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Transformation Through Collaboration

NC CLEAN ENERGY TECHNOLOGY CENTER

NC SUSTAINABLE ENERGY ASSOCIATION

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Proceedings from the Forum on EPA's Proposed Clean Power Rule: What Does it Mean for North Carolina's Energy Future?

Introduction

On June 2, 2014, the U.S. Environmental Protection Agency (EPA) proposed a new standard requiring that carbon dioxide emissions from existing coal-fired power plants be cut nationally 30 percent by 2030 from 2005 levels. The EPA's proposed carbon rule (called the Clean Power Plan) is the most significant change in the electricity sector in decades with "beyond the fence line" compliance options. The rule assigns states different targets for reduction of carbon pollution and requires states to devise individual compliance plans. There are four building blocks associated with the proposed Clean Power Plan (see: http://www2.epa.gov/carbon-pollution-standards/fact-sheet-clean-power-plan-framework for more details):

- Building Block 1: Improving the heat rate of coal-fired power plants by 6 percent;
- Building Block 2: Re-dispatching natural gas combined cycle plants to run at 70 percent capacity;
- Building Block 3: Developing new nuclear and renewable sources; and,
- Building Block 4: Reducing energy demand 1.5 percent per year through energy efficiency measures.

Comments on the proposed rule were due last December and based on the comments, the EPA will finalize the proposed Clean Power Plan by mid-summer 2015. In addition, the agency will begin the regulatory process for proposing a federal plan. States are encouraged to utilize the four building blocks for their initial compliance plans but they may also utilize multiple measures outside of these building blocks if they desire.

Initial compliance plans are due to EPA by June 2016. Under the proposed EPA standards, North Carolina plants must cut their carbon dioxide emissions by 40 percent by 2030 to meet a proposed emission goal rate of 992 lb/MWh.

Stakeholder Forum

At a Forum held on March 13, 2015, hosted by the Institute for Emerging Issues at N.C. State University in partnership with the North Carolina Sustainable Energy Association, the North Carolina Clean Technology Center, E4Carolinas, the Research Triangle Cleantech Cluster, and Advanced Energy, a diverse group of stakeholders was brought together to learn about the proposed rule and its implications for North Carolina. Attendees heard from the North Carolina Department of Environment and Natural Resources (DENR), Duke Energy and the North Carolina Utilities Commission's (NCUC) Public Staff on how the proposed rule might be achieved and its implications for ratepayers. Attendees also heard from the author of a Duke University study on possible compliance paths for North Carolina and

finally from representatives in South Carolina and Kentucky on how they are planning for compliance with the EPA's proposed Clean Power Plan, even in the midst of uncertainty. Finally, Forum attendees provided feedback on what issues need more public education and how North Carolina might engage stakeholders to prepare for the final rule. Forum attendees included business representatives, utility executives, government, public interest groups, researchers, consultants and education officials. Appendix 1 provides a list of registered attendees and the agenda.

The Forum began with **Jenah Zweig**, Policy Director for the Southeast Energy Efficiency Alliance, who outlined a summary of EPA's proposed Clean Power Rule, possible changes to the final rule, and other compliance opportunities beyond EPA's four building blocks. (See Appendix 2 for Jenah's power point presentation). Jenah's presentation noted five possible changes to EPA's proposed Clean Power Rule:

1. A multi-year baseline rather than just one year (2012);
2. A change to the compliance timeline;
3. A possible inclusion of a safety valve;
4. A change to the second building block for needed infrastructure improvements for natural gas combined cycle; and,
5. More clarity with regard to the third building block as it relates to nuclear facilities under construction.

Two major decision points for North Carolina include (1) whether to utilize a mass-based or rate-based approach; and (2) whether to develop a single-state or multi-state compliance plan. Jenah concluded her presentation advising that North Carolina develop its own plan to keep Federal regulators out of the state's backyard and to identify the common sense, low-cost opportunities for the state.

Sam Watson, the General Counsel & Director of the Legal and Administration Division of the North Carolina Utilities Commission moderated a panel discussion with **John Evans** of the North Carolina Department of Environment & Natural Resources (DENR), **Diane Denton** of Duke Energy and Chris Ayers of the NC Utilities Commission Public Staff. Each of the panelists offered the following comments:

John Evans: Fully expects that there will be substantial changes between the proposed and final rule. DENR staff found technical errors with North Carolina emission reductions and expects the final rule to have different compliance figures. Acknowledged significance of the Murray Energy Corporation case (due to be heard in federal court on April 16th) which argues that EPA does not have the statutory authority to regulate carbon under the 111(d) provisions of the Clean Air Act. Has concern with initiating work on a changing rule, citing frustrating with his experience with EPA's interstate air pollution rule. Finality on the rule is critical before implementation from a state resource standpoint.

He also offered the following comments on specific building blocks:

Building Block 1: North Carolina has the most efficient coal fleet in the country because of the 2002 Clean Smokestacks law. Unclear how much more efficient the coal fleet can become and if it is impossible to get to the 6 percent ceiling, the state will have to do more on building blocks 2, 3 and 4.

Building Block 2: Reliability and availability are of big concern for running natural gas combined cycle plants at 70 percent capacity.

Building Block 3: North Carolina is a leader in renewable energy but the 10 percent goal is expected to be changed since it is a technical error.

Building Block 4 – North Carolina imports 18 percent of its power and our state cannot control that part of our energy mix.

In conclusion: DENR is charged with protecting the public health and natural resources while also overseeing the implementation of the final rule. This dual mandate could create conflicts. For example, if more natural gas and coal will be used at a reduced load they can emit more pollutants than at higher loads and the state must be careful about pollution hotspots.

Diane Denton: With three million North Carolina customers, energy reliability is a big concern for Duke Energy. The company has a diverse and balanced energy mix including the largest nuclear plant fleet, hydro, natural gas, renewable energy and coal. Duke has already invested over $9 billion to retire a quarter of its coal fleet and one half of that has been in North Carolina (a total of 26 plants). The company has spent $7.5 billion for environmental controls since 1999 with $3 billion of that in North Carolina. Duke has achieved a 27 percent reduction in CO2 emissions since 2005. Overall Duke Energy is focused on two aspects with regard to the Clean Power Plan: (1) the impact to its customers, since any investments the company makes are paid for through utility rates, and (2) any impacts to the communities Duke Energy serves. For example, North Carolina customers have already paid for clean air improvements under the Clean Smokestacks Act and plants were modernized. Customers should not be forced to pay twice – once for the upfit and second again if the plants are retired prematurely (so-called stranded costs). Finally, electricity price and reliability is an important differentiator in site selection for industries who locate in North Carolina and that issue cannot be overlooked.

Chris Ayers: Ensures safe, reliable, and affordable utility services for customers. Biggest concern about the proposed EPA Clean Power Plan is whether customers will be stuck paying stranded costs for coal plants that are retired too early. Overall the 111(d) proposed rule is not a least cost path to regulating carbon pollution. North Carolina electric customers are already paying higher rates to comply with the Clean Smokestacks Act; and, if these plants have to be retired to meet the 111(d) proposed rules then additional costs must be recovered from ratepayers.

Additional comments from the panelists through question and answer session:

- Overall concerns about investing any money in uncertain compliance paths;
- DENR has mapped out a process for what needs to be done at each step along the way, including public comment on the rule;
- Duke Energy has included a "shadow price" for carbon beginning in 2020 as part of their integrated resource plan, which gets submitted annually to the NC Utilities Commission;
- Duke Energy does have concern about the interim compliance deadline in the proposed rule (especially the 2020 goal). The company can fully implement building block 1 by 2020 but it may be really difficult to achieve all the requirements by 2020;
- There is no certain CO2 control technology commercially available to date.
- Duke Energy is open to working with other states but in a regional approach there are some winners and some losers.

Etan Gumerman from the Nicholas Institute for Environmental Policy Solutions at Duke University spoke about the EPA Clean Power Plan compliance scenarios he modeled for North Carolina. His presentation is available in Appendix 3. Etan's major conclusions are the following:

- Without the proposed EPA Clean Power Plan, North Carolina will have a slight increase in emissions. With the proposed rule, the state will expect lower emissions, mostly from coal.
- In all of the modeled scenarios, continued switching from coal to natural gas dispatch will be a major component of the compliance plan.
- Impacts on utility and customer costs are dependent on North Carolina's design and compliance (mass-based vs. emission-based target). If North Carolina develops a rate-based compliance plan, costs are higher than any business as usual scenario. With mass based compliance, costs increase over time. That is due primarily due to the fact that in the rate-based target, coal generates emissions above a target, so every kWh of coal needs to be offset. In a mass-based target, everyone is in compliance until you add up all the emissions and see the sum.
- Under all four scenarios modeled (rate-regional, rate-state, mass–regional, mass-state) regional compliance is cheaper than state compliance; mass-based compliance is less expensive than rate-based compliance.

The final panel at the Forum, moderated by **Jonas Monast** at Duke University's Nicholas Institute for Environmental Policy Solutions, included **Myra Reece** of South Carolina and **John Lyons** of Kentucky. Each of these panelists offered the following comments:

Myra Reece: Offered three main points about her Clean Power Plan stakeholder process in South Carolina. (1) The Clean Power Plan is the most polarizing, complex, challenging rule she has ever dealt with. The rule goes well beyond air quality planning and touches on energy policy. (2) The plan must involve every single stakeholder in South Carolina that has a vested interest in response to the proposed rule. In August 2013, South Carolina brought in a diverse group of stakeholders (utilities, electric cooperatives, public staff, environmental justice community leaders) to talk about the implementation challenges with the proposed rule. The group has been meeting regularly since that time. (3) It is very important to have a diverse stakeholder group so that the rule is shaped in a genuine way.

John Lyons: Kentucky has more coal-fired plants than anyone else in the Southeast and no renewable energy portfolio standard, no natural gas combined cycle plants and no nuclear plants. The energy mix is 95 percent coal-fired generation. Kentucky asked EPA for flexibility with the proposed rule because if the Commonwealth had to take so many coal plants offline they would be in a dire situation. They already lost 8,000 mining jobs since 2012. As a regulated state, the federal plan is not something that Kentucky really wants. Kentucky doesn't have a framework or stakeholder process like South Carolina, but they have had one stakeholder meeting to date. Kentucky has found that a mass based approach is probably best simply because of coal plant retirements. John believes that his state has one of the best modeling teams in the southeast and detailed compliance scenarios are critical to making decisions. Finally, Kentucky has participated in the Midwestern Power Sector Collaborative to learn the advantages and disadvantages of joining a regional plan.

Additional comments from the panelists through question and answer session:

- South Carolina's stakeholder group started with 15 people and now it has up to 65 members. Comments submitted to EPA included the comments of the Public Utilities Commission. The state has taken advantage of the Southeast Energy Efficiency Alliance and the resources of the Nicholas Institute for Environmental Policy Solutions at Duke University.
- Timeline for compliance is a big concern of both states. Both panelists do not want to rush to submit a flawed plan.

Responses to the Proposed EPA Clean Power Rule

The participants broke into discussion groups to give their feedback on EPA's proposed Clean Power Rule. The responses were focused on three questions:

1. What do you understand the least and/or need more education about?
2. What are the stakeholder engagement opportunities for North Carolina considering what you heard from South Carolina and Kentucky?
3. Given these and other opportunities, what can North Carolina state officials, power companies, and stakeholders do to prepare for the final rule and the development of a state plan? For example, are there opportunities to fill information gaps or improve coordination among state entities?

The responses were written by the participants and also recorded by staff at the North Carolina Clean Technology Center. They are set out in full below.

1. What do you understand the least or need more education about?

<u>The Final Rule When it is Promulgated</u>

- How would a "reliable" safety value work if it is included in the final EPA plan?
- What is the real objective of the EPA rule? To shut down coal plants, reduce overall carbon emissions from electric generation or something else?
- How does a state's unique compliance or progress toward emissions reductions get evaluate or credited in the administration of a plan?
- What are the legal challenges to EPA's rule and what does that mean for North Carolina as the final rule gets developed?
- The greatest unknown is what the final rule will require and the cost implications for consumers.
- What flexibility is granted in the different timelines for when plans are due when implementation would occur?

<u>Mass vs. Rate Based Options</u>

- Do state officials or Duke Energy favor a mass-based or rate-based approach?
- How will all four building blocks be impacted by one approach vs. the other?
- What are the differences and implications between the mass and rate based targets?
- What is the difference between these two options?
- What are the pros and cons of mass-based vs. rate-based approaches?
- Need more explanation of how to convert emissions to a mass-based goal and why the mass-based goal is a least cost alternative.

<u>Building Block Details</u>

- Is the emissions rate target a complex derivative open to interpretation on renewable energy, energy efficiency and other details?
- Does Duke Energy believe that there are more achievable reductions as part of building block number 1?
- What are suitable options beyond the four building blocks for North Carolina?
- Can nuclear not yet under pre-construction/construction be counted on under building block 3 given how long the nuclear development process takes?

- How are measures behind the customer meter such as energy efficiency, storage, demand response and renewable energy included in the plan?
- What other non-building block alternatives exist?
- How much freedom do states have in deviating from the building blocks and which other carbon-reducing measures qualify for emissions reductions?
- How are energy efficiency measures verified?
- What is the EPA rationale for state glide paths beyond the building block options?
- Need more concrete examples of how a typical state can use efficiency to reduce carbon emissions.

State vs. Regional Approach

- How will energy dispatch be impacted by multi-state approaches?
- How will regional pans work with a shared service area?
- What are the economic impacts to states, ratepayers and utilities with trading across state lines?
- What is the value to North Carolina of a North and South Carolina regional compliance strategy?
- What formal group collaborations exist to consider a regional approach?
- What exactly are the target emissions for North Carolina and how would this work with potential regional partners?
- How will EPA treat credits for the import and export of power from states?
- What would a regional or multi-state approach work for North Carolina?

Compliance Modeling/State Implementation Plan/Enforcement

- Need more understanding of the different projected models for compliance in the southeast
- How will the final Clean Power Plan be enforced?
- What is the baseline upon which EPA is building state mandated carbon reductions?
- What is the process for creating North Carolina's SIP and who are the final decision makers on what goes into this SIP?
- How do third party opportunities get aggregated, counted and verified as part of a state implementation plan? If that is a premature question, will North Carolina decide those rules as a state?
- What are potential impacts on the state/region for jobs and economic development?

Miscellaneous

- Is the partisanship about whether we need a rule or how a rule gets drafted?
- How do "utility of the future" conversations and possible rule changes impact how stakeholders perceive the cost and feasibility of compliance?
- The proposed plan influences decisions by the utilities. Can that be identified?
- How will certain elements be included in a state implementation plan such as energy efficiency?
- What formal groups exist to tackle all of these questions?
- What are the unintended consequences for the proposed EPA Clean Power Plan?

2. What are the stakeholder engagement opportunities for North Carolina considering what you heard from South Carolina and Kentucky?

