

Missouri Residential Energy Code Baseline Study

Update Meeting
June 1, 2016

Welcome

Brenda Wilbers, DED/DE

Presentation Topics

- Meeting Goals
- Review Goals & Rationale of Study
- Data Collection Update
- Overview of Preliminary Results
- Sampling Plan Updates
- Group Discussion
- Next Steps / Collaboration

Meeting Goals

- Review the study and data collection plan with key energy code stakeholders
- Provide an update on preliminary findings, logistics of data collection, and experiences in the field
- Facilitate an efficient data collection process for the remaining counties through stakeholder collaboration

Overview of Project

- 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
 - The collected data will be analyzed by the Pacific Northwest National Laboratory on an energy use basis

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 (CFM25)

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 began April 6th and ends June 30th

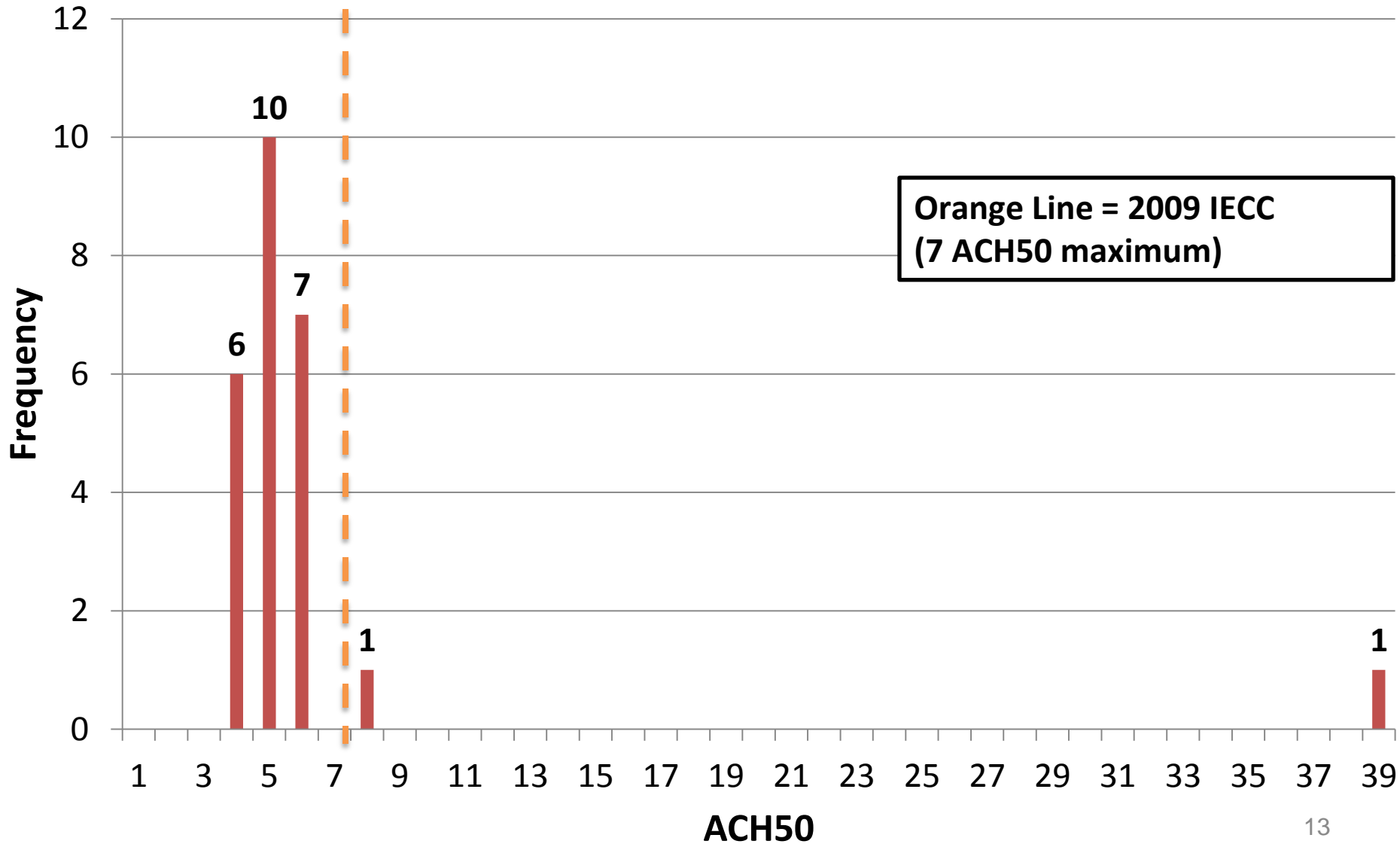
Matt Belcher

(Data Collection Facilitator)

