
Clean Energy for a New Virginia Economy



February 28, 2017

3 Recommendations

- Grow clean energy for the New Virginia Economy and tackle climate change with a market-based program that limits and reduces EGU carbon pollution 30% by 2030.
- Allocate carbon allowances to electricity distribution companies.
- Fund DEQ's modest administration costs of a carbon limit in the same manner as Title V program funding.

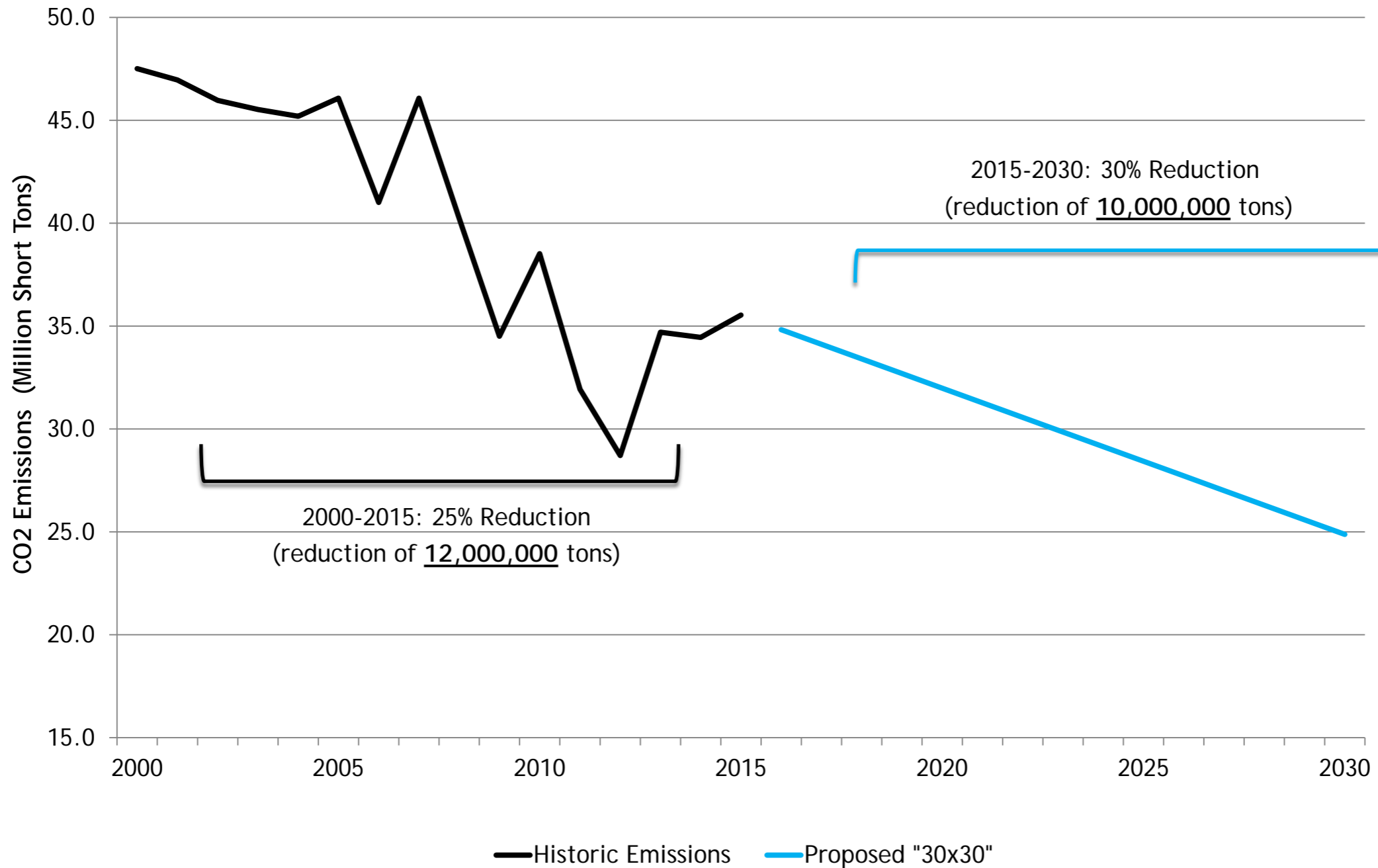
30X30

How Virginia can limit carbon pollution 30% by 2030 and grow a New Virginia Economy fueled by clean energy

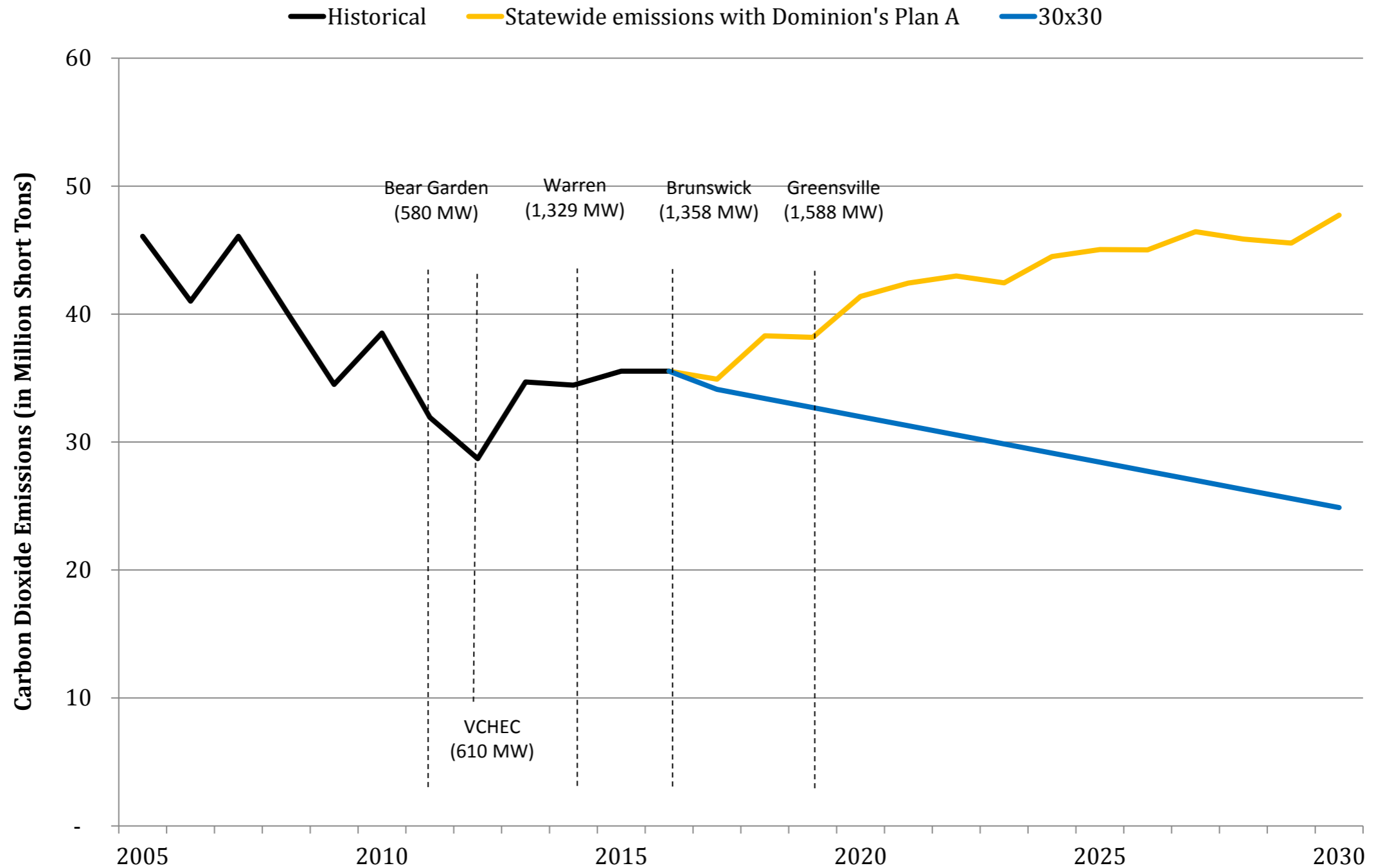


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A Continuation of Virginia's Pollution Reduction Progress



Dominion Virginia Power's Planned Pollution Increases



Source: U.S. EIA's State Carbon Dioxide Emissions data for 2000-2015;
 Yellow line reflects Dominion Plan A CO2 emissions with non-Dominion generation emissions held flat at 2015 levels.

