

Missouri Residential Energy Code Baseline Study

Kick-Off Meeting
March 29, 2016

Presentation Topics

- Overview of Project and Meeting Goals
- Rationale and Goals of Study
- Study Structure, Partners, & Process
- Data Analysis
- Results from Previous Study (Kentucky)
- Sampling Plan
- Group Discussion

Meeting Goals

- Inform key energy code stakeholders of the study and data collection plan
- Get stakeholder input on Assessment Methodology and Sampling Plan
- Facilitate an efficient data collection process through stakeholder collaboration

Overview of Project

- ARRA: 90% compliance with 2009 IECC by 2017
- DED/DE contracted with MEEA to conduct residential study to determine current construction practices relative to 2009 IECC
 - Results from this study will be used to determine statewide compliance with ARRA requirements
- New single-family homes throughout Missouri

Goals & Rationale of Study

- Collect in-field construction data from random sample of homes across Missouri
- Obtain statistically-significant observations of 9 key measures
- All data collected will be anonymous and only analyzed on statewide level
- Use collected data as a basis to determine statewide compliance with ARRA requirements

9 Key Items

- Envelope Tightness (ACH50)
- Window U-Factor
- Ceiling Insulation
- Foundation Insulation
- HVAC Right Sizing (Manual J Block Load)
- Window Solar Heat Gain Coefficient (SHGC)
- Exterior Wall Insulation
- High Efficacy Lighting
- Duct Leakage

Study Structure and Timeline

- DED/DE: Funding and general oversight of study
- MEEA: Management of study & subcontractors
- Matt Belcher: Outreach to builders & code officials and coordinating site access
- The Cadmus Group: On-site data collection

Data collection begins April 6th and ends June 30th.

Matt Belcher

(Data Collection Facilitator)

Data Collection Facilitator

- Calls permitting jurisdictions for recent permitting information
- Permits are randomized
- Calls builders in order from randomized list
 - Tells them about study
 - Requests permission to come on site
- Passes builder contact info onto Data Collector after receiving “yes” response

The Cadmus Group (Data Collector)

Data Collector Process

- After Matt calls builder and receives a “yes,” Cadmus will call to schedule the site visits
 - Idaho area code
- Minimal Disruption to operations
- Experience in other states
- 15 homes / week
- Submitting anonymous data collection sheets to MEEA

