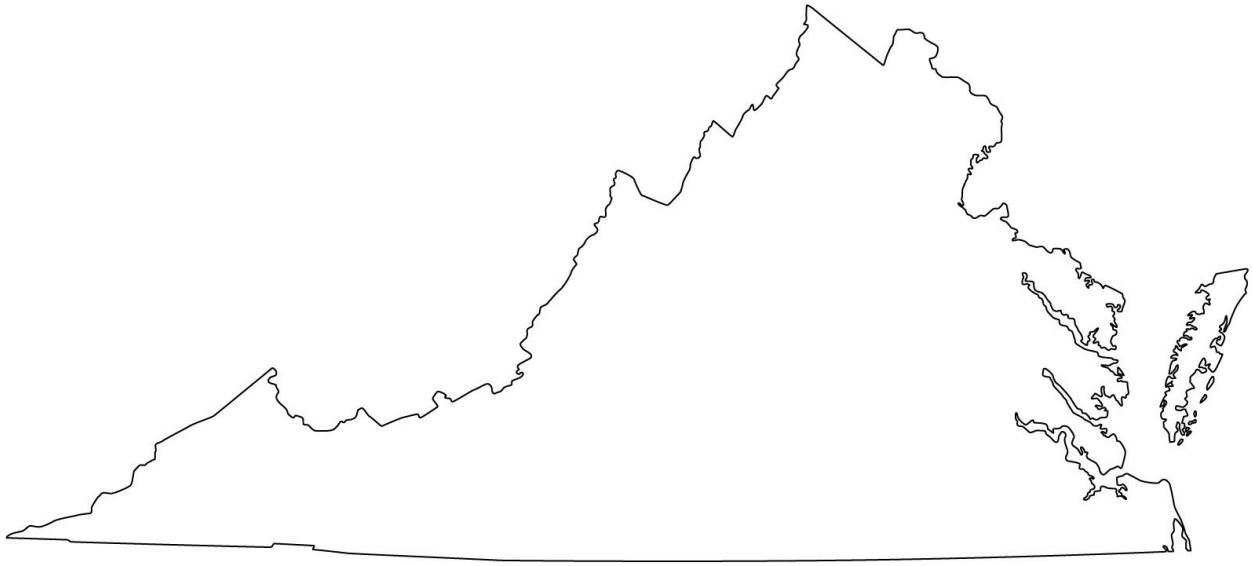
Characterizing and tracking progress towards meeting the 2014 Virginia Energy Plan electric energy conservation goal



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Governor's Executive Committee on Energy Efficiency
Richmond, VA – June 1, 2015

2007 and 2014 Virginia energy consumption goals

- Statute: 2007 Acts of Assembly, Chapter 933, Clause 3:

  "The Commonwealth shall have a stated **goal of reducing the consumption of electric energy by retail customers … by the year 2022 by an amount equal to ten percent** of the **amount of electric energy consumed** by retail customers **in 2006**."

- 2014 Virginia Energy Plan:

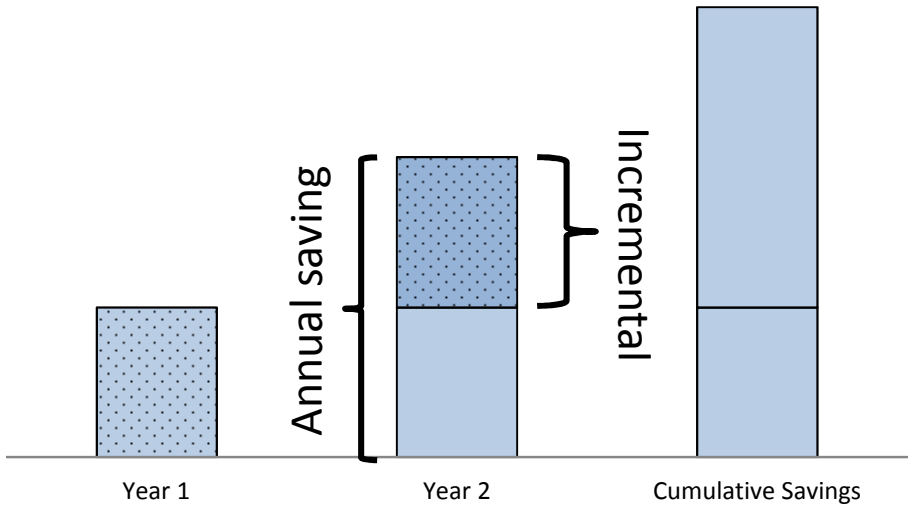
  "**Establish the Board on Energy Efficiency [Governor's Executive Committee on Energy Efficiency] to develop a strategic plan to achieve the voluntary goal of reducing energy consumption by 10% by 2020**, accelerating the 2007 Virginia Energy Plan goal by two years."

