

Clean Power Plan: “201”

September 28, 2015

Town Hall Discussion of Georgia’s Options for
Implementing the Clean Power Plan, Atlanta, GA

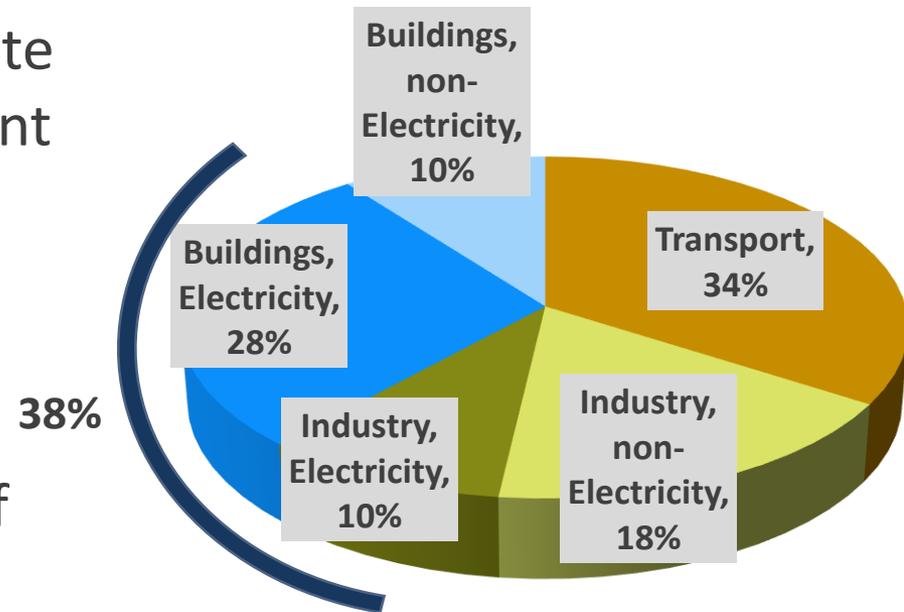
Marilyn A. Brown

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EPA's Clean Power Plan

- “Climate change is a problem that can no longer be left to future generations.” Pope Francis
- Countries are gathering in Paris in December to participate in UN climate talks: the CPP shows U.S. commitment and will help motivate cooperation
- It is the first ever U.S. regulation to limit carbon pollution from existing fossil power plants
- The electricity sector is the source of 38% of CO₂ emissions
- The rule is designed to cut this sector's CO₂ emissions in 2030 to 32% below 2005 levels

U.S. CO₂ Emissions from the Energy Sector (2013)



Source: EIA. 2015. *Annual Energy Outlook 2015*, Table 18.

How the State Goals were Created

EPA developed state *goals* based on three building blocks...

- BB1 – Coal Efficiency Improvement
- BB2 – Increased Natural Gas
- BB3 – Renewable Energy



- The final rule does not use nuclear or energy efficiency to build state goals, but they can contribute to compliance.
- The state targets are strictly based on the composition of the fleet in each state.

