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By email to: A-and-R-Docket@epa.gov

U.S. Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mail Code 28221T
1200 Pennsylvania Ave., NW
Washington, DC 20460

Attn: Docket ID No. EPA-HQ-OAR-2013-0602

Dear Administrator McCarthy:

The Southern Environmental Law Center ("SELC") is pleased to submit the following comments regarding EPA's proposed "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units" at 79 Fed. Reg. 34830, *et seq.* (June 18, 2014) ("the Clean Power Plan" or "proposal") and related materials.[1] This set of comments focuses on the State of Georgia and the achievability of its proposed emissions rate target. We also recommend improvements to the proposal that would accurately reflect Georgia's ability to utilize renewable energy resources and energy efficiency in meeting its target, and that would ensure appropriate treatment of Georgia's under-construction nuclear units.

SELC is a non-profit, regional environmental organization dedicated to the protection of natural resources throughout the Southeast. Through utility regulatory proceedings and stakeholder processes, as well as legal and administrative matters under the Clean Air Act, SELC works extensively on issues concerning energy resources and their impact on the people, culture, environment, and economy in six Southeastern states – Georgia, Tennessee, Virginia, North Carolina, South Carolina, and Alabama.[2] As such, SELC has a significant interest in the Clean Power Plan proposal.

In Georgia our engagement on these issues has included participation in numerous proceedings before the state Public Service Commission ("PSC"), which oversees the largest power provider in the state, Georgia Power Company. These proceedings have included integrated resource plan ("IRP") dockets, rate cases, demand-side management ("DSM")

[1] These comments also address information provided in the October 28, 2014 Notice of Data Availability and the additional information regarding calculation of a mass-based conversion provided on November 6, 2014. *See* Clean Power Plan Proposed Rule Notice of Data Availability – Oct. 28, 2014, 79 Fed. Reg. 64,543; Clean Power Plan Proposed Rule Notice: Additional Information Regarding the Translation of Emission Rate-Based CO2 Goals to Mass-Based Equivalents – Nov. 6, 2014, 79 Fed. Reg. 67,406.

[2] In addition to these comments, SELC is filing sets of comments on each of the other five states, as well as a separate set of comments on the treatment of biomass under the proposal.

program approvals, certificates of public convenience and necessity, and renewable resource program approvals. We have also been involved in related stakeholder processes, such as the DSM working group[3] and the Southeast Regional Transmission Planning ("SERTP") process.[4] In addition, we have extensive experience working on matters falling within the authority of the Georgia Environmental Protection Division, as the state implementing agency for the Clean Air Act, particularly on matters pertaining to coal-fired power plants, including Title V and Prevention of Significant Deterioration ("PSD") permits. We also regularly engage in state lawmaking and policy venues on energy issues.

INTRODUCTION

SELC strongly supports the Clean Power Plan's goal of achieving substantial carbon reductions from the power sector in a cost-effective manner. The nation's existing fossil fuel-fired power plants constitute the largest single source of carbon emissions in the country. Georgia is home to some of the nation's largest carbon-emitting power plants, including the top emitter, Plant Scherer.[5] No meaningful effort to address the severe human and environmental effects of climate change can occur without limiting such emissions. The Clean Power Plan appropriately asks Georgia to lower its significant carbon footprint. And we agree with EPA that the most cost-effective approach to significantly reducing power sector carbon pollution in Georgia and other states must be based on the reality that power generating sources are part of an integrated system, interconnected through the electric grid.

The good news is that Georgia has already made significant progress toward modernizing its power sector. As a result, Georgia is well on its way toward achieving the reductions that the proposal requires. Georgia has recently emerged as a national leader in solar power,[6] and its utilities have already made decisions to retire aging and uneconomic coal units and to convert other units to run on cleaner-burning natural gas.