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How to Get There

1.5% energy efficiency savings (by 2024)
&
20% renewable energy.

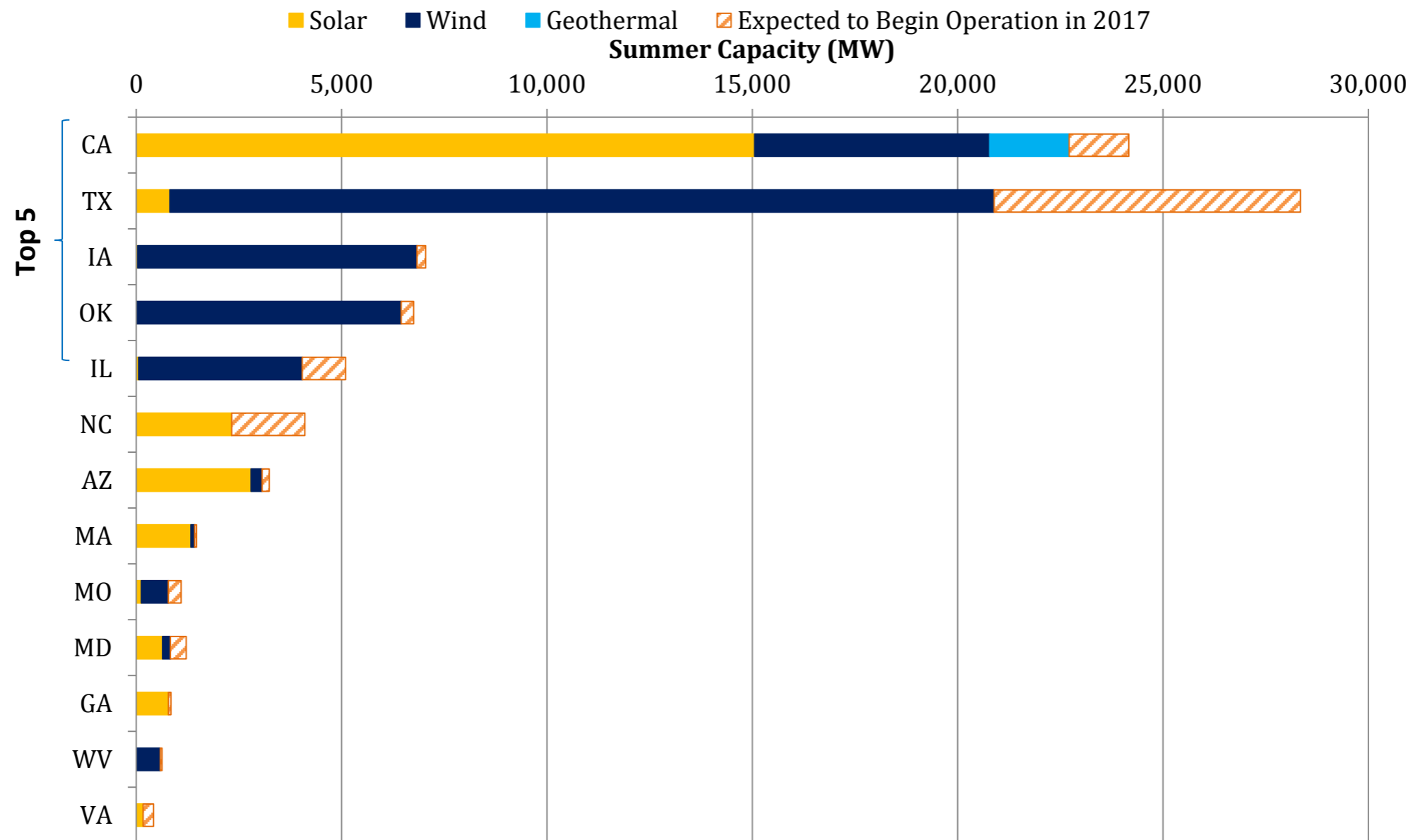
These achievable, lower-cost resources will:

- Increase Virginia's energy independence.
- Reduce electricity bills.

30x30

An Opportunity for Renewable Energy Growth

- 20% renewables by 2030 in Virginia is achievable.
- 7 states already exceed 20% renewable today; at least 15 more states will exceed that by 2030.

