

Energy Efficiency Considerations for State Compliance Plans

Barriers and Solutions: Strategies for
Effectively Leveraging Energy Efficiency as an
Environmental Compliance Tool



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About This Resource Paper Series

Energy efficiency is widely recognized as a cost-effective, rapidly deployable resource for air pollution reductions from the electric sector. However, with the release of the U.S. Environmental Protection Agency’s (EPA) proposed Clean Power Plan (CPP) in June 2014, southeastern states and utilities have voiced concerns regarding a number of barriers and challenges to using energy efficiency as a pollution control strategy within state compliance plans, both under existing air programs and forthcoming regulations, such as the CPP, once finalized (expected in August 2015). This SEEA Resource Paper Series identifies resources, strategies and solutions to help states and utilities address these barriers and effectively utilize energy efficiency as a compliance strategy, where appropriate and cost-effective.

Disclaimer

SEEA recognizes that the EPA is finalizing the CPP; many unknowns exist until the final guidelines are released. The materials provided on the [SEEA Clean Power Plan web portal](#), along with the resources and discussion contained in this Resource Paper are provided for informational purposes only, and do not constitute legal advice. Contact your attorney for advice with respect to any particular legal issue.

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I. Executive Summary

EPA's proposed Clean Power Plan (CPP), released in June 2014, articulates a variety of policy options and compliance approaches, including energy efficiency measures, which may be utilized in meeting state emissions reduction targets. This spectrum of compliance approaches is intended to preserve state flexibility in meeting compliance obligations at least cost. Southeastern stakeholders, including regulators, utilities and others, have voiced questions, concerns and preferences regarding compliance plans. These priorities and considerations will guide state compliance pathway design, defining the role of energy efficiency in CPP implementation across the Southeast.

In developing a compliance plan, states have a wide spectrum of “decision points” that will define the state plan structure, inherent level of flexibility and overall approach to incorporating compliance options, including energy efficiency.

A. Who Is Responsible for Achieving Emissions Limits?

State plans must identify entities responsible for compliance and other obligations, and include mechanisms for demonstrating compliance and reporting obligations met under the plan.

States may choose to hold EGU owners and operators responsible for achieving emissions reductions, in which case states must decide how to assign emission reduction goals among them. States may also assign compliance obligations to other entities under a “portfolio approach”. Finally, EPA has suggested the use of a “state commitment approach.” Under this approach, a state would develop two plans: one set of measures for which the state itself commits results, and a comprehensive backstop mechanism that would be implemented if the measures included in a state plan did not achieve their intended results. This approach may be appealing to states considering comprehensively incorporating energy efficiency into their compliance plans because it has the potential to shield individual actors from enforcement actions.

B. What Measures Count Toward Compliance?

Within the energy efficiency space, a variety of opportunities – both utility- and government-driven, as well as market-based – are available to states. These include ramping up utility energy efficiency programs, fostering new markets for energy efficiency technologies, pursuing demand-side management and behavioral programs, boosting appliance standards, incorporating building energy codes and improving utility resource planning practices. More detail on these options is provided in *Implementing EPA's Clean Power Plan: A Menu of Options*, a publication recently released by the National Association of Clean Air Agencies (NACAA).

Energy efficiency options can provide significant flexibility to states in compliance plans and may lower the compliance costs, although they may also present additional considerations related to administration and enforcement.

C. What Form Will Emissions Reduction Goals Take?

EPA originally set state goals as an emissions performance rate, measured in pounds of CO₂ per megawatt hour; however, EPA also proposed an option for states to convert the rate goal to a mass-based emissions cap, measured in tons of CO₂. A rate-based goal constrains carbon emissions relative to the gross amount of electricity generated by affected EGUs, while a mass goal simply limits the total CO₂ emissions from affected units in a state plan. The decision to take a rate- or mass-based approach influences how energy efficiency is incorporated into a state plan.

States can take advantage of market-based compliance approaches under both mass-based and rate-based plans. Market-based approaches could take a number of forms under EPA's proposed CPP, most of which can incorporate energy efficiency in some manner. For example, state plans can establish tradable emissions credits for electricity demand reductions generated by energy efficiency and demand response programs.

Each approach presents unique challenges and opportunities. For instance, a rate-based goal may better accommodate growth; however, with regard to energy efficiency, it requires an EM&V plan to inform crediting. On the other hand, a mass-based approach may provide more certainty for planning purposes because it would give states a clear amount of emissions available to assigned entities. Additionally, the methodology for converting a rate-based target to a mass-based target is an area where states have requested additional guidance and technical support from EPA, and is likely to be further defined in the final rule.

D. Where Can Compliance Actions Occur?

States may choose to “go it alone” or to work with other states to develop multi-state compliance plans. Recent discussions in the Southeast have focused on hybrid approaches, referred to as “common elements” or “trading-ready” approaches, in which states largely retain their autonomy, but engage to a limited degree with other states through shared compliance units and tracking infrastructure. This approach may prove appealing as a vehicle to develop consistent, uniform protocols for crediting energy efficiency across the region, which may be leveraged in a multi-state plan at a later time.

In determining what level of coordination to undertake with other states, states must consider state law or policy limitations that might influence or even dictate coordination with other states. States may wish to consider the implications of taking a single-state approach at the outset; however, despite the relative simplicity of this approach, it may limit the economic efficiency of overall compliance.

Under some variety of multi-state approaches, broad regional collections of states will face fewer market-distorting issues across borders. Problems concerning “who gets credit” for emission reductions attributable to energy efficiency, which can be delivered by a range of market actors, can also be mitigated if states participate in a regional compliance plan.

States may wish to consider beginning conversations with neighboring states on potential agreements regarding methods for accounting for energy efficiency crediting early on in the state planning process.

E. How Are Emissions Reductions from Energy Efficiency Measures Measured and Tracked?

The inclusion of energy efficiency programs and measures in state plans raises additional considerations for states regarding how to credit demand reductions toward compliance. Per EPA’s guidance, emissions standards in state compliance plans must be quantifiable, non-duplicative, permanent, verifiable and enforceable. State plans must describe how the emissions standard has these characteristics, recognizing the non-traditional nature of some potential compliance measures.

There are significant benefits related to the adoption of clear, consistent EM&V protocols. Uniform EM&V protocols make the determination of savings for energy efficiency programs more consistent and increase the credibility of savings estimates, which helps stakeholders manage various types of uncertainties associated in the execution of energy efficiency programs and provide confidence that energy efficiency goals are being met. Furthermore, increased consistency simplifies the comparison of savings resulting from similar energy efficiency measures in different jurisdictions; this supports the development of best practices and program benchmarking, in addition to multi-state and “common elements”) compliance approaches.

