



Virginia Energy Efficiency Roadmap

Policy and Program
Recommendations

APRIL 6, 2017 | GOVERNOR'S EXECUTIVE COMMITTEE

Objective

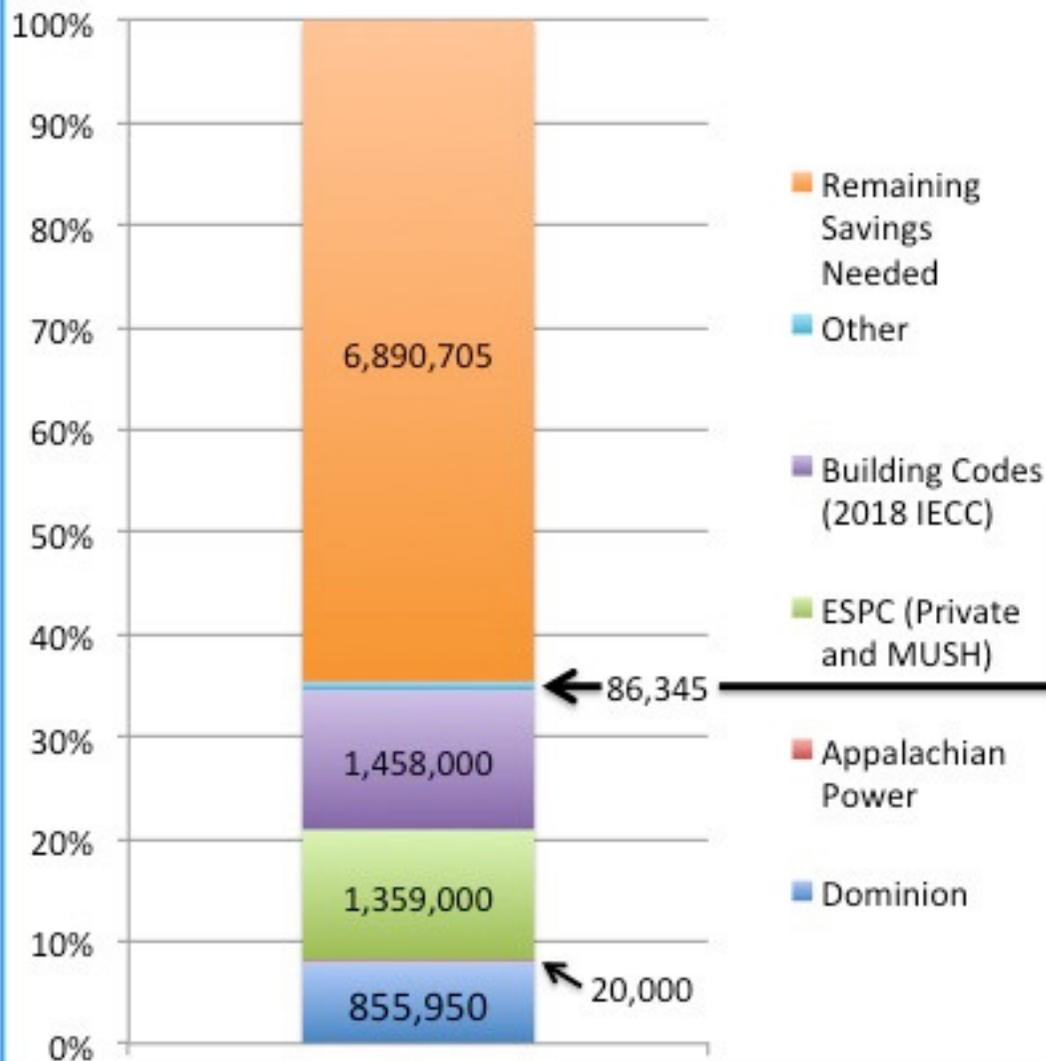
IDENTIFY AND RECOMMEND SIGNIFICANT OPPORTUNITIES FOR ENERGY CONSERVATION

The project team will recommend several significant energy efficiency program and policy options to the GEC and will develop a report outlining implementation strategies, culminating in a "Roadmap" that documents pathways to reach significant energy conservation goals in the Commonwealth.



