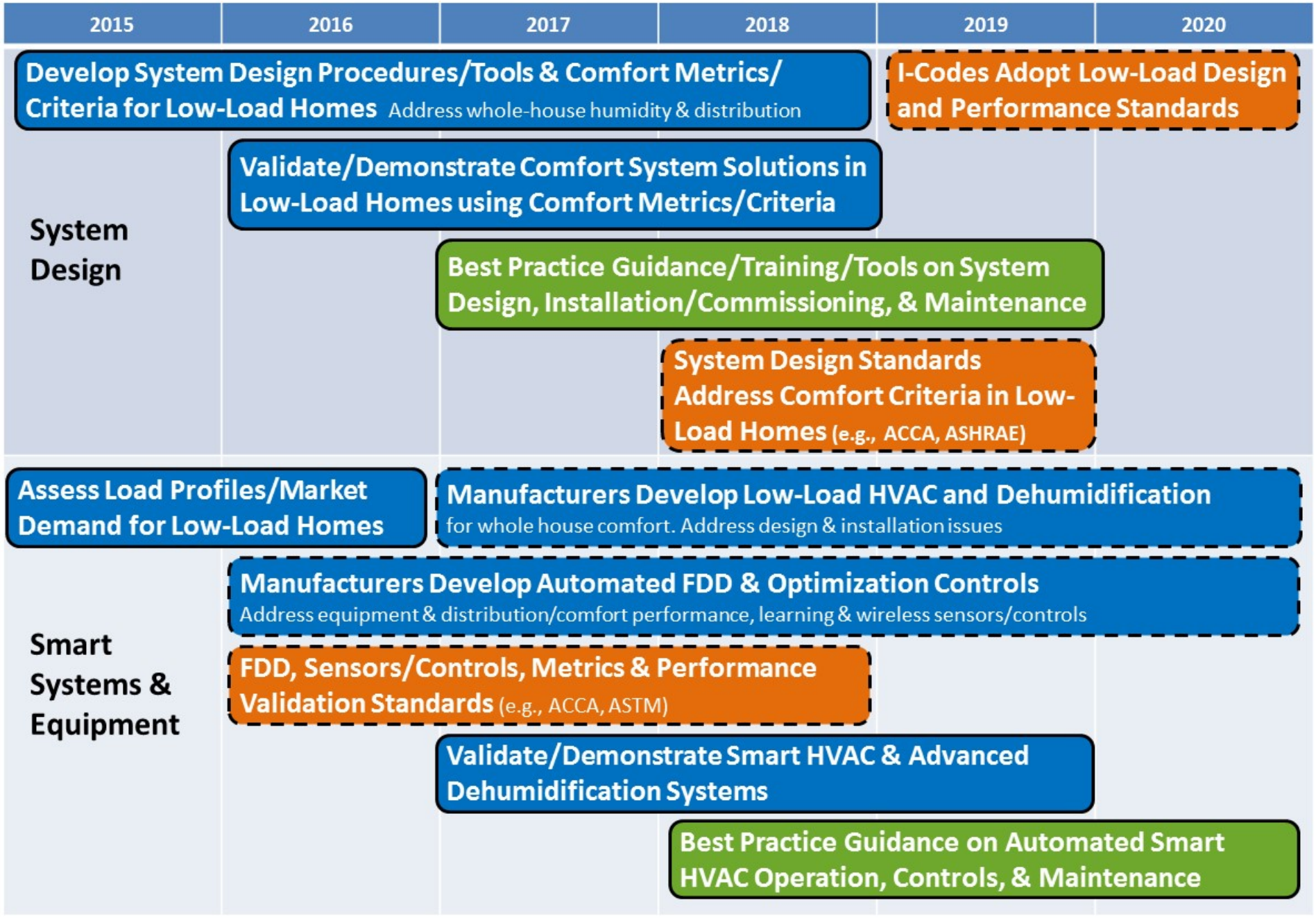
- Standard Practice as endpoints
- Manage risks to minimize problems of adoption
- Address optimal performance & cost-effectiveness
- Solutions must be practical & profitable for builders and home improvement contractors