Affected Power Plants in Georgia

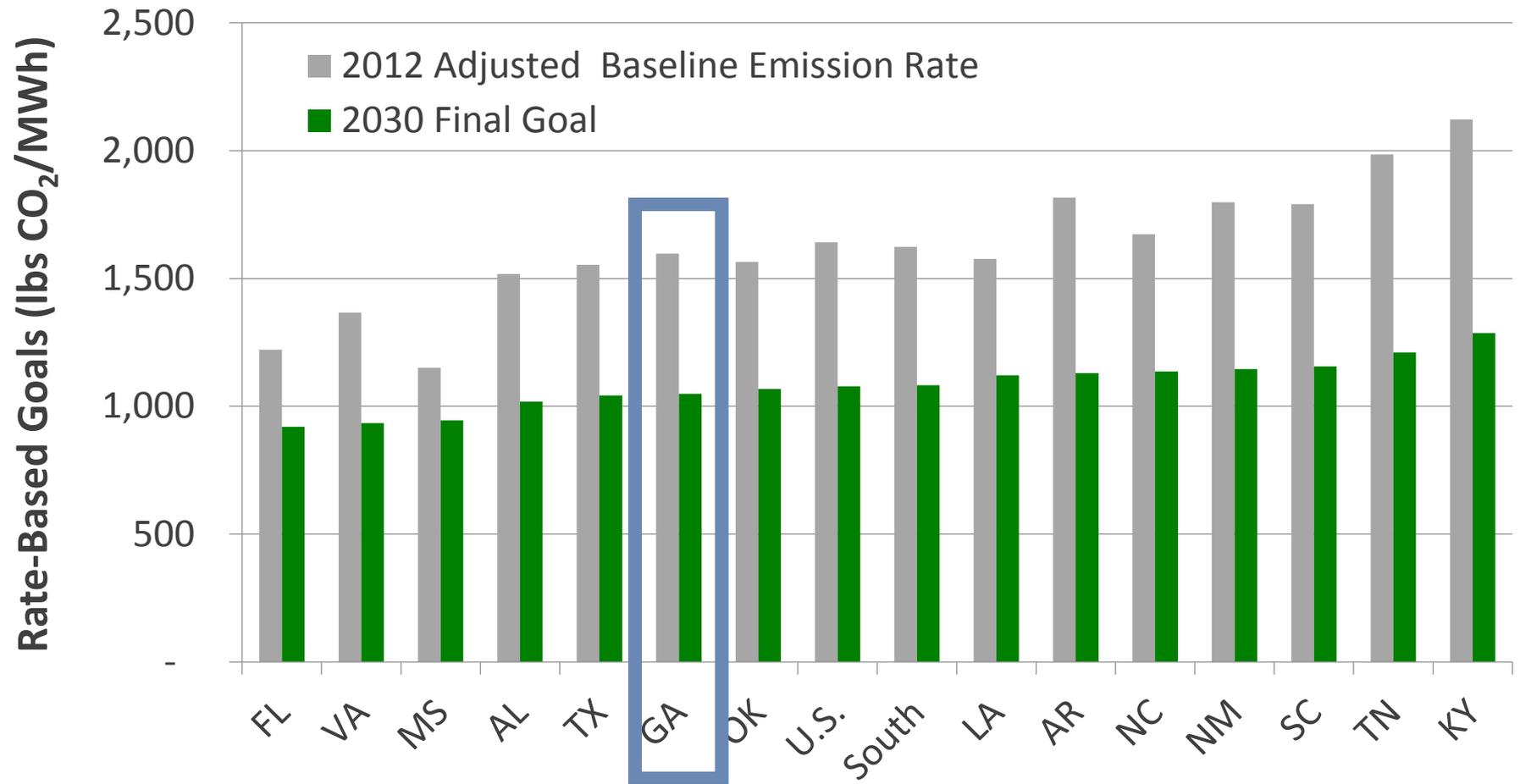
Plant Name	Fuel type	Nameplate Capacity (MW)	Carbon Dioxide Emissions in 2012 (tons)
Scherer	SUB	3,564	23,858,823
Bowen	BIT	3,540	10,532,567
Wansley	BIT	1,957	5,292,055
Jack McDonough*	BIT	3,202	5,166,343
McIntosh Combined Cycle Facility	NG	1,377	3,105,799
Wansley Combined Cycle	NG	1,239	2,819,021
Yates	BIT	1,487	2,644,256
Harllee Branch	BIT	1,746	2,359,261
Thomas A Smith Energy Facility	NG	1,192	1,753,488
Hammond	BIT	953	1,745,475
Chattahoochee Energy Facility	NG	540	1,070,234
Effingham County Power Project	NG	597	1,032,072
Wansley Unit 9	NG	568	764,422
Kraft	BIT	352	515,349
Mid-Georgia Cogeneration Facility	NG	323	189,209
McIntosh	BIT	988	25,970
Mitchell	BIT	344	3,839



