South Carolina Business Council

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EPA Proposed Clean Power Plan impact on SC

Data Viewer EPA Proposed Clean Power Plan, State 2030 Goal Calculation: South Carolina

Start & Key Resources

Summary

Step 1

Step 2

Step 3a

Step 3b

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Step 1 – Calculation of 2012 Fossil Emission Rate

To start, the state's fossil emission rate is calculated, using 2012 data.

State Goal Formula[1]

$$\frac{\text{(Coal gen. x coal emission rate) + (OG gen. x OG emission rate) + (NGCC gen. x NGCC emission rate) + "Other" emissions}^{2}}{\text{Coal gen. + OG gen. + NGCC gen. + "Other" gen.}^{2}}$$

For South Carolina, the 2012 Fossil Emission Rate is:

$$\text{Rate} = \frac{(28{,}460{,}318 * 2{,}164) + (405{,}616 * 1{,}730) + (11{,}209{,}394 * 847) + 10{,}850{,}547}{(28{,}460{,}318 + 405{,}616 + 11{,}209{,}394 + 14{,}671)}$$

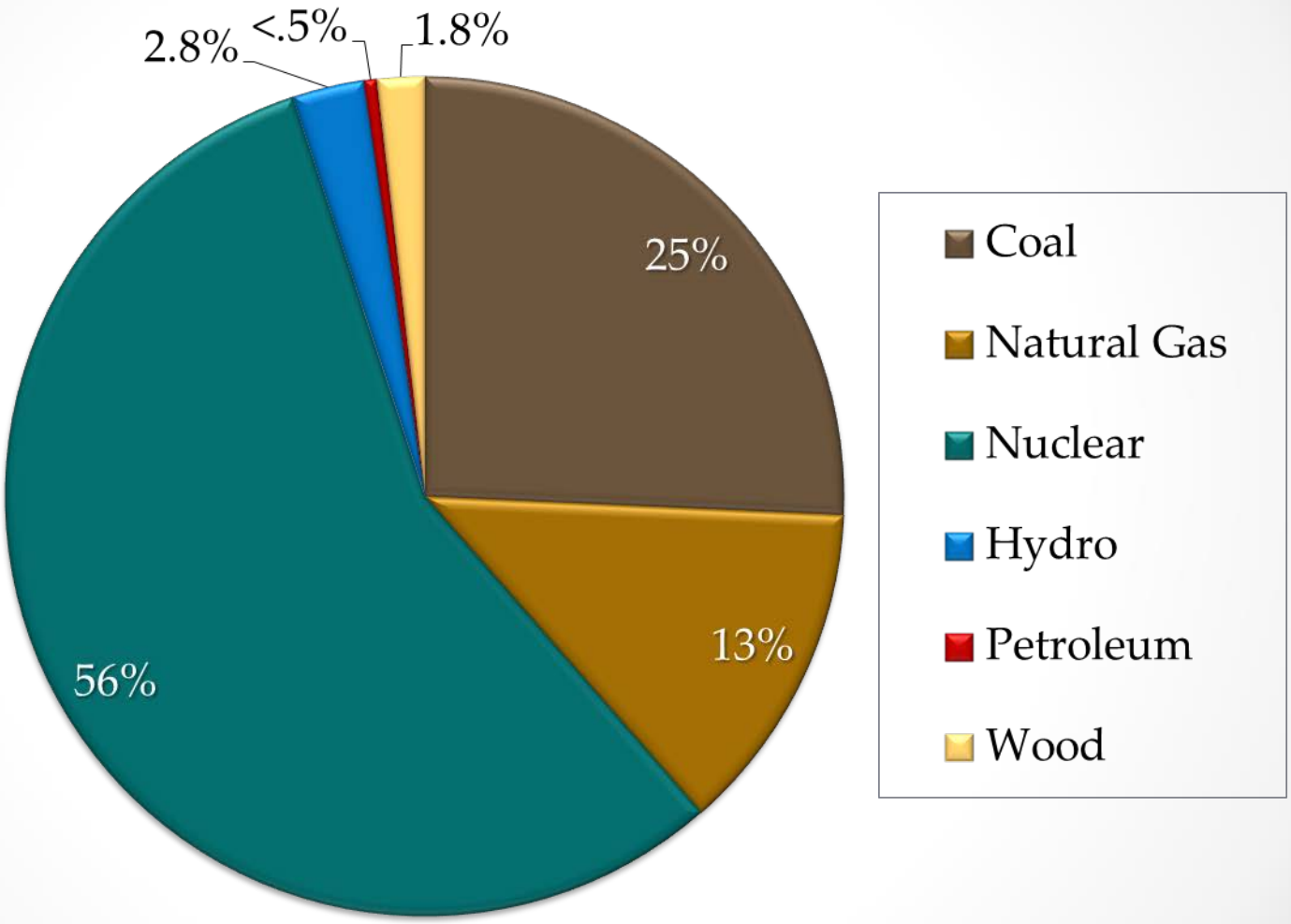
Rate = 1,791 lbs/MWh

[2] "Other" includes fossil sources that are likely subject to 111(d) rulemaking, but not subject to building block abatement measures (e.g., IGCC, high utilization CTs, useful thermal output at cogeneration units)

