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# Choosing Our Energy Future

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**TOWN HALL DISCUSSION OF GEORGIA'S OPTIONS FOR  
IMPLEMENTING THE CLEAN POWER PLAN**

**September 28, 2015**

**#GaCPP**





# Clean Power Plan: “201”

September 28, 2015

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

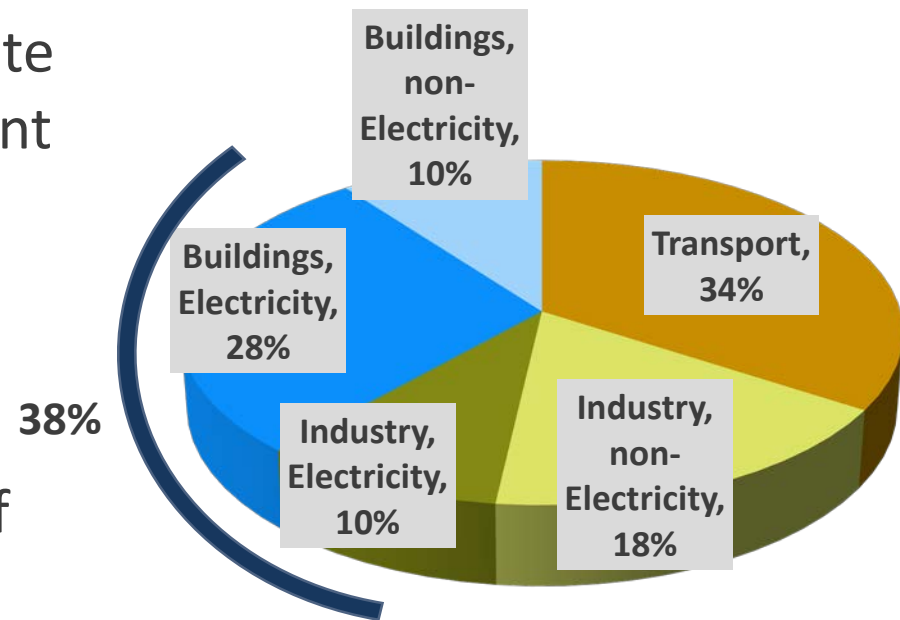
**Marilyn A. Brown**

Professor, School of Public Policy  
Georgia Institute of Technology  
September 28, 2015

# 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 CO<sub>2</sub> emissions
- The rule is designed to cut this sector's CO<sub>2</sub> emissions in 2030 to 32% below 2005 levels