Blue: Coal plants
Gold: Natural gas combined cycle

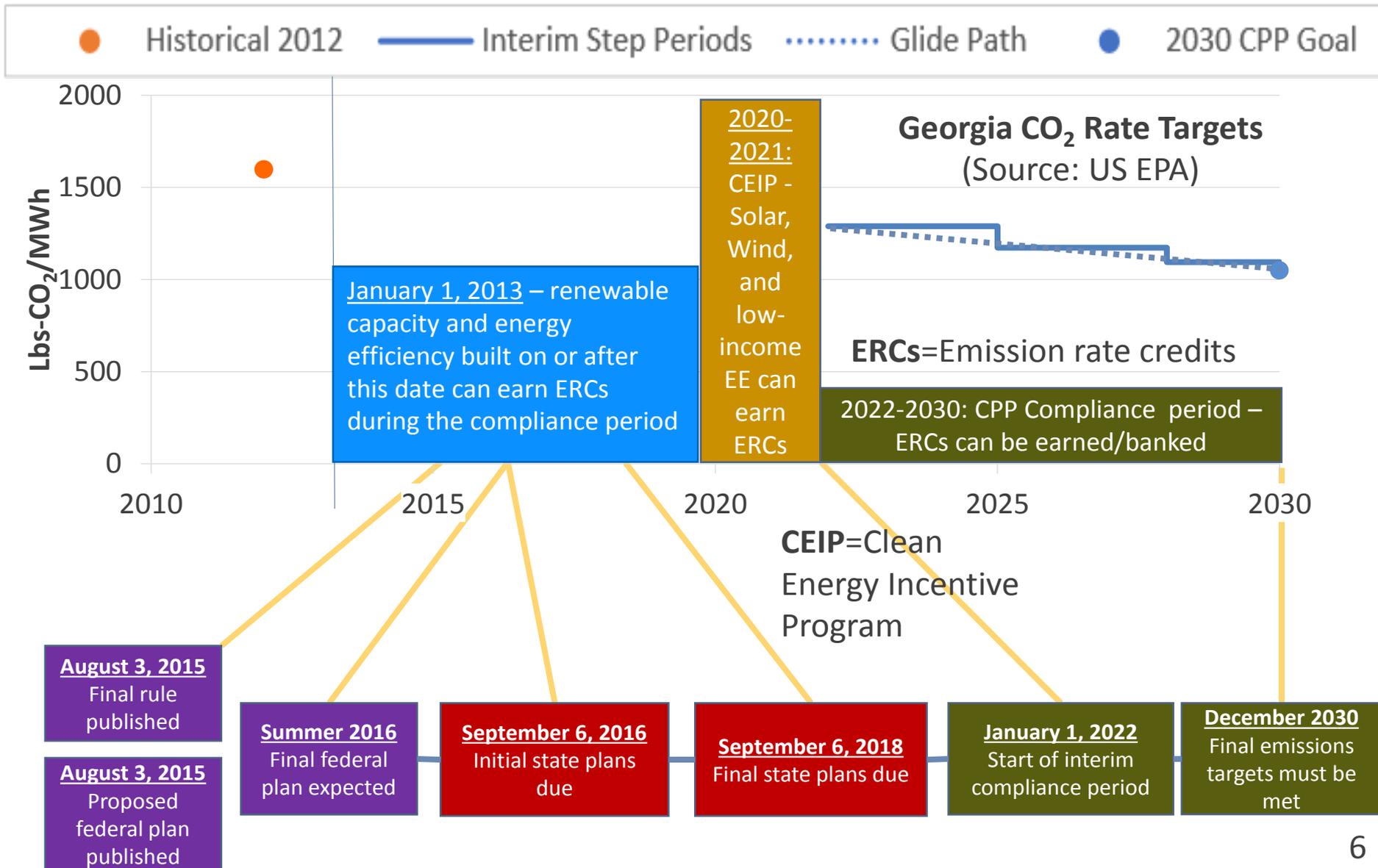
- Total emissions of affected units in GA = 62.9 million tons of CO₂
- 2030 goal = 46.3 million tons of CO₂