Governor's Executive Committee tasks

- **Develop measurement and verification method to track consumption and determine Virginia's progress towards meeting goal**
- Identify barriers and opportunities to meet goal
- Review best practices in cost recovery and incentives to utilities
- Plan outreach efforts
- Identify financing tools
- Recommend new programs or policy changes to support energy efficiency upgrades for low-income Virginians especially in Southside and Southwest Virginia
- Review existing Virginia-specific studies

Terminology

- Incremental savings: NEW savings in avoided energy consumption for a given year
- Annual savings: Savings in avoided energy consumption for a given year (including prior year savings that are still within useful life)
- Cumulative savings: Sum of annual savings



There are several ways to characterize the 2014 Goal

1. Reduce total consumption to 10% below amount consumed in the baseline year
2. Reduce baseline "intensity measure" by 10%

Top-down evaluation

Measure: consumption

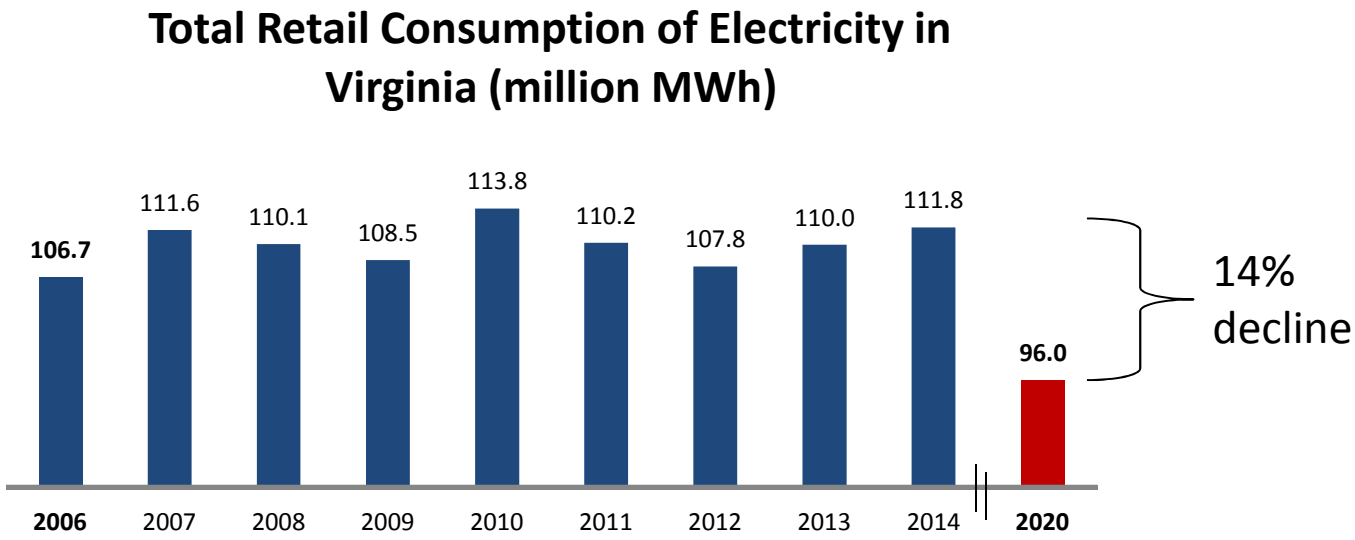
3. Achieve an **annual** savings of 10% of the baseline year (2006) consumption **in** the target date (2020)
4. Achieve a **cumulative** savings of 10% of the baseline year (2006) consumption **by** the target date (2020)