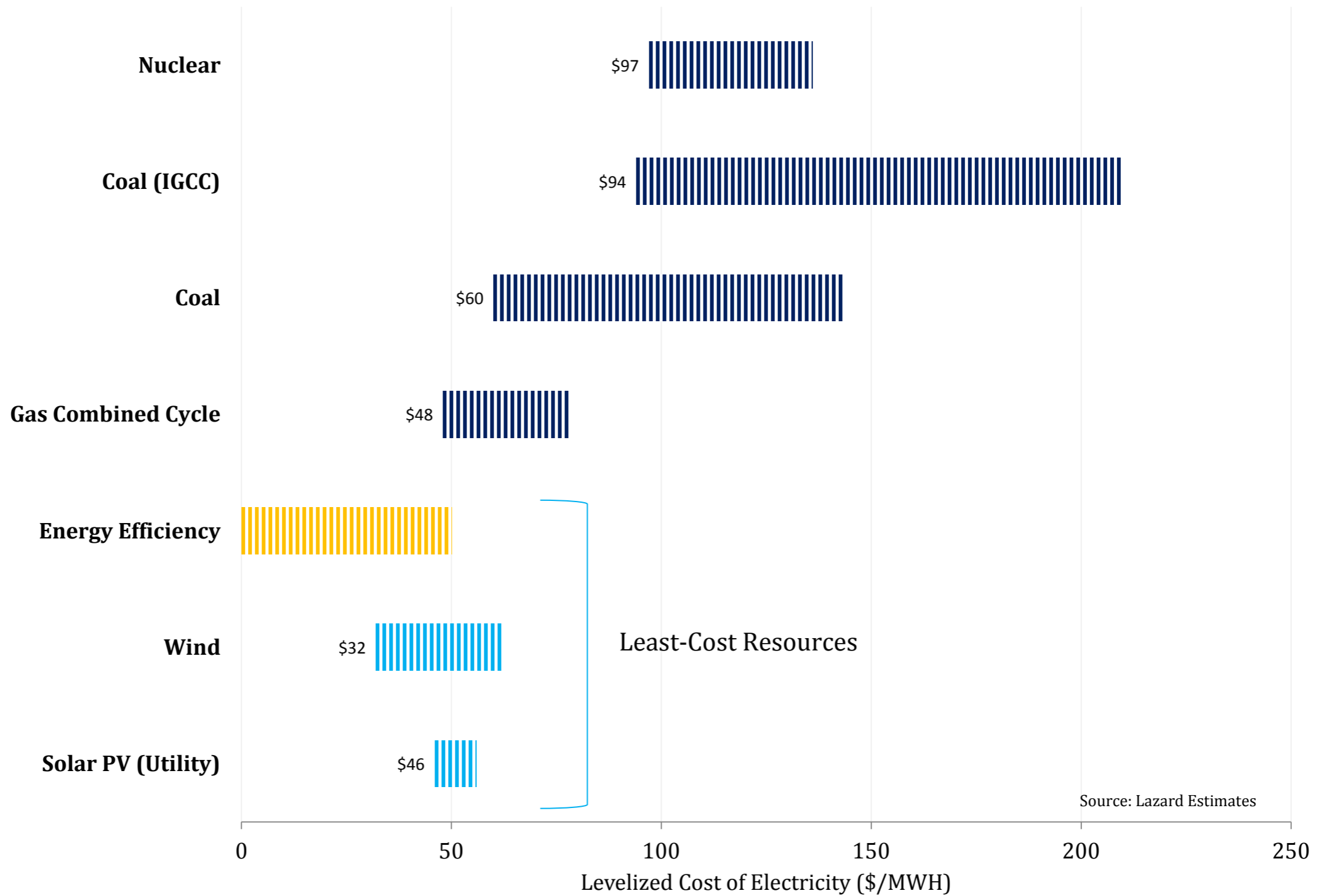


Source: Operating Summer Capacity values drawn from U.S. EIA, Electric Power Monthly, February 2017.

Expected 2017 capacity is from SNL Energy. Reflects announced builds as of January 28, 2017, scheduled to begin operating in 2017.

30x30

An Opportunity for Lower Energy Bills



Source: Lazard Estimates

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An Opportunity for Job Growth

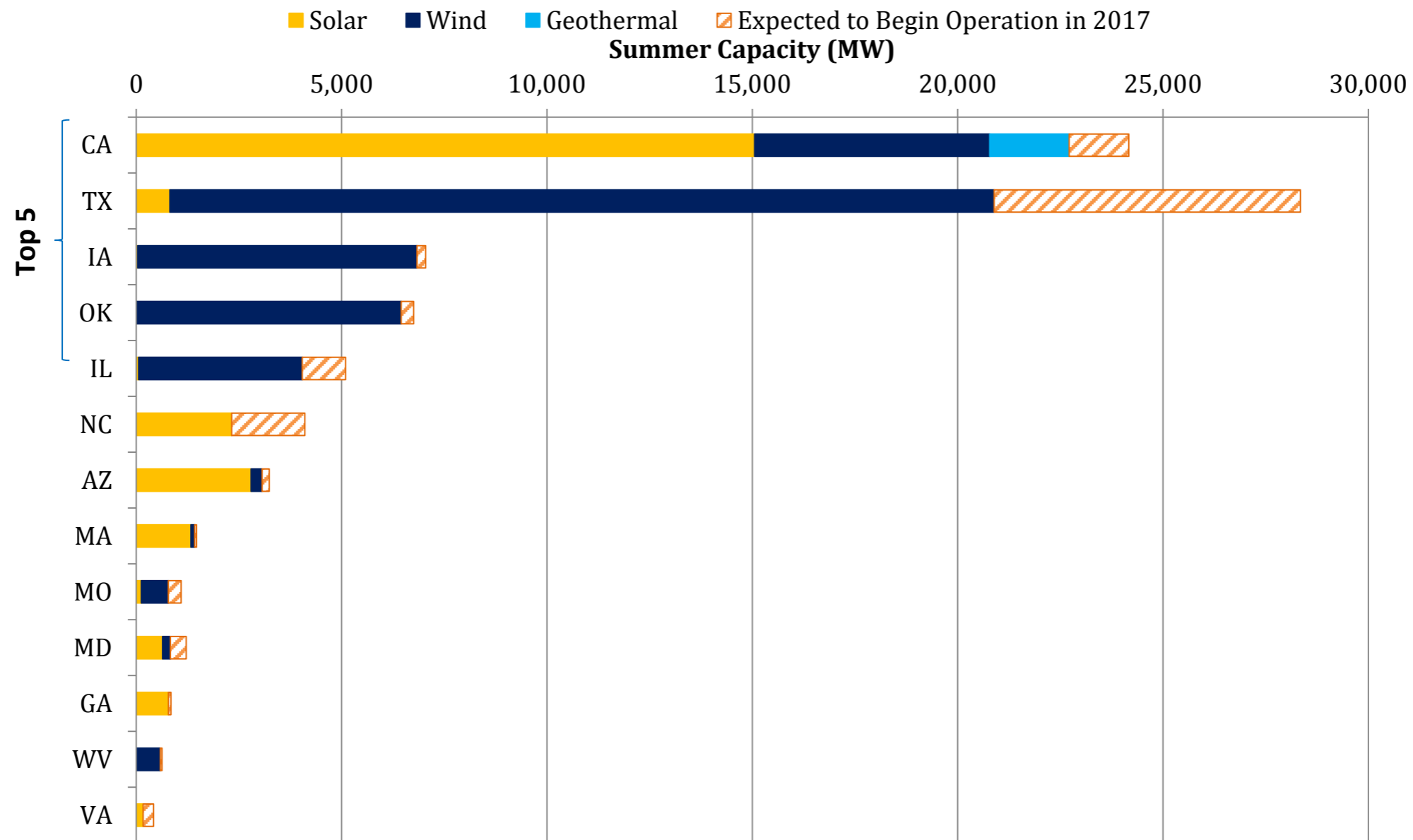
Virginia solar jobs grew 65% last year (from 1,963 to 3,236).

There are more American jobs now in solar and wind energy generation than in all fossil fuel generation combined.

30x30

An Opportunity for Renewable Energy Growth

- 20% renewables by 2030 in Virginia is achievable.
- 7 states are already at 20% today; at least 17 states will exceed that by 2030.



Source: Operating Summer Capacity values drawn from U.S. EIA, Electric Power Monthly, February 2017.