Georgia's Rate Base Goal is Similar to Goals of Other States in the South

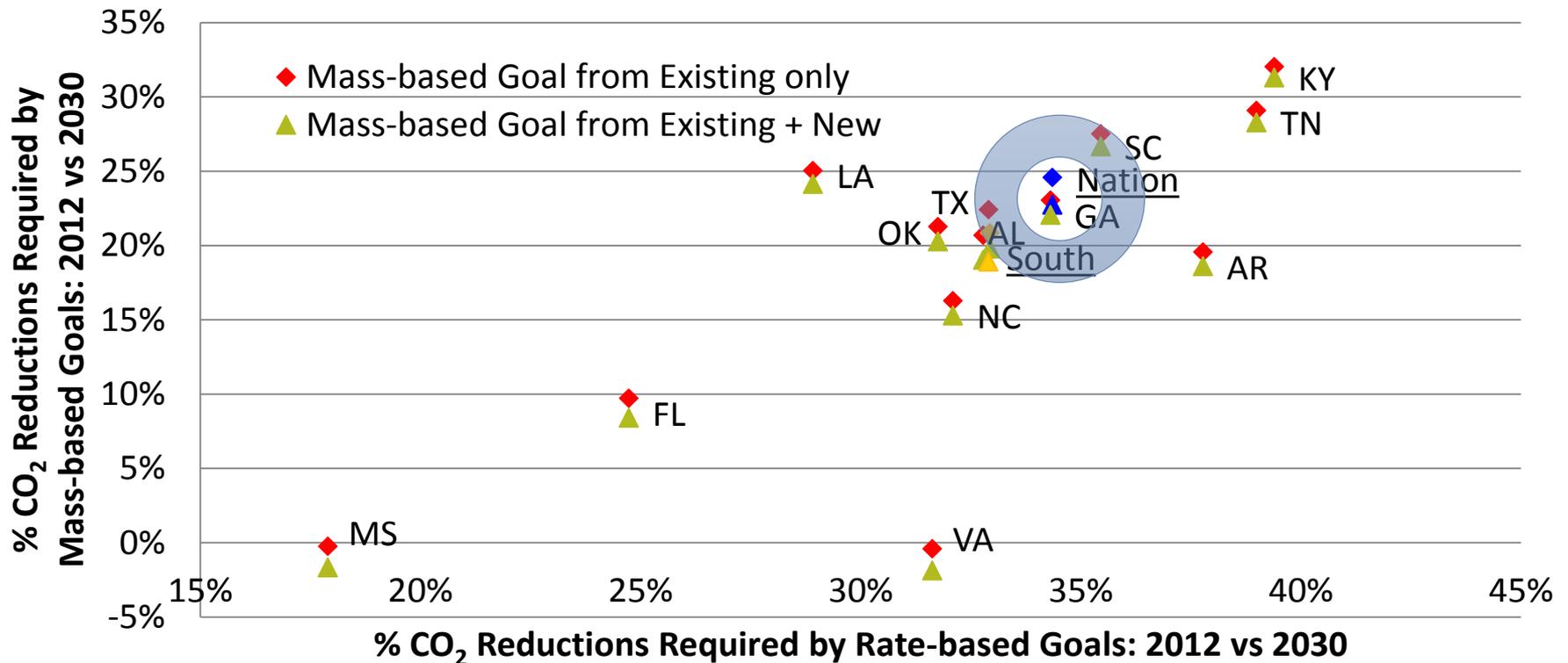


Source of 2012 Emission Rates: <https://blog.epa.gov/blog/wp-content/uploads/2015/08/State-tables-tab-1.pdf>

Clean Power Plan Timeline



EPA Set Both Mass and Rate Goals (See Southern State Goals Below)



Georgia's Goals	2030 Final Goals	% Reduction
Rate Goal (lbs/MWh)	1,049	34%
Mass Goal, Existing only (Million tons of CO ₂)	46.3	23%
Mass Goal, Existing + New (Million tons of CO ₂)	46.9*	22%

