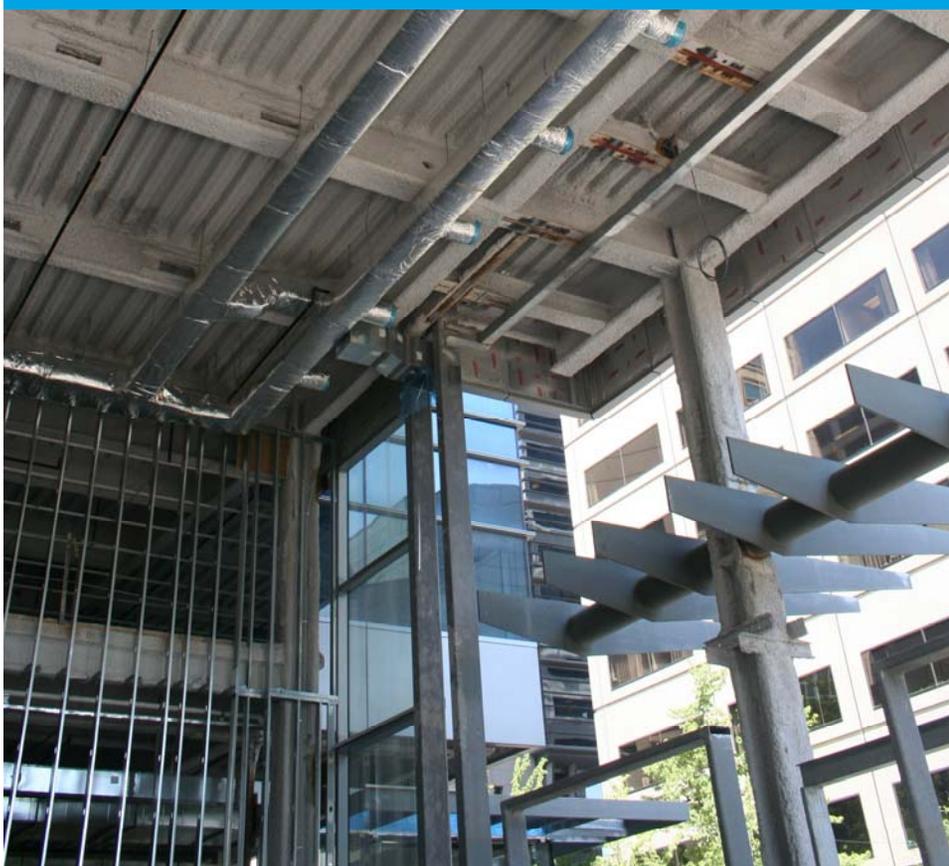


# BUILDING ENERGY CODES

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



## DOE Energy Efficiency Standards for Manufactured Housing

April 28, 2010

Robert Lucas

Pacific Northwest National Laboratory  
robert.lucas@pnl.gov

- Overview
  - Summary of the law's requirements
  - Timeline for issuing DOE standards
  - The IECC
  - Issues
  - Open discussion

- Summary of EISA Section 413
  - Requires DOE to develop MH energy standards but doesn't explicitly relieve HUD of that responsibility
    - DOE shall “consult with HUD”
  - Establishes “most recent” IECC as design baseline, DOE can exceed or fall short of IECC if “cost effective”
    - Purchase price
    - Life-cycle cost
  - DOE “may” consider
    - Uniqueness of factory-built housing
    - HUD climate zones (three, on state boundaries vs IECC's 8 on county boundaries)
    - Allowing “alternative practices” (trade-offs)
  - Final rule issued by December 2011