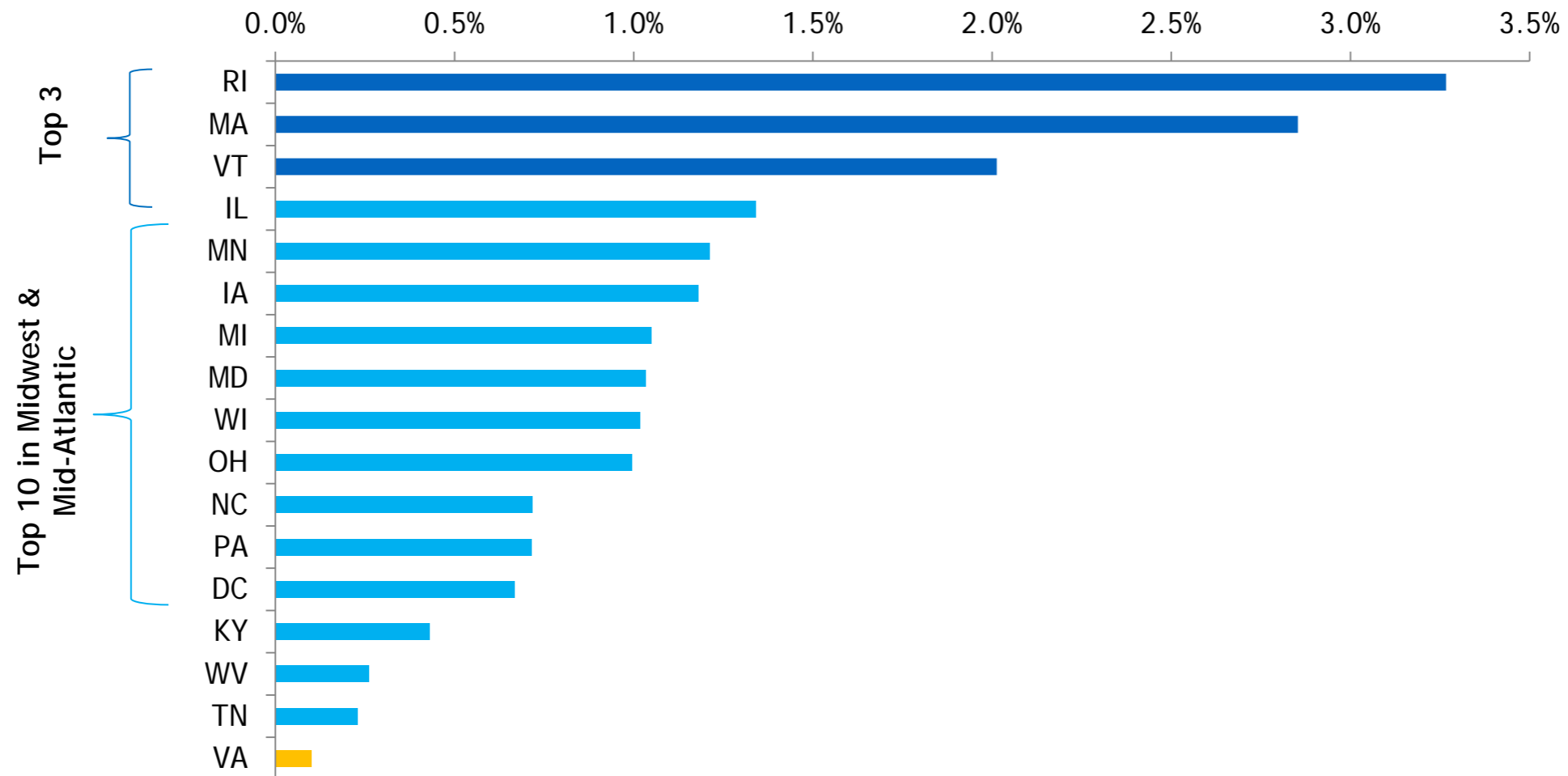
Expected 2017 capacity is from SNL Energy. Reflects announced builds as of January 28, 2017, scheduled to begin operating in 2017.

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An Opportunity for Energy Efficiency

- Ramp up rate of .2% per year starting in 2017, up to 1.5% per year starting in 2024.
- 8 states have already achieved this level; 8 more states will likely achieve this level in 2017 or beyond.

2015 Energy Savings (% of Retail Sales)



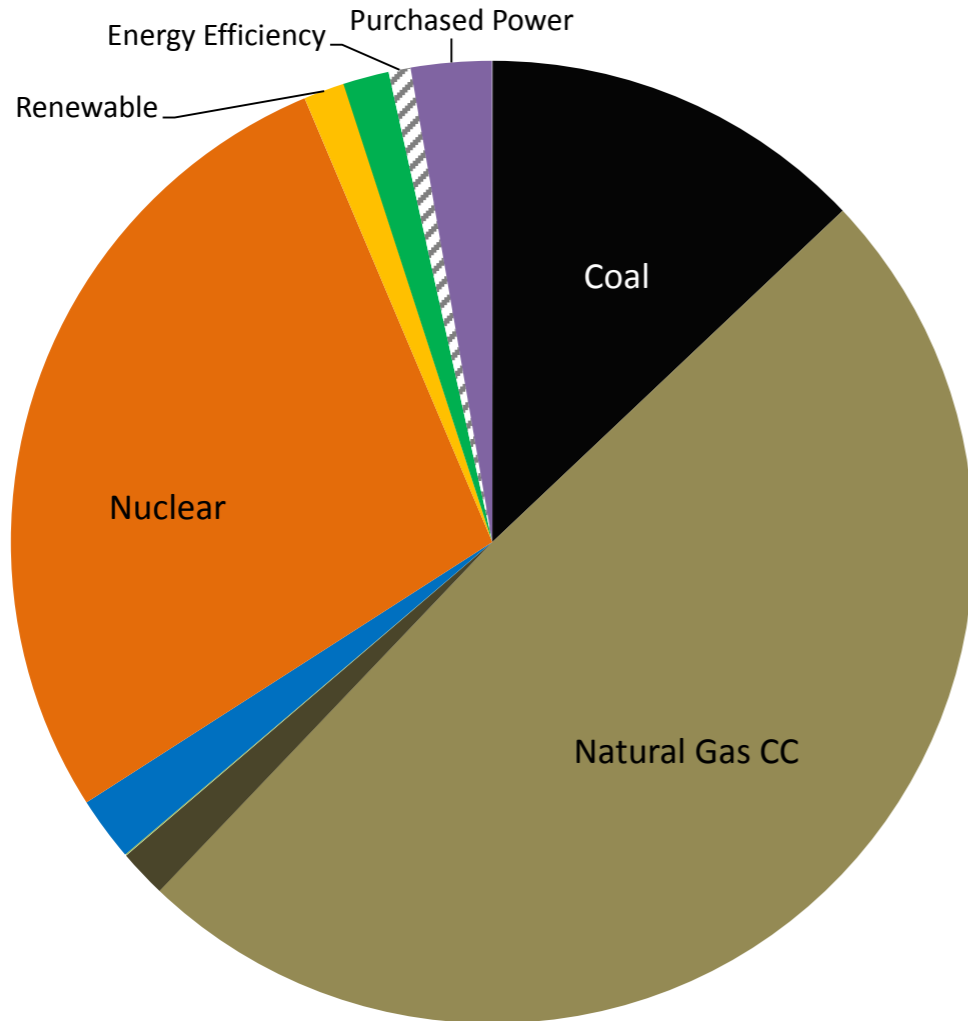
30x30 Would Help Address Virginia's 10th Highest Bills

Rank	State	Average Monthly Bill (Dollar and cents)	Rank	State	Average Monthly Bill (Dollar and cents)
#1	Connecticut	153.13	#26	Indiana	111.51
#2	Hawaii	152.12	#27	New York	111.32
#3	South Carolina	144.04	#28	Oklahoma	110.87
#4	Alabama	142.48	#29	Kansas	110.58
#5	Maryland	139.91	#30	Arkansas	110.22
#6	Mississippi	137.24	#31	New Jersey	110.04
#7	Texas	136.00	#32	District of Columbia	109.21
#8	Florida	132.16	#33	South Dakota	108.68
#9	Delaware	131.18	#34	North Dakota	104.96
#10	Virginia	130.58	#35	Nebraska	101.96
#11	Georgia	129.46	#36	Iowa	98.53
#12	Tennessee	128.51	#37	Oregon	96.24
#13	North Carolina	125.51	#38	Vermont	95.33
#14	Arizona	124.67	#39	Idaho	95.01
#15	Louisiana	120.02	#40	California	94.59
#16	Alaska	119.64	#41	Wisconsin	94.26
#17	Massachusetts	119.26	#42	Michigan	93.61
#18	Pennsylvania	116.62	#43	Minnesota	92.32
#19	Nevada	116.47	#44	Wyoming	91.19
#20	Missouri	115.80	#45	Illinois	89.91
#21	New Hampshire	114.90	#46	Montana	89.03
#22	Kentucky	114.72	#47	Washington	87.64
#23	Rhode Island	114.50	#48	Maine	86.75
	U.S. Total	114.03	#49	Colorado	83.42
#24	Ohio	112.25	#50	Utah	80.92
#25	West Virginia	111.59	#51	New Mexico	79.23