Energy efficiency registries could provide a consistent framework for tracking and verifying savings from energy efficiency measures, and constitute a critical component of the market infrastructure needed to fully maximize the low-cost and job creation benefits of energy efficiency.

Tracking systems can provide a reliable, credible system that tracks information that can be used by state administrators. Tracking systems are used to track and verify use of credits, and the data they produce could be used to generate reports that demonstrate compliance under a plan.

F. Conclusion

Southeastern states have diverse electricity sectors, market actors and generation mixes. In terms of meeting compliance obligations under EPA’s proposed Clean Power Plan, there is no “one size fits all” approach. States will need to consider local conditions and state priorities in determining the approach that is best suited to their unique circumstances, including how energy efficiency can best support least-cost compliance.

II. Introduction

A. Energy Efficiency Is Ramping Up in the Southeast

Many states, utilities, businesses and consumers in the Southeast are ramping up energy efficiency activities that reduce demand, manage energy costs and promote economic growth. These activities range from industry adoption of energy-efficient technologies and government lead-by-example programs to utility-administered program offerings and initiatives to enhance compliance with building energy codes. Along with demand reductions, these energy-efficiency activities can reduce emissions from fossil fuel-fired electric generating units (EGUs). As a result, energy efficiency is a core element of current conversations regarding the regulation of carbon dioxide (CO₂) and other pollutants produced by EGUs.

B. States Have a Range of Options in Determining Clean Power Plan Compliance Approaches

EPA's proposed Clean Power Plan (CPP), released in June 2014, articulates a variety of policy options and compliance approaches, including energy efficiency measures, which may be utilized in meeting state emissions reduction targets. This spectrum of compliance approaches is intended to preserve state flexibility in meeting compliance obligations at least cost.¹ In developing a compliance plan, states have a wide spectrum of "decision points" that will define the state plan structure and inherent level of flexibility, including the following:

- **Who** is responsible for achieving emissions limits;
- **What** measures count toward compliance;
- **What form** emissions reduction goals will take;
- **Where** compliance actions can occur; and
- **How** emissions reductions from energy efficiency measures are measured and tracked.²

While certain policies may be more conducive to incorporating energy efficiency than others, energy efficiency can play a role in achieving compliance more cost effectively across most compliance approaches. This paper approaches the considerations that many southeastern states will likely take into account as they evaluate how energy efficiency may support compliance under the proposed CPP.

C. EPA Has Articulated Specific Criteria for Approving State Plans

EPA must approve state plans; if a plan does not meet its stated requirements, EPA has the authority to implement and enforce applicable Clean Air Act requirements through a Federal Implementation Plan (FIP) or portions of a plan under the Act.³ EPA will evaluate the sufficiency of each plan based on four general criteria:⁴

1. **Enforceability:** A state plan must contain **enforceable measures** that reduce CO₂ emissions from affected EGUs.
2. **Emissions Performance:** Measures in the plan must be projected to achieve emissions performance equivalent to or better than the applicable state-specific CO₂ goal on a timeline equivalent to that in the emissions guidelines.
3. **Quantifiable and Verifiable:** EGU CO₂ emissions performance under the state plan must be quantifiable and verifiable.
4. **Reporting and Implementation, Corrective Measures:** The state plan must include a process for state reporting of plan implementation at the level of the affected entity, CO₂ emission performance outcomes and, if necessary, implementation of corrective measures.

D. Southeastern Stakeholders Have Voiced Questions, Concerns and Preferences Regarding Compliance Plans

Southeastern stakeholders, including regulators, utilities and others, have voiced questions, concerns and preferences regarding compliance plans. These priorities and considerations will guide state compliance pathway design, defining the role of energy efficiency in CPP implementation across the Southeast.⁵ To identify common themes in the region regarding perceptions of energy efficiency in CPP compliance, SEEA conducted a survey across southeastern states. These considerations are discussed in Table 1, as follows.

Table 1.
Compliance Plan Considerations Articulated in Southeastern Comments to EPA

Theme	Generally Stated Preference
Compliance Costs	Least-cost options.
Equity	Fairness in distribution of compliance obligations and credit for reductions.
Administration and Enforcement	Minimal administrative burden.
Flexibility	Maximum flexibility.
Timing	“Glide path” allowing sufficient time for plan design and coordination.
Reliability and Regulatory Certainty⁶	Operation within the bounds of state and federal law, with consideration of regional electricity market structures and reliability constraints.
Evaluating and Tracking	Clear and practical standards.

Source: SEEA Clean Power Plan Comment Survey

III. State Plan Decision Points

Southeastern states have a wide range of options to consider and face a number of challenging questions in designing state compliance plans. This section walks through high-level considerations for states as they evaluate compliance strategies suitable to their unique local needs and conditions, in addition to the role of energy efficiency as a least-cost compliance resource.

A. Who Is Responsible for Achieving Emission Limits?

State plans must identify entities responsible for compliance and other obligations, and include mechanisms for showing compliance and obligations met under the plan. Under both single and multi-state plan formats, states must determine the level at which compliance will be applied. In other words, states must ultimately answer the question of who is responsible in the event that a compliance measure does not achieve required emissions reductions.⁷ The result of the failure of any given measure might result in penalties against an entity for non-performance, requirements to force corrective action(s) and/or a requirement for a regulated entity to make up any emissions reduction shortfall.⁸

It is important at the outset of the planning process to distinguish between entities directly responsible for achieving emissions reductions under a plan, and entities that may contribute to emissions reductions without being subject to enforceable action. Notably, plans that include energy efficiency measures may involve actors that have not historically been involved in achieving compliance with air regulations in the Southeast; for example, private sector energy service companies (ESCOs). Several possible approaches to assigning responsibility within a state plan are discussed below.

1. EGU-Only Approach

States may choose to hold EGU owners and operators responsible for achieving emissions reductions, in which case states must decide how to assign emission reduction goals among them. Goals may be assigned to individual units, across multiple units at a single facility, or across facilities within the plan territory (utility- or fleet-level bubbling). While this approach is comparatively simple to administer, a broader crediting framework would be necessary in order to allow for the inclusion of all potentially available end-use energy efficiency under this approach.

Emissions limitations could take the form of a rate-based goal or a cap on overall emissions. Under a utility rate approach, affected EGU owners and operators would be required to manage a certain rate across their portfolio. Assigning goal rates across units by portfolio or plant type could be a complex process in some states; however, it has the benefit of allocating effort differently for different portfolios or plant-types.⁹ Under a utility emissions budget approach, a plan would allocate a share of the state emissions budget to each utility or other unit owner. States could take a direct allocation approach or utilize an auction process to assign emission budgets.

