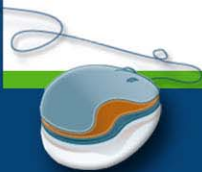
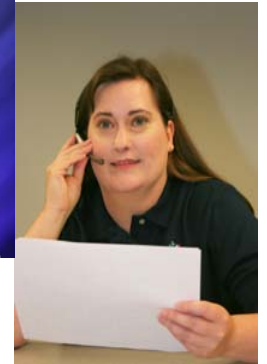


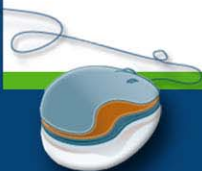
# American Recovery and Reinvestment Act (ARRA) State Energy Program (SEP) Formula Grants 90% Compliance

Linda Connell  
Rose Bartlett



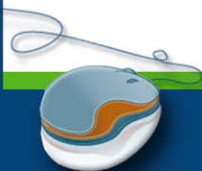
# Agenda

- Introduction
- BECP activities to date
- Annual reporting requirement
- Metrics definition
- Onsite audit guidelines
- Related outcomes
- Tools
- Training
- Questions and feedback



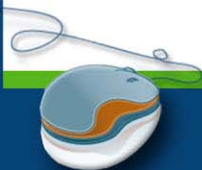
# ARRA-SEP Language

- A residential building energy code (or codes) that meets or exceeds the **most recent International Energy Conservation Code**, or achieves equivalent or greater energy savings.
- A commercial building energy code (or codes) throughout the State that meets or exceeds the ANSI/ASHRAE/IESNA **Standard 90.1–2007**, or achieves equivalent or greater energy savings.
- A plan to achieve **90 percent compliance** with the above energy codes within eight years. This plan will include active training and enforcement programs and **annual measurement** of the rate of compliance.



# ARRA-SEP

- Residential: 2009 IECC
- Commercial: 90.1-2007
- 90% compliance within 8 years
- Interpretations
  - 2009 IECC not specified directly because still being acted on and couldn't be referenced
  - One time demonstration of 90% compliance required



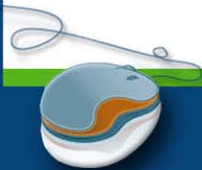
# ARRA-SEP

- Initial application letters due March 23
  - Letters have already been received from all states
- Applications due May 12



# Webcast Intent

- Inform states of DOE/PNNL ARRA activities
- Answer questions and get feedback
- Purpose
  - Foster uniformity in measuring compliance rates
  - Eliminate need for each state to develop their own procedures and tools or
  - Provide tools that states can adapt for their own preferred use



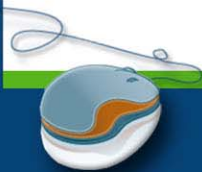
# Activities to Date

- Research into past studies and protocols associated with compliance
- First “strawman” proposed 3-tier approach
- Tiers 1 & 2 measure building department processes
  - Training and certification of code enforcers?
  - Level of plan review/inspection?
  - Is compliance documentation required before permit issued?
- Tier 3 measures performance e.g. compliance measured by auditing the actual buildings in the field
- Performance does not include operational data



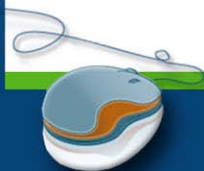
# Thanks to Rev 1 Commenters

- David Cohan
- Mike DeWein
- Bill Dupler
- Isaac Elnecave
- Henry Kosarzycki
- Ron Lynn
- Emory Rodgers
- Kraig Stevenson
- Steve Turchen
- Liked multiple tiers, but performance required for ARRA metric
- Include the design and construction industry



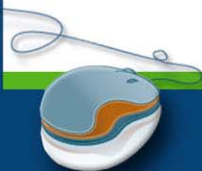
# Annual Reporting Requirement

- ARRA metric
  - Must be measured by performance based on onsite audit
  - Use a statistically-valid sample
    - 90% of buildings sampled meet code
    - On average, the buildings sampled were 90% compliant
  - Based on 2009 IECC & 90.1-2007 (target codes)
  - Show progress annually until 90% compliance demonstrated
  - 90% compliance must only be demonstrated once