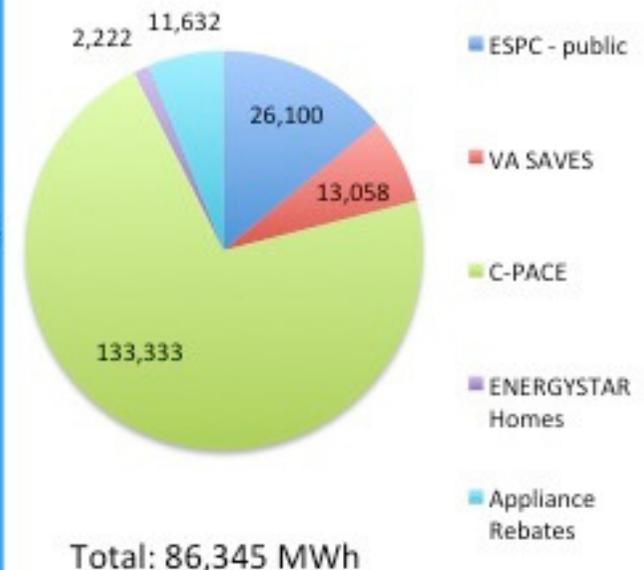
Projected 2020 Annual MWh Savings & Savings Needed to Meet 10% Electricity Reduction Goal

(Equal to 10.67 million MWh of Annual Savings in 2020)



Virginia on track to achieve **36%** of goal if these policies and programs are implemented or adopted.

Other Programs: 2020 Annual Savings (MWh)



Energy Data Warehouse

RECOMMENDATION #1

- Track and understand energy consumption in state agency facilities
- Identify potential candidates for ESPCs/EE
- Highlight successful EE projects
- Provide replicable solution for local governments
- Enable programs based on verified savings



WHAT IS THE STATUS OF THE ENERGY DATA WAREHOUSE AND WHAT DOES THE ROADMAP RECOMMEND?

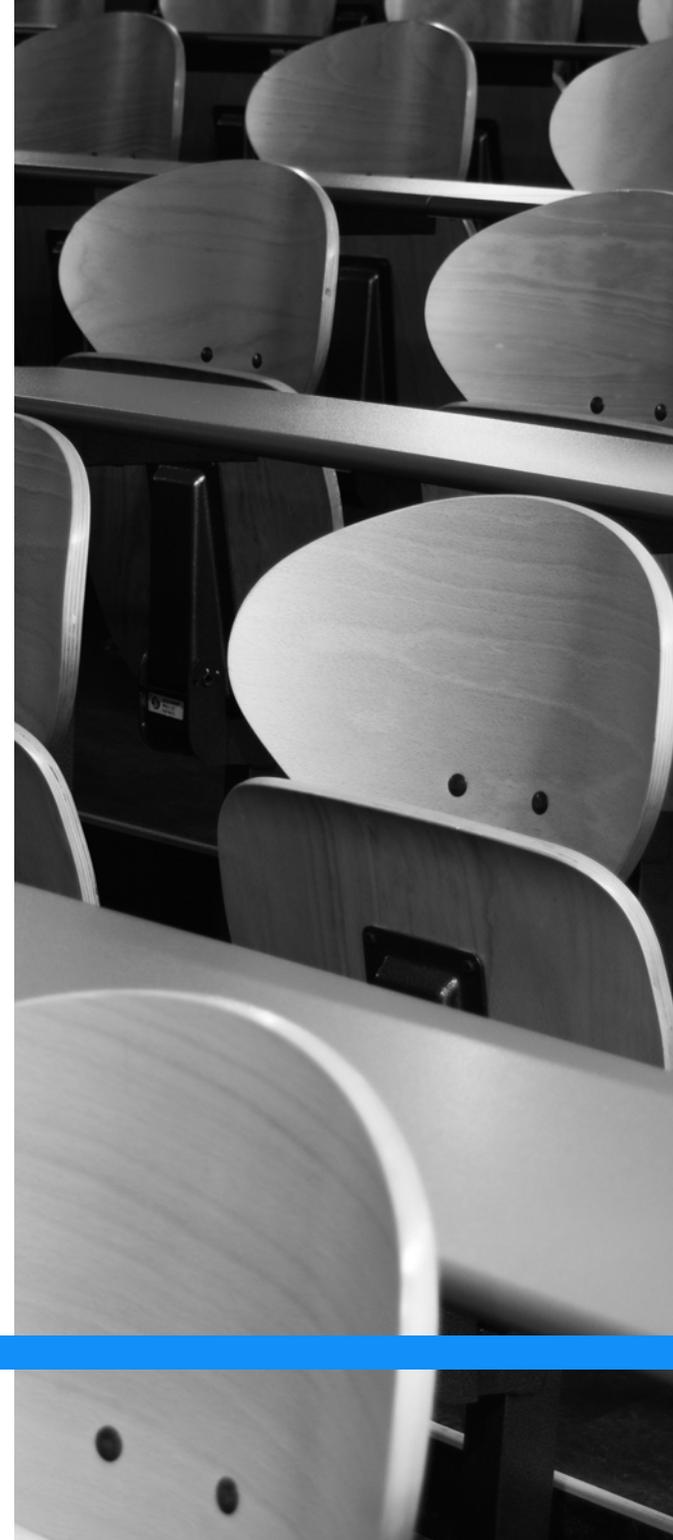
- Energy use and facility information not currently linked for state facilities
- DMME has engaged vendor for initial mapping of DGS facilities database
- Receive monthly updates for top 200 DVP state accounts
- Identify scope of data cleanup effort, likely months of intensive, manual data cleanup
- DMME has planned meetings with DVP and DGS to match utility accounts to facilities addresses
- DVP to correct matched addresses in billing database
- Engagement with state utilities to prioritize improved meter data for state facilities
- Maintain DMME/DGS funding for the procurement and management of energy data software
- Funding for training and education for state facilities managers on maintaining accurate facilities records and using software
- Energy savings data could eventually be used to support innovative energy efficiency programs, like Pay-for-Performance

The Energy Data Warehouse will not directly result in energy savings, but act as an enabling program to further validate and highlight the value of energy efficiency improvements for state agencies.