Bottom-up evaluation relies on determining savings at a more granular level

Measure: savings

Method 1: 10% reduction of baseline level

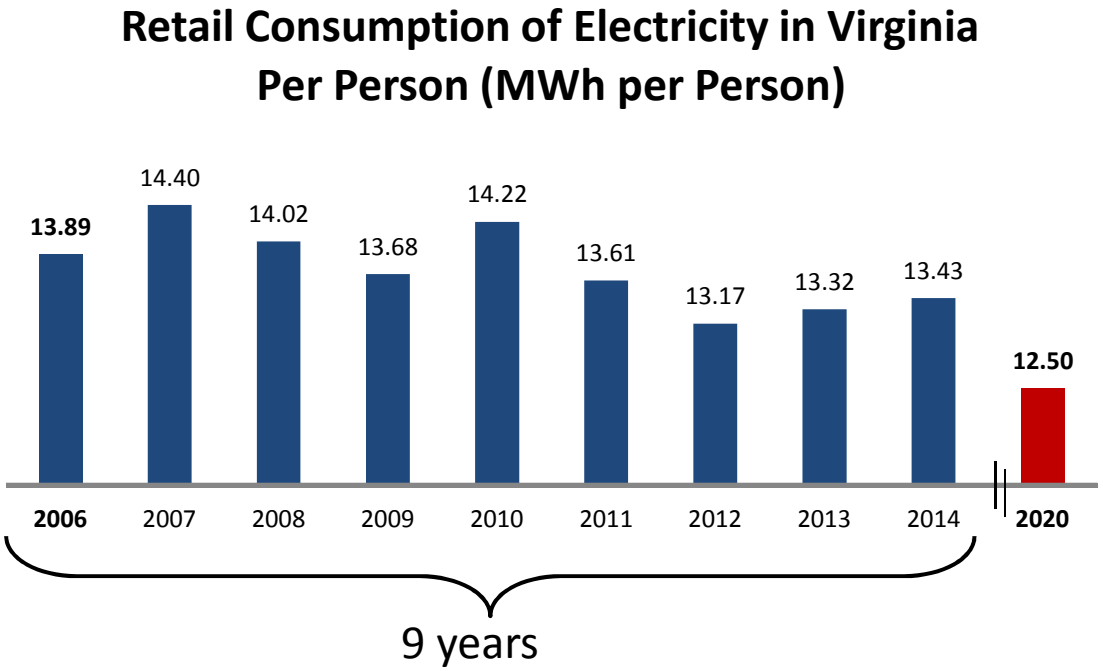
- 2006 Retail Electricity Sales: **106.7 million MWh**
- 2020 Target: **96.0 million MWh**

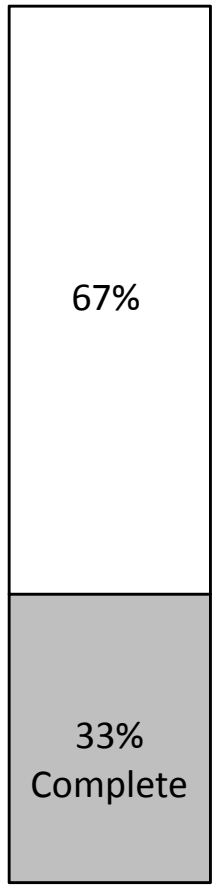


- Can be refined by normalizing for weather, population, and economic changes

Method 2a: Reduce electricity consumption per person by 10%

- Retail Electricity consumption per person
  - 2006 Level: 13.89 MWh per person
  - 2020 Target: 12.50 MWh per person
  - 2014 Level: 13.43 MWh per person