Analysis Methodology

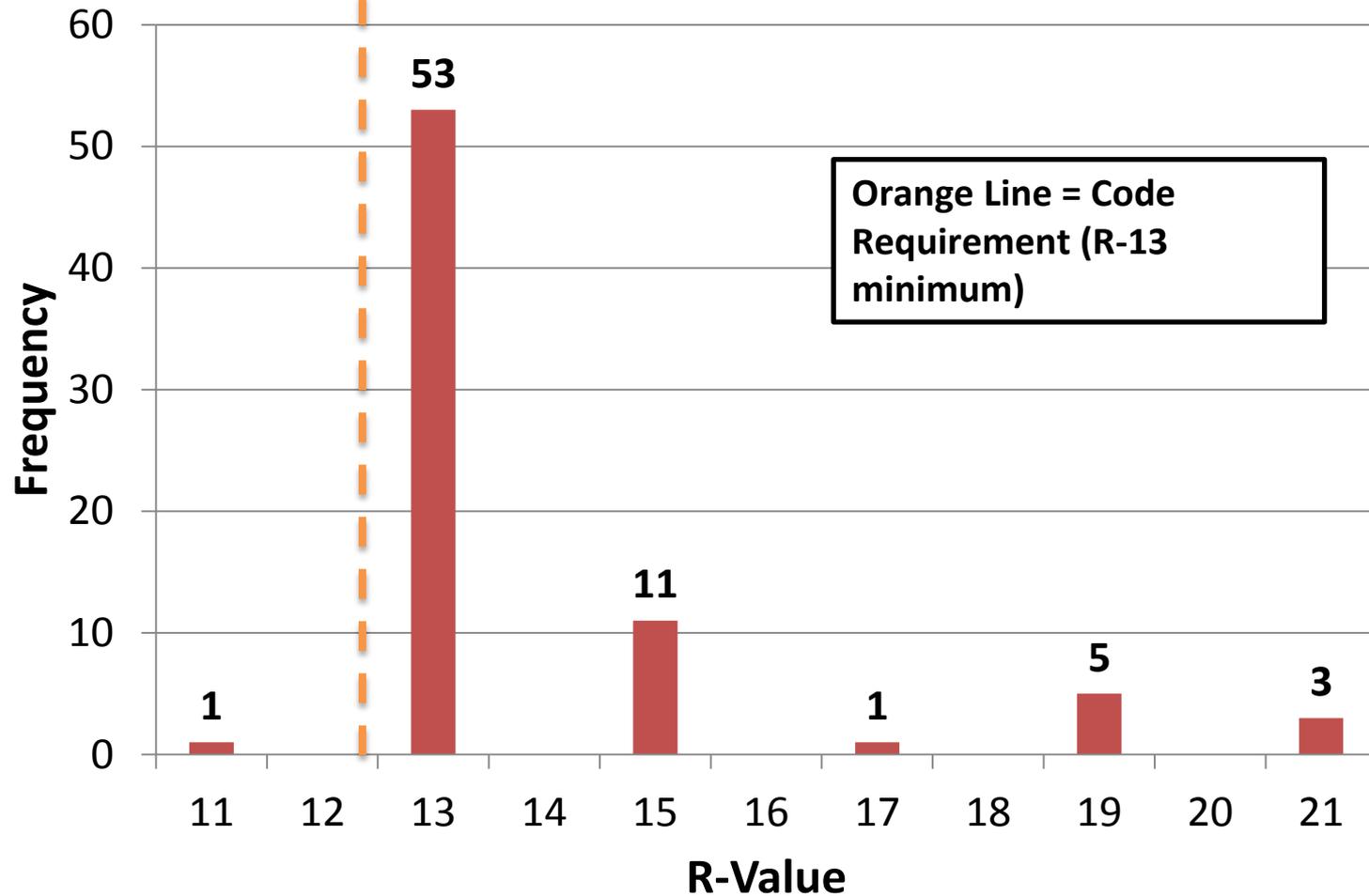
Analysis Methodology

- Establish range & frequency of observations for each key item
- Identify observations that don't meet minimum code requirement
 - Only analyzing non-compliant items that are 15%+ of observations
- Run EnergyPlus models for these items to establish energy use (all other items kept at code level)
- Compare non-compliant energy usage to compliant energy usage to establish savings

