

# **Kentucky Residential Energy Code Compliance Improvement Study**

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# Presentation Topics

- Overview of Project
- Rationale and Goals of Study
- Current Status of Code
- Compliance Improvement Program
- Contact Information

# Team

- George Mann (Project Manager)
- Isaac Elnecave/Chris Burgess (MEEA)
- Karen Jones/Roger Banks/Ric McNeas (DHBC)
- Lee Colten (DEDI)
- Michelle Britt/Eric Makela (Britt-Makela Group)

# Overview of Project

- MEEA, in partnership with DHBC and DEDI, was awarded a 3-year grant to implement a **residential** energy code compliance improvement program
- Project separated into three phases
  - Phase 1: Pre-Program Code Compliance Assessment
  - Phase 2: Implementation of Program
  - Phase 3: Post-Program Code Compliance Assessment

# Rationale For Study

- Code Compliance in Kentucky is well under 100% (particularly in rural areas of the state)
- New approaches to code compliance training and education may improve code compliance rates
- Improved energy code compliance could significantly (and cost-effectively) reduce energy use and peak electricity demand, and help meet state energy goals.

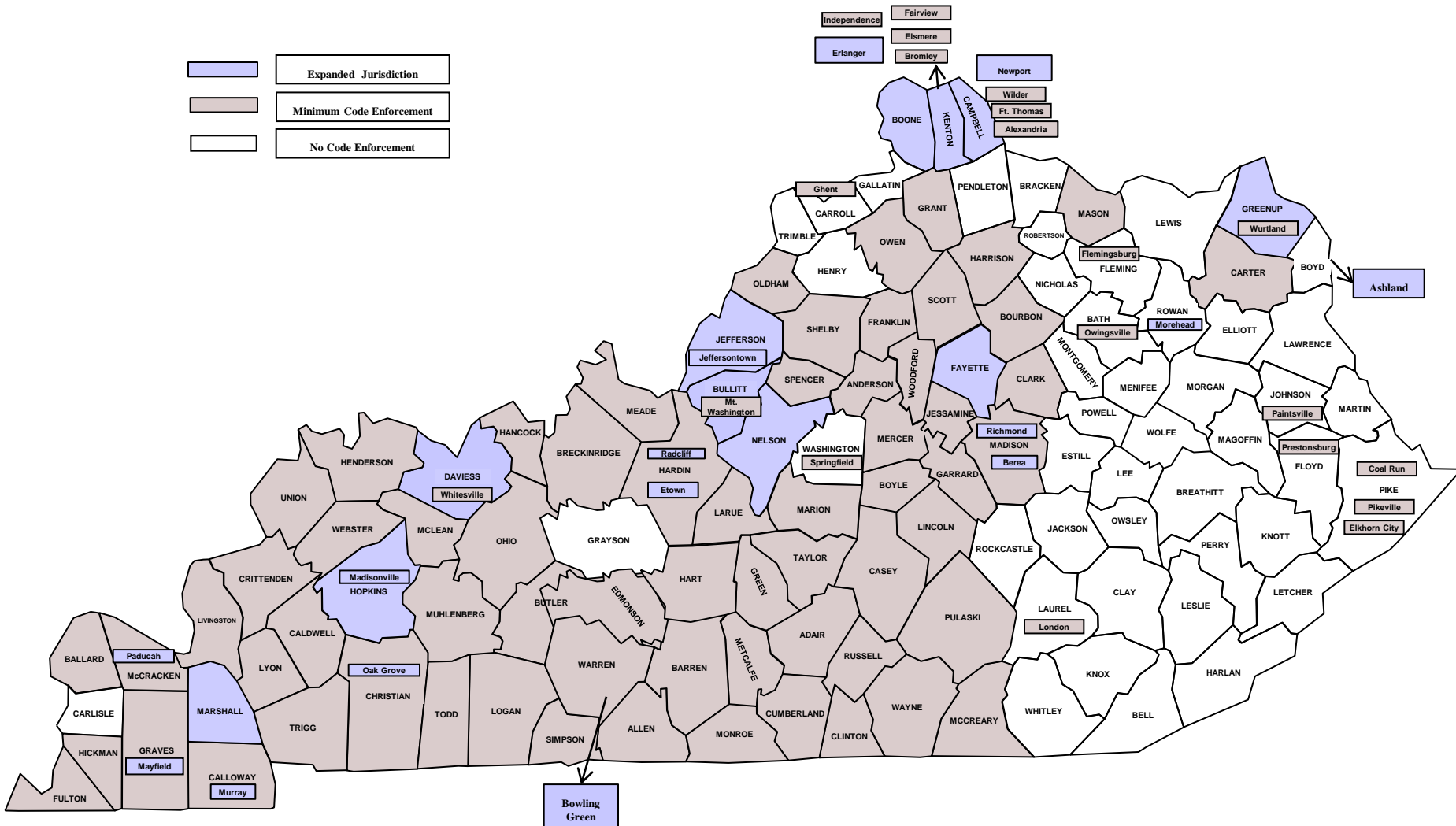
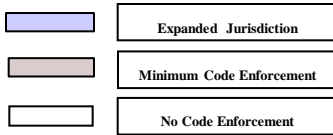
# Goals of Study