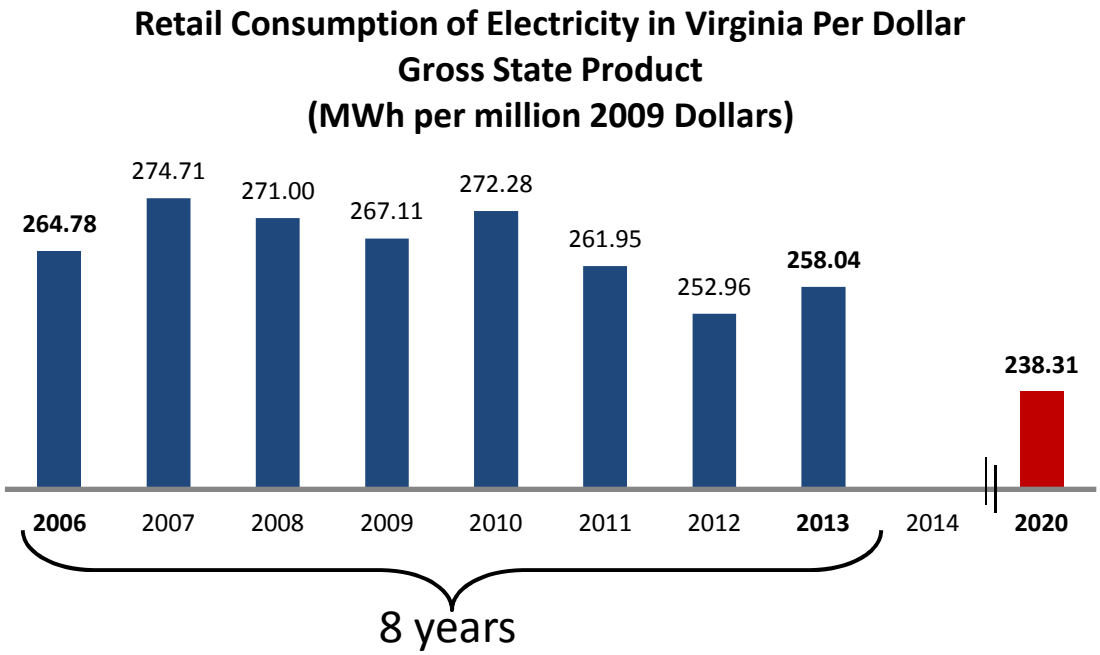


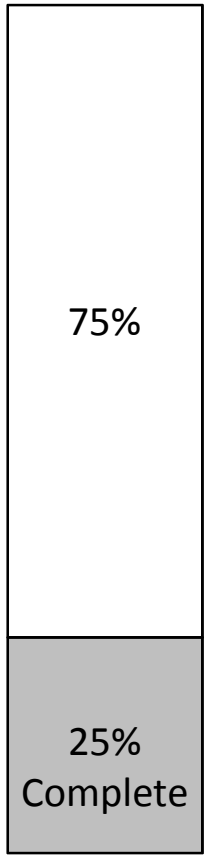


Progress as of Jan 2015

Method 2b: Reduce electricity consumption per million $ GSP by 10%

- Retail Electricity consumption per million $ gross state product (GSP)
  - 2006 Level: 264.78 MWh per million $ GSP
  - 2020 Target: 238.31 MWh per million $ GSP
  - 2013 Level: 258.04 MWh per million $ GSP