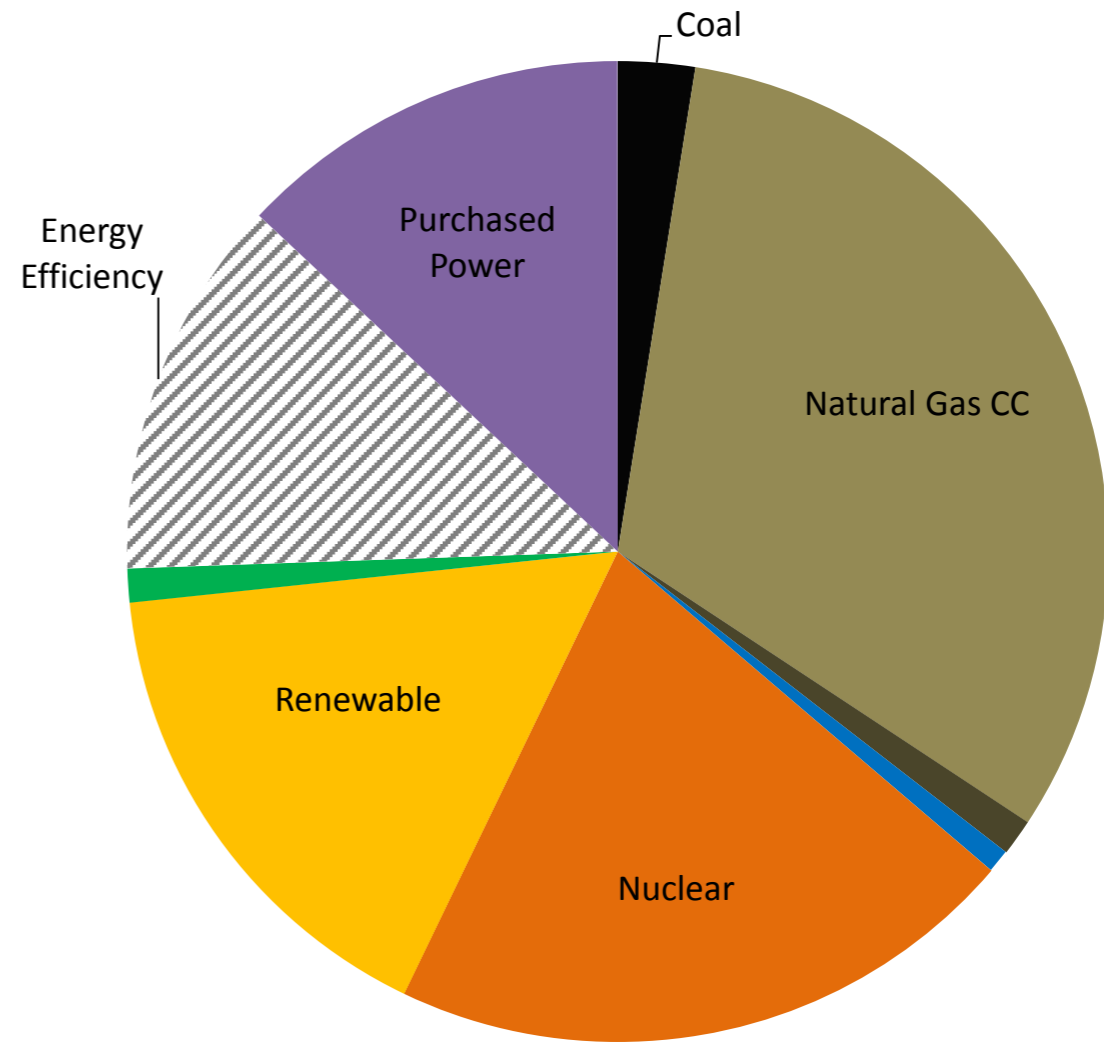
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An Opportunity for Dominion to Diversify

Dominion 2030 Energy Mix (Plan A from IRP)