*New Source Complement = 597,559 tCO₂

For Compliance: States choose to Use a Mass or Rate Goal

MASS


$$\frac{CO_2_lbs}{MWh} \times \text{Generation (MWh)} = \text{Tons}$$


Add solar, wind, EE, nuclear, etc. to displace fossil generation to lower mass

RATE


$$\frac{CO_2_lbs}{MWh} + \frac{0\ lbs}{MWh} = \text{Rate}$$

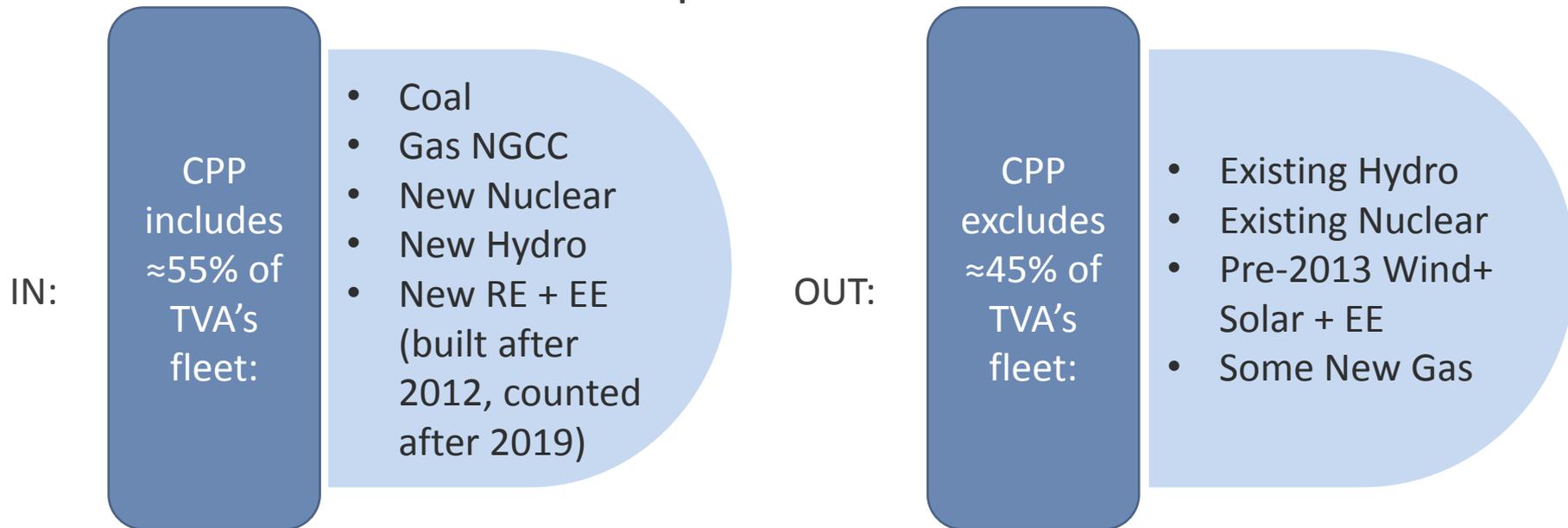

States issue Emission Rate Credits (ERCs) from new RE, EE, nuclear, etc. to lower RATE

Which has a lower compliance cost?

- The CPP *Regulatory Impact Analysis* suggests that mass-based goals do
- Brown et al., found that rate-based goals offer lower compliance costs.