Stakeholder Process

- There should be more coordination between public power, investor-owned utilities and electric cooperatives on compliance with the proposed Clean Power Plan.
- All inclusive collaborative stakeholder meetings within North Carolina should be done with unbiased facilitator.
- There must be a public comment process to inform North Carolina's decision on whether to do a multi-state or regional plan.
- As South Carolina suggested, take advantage of other goals and rules that may have similar approaches to the Clean Power Plan (such as in energy efficiency).
- North Carolina should hold several stakeholder or town hall sessions to get feedback on what should be done.
- There is no stakeholder engagement currently on this issue. The state would be well served by leadership from the executive branch on this front.
- The North Carolina citizens should be education on the Clean Power Plan and the implications to the state of its enactment.
- North Carolina has the opportunity to build on its past successes (Clean Smokestacks Act, Renewable Energy & Energy Efficiency Portfolio Act) to look for ways to turn the Clean Power Plan into an opportunity.
- North Carolina should follow South Carolina with an open public stakeholder process now because it is not enough for DENR to start after the rule or litigation is final.
- A state-led or other formal stakeholder group that engages all interested and affected parties would be helpful even before the rule is final.
- Some form of preliminary planning for the state and region should begin. I believe North Carolina is ahead of the curve when it comes to stakeholder engagement but planning in concert should increase.
- Open and transparent public sessions should start now and continue through the development and implementation of a state implementation plan or multi-state plan.
- A North Carolina stakeholder group should identify the state's priorities, unique circumstances, "specialness" that will color any approach or course of action to comply with the rule.
- Suggest forming a stakeholder group now (not waiting) to consider compliance options.
- North Carolina may need an inclusive working group from industry, government, the universities and non-profits to develop a comprehensive compliance plan.
- Stakeholders should engage with DENR, the NC Public Utilities Commission and the NC General Assembly even before the rule is final.
- IEI and its partners should be supported to continue this stakeholder process (at the university).
- Create a diverse stakeholder group to identify gaps and solutions to meet the rule.
- Based on what I heard this morning, it is not clear to me that the state will have formal stakeholder meetings about the Clean Power Plan. May end up being mostly informal.
- Balance how to make the public aware of the proposed rule without creating a political mess.
- Develop webinars and a website on implementation progress, including a CO2 dashboard.
- Broaden stakeholder engagement with the goal of consensus of positions, but allow for the ability to disagree on certain aspects of the Clean Power Rule.
- Include environmental justice groups at the table.
- Follow South Carolina's lead and learn from their process.
- This group should be reconvened in the future.

- South Carolina has a large and diverse stakeholder group. North Carolina had a similar process with the Clean Smokestacks and the Renewable Energy and Energy Efficiency Portfolio Standard legislation. This same process should be used with regard tot the Clean Power Plan.
- Continue stakeholder events such as this, maybe in an attempt to open regional discussion with other states. However, this should not include any preliminary commitments to join such a process.
- Advanced Energy could convene a process similar to what they did to inform NC Greenpower.
- Can foundation funding support broader stakeholder engagement opportunities?
- DENR must be responsible for creating and submitting a state plan. DENR should take the lead in providing opportunities for stakeholder engagement but this seems remote given their wait and sees approach to committing resources to the process.
- The Energy Policy Council should take up this topic as an agenda item.
- The NC Public Staff could convene a stakeholder group or open the docket for comments.

Agency Coordination

- There should be more deliberate DENR and Public Utilities Commission coordination and an open public comment process within the state to develop an authentic state plan.

Multi-State Coordination

- Once the final rule is announced, North and South Carolina should engage in a joint modeling effort to understand the impact on both states to determine if we can achieve a win-win path forward using a regional plan.
- How could we work together to form a regional group to achieve mandated goals?
- A regional emission trading system should improve the efficiency and flexibility of the rule; environmental commons should be coordinated regionally.
- Plants are shared across state lines. There must be multi-state coordination.
- Besides South Carolina, what other states should North Carolina engage to formalize collaborative planning efforts with?

Legislative Coordination

- What legislative changes are needed?
- North Carolina has the opportunity to create a legislatively chartered stakeholder group to advise and collaborate with the technical experts at DENR.

Research Needs

- Identify the research needs or compliance modeling necessary to meet the 2020/2030 targets
- North Carolina must identify its own priorities and interests first as a state.

Miscellaneous

- What is the wealth transfer that Georgia's Tim Echols referred to?
- In my opinion this is pretty straightforward. Engage the U.S. Congress to overrule the EPA.

3. Given these and other opportunities, what can North Carolina state officials, power companies and stakeholders do to prepare for the final rule and the development of a state plan? For example, are there opportunities to fill information gaps or improve coordination among the state entities?

Education and Outreach

- There will need to be a concerted effort to educate the public and stakeholders about the rule, the implementation plan and actions to reach compliance.
- I believe the Forum today given that it is informal is an excellent way to begin to promote the stakeholder process.
- Educate consumers and business leaders regarding the potential cost increases and the magnitude of the impacts

Development of Stakeholder Process

- Start now to identify opportunities and barriers - establish a collaborative framework that can be followed one the final rules are developed
- Migrate the conversations into the public arena for discussion. Establish and prioritize work of a formal consortium of utility/state/customer/academic and other stakeholders.
- Move forward with stakeholder input on creative solutions to achieve carbon reductions beyond the four building blocks of the Clean Power Rule.
- Develop four stakeholder subgroups: (1) legal and regulatory matters; (2) business and industry opportunities; (3) modeling and compliance scenarios; and (4) current technological solutions.
- Establish a stakeholder engagement process; by developing a sample state implementation plan even though some elements might change. View the rule as an opportunity rather than as a threat for North Carolina.
- Put in place a stakeholder process that provides fair access to the process and all parties a voice.
- DENR, the NC Utilities Commission and Public Staff should collaborate and then share draft plans with interested stakeholders.
- DENR should move forward with stakeholder input on creative solutions to achieve carbon reductions beyond the four building blocks.
- The general consensus seems to me that some form of the Clean Power Plan will be finalized and it touches a lot of organizations within North Carolina The sooner we get pencil to paper the better. Even if it serves as a trial run to put the plan forward until final rule promulgation. If you wait, valuable time will be lost.
- Bring policy makers, utilities, and end use customers to identify solutions, costs and recovery of costs.
- Stakeholders should arrive at a consensus on what the next steps are so DENR can begin preparing for the final rule
- Create a stakeholder group and information resource site for open review and development of a state position and plan
- Stakeholders can provide specific suggestions backed by analysis; and power companies can be transparent with data so parties are informed
- North Carolina needs to sponsor an open meeting for stakeholders.

Information Gathering

- There are still plenty of gaps about energy and environmental policy that decision makers need to have
- North Carolina needs to identify the low efficiency, moderate efficiency and high efficiency plants. In addition, the state needs to develop technologies that can be used in existing fossil fuel power plants to meet the targets.
- The information needs are huge: the supply and demand curve for energy from 2020-2030; technology growth (biomass, solar), electricity trading.

- Gather information on existing programs that could be used to meet the requirements
- North Carolina should hold information sessions for additional opportunities for outside the fence carbon reductions.
- Provide meetings with utility customers to see if all of this is affordable and provide details on the projected rate changes.

Modeling Compliance Scenarios

- See private funding for analysis of compliance paths once EPA promulgates a final rule.
- Expand on the current modeling to date and considering hiring an independent consultant for those impacts.
- Continue modeling to better understand the tradeoffs and assumptions.
- Develop a better understanding of options for compliance (future cost of renewables, wind, energy demonstration, etc.). Don't know what you don't know is still uncertain but based on what you know, what is viable?
- Model the potential role for energy efficiency in meeting plan requirements
- Scenario planning needs to happen that engages all stakeholders to facilitate North Carolina's rubix cube expertise.

Multi-State Dialogue

- Southern states should explore what can be done collectively rather than considering only a zero sum game
- Coordinate with other southern states to increase flexibility in timelines.
- Is there a way to share or monetize the benefits of a regional plan so that each participating state gets a "fair share" of the benefits?
- Increase collaboration with other southeastern states, particularly South Carolina to bring about regional compliance with the Clean Power Plan
- Coordinate with Virginia and consider regional plans

Practicality or Likelihood of Collaboration

- Three avenues seem possible: work with EPA to develop a compliance plan, work with the U.S. Congress to override EPA's authority for the rule or litigation through the courts. Are there other opportunities than these?
- The North Carolina Utilities Commission has chosen to stay neutral on the Clean Power Plan rule because they are quasi judicial. However, we are a year out and there is not enough attention being paid to this. We are "pedal to the metal" unless someone says not to do this. With a mid July deadline of 2016 this greatly concerns me. There is nothing in place right now.
- There is real concern if things don't change. North Carolina is supposed to submit a plan next year and the state implementation plan is where we should focus our efforts. Prepare for the eventuality that the train is going to wind up some place. Legally there is no relief in the next year and no relief from Congress.
- If North Carolina chooses not to submit a plan, they will have to deal with the penalty that ensues.
- Unless you are a REGI state, it is incredibly hard to develop a regional plan with the 18 months lead-time needed for a legislative action.
- Don't tie state officials' hands behind their backs by mandating only to use block 2 or barring them from developing draft compliance plans.

Miscellaneous

- It would be helpful to see or know what the DENR plan looks like today.
- Just as there is a desire for flexibility in the state implementation plan, we should urge policymakers to remain flexible on how we plan for a plan and do not bar the state from working on one until the legal challenges are exhausted.
- We need a backup plan in the event that the lawsuit is not successful.
- North Carolina needs to preserve its leadership position in clean energy, as the companies, which are prospering here, will look elsewhere.

Appendix 1

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EPA's Clean Power Rule: What Does it Mean for North Carolina's Energy Future?

Friday, March 13, 2015, 8:30 – 2:00 p.m.
James B. Hunt, Jr. Library, NC State University, Centennial Campus, Second Floor

AGENDA

8:15-8:30 a.m. Arrive

8:30 - 8:40 a.m. Welcome & Goals of the Meeting
Diane Cherry, Environments Policy Manager, Institute for Emerging Issues

- Understanding EPA's Clean Power Rule
- Implications for North Carolina's energy future
- General comments on the rule and what needs further consideration

8:40 - 9:00 a.m. EPA's Clean Power Rule
Jenah Zweig, Policy Director, Southeast Energy Efficiency Alliance

- General guidelines of the Clean Power Rule (including its four building blocks)
- What form EPA's final rule may take

9:00 - 10:00 a.m. Implications for North Carolina: A Panel Discussion
Moderated by **Sam Watson**, General Counsel & Director, Legal and Administration Division, North Carolina Utilities Commission

John Evans, Chief Deputy Secretary, North Carolina Department of Environment & Natural Resources

- How the proposed rule can technically be achieved
- The components of a new SIP plan

Diane Denton, Director, Environmental & Energy Policy, Duke Energy

- How Duke Energy would comply with the proposed rule

Chris Ayers, Executive Director, Public Staff, North Carolina Utilities Commission

- The implications of the proposed rule on ratepayers

10:00 – 10:10 a.m. Break

10:10 – 10:30 a.m. Modeling Results & Compliance Scenarios
Etan Gumerman, Senior Policy Associate, Environmental Economics Program, Nicholas Institute for Environmental Policy Solutions, Duke University

10:30 – 11:15 a.m. How Other States Are Preparing for EPA's 111(d) Clean Power Rule
Moderated by **Jonas Monast**, Director, Climate and Energy Program, Nicholas Institute for Environmental Policy Solutions, Duke University

John Lyons, Assistant Secretary, Energy and Environment Cabinet, State of Kentucky
Myra Reece, Bureau Chief, Department of Health and Environmental Control, State of South Carolina

11:15 - 12:30 p.m. Breakout Sessions: On 4th Floor – Rooms 4103, 4104, 4105 and 4107

Facilitated by **Daniel Brookshire,** Institute for Emerging Issues, **Diane Cherry,** Institute for Emerging Issues**, Jeremy Tarr,** Duke University, Nicholas Institute for Environmental Policy Solutions, **Jonas Monast**, Duke University, Nicholas Institute for Environmental Policy Solutions

Break into four concurrent groups to answer these questions below.

1. What do you understand the least and/or need more education about?
2. What are the stakeholder engagement opportunities for North Carolina considering what you heard from South Carolina and Kentucky?
3. Given these and other opportunities, what can North Carolina state officials, power companies, and stakeholders do to prepare for the final rule and the development of a state plan? For example, are there opportunities to fill information gaps or improve coordination among state entities?

Highlight within each group what you would like reported out

12:30 – 1:30 p.m. LUNCH – Multipurpose Room on Second Floor

Small Group Report Back
- Group 1 Group 2
- Group 3 Group 4

1:30 – 2:00 p.m. Next Steps & Adjourn

Meeting Participants: EPA's Clean Power Plan: What Does it Mean for North Carolina?

Name	Title	Organization
Brad Atkinson	Energy Section Chief	North Carolina Department of Environment & Natural Resources
Chris Ayers (*speaker*)	Executive Director	North Carolina Utilities Commission Public Staff
Don Bailey	Commissioner	North Carolina Utilities Commission
George Baldwin	Managing Director, Government Relations & Sustainability	Piedmont Natural Gas
Kendal Bowman	Vice-President, Regulatory Affairs and Policy	Duke Energy
John Broadman	Member	North Carolina Energy Policy Council & Former Federal Deputy Assistant Secretary for International Energy Policy
Daniel Brookshire	Emerging Leaders Fellow	Institute for Emerging Issues
Robbie Brown	Director, Division of Air Assessment & Regulation,	State of South Carolina, Department of Health and Environmental Control
Patrick Buffkin	Government Affairs Manager	North Carolina Association of Electric Cooperatives
Robert Caldwell	Senior Vice-President, Distributed Energy Resources	Duke Energy
John Camilleri	Chief Technology Officer	Green Energy Corporation
Charlie Carter	Partner	Nexsen Pruet
Diane Cherry	Environments Policy Manager	Institute for Emerging Issues
Marty Clayton	District Manager	Duke Energy
Brian Coble	Senior Vice-President	Advanced Energy

Meeting Participants: EPA's Clean Power Plan: What Does it Mean for North Carolina?

Kimberly Conley	Assistant Director, Energy Solutions	NC State University
Diane Denton (*speaker*)	Director, Environmental & Energy Policy	Duke Energy
Molly Diggins	Executive Director	North Carolina Sierra Club
Walter Dimmig	Principal	NET Power
David Doctor	President & CEO	E4 Carolinas
Scott Dorney	Executive Director	North Carolina Military Business Center
Katie Drye	Project Manager	Advanced Energy
Herbert Eckerlin	Professor, Mechanical & Aerospace Engineering	NC State University
John Evans (*speaker*)	Chief Deputy Secretary	North Carolina Department of Environment & Natural Resources
George Everett	Senior Advisor	Duke Energy
Luis Fondacci	Vice-President, Transmission & Regulatory Affairs	North Carolina Electric Membership Cooperative
Andrew Fusco	Vice-President, Corporate Strategy & Member Services	ElectriCities of North Carolina
Mitch Gillespie	Senior Policy Advisor	North Carolina General Assembly, Office of House Speaker Tim Moore
Etan Gumerman (*speaker*)	Senior Policy Associate, Nicholas Institute for Environmental Policy Solutions	Duke University
Terry Hairston	Environmental Manager	Nucor Steel
Harsha Holalu Ramakrishna	Extension Specialist	NC State University

Meeting Participants: EPA's Clean Power Plan: What Does it Mean for North Carolina?