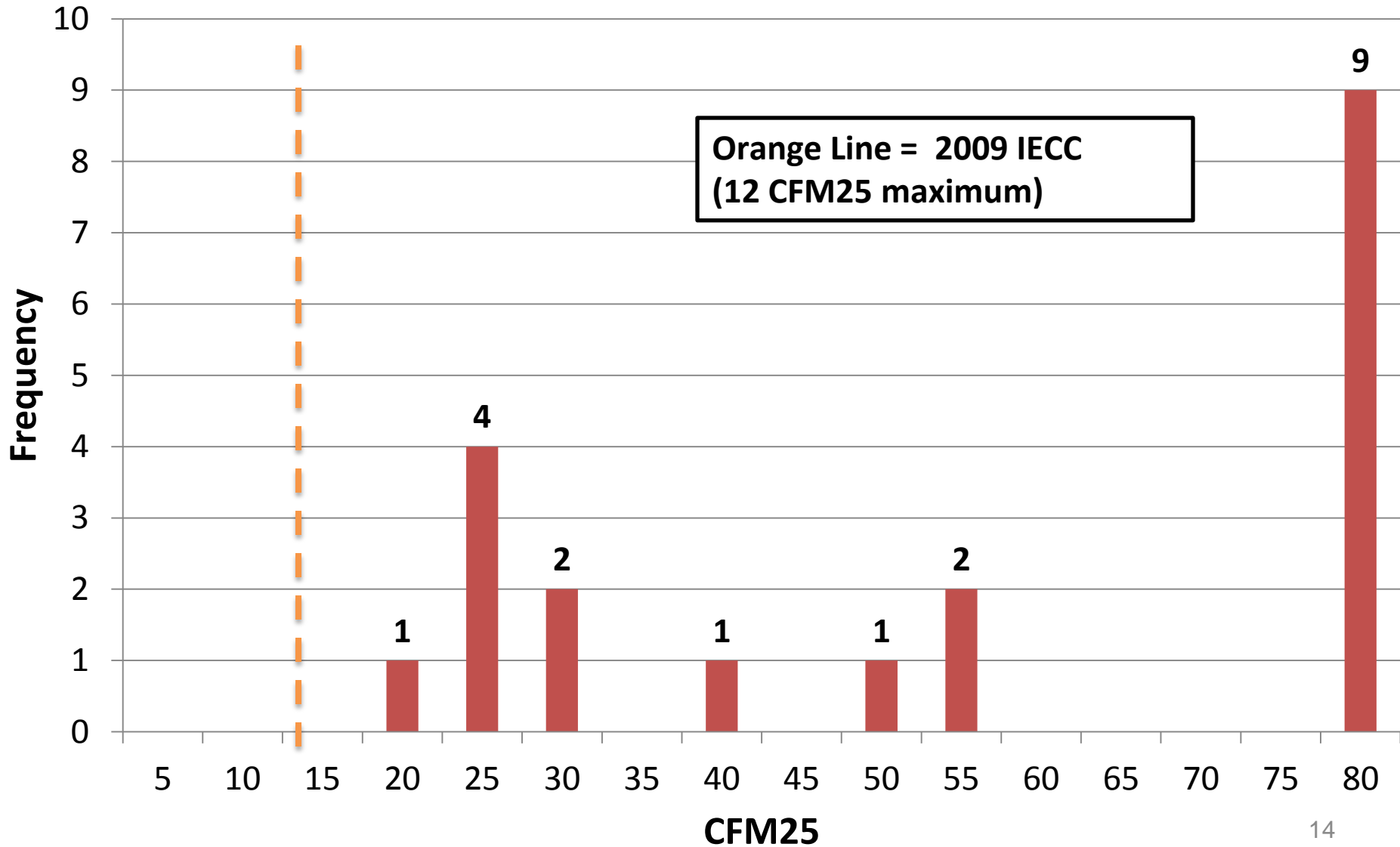
The Cadmus Group (Data Collector)

Overview of Preliminary Results

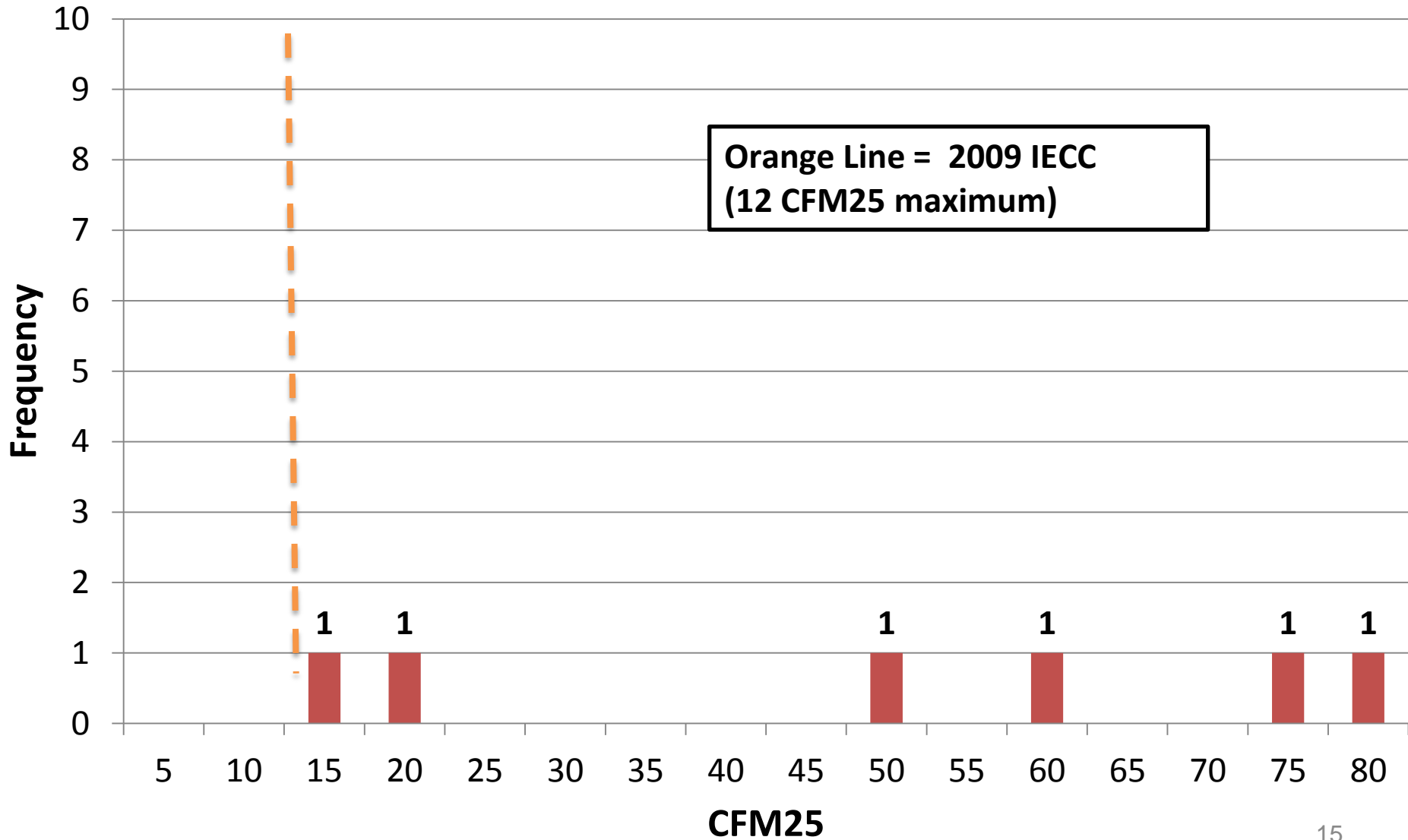
Preliminary - Blower Door Results (ACH50)