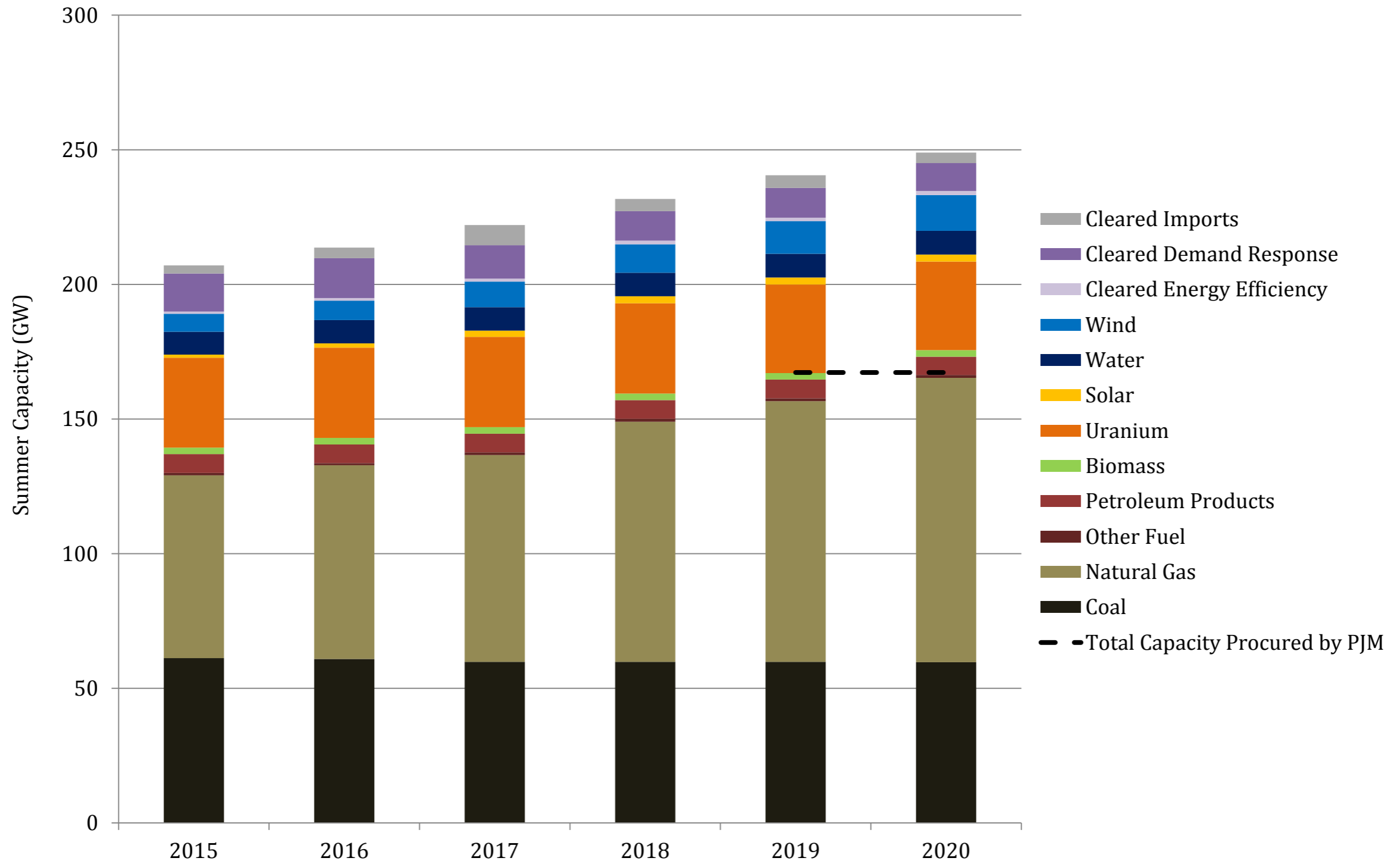


30x30 Energy Mix



■ Coal ■ Natural Gas CC ■ Natural Gas Turbines ■ Oil ■ Hydro ■ Nuclear ■ Renewable ■ Biomass ▨ Energy Efficiency ■ Purchased Power

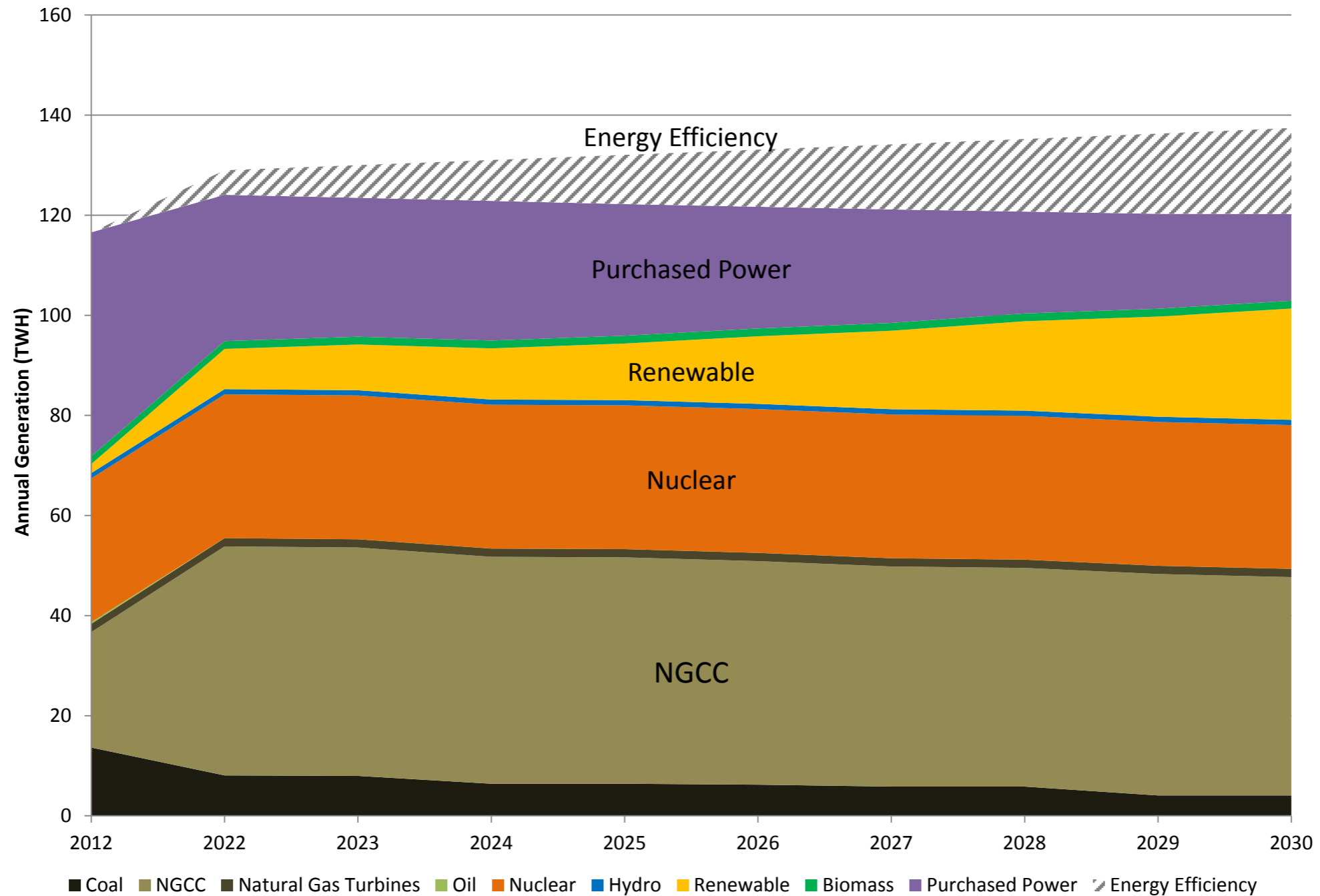
Additional Natural Gas Plants in Virginia Are Not Needed



Source: Supply Side generation from SNL Energy. Reflects announced builds as of February 28, 2017.
 Demand-side values and Capacity Procurements drawn from PJM Interconnection's 2019/2022 RPM Base Residual Auction Results.