The Clean Power Plan requires only that Georgia continue building on this progress. Doing so will help Georgia reap more of the economic benefits that it has already realized through the recent explosive growth in solar generation within its borders. At the same time, there will be significant benefits beyond carbon emission reductions, as reducing fossil generation will curb emissions of other pollutants that have long plagued Georgia's air quality—such as nitrogen oxide emissions that produce ground-level ozone. As a result, the Clean Power Plan will help Georgians breathe easier and lead healthier, more productive lives.

In short, as described in more detail below, Georgia is well positioned to meet or exceed its target. While the proposal may need some refinement, it is a positive opportunity for

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[3] The DSM Working Group is a meeting of stakeholders that occurs on a quarterly basis over a two-year span between Georgia Power Company's triennial IRP filings. The process includes an updating of the technical, economic and achievable potential of efficiency programs and culminates in the demand-side management plan that will accompany the utility's next IRP filing.

[4] *See* http://www.southeasternrtp.com/.

[5] Adam Ragusa, *Plant Scherer "Dirtiest" in Nation*, GPB NEWS (Sept. 19, 2013), *available at* http://www.gpb.org/news/2013/09/19/plant-scherer-dirtiest-in-nation.

[6] David Pendered, *Georgia's solar industry praised in new report by Pew Charitable Trusts*, SAPORTA REPORT (Nov. 19, 2014), *available at* http://saportareport.com/blog/2014/11/georgias-solar-industry-praised-in-new-report-by-pew-charitable-trusts/.

Georgia. The Clean Power Plan will help Georgia continue to diversify its electric system, while growing its economy through sensible investments in clean energy technologies like solar, wind and energy efficiency. The resulting benefits will accrue to all Georgians.

Our comments are divided into four parts. In Part I, we summarize how EPA arrived at the proposed CO_2 emission rate target for Georgia. Part II explains how measures that are already in place or in the works move Georgia 60 percent of the way toward achieving its target. In Part III, we provide just two examples of how combinations of additional energy efficiency, renewable energy and perhaps natural gas usage can cost-effectively cover the remaining 40 percent. Finally, in Part IV, we comment on certain aspects of the proposal regarding renewables, energy efficiency, natural gas and under construction nuclear.[7]

DISCUSSION

I. Summary of Georgia's Emission Rate Target

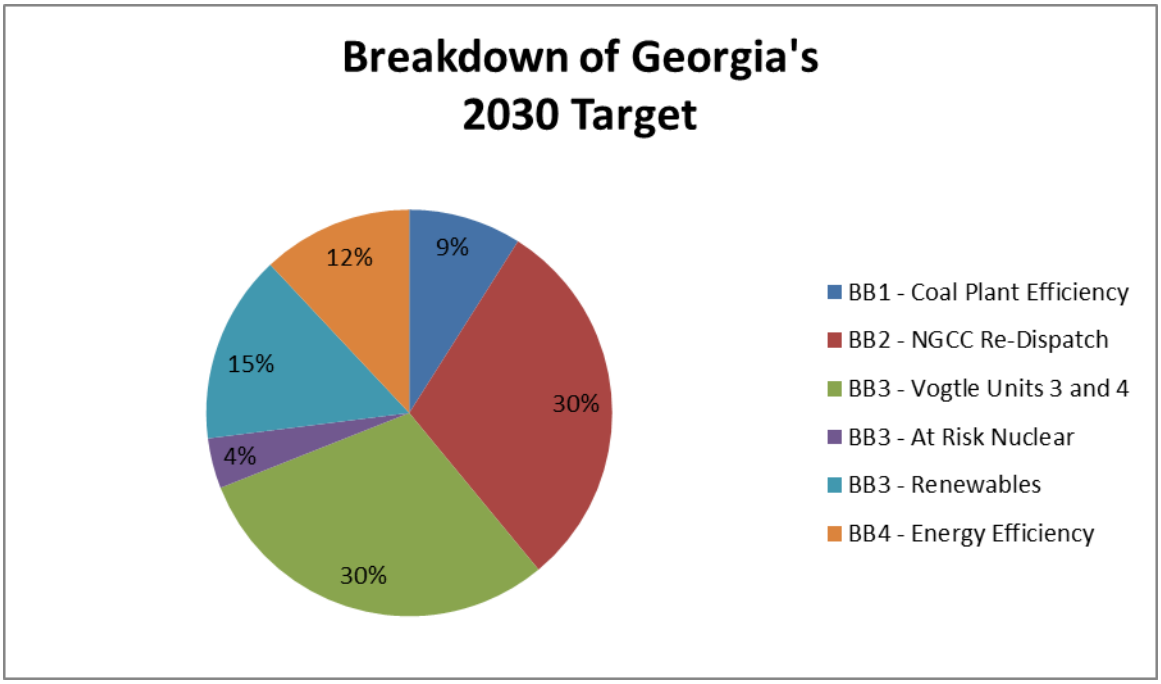
EPA has proposed a carbon emission rate target for Georgia of 834 pounds per megawatt-hour (lbs/MWh) to be achieved by 2030, and an interim average target of 891 lbs/MWh between 2020 and 2029.[8] Georgia's proposed target represents a 48 percent emission rate reduction from a 2012 *unadjusted* emission rate of 1,598 lbs/MWh.[9] Georgia's target results from EPA's application of a set of measures (called "building blocks") that EPA has determined will allow states to achieve meaningful CO_2 emission reductions at a reasonable cost.