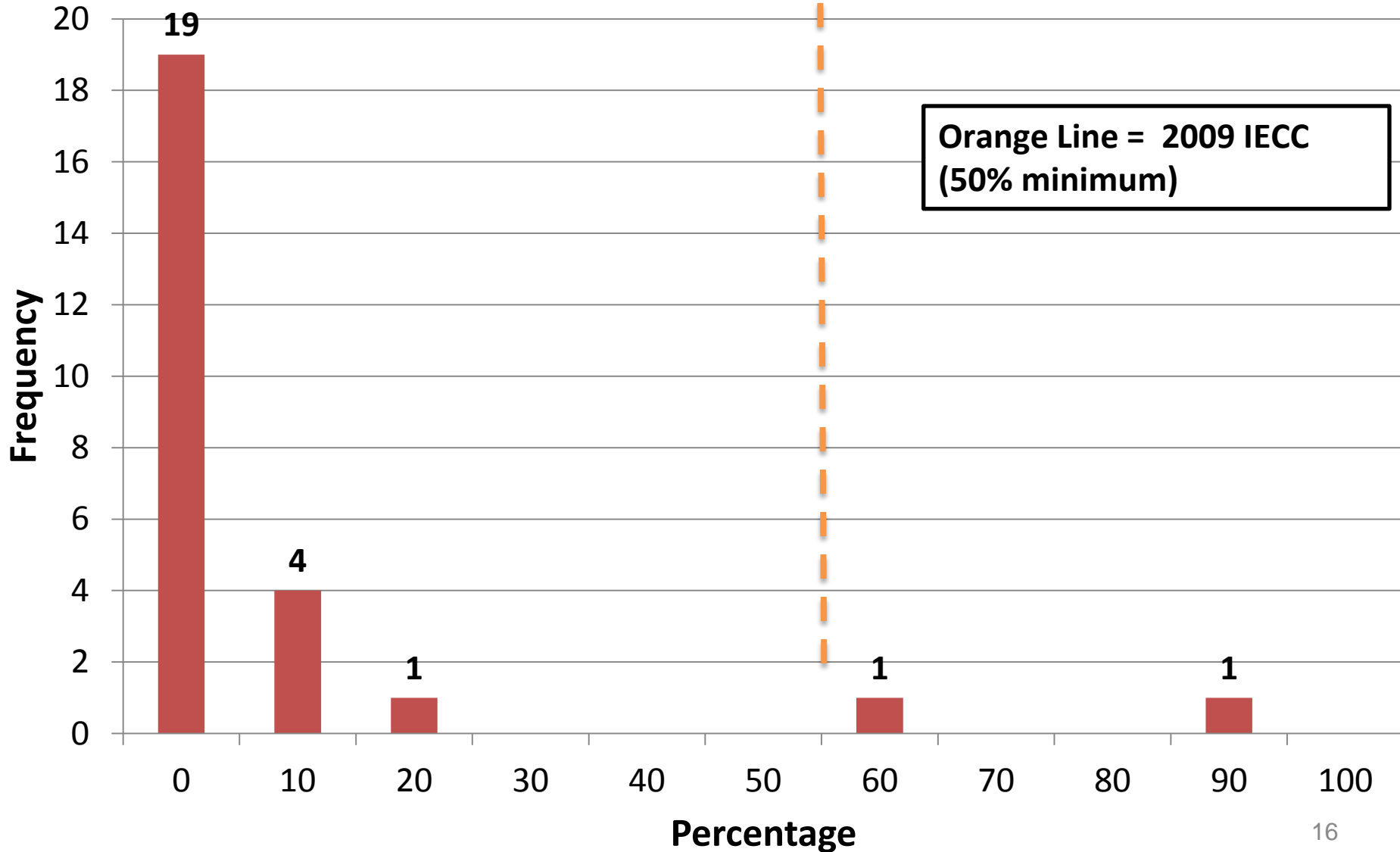
Preliminary - Duct Leakage - Conditioned Space (CFM25)