30x30

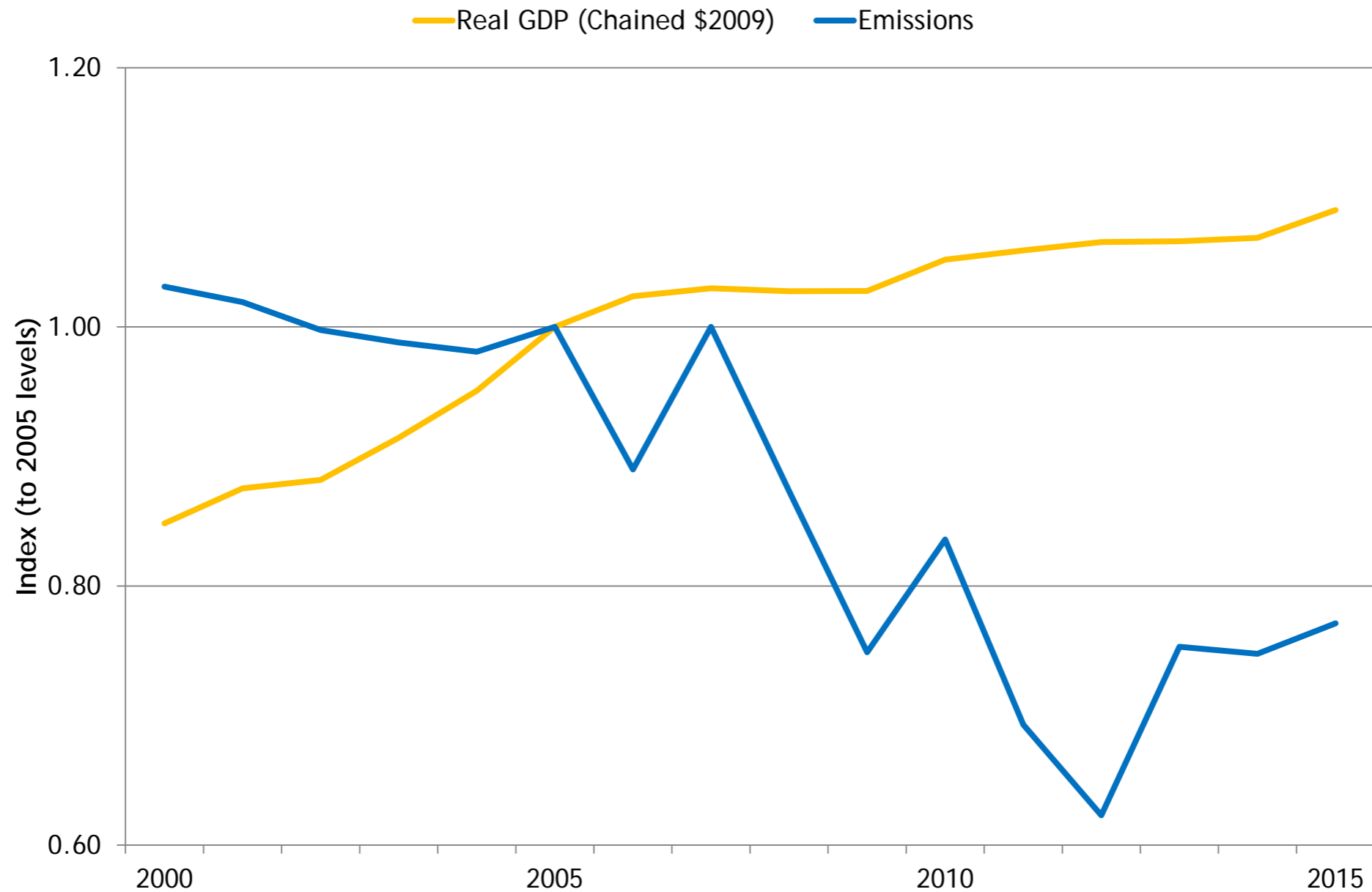
An Opportunity for Energy Independence



30x30

Reductions in Carbon Do Not Slow Economic Growth

Virginia's Economy Grew While It Reduced its Carbon Pollution

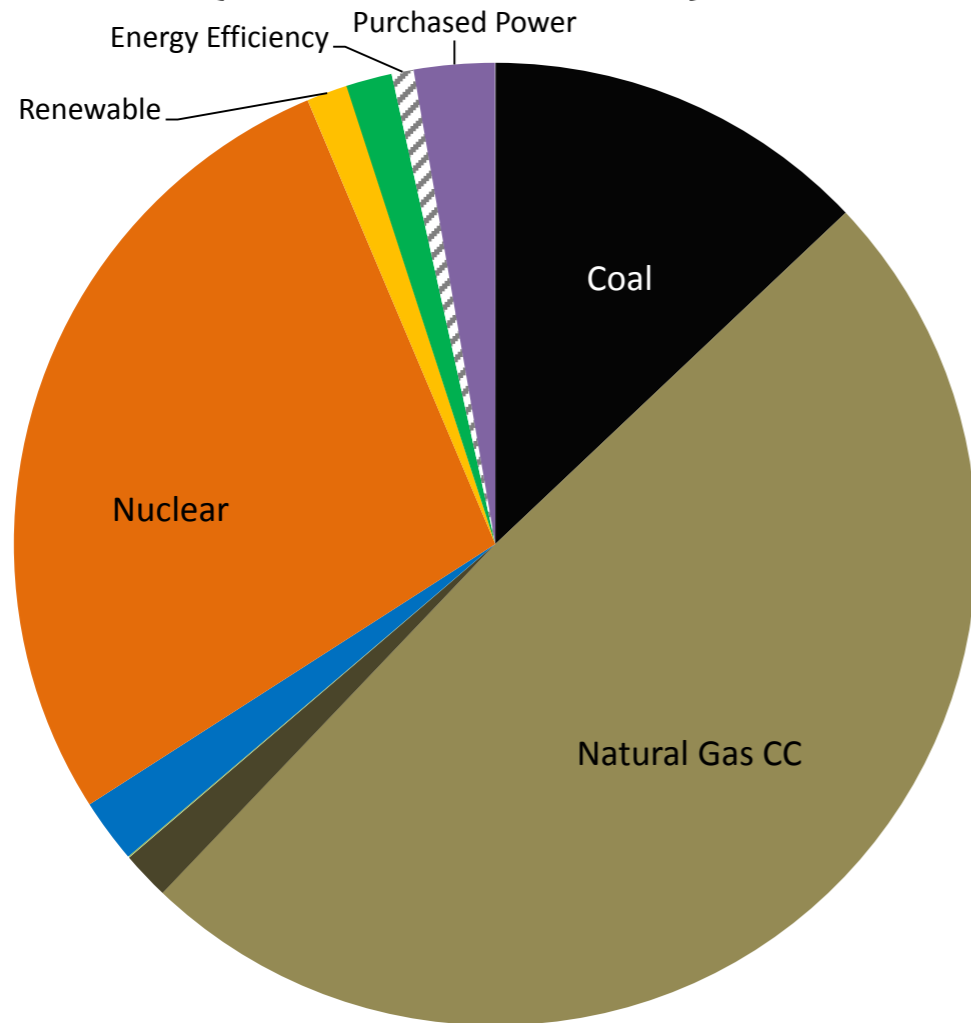


Source: U.S. EIA's State Carbon Dioxide Emissions data for 2000-2015 (available at <http://www.eia.gov/environment/emissions/state/>)
U.S. Bureau of Economic Analysis's "Regional Data," "Annual GDP by State," and "Real GDP in chained dollars,"
available at www.bea.gov/iTable/index_regional.cfm. Figures adjusted for inflation

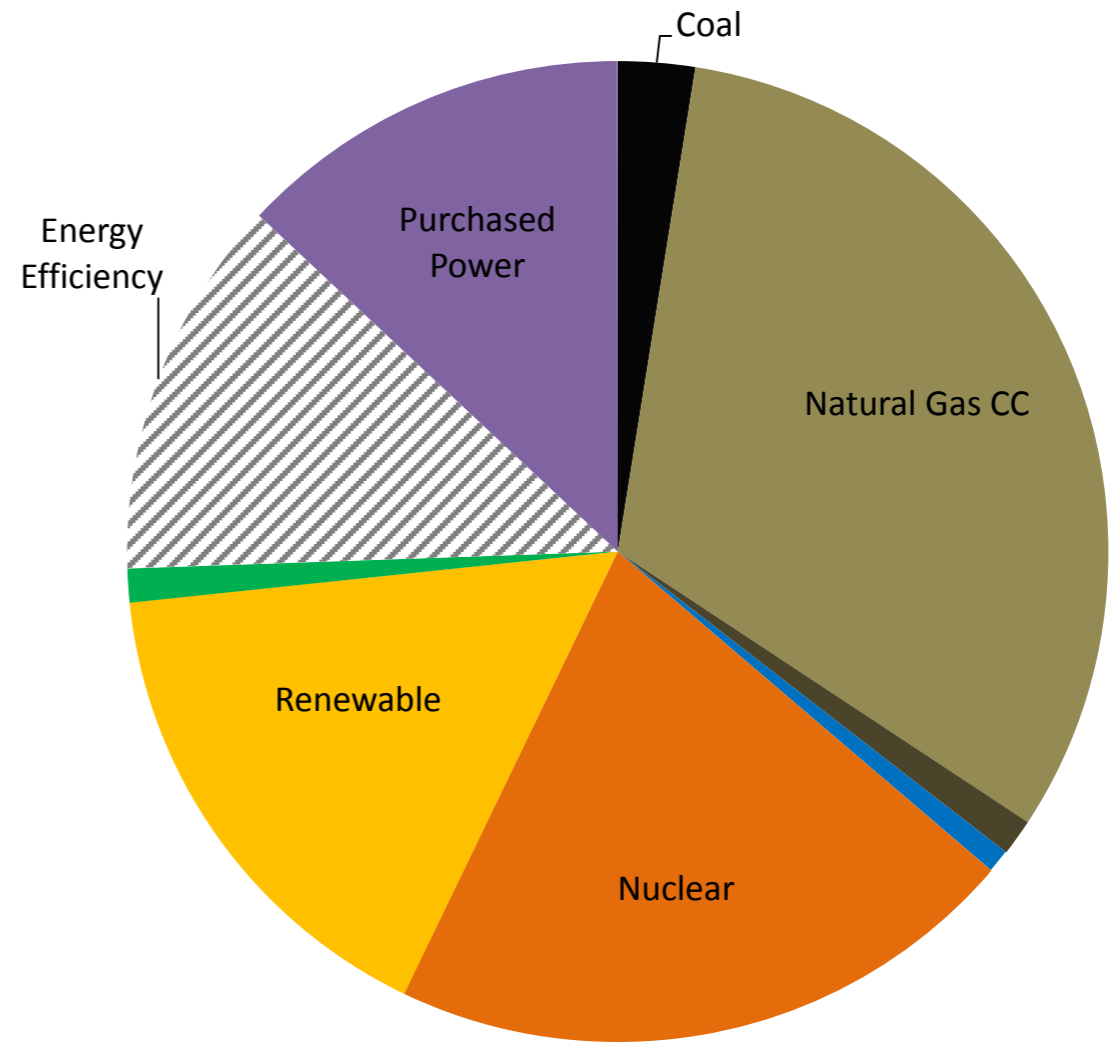
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An Opportunity for Dominion