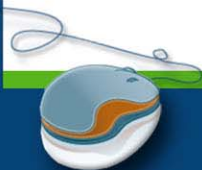
# Metrics Definition

- Advantages to measuring prior codes
  - Needs assessment and identification of barriers
  - Corrective training
  - Training on new code requirements
  - Engagement of the building jurisdictions
- Home rule states
  - Same processes apply
  - Protocols offered at jurisdictional level
  - Work through state energy office



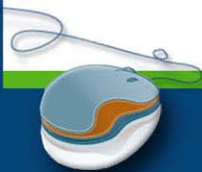
# Metrics Definition con't

- Interim reporting requirement:  
show progress
  - Spot check buildings (smaller sample)
  - Revisit jurisdiction processes (questionnaire /checklist)
    - Could include design & construction industry



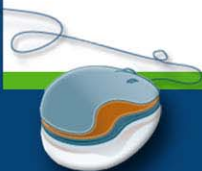
# Metrics Definition con't

- Codes exceeding 2009 IECC/ 90.1-2007
  - DOE state analysis will provide state determinations (draft results in July)
  - Framework established based on the target codes (2009 IECC / 90.1-2007)
  - States/localities may request similar determinations
  - Must still demonstrate 90% compliance
  - Some DOE tools will be applicable, some will not



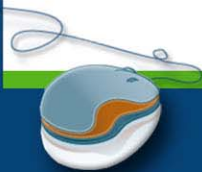
# Metrics Definition con't

- Collection of multiple metrics
  - Residential and commercial
    - Further delineations, such as low-rise multi-family vs. single-family and large commercial vs. small commercial
  - New construction and retrofit
  - Process and performance
  - Metric roll-up to state, regional, and national level