**U.S. CO<sub>2</sub> 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

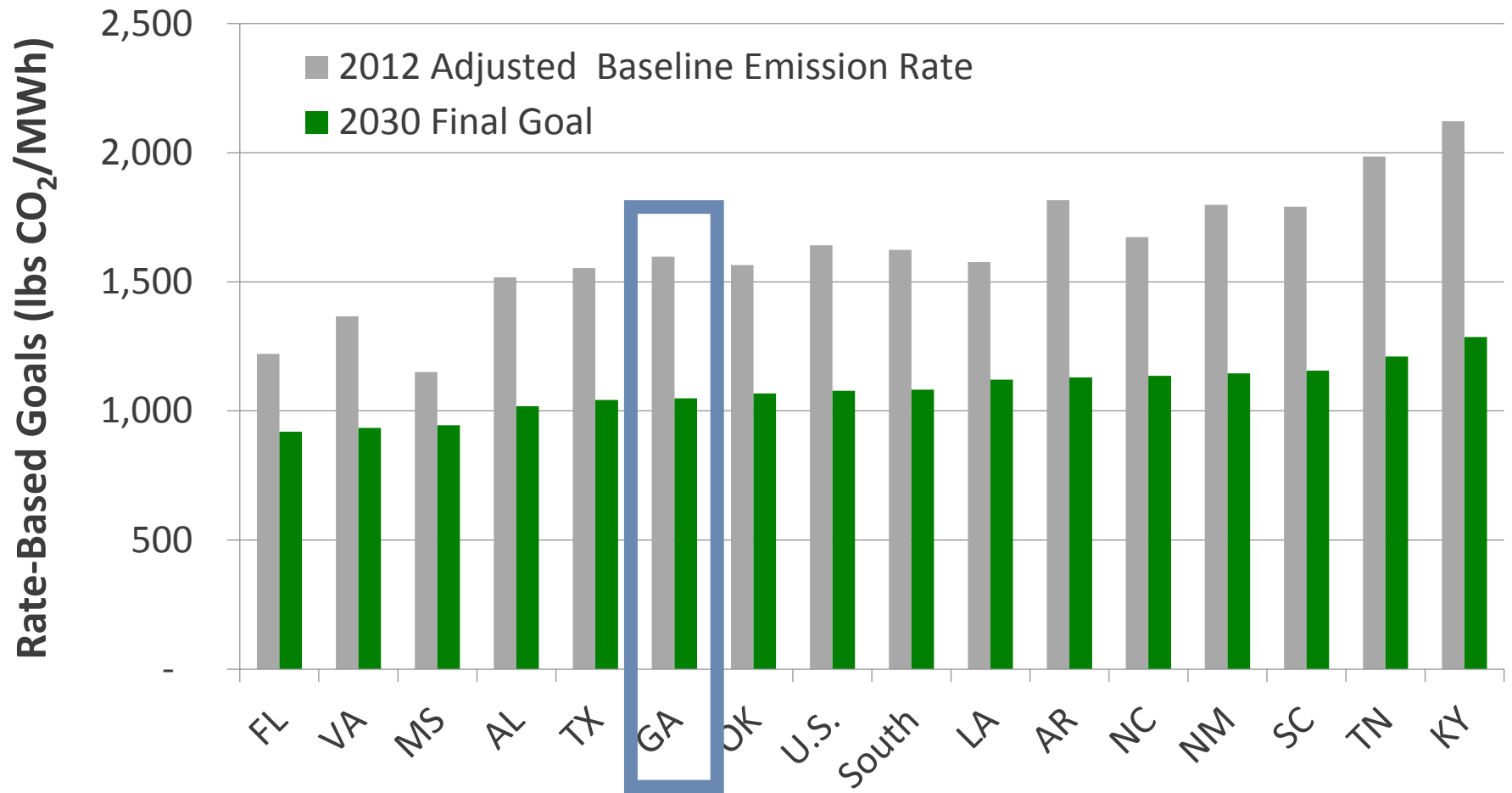
Plant Name	Fuel type	Nameplate Capacity (MW)	Carbon Dioxide Emissions in 2012 (tons)
Scherer	SUB	891	23,858,823
Bowen	BIT	806	10,532,567
Wansley	BIT	952	5,292,055
Jack McDonough*	BIT	299	5,166,343
McIntosh Combined Cycle Facility	NG	282	3,105,799
Wansley Combined Cycle	NG	203	2,819,021
Yates	BIT	123	2,644,256
Harllee Branch	BIT	299	2,359,261
Thomas A Smith Energy Facility	NG	147	1,753,488
Hammond	BIT	125	1,745,475
Chattahoochee Energy Facility	NG	176	1,070,234
Effingham County Power Project	NG	198	1,032,072
Wansley Unit 9	NG	171	764,422
Kraft	BIT	54	515,349
Mid-Georgia Cogeneration Facility	NG	107	189,209
McIntosh	BIT	178	25,970
Mitchell	BIT	163	3,839