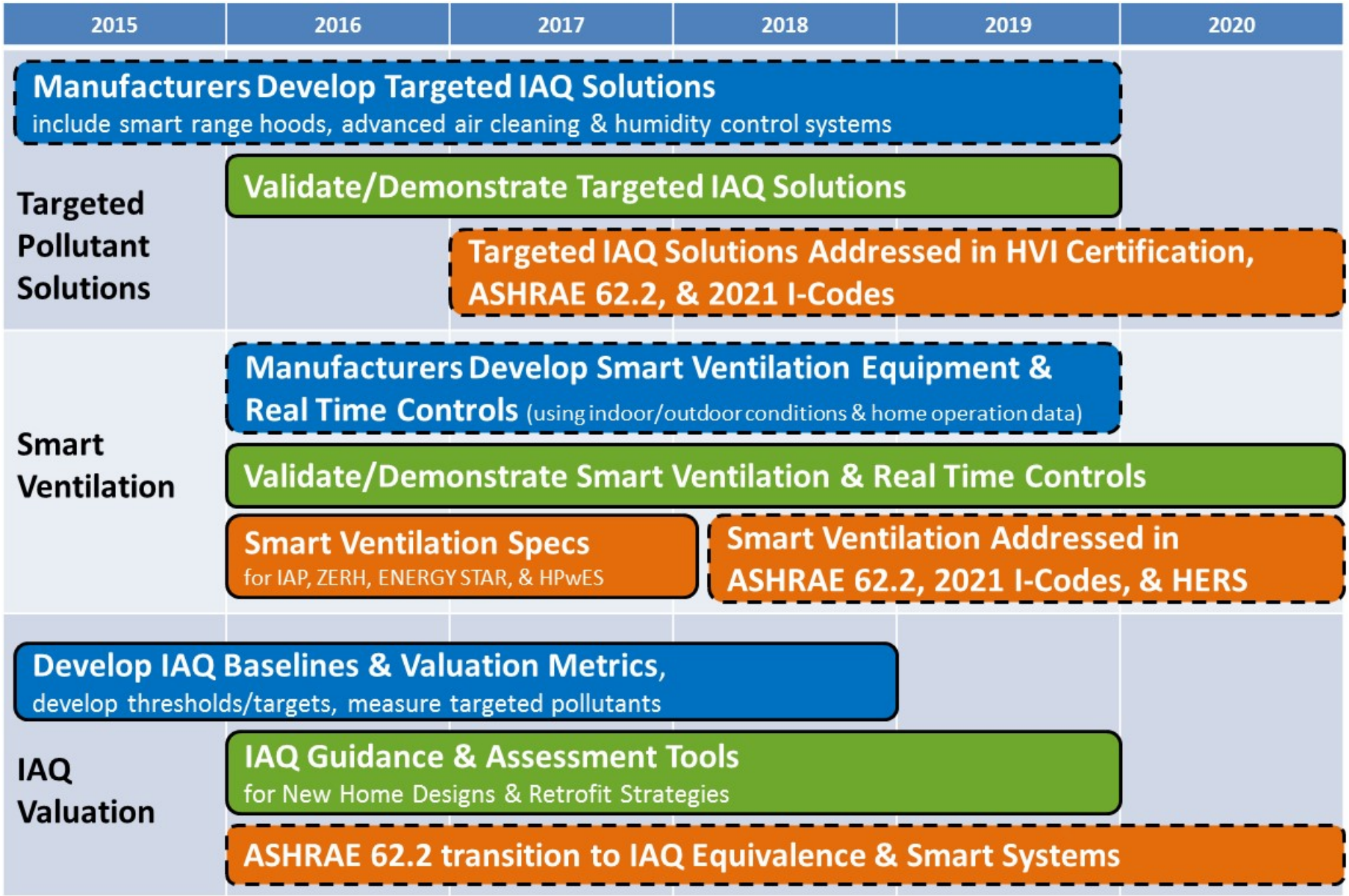
A. High Performance Moisture Managed Envelopes