Roy Jones	Chief Operating Officer	ElectriCities of North Carolina
Steve Kalland	Executive Director	NC Clean Energy Technology Center
Louis King	Policy Analyst	North Carolina General Assembly, Office of House Speaker Tim Moore
Bob Koger	President	Advanced Energy
Ward Lenz	Director of Government Relations	Advanced Energy
John Lyons (*speaker*)	Assistant Secretary, Energy and Environment Cabinet	State of Kentucky
Richard McCall	Director, Environmental & Transmission Compliance	North Carolina Electric Cooperatives
Mark McIntire	Director, Environmental & Energy Affairs	Duke Energy
James McLawhorn	Director, Electric Division	North Carolina Utilities Commission Public Staff
David Meisinger	Vice-President, Energy Portfolio Supply and Regulatory Affairs	Electric United, Electric Membership Cooperative
Sharon Miller	Executive Director	Carolina Utilities Customer Association
Charlotte Mitchell	Attorney	Law Office of Charlotte Mitchell
Jonas Monast (*speaker*)	Director, Climate & Energy Program	Duke University, Nicholas Institute for Environmental Policy Solutions
John Morrison	Senior Vice-President	Strata Solar
Lee Anne Nance	Executive Vice-President	Research Triangle Regional Partnership
Paul Newton	State President, North Carolina	Duke Energy

Meeting Participants: EPA's Clean Power Plan: What Does it Mean for North Carolina?

Kevin O'Donnell	President	Nova Energy Consultants
Brian O'Hara	President	Southeastern Wind Coalition
Daniel Paprocki	Energy Extension Specialist, Energy Solutions	NC State University
Andre Pettigrew	Executive Director	Clean Economy Solutions
Amy Pickle	Director of State Policy	Duke University, Nicholas Institute for Environmental Policy Solutions
Lisa Poger	Technical Lead	Advanced Energy
Myra Reece (*speaker*)	Bureau Chief, Department of Health and Environmental Control	State of South Carolina
Ulla Reeves	High Risk Energy Program Director	Southern Alliance for Clean Energy
Cecil Rhodes	Vice-President, North Carolina Eastern Municipal Power Agency	ElectriCities of North Carolina
Art Samberg	Project Coordinator	NC State University
Jo Anne Sanford	Attorney	Sanford Law Office
Rudy Shankar	Assistant Director, Energy Production Infrastructure Center	University of North Carolina at Charlotte
Steven Slee	Vice-President	Fifth Third Bank
Amy Strecker	Program Manager	Duke Energy
Jeremy Tarr	Policy Counsel, Climate & Energy Program	Duke University, Nicholas Institute for Environmental Policy Solutions
Scott Tew	Executive Director, Sustainability	Ingersoll Rand

Meeting Participants: EPA's Clean Power Plan: What Does it Mean for North Carolina?

Cara Townsend	Energy Policy Analyst	Office of Governor Pat McCrory
Steve Trakas	Senior Operating Officer	Gibbs International
Hawley Truax	Program Officer	Z Smith Reynolds Foundation
Ivan Urlaub	Executive Director	North Carolina Sustainable Energy Association
Susan Vick	Director State Government Affairs	Duke Energy
Gil Vinzani	Air Quality Engineer	Piedmont Natural Gas
Jeffrey Warren	Science & Energy Advisor	North Carolina Senate
Sam Watson (*speaker*)	General Counsel & Director, Legal and Administration Division	North Carolina Utilities Commission
Carl Wilkins	Director of Sustainability	Quanta Technology
Patrick Wilkinson	Vice-President, Energy Automation Business Unit	Siemens
Hang Yin	Research Assistant	Resources for the Future
Gary Yoder	Vice-President, Environmental Services	Biogen Idec
Michael Youth	Counsel & Regulatory Advisor	North Carolina Sustainable Energy Association
Jenah Zweig (*speaker*)	Policy Director	Southeast Energy Efficiency Alliance

Thanks to the notetakers for each of the breakout sessions from the North Carolina Clean Energy Technology Center:

- Ethan Case
- Heather Calderwood
- Ben Inskeep
- Achyut Shrestha

Appendix 2

EPA's Proposed Clean Power Plan:
An Evolving Landscape

NCSU's "EPA's Clean Power Rule: What Does it Mean for North Carolina's Energy Future?" Event
March 13, 2015

Jenah Zweig, Policy Director
Southeast Energy Efficiency Alliance

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A ROADMAP FOR TODAY'S DISCUSSION

- EPA's Proposed Clean Power Plan: An Overview
- Timeline & Process
- (a) The Target: EPA's Key Components
- (b) Compliance Plans: State Flexibility
- Why Start Now?

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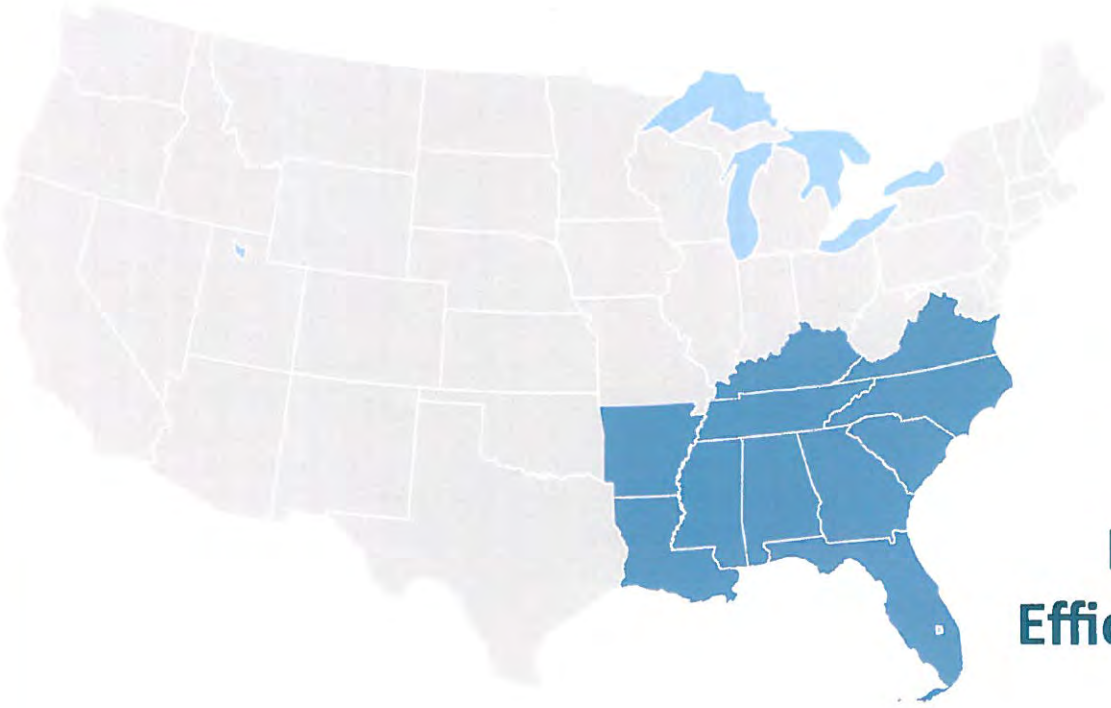
SEEA SERVES THE SOUTHEAST



Eleven-state footprint

Non-profit, non-partisan

Regional Energy Efficiency Organization (REEO)

www.SEEALLIANCE.org

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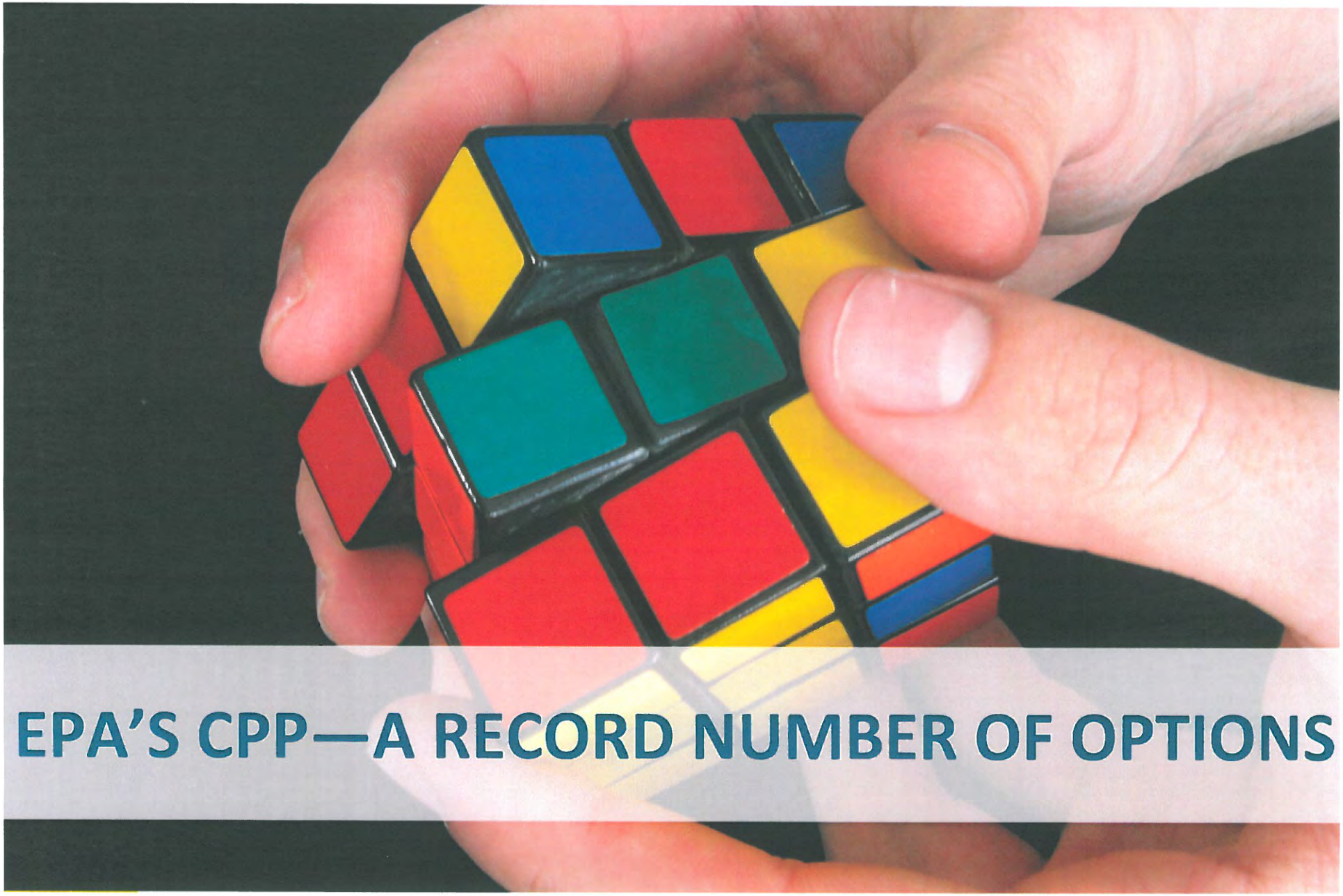
EPA'S PROPOSED CLEAN POWER PLAN: AN OVERVIEW



EPA'S CPP—A RECORD NUMBER OF OPTIONS

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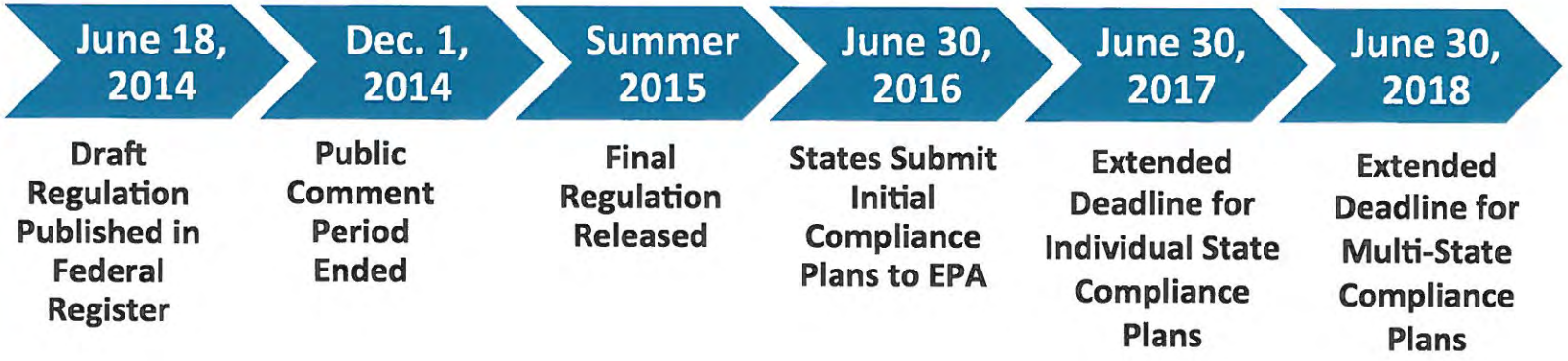
EPA'S PROJECTED TIMELINE

Multi-State Plans Rewarded with More Time



Litigation Ongoing Throughout

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A THREE-STAGE PROCESS

1. EPA sets guidelines for states

Based on "Best System of Emissions Reductions" (BSER)

2. States submit compliance plans

Alternate: federal implementation plan (FIP)

3. States implement submitted plans

Interim 2020-2029; Final goal 2030-beyond

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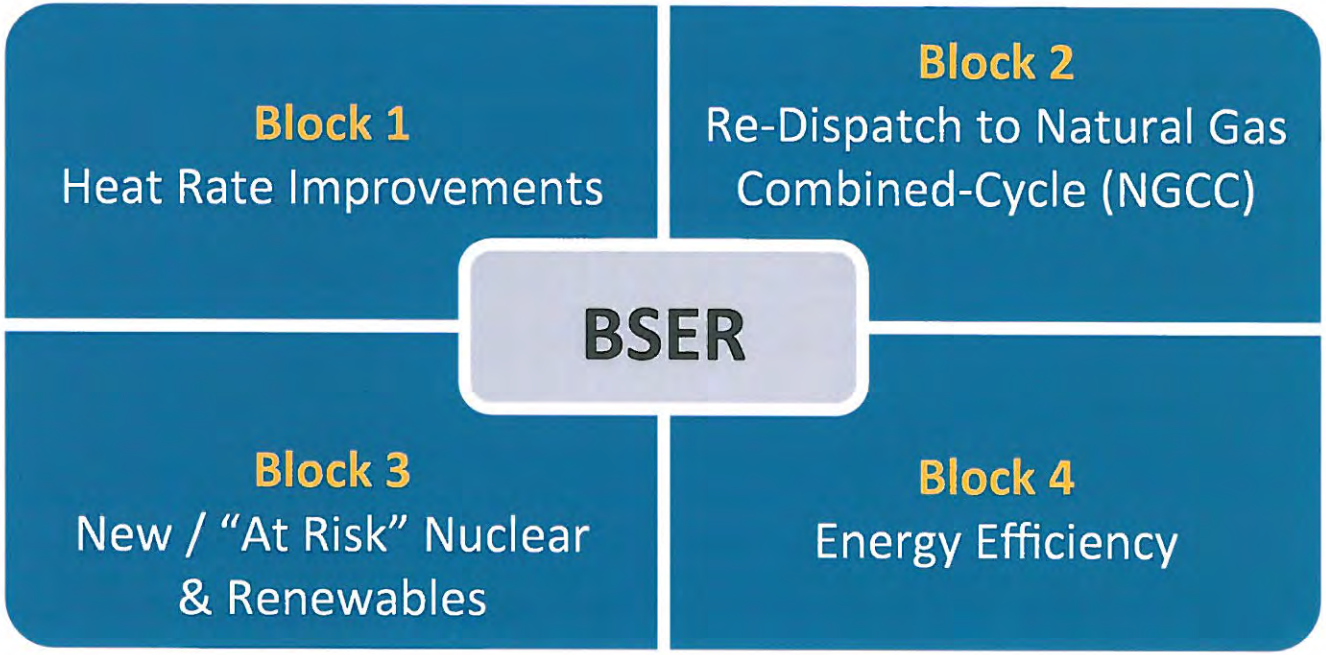
EPA'S PROPOSED BUILDING BLOCKS