- Determine efficacy of code compliance improvement strategies
- Determine potential energy savings (and possibly peak electricity demand reduction)
- Determine cost-effectiveness of improved energy code compliance
- Establish credible EM&V approach to measuring energy savings from improved energy code compliance

# Kentucky Energy Code: Recent Chronology

- 2007 Senate Bill 10 mandated statewide permitting and inspections for all HVAC installations
- The Department of Housing, Buildings and Construction Board approved the adoption of 2009 IECC Residential Code on May 19, 2011.
- The Department of Housing, Buildings and Construction Board approved the adoption of 2009 IECC Commercial Code on August 19, 2010.
- The Department of Housing, Buildings and Construction Board approved the adoption of 2012 IECC Commercial Code on February 20, 2014. (Residential will continue the use of 2009 IECC Code)

# Code Enforcement Jurisdictions





# Recent Energy Code Compliance Efforts

- *2009 – 2012* ARRA-funded energy code inspectors, through DEDI:
  - DHBC created 15 permanent inspector positions (HVAC portion of energy code)
  - After first year fully sustainable by permit fees
- *2011* – ARRA grant through Pacific Northwest National Lab (PNNL), with the Building Codes Assistance Project (BCAP)

# Recent Energy Code Compliance Efforts

- 2009 – 2012 ARRA-funded energy code training
  - Train the trainers for residential energy code
  - Manual J & D training for Master HVAC contractors – included software and hands-on
  - Plan review workshop for certified building officials
  - Series of 10 all-day workshops on residential code across the state for builders
  - Series of ½ day workshops on commercial code for design community
  - IECC certification for inspectors
  - Staff attended energy codes conferences
- 2011 ARRA-funded activities with BCAP
  - Development of web-based Learning Management System on energy code
  - Development of education materials for various consumer audiences
  - Developed needs assessment/gap analysis and plan for energy codes

# 3-Phase Program Implementation

- *Phase 1:* Conduct survey to determine baseline energy code challenges and compliance rate
- *Phase 2:* Implement programs to raise energy code compliance rate
  - Establish Energy Code Compliance Collaborative
  - Establish Targeted Advanced Training Program (informed by Phase 1 survey results)
  - Establish Circuit Rider Program
  - Establish Energy Code Compliance Hotline and web-based Learning Management System
- *Phase 3:* Conduct survey to determine post-implementation energy code compliance rate

# Study Structure and Timeline

- Project separated into three phases (across 32 months)
  - *Phase 1*: Pre- Program Code Compliance Assessment (6 months)
  - *Phase 2*: Implementation of Program (26 months)
  - *Phase 3*: Post- Program Code Compliance Assessment (6 months, concurrent with end of Phase 2)