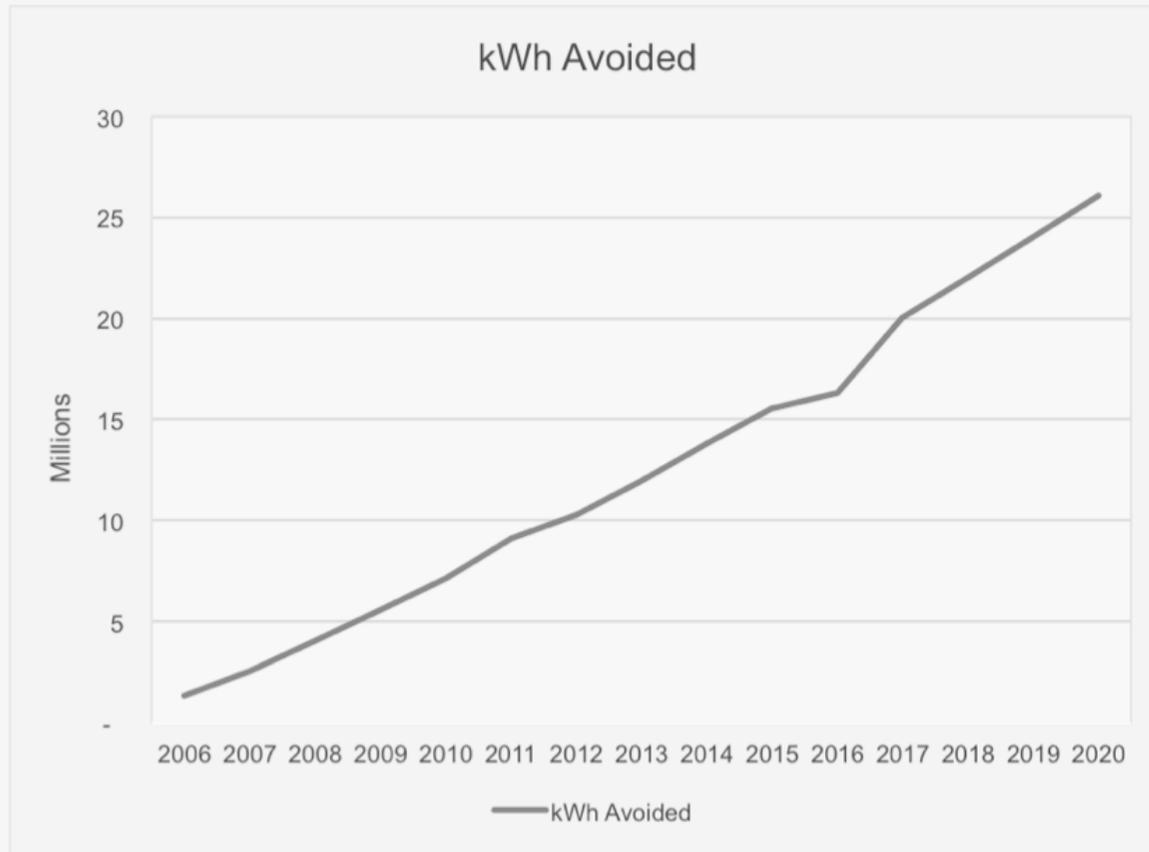
Energy Savings Performance Contracting (ESPC)

RECOMMENDATION #2

- Budget-neutral: improvements paid for through energy and operational cost savings
- Guaranteed savings: ESCO assumes financial risk and guarantees payment if actual savings fall below projected savings
- Comprehensive: electric, gas, and water measures eligible
- State agencies, higher-education institutions, and other public bodies eligible for technical assistance from DMME



WHAT IS THE STATUS OF ESPC IN VIRGINIA?