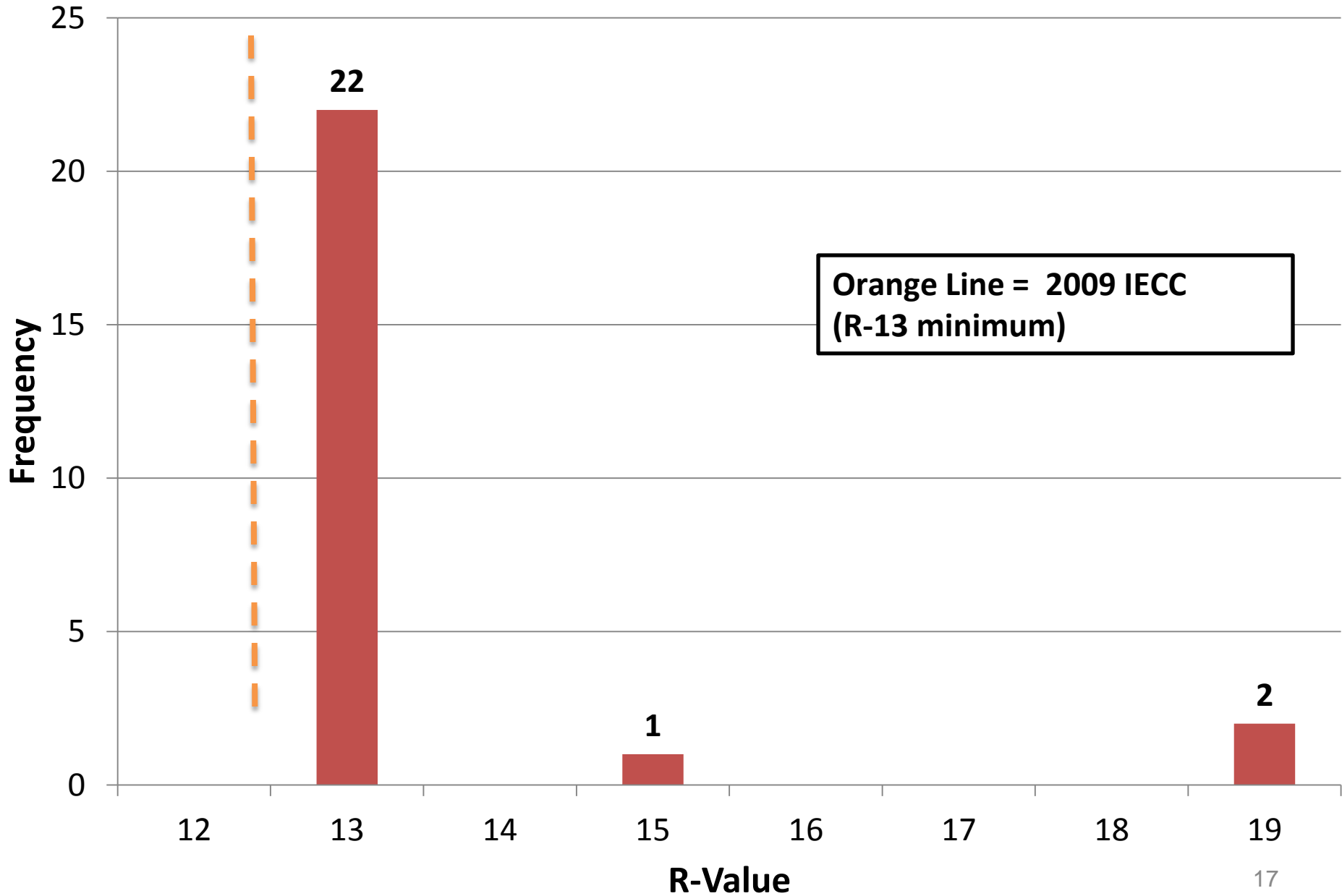
Preliminary - Duct Leakage - Unconditioned Space (CFM25)



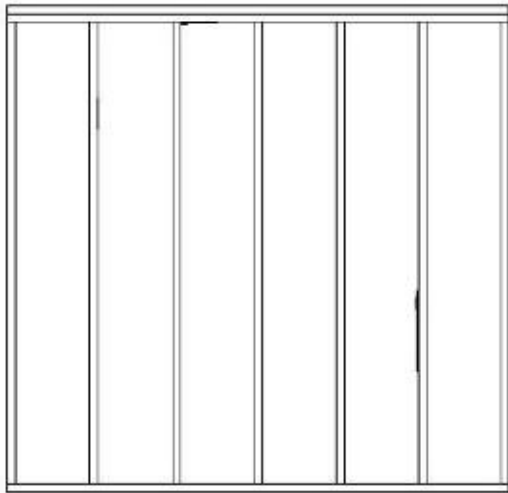
Preliminary - High Efficacy Lighting (%)