- Best system of emission reduction (BSER) or "building blocks" are applied to each state's power sector, resulting in individual, rate-based goals
- Combined reductions from state-specific goals ~ 30% by 2030
- States have broad flexibility in determining the mix of strategies they use to reach savings targets

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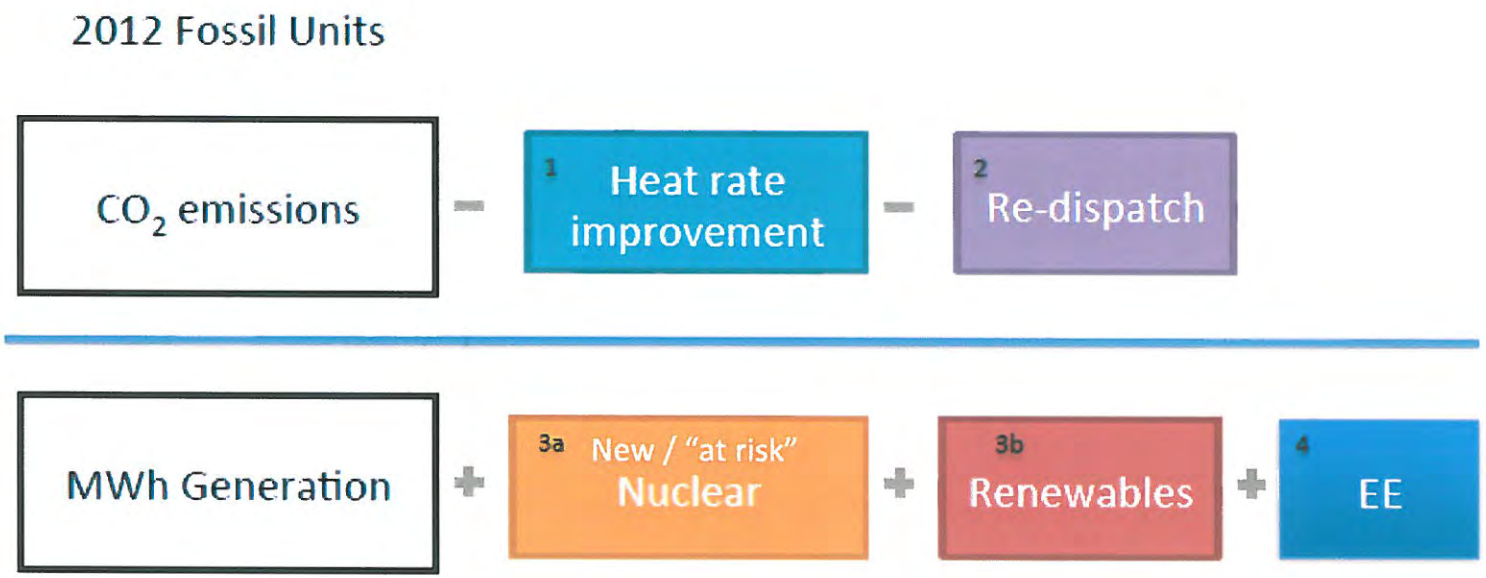
EPA'S EMISSIONS CALCULATIONS



Graphic: Nicholas Institute, 2014

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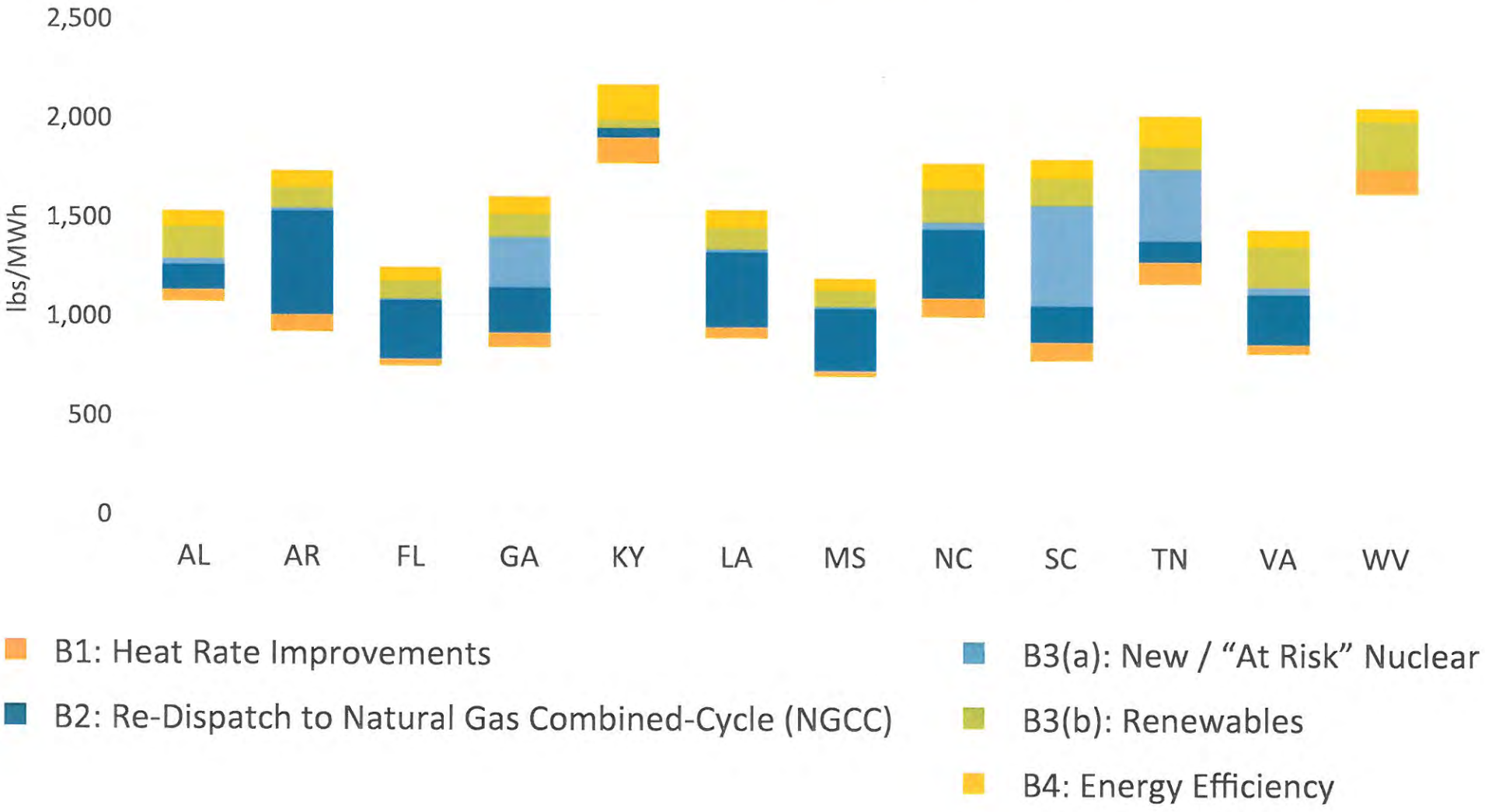
EPA'S PROPOSED EMISSIONS REDUCTIONS ACROSS THE SOUTHEAST (LBS/MWH)



A FEW POTENTIAL CHANGES TO THE FINAL RULE

- **Baseline:** likely to correct mistakes resulting from a one-year (2012) baseline; may allow states to use a multi-year range (e.g., 3-year average)
- **Proposed state targets:** very likely to change; unclear which way/how much
- **Compliance timeline:** likely to adjust interim goal element ("glide path")
  - ~80% of states need to achieve > ½ of their 2030 emission rate goals by 2020
  - Allow more time for ramp up/infrastructure; but still will have rate-of-progress
- **Reliability:** possible inclusion of a "safety valve"
- **Building block 2:** natural gas combined cycle (NGCC)
  - Phase-in to allow for needed infrastructure improvements to existing facilities
  - Modify how quickly states switch to NG to avoid stranded assets (e.g., take into account not just book life of EGUs, but also any pollution-control upgrades)
- **Building block 3(a):** More clarity on under-construction nukes (i.e., GA, SC, TN)

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EPA SETS THE TARGET, AND HANDS COMPLIANCE OFF TO THE STATES = MORE FLEXIBILITY

YES AND... BEYOND EPA'S BUILDING BLOCKS

- Optimize Grid Operations
- Reduce Losses in the T&D System
- Foster New Markets for Energy Efficiency
- Adopt Procurement Requirements ("loading order")
- Encourage Clean Distributed Generation
- Revise Capacity Market Practices
- Adopt Environmental Dispatch
- Improve Utility Resource Planning
- Adopt Cap-and-Invest Programs (e.g., RGGI)
- Tax Carbon Dioxide Emissions

*Note: some opportunities more "ripe" than others...

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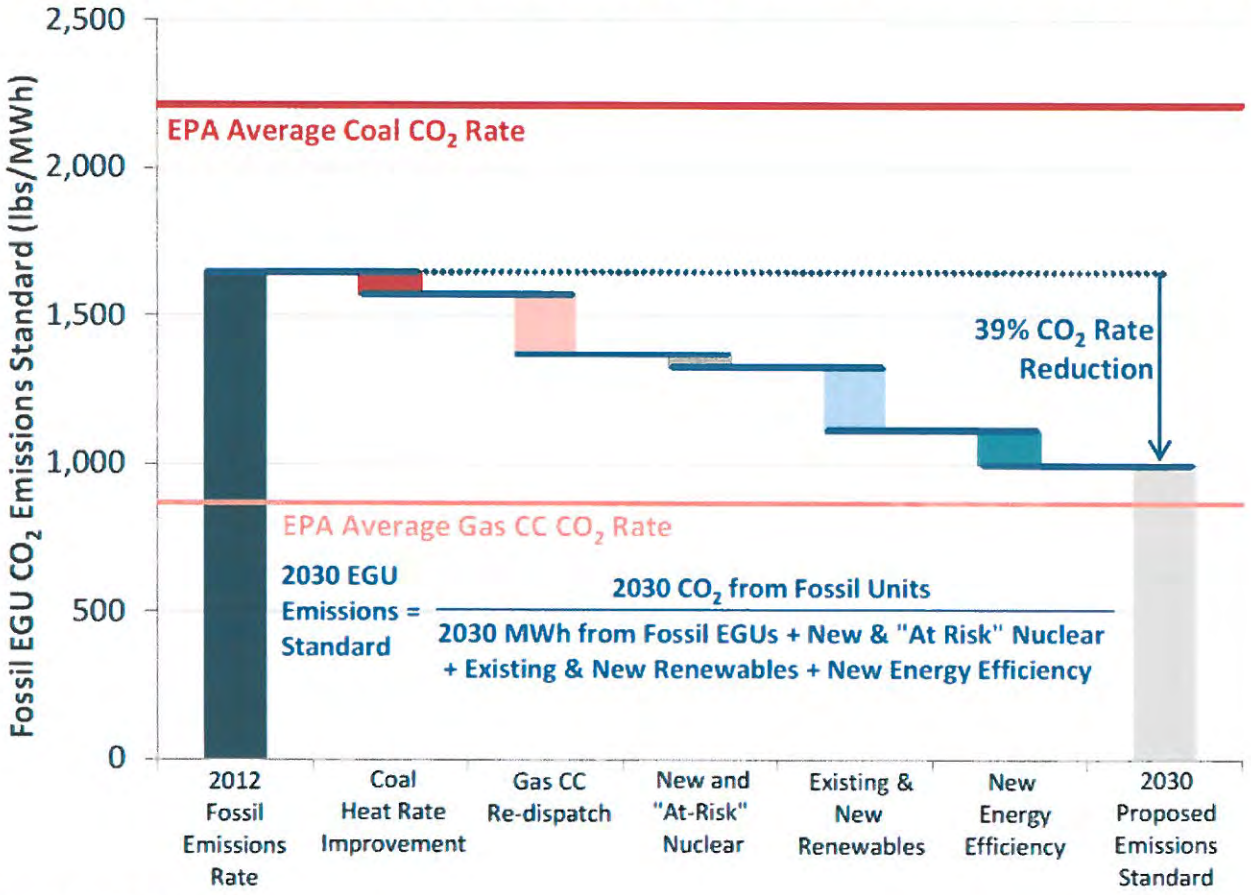
STATES CREATE OWN COMPLIANCE MIX & CAN "BRIDGE GAPS"

Calculation of National Average Fossil EGU CO_2 Emissions Standards based on BSER



Sources and Notes:

Reflects Option 1 final rate for years 2030 from EPA Technical Support Document: Goal Computation, Appendix 1.

