Building Codes

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SEEA

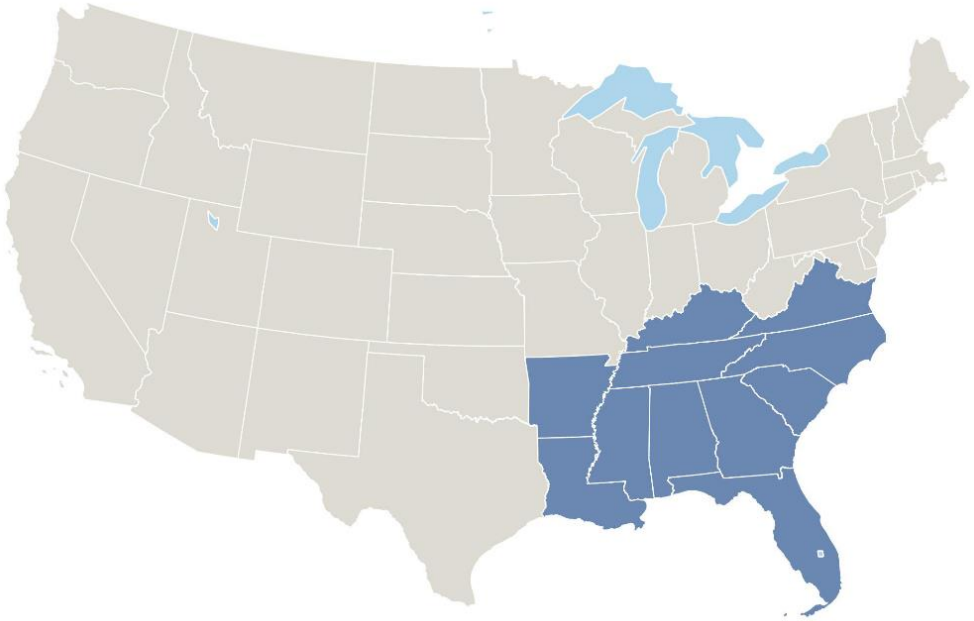
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

Energy Codes in Virginia

Where are we and where can we go?

SEEA Serves the Southeast

The **Southeast Energy Efficiency Alliance (SEEA)** promotes energy efficiency as a catalyst for economic growth, workforce development and energy security. We do this through collaborative public policy, thought leadership, outreach programs, and technical advisory activities.



Regional Energy Efficiency Organization

Eleven-state footprint

Non-profit, non-partisan

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Virginia

- What does construction look like in the state?
  - Commercial
  - Residential
- Where are we currently at with energy codes?
  - Current code
  - Adoption process
- Where can and should we go?

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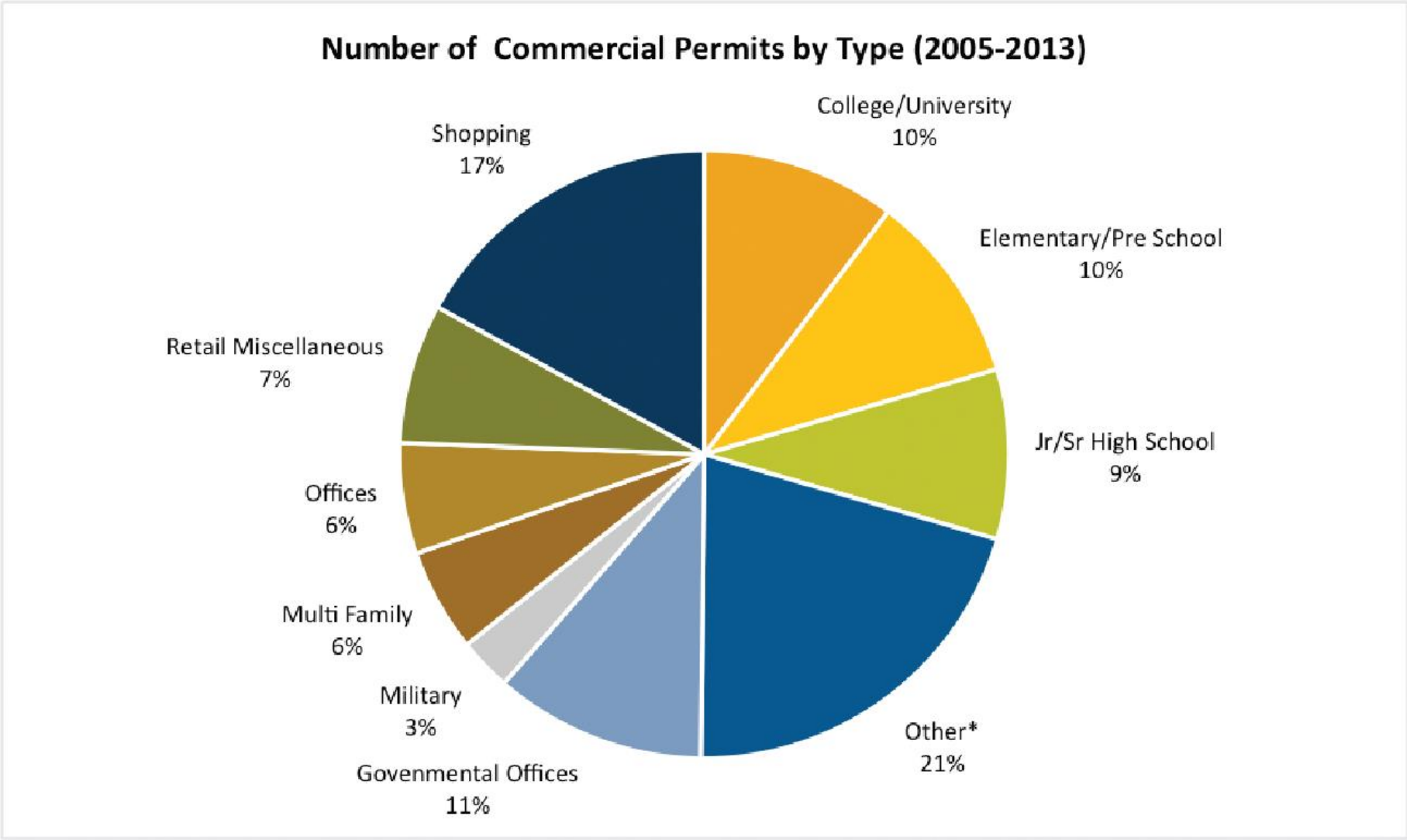
The Importance of Energy Codes

- Energy codes are one of the only policy mechanisms to require EE in the Southeast.
- Energy codes provide added benefits of comfort, durability and affordability.
- Energy codes benefit all, even if you aren't in the market for a new home
  - Less demand on the grid, less need to import energy, better energy security

