The Role of Building Energy Codes in a Carbon Reduction Strategy for Virginia

Chelsea Harnish
Executive Director
Virginia Energy Efficiency Council

Andrew Grigsby
Executive Director
Local Energy Alliance Program

Who We Are

Founded in 2012, The Virginia Energy Efficiency Council is the voice for the energy efficiency industry in the Commonwealth. Our members include Fortune 500 companies, universities, nonprofits, local governments, state agencies, and utilities. The Council's goal is to ensure that energy efficiency is recognized as an integral part of Virginia’s economy and clean energy future.

Founded in 2009, the mission of the Local Energy Alliance Program is to lead the effort to equip Virginia buildings with energy efficient and renewable technologies. Our goals include cost savings, local economic development, and energy sector decarbonization.

Building Energy Codes and Climate

- Buildings consume more than 40% of the energy we use nationally each year and about 70% of the electricity, making buildings responsible for 39% of carbon pollution
- In a given state, adoption of the newest versions of the building energy codes could reduce energy use and costs of new buildings and major renovations by 12 – 40%
- In Virginia, the model energy codes (IECC) for residential buildings are projected to (cumulative 2010-2040):
  - Save homeowners $2.54 billion
  - Avoid 15.97 million metric tons (MMT) CO2 emissions

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Recommendations

1. Immediate Action (Q1 2017):
    a) Provide guidance to DEQ and DMME staff on participating in the Virginia code update process
    b) Direct DHCD and DMME/ DEQ to enter into MOU(s) for information sharing during the update process
2. Longer Term Action:
    a) Draft legislation to create an ex-officio seat for DMME on the Board of Housing and Community Development

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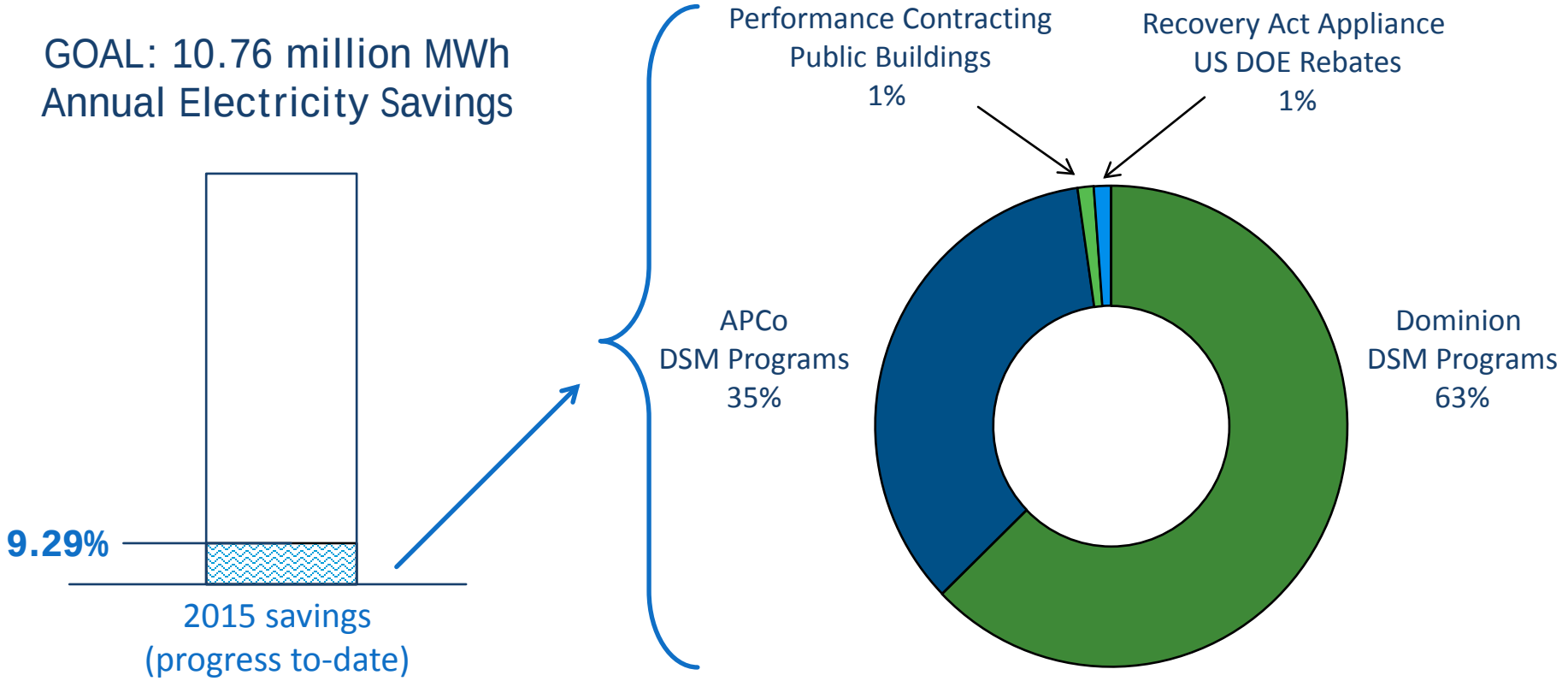
Tracking Progress Towards Virginia's Voluntary EE Goal