**Blue:** Coal plants  
**Gold:** Natural gas combined cycle

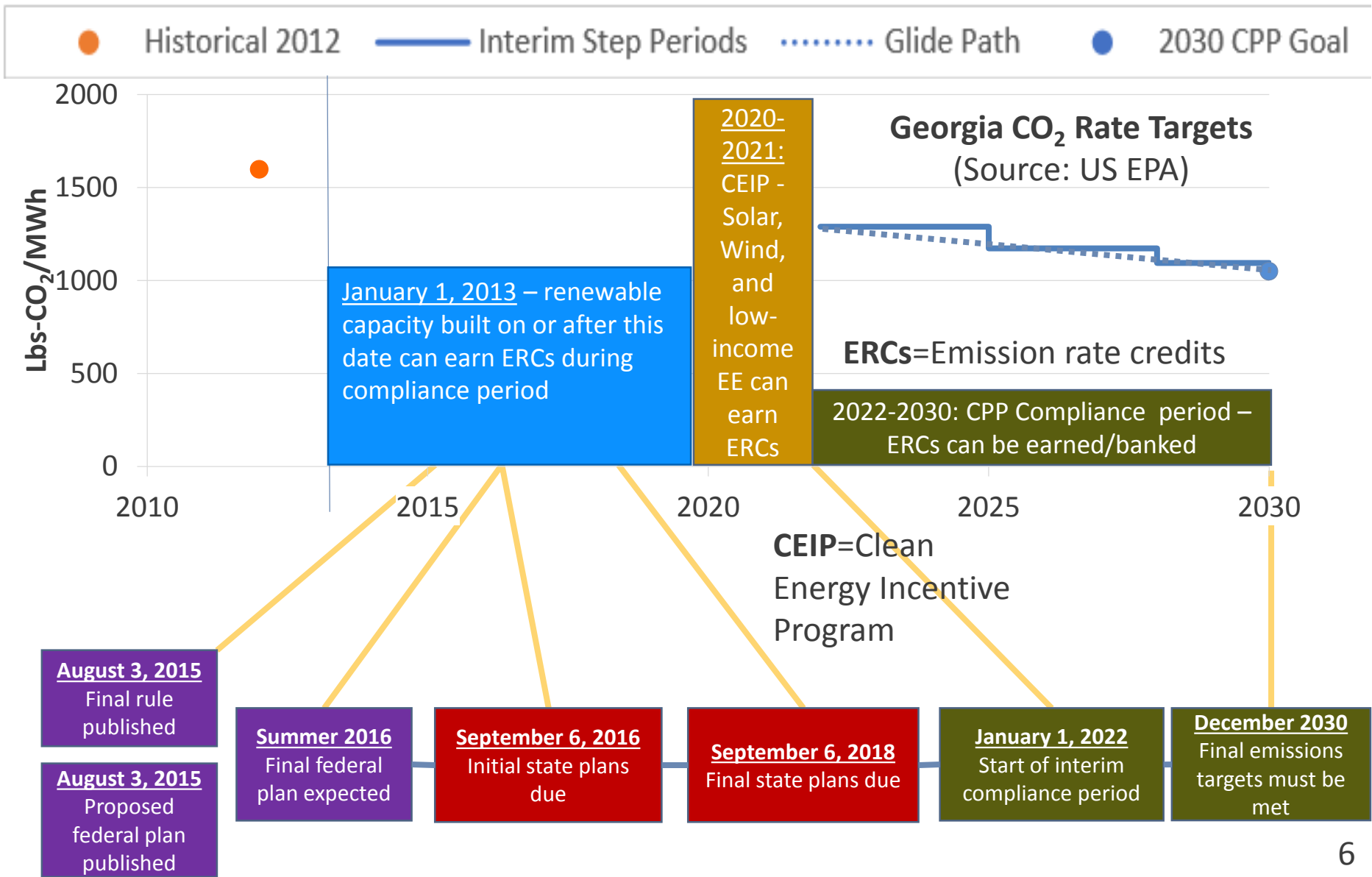
- Total emissions of affected units in GA = 62.9 million tons of CO<sub>2</sub>
- 2030 goal = 46.3 million tons of CO<sub>2</sub>