Source: Brattle Group, 2014

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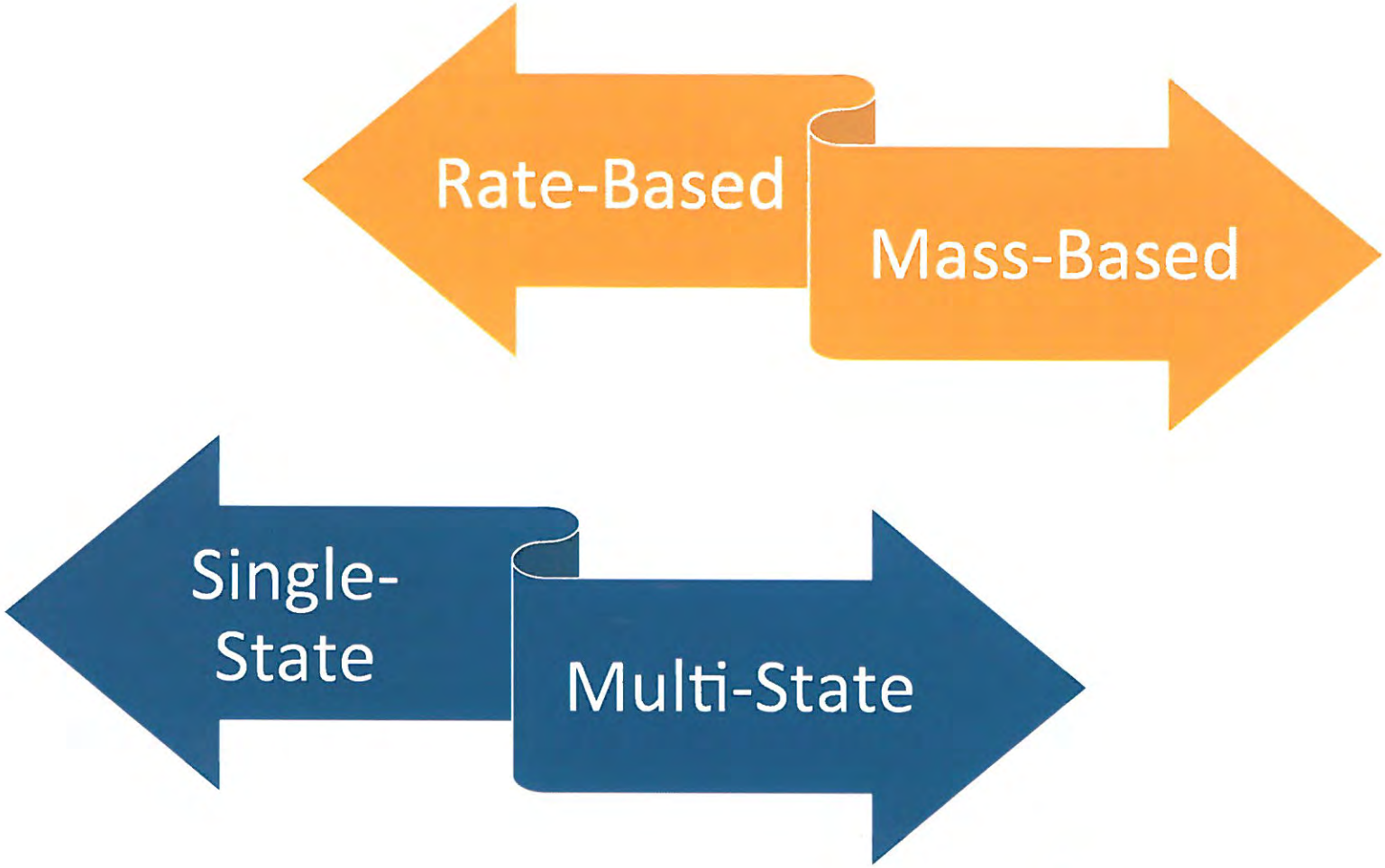
MORE OPTIONS TO TAILOR TO YOUR PRIORITIES…



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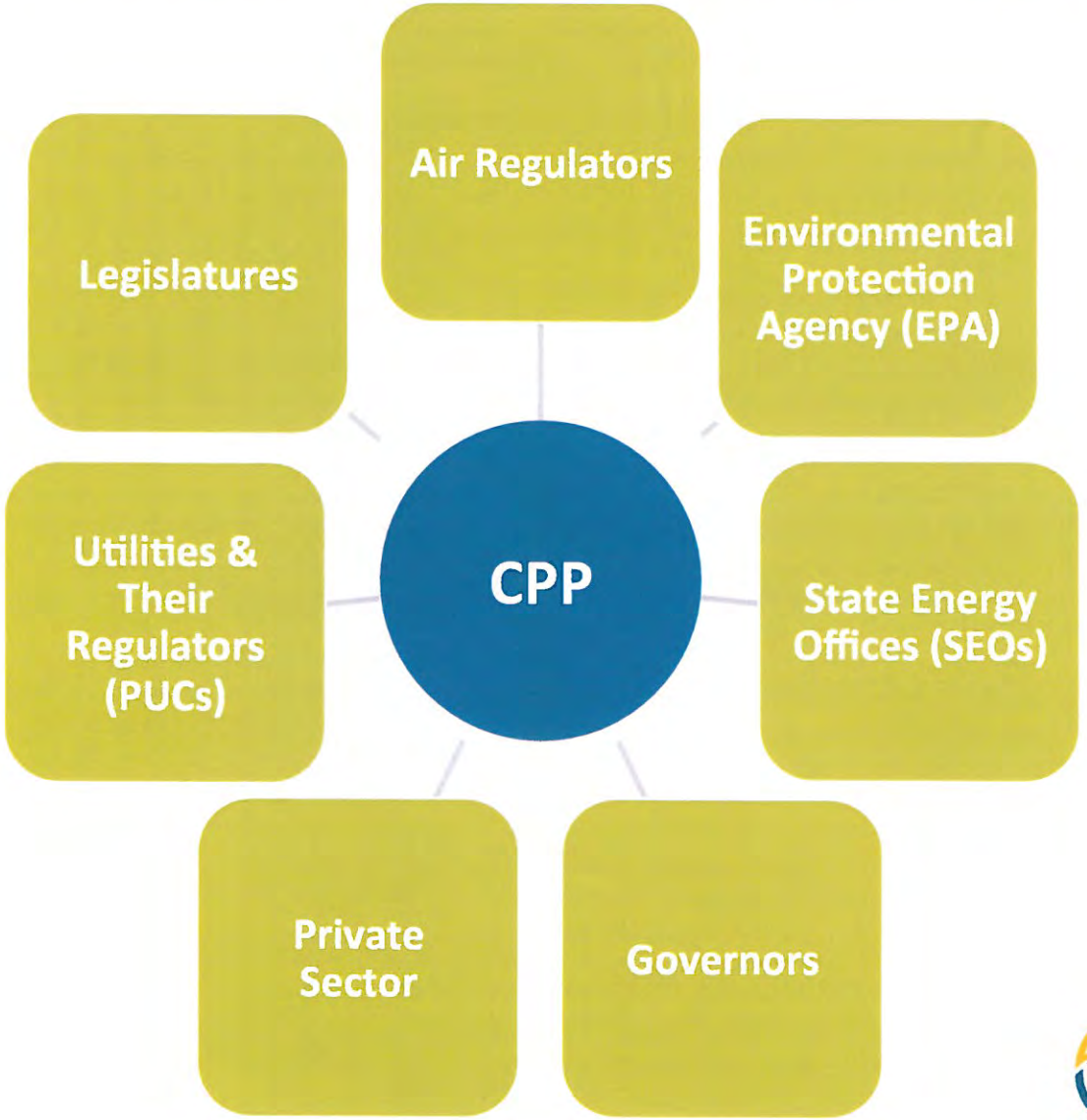
WHAT WILL NORTH CAROLINA'S PLAN LOOK LIKE?

THE BALL'S IN YOUR COURT

COORDINATION IS ESSENTIAL TO SUCCESS



+ The Public & Other Stakeholders

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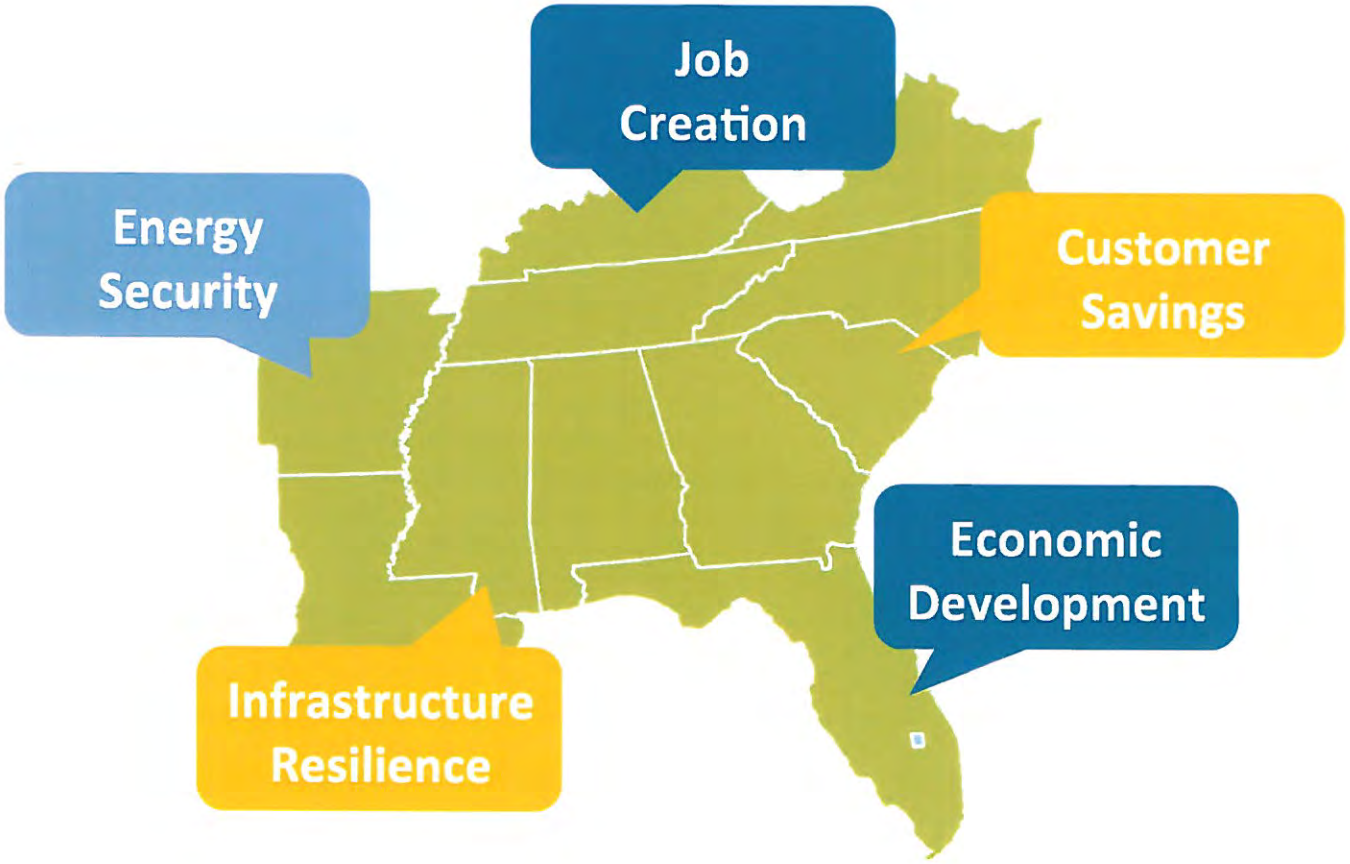
IDENTIFY YOUR IN-STATE PRIORITIES & RESOURCES



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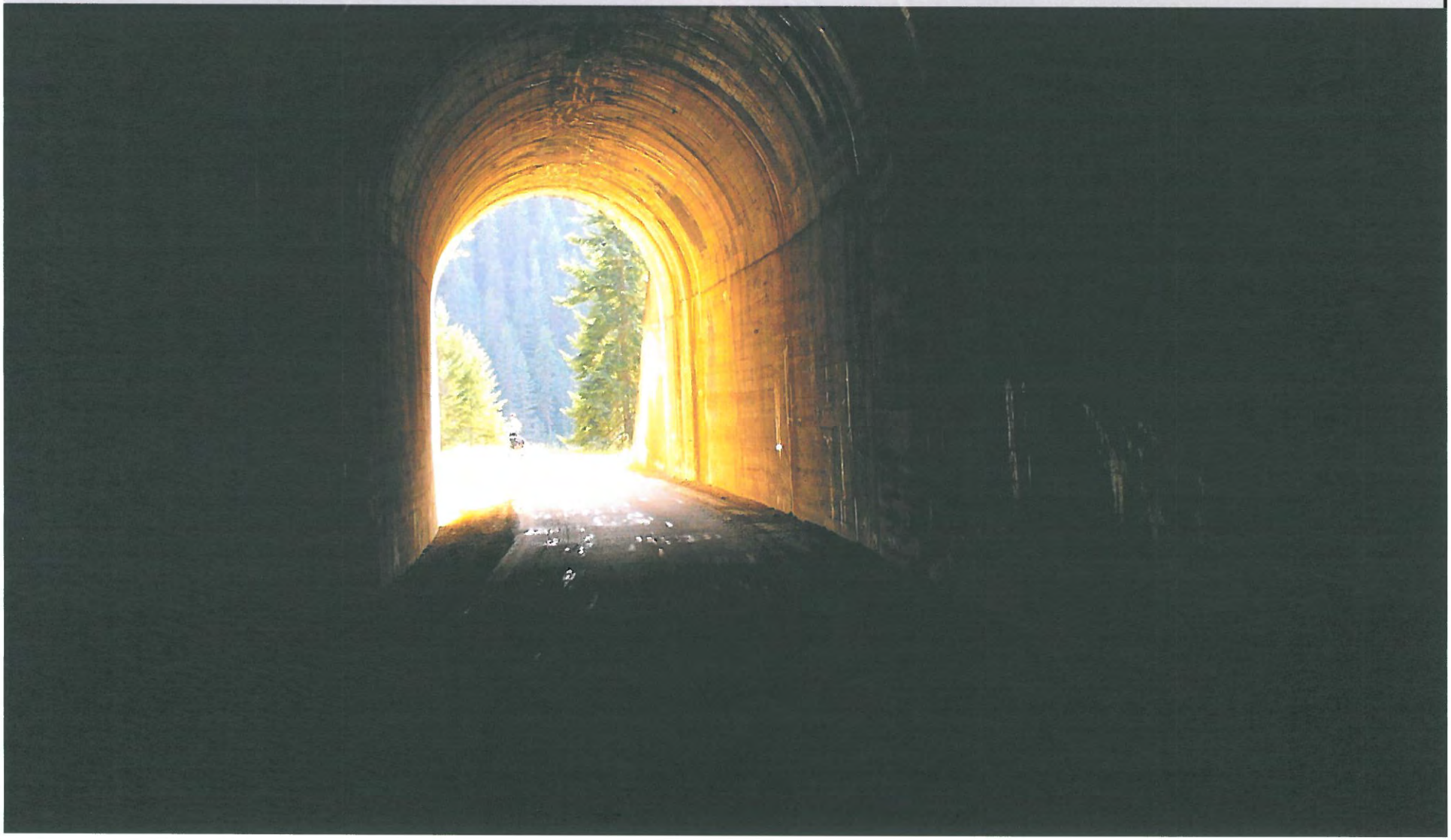
HAVE "NO REGRETS"



Thank you!

Jenah Zweig, Policy Director
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APPENDIX

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RATE-TO-MASS CALCULATION

EPA's basic formula for translating from a rate-based (carbon intensity) goal to a mass-based (CO_2 metric tonnage) equivalent is:

Mass = CO_2 Emissions Rate x Generation

- State then only needs to comply with the approved tonnage limit (and not the initial rate target) based on actual emissions from affected sources
- Trading within state or with other states is then more straightforward (e.g., RGGI and CA use mass-based, not rate-based calculations)
- Typically most cost-effective
- Provides more credit for coal and other fossil fuel retirements (significant reduction when calculated based on tonnage vs. carbon intensity)
- No need for taxes, auctions and other added electricity costs to consumers (can calculate based on a simple allocation to generators based on historic emissions)

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NOT YOUR CONVENTIONAL "SIP"

	Section 110	Section 111(d)
Costs	May Not Consider	Must Consider
Required Reductions	CAA determines nonattainment (no EPA discretion)	EPA determines target, and states determine how to achieve
Timing	CAA specifies (no EPA discretion; within 3 yrs of NAAQS designation)	EPA establishes (proposed 2020-2030 w/1-3 yrs for plan submission)
Measures	Some flexibility, but many mandated by CAA or regulation	Flexibility: 4 building blocks and/or alternative measures beyond them
Acceptability	Quantifiable, non-duplicative, permanent, verifiable, enforceable	See 110 (but EPA invited comment and may consider more flexibility)
Flexibility	Limited; states can substitute national for local w/justification	EPA's 4 proposed building blocks and/or alternative measures

Source: Regulatory Assistance Project, 2015

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NOT YOUR CONVENTIONAL "SIP" (cont.)