Source: DMME analysis of 2015 Utility Integrated Resource Plans; Virginia Energy Management Program Performance Measures; US DOE study of the appliance rebate programs; and US EIA electricity sales data.

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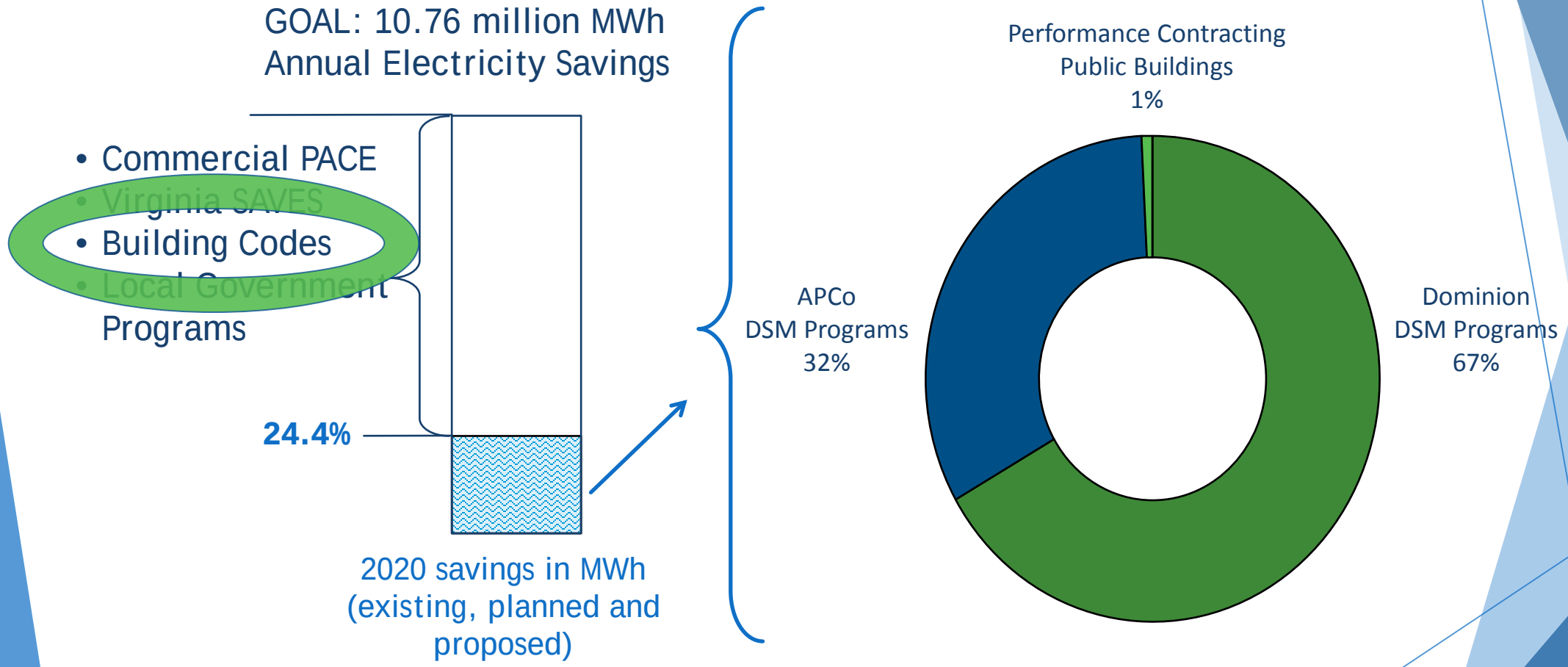