- Over 230 ESPC projects completed to date
- Projected 26.1 million kWh avoided in the year 2020, or 0.24% of goal
- Total lifetime 190 million kWh avoided by the year 2020
- Estimated \$844.3M savings to finance projects
- Estimated \$242.4M NPV net savings after financing
- Estimated 400.6K tons CO₂ avoided

Additional Considerations for ESPCs

Challenges

- Expanding program participation through active promotion will require additional resources—ESCOs currently lead marketing efforts
- New contract and potentially new ESCOs entering market
- M&V data collection can be costly and time-consuming

Further Options

- Leverage Energy Data Warehouse pilot to look for opportunities. DMME can target those that would be good candidates to promote ESPC
- Maintain momentum of the Governor's ESPC and broader EE efforts (under EO 31 and under his 2014 state energy plan) and carry forward into the next administration

Upcoming Opportunities

- DMME will advertise new contract with ESCOs this spring
- Contract will be in place for seven years, providing program stability
- New contract will also improve data collection efforts by requiring annual M&V, maintaining DMME involvement throughout life of project, and requiring ESCOs to use DOE's eProjectBuilder

Property-Assessed Clean Energy (PACE)

RECOMMENDATION #3

- Commercial PACE could achieve 400,000 MWh savings by 2020, or 3.5% of the goal.
- Locally-driven policy with statewide benefits
- Building upgrades provide multiple benefits to property owners
- Several large jurisdictions in VA considering PACE



WHAT IS THE STATUS OF PACE IN VIRGINIA AND WHAT DOES THE ROADMAP RECOMMEND?

Current Status

- Commercial PACE enabled
- Several large jurisdictions considering C-PACE
- Arlington County will launch first program in VA this spring/summer 2017
- DMME received \$500K grant from DOE to accelerate PACE financing in VA, MD, and DC region

Recommendations

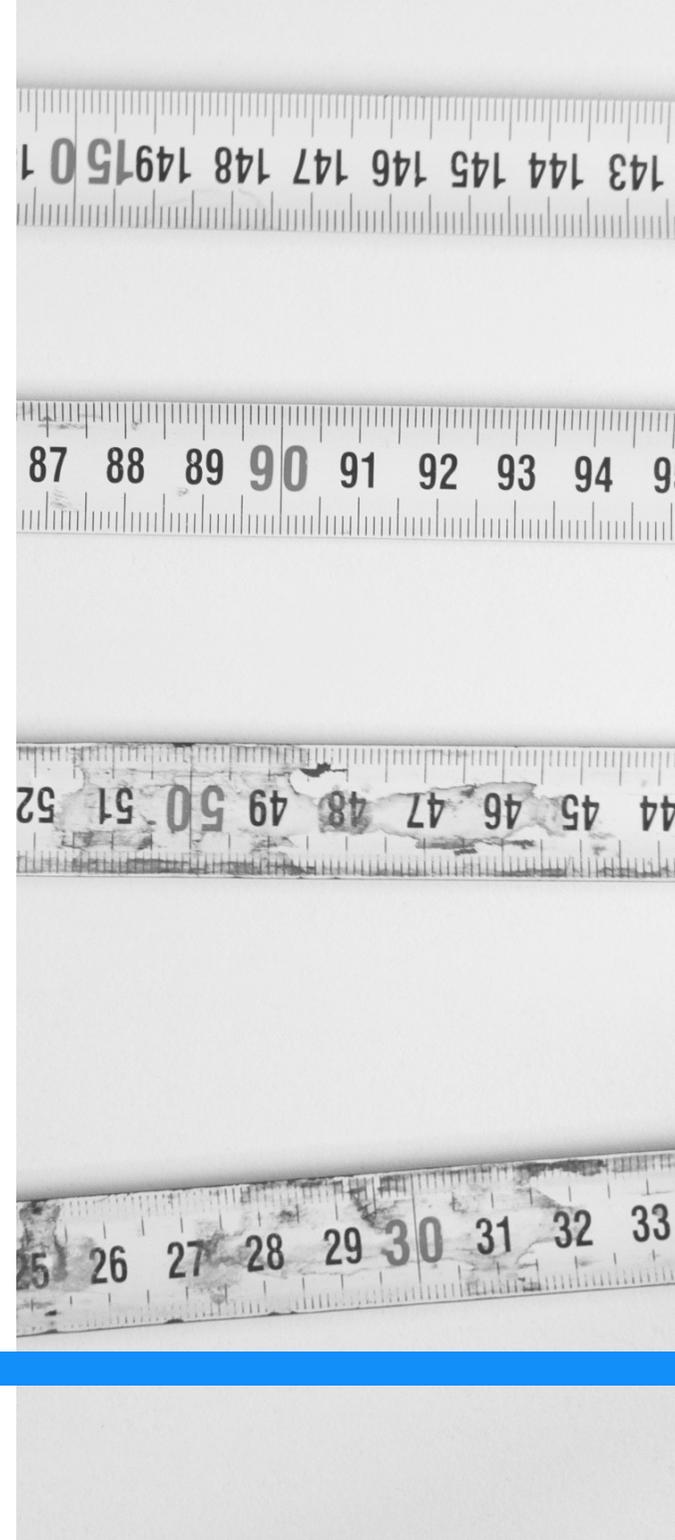
- Build regional momentum through coordinated outreach and education to key stakeholders
- Continue to scale C-PACE and document its impacts in VA
- Consider enabling legislation for Residential PACE

The Mid-Atlantic PACE Alliance (MAPA) is the name of the three-year effort funded through the U.S. Department of Energy to advance and standardize Commercial PACE in Virginia, DC, and Maryland. MAPA seeks to accelerate uptake of PACE in the region through marketing, outreach, education, and the dissemination of best practices.