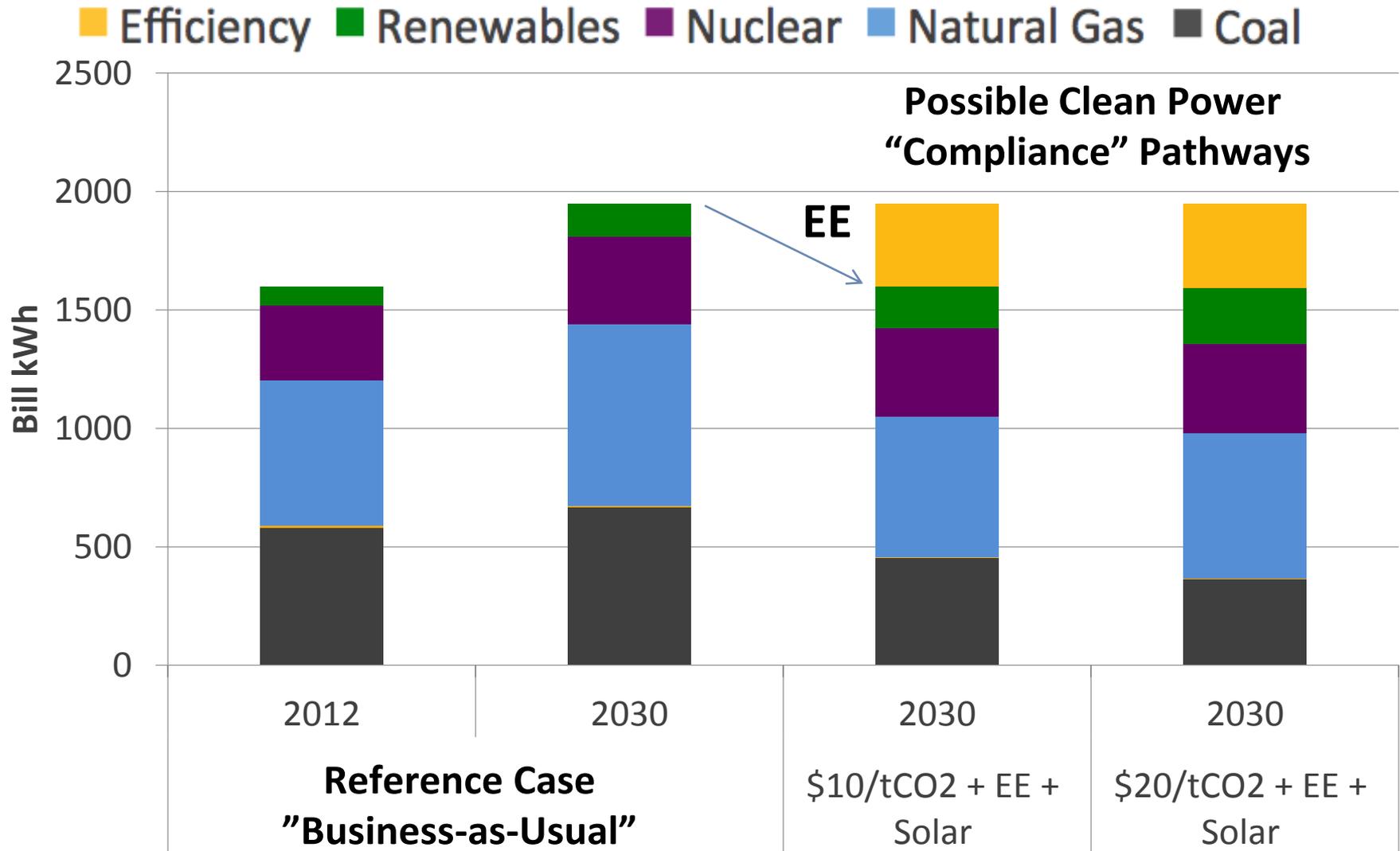
Existing Nuclear, RE and EE Are Not Considered in Calculating Rates

- For assessing compliance, the rate-based goals exclude a lot of existing clean energy.
- For example, 45% of TVA's current fleet may not be used to earn ERCs to achieve compliance.