Source: DMME analysis of Appalachian Power Company and Dominion Virginia Power 2015 Integrated Resource Plans; Virginia Energy Management Program Performance Measures; US Department of Energy study of the appliance rebate programs; and US Energy Information Agency electricity sales data.

Overview of Building Codes Update

Federal

- Model code drafted by the International Code Council (ICC) and updated every three years
- The International Energy Conservation Code (IECC) is one aspect of the model code

States

- No federal mandate for states to adopt the model code
- Ten states have already adopted the 2015 model codes

Virginia

- VA building code known as the Uniform State Building Codes (USBC)
- Board of Housing and Community Development votes on final USBC

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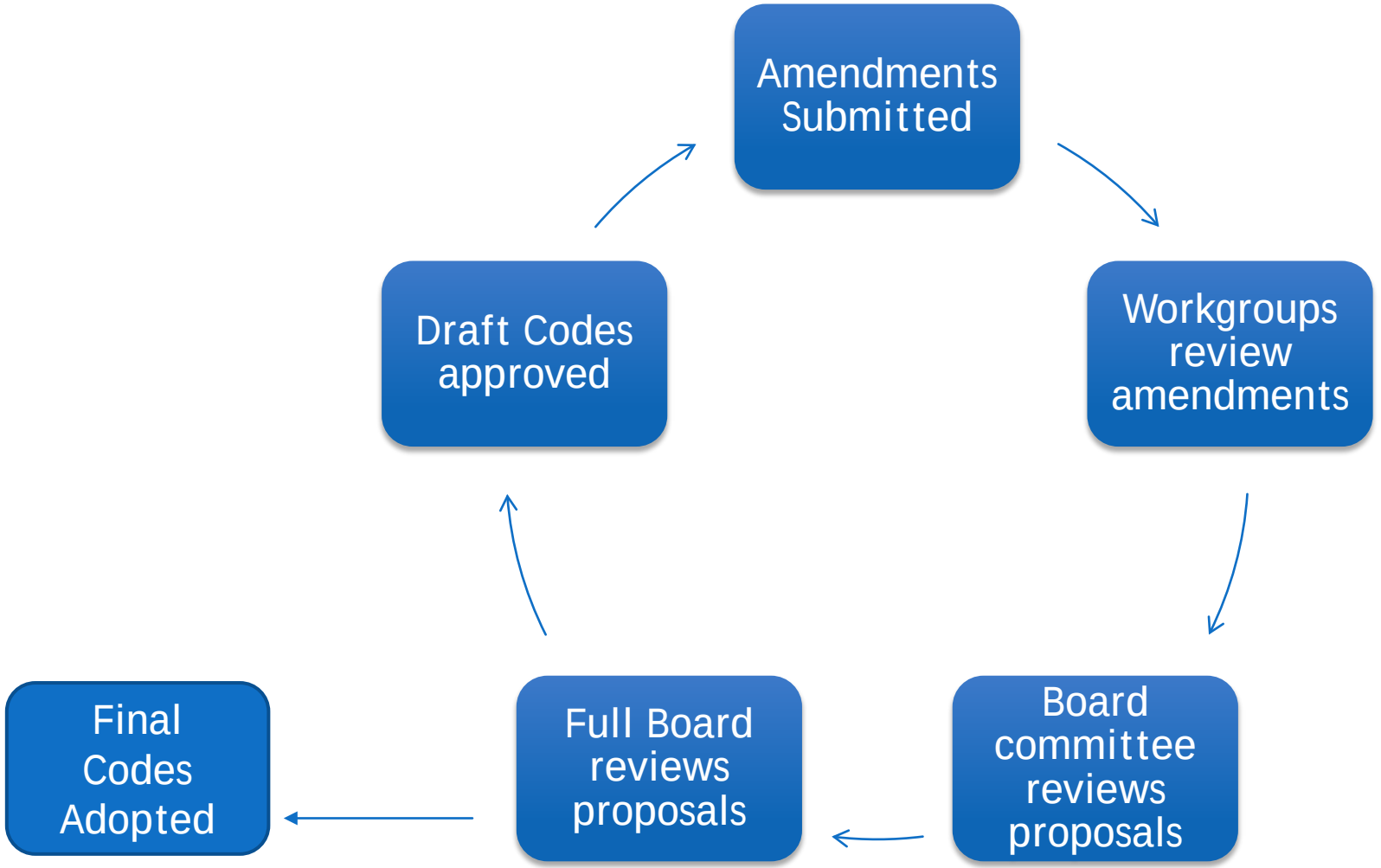
Cycle of updating the Uniform State Building Codes (USBC)