Commercial Benchmarking

RECOMMENDATION #4

- Benchmarked buildings achieve annual energy savings of approximately 2.4% per year and ENERGYSTAR score increases of 2 points per year
- If all U.S. buildings followed similar trend, 25% energy savings by 2020
- Building owners benefit from energy reductions, cost savings, competitive edge
- Enabling policy to spur EE projects: What gets measured, gets managed.



WHAT IS THE STATUS OF BENCHMARKING IN VIRGINIA AND WHAT DOES THE ROADMAP RECOMMEND?

Current Status

- Localities are unable to enact mandatory benchmarking programs

Recommendations

- DMME to kickoff the Data Access and Benchmarking Working Group in late April/early May 2017
- Examine data access and privacy issues, potential impact of commercial benchmarking, and eventually draft enabling legislation for localities to carry out mandatory programs for consideration by 2018 General Assembly

Benchmarking, similar to the Energy Data Warehouse, is an enabling policy that seeks to first bring awareness to energy consumption in buildings and then provide tailored energy efficiency recommendations for participating facilities.

Building Codes

RECOMMENDATION #5

- Potential Savings: 1,458,000 MWh by 2020
- Save Virginians \$500 million by 2030
- At least \$5,000 in lifetime savings per home if residential codes updated from 2009 to 2015



WHAT ARE VIRGINIA'S CURRENT CODE STANDARDS AND WHAT DOES THE ROADMAP RECOMMEND?

BASELINE

RECOMMENDED NEAR-TERM STRATEGY (2017)

RECOMMENDED LONG-TERM STRATEGY (2018-ON)

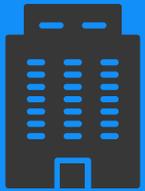


2012 IRC, with amendments equivalent to 2009 standards.

Adopt key EE proposals to move closer to 2012 & 2015 IECC.

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RESIDENTIAL



2012 IECC, with reference to ASHRAE 90.1-2010.

Adopt key EE proposals to move closer to 2015 IECC.

Adopt key EE proposals to move closer to 2012 & 2015 IECC.

COMMERCIAL

Additional Considerations for Building Energy Codes

Challenges

- Unlikely that DHCD will update codes to 2015 standards; some EE amendments already out of consideration by DHCD working groups
- Cost to homebuilders cited as primary concern related to EE standards

Further Options

- What are opportunities to engage key stakeholders during this code cycle or in preparation for 2018 cycle (2019)
- What other activities could advance codes compliance or adoption?