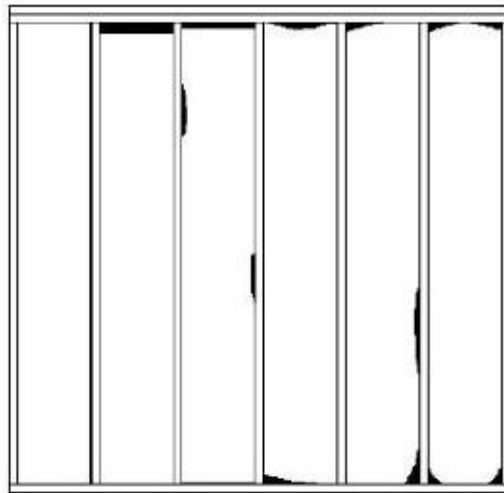
Preliminary - Wall Insulation - R-Value



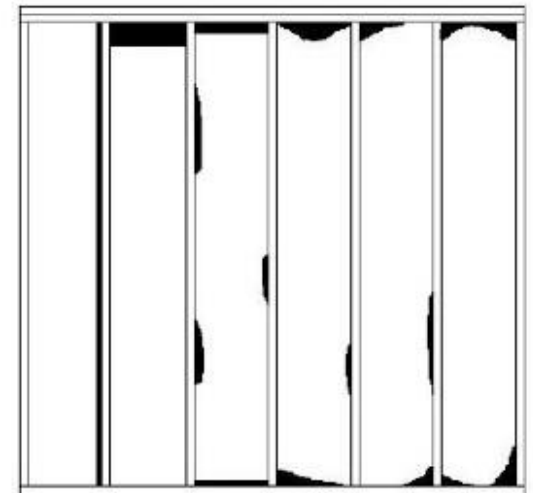
Insulation Installation Grades



Grade I