Data from Appendix 1 of the Goal Computations TSD at http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents

[1] ***Units of Measure:*** All generation numbers are MWh, unless otherwise noted; emission rates are lbs/MWh; and "Other Emissions" are in lbs

SC Electrical Generation by Fuel, 2013



Kentucky Energy Database, EEC-DEDI, 2014

Life Expectancy of SC Existing Nuclear Generation

Nuclear Unit	Mw	End of Current License
VCS-1	966	8/06/2042
CAT-1	1,129	12/05/2043
CAT-2	1,129	12/05/2043
OCONEE- 1,2	1,692	2/06/2033
OCONEE- 3	846	7/19/2034
H.B. Robinson	724	7/31/2030
TOTAL	6,486 Mw's	

Removal of "At Risk" Nuclear Penalty

- Final South Carolina 2030 Goal Rate would be

990 lbs./MWh

SC New Nuclear 2 & 3

May 10, 2014

Treat SC with Nuclear "as is"

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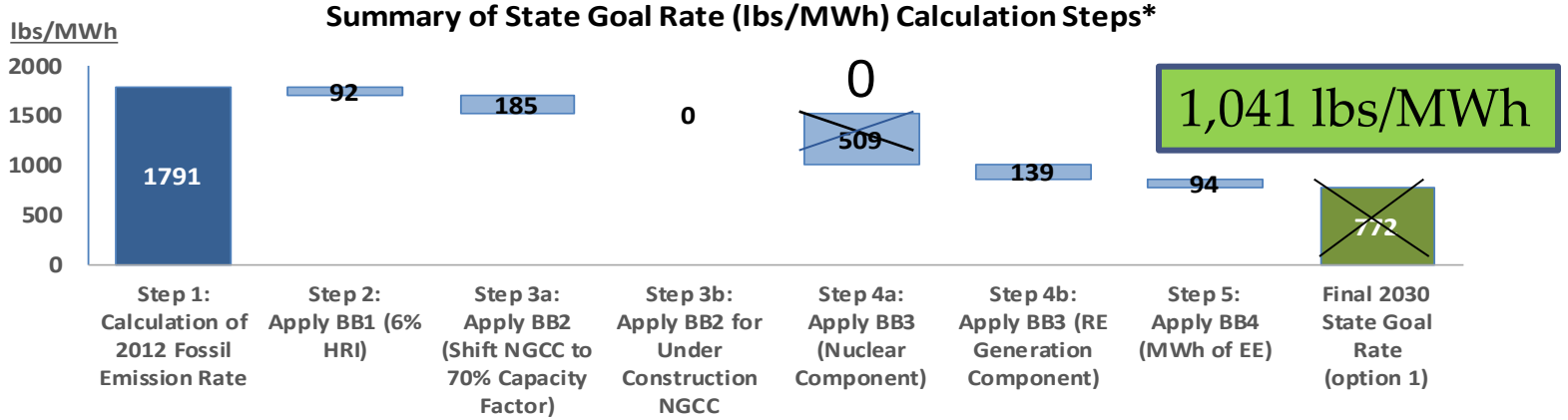
Getting from 2012 Fossil Emission Rate to Final 2030 State Goal Rate (option 1)

Building Block 1 (step 2)	Improve the heat rate at existing coal units 6% to reduce the emission rate from **2,164** lbs/MWh to **2,034** lbs/MWh
Building Block 2 (steps 3a and 3b)	Shift generation from fossil-fired boilers to NGCC units up to a 70% capacity factor, increasing NGCC generation from **11,209** GWh to **17,458** GWh
Building Block 3 (steps 4a and 4b)	Increase generation from renewable sources from **2,143** GWh in 2012 to **9,676** GWh in 2030. Incentivize preservation of **2,996** GWh of generation (~5.8%) from historic nuclear fleet
Building Block 4 (step 5)	Improve end-use energy efficiency to decrease electricity demand **8,553** GWh, equivalent to avoiding **10.2%** of projected electricity sales in 2030

Summary of State Goal Rate (lbs/MWh) Calculation Steps*



*This graph and the associated calculations are for illustrative purposes only to demonstrate how state goals are calculated to take into account all of the building blocks identified in Option 1 of the proposed Clean Power Plan. While this demonstration yields apparent "incremental" changes to state emission rates from quantifying the effect of each building block in a given state, the state goal is a product of all of the building blocks considered simultaneously in the computation process. While the "incremental" effect calculated for each building block depends on the sequence in which the building blocks are quantified (with only one particular sequence demonstrated here), the computed state goal is the same regardless of the sequence selected to calculate each building block's effects within the overall state goal computation process.

To view presentation please visit www.regulatorystaff.sc.gov