The following chart depicts the relative contribution of each building block toward Georgia's 2030 target. We also provide the spreadsheet, included as Attachment 1 to these Comments, in which we replicate EPA's methodology and demonstrate how Georgia's emission rate target was derived.

[7] In large part, our comments address issues in the context of the proposed rate targets for Georgia and other states, without noting how state mass targets may affect those issues. However, as a general matter, we note that the Clean Air Act requires that any state plan be at least as stringent as the emission rate achieved by applying the Best System of Emission Reduction (BSER). Therefore, if a state adopts a mass-cap compliance strategy in place of a rate-based target, EPA should ensure that the mass-cap achieves carbon emissions reductions at least as stringent as what the Clean Power Plan would require of that state under a rate-based target.

[8] 79 Fed. Reg. at 34,895.

[9] In 2012, Georgia produced 41 million megawatt-hours (MWh) from its coal-fired power plants, 37.6 million MWh from natural gas combined cycle (NGCC) units, and had no generation from oil and gas (O/G) steam or other fossil units. In total, Georgia's fossil fuel-fired energy fleet emitted over 125 billion pounds of CO_2, which when divided by the total generation from coal-fired and NGCC plants, equals 1,598 lbs/MWh. *See* Clean Power Plan, *Technical Support Document, State Goal Computation*, Appendix 1.



We note at the outset that while EPA relied upon its particular methodology to set Georgia's target, there is nothing requiring Georgia to follow the same path for compliance. As EPA emphasizes in the proposal, states may elect to pursue some building blocks more and others less extensively than EPA assumes, and may even choose other measures, so long as they meet the overall target reduction. States retain the flexibility to determine the compliance path that makes the most sense under their unique facts and circumstances.

Building Block 1: Making Existing Coal Plants More Efficient

EPA assumes that a combination of best operating practices and equipment upgrades could result, on average, in a 6 percent heat rate improvement at each of Georgia's remaining coal-fired power plants. Under this assumption, Georgia's coal fleet would produce roughly 6 percent more electricity per ton of coal burned, lowering overall CO_2 emissions by 5.6 million pounds. This lowers Georgia's 2012 emission rate by 72 lbs/MWh or 9 percent of the target reduction.