Virginia: Commercial Renovations on the Rise

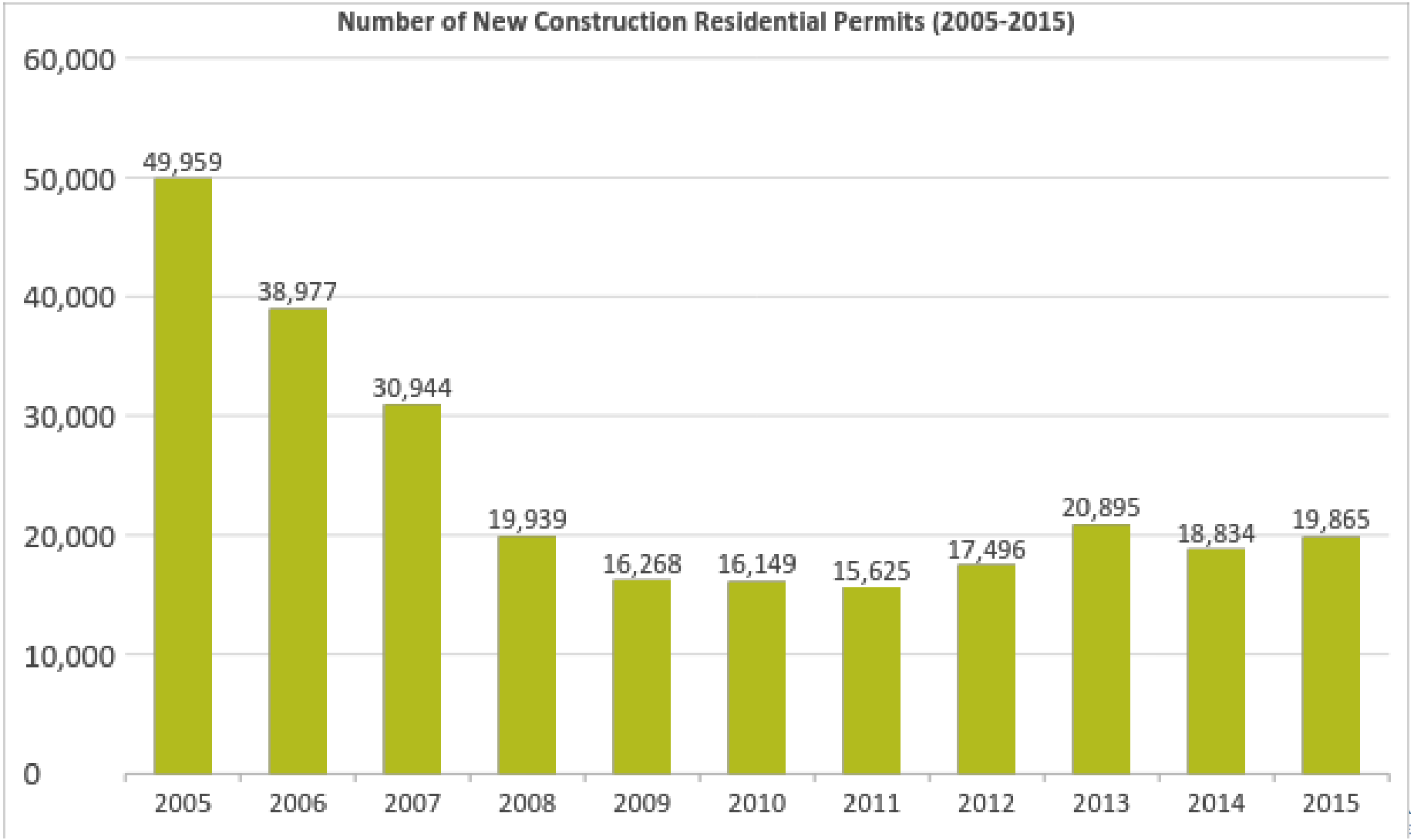
Virginia: Public Project Starts Dominate



Virginia: New Construction Square Footage

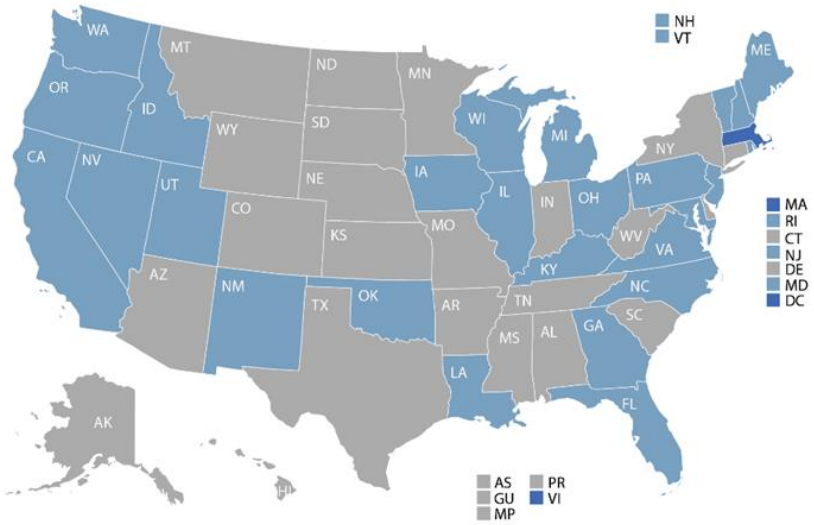
Multi Family	85,986,787
Offices	63,194,605
Shopping	43,572,798
Warehouses	19,271,892
Jr/Sr High School	16,830,239
Elementary/Pre School	15,686,075
Hotels/Motels	12,549,703
College/University	12,132,382
Military	12,012,405
Hospitals/Clinics	10,504,156