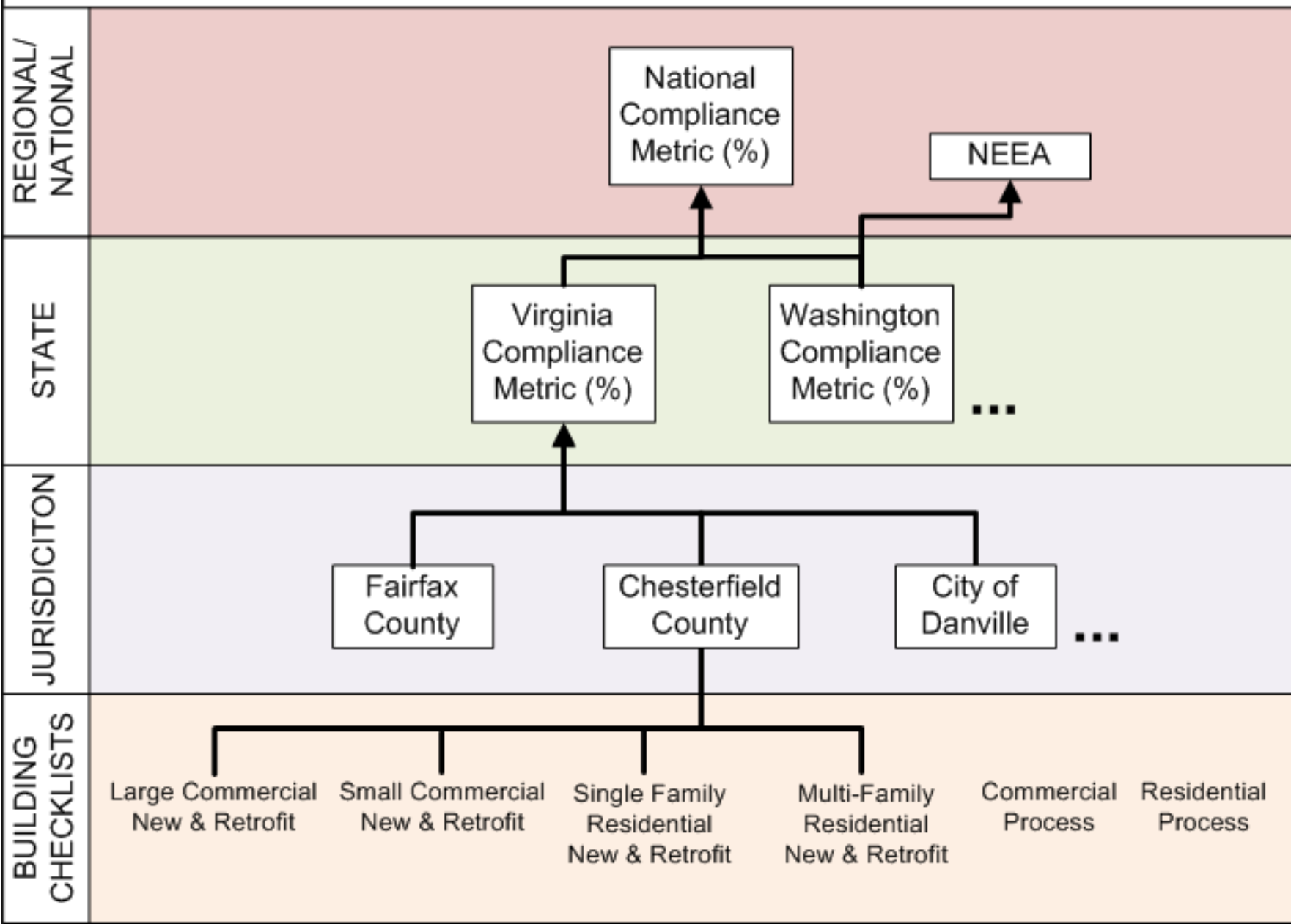


# Onsite Audit Guidelines

- Sample size and make up
  - How to define a statistically relevant sample?
  - Which jurisdictions, based on permits?
  - Which buildings, to include new construction, additions, renovations?
- Inspection criteria
  - What building features should be inspected?
  - How are results measured and weighted?
  - How are results documented?
- Inspection Tools
  - Checklists specific to climate zone and building type
  - Building department process checklists



# Code Compliance Metric Roll-Up



# 2009 IECC Compliance Inspection Checklist

## Residential

Climate Zone 5

Date: \_\_\_\_\_ Name of Inspector: \_\_\_\_\_

State: \_\_\_\_\_ Jurisdiction: \_\_\_\_\_

Project Type:     New Construction             Addition             Renovation

	Complies				Missing
Glazing Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Glazing U-factor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ceiling Insulation R-Value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wall Insulation R-Value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50% of lamps are high efficacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foundation Insulation R-Value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duct Insulation R-Value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duct Sealing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duct blaster test administered and passed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Circulating hot water pipes are insulated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

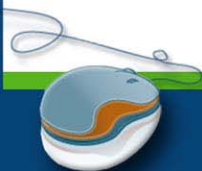
# Onsite Audit Guidelines

- Use of auditors/inspectors
  - Building department staff
  - Third party
  - Qualifications and certification
  - Training (as done in one study)
- State, building department, and builder/contractor buy-in
  - Training opportunities as an incentive
  - Communicate this is not punitive
  - Requirement for occupancy permit as a stick
- Early pilot studies in a few states



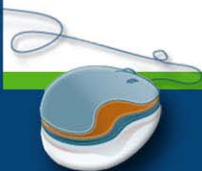
# Related Outcomes

- Opportunity to impact & change practices and collect additional information
  - Electronic data for automating metrics
  - Process vs. performance correlation studies
    - Best practices guides
  - Evaluation of potential energy savings based on compliance metrics
    - If 100% compliance is achieved, how will that impact energy usage?
  - Needs assessments
    - What do the building departments need in order to increase compliance?
  - Compliance checklist enhancements
    - How can we better integrate energy checklist items into existing building department processes?



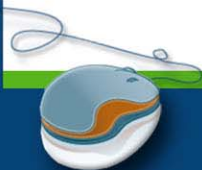
# Tools

- Feedback requested on which tools would be useful to the states
- State and national compliance statistics database
- Automated checklist ingest and analysis
- Sample size and building distribution generation
- Commercial code building inspection decision tool
- Online survey tool for process measurements
- Onsite inspection checklists
  - Paper
  - Excel
  - PDA



# Training

- Inspectors/auditors
  - Inspection basics
  - Checklists
    - How to complete
    - Tools
- Energy code training
- Materials for problem areas/corrective actions
  - FAQs
  - Code notes
  - PowerPoint files and webcasts
- Other FAQs
  - How to select a sample set
  - How to prepare the building department for an upcoming audit



# Questions and Feedback

- Questions
- Feedback
  - [www.energycodes.gov/training/compliance-thankyou.stm](http://www.energycodes.gov/training/compliance-thankyou.stm)
  - [techsupport@becp.pnl.gov](mailto:techsupport@becp.pnl.gov)
  - Jean Boulin: 202-586-9870
  - Linda Connell: 509-375-4353