Building Block 2: Re-dispatch to Underutilized Natural Gas Units

EPA assumes that Georgia has sufficient existing natural gas capacity to shift electricity generation from the most carbon-intensive units (e.g. coal generators) to less-intensive natural gas combined cycle (NGCC) units. Georgia has significant existing NGCC capacity – more than 8,000 MW. In 2012, Georgia's average NGCC capacity factor – a measure of those plants' actual output relative to their potential output – was 51 percent. EPA assumes that Georgia can increase its average NGCC utilization rate up to a maximum of 70 percent by re-dispatching existing fossil generation to these NGCCs. To achieve a 70 percent capacity factor across its existing NGCC fleet, Georgia would need to increase its gas generation by 13.8 million MWh, displacing an equivalent amount of coal generation. Coal emissions would decrease, while

lower-carbon intensity NGCC emissions and generation would increase. This measure would lower Georgia's 2012 emission rate by 231 lbs/MWh or 30 percent of the target reduction.[10]

Building Block 3a: At-risk and Under-Construction Nuclear

In Building Block 3a, EPA estimates the amount of existing nuclear capacity that is considered "at risk" of retirement, as well as the total nuclear capacity under construction in each state in 2012. EPA's "at risk" analysis is not directly tied to the amount of nuclear generation actually at risk of retirement in any given state. Instead, EPA has identified 5.8 percent as the approximate nationwide amount of nuclear generation that was at risk of retirement in 2012, based on recent projections by the U.S. Energy Information Administration ("EIA"). EPA believes this represents a reasonable proxy for the amount of nuclear capacity that is at risk of retirement in the future, and therefore assigns to states with existing nuclear a flat credit of 5.8 percent of the state's nuclear capacity.

Georgia had 28.7 million MWh of existing nuclear generation in 2012. Providing credit for 5.8 percent of this generation yields 1.8 million MWh, lowering Georgia's emission rate by 29 lbs/MWh, or approximately 4 percent of the target reduction.

In addition, Georgia is one of just three states with nuclear units under construction in 2012 (at Plant Vogtle near Waynesboro, Georgia). Unlike the generation from existing nuclear facilities, the entire amount of the generation expected from these units is included in EPA's emission rate calculations. Generation from the new Vogtle Units 3 and 4 is expected to produce approximately 17.4 million MWh. In EPA's equation, this lowers Georgia's emission rate by 225 lbs/MWh, or 30 percent of the target reduction.

Unlike with Building Block 2, where EPA assumes the displacement of coal and other fossil steam generation by re-dispatched NGCC generation, EPA does not assume any displacement of fossil generation by either existing or under-construction nuclear.

Building Block 3b: Renewable Energy

The renewables portion of Georgia's target is calculated assuming the state will meet a goal of 10 percent non-hydropower renewable generation by 2030. EPA has determined that 10 percent is an appropriate goal for the Southeast region based on average existing renewable portfolio standards (RPS) in this region. For the Southeast region, this 10 percent goal is based on RPS requirements enacted by the legislature of the state of North Carolina. EPA took this approach for two reasons. First, states like North Carolina have already had the opportunity to assess RPS requirements against a range of policy objectives including feasibility and costs, so these state policy decisions reinforce the best practices on which EPA bases its targets. Second, renewable resource development potential varies by region. EPA's decision to adopt a regional approach based on existing legal obligations of neighboring states is designed to tie a state's renewables target to regional availability of renewable energy resources.

Once it determined the regional target of 10 percent, EPA then calculated a regional growth factor that would be necessary to bring Georgia and other states up to the regional goal

[10] Georgia has no under-construction NGCC capacity, so Building Block 2b, which would assume re-dispatch to new NGCC capacity, does not apply.

by 2030. For the Southeast region, the regional growth factor is 13 percent per year. EPA applies the regional growth factor to each state's 2012 starting level, but not until 2017, the year after state compliance plans are due. EPA assumes new renewable energy capacity investments through 2029, unless the state reaches the point where such additions would surpass 10 percent, in which case EPA assumes no further such additions.