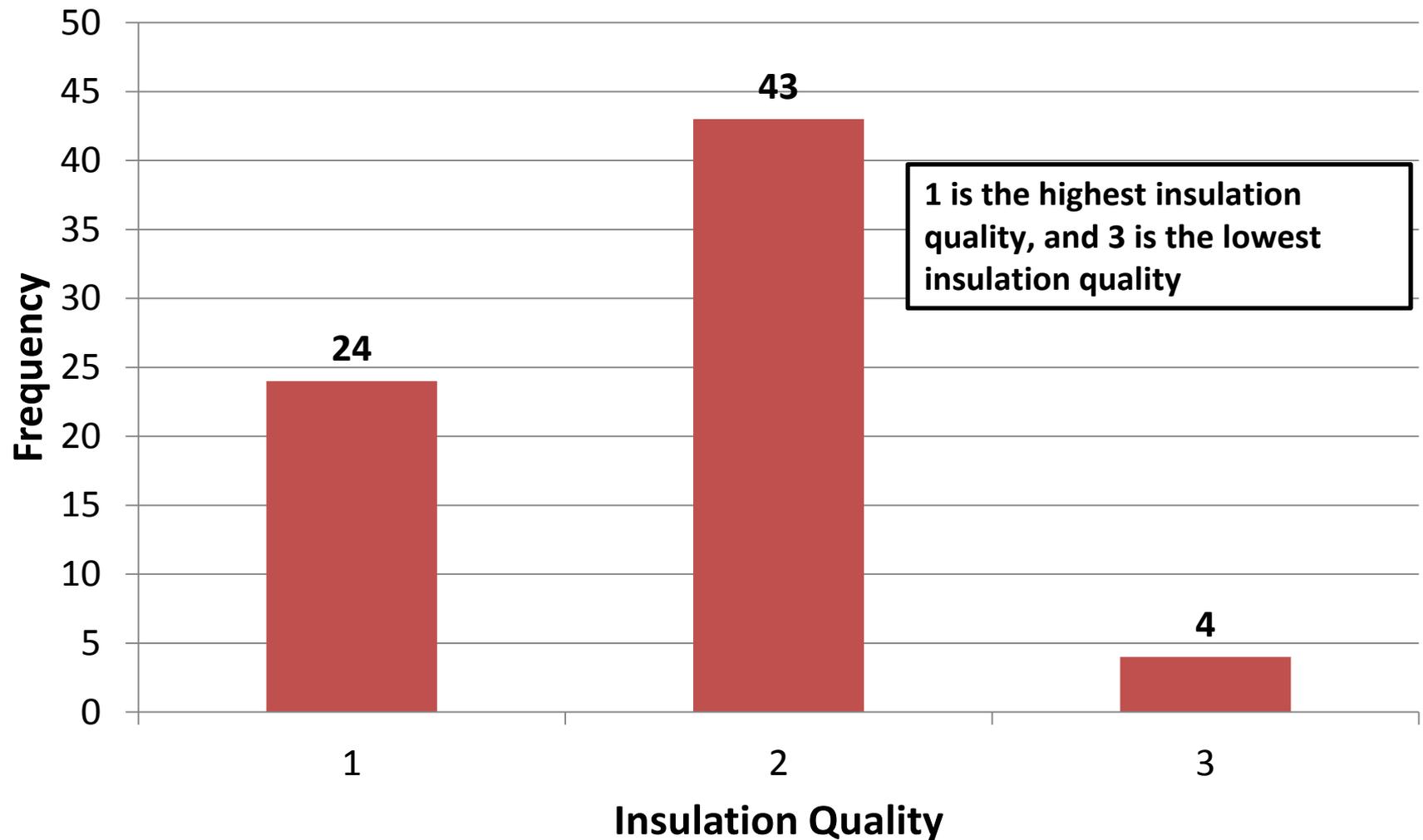
Overview of Kentucky Results

- MEEA and Cadmus conducted similar baseline study in Kentucky as part of larger effort, funded by DOE
 - 8 states are participating
 - Baseline Study, Training & Education, Post-Study
- Find out more at <http://1.usa.gov/1LU3qQ5>