Virginia: New Single-Family Houses



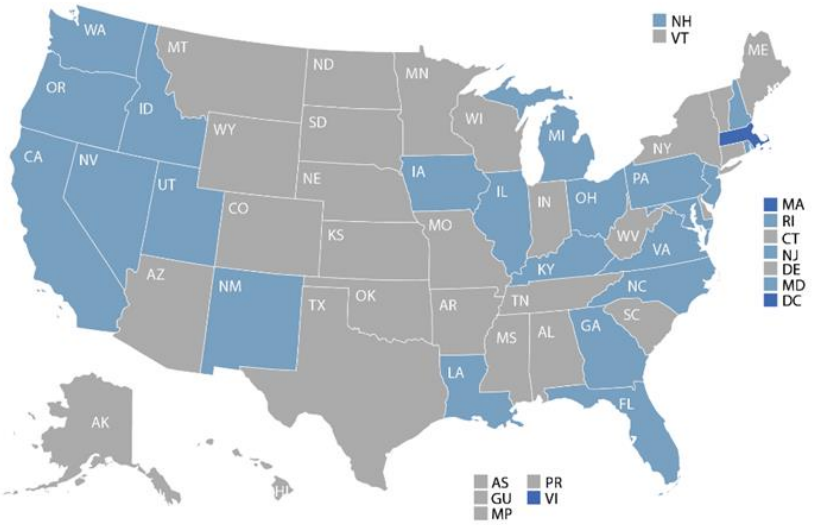
Energy Code Adoption: January 2009

January 2009



Commercial State Energy Code Status

0	meets or exceeds ASHRAE Standard 90.1-2013 or equivalent
0	meets or exceeds ASHRAE Standard 90.1-2010 or equivalent
3	meets or exceeds ASHRAE Standard 90.1-2007 or equivalent
26	meets or exceeds ASHRAE Standard 90.1-2004 or equivalent
27	no statewide code or precedes ASHRAE Standard 90.1-2004



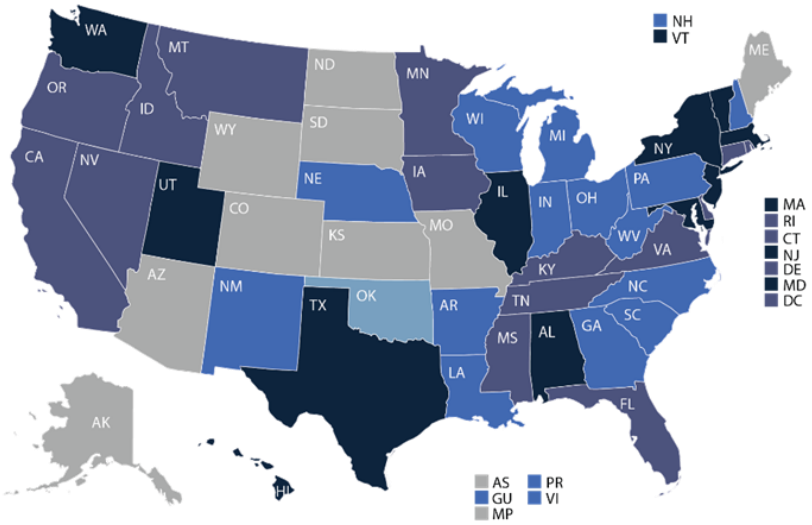
Residential State Energy Code Status

0	meets or exceeds the 2015 IECC or equivalent
0	meets or exceeds the 2012 IECC or equivalent
3	meets or exceeds the 2009 IECC or equivalent
22	meets or exceeds the 2006 IECC or equivalent
31	no statewide code or precedes the 2006 IECC

BCAP Building Codes Assistance Project

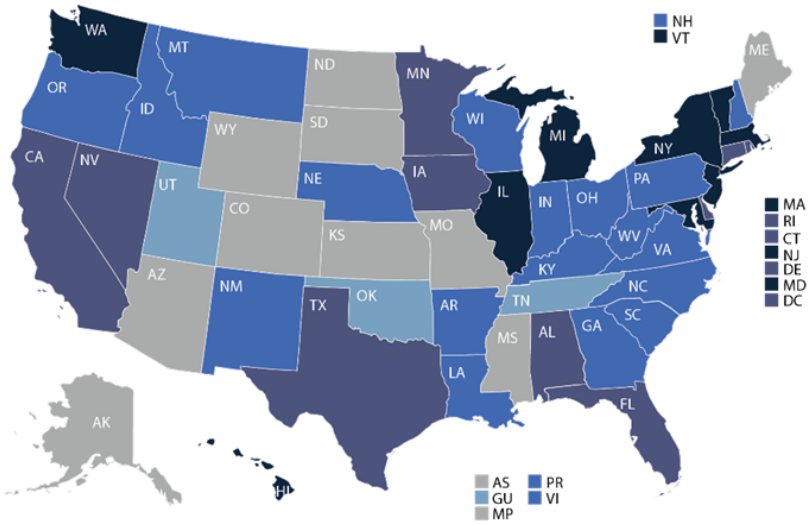
Energy Code Adoption: November 2016

November 2016



Commercial State Energy Code Status

- 11 meets or exceeds ASHRAE Standard 90.1-2013 or equivalent
- 16 meets or exceeds ASHRAE Standard 90.1-2010 or equivalent
- 17 meets or exceeds ASHRAE Standard 90.1-2007 or equivalent
- 1 meets or exceeds ASHRAE Standard 90.1-2004 or equivalent
- 11 no statewide code or precedes ASHRAE Standard 90.1-2004