Dominion 2030 Energy Mix (Plan A from IRP)



30x30 Energy Mix

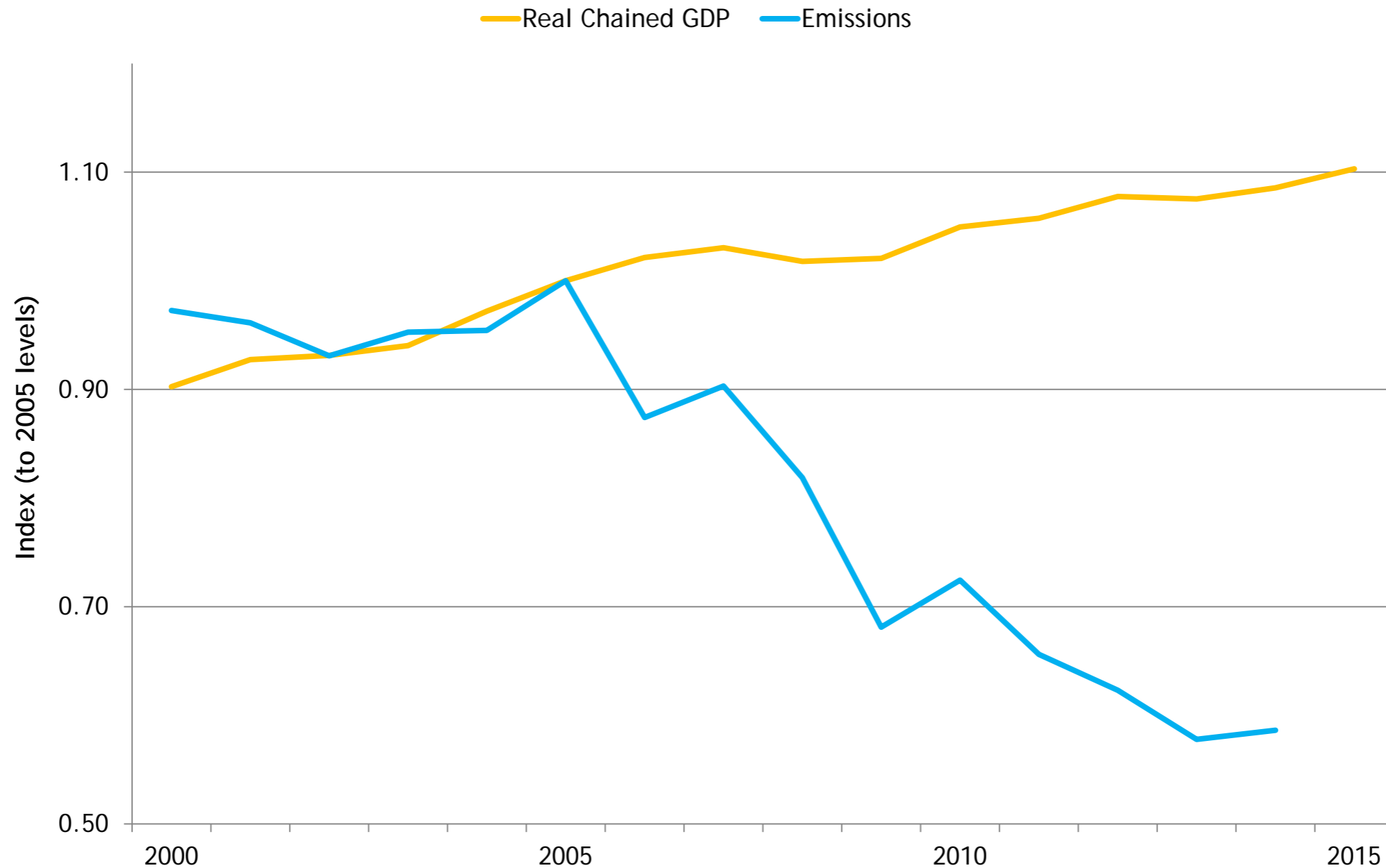


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Reductions in Carbon Do Not Slow Economic Growth

States in RGGI Grew Their Economies While They Limited and Reduced Carbon Pollution



Source: U.S. EIA's State Carbon Dioxide Emissions data for 2000-2015 (available at <http://www.eia.gov/environment/emissions/state/>)
U.S. Bureau of Economic Analysis's "Regional Data," "Annual GDP by State," and "Real GDP in chained dollars,"
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30x30 Is an Opportunity for Virginia Leadership

- National and international leadership.
- Fiscally conservative leadership.
- Creates a clean energy economy that will not otherwise occur.

#2: ALLOCATE CARBON ALLOWANCES TO DISTRIBUTION COMPANIES

***Distribution company allocation can ensure allowance value is returned to
Virginia citizens***



Allocation to Distribution Companies

- DEQ should partner with Virginia SCC.
- The SCC should ensure Dominion and APCo devote allowance revenue to EE and RE investments to maximize macroeconomic benefits.
- Co-ops and munis can utilize carbon allowance revenue according to their boards.
- DEQ should not allocate allowances to generators based on past emissions, because that would unnecessarily increase costs.

#3: DEQ SHOULD FUND THE MINIMAL ADMINISTRATION COSTS IN A MANNER SIMILAR TO TITLE V PROGRAM FUNDING

***Entities That Utilize Allowances Should Fund Programmatic Costs through a
Pro-rata Fee-for-Service System***



DEQ Administration Funding Mechanism

- DEQ should cover administrative costs via pro rata charge based on total number of surrendered allowances.
- Market-based structures like 30x30 require minimum administration, and rely on the allowance market to do the “work” of identifying the most efficient emissions reductions.

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