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

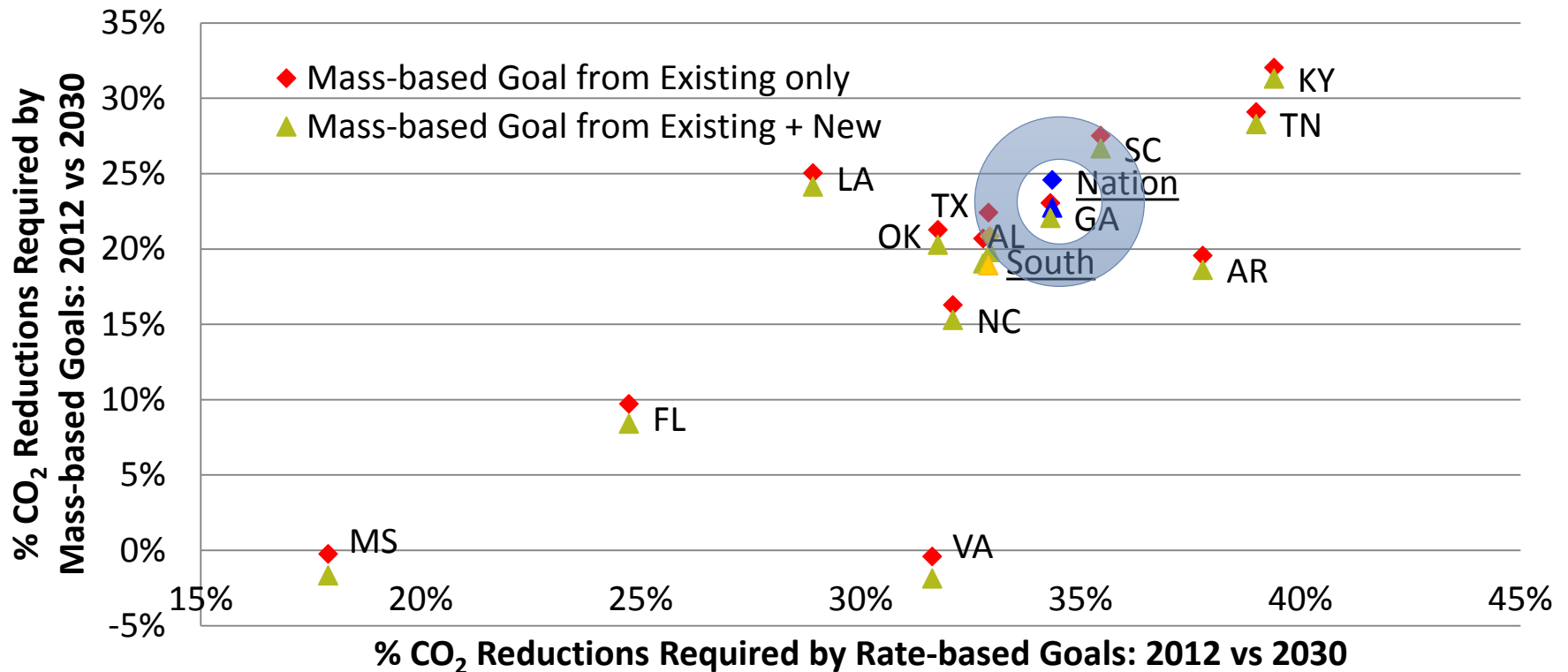


Source of 2012 Emission Rates: <https://blog.epa.gov/blog/wp-content/uploads/2015/08/State-tables-tab-1.pdf>

# 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 <sub>2</sub> )	46.3	23%
Mass Goal, Existing + New (Million tons of CO <sub>2</sub> )	46.9*	22%