	Section 110	Section 111(d)
Enforcement	State environmental agency and EPA	State (potentially through multiple agencies) and EPA
No Acceptable Plan	CAA process: 18 mos. to remedy, then federal implementation plan (FIP) and can increase ratios and restrict highway funds	EPA discretion: *can* impose federal plan, but if/when flexibility; EPA can negotiate remedies w/o timetables
Multi-State or Regional Plans	Limited; even when coordinated, must still submit separately	Encouraged; no need to be adjacent and a single entity can submit
Regional EPA Offices	Review and approve; considerable experience, precedent guidance	Review and approve; glitches anticipated since new process
Multi-P Co-Benefits	May or may not provide GHG reductions as well; GHG reductions from SIPs should be acceptable for 111(d) plan inclusion	Likely to provide criteria pollutant reductions as well; criteria pollutant 111(d) reductions may or may not be acceptable for SIP inclusion

Source: Regulatory Assistance Project, 2015

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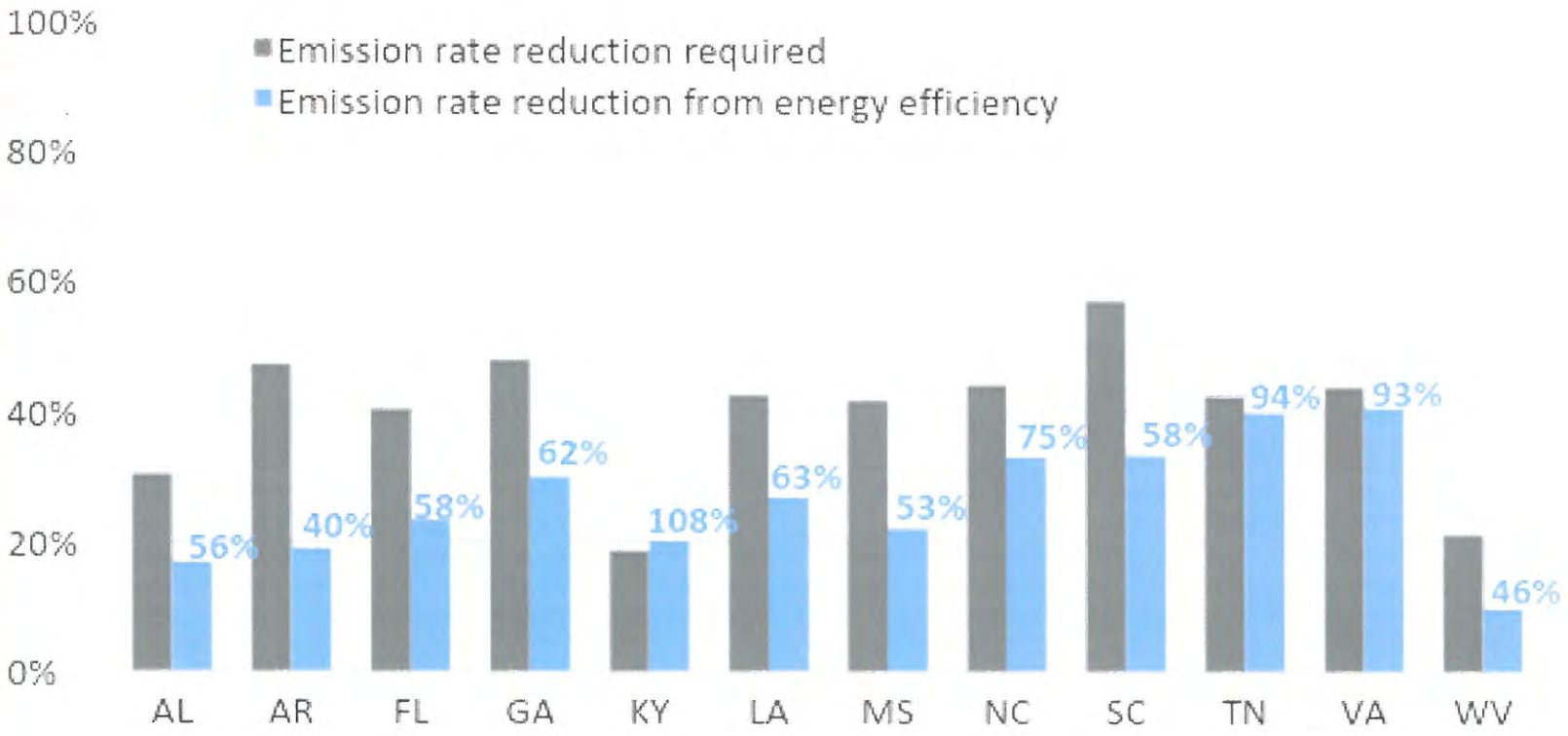
OPPORTUNITY THROUGH ENERGY EFFICIENCY



Source: American Council for an Energy Efficient Economy, 2014

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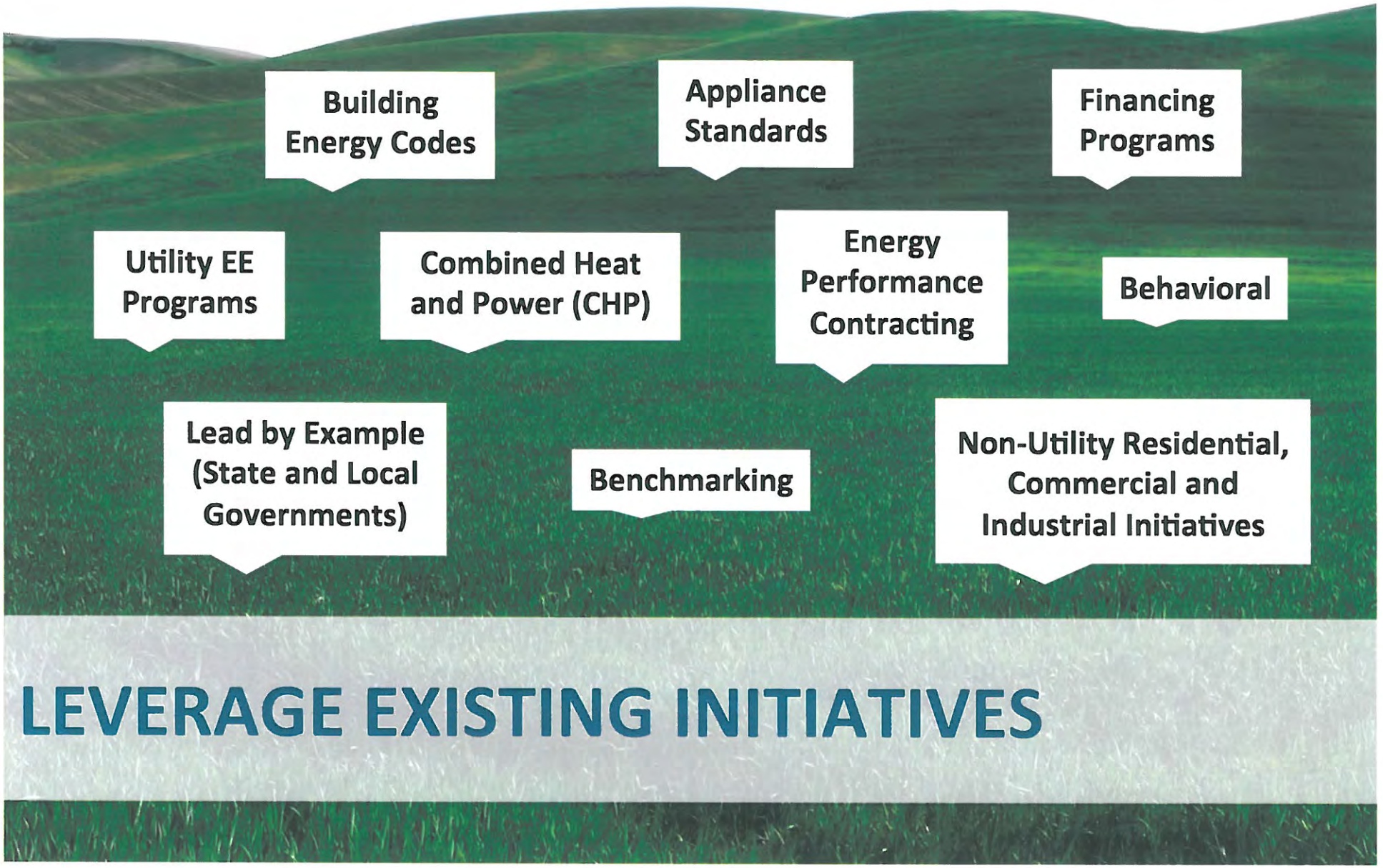

LEVERAGE EXISTING INITIATIVES

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Appendix 3

Quick Thoughts about Clean Power Rule Compliance from Modeling Scenarios

Institute for Emerging Issues: EPA's Clean Power Rule
Friday, March 13, 2015

Presenter:
Etan Gumerman
Senior Policy Analyst
Nicholas Institute for Environmental Policy Solutions
Duke University

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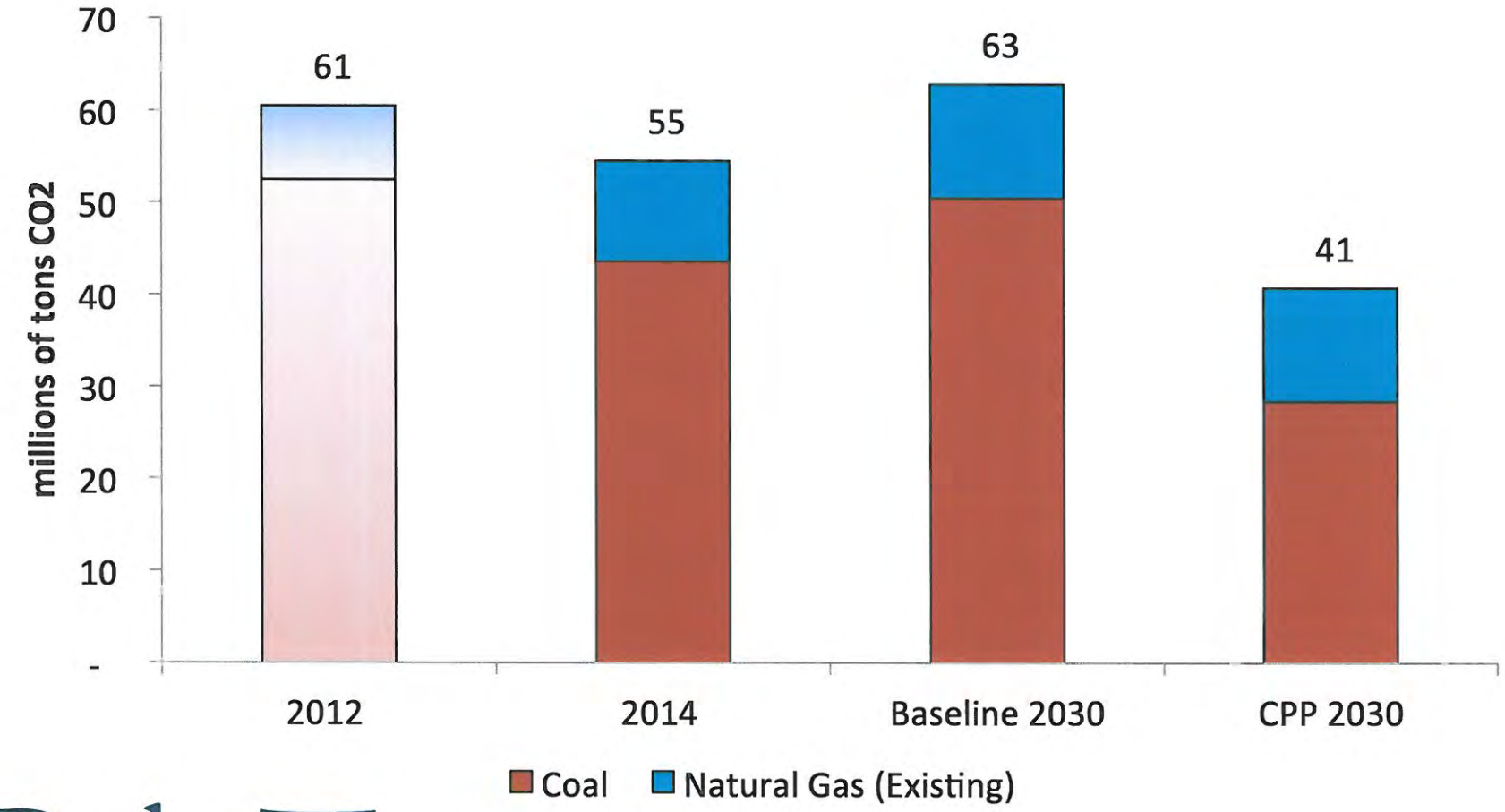
North Carolina Emissions
(Affected Units)



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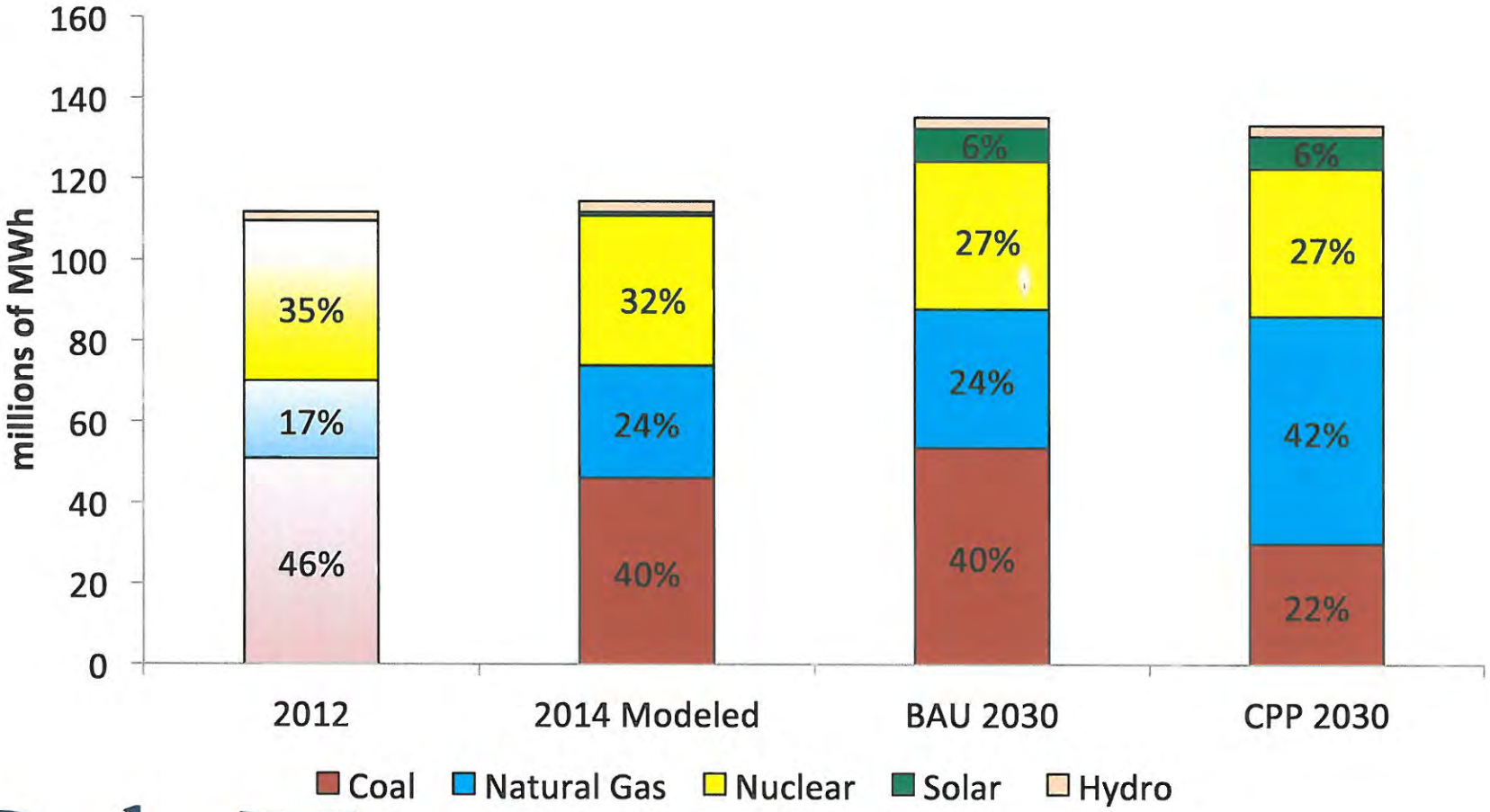
North Carolina's Natural Gas Increase