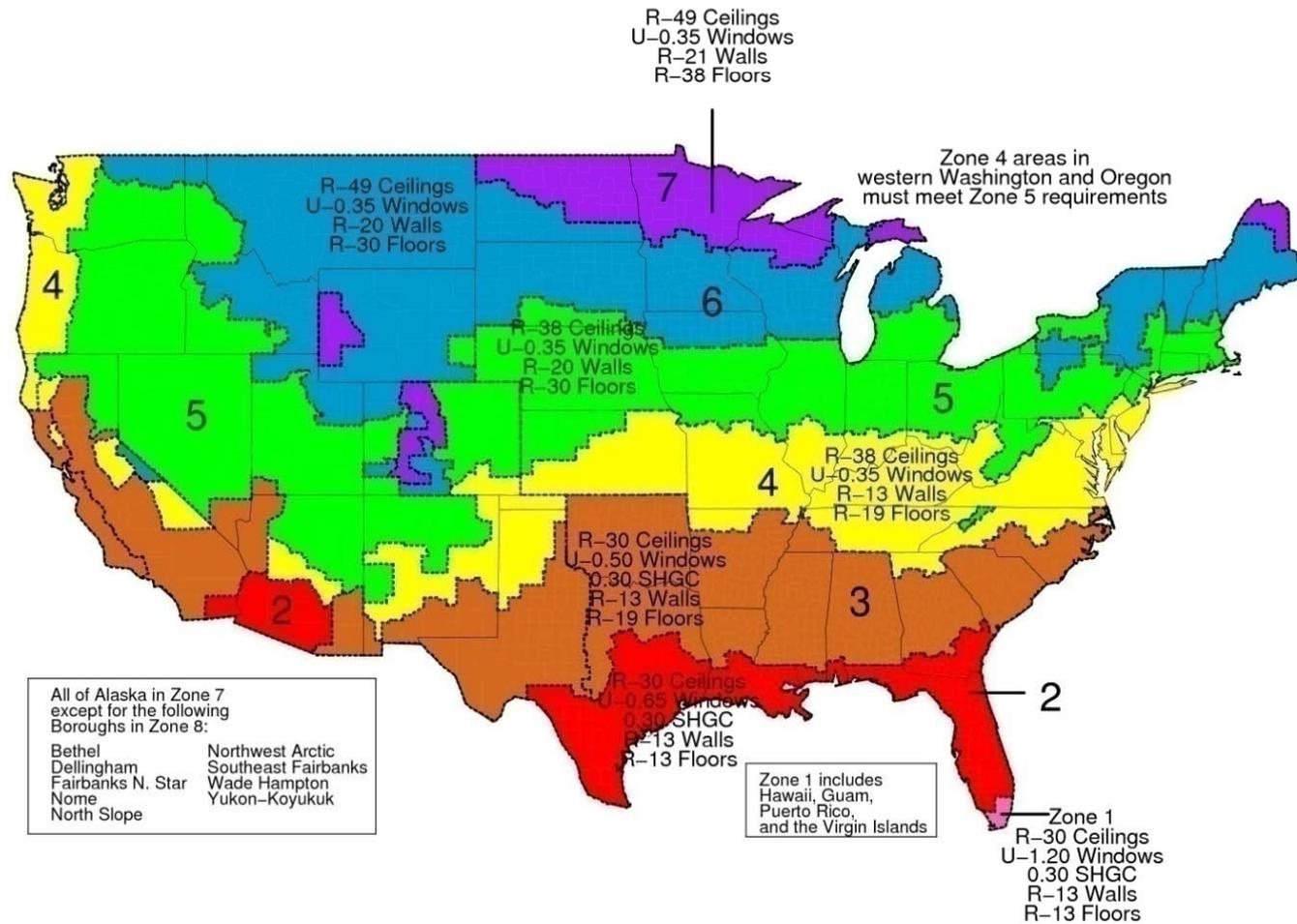
# Timeline for Issuing Standards

- Work to date
  - ANOPR drafted and released February 22, 2010
- Prepare Notice of Proposed Rulemaking (NOPR) in calendar year 2010
  - Will contain the proposed standards
  - Supporting documents will contain technical analysis
- Publish NOPR in the Federal Register around the end of calendar year
- Public comment period including public hearing early 2011
- Consider and address public comment
- Issue Final Rule by December 2011

Right now, DOE is in listening mode, all input is welcome

- ANOPR requested public comment to assist DOE in developing standards
  - Input requested on 13 specific questions
  - Public comment period ended but input will still be accepted if submitted soon
- Detailed, documented technical data is particularly useful

# The 2009 IECC



# 2009 IECC Requirements not in HUD MHCSS

- 0.30 maximum SHGC (solar heat gain) glazing in zones 1-3
- R-6 ducts (R-8 for supply ducts in attic), R-3 pipes (for boilers)
- Tested tight ducts
- 50% of light bulbs are high efficacy (CFLs qualify)
- NFRC window ratings (NFRC currently does not rate storm windows)
- No trade-off credit for high efficiency equipment
- Certificate on building listing insulation R-values, window U-factor/SHGC, etc.

- Climate zones: 8 IECC zones versus 3 HUD code zones
- Fundamental differences in manufactured housing and site-built housing that impact energy efficiency
- Economic (purchase price and life cycle cost) considerations
  - Financing parameters
  - Energy costs (heating equipment shares)
- Enforcement (conformity assessment)
  - Plan review, plant inspections, site installation inspections
- Format and presentation of the standards
  - Match look (section numbering, etc.) of HUD Code?

# Comments?

All comments and discussion welcome

- Further comments and/or supporting documentation can be sent to Harry Indig ([harry.indig@ee.doe.gov](mailto:harry.indig@ee.doe.gov)) or myself ([robert.lucas@pnl.gov](mailto:robert.lucas@pnl.gov))