\*New Source Complement = 597,559 tCO<sub>2</sub>





# 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**


$$\frac{CO_2\_lbs}{MWh} + \frac{0\ lbs}{MWh} = \text{Rate}$$


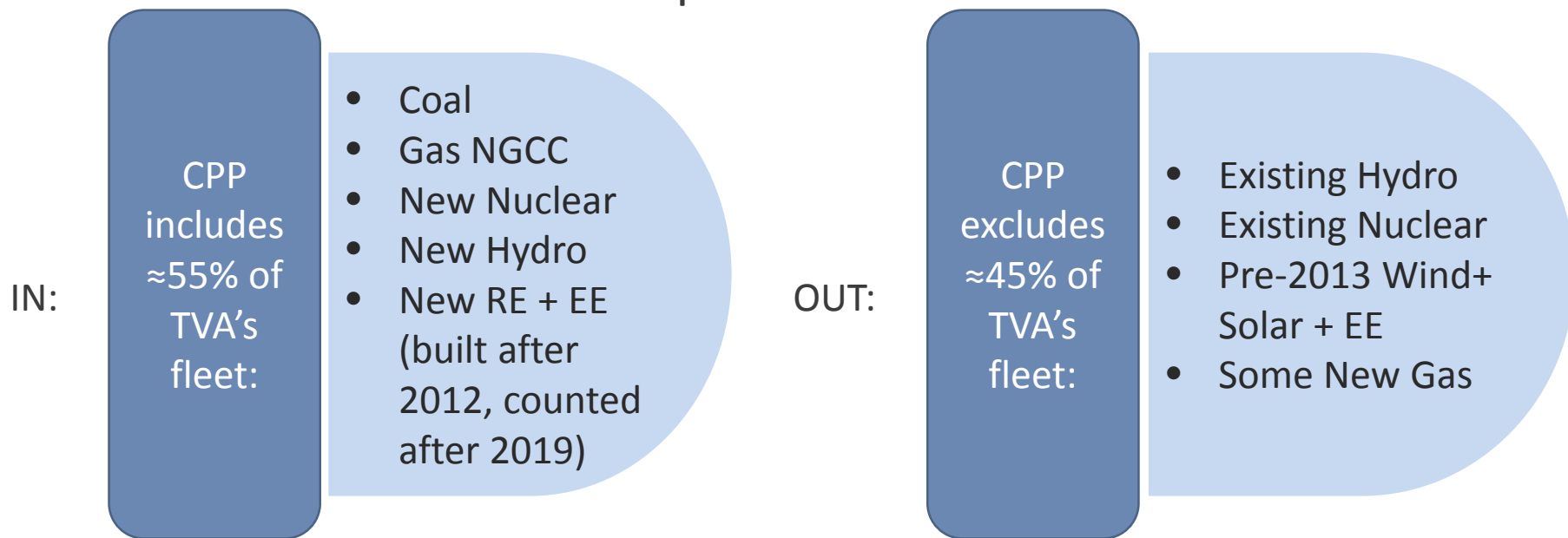
States issue Emission Rate Credits (ERCs) from new RE, EE, nuclear, etc. to lower RATE

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.

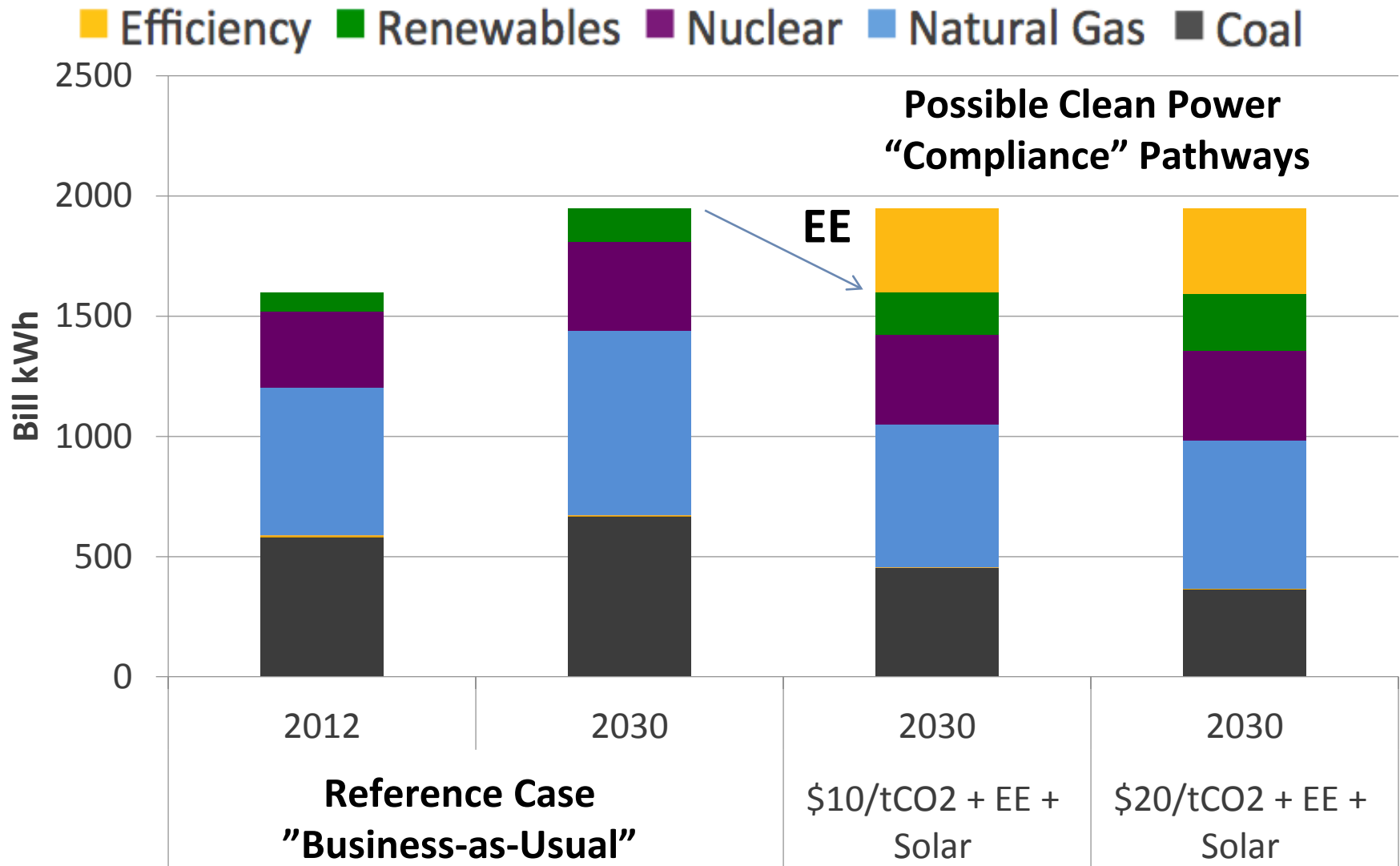
# Existing Nuclear, RE and EE Are Not Considered in Calculating Rates