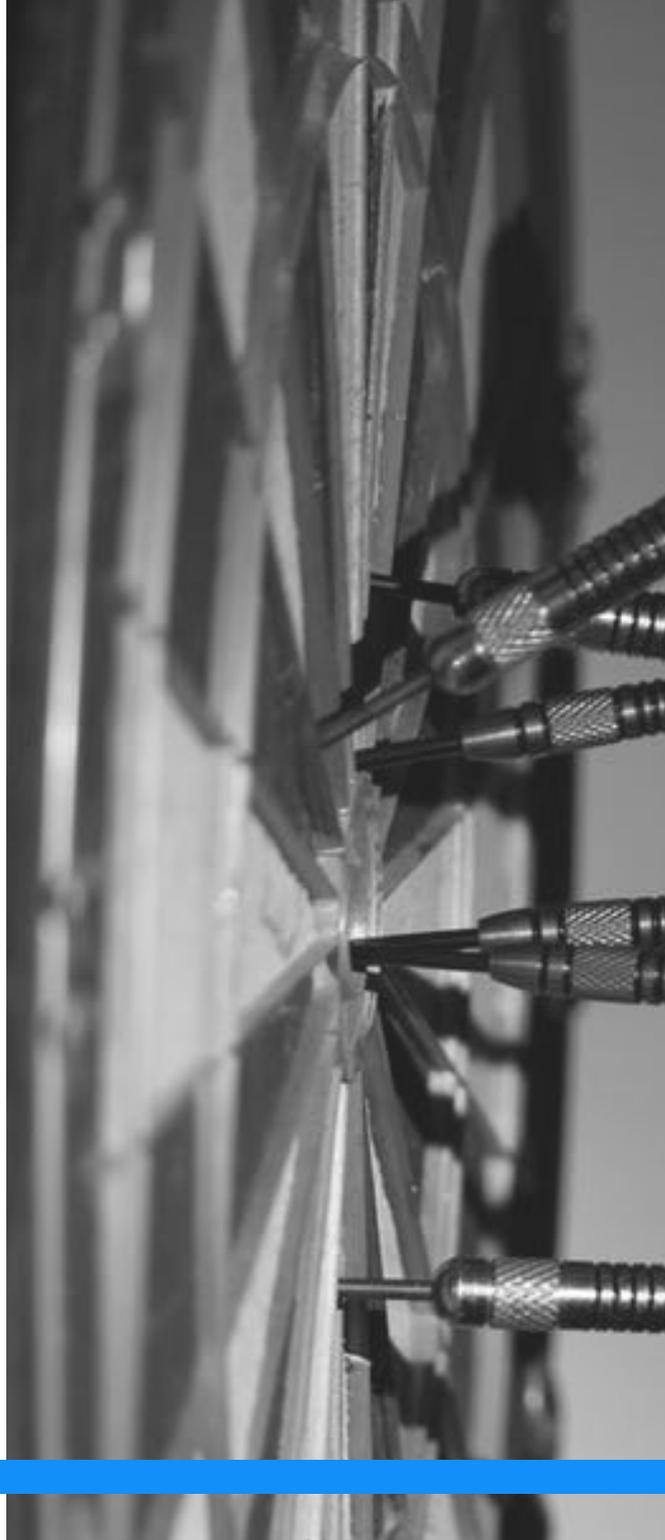
Upcoming Opportunities

- Open seat in District 1 for Board of DHCD
- Public hearing scheduled for May 15, 2017
- Roadmap will submit comments to DHCD by May 26
- GEC members could assist in drafting Roadmap comments or sign on to comments, if interested

Evaluation, Measurement, and Verification (EM&V) and Utility Savings Targets

RECOMMENDATION #6

- Strong EM&V and long-term, steadily increasing energy savings targets beginning in 2018 can achieve electricity savings of ~15,800 GWh by 2032, or 14% of electricity sales in that year.
- Creates opportunity for utilities to financially thrive while enabling customers to save, creating least-cost, least-risk electric system
- Results in investment in results-oriented, wider-reaching EE programs, leads to economic development and EE-related jobs



Background

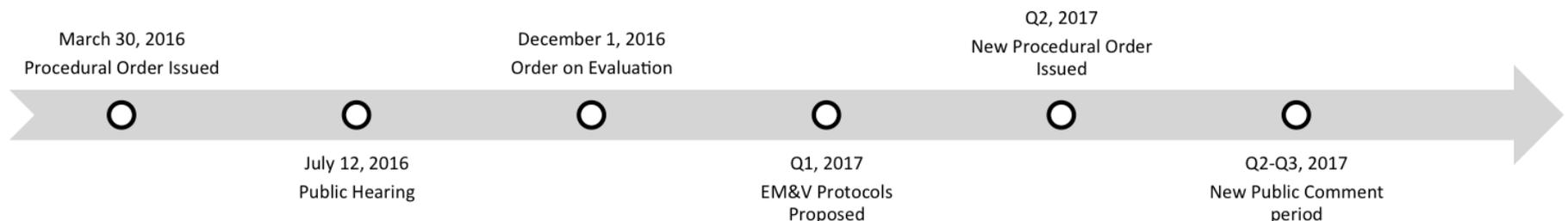
- HB 1053 and SB 396 (2016) ordered the SCC to evaluate “the establishment of uniform protocols for measuring, verifying, validating, and reporting the impacts of energy efficiency measures implemented by investor-owned electric utilities...” and to evaluate “the establishment of a methodology for estimating annual kilowatt savings and a formula to calculate the levelized cost of saved energy...”
- Also required SCC to hold a docketed proceeding and to submit findings and recommendations to Governor and General Assembly by December 1, 2016.
- Many groups submitted insight on how to proceed with documenting and measuring the effects of an EE program.

Current Status

- In December 2016 Order on EM&V, SCC directed staff to “draft proposed EM&V regulations of general applicability to both electric and natural gas utilities, incorporating Virginia-specific data where possible.”
- Declined to adopt a Virginia-specific Technical Resource Manual (TRM)
- Did not establish a separate formula to calculate levelized cost of saved energy for EE measures
- Declined to further standardize the application of cost/benefit tests

Future Opportunities

- EM&V regulations SCC staff produce will be considered in a separate docketed proceeding, with associated public notice, an opportunity for comment by interested persons and entities, and a hearing before the Commission. Proceeding is expected to commence at the end of the first quarter of 2017. As of April 3, 2017, the proposed EM&V regulations have not posted.