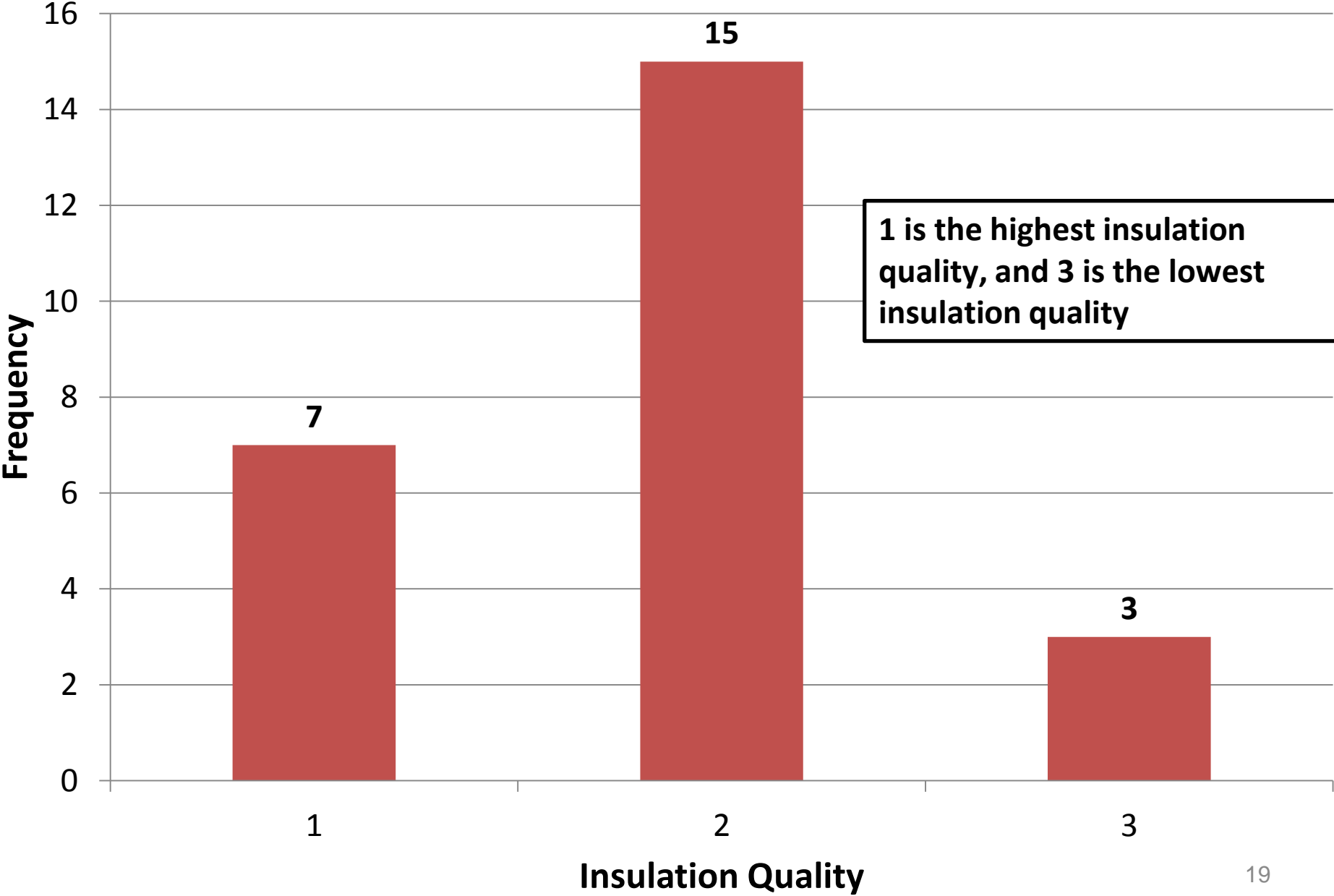
Grade II



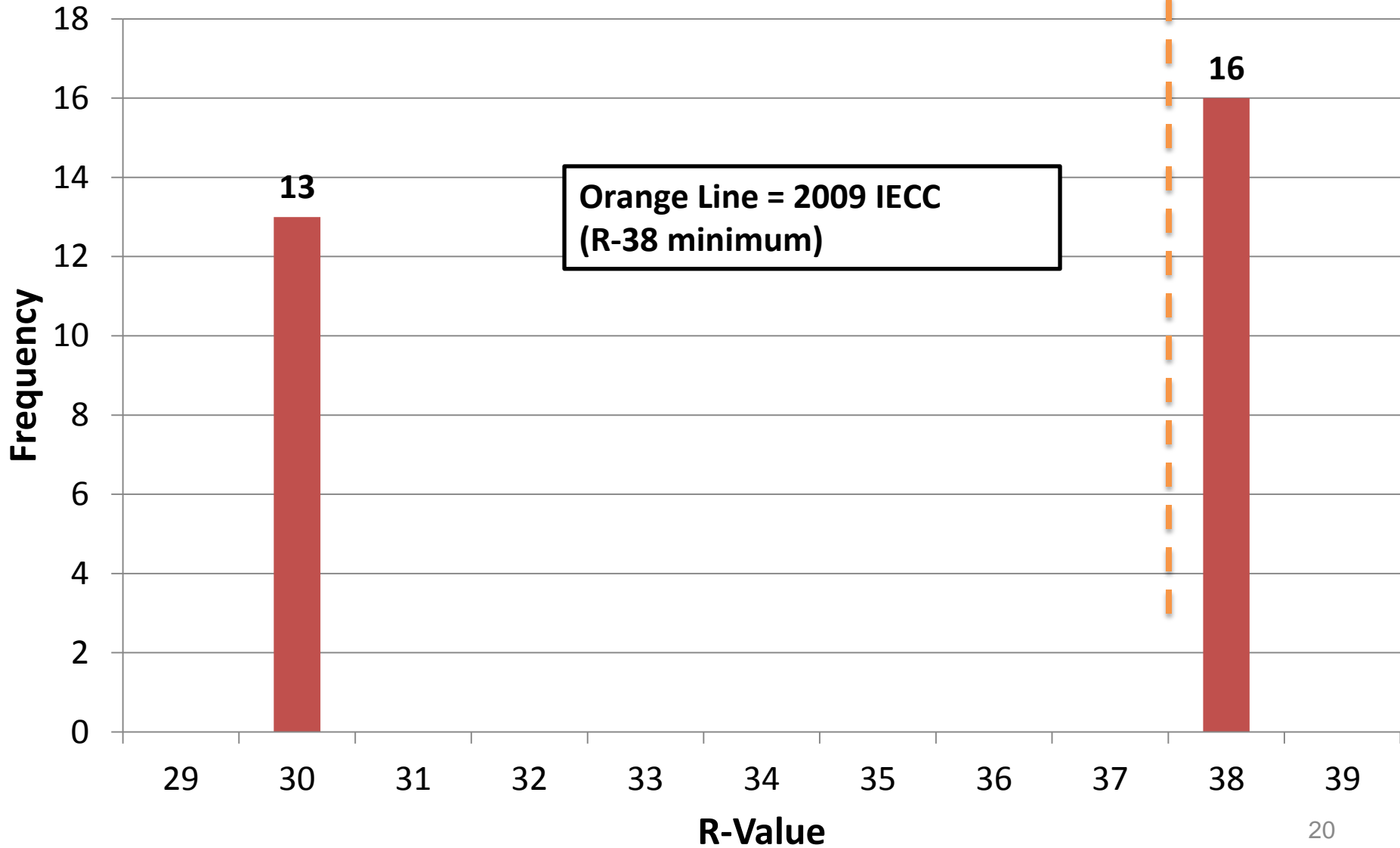
Grade III

Diagrams from the HERS Standards

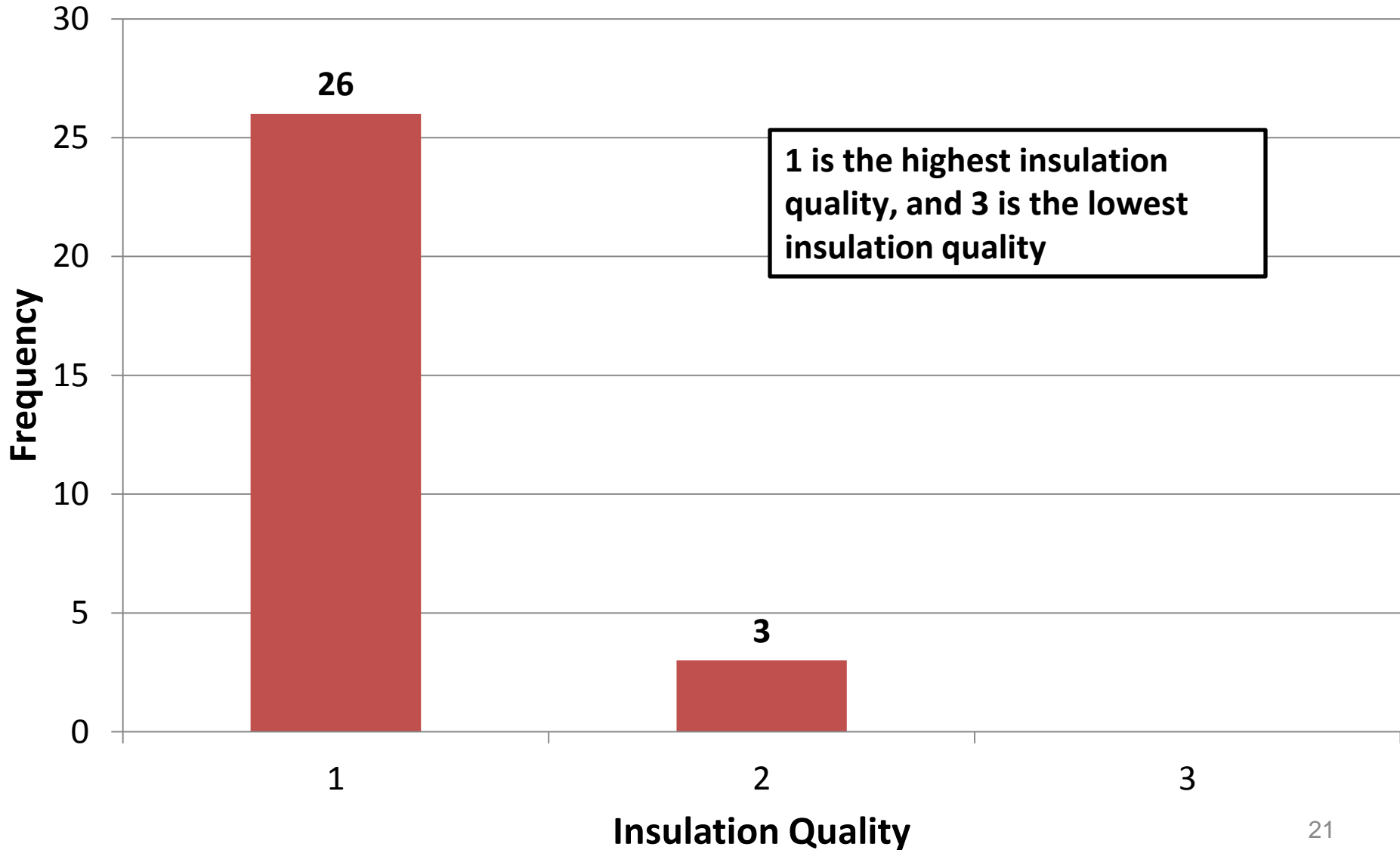
Preliminary - Wall Insulation Quality