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NATIONAL, REGIONAL MODELING

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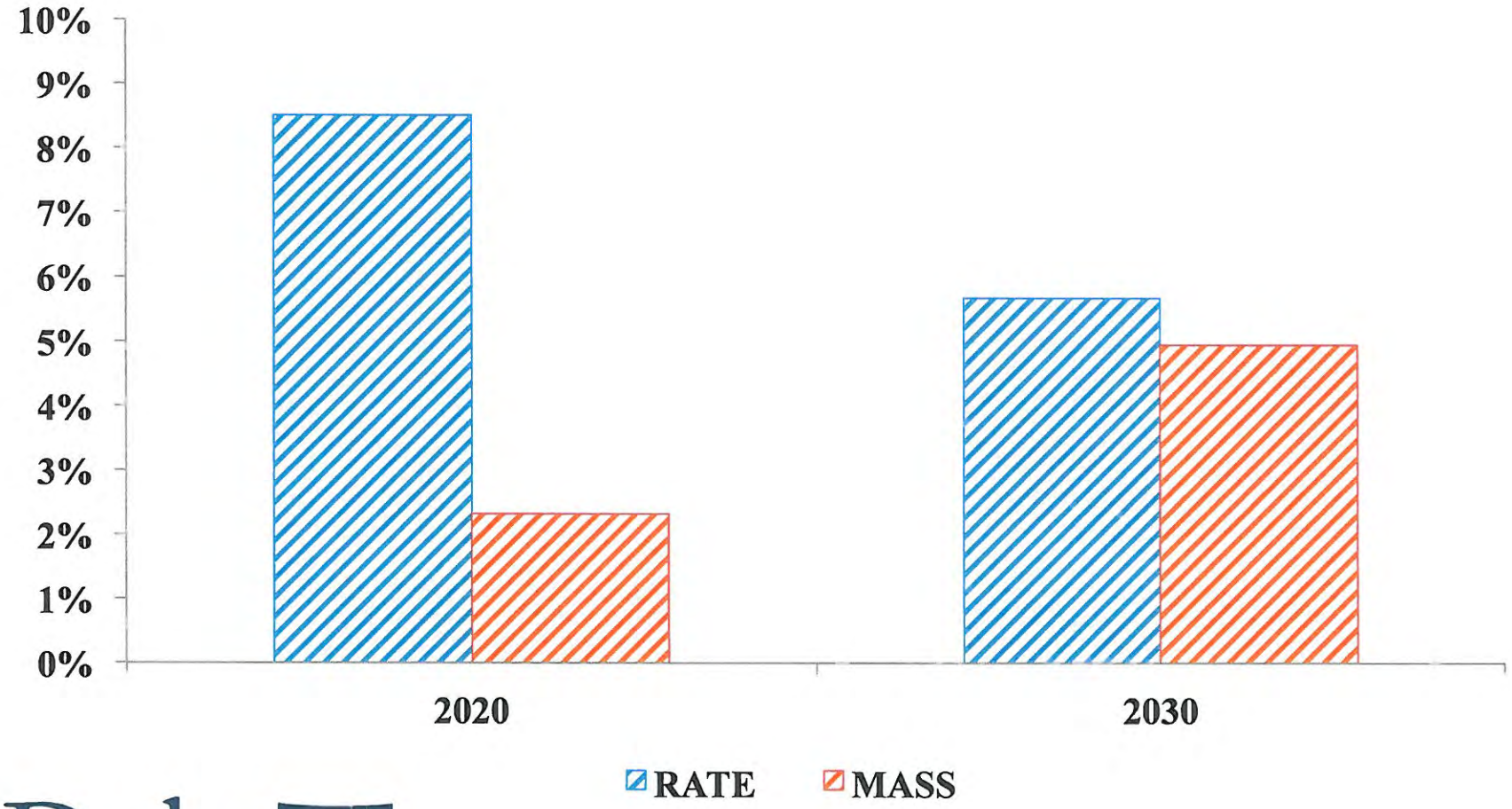
Compliance Costs for Southeastern States Using Rate and Mass-Based Approach



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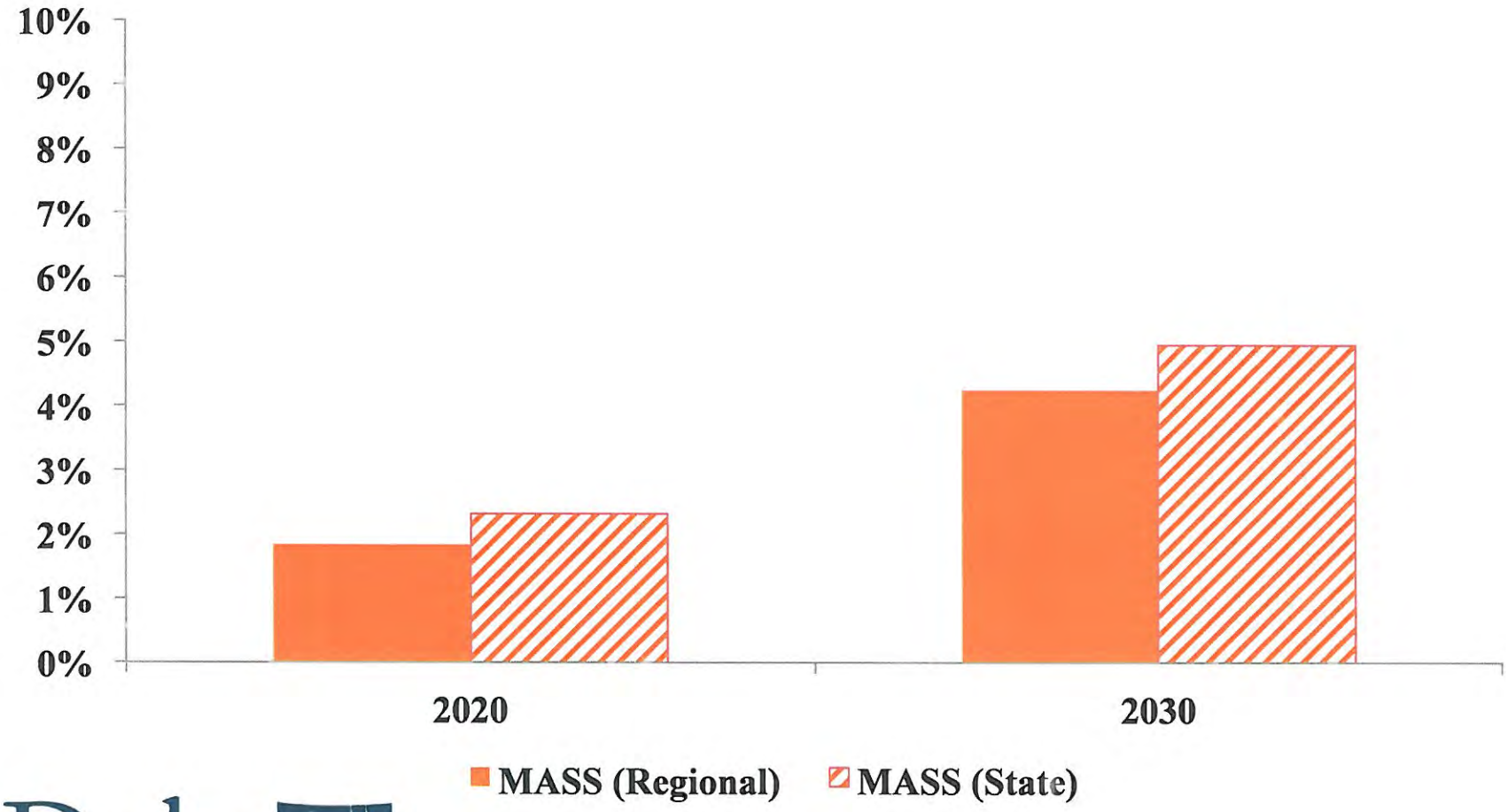
Compliance Costs with Added Flexibility of Regional Trading



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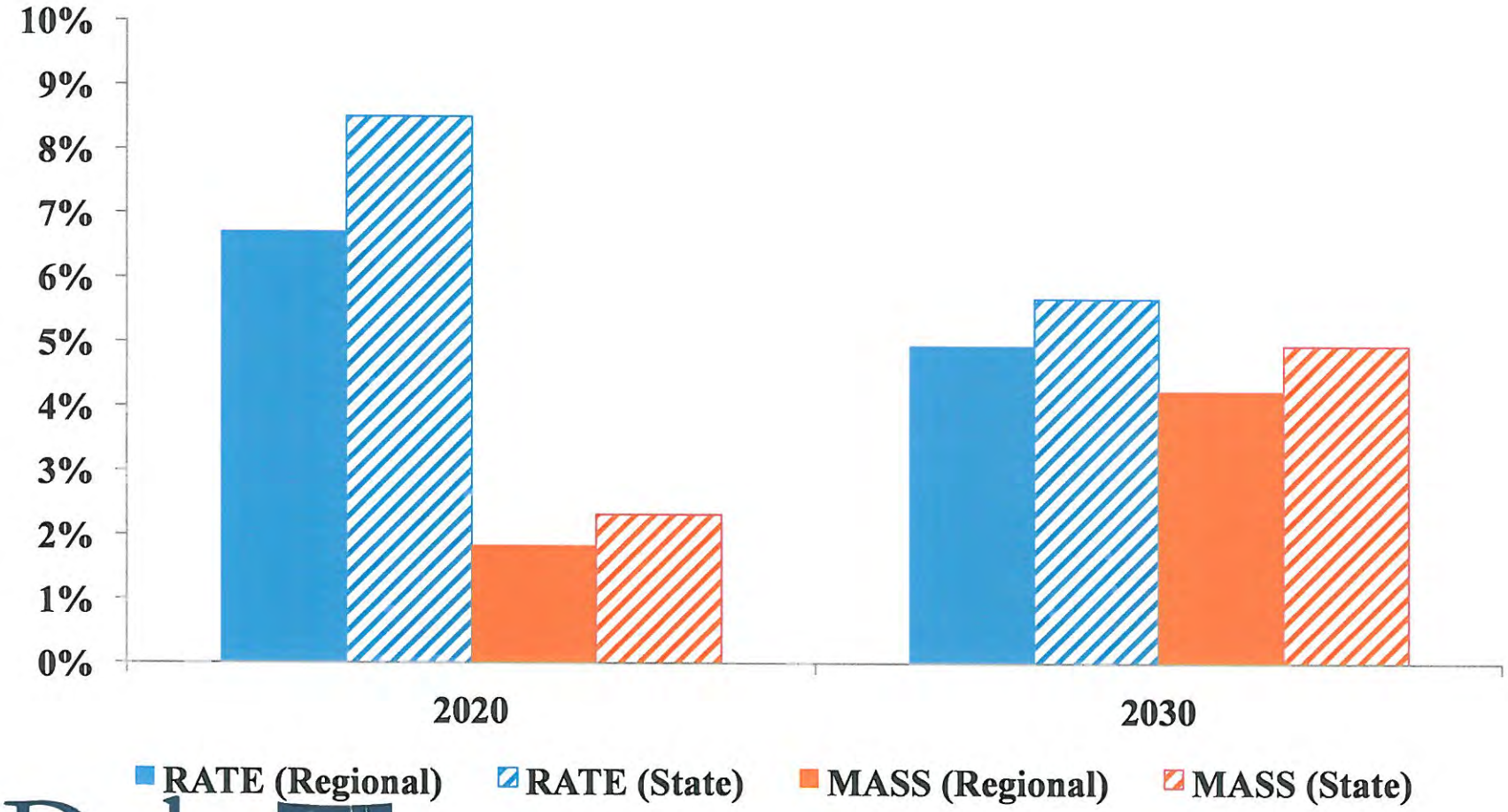
Southeastern Compliance Cost Increases from Four Scenarios



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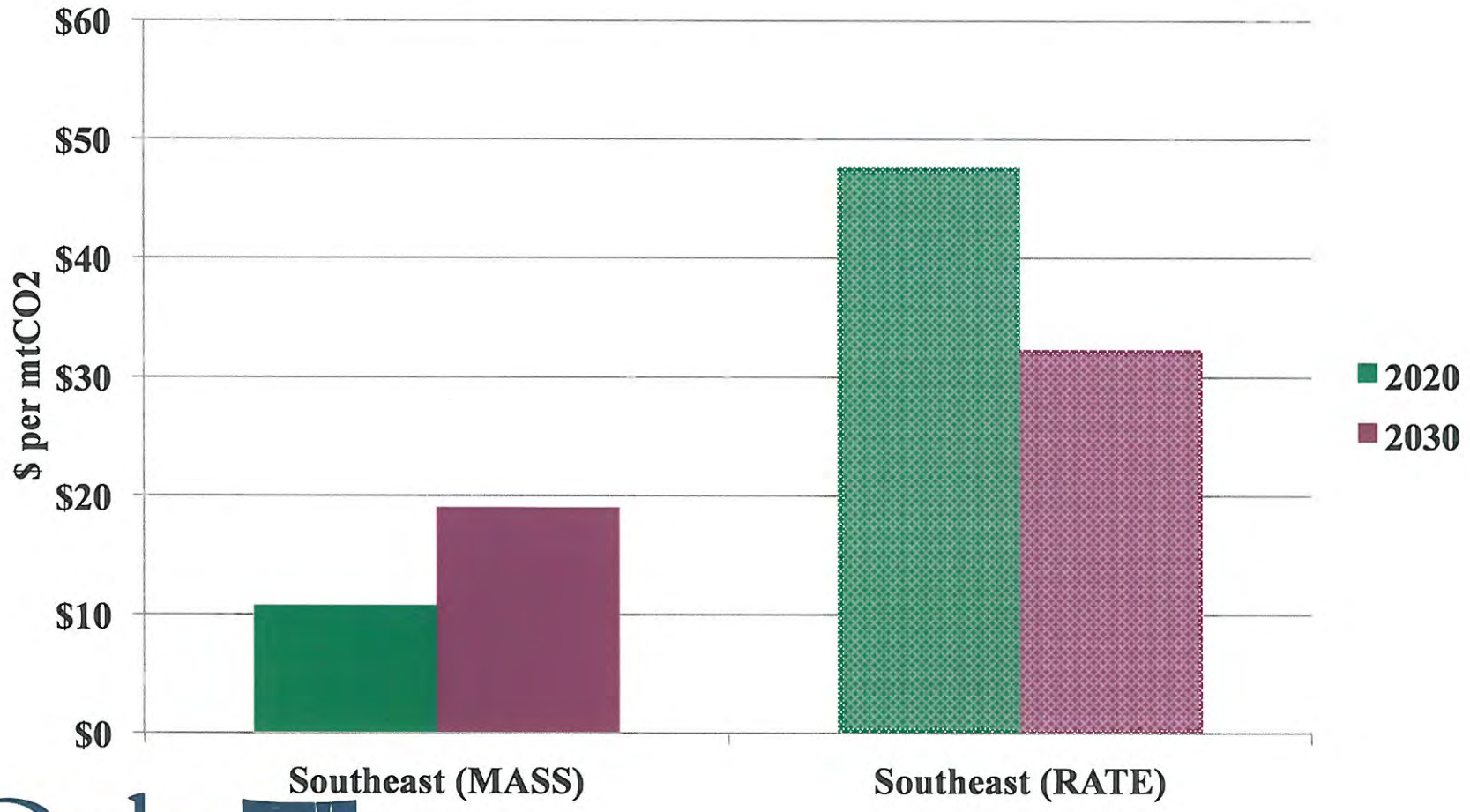
Significant Amount of Value Tied up in Mass-Based