Residential State Energy Code Status

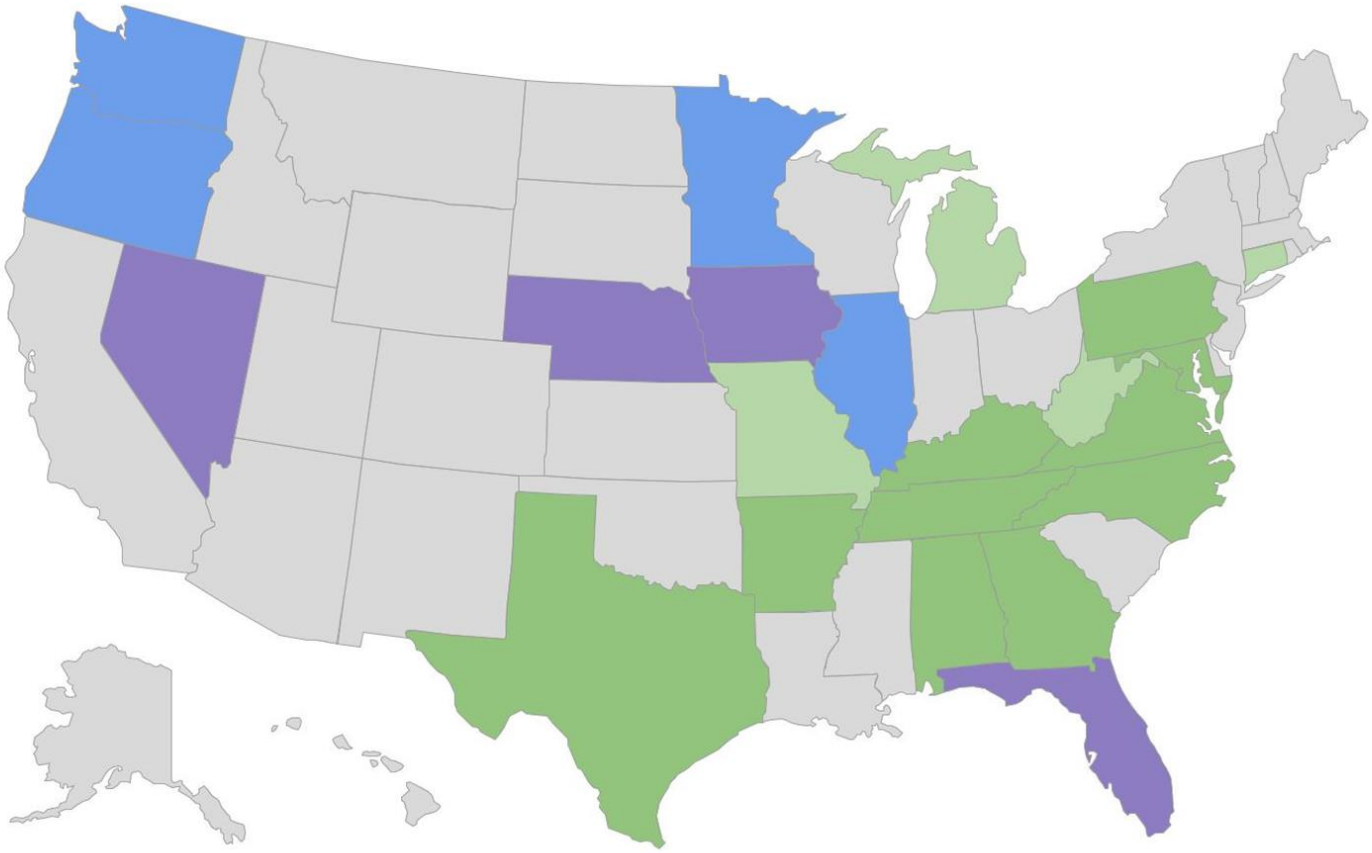
- 9 meets or exceeds the 2015 IECC or equivalent
- 11 meets or exceeds the 2012 IECC or equivalent
- 21 meets or exceeds the 2009 IECC or equivalent
- 3 meets or exceeds the 2006 IECC or equivalent
- 12 no statewide code or precedes the 2006 IECC

BCAP Building Codes Assistance Project

Virginia: Current State

- 2012 IECC
  - Commercial – minimal amendments
  - Residential – weakening amendments
- Currently adopting the 2015 IECC
- Challenges in VA mirror the region
  - Split incentive not addressed
    - Strong residential industry support for little to no change (both fear of unknown and costs)
    - Lack of general public support (i.e. people who will actually be paying the bills
  - Confusing processes and lack of understanding of EE among decision makers
  - The energy code is getting more complicated