EGU-Only Approaches		
Unit-by-Unit	Facility	Fleet-level Bubbling
Emissions targets assigned to individual EGUs.	Emissions targets assigned to individual facilities, which may contain one or more affected EGUs.	Emissions targets assigned across utility fleet. Fleets may contain one or more facilities, each of which may contain one or more affected EGUs.

2. Portfolio Approach

Consistent with the concept of allowing a broader array of strategies to achieve state emissions goals, states may also choose not to limit emissions reduction targets to EGU owners and operators, and to incorporate other entities and their associated actions within a state plan. This is referred to as the “portfolio approach.” For example, some states may be able to include non-utility energy efficiency measures under this approach, such as a municipal energy efficiency program. States must consider what entities might be responsible for achieving reductions under this approach, and EPA will be addressing some key questions regarding this approach in the final guidelines.¹⁰ In addition to emissions limits for affected EGUs, this approach could require states to open up entities other than affected EGUs to federal enforcement. This may be a deterrent for some states, and the state commitment approach, described below, provides a workaround to address this concern.¹¹

3. State Commitment Approach

As a subset of the portfolio approach, EPA introduced the concept of a “state commitment approach” in the draft CPP. Under a state commitment approach, a state would develop two plans: one set of measures for which the state itself commits results, and a comprehensive backstop mechanism that would be implemented if the measures included in a state plan do not achieve their intended results.¹²

This approach may be appealing to states considering comprehensively incorporating energy efficiency into their compliance plans because it has the potential to shield individual actors from enforcement actions. Because plans must include corrective actions for shortfalls, states should consider how such a requirement might be met in the event that the projected reductions associated with actions under “state commitment” strategies do not perform as expected.

4. Considerations for States

i. Reliability and Regulatory Certainty

As a first step, states must explore the kinds of planning actions they may be required to take under existing policy guidelines, as well as those that they are currently unable take. For example, many

southeastern air agencies are encouraged to coordinate regulatory policy across jurisdictions in their authorizing statutes.¹³ In some states, state law may not provide the authority for a state commitment approach, or it may even be precluded. States must further consider constitutional limitations related to interstate commerce and authority under the Federal Power Act.¹⁴

In answering the question of how to allocate emissions limitations across affected EGUs or other entities, states must also choose whether and how to address electricity market sector variation within their plan. Entities involved in the ownership and operation of EGUs in the Southeast generally fall into one of seven categories: investor-owned utility sector, federal and state sector, cooperative sector, municipal sector, marketer sector, merchant electricity generator sector and ISO-RTO sector. See **Appendix B** for additional information.

Power systems in the Southeast tend to be vertically integrated, where one utility handles the all functions of generation, transmission and distribution within a certain geographical area. However, this is not always the case. Multiple electricity sector market types often exist within a single state. For example, Arkansas has 33 electric utilities: four investor-owned electric utilities, 17 distribution cooperatives and one generation and distribution cooperative. All of these utilities are regulated by the Arkansas Public Service Commission (APSC). The state also has 11 municipal utilities that are not regulated by the APSC.¹⁵ Such variation should be considered by states in development of a plan.

ii. Equity and Compliance Costs

In the case that states decide to assign emission reduction obligations to affected entities, they may raise issues of equity and compliance costs. For example, emissions limitations placed on individual EGUs or facilities may impact the ability of a facility to continue to operate. If limits assigned to a unit or facility are too stringent and cannot be met through measures taken at the plant or actions available to plant owners and operators, the plant may face early retirement, or cause one facility to incur significantly higher operating costs compared to another, resulting in uneven competition. As such, states may want to consider the equity of assigning goals across utility fleets, depending on the state's power market structure and respective utility territories.

iii. Flexibility

When considering how to approach emissions limitations in a Section 111(d) compliance plan, states should keep in mind the significant flexibility afforded under Section 111(d) in contrast to Section 110 of the Clean Air Act. Under Section 111(d), states need not consider local air concentrations, and likely will be allowed to demonstrate compliance by averaging across the state's affected EGUs, or across multiple states in the case of a multi-state plan. This removes the significant burden of needing to model air concentrations in local areas, and allows efficiency measures from electricity users which can be traced back to the EGUs to count for credit. Rather than demonstrating a reduction in emissions within a particular geographical region, reductions can be measured at the source and then quantified according to EPA-approvable power system models.

This provides states significant flexibility with regard to not only how to apply emissions limitations to affected EGUs, but also to other entities, as outlined in Table 2 below, with the potential provide compliance margin toward emissions goals.¹⁶ This provides states significant flexibility with regard to not only how to apply emissions limitations to affected EGUs, but also to other entities, as outlined in Table 2 below, with the potential provide compliance margin towards emissions goals.¹⁷

Table 2. Compliance Plan Approaches

Approach¹⁸	Enforceable Entities
EGU-Only Approach	<p>Enforceable emissions limits would be applied to affected EGU owners and operators only:</p> <ul style="list-style-type: none"> • Unit-level limits • Facility-level limits • Fleet-level limits or utility-bubbling
Portfolio Approach	<p>In addition to EGU owners and operators, entities may include:</p> <ul style="list-style-type: none"> • Large industrial end-users • Local government programs • Third-party energy efficiency program administrators • Energy service companies (ESCOs) • Other non-EGU actors
State Commitment Approach	<p>May include (in addition to, or independent of, entities listed above):</p> <ul style="list-style-type: none"> • State building energy codes programs • State building energy efficiency lead-by-example programs • State energy efficiency procurement programs • Other state government entities able to make a commitment to achieve reductions

B. What Measures Count Toward Compliance?

1. A Variety of Energy Efficiency Compliance Options Exist

States have a number of options to explore in charting their path to compliance. If a state prefers not to achieve the level of performance estimated by the EPA for a particular Best System of Emission Reduction (BSER) building block used by EPA to set the state emissions guidelines, it can compensate for any shortfall through over-achievement in another block, or employ other compliance approaches not factored into

the state-specific goal at all.¹⁹ States have the flexibility to incorporate compliance approaches beyond EPA’s BSER building blocks in their plans.