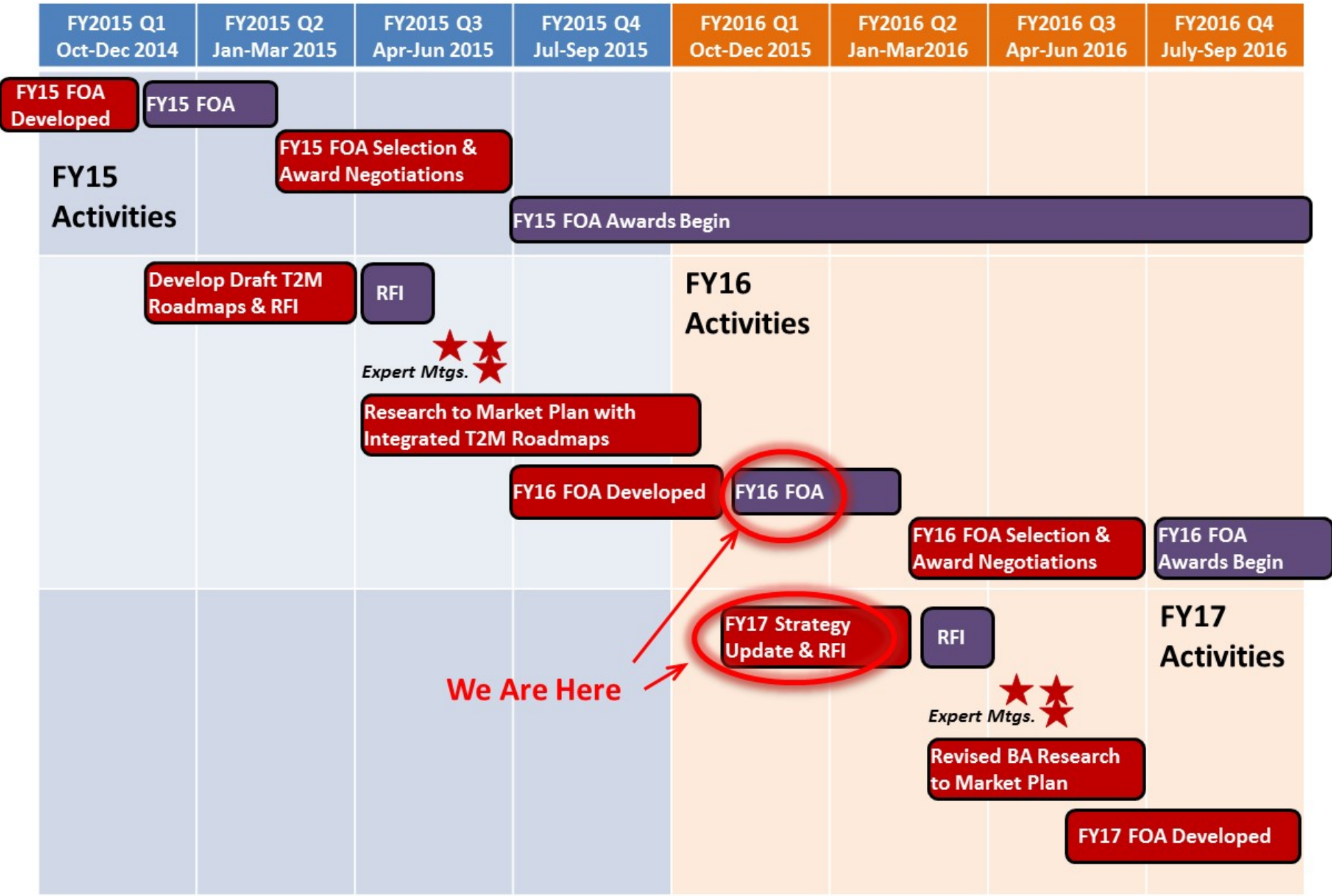
B. Optimal Comfort Systems for Low-Load Homes