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Thank You

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Additional Slides

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Important Policy Considerations

- Rate-based Trading
  - Units below the emissions rate goal are "subsidized" by being able to sell allowances for each hour they generate
  - Units above the emissions rate goal are "taxed" by needing to buy allowances from units generating below the goal
  - It is usually assumed that these interactions occur within the industry
    → no opportunity for states to raise revenue by selling allowances
- Mass-based Trading
  - All units are "taxed" in proportion to their emissions through needing to purchase allowances (unless they are grandfathered to the units)
  - If the state retains ownership of the allowances, they can raise a substantial amount of revenue through sales, but electricity bills may be higher unless revenue is used to lower utility costs or subsidize efficiency
  - A mass-based approach adds flexibility
    → lower costs
    → coal plants are cheaper to operate and will run more

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Allowance Prices: What to Look For

1) Variation in mitigation opportunities across states, shown by differences in allowance prices (policy costs on the margin) or costs per ton of CO2, indicates the potential for gains from coordination
2) Allowance prices under mass-based tend to rise towards 2030 as the added flexibility allows states to shift costs farther out in time
3) Including new NGCC in a rate-based approach lowers allowance prices while raising total costs. It also results in the highest wholesale electricity prices
4) The annual value, or potential revenue, of allowances under a mass-based system range from $300 million to more than $1 billion for states in the Southeast

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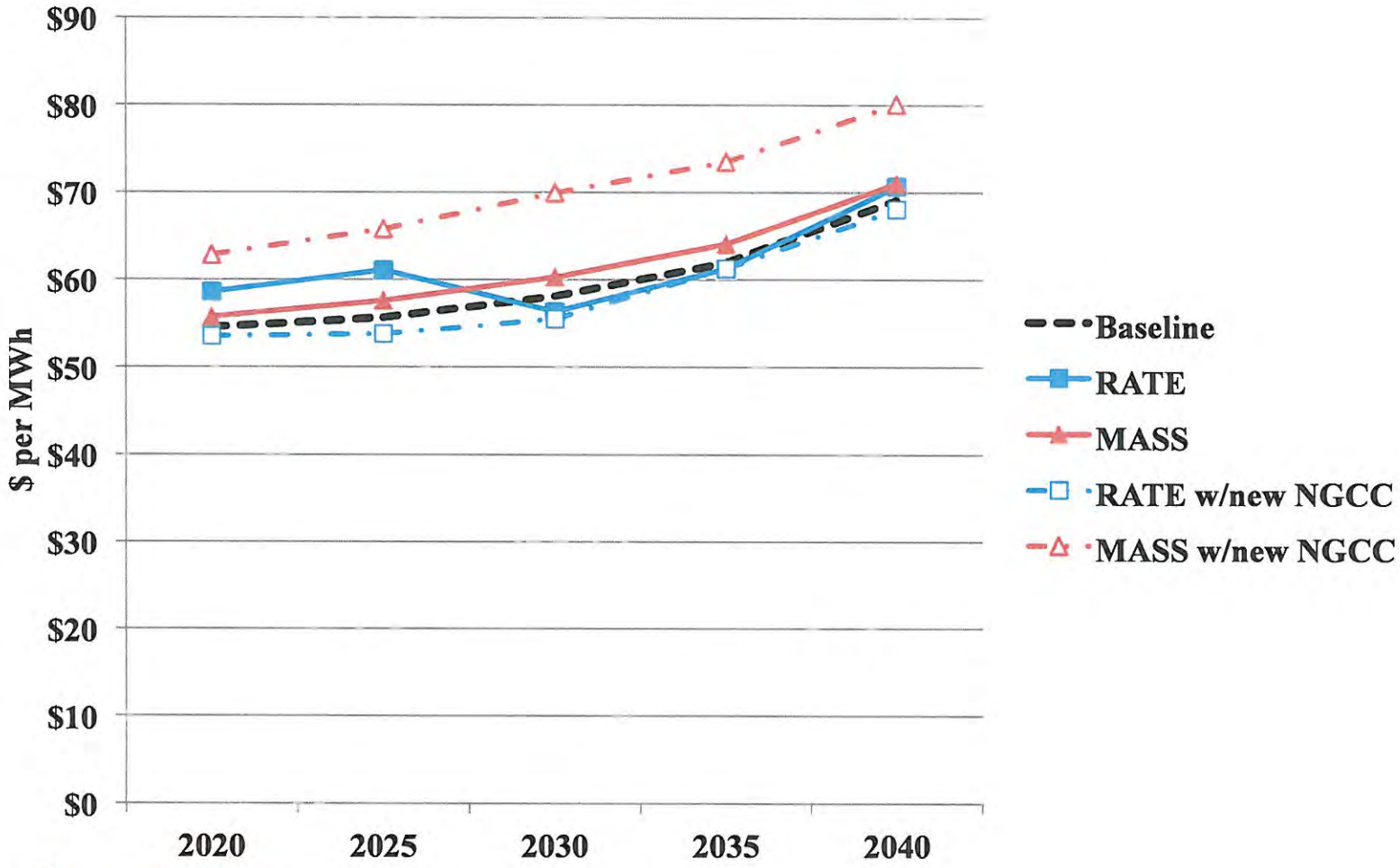
Wholesale Electricity Costs

(Southeast average)



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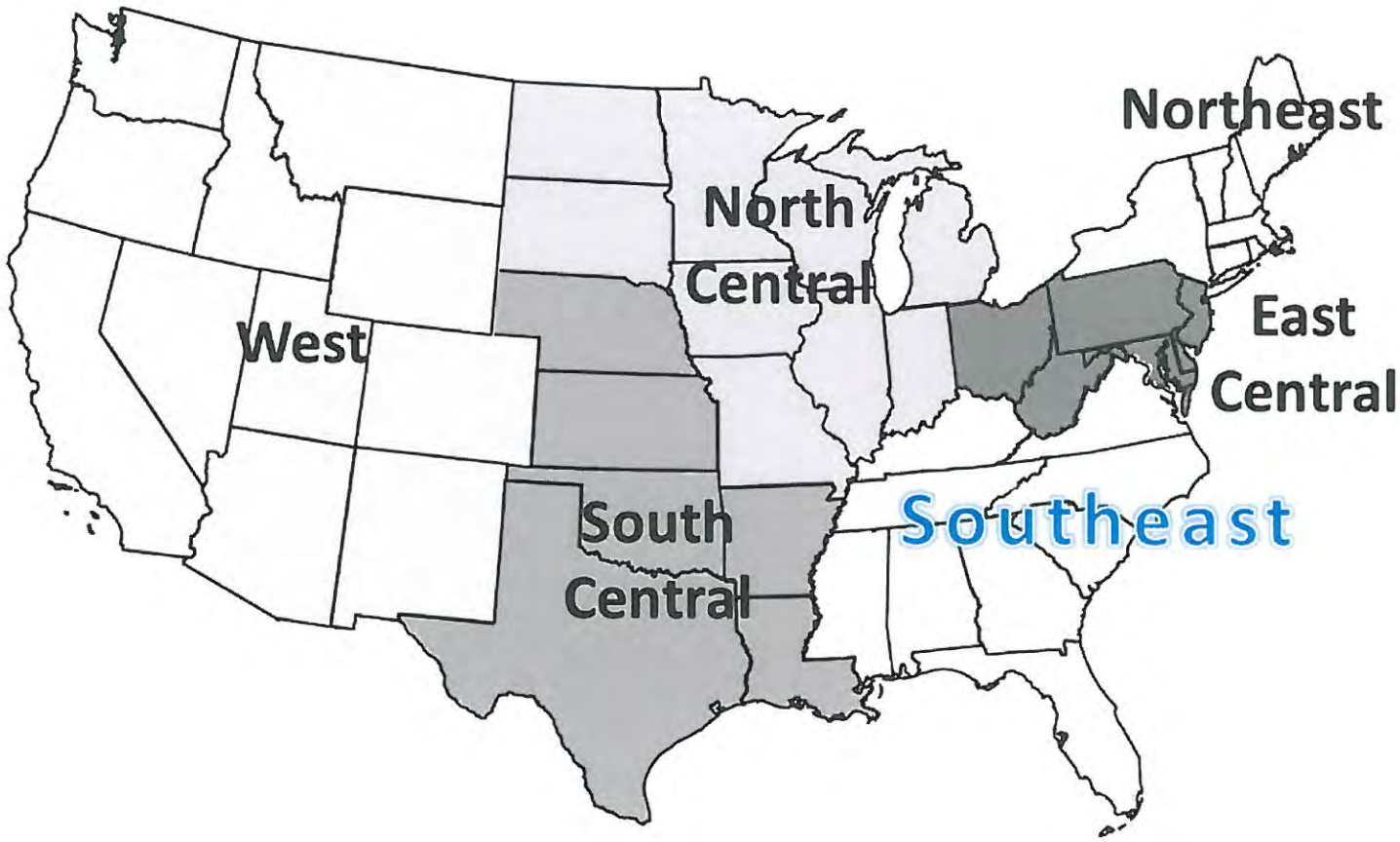
State Groupings for Regional Trading



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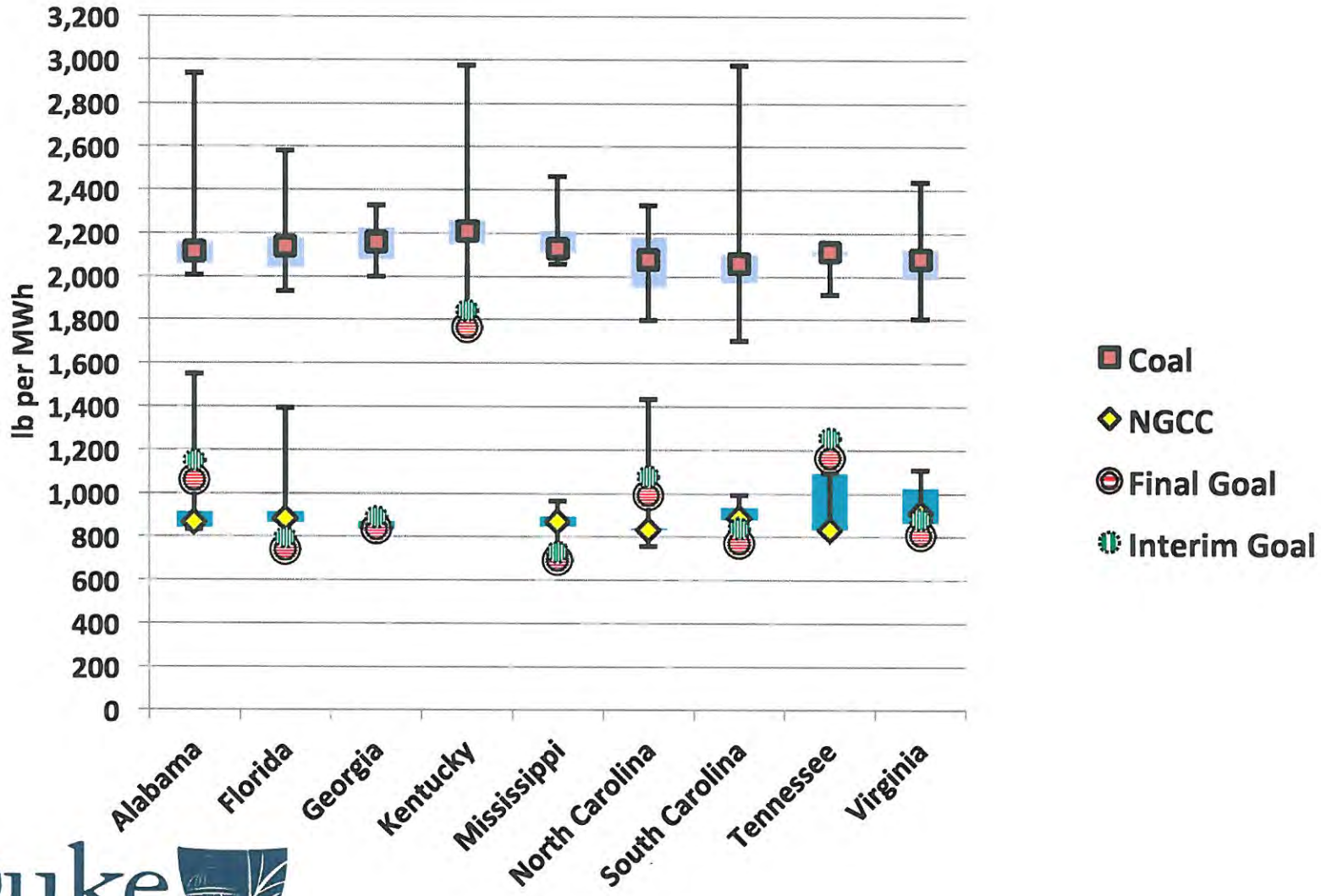
Emissions Rates in the Southeast



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What to Expect (or Not) from Any Electricity Dispatch Model

- What they do:
  - Find the most cost-effective way of supplying electricity to the national grid over the entire forecast period of the model
  - Provide information on generation, capacity, utilization, investments in new units, retrofits, fuel use, emissions, allowance prices, costs, etc.
  - Helpful as guide to how policies may affect industry (estimate relative impacts for different policy options and important sensitivities)
- What they don't do:
  - Worry about stranded assets or other financial issues around past borrowing
  - Estimate retail electricity prices or (usually) changes in electricity demand
  - Know how fast it is feasible to build new generating units
  - Other real-world issues (e.g., uncertainty, some aspects of reliability, site issues)
  - Issues/costs outside of electricity (gas pipelines, Smart grids, aging infrastructure)
  - Non-economic reasons to keep specific units running

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