In 2012, Georgia's existing non-hydropower renewable generation constituted 3 percent of all generation, equivalent to 3.3 million MWh.[11] EPA assumes that Georgia grows its renewable generation to 10 percent by 2027. Under EPA's assumptions, by 2030 Georgia would produce over 12 million MWh of zero-emission generation. The growth in renewable generation projected by EPA, which like nuclear is not assumed to displace fossil generation, would reduce Georgia's 2012 emission rate by another 116 lbs/MWh, or 15 percent of the target reduction.

Building Block 4 – Energy Efficiency

Finally, EPA assumes that Georgia begins taking more meaningful steps to decrease demand for generation through demand-side energy efficiency. EPA's energy efficiency targets are based on what 12 leading states have achieved, or will achieve with existing requirements – specifically, annual incremental savings of 1.5 percent of the electricity demand that otherwise would have occurred. EPA assumes that states will increase their annual incremental savings from their 2012 annual savings rate to a rate of 1.5 percent over a period of years starting in 2017. The increase to 1.5 percent will take place at a rate of 0.2 percent incremental savings per year. States that are already near 1.5 percent will reach their target earlier than states that have not yet implemented much demand-side energy efficiency.

In addition, states that are net importers of electricity receive credit for only a portion of their energy efficiency investments. As a net-importing state, Georgia receives credit for 88 percent (its share of in-state generation) of its energy efficiency investments.[12] Under EPA's assumptions, Georgia is expected to achieve annual incremental savings of 1.5 percent by 2024, and cumulative savings of 9.8 percent, or more than 12 million MWh by 2030. Here again, like nuclear and renewable generation, EPA does not assume that this new generation displaces fossil generation. This building block lowers Georgia's 2012 emission rate by 92 lbs per MWh, or 12 percent of the target reduction.

II. Georgia is over halfway to its target based on plans its utilities already have in place.

As noted at the beginning of Part I, EPA's building blocks determine the target for Georgia, but Georgia does not have to follow those precise steps to meet the target. In fact, EPA's target-setting does not take into account carbon-reducing measures that Georgia had begun approving and putting into place prior to the proposal. When those measures – which include coal unit retirements and conversions, new investments in renewable generation, and the construction of new nuclear units – are taken into account, we can see that Georgia will achieve

[11] EPA, *Technical Support Document: GHG Abatement Measures*, Docket ID No. EPA-HW-OAR-2013-602, at 4-6, Table 4-1, 2012 RE Performance by State (MWh) (hereinafter "Abatement TSD").

[12] As discussed in more detail in Section IV below, we support an approach whereby all states receive 100 percent credit for investments in energy efficiency, especially where such programs are displacing existing fossil-fired generation.

almost 60 percent of the required reductions merely by staying the course. This is shown on the spreadsheet that we attach as Attachment 1 to these comments.

A. Utility plans to retire existing coal-fired units

Georgia Power has already made decisions to retire a number of its oldest, dirtiest and least economic coal-burning units. The Georgia Public Service Commission ("PSC") has approved these retirements as prudent economic decisions that are in the best interests of the utility's customers.[13] The units for which retirement decisions have already been made include:

- **Plant Branch.** Georgia Power has received PSC approval to retire all four of its coal-burning units, totaling 1,750 MW, at this facility near Milledgeville, Georgia.[14] All four units will cease operation by April 2015. In 2012, the Branch units accounted for 2,099,279 MWh of generation that produced nearly 2.4 million tons of CO_2 emissions.

- **Plant Yates Units 1-5.** Georgia Power has received PSC approval to retire five of its coal-fired units, totaling 680 MW, at this facility near Newnan, Georgia. The five units will cease operation by April 2015. In 2012, these five units accounted for 698,523 MWh of generation that produced over 900,000 tons of CO_2 emissions.