# Phase 1: Baseline Study

- Determine current level of statewide energy code compliance
- Determine energy savings and peak reduction potential with improved compliance
- Use DOE developed methodology (more details later in the agenda)
  - Sampling Plan
  - Outreach Plan
  - On-Site Assessments
  - Analysis of Assessments

# Notes on Survey

- There are eight requirements which will be observed.
- Each state needs to get 63 sets of observations for the eight requirements.
- Each site will only be visited once.
- All of the site data will remain anonymous.
- Building officials will know about the survey but will not accompany the surveyors.
- All results will be reported as a statewide value.

# Observable Items

- Foundation Insulation (basement, crawl space or slab as applicable).
- Above-Grade Wall Insulation
- Ceiling/Roof Insulation
- Envelope Air Leakage (Blower Door Tests)
- Duct Leakage
- High Efficacy Lighting
- HVAC Sizing
- Window U-Factor





# Phase 2: A Comprehensive Program Approach

## Program Elements Include:

- Code Compliance Collaborative
- Advanced Training (Topic and Role-Based)
- Circuit Rider
- Hot Line
- Online Courses

# Energy Code Compliance Collaborative

- Establishment of advisory group to help guide program work
- Provides input on program work / incubates new ideas for improving energy code compliance
- Broad cross-section of stakeholders
- Follow successful model from Nebraska

# Targeted Advanced Training

- Baseline study identifies areas of non-compliance
- Design training curriculum focused on measures that need improving (taking into account how non-compliance changes across different regions of the state)
- Includes role-based training for code officials

# Phase 2: A Comprehensive Program Approach

- Comprehensive approach to reach maximum number of stakeholders
- Targeted training and information based on data from baseline study

# Circuit Rider

- Qualified experts on energy codes who travel to jurisdictions across the state on a regular basis
- Provide individual, targeted training and assistance to jurisdictions
- In areas without building departments, circuit riders can provide training to homebuilders, building supply houses and other stakeholders.

# Code Hotline

- Provides quick, timely answers to energy code related questions
- While answers are provided by a qualified energy code expert, they are not an official code interpretation.

# Online Learning Modules

- Supplement advanced training and circuit riders for those who could not participate
- Build on successful program implemented in 2011. Update for new code in place (2009 IECC) and pre-program study results

# Phase 3: Post-Program Study

- Same Methodology as Pre-Program Study
- Goal is to compare the energy lost to non-compliance post-program to pre-program.



# Project Partners

- **MEEA** – primary grant recipient; contract and administrative oversight – especially for various sub-contractors
- **Department of Energy Development and Independence** – administrative, logistical, and technical support
- **Department of Housing, Buildings and Construction** - administrative, logistical, and technical support; marketing code improvement activities; will hire contractor to coordinate survey and program implementation activities
- **MEEA Sub-contractors:**
  - Survey
  - Online Learning Modules
  - Circuit Rider Program
  - Targeted Advanced Training Program
  - Hotline
- **Stakeholders** – participate in Collaborative and provide input on results interpretation, design of code improvement programs, etc.

# Other States with Similar Projects

- Alabama – Qualitative jurisdictional assessment sampling to inform statewide jurisdictional technical assistance program
- Arkansas/Georgia – Robust stakeholder engagement process to support training and education program
- Maryland – Educating county executives and managers about the “why” of code compliance, coupled with technical training for code officials and builders.
- Pennsylvania – Advanced in-person and online training supplemented by home energy rater consultations for builders and development of an inspection app for code officials.
- Texas – Ambassador Outreach to Provide Local Training Resources

# Next Steps

- Formally establish energy codes compliance collaborative
- Issue RFP for data collection contractor
- Hire DHBC staff person who will manage project
- Begin developing RFP's for program implementers

# Contact Information

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