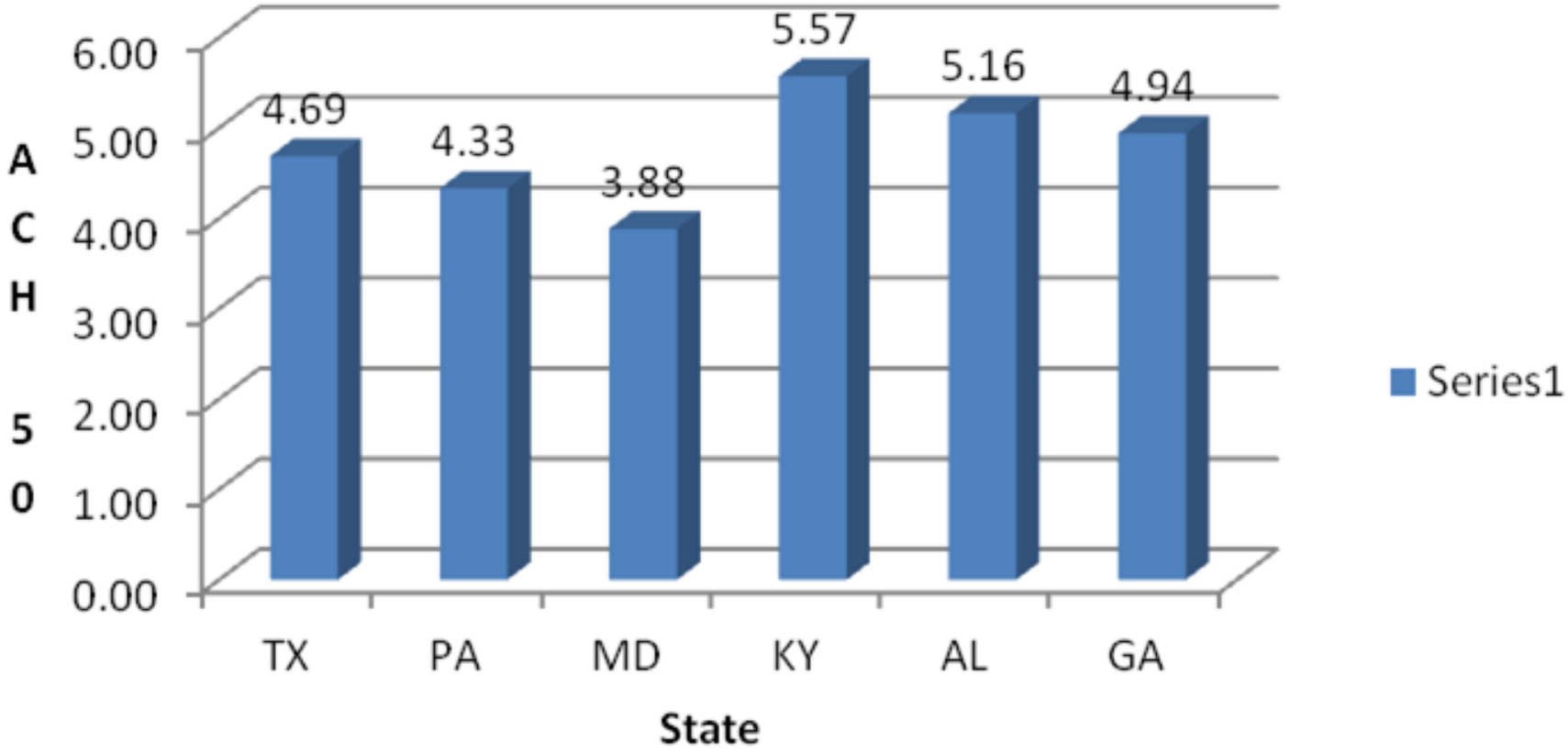
DOE Energy Code Field Study States



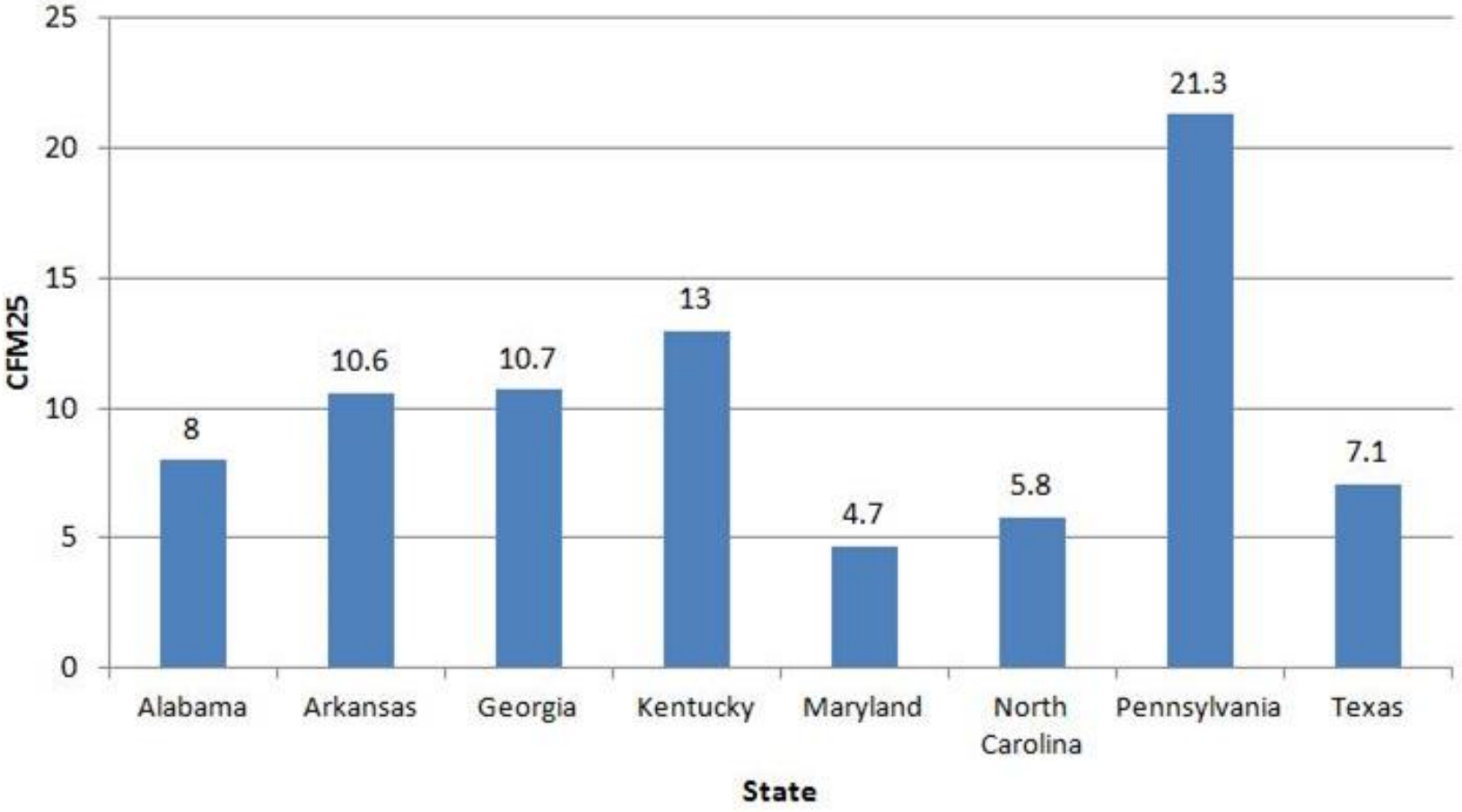
Virginia Energy Code Field Study

- Data collection starting this summer
- Data points
  - Duct leakage
  - Envelope leakage
  - Lighting
  - Exterior wall, foundation and ceiling insulation (R-Value and install quality)
  - Window SHGC and U-Value
- Opportunities to collect other data points