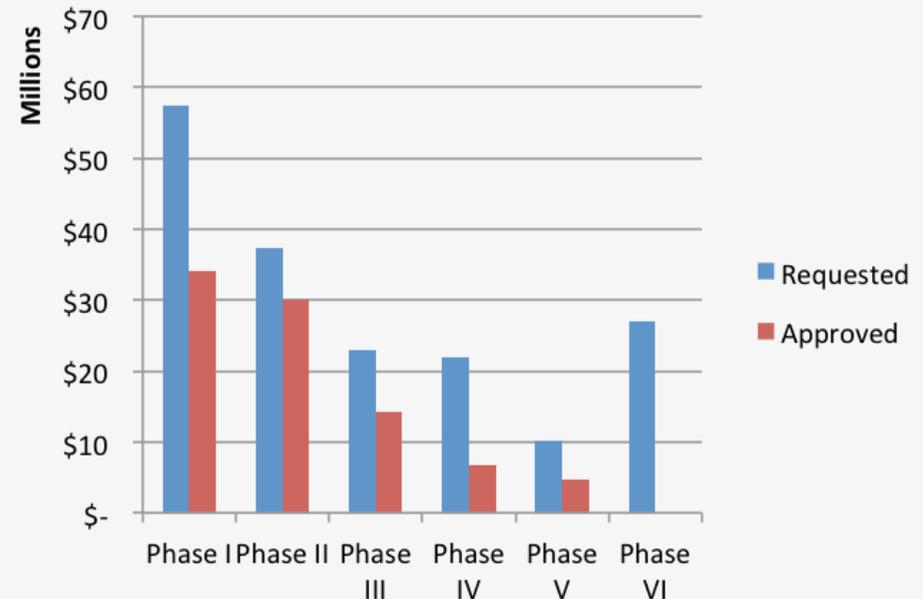
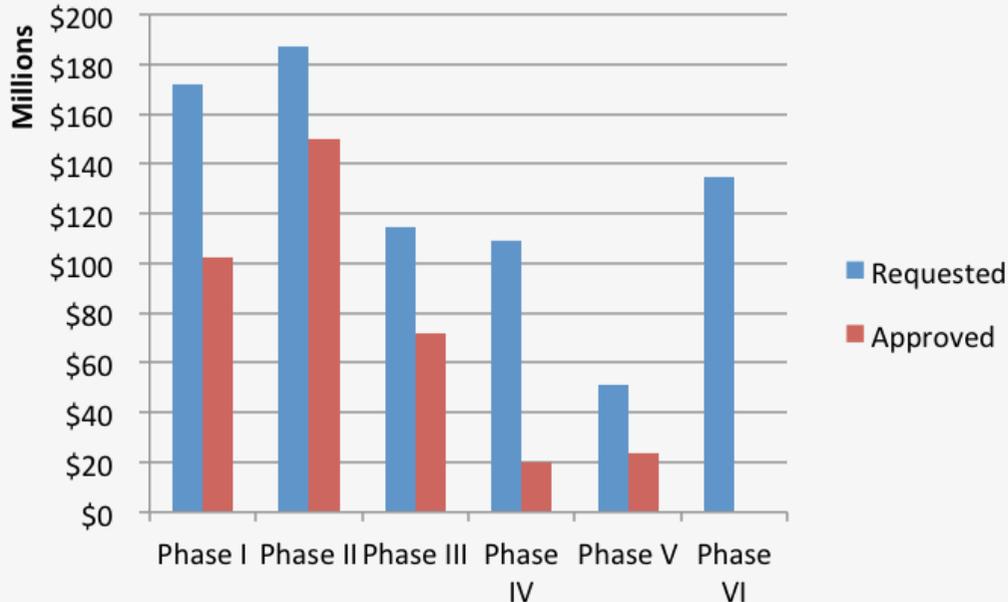


UTILITY ENERGY EFFICIENCY PROGRAMS IN VIRGINIA

Background

Dominion DSM Program Overview, Total		
	Requested	Approved
Phase I	\$172,200,000 for three years	\$102,300,000 for three years
Phase II	\$187,025,000 for five years	\$150,025,000 for five years
Phase III	\$114,439,906 for five years	\$71,610,689 for five years
Phase IV	\$109,417,260 for five year	\$20,000,000 for three years
Phase V	\$51,369,393 for five years	\$23,500,000 for five years
Phase VI	\$134,914,625 for five years	

Dominion DSM Program Overview, Year		
	Requested	Approved
Phase I	\$ 57,400,000.00	\$ 34,100,000.00
Phase II	\$ 37,405,000.00	\$ 30,005,000.00
Phase III	\$ 22,887,981.20	\$ 14,322,137.80
Phase IV	\$ 21,883,452.00	\$ 6,666,666.67
Phase V	\$ 10,273,878.60	\$ 4,700,000.00
Phase VI	\$ 26,982,925.00	



Current Status

- Energy savings targets are voluntary
- Leaves significant opportunity to achieve all cost-effective energy efficiency