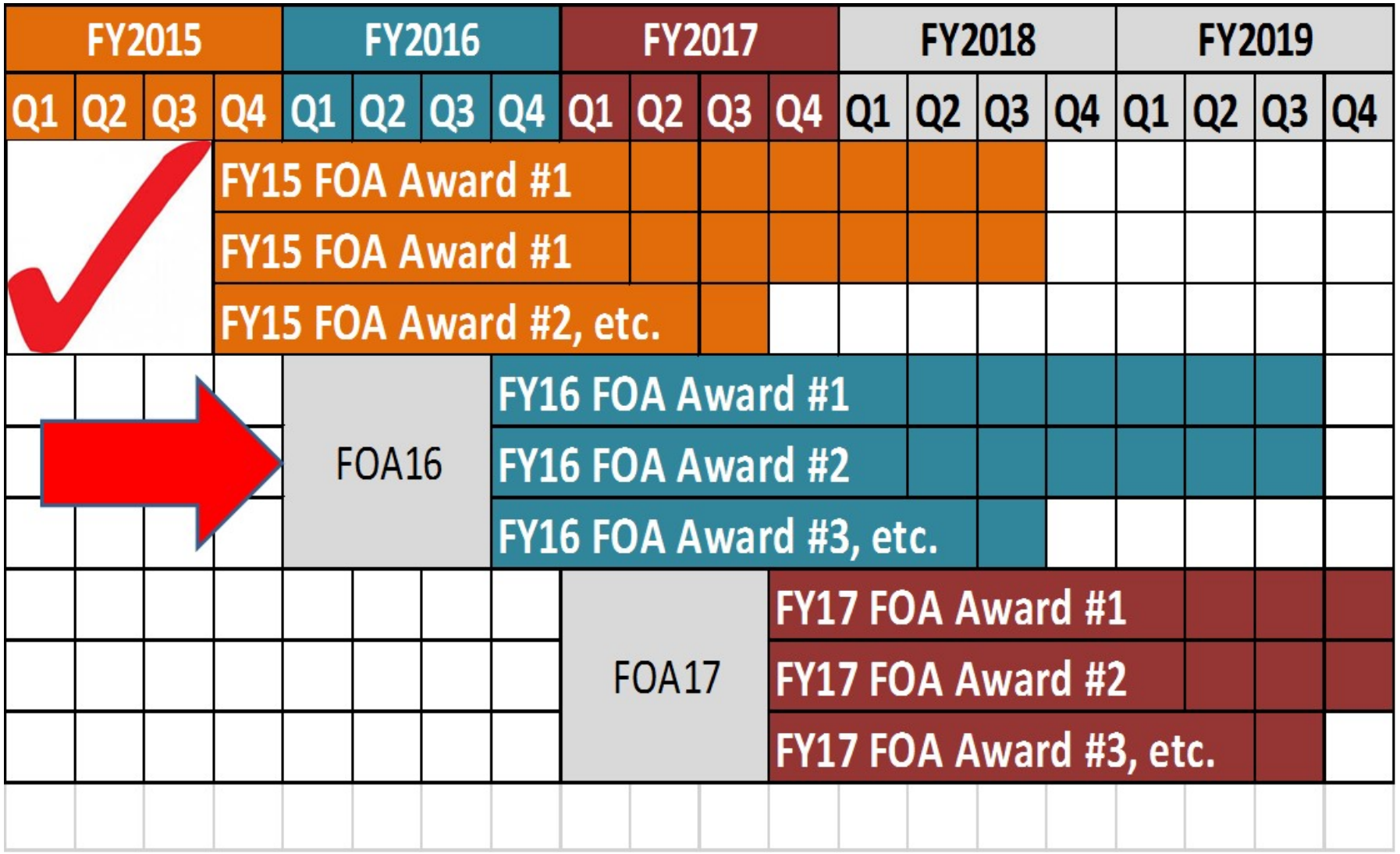
C. Optimal Ventilation & IAQ Solutions



Building America FY15-17 Planning Timeline



Building America Planned 3-Year FOA Schedule (subject to appropriations)



Questions?

For More Information:

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