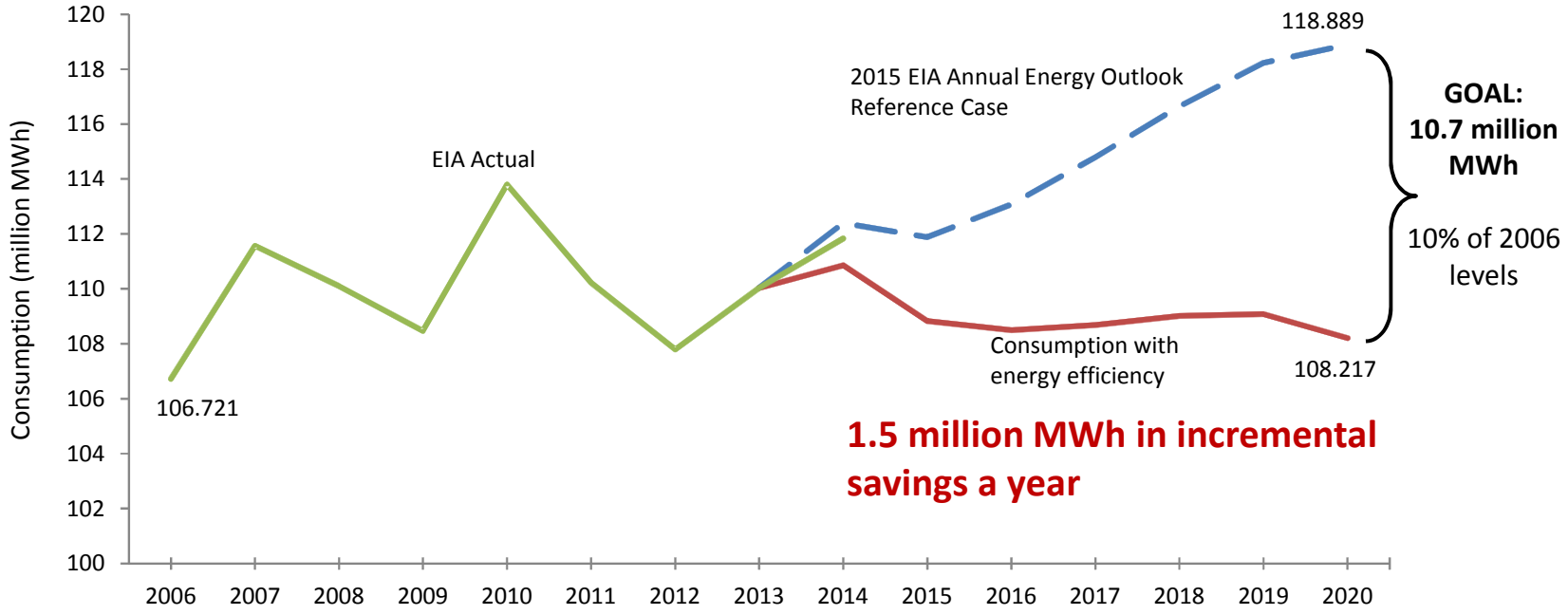




Progress as of Jan 2015

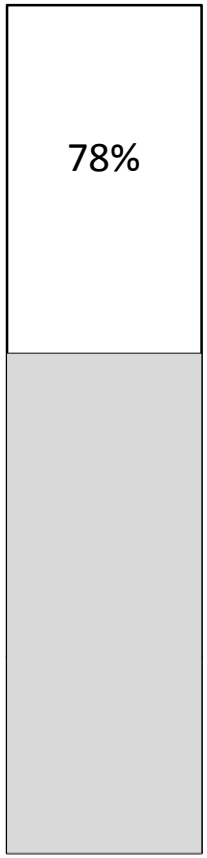
Method 3: Annual savings in 2020 equal to 10% of 2006 consumption level

- 2006 Level: 107 million MWh
- 2020 Target: 10.7 million MWh reduction from DSM/EE programs



Dominion Virginia Power's progress

- Dominion indicates that its current and projected Demand-side reduction programs noted in its integrated resource plan help it achieve 45% of its reduction goal
- Appalachian Power Company does not currently track progress towards meeting the 10% goal
- Savings reported by Dominion are only savings that are directly attributed to energy efficiency programs