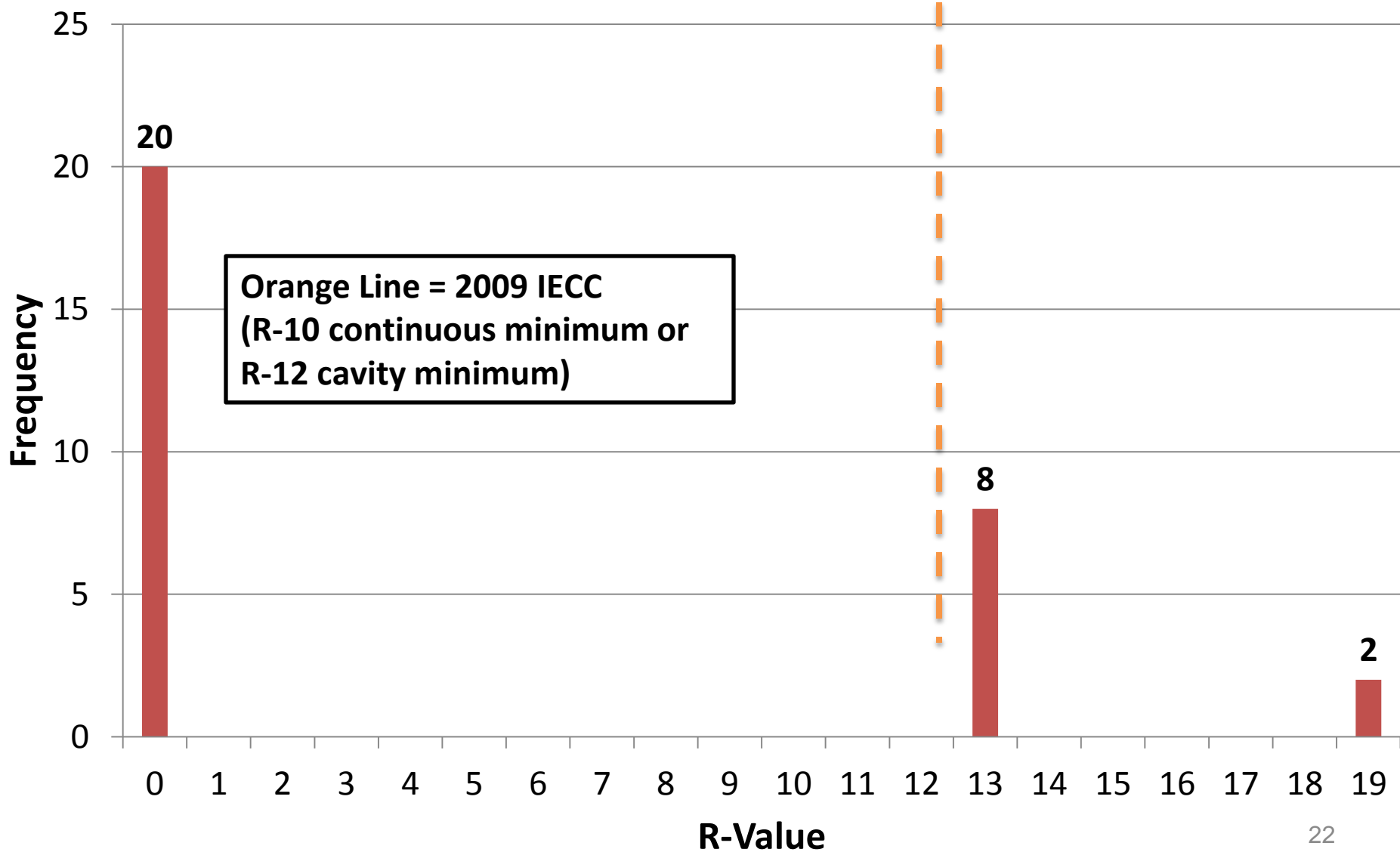
Preliminary - Ceiling Insulation - R-Value



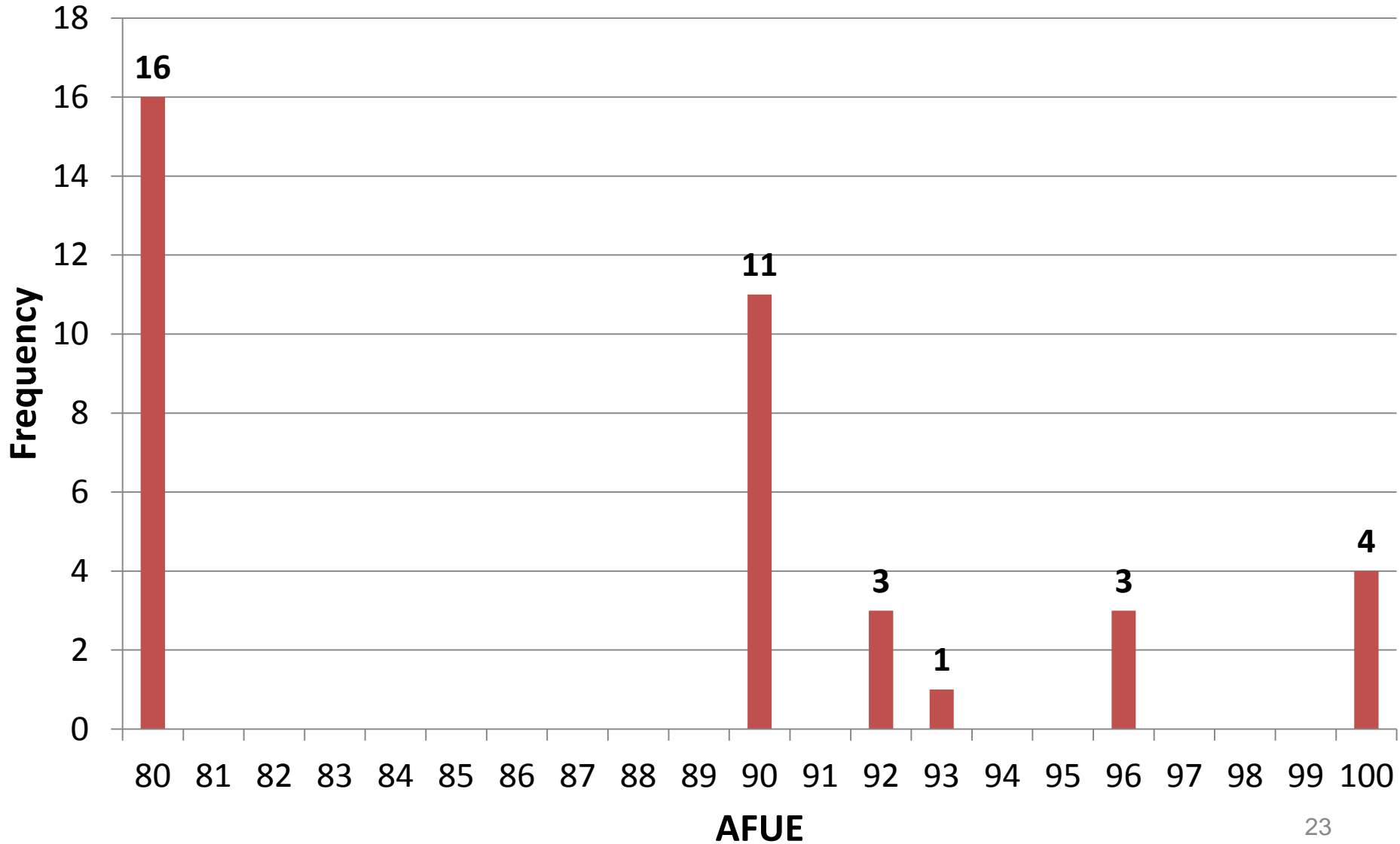
Preliminary - Ceiling Insulation Quality