Within the energy efficiency space, a variety of opportunities – both utility- and government-driven as well as market-based – are available to states. These include ramping up utility energy efficiency programs, fostering new markets for energy efficiency technologies, pursuing demand-side management and behavioral programs, boosting appliance standards, incorporating building energy codes and improving utility resource planning practices. More detail on these options is provided in *Implementing EPA’s Clean Power Plan: A Menu of Options*, a publication recently released by the National Association of Clean Air Agencies (NACAA).²⁰

Flexible Compliance Options Available to States	
Block 1	Heat rate improvements
Block 2	Natural gas re-dispatch
Block 3	Low- and zero -emitting generation
Block 4	Demand-side energy efficiency
Other Options (Efficiency-Related, Not Exhaustive)	<ul style="list-style-type: none"> • Establish savings targets for utilities • Foster new markets for energy efficiency • Pursue behavioral efficiency programs • Boost appliance efficiency standards • Boost building energy codes • Improve utility resource planning practices • Improve demand response policies and programs <p>Combined heat and power</p>

2. Considerations for States

Energy efficiency options can provide significant flexibility to states in compliance plans and provide pathways to lowering the cost of compliance, but may present additional considerations related to administration and enforcement.

i. Flexibility and Compliance Costs

The flexibility for states to “over deliver” in energy efficiency would effectively decrease reductions needed within other building blocks, and affords states the ability to design lower cost compliance strategies that are specific to state circumstances and needs. Additionally, the

availability of an expanded array of energy efficiency programs and measures, such as building energy codes and other non-utility energy efficiency programs, that go beyond the BSER building blocks introduces additional affordable compliance options for states.

ii. Administration and Enforcement

The inclusion of energy efficiency presents additional administrative and enforcement implications. In order to include energy efficiency in compliance plans, states must define a process for how to track, credit and report demand reductions that will be counted toward compliance. States must also develop a method to quantify energy savings for each energy efficiency program or measure included. Once a methodology for calculating energy savings is determined, the state plan must outline how energy savings will be translated into an emissions reduction impact number. This requires states to take a forward-looking approach and to further develop evaluation, measurement and verification (EM&V) plans specific to energy efficiency measures incorporated in a plan.²¹

The administrative component of these requirements may be significant for states with less experience dealing with technical considerations related to tracking, crediting and evaluating energy efficiency program and project performance. Nonetheless, states can learn from the past experience of others that have included energy efficiency in Section 110 compliance plans.²² In addition, many useful tools and resources exist to support such efforts, and are discussed in further detail below in **Section E**.

C. What Form Will Emissions Reduction Goals Take?

1. Rate-Based Versus Mass-Based Goals

EPA originally set state goals as a performance rate, measured in pounds of CO₂ per megawatt hour; however, EPA has also proposed an option for states to convert to a mass cap, measured in tons of CO₂.²³ A rate-based goal constrains carbon emissions relative to the gross amount of electricity generated by affected EGUs, while a mass goal simply limits the total CO₂ emissions from affected units in a state plan. The decision to take a rate- or mass-based approach is one that will influence how energy efficiency is incorporated into a state plan.

Under a mass-based plan, states must convert the rate-based goal into a tonnage cap.²⁴ States must then decide how to allocate emissions across affected entities over the compliance period. Under a mass-based regime, energy efficiency would not be explicitly credited, but inherent in emissions from covered units. In other words, energy efficiency could contribute to emissions reductions at an EGU by reducing demand for electricity at that source, thereby reducing the level of emissions that would otherwise be produced. With this approach, efficiency would inherently reduce emissions at affected sources without the need for separate measurement and quantification for efficiency efforts. States could utilize existing planning processes such as Integrated Resource Planning (IRP), energy efficiency ratemaking at the utility

commission level and other policies to support state goals without explicitly including them within state plans submitted to EPA.

Under a rate-based plan, where rate-based emissions limits are applied to EGUs, energy efficiency could be credited to EGUs as emissions rate adjustment, or it could be credited to EGUs or to an energy efficiency project if the state sets up a “credits desk” where energy efficiency project proponents can seek credits via a tradable crediting or state-assigned crediting framework. Credits desks can be designed to function under a variety of regulated entity frameworks, and may make it easier for non-utility energy efficiency providers to convert their projects into credits for participation in markets.

Under this concept, credits could be issued by the state or another entity through a crediting mechanism. If a state chooses to apply the EPA-determined state goal rate across all existing affected EGUs under the plan at the outset, states may not have to allocate credits amongst different units and entities. EPA or states implementing this or any rate-based approach could develop protocols and mechanisms for adjusting emission rates to reflect energy efficiency, renewables and other credited activities.

Table 3. Energy Efficiency Under Mass- and Rate-Based Goals

Mass-Based Goal	Rate-Based Goal
Compliance is measured in overall emissions, so no crediting mechanism is needed for energy efficiency.	States must develop an energy efficiency crediting mechanism.
No EM&V plan is required for energy efficiency measures.	An EM&V plan is required for energy efficiency measures.
States must accurately project demand growth for the duration of compliance period, and risk constraining the market in the event that demand exceeds projections.	The absence of a hard cap allows for growth.

2. Market-Based Approaches

Whether a state opts for a rate-based or mass-based goal, it can take advantage of energy efficiency in market-based approaches.²⁵ Market-based approaches could take a number of forms under EPA’s proposed CPP, most of which can incorporate energy efficiency in some manner.²⁶ For example, state plans can establish tradable emissions credits for electricity demand reductions through energy efficiency and demand response programs.

One option under a mass-based approach with market trading is for a state plan to establish a state limit on total emissions, create credits equal in number to the tons of emissions in the emissions limit and distribute the emissions credits to EGU operators and other market participants through an auction

system or direct allocation. EGU's would then turn in a credit for each ton of emissions produced during a given compliance period.

Under a rate-based approach in a market system, EGU's that operate below the prescribed rate would earn credit that other EGU's in need of additional reductions could procure. A regional emissions rate approach would place all units in the region on a level playing field (with a uniform credit price), while state-by-state implementation or different state rates could result in uneven competition, as mentioned in **Section A** above.²⁷

Infrastructure for mass-based trading exists for other air pollutants; examples include the Acid Rain Trading Program, the Regional Greenhouse Gas Initiative and the California Cap-and-Trade Program. In addition, there are ten regional renewable energy certificate (REC) tracking systems in operation in the U.S., which provide a useful model that can be upgraded to track and credit energy efficiency under market-based approaches.²⁸

3. Considerations for States

Each goal approach presents unique challenges and opportunities. For instance, a rate-based goal may better accommodate growth; however, with regard to energy efficiency, it requires an EM&V plan to inform crediting. On the other hand, a mass-based approach may provide more certainty for planning purposes because it would give states a clear amount of emissions available to assigned entities. Additionally, the methodology for converting a rate-based target to a mass-based target is an area where states have requested additional guidance and technical support from EPA, and is likely to be further defined in the final CPP.

i. Compliance Costs

Many states have expressed concerns about how to accurately account for energy demand growth under a mass-based goal conversion formula. States do not want to create a mass-based cap that does not fully account for growth in the state, which could increase compliance costs if demand growth exceeds projections used by the state to convert to a mass cap in the plan. Some stakeholders have proposed that a mass-based budget might be adjusted up or down at regular intervals based on actual growth; however this remains to be decided in the final rule.

ii. Administration and Enforcement

Pursuing a market-based approach in coordination with other states may raise economic, administrative and political concerns for some states.²⁹ The benefits of such programs should be assessed by states as they evaluate options and discuss approaches with policy makers.