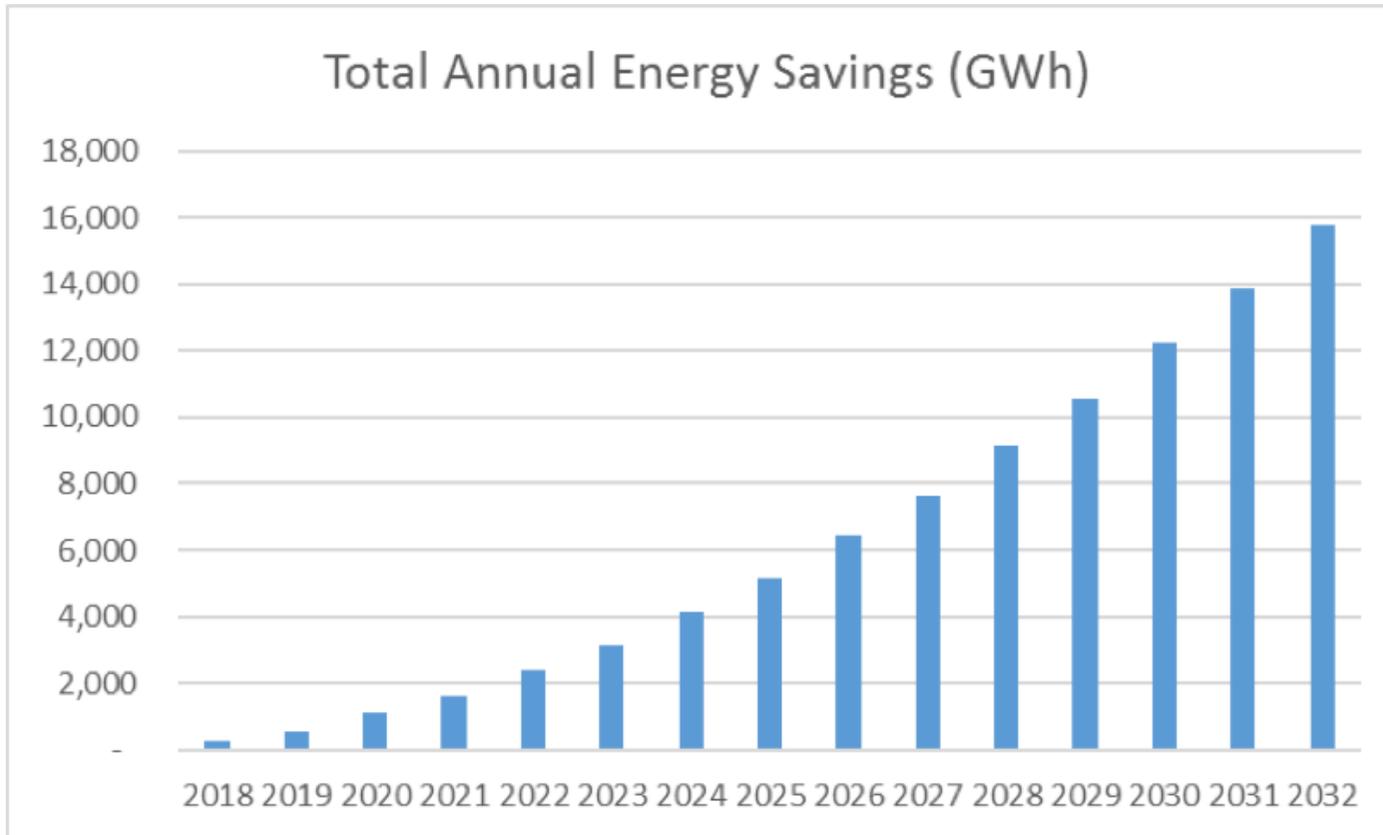
Future Opportunities

- Prepare legislation for the 2018 General Assembly session that provides SCC authority to establish long-term and steadily-increasing energy savings targets
- Support utility business model improvements that support financially sustainable energy efficiency programs and establish stakeholder forums to discuss key issues and program evolution.



WHAT DOES THE ROADMAP RECOMMEND?

In order to achieve electricity savings* of about 15,800 GWh by 2032, or 14% of electricity sales in that year, legislation is needed. Annual electricity targets as follows are readily achievable:



- 0.25% in 2018 and 2019
- 0.5% in 2020 and 2021
- 0.75% in 2022 and 2023
- 1% in 2024 and 2025
- 1.25% in 2026 and 2027
- 1.5% in 2028 and 2029
- 1.75% in 2030 and 2031
- 2% in 2032 and thereafter.

This graph is meant to provide a basic vision of utility electricity savings under long-term savings requirements. It was generated by using statewide sales and applying AEO, SERC-derived annual growth projections. Incremental annual electricity savings targets ramped up from 0.25% to 2% per year. Savings continue to accrue over the lifetime of the measures, which is assumed to be at least 13 years, and to account for savings decay, it applies a five percent annual degradation factor each year, starting in 2019 through 2032. The graph does not capture the complexities of program design, customer sector impacts, or market and technology disruptions.