- 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.



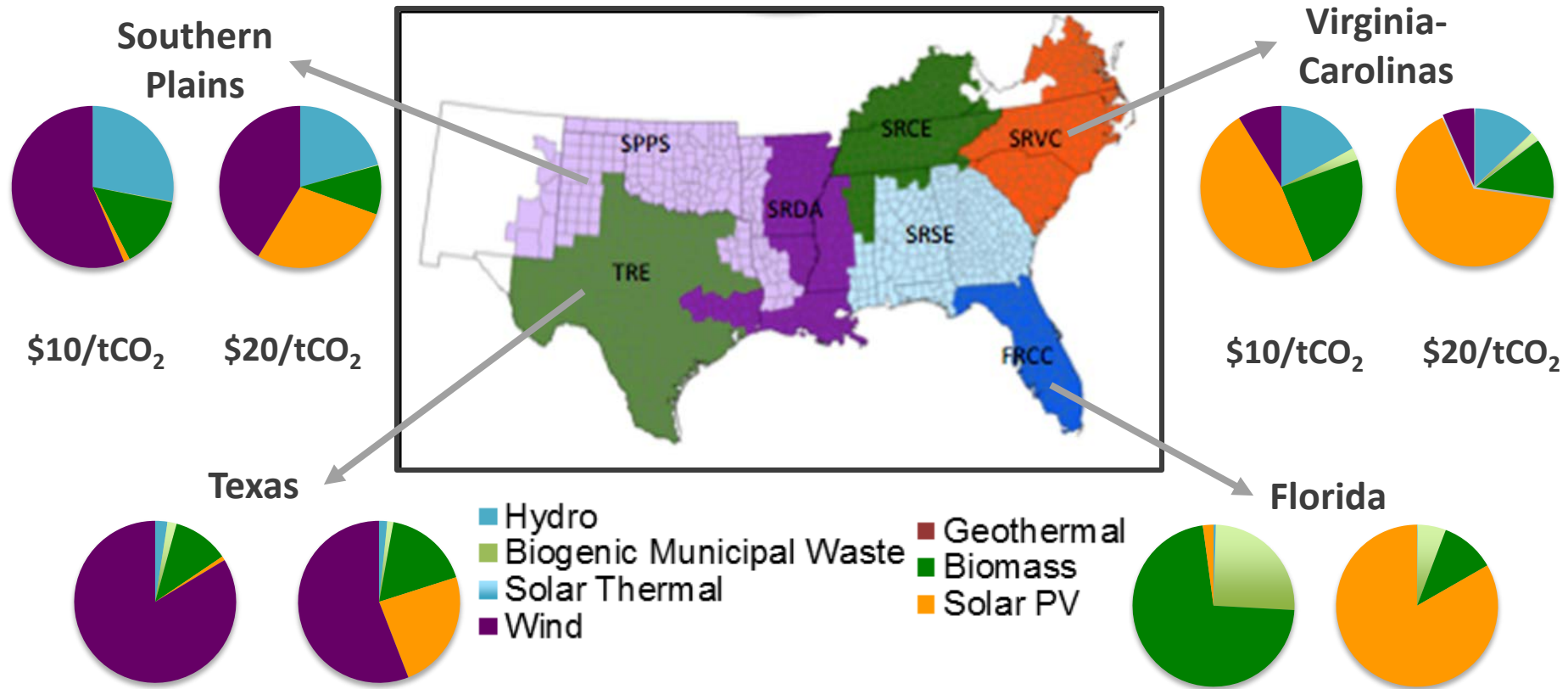
Only RE+EE sources built on or after Jan. 1, 2013 can earn ERCs – and they can only be counted beginning in 2020/2022