D. Where Can Compliance Activities Occur?

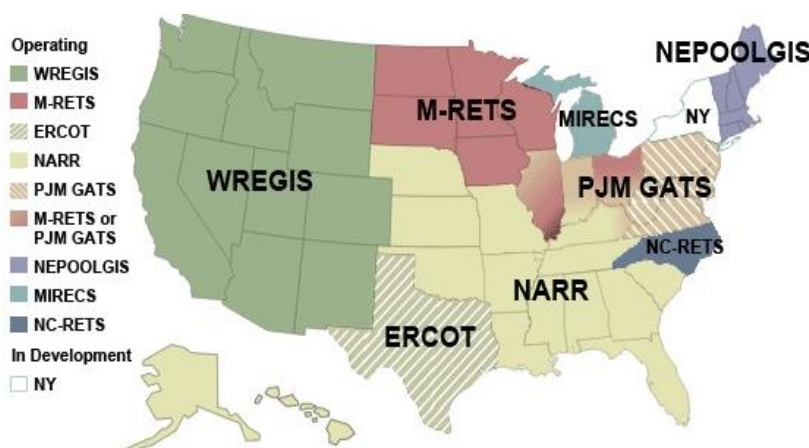
1. Single-state, Multi-state and Hybrid Approaches

States may choose to “go it alone” or to work with other states to develop multi-state compliance plans. Recent discussions in the Southeast have focused on hybrid approaches, in which states largely retain their autonomy, but engage to a limited degree with other states through shared compliance units and tracking infrastructure, for example – a method the Western Interstate Energy Board calls a “modular approach”³⁰ and the Midcontinent States refer to as the “trading ready.” In the Southeast, Duke University’s Nicholas Institute refers to this as a “common elements approach.”³¹ This approach has proven appealing as a vehicle to develop consistent, uniform protocols for crediting energy efficiency across the region, which may be leveraged in a multi-state plan at a later time.³²

Because carbon emissions are additive, under a mass-based multi-state plan, states would work together toward the achievement of a common emissions reduction goal representing the sum of the reductions required in participating states. Under a rate-based multi-state approach, proposed state plans would need to meet an average of rates from participating states. A regional emissions rate approach could place all units in the region on a level playing field while state-by-state implementation or different state rates could result in uneven competition.³³

Multi-state plans would require states to coordinate on crediting and tracking of reductions. EGUs have been reporting carbon emissions for some time; however, while carbon emissions reporting is standardized across states, crediting is not. Existing renewable energy certificate (REC) tracking systems provide a useful example for states considering a rate-based multi-state approach.

Figure 2. REC Systems Operating in the U.S.



Source: Cadmus (2015).

2. Considerations for States

In determining what level of coordination to undertake with other states, states must consider state law

or policy limitations that might influence or even dictate coordination with other states.

Fundamental to any understanding of state planning approaches in the region, states must keep in mind that utility resource planning does not follow state territory lines.³⁴ Because electricity flows across state lines and many utilities operate across territories that are not limited by state boundaries, energy-efficiency actions that take place in one state may have beneficial electricity demand reduction impacts in another. As a result, in the absence of a coordinated approach, state goals and crediting of energy efficiency may not be aligned from one state to the next.

i. Timing and Compliance Costs

States may wish to consider the implications of taking a single-state approach at the outset. Despite the relative simplicity of this approach, it may limit the economic efficiency of overall compliance. Modeling results of regional versus state-by-state compliance approaches by the EPA, Nicholas Institute³⁵ and Georgia Tech³⁶ suggests that significant cost reduction benefits exist for a coordinated, multi-state approach. In addition, states can benefit from flexibilities provided by EPA for multi-state approaches, which provide additional time for planning. However, if the additional time is still not enough to properly develop a multi-state plan, the “common elements” approach may provide a useful alternative.

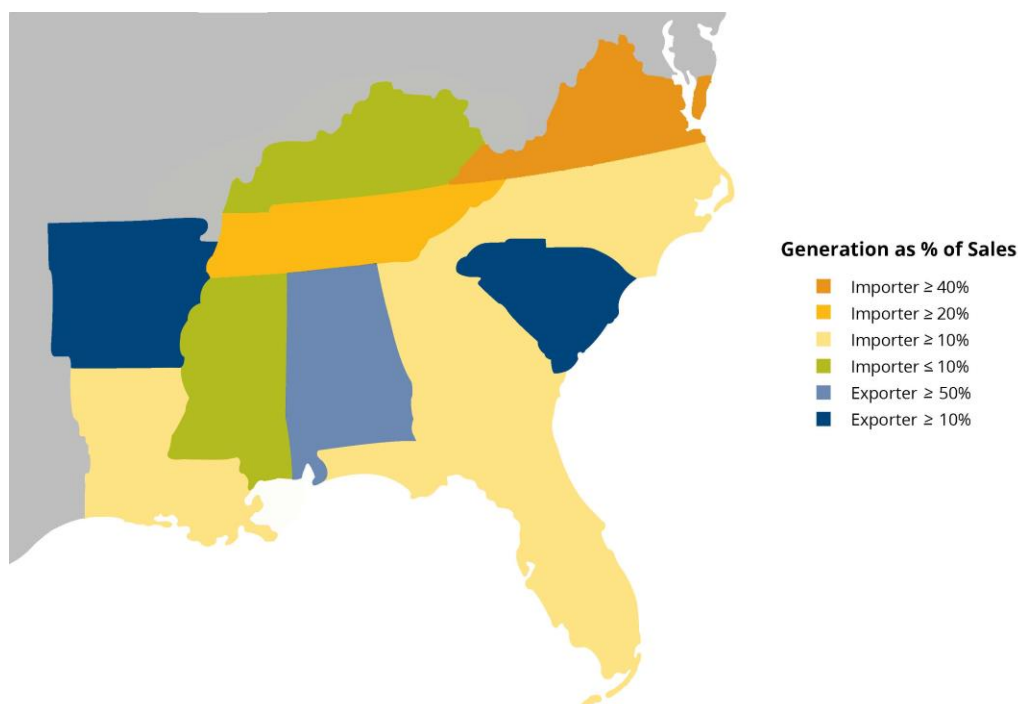
ii. Equity, Reliability and Regulatory Certainty