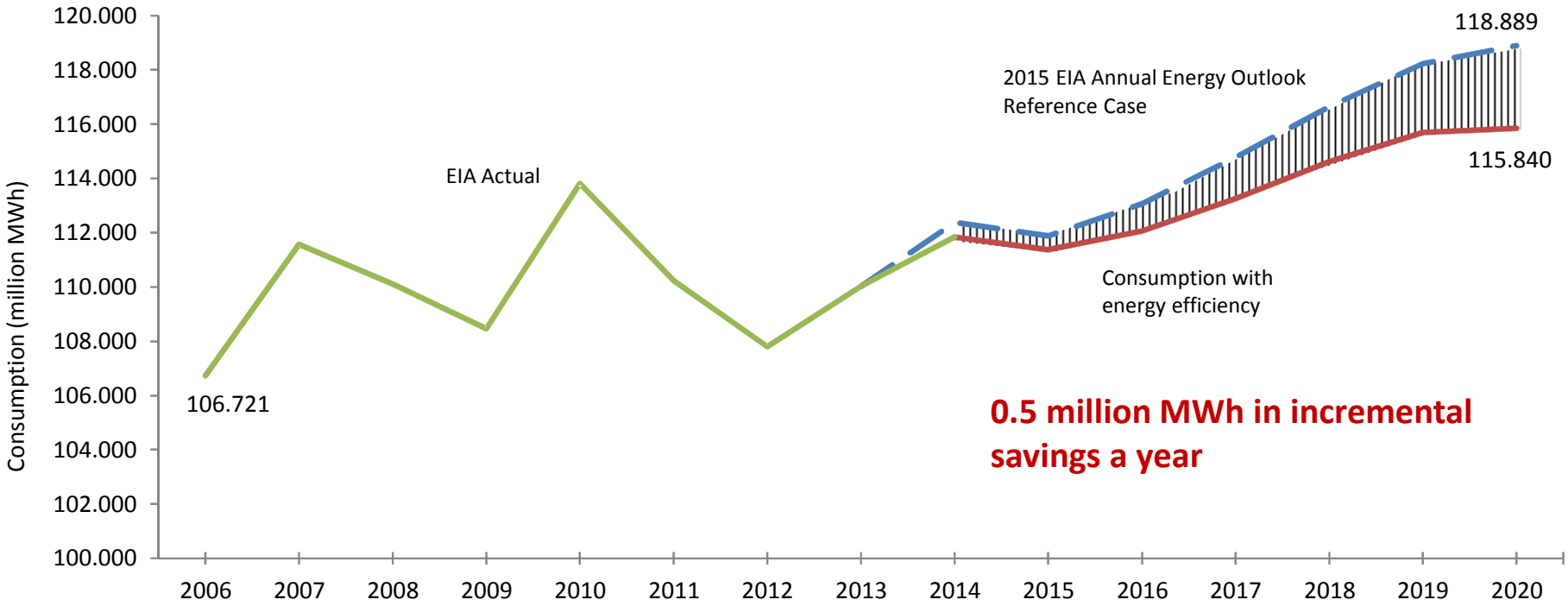
Reported Progress as of Jan 2015

10.672 million MWh in annual savings by 2020

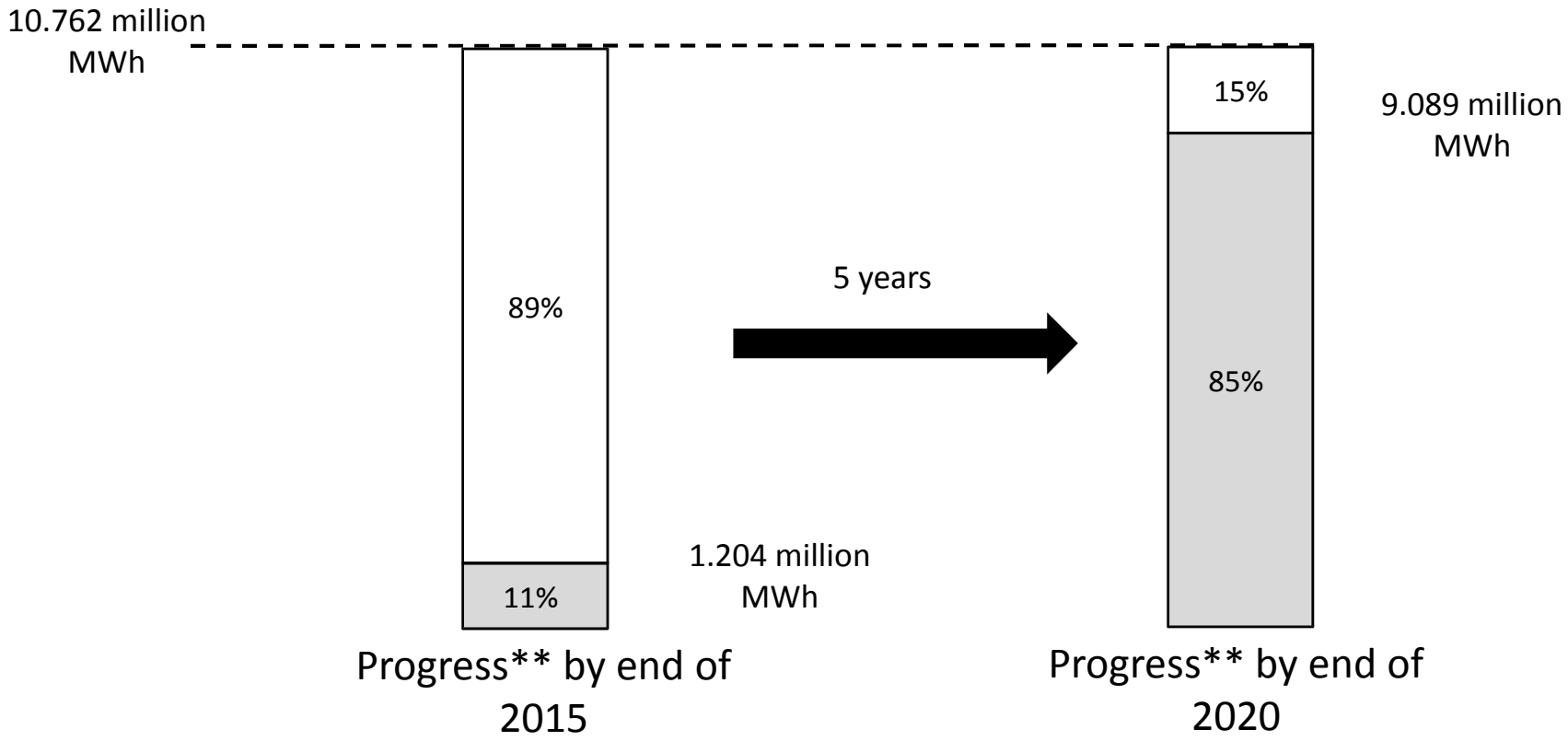
57% if Dominion meets its stated goal: 6.179 million MWh

2.333 million MWh annual savings by 2020 (DVP)

Method 4: Achieve a cumulative savings equal to 10% of 2006 consumption levels



Dominion's goal could meet Virginia's 10% goal under the **cumulative** measure



**NOTE: Progress includes DSM activities/programs that are in place, approved, and proposed.

Summary

- Characterization of 10% goal can determine how achievable the goal is
- Top-down versus bottom-up measures
  - Top-down measures: focus on consumption and more useful if the portfolio of programs in more market based and harder to track through EM&V
  - Bottom-up measures: focus on energy savings (avoided MWh) and more useful if the portfolio of programs are largely utility scale and administered by the utility. Will require strong EM&V processes
- The 10% annual reduction goal is very aggressive
- Bottom-up measures are closer to what can be used to meet EPA Clean Power Plan targets

Evaluation, measurement and verification (EM&V)

- This presentation includes rough estimates to stimulate discussion
- Weakness: graphs over time DO NOT show exact measure of savings due to efficiency programs; they only show reductions in consumption
  - Do not account for other factors that could lead to lower consumption levels (for example: macroeconomic changes, price changes, energy efficiency marketing, etc…)
  - Ignores participants in a program who would have participated in the program anyway
- EM&V is important to utilities in order to get Demand-Side Management programs approved by state regulators

Thank you.

Questions?

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