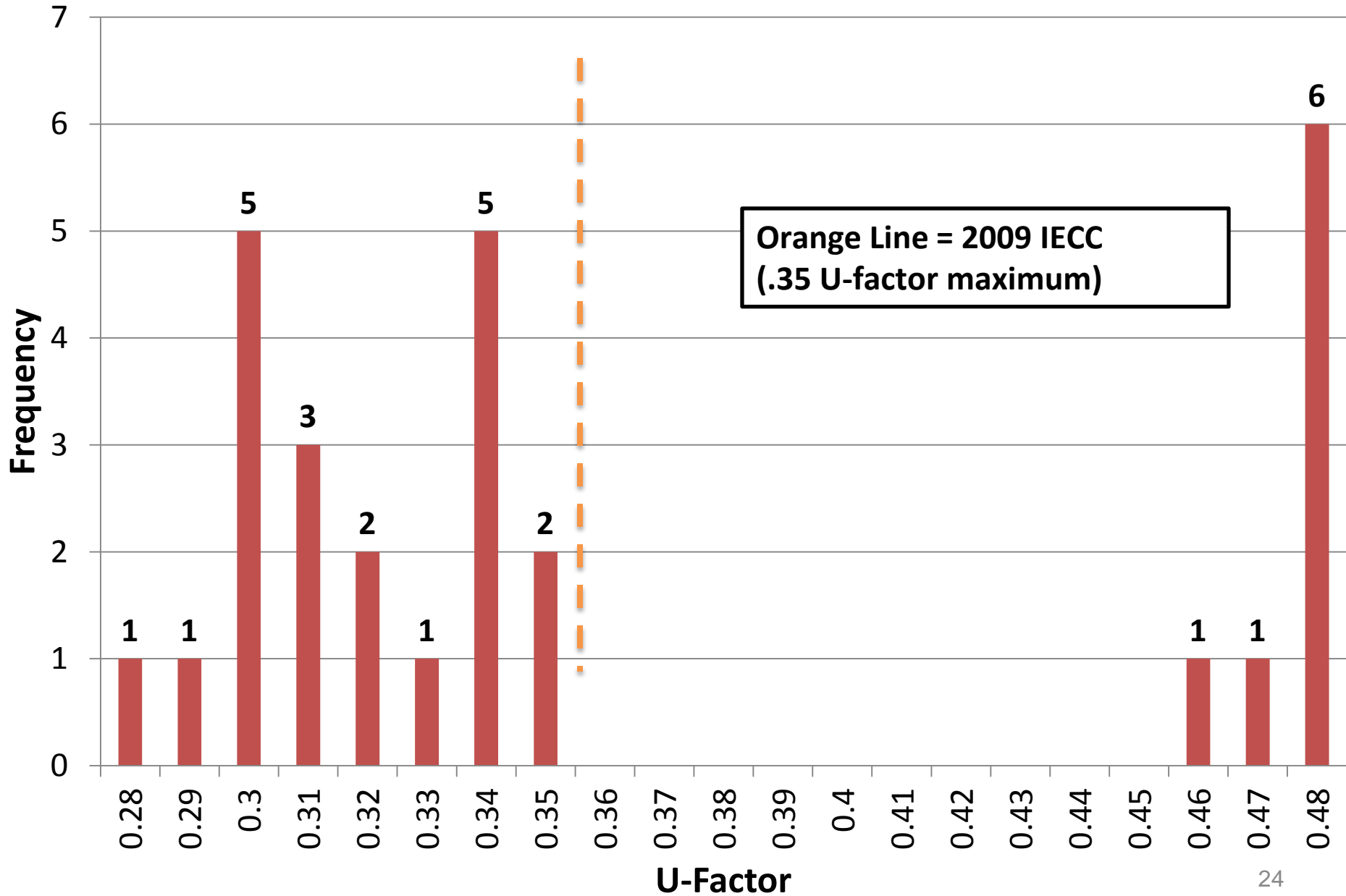
Preliminary - Basement Wall Insulation - R-Value



Preliminary - Furnace Efficiency (AFUE)



Preliminary - Window U-Factor



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



Final Sampling Plan

County Substitution Process

- So far the only substitution required is St. Louis City
 - Lack of construction
- Look for demographic similarity and reasonably proximity
 - Typically things like population, median income, owner occupancy rate, education, poverty level, density
 - In this case a major consideration is a similar urban environment
- Check for similar construction types and techniques

Group Discussion

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

Next Steps

- Field data collection continues
 - Southwest Missouri, St. Louis city, other
- MEEA will submit report to DED/DE in mid / late summer 2016
- PNNL will analyze final data

Contact Information

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