Under some variety of multi-state approaches, broad regional collections of states will face fewer market-distorting issues across borders.³⁷ Problems concerning “who gets credit” for emission reductions attributable to energy efficiency, which can be delivered by a range of market actors, can also be mitigated if states participate in a regional compliance plan.³⁸

Cross-state coordination will be necessary to address state concerns regarding the equity of energy efficiency crediting between importer and exporter states. By the terms of EPA’s draft CPP, in cases where a state plan operates in the absence of an agreed crediting framework between states, an energy efficiency action taken in an importer state may be less valuable as a creditable emission reduction as the same action taken within an exporter state. This is because the CPP proposes discounting the amount of energy efficiency credit a state can take relative to the portion of electricity it imports. In other words, a megawatt hour saved in a state that imports half of its electricity may only be counted as half a megawatt hour by EPA. In fact, the credit available from efficiency savings would be less valuable than in any other state with a higher ratio of generation to sales – a misalignment that many southeastern stakeholders noted in their comments to EPA.

Three of the eleven states in the SEEA territory were exporter states in 2012. However, this is projected to change, even in the absence of the CPP, over the duration of the compliance period, and may not be useful for state planning purposes. Nonetheless, it illustrates the variation between states.

Figure 3. Importer and Exporter States in the Southeast (2012)



Data source: EPA June 2014 Goal Setting TSD.

States may wish to consider beginning conversations with neighboring states on potential agreements regarding methods for accounting for energy efficiency crediting. The NARUC EISPC *Guide for Regional Coordination* provides a template Memorandum of Understanding (MOU) as a starting point.³⁹

E. How Are Emissions Reductions from Energy Efficiency Measured and Tracked?

As mentioned above, the inclusion of energy efficiency programs and measures in state plans raises additional considerations for states regarding how to credit demand reductions toward compliance. Per EPA’s guidance, emissions standards must be quantifiable, non-duplicative, permanent, verifiable and enforceable measures.⁴⁰ State plans must describe how the emissions standard has these characteristics, recognizing the non-traditional nature of some potential compliance measures.⁴¹

An emission standard is quantifiable if it can be reliably measured using technically sound methods in a replicable manner. In order to include an energy efficiency program or measure in a state plan, states must develop a protocol to quantify energy savings. Methodologies must be developed that are appropriate for each type of energy efficiency measure included in the plan.⁴² Once a methodology for calculating energy savings is determined, the state plan must outline how energy savings will be translated

into an emissions reduction impact number.

Under a rate-based plan, where rate-based emissions limits are applied to EGUs, energy efficiency is credited to EGUs as emissions rate adjustment or to an eligible energy efficiency project proponent, via tradable credits or state-assigned crediting framework. States including energy efficiency in plans through this method will be required to develop an EM&V plan for each energy efficiency program and measure. EPA has committed to releasing additional guidance on acceptable EM&V strategies.

In order to include an energy efficiency program or measure in a state plan, states must develop a method to quantify energy savings. Protocols must be developed that are appropriate for each type of energy efficiency measure included in the plan.⁴³ Once a methodology for calculating energy savings is determined, the state plan must outline how energy savings will be translated into emissions reductions.

Under a rate-based plan, where rate-based emissions limits are applied to EGUs, energy efficiency might be credited to EGUs as an emissions rate adjustment, via tradable credits or state assigned crediting framework.

1. Uniform EM&V Protocols

There are significant benefits related to the adoption of clear, consistent EM&V protocols. Uniform EM&V protocols make the determination of savings for energy efficiency programs more consistent and increase the credibility of savings estimates, which helps stakeholders manage various types of uncertainties associated in the execution of energy efficiency programs and provide confidence that energy efficiency goals are being met. Furthermore, increased consistency simplifies the comparison of savings resulting from similar programs in different jurisdictions; this supports the development of best practices and program benchmarking, in addition to multi-state compliance approaches.

Clearly identifying the parameters used in measuring and calculating the results of energy efficiency programs allows administrators to set EM&V data requirements early on, which improves alignment between implementation and evaluations and provides regulatory certainty.⁴⁴

2. Registries

Registries can serve as a flexible and transparent tool for certifying the creation of energy efficiency demand reductions and credits. As suggested in NARUC's *Principles for Incorporation of Energy Efficiency in 111(d) Plans*,⁴⁵ states may be given the option to choose to develop or participate in a voluntary registry to establish a transparent data repository for energy efficiency projects or activities. A registry can provide clear attribution and ownership of energy savings and be used by a state(s) to perform audits and assure credibility of savings and emission reduction claims. The Climate Registry is one example of a voluntary registry platform.⁴⁶ Registries can be designed to allow a variety of entities to participate, thus broadening the potential for energy efficiency options under a plan.

3. Tracking Systems

Tracking systems can provide a reliable, credible system that tracks information that can be used by state

administrators. Tracking systems are used to track and verify use of credits, and the data they produce could be used to generate reports that demonstrate compliance under a plan.

Tracking systems create unique serial numbers for credit certificates. Users have unique accounts within the trading system that allow them to participate. Once a certificate is traded and used within the system, it is retired. This allows states to avoid double-counting of credits to meet a mandatory goal. Generator, size, date created, facility name and program eligibility information are among the data points that tracking systems typically capture. In order to most effectively leverage existing infrastructure, states can work with registries to tailor the kind of information that would need to be captured for reporting under a state plan and incorporate that into a tracking system.⁴⁷

Tracking systems acknowledge that credits work across state lines. By relying on tracking systems as a method to track generation and use of credits, states can get information on the status of credits generated and used within other states. Finally, inter-registry trading of credits is also currently in place in the U.S., so there is activity on which a potential program could be developed as a part of state compliance plans.⁴⁸

IV. Conclusion

States have a variety of choices to make in determining how to craft a compliance plan that meets jurisdictional needs, comports with local market structures and minimizes overall compliance costs. Among these “decision points” are:

- **Who** is responsible for achieving emissions limits;
- **What** measures count toward compliance;
- **What form** emissions reduction goals will take;
- **Where** compliance actions can occur; and
- **How** emissions reductions from energy efficiency measures are measured and tracked.