Current Timeline for Updating Virginia Codes

- Winter 2017- Spring 2017: public comment period for draft code
- Spring 2017: DHCD begins accepting amendments to the draft code; Stakeholder workgroups begin meeting
- June 19, 2017 (tentative): public hearing on code updates
- November 2017: Board of Housing and Community Development votes on final Uniform State Building Codes

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   a) Draft legislation to create an ex-officio seat for DMME on the Board of Housing and Community Development
   b) **Provide mechanisms for building science to inform the debate – in the public interest**

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Overview of Virginia Codes Updating Process

Efficiency Standards in the draft Uniform State Building Codes:

- Commercial Codes: Up-to-date
- Residential Codes: Many weakening amendments (since 2012), including
  - Attic insulation not increased to R49, stays at R38
  - Insulation not required on most domestic hot water pipes
  - Wall insulation increased from R13 to R15 instead of to R20
  - Replacement windows not required to meet current efficiency specs
  - Visual inspection for building air-tightness allowed and building draftiness limit raised
  - Visual inspection for duct air-tightness allowed and duct leakage limit raised

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Building Science in the Public Interest

- If there is industry-standard (e.g., US National Lab) research on relevant code topics available, staff should ensure that board members and stakeholders receive adequate briefing on its contents and conclusions.
  - Provide expert opinion or witnesses as needed.
- During the code update process, empower staff to provide "staff's opinion" – as a neutral, professional party acting in the public interest.
  - Perform fact-checking on points of building science.
  - The current process relies on stakeholders' submissions to completely articulate the public interest.

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   c) **Fund/support a study of compliance with current codes**

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A Case for Studying Compliance Issues

Mechanical testing of air leakage is irreplaceable:

- The US DOE "Field Study" research from other states shows that visual inspections are inadequate for consistent enforcement.
- Some homes in Virginia, which do get tested, often fail to meet Virginia standards on the first try. Data from two Virginia HERS raters:
  - *Think Little, Charlottesville, VA:*
    - 118 homes tested between 3/2015 and 9/2016
      - 23% did not meet the VA standard for home air-tightness
      - 53% did not meet the VA standard for ductwork air-tightness
  - *EDGE Energy, McLean, VA:*
    - 55 homes and 72 duct systems tested between 7/2015 and 7/2016
      - 60% did not meet the VA standard for home air-tightness
      - 56% did not meet the VA standard for ductwork air-tightness

Rigorous Energy Codes are GREAT for:

- Environmental policy (global warming, resource use)
- Energy policy (costs, grid stability, predictability)
- The construction industry (deliver a more valuable, higher-quality product)
- The mortgage industry (32% less risk of default (IMT/UNC report))
- Local jobs (framing and insulating don't happen overseas)
- Affordable housing (lowers total cost of housing and increases predictability of monthly costs (DOE, etc. analyses))
- Home buyers/renters of all kinds (comfort, savings, predictability, air quality)

Besides, people want it… A 2013 survey by the National Association of Homebuilders reports that 90% of homebuyers would pay 2-3% more for a home that includes permanent energy efficiency features.

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Thank you

Chelsea Harnish
Executive Director
Virginia Energy Efficiency Council
804.457.8619
chelsea@vaeec.org
www.vaeec.org

Andrew Grigsby
Executive Director
Local Energy Alliance Program, Inc.
804.252.1486
andrew@leap-va.org
www.leap-va.org