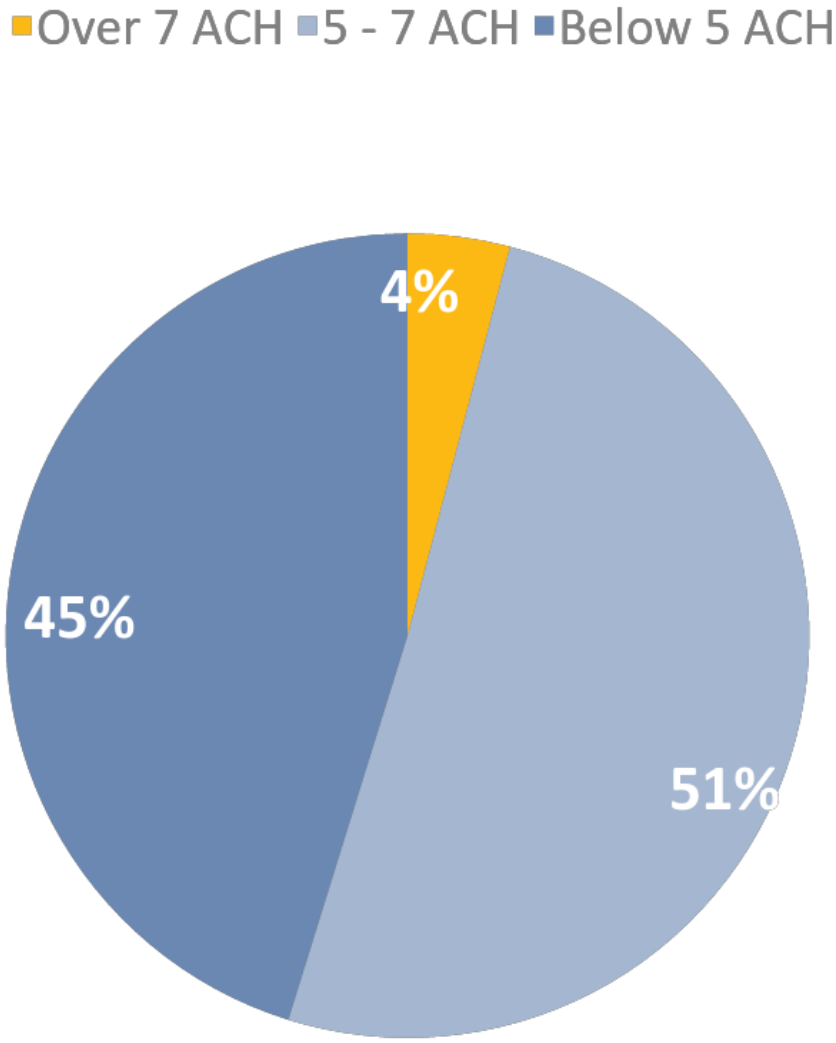
Average Envelope Leakage

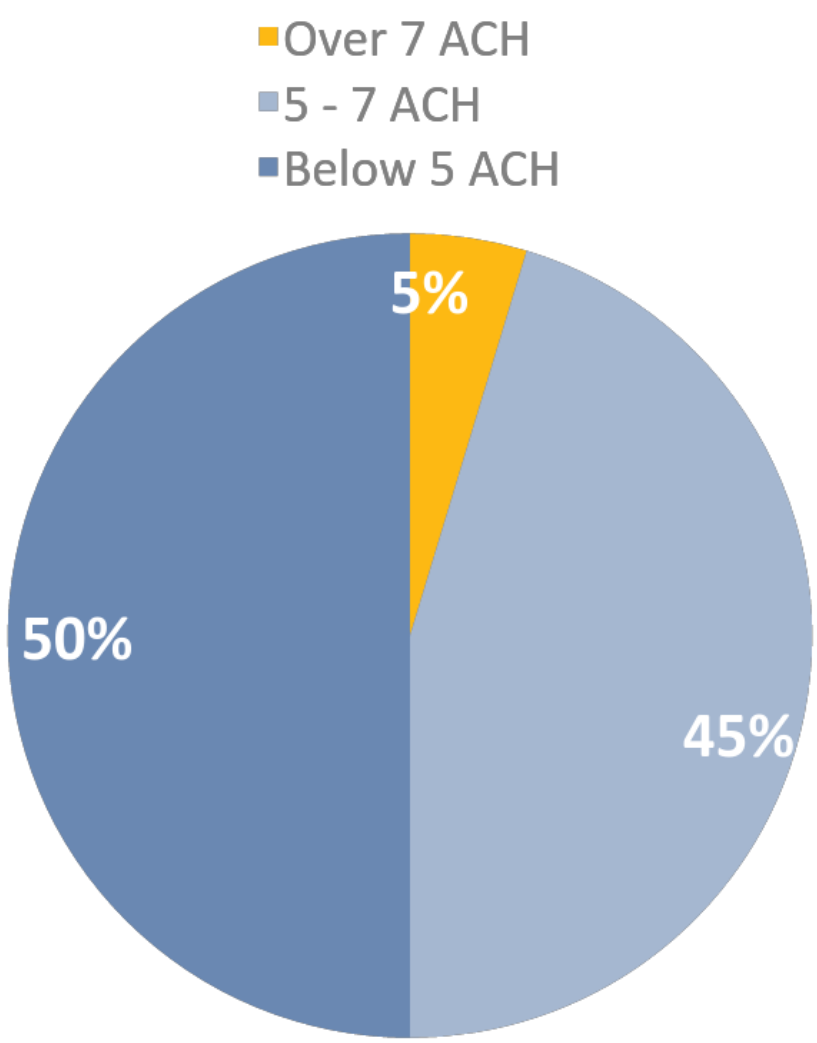


Average Duct Leakage

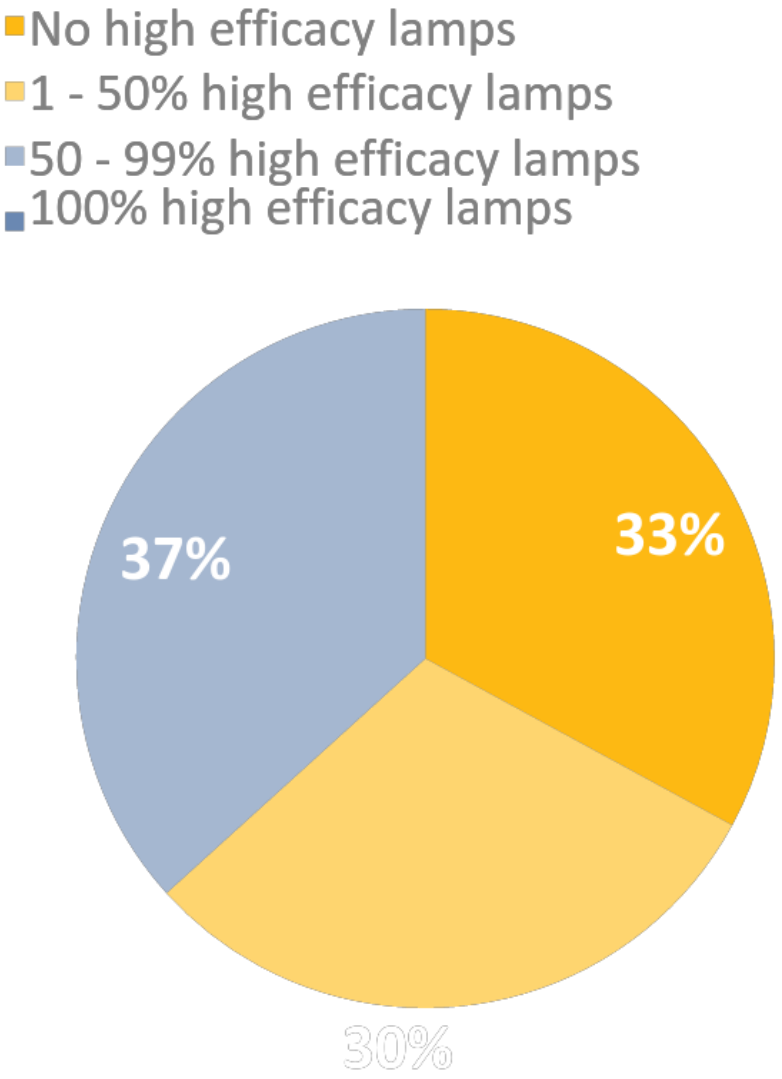


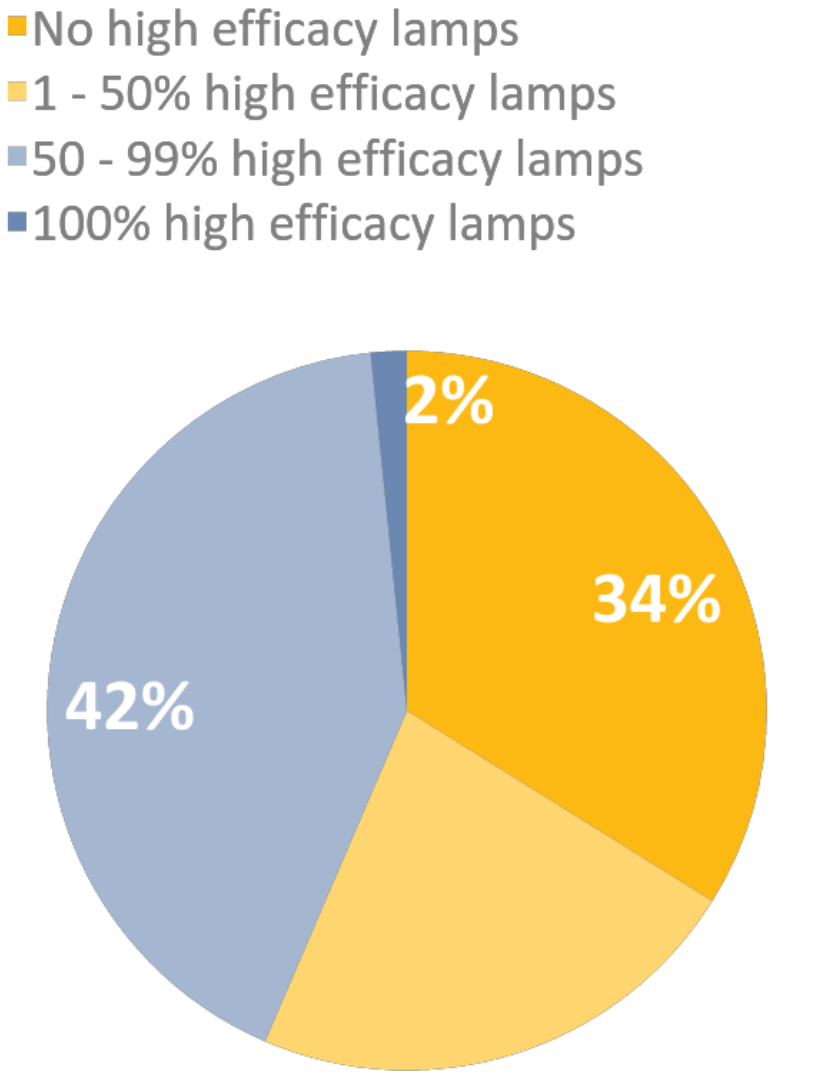
Statewide vs. Georgia Power Air Leakage



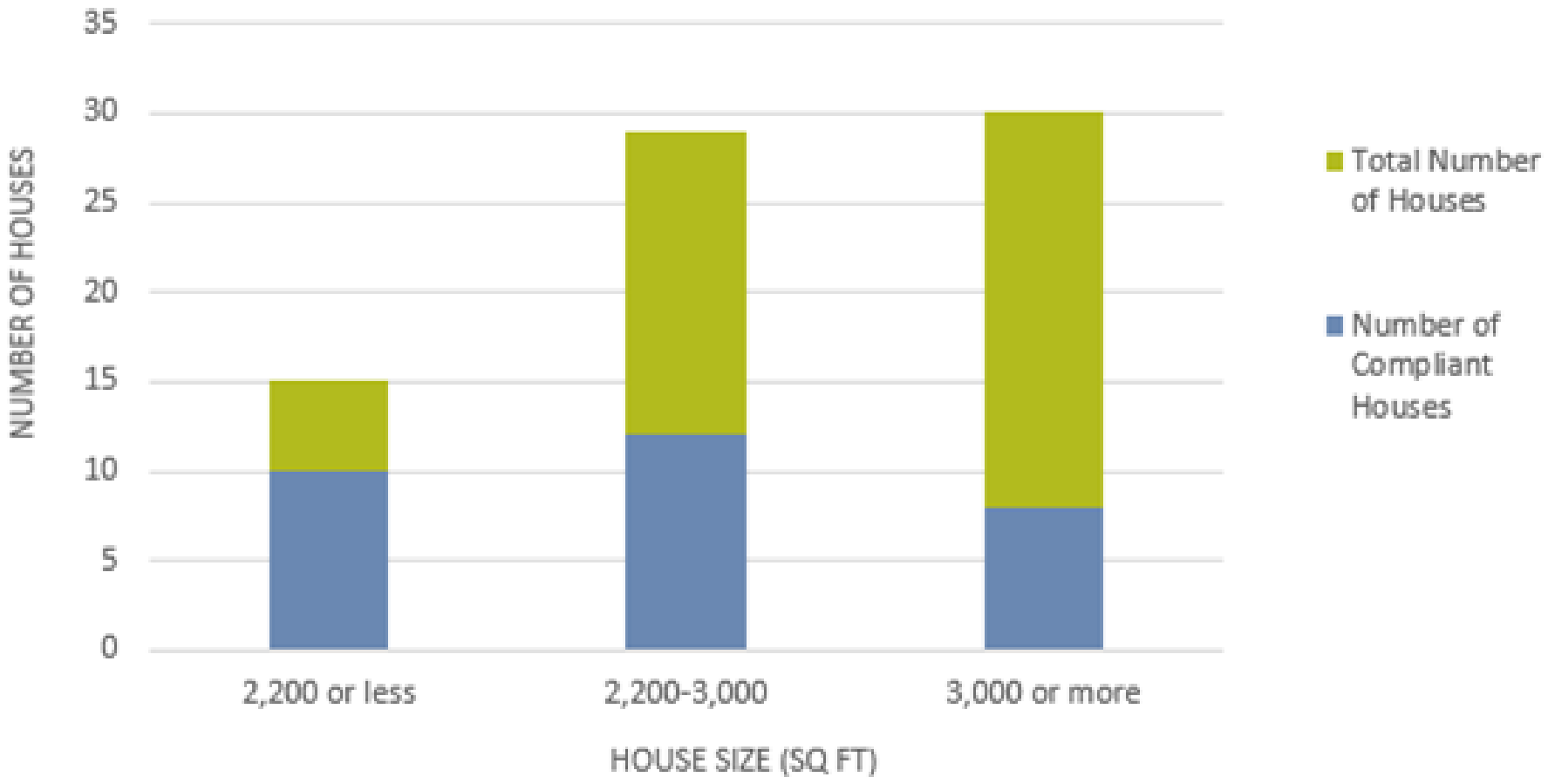


Statewide vs. Georgia Power Lighting

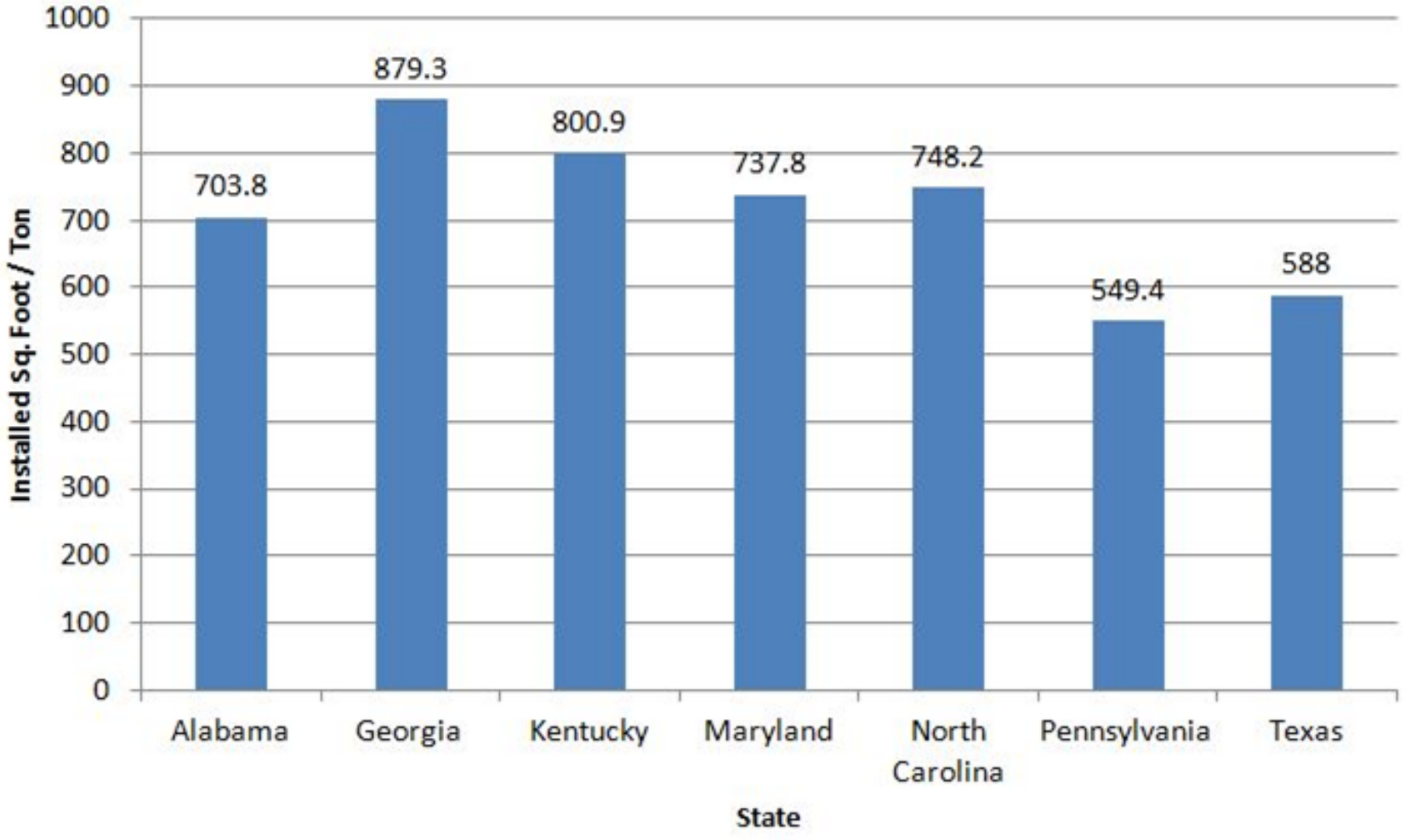




Georgia Lighting: Compliance by House Size



HVAC Tons Per SF



Long Term – Where Do Codes Take Us?

- DOE Building Energy Codes Program – Model code savings projections (2010-2040)
  - Assumption: VA has 4 year lag of adoption of model energy codes
  - Assumption: code compliance is not 100% in year one
- 2010-2040 savings for consumers
  - Commercial: $1.37 billion
  - Residential: $2.54 billion
- Avoided CO_2 emissions (million metric tons)
  - Commercial: 13.19
  - Residential: 15.97

SEEA

SOUTHEAST ENERGY EFFICIENCY ALLIANCE

Thank you!

Lauren Westmoreland

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Virginia's Energy Code

www.vaeec.org
leap-va.org

- Virginia's building code is known as the Uniform State Building Code (USBC).
- The Department of Housing and Community Development (DHCD) manages the triennial code update process.

VIRGINIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
Partners for Better Communities

www.dhcd.virginia.gov

- That process includes ~2 years of public meetings and board actions before the updated code is adopted.
- The 14-member Board of Housing and Community Development (BHCD) votes on the final content of the updated code.
  - 1 member for each congressional district – appointed by the Governor to 3-year terms
  - 3 ex-officio members representing Va. Fire Services Board, Va. Code Officials Association, and Virginia Housing Development Authority

Virginia's Energy Code

www.vaeec.org
leap-va.org

Virginia's Code Update Process: (all meetings in Richmond)

- The board's draft version of the 2015 USBC is currently published for review
- May 24: "sub-workgroup" stakeholder meeting covering energy issues
- May 26: last day to submit public comments on the draft code via townhall.virginia.gov
- May 26: last day to propose specific amendments to the draft code via DHCD "cdpAccess" website
- June 13 & Aug. 23: stakeholder workgroup meetings to discuss and vote on new proposals
- Sept. 18 & Nov. 20: Board's code committee meets to consider proposals
  - All Board meetings begin with a public comment period. Otherwise, public participation is very limited.
- Dec. 18: Final Board vote on content of updated code

Virginia's Energy Code

www.vaeec.org
leap-va.org

Sources:

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- McKinsey report: https://www.mckinsey.com/~/media/McKinsey/dotcom/client_service/Sustainability/PDFs/Reducing%20US%20Greenhouse%20Gas%20Emissions/US_mid_range_abatement_curve_2030.ashx
- BCAP "True Cost": http://bcapcodes.org/wp-content/uploads/2015/11/Virginia-2012-IECC-True-Cost.pdf
- NIST: http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1194.pdf
- ICF report: http://bcap-energy.org/wp-content/uploads/2015/12/ICF-Comparison-of-Cost-effectiveness-Methodologies.pdf
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- DOE: 2015 IECC comparisons: https://www.energycodes.gov/sites/default/files/documents/2015IECC_CE_Residential.pdf
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- NAHB: What Home Buyers Really Want: https://www.nahb.org/~/media/Sites/NAHB/SupportingFiles/8/Wha/WhatHomeBuyersWant_20130430023250.ashx?la=en
- DOE Field Study of code compliance: https://www.energycodes.gov/compliance/residential-energy-code-field-study