Southeastern states have diverse electricity sectors, market actors and generation mixes. In terms of meeting compliance obligations under EPA’s proposed Clean Power Plan, there is no “one size fits all” approach. States will need to consider local conditions in determining the approach that is best suited to their unique circumstances, and how energy efficiency can best support least-cost compliance.

With the release of the final rule, expected in August 2015, guidance surrounding the development of state plans may change; however, most states have already begun conversations to proactively explore potential pathways toward compliance. Regardless of the pathway that states choose, energy efficiency can serve as a foundational component, alleviating pressure on customer bills and driving local economic growth and job creation.

Appendix A. State Plan Components

As articulated in EPA's draft guidelines, all state plans must contain the following:⁴⁹

- Identification of affected entities;
- Description of plan approach and geographic scope;
- Identification of state emission performance level;
- Demonstration that plan is projected to achieve emission performance level;
- Identification of emission standards;
- Demonstration that each emission standard is quantifiable, non-duplicative, permanent, verifiable, and enforceable;
- Identification of monitoring, reporting and recordkeeping requirements;
- Description of state reporting;
- Identification of milestones;
- Identification of backstop measures;
- Certification of hearing on state plan; and
- Supporting material.

Appendix B. EGU Owners and Operators in the Southeast

EGU owners and operators in the Southeast are typically classified in one of the following sectors:⁵⁰

1. **Investor-Owned Utility Sector:** This Sector includes any investor-owned entity with substantial business interest in ownership or operation in any of the asset categories of generation, transmission or distribution.
2. **Federal and State Sector:** This Sector includes any U.S. federal entity that owns or operates electric facilities or provides balancing authority services, in any of the asset categories of generation, transmission, or distribution; or this can also include any entity that is owned by or subject to the governmental authority of a state and that is engaged in the generation, delivery or sale of electric power to end-use customers primarily within the political boundaries of the state.
3. **Cooperative Sector:** This Sector includes any non-governmental entity that is incorporated under the laws of the state in which it operates, is owned by and provides electric service to end-use customers at cost, and is governed by a board of directors that is elected by the membership of the entity; and any non-governmental entity owned by and which provides generation or transmission service to such entities.
4. **Municipal Sector:** This Sector includes any entity owned by or subject to the governmental authority of a municipality, that is engaged in the generation, delivery, or sale of electric power to end-use customers primarily within the political boundaries of the municipality; this classification also includes any entity, whose members are municipalities, formed under state law for the purpose of generating or purchasing electricity for sale at wholesale to their members.
5. **Marketer Sector:** This Sector includes any entity that is engaged in the activity of buying and selling of wholesale electric power in the SERC Region on a physical or financial basis.
6. **Merchant Electricity Generator Sector:** This Sector includes any entity that owns or operates an electricity generating facility or provides balancing authority services for such entities. This includes, but is not limited to, small power producers and all other non-utility producers such as exempt wholesale generators who sell electricity at wholesale.
7. **ISO-RTO Sector:** This Sector includes any entity that operates a FERC-approved ISO or RTO.

End Notes

¹ Section 111(d) of the CAA directs EPA to set state *emissions guidelines*. Emissions guidelines provide the procedure for development of state plans to reduce pollution emissions from affected sources. EPA's June 2014 CPP proposes a minimum level of reduction, in the form of a mandatory emissions intensity target, states must achieve. The emissions intensity target for each state is state-specific, and is based on EPA's estimate of reductions achievable by applying the Best System of Emission Reduction (BSER). While EPA's emissions guidelines determine the extent and timing of emission reductions required under state compliance plans, states are granted the authority to develop standards of performance for affected in-state EGUs.

² See Appendix A for a full list of state plan requirements.

³ US EPA. "Overview on the Clean Air Act, Section 111 and the State Plan Structure" Webinar Presentation April 2, 2015, available at <http://www2.epa.gov/sites/production/files/2015-04/documents/epa-webinar-clean-air-act-section-111d.pdf>.

⁴ 79 FR 34909.

⁵ Southeast Energy Efficiency Alliance. SEEA 111(d) Summary of Comments from Southeastern States (Feb 2015) available at: <http://www.seealliance.org/wp-content/uploads/Key-Takeaways-from-Southeastern-Clean-Power-Plan-Comments-3-18-14-Final.pdf>.

⁶ Reliability issues will be addressed in a forthcoming resource paper.

⁷ The meaning of "enforceability" remains unclear under the draft CPP. See 79 FR 34909.

⁸ Sara Hayes. American Council for an Energy-Efficient Economy. Navigating the Clean Power Plan: A Template for Including Building Energy Codes in State Compliance Plans at 4, available at <http://aceee.org/sites/default/files/111d-building-codes-template-0315.pdf>.

⁹ Litz, Franz T. and Jennifer Macedonia. Bipartisan Policy Center and Great Plains Institute. "Choosing a Policy Pathway for State 111(d) Plans to Meet State Objectives" (April 2015) at 13.

¹⁰ See generally Sara Hayes, American Council for an Energy-Efficient Economy. Navigating the Clean Power Plan: A Template for Including Building Energy Codes in State Compliance Plans at 4, available at <http://aceee.org/sites/default/files/111d-building-codes-template-0315.pdf>.

¹¹ Most non-utility energy efficiency programs are either adopted through legislation or regulation, and may carry voluntary participation by entities or prescribe mandatory targets. Local jurisdictions within a state may also have their own energy efficiency programs. Non-utility programs under a portfolio approach are discussed in more detail in another paper in this series.

¹² *Id.* at footnote 17.

¹³ See Resource Paper 1 of this paper series for additional information as well as the National Association of Regulatory Utility Commissioners (NARUC) and Eastern Interconnection States' Planning Council (EISPC) Regional Planning Guide (May 8, 2015).

¹⁴ A useful discussion of these issues is provided in the "Minimizing Constitutional Risk: Crafting State Policies that Can Withstand Constitutional Scrutiny" by Konschnik and Peskoe at Harvard Law School.

¹⁵ Arkansas Public Service Commission. "2014 Annual Report" available at <http://www.apscservices.info/AnnualReports/2014AR.pdf>.

¹⁶ US EPA. "Municipal Waste Combustion: Summary of Requirements for Section 111(d) / 129 State Plans for Implementing Municipal Waste Combustor Emissions Guidelines" (May 1996).

¹⁷ US EPA. "Municipal Waste Combustion: Summary of Requirements for Section 111(d) / 129 State Plans for Implementing Municipal Waste Combustor Emissions Guidelines" (May 1996).

¹⁸ 79 Fed. Reg. 34830, at p. 34837.