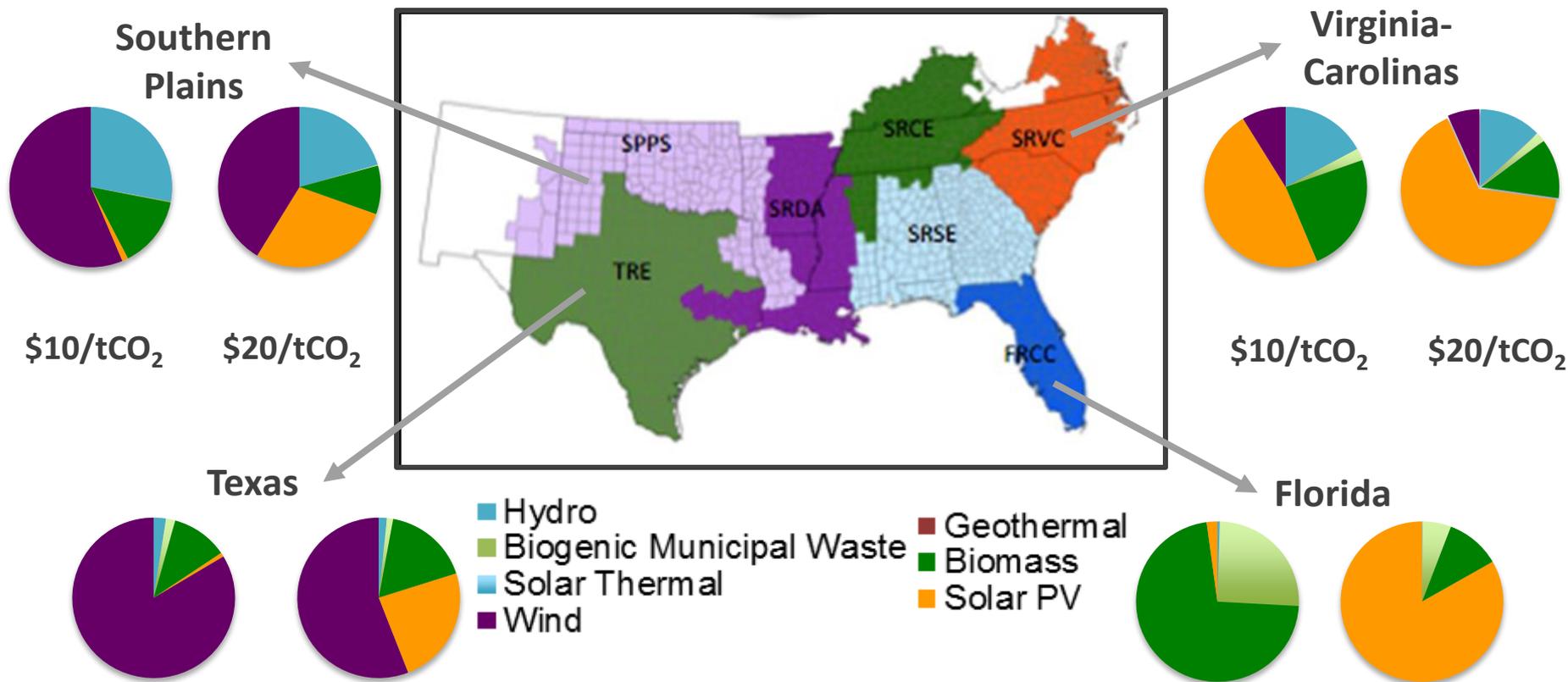
Only RE+EE sources built on or after Jan. 1, 2013 can earn ERCs – and they can only be counted beginning in 2020/2022

CPP Will Likely Cut Coal Use, Curb Gas Growth and Increase EE and RE in the South



Source: Brown, Kim, and Smith (2015) Low-carbon Electricity Pathways for the US and the South: http://www.spp.gatech.edu/sites/default/files/publication/download/Low-Carbon_Pathway.pdf

A Great Deal is at Stake: e.g., State Plans Could Reach “Tipping Points” for Solar Power



Increasing carbon allowances from \$10 to \$20/tonne-CO₂ could trigger significant gains in solar PV generation by 2030.

How Will Georgia Respond?

Carbon pollution has declined already over the past decade due to a growing abundance of low-cost natural gas and lower cost of renewables.

But without the CPP, electricity demand is expected to increase – with CO₂ growing as a consequence.

If States design smart Clean Power Plans, they can:

- spur innovation and technology-based solutions
- accelerate economic growth
- cut energy bills
- improve human health and protect the environment.

How will/should Georgia respond?

For More Information

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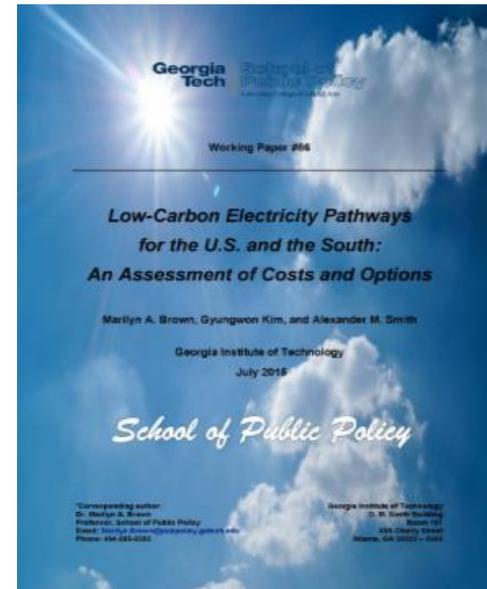
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Source: EPA Clean Power Plan Technical Support Documents, Goal Computation Appendix 1-5