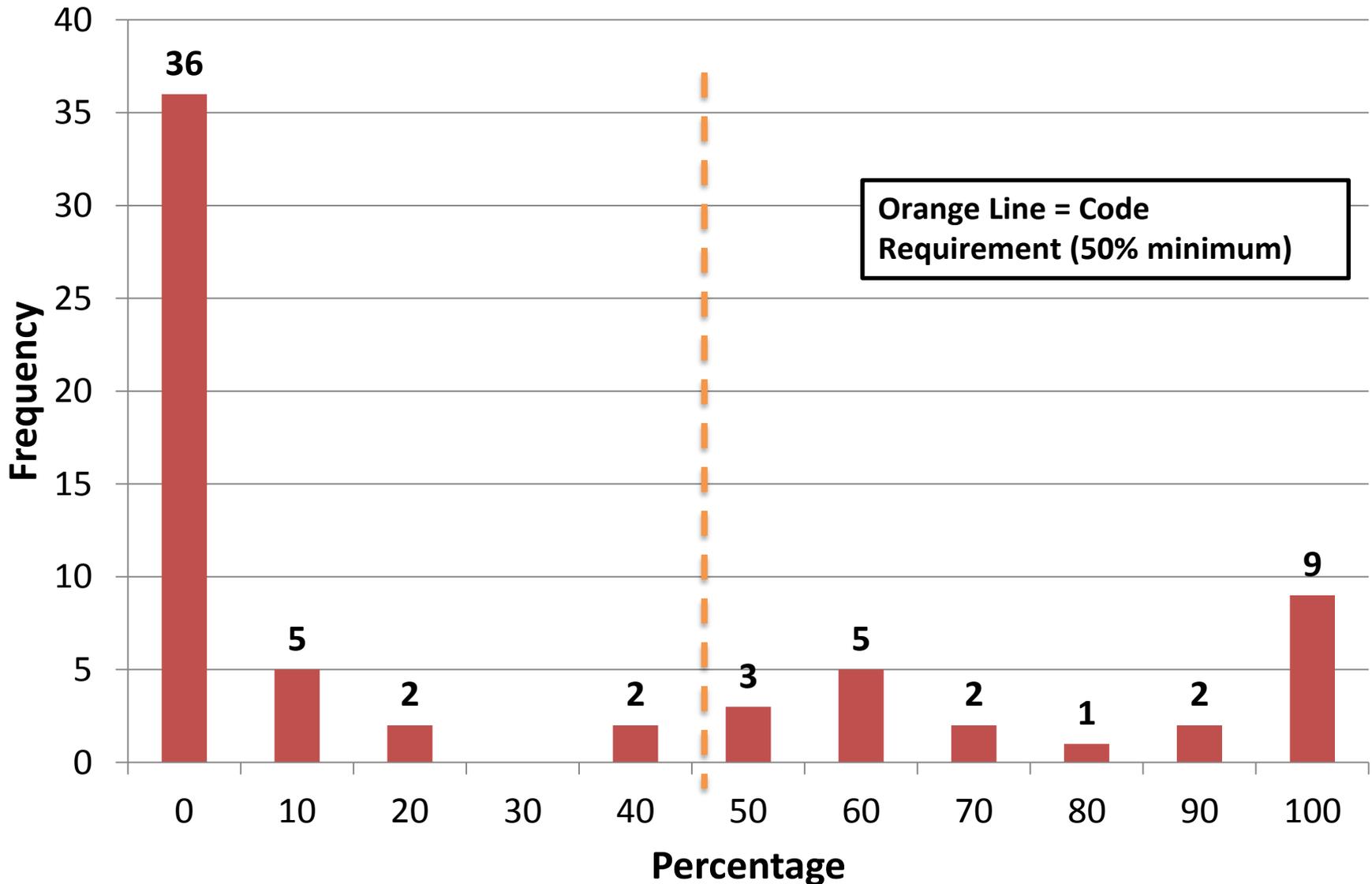
Wall Insulation R-Value: Kentucky



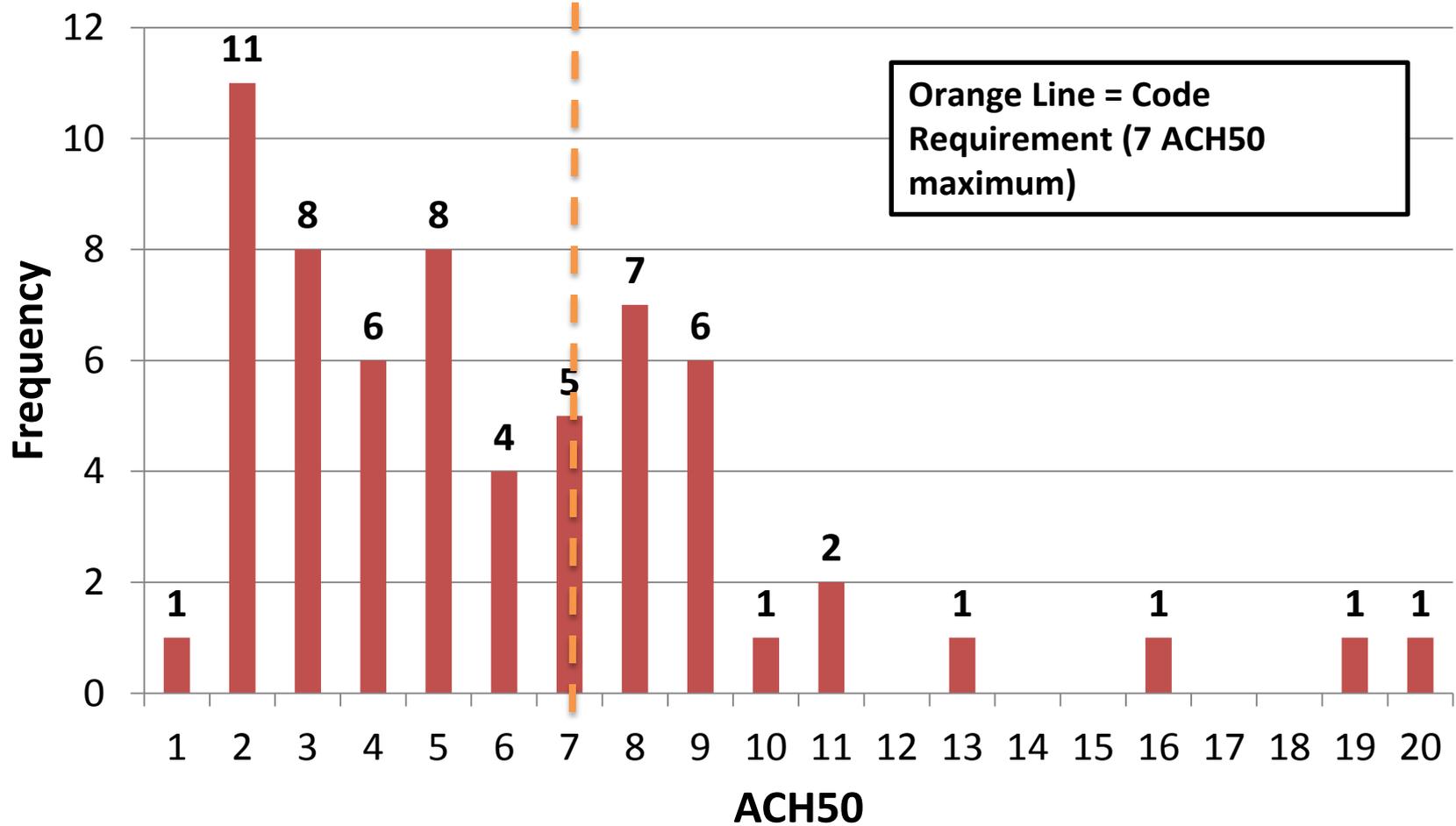
Wall Insulation Quality: Kentucky



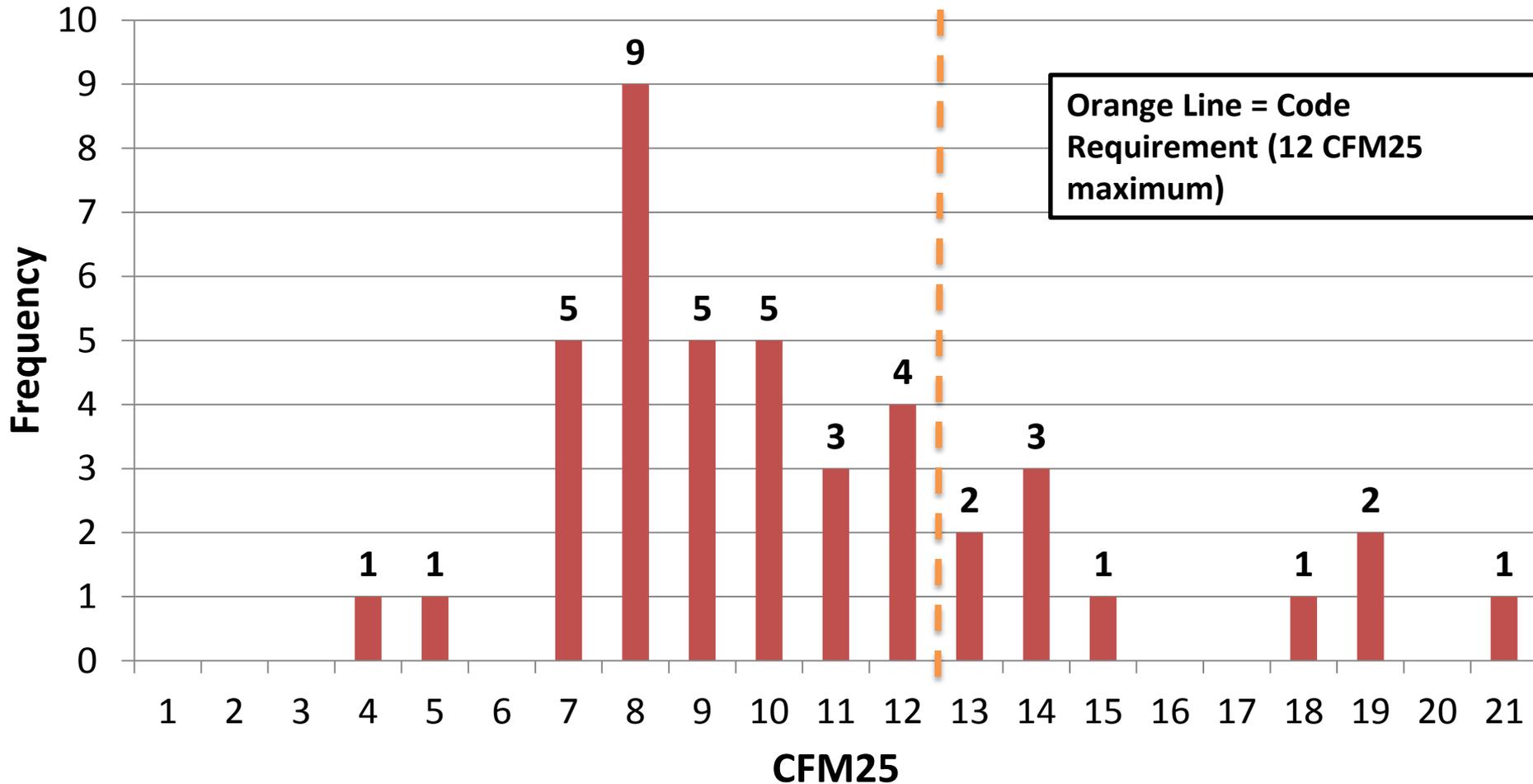
High Efficacy Lighting (%): Kentucky



Blower Door Results (ACH50): Kentucky



Duct Leakage - Unconditioned Space (CFM25): Kentucky



Kentucky: PNNL - Statewide Measure by Measure Energy Savings

Measure	Total Electricity Savings (kWh)	Total Natural Gas Savings (therms)	Total Energy Savings (MMBtu)	Total Electricity Savings	Total Natural Gas Savings	Total Energy Cost Savings
Wall - PNNL	1,199,555	51,841	9,277	\$117,436	\$53,608	\$171,044
Lighting - PNNL	2,206,514	(17,865)	5,742	\$216,018	(\$18,473)	\$197,544
ACH 50 - PNNL	3,245,622	161,079	27,182	\$317,746	\$166,568	\$484,314
Duct Leakage - PNNL	444,934	13,060	2,824	\$43,559	\$13,505	\$57,064
TOTAL	7,096,625	208,115	45,025	\$694,759	\$215,208	\$909,966

Enjoy The Break!

Sampling Plan Methodology

- Based on 2015 Census Permit Data
- Only Single Family Homes
- Permits are Weighted by County
- Then Randomly Selected
- Representative Cross-Section of Construction

Group Discussion

- Feedback on sampling plan
- Suggestions of partners/contacts to make data collection as efficient as possible
- General discussion, feedback, and questions

Next Steps

- Field data collection begins April 6th in St. Louis area
- Matt has begun calling jurisdictions & will continue
- MEEA will organize a mid-point stakeholder update meeting in May
 - Final stakeholder meeting will take place this summer once results are in

Contact Information

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