¹⁹ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units," June 18, 2014, 79 FR 34918-34919, 34926.

²⁰ Available at http://www.4cleanair.org/NACAA_Menu_of_Options.

²¹ National Association of State Energy Officials. "NASEO 111(d) Webinar: Crediting Energy Efficiency" (July 2014). Available for download at <https://www.youtube.com/watch?v=ulz3hRzo9fY&feature=youtu.be>.

- ²² US Environmental Protection Agency, *Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans Appendix K: State, Tribal and Local Examples and Opportunities* (July 2012) available at <http://epa.gov/airquality/eere/pdfs/appendixK.pdf>.
- ²³ US Environmental Protection Agency, *Carbon Pollution Emission Guidelines for Existing Sources: Electric Generating Units* 493-494 (June 2, 2014).
- ²⁴ US Environmental Protection Agency. Technical Support Document: Translation of the Clean Power Plan Emission Rate-Based CO₂ Goals to Mass-Based Equivalents, available at <http://www2.epa.gov/sites/production/files/2014-11/documents/20141106tsd-rate-to-mass.pdf>.
- ²⁵ Monast et al. Enhancing Compliance Flexibility under the Clean Power Plan: A Common Elements Approach to Capturing Low-Cost Emission Reductions. Nicholas Institute for Environmental Policy available at http://www.nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-01.pdf.
- ²⁶ Monast et al. Enhancing Compliance Flexibility under the Clean Power Plan: A Common Elements Approach to Capturing Low-Cost Emission Reductions. Nicholas Institute for Environmental Policy available at http://www.nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-01.pdf.
- ²⁷ Litz, Franz T. and Jennifer Macedonia. Bipartisan Policy Center and Great Plains Institute. "Choosing a Policy Pathway for State 111(d) Plans to Meet State Objectives" (April 2015).
- ²⁸ Renewable energy certificate tracking systems are regional electronic databases that provide a platform for producing, managing, and retiring RECs, and also for ensuring that each REC is counted only once. See generally Quarrier and Farnsworth, Center for Resource Solutions. "Tracking Renewable Energy for the U.S. EPA's Clean Power Plan: Guidelines for States to Use Existing REC Tracking Systems." (2014)
- ²⁹ Monast et al. Enhancing Compliance Flexibility under the Clean Power Plan: A Common Elements Approach to Capturing Low-Cost Emission Reductions. Nicholas Institute for Environmental Policy available at: nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-01.pdf
- ³⁰ Western Interstate Energy Board. "Exploring the Modular Approach to 111(d) Compliance in the West" (March 2015) Available at <http://westernenergyboard.org/2014/11/rfp-exploring-the-modular-approach-to-111d-compliance-in-the-west/>.
- ³¹ David Farnsworth, Regulatory Assistance Project. "Tracking Renewable Energy for Compliance Under the Clean Power Plan" April 8, 2015, available at: <http://www.raonline.org/featured-work/tracking-renewable-energy-for-compliance-with-the-clean-power> (accessed May 5, 2015).
- ³² Monast et al. Enhancing Compliance Flexibility under the Clean Power Plan: A Common Elements Approach to Capturing Low-Cost Emission Reductions. Nicholas Institute for Environmental Policy available at: nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-01.pdf
- ³³ Litz, Franz T. and Jennifer Macedonia. Bipartisan Policy Center and Great Plains Institute. "Choosing a Policy Pathway for State 111(d) Plans to Meet State Objectives" (April 2015) at 11.
- ³⁴ RTOs and planning role. In some areas of the country, coordinating organizations known as independent system operators (ISOs) and regional transmission organizations (RTOs) plan, operate, dispatch and provide open-access transmission service under a single tariff. In addition, ISOs and RTOs purchase balancing services for the transmission system. See Regulatory Assistance Project. "Electricity Regulation in the U.S.: A Guide" (March 2011) available at <http://www.raonline.org/document/download/id/645>.
- ³⁵ Martin T. Ross, Brian C. Murray, and David Hoppock, Nicholas Institute. "Assessing the Impacts of the Clean Power Plan on Southeast States." (May 2015) available at <https://nicholasinstitute.duke.edu/climate/publications/assessing-impacts-clean-power-plan-southeast-states#.VXaoAab1hpk>.

³⁶ Brown, Marilyn et al. "Low-Carbon Electricity Pathways for the U.S. and the South: An Assessment of Costs and Options." (May 2015) available at <http://www.cepl.gatech.edu/drupal/blog>.

³⁷ Monast et al. Enhancing Compliance Flexibility under the Clean Power Plan: A Common Elements Approach to Capturing Low-Cost Emission Reductions. Nicholas Institute for Environmental Policy *available at* http://www.nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-01.pdf.

³⁸ Ken Colburn, Regulatory Assistance Project. “Tackling 111(d): Could Regional Approaches Rule?” May 4, 2014 *available at* <http://www.raonline.org/featured-work/tackling-111d-could-regional-approaches-rule>.

³⁹ *Available at* <http://www.naruc.org/Publications/Multistate%20111d%20Coordination.pdf>.

⁴⁰ See Appendix A.

⁴¹ 79 FR 34909. *Also See:* National Association of State Energy Officials. “NASEO 111(d) Webinar: Crediting Energy Efficiency” (July 2014). *Available for download at*

<https://www.youtube.com/watch?v=ulz3hRzo9fY&feature=youtu.be>.

⁴² NREL Webinar Presentation. “Uniform Methods Project” *available at*

<http://www.nrel.gov/docs/fy13osti/53827.pdf>.

⁴³ NREL Webinar Presentation. “Uniform Methods Project” *available at*

<http://www.nrel.gov/docs/fy13osti/53827.pdf>.

⁴⁴ *See generally* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units,” June 18, 2014, 79 FR 34918-34919, 34926

⁴⁵ NARUC. Principles for Energy Efficiency. *Available at* <http://naruc.org/Publications/Energy-Efficiency-Principles.pdf>.

⁴⁶ Climate Registry Webinar, *available at* <https://www.youtube.com/watch?v=xBBF3LfPepU>.

⁴⁷ Regulatory Assistance Project, Webinar on REC Tracking Systems May 14, 2015.

⁴⁸ Regulatory Assistance Project, Webinar on REC Tracking Systems May 14, 2015.

⁴⁹ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units,” June 18, 2014, 79 FR 34911.

⁵⁰ Southeast Electric Reliability Council. SERC 2014 Informational Summary Brochure, *available at* <http://www.serc1.org/Documents/SERC/SERC%20Publications/Information%20Summary/2014%20Information%20Summary%20Brochure%20%28July%202014%29.pdf>.