# 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](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-CO<sub>2</sub> 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 CO<sub>2</sub> 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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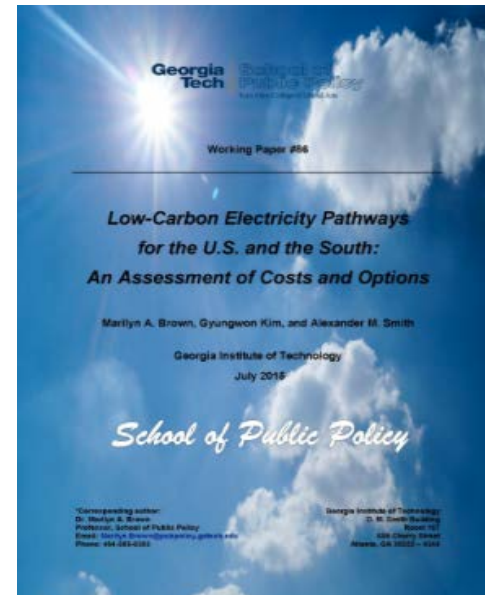
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# Affected Power Plants in Georgia

<b>Plant Name</b>	<b>Fuel type</b>	<b>Prime mover type</b>	<b>Nameplate Capacity (MW)</b>	<b>Electric Generation (MWh)</b>	<b>Carbon Dioxide Emissions (tons)</b>
Scherer	SUB	ST	3,564	19,989,996	23,858,823
Bowen	BIT	ST	3,540	9,565,786	10,532,567
Wansley	BIT	ST	1,957	4,877,422	5,292,055
Jack McDonough	BIT	ST	3,202	11,980,556	5,166,343
McIntosh Combined Cycle Facility	NG	CC	1,377	7,534,021	3,105,799
Wansley Combined Cycle	NG	CC	1,239	6,890,836	2,819,021
Yates	BIT	ST	1,487	2,372,465	2,644,256
Harlee Branch	BIT	ST	1,746	2,099,279	2,359,261
Thomas A Smith Energy Facility	NG	CC	1,192	4,029,611	1,753,488
Hammond	BIT	ST	953	1,415,756	1,745,475
Chattahoochee Energy Facility	NG	CC	540	2,575,313	1,070,234
Effingham County Power Project	NG	CC	597	2,399,280	1,032,072
Wansley Unit 9	NG	CC	568	1,842,437	764,422
Kraft	BIT	ST	352	625,620	515,349
Mid-Georgia Cogeneration Facility	NG	CC	323	380,258	189,209
McIntosh	BIT	ST	988	19,941	25,970
Mitchell	BIT	ST	344	3,233	3,839

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

# Extra Slides

EGUs are the only entities with federally enforceable requirements

Reliability safety valve

Additional flexibility and guidance on interstate trading

Release of draft federal plan

Release of draft EM&V guidance

- Notification to EPA of unforeseen emergency threatening reliability
- Units may have up to 90 days to run outside of limits
- Excess emissions during this period will not count against the state's goal





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