- **Plant Kraft Units 1-4.** Georgia Power has received approval to retire these four units, totaling 334 MW, by April 2016. In 2012, these units accounted for 625,568 MWh of generation that produced over 500,000 tons of CO_2 emissions.

- **McDonough Unit 1**. Georgia Power has retired this unit, totaling 299 MW, which in 2012 produced 41,375 MWh of generation and over 55,000 tons of CO_2 emissions.[15]

The electric generation and carbon emission levels from these units were included in Georgia's baseline emissions rate. However, EPA did not include the planned retirements of these units when calculating Georgia's emissions rate target. Collectively, these units accounted for more than 3.4 million MWh of coal generation in 2012. Applying these retirements to EPA's emissions rate calculation lowers Georgia's emission rate by 32 lbs/MWh or 4 percent of the 2030 target reduction.

B. Planned gas conversions

In addition to the above unit retirements, Georgia Power has received PSC approval to convert two to other coal-burning units at its Plant Yates (totaling 808 MW) to run on natural gas. Like the above unit retirements, the PSC approved the conversions, which will take effect

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[13] *See* Final Order dated July 17, 2013, Georgia Public Service Commission Docket No. 36498, *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=148995.

[14] *Id.*; *see also* Final Order dated March 26, 2012, Georgia Public Service Commission Docket No. 34218-U, *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=141220.

[15] Prior to 2012, Georgia Power converted the other McDonough units to run on natural gas. Georgia Power has touted that conversion project for its carbon emission reduction benefits. *See* http://www.georgiapower.com/environment/improving-air-quality.cshtml.

by April 2015, on economic grounds.[16] The efficiency of converted units typically pales in comparison to new or existing NGCC units, and therefore is not particularly cost-effective as a strategy for lowering carbon emissions. Nevertheless, Georgia may rely on the Yates gas conversions for compliance purposes, and compared to the coal generation they replace, the converted units will produce lower carbon emissions.

In 2012, Yates 6 and 7 were responsible for 1,673,942 MWh of generation and 1.7 million tons of carbon emissions. The units ran at a capacity factor of 24 percent. There is no public information regarding how frequently these units will run in the future or at what rate they will emit carbon. However, assuming they retain their current capacity factor and produce carbon emissions at a rate of 1200 lbs/MWh,[17] the conversions will reduce Georgia's 2012 emission rate by another 25 lbs/MWh or 3 percent of the target reduction.

C. Planned renewables projects

In 2012, Georgia's existing non-hydropower renewable generation made up 3 percent of all generation, equivalent to 3,278,536 MWh. However, this total does not reflect significant new levels of renewable generation – mostly solar, but also wind – that Georgia Power is in the process of adding to its energy mix. Through its Advanced Solar Initiative and related programs, Georgia Power is on pace to add more than 900 MW of utility scale and distributed generation solar to its supply portfolio by 2016.[18] In addition, earlier this year, Georgia Power entered its first-ever wind deals, under which it will import 250 MW of cost-effective wind generation, along with associated renewable energy credits (RECs), from facilities in Oklahoma.[19] The agreement is for a 20-year term, commencing in 2016.[20] The PSC has or is in the process of approving these programs as in the best interests of Georgia Power customers because they will provide benefits in the form of cost savings and fuel diversity.[21]

Although the precise capacity factors associated with these projects are not publicly available, it is reasonable to assume a 20 percent capacity factor for the solar installations.[22] For the wind agreement, an approximate capacity factor can be inferred from the utility's statements. Georgia Power has stated that the project is sufficient to power the equivalent of 50,000 homes.[23]

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[16] *See* Final Order dated July 17, 2013, Georgia Public Service Commission Docket No. 36498, *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=148995.

[17] As detailed in SELC's contemporaneously filed comments pertaining to the State of Alabama, the conversion of the four coal units at Plant Gaston, of which Georgia Power is a part owner, is expected to result in a unit efficiency of approximately 1,196 lbs/MWh. We feel it is reasonable to assume a similar emission rate for the converted Yates' units.

[18] *See* http://www.georgiapower.com/about-energy/energy-sources/solar/asi/advanced-solar-initiative.cshtml.

[19] Order Adopting Stipulation [regarding Georgia Power Company's Application for the Certification of the Power Purchase Agreements for Wind Resources from the Blue Canyon II and Blue Canyon VI Wind Farms], Document No. 153618, *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=153618.

[20] *Id.*

[21] *See id*; *see also* Georgia Power Company's Application for Certification of the 2015 and 2016 Advanced Solar Initiative Prime Power Purchase Agreements and Request for Approval of the 2015 Advanced Solar Initiative Power Purchase Agreements filed October 10, 2014, Georgia Public Service Commission Docket No. 38877, *available at* http://www.psc.state.ga.us/factsv2/Docket.aspx?docketNumber=38877.

[22] Lopez, A. et al. 2012. *U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis.* National Renewable Energy Laboratory. At 25. *Available at* http://www.nrel.gov/docs/fy12osti/51946.pdf.

[23] *See* http://www.georgiapower.com/about-energy/energy-sources/wind-energy.cshtml.

The average Georgia home consumes 13,176 kWh per year.[24] The amount of electricity consumed by 50,000 such homes equates to 658,800 MWh. Dividing that figure by 8,874 hours and by 250 MW yields a capacity factor of 30 percent. Assuming a 30 percent capacity factor, these deals will result in 658,800 MWh of renewable generation.[25]

Combined, the above renewable generation projects will provide over 2.2 million MWh of generation. If applied to the existing level of renewable generation in Georgia's 2012 baseline, the result is a reduction of 68 lbs/MWh, or almost 9 percent of the target reduction.[26]

D. Utility plans regarding existing nuclear

Georgia's existing nuclear fleet provided 28.7 million MWh of generation in 2012. EPA assumes that 5.8 percent of this generation will remain on-line through 2030, and provides a credit for the amount of generation this would represent: 1.8 million MWh. This lowers Georgia's emission rate by 29 lbs/MWh or approximately 4 percent of the target reduction. EPA's assumption is conservative in light of the utility's most recent resource plan, which shows it retaining all of its current nuclear fleet through 2030.[27]

E. Utility plans regarding under-construction nuclear

Georgia Power is in the process of constructing two new nuclear units, totaling 2,200 MW, at its Plant Vogtle facility near Waynesboro, Georgia. The two units have expected operation dates of December 2017 and December 2018, respectively.[28] Assuming, as EPA does, a 90 percent capacity factor, these units would produce more than 17 million MWh of zero-carbon generation annually.

F. Utility plans regarding energy efficiency

Georgia's largest investor-owned utility, Georgia Power Company, operates eight certified demand-side management programs: five residential and three commercial. By 2017, these programs are expected to achieve annual incremental savings of 364,508 MWh and cumulative savings of 1.4 million MWh.[29] As noted previously, in Part I, under Building Block 4 EPA assumed that states that are net importers of electricity will receive credit for only a portion

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[24] *See* EIA data at http://www.eia.gov/electricity/sales_revenue_price/xls/table5_a.xls.

[25] We do note, however, that the wind deals are "firm" arrangements, under which energy delivery is fixed and guaranteed over the agreement term – meaning, in all likelihood, that some measure the generation will be supplied by gas. The firm nature of the deals was a motivating factor in the PSC's approval. *See* Order Adopting Stipulation, *supra* n. 19. It is unclear to what extent this does or should affect EPA's inclusion of the total generation these deals represent in the denominator of its emission rate equation.

[26] *See* Attachment 1.

[27] *See* Georgia Power Company's 2013 Integrated Resource Plan and Application for Decertification of Plant Branch Units 3 and 4, Plant McManus Units 1 and 2, Plant Kraft Units 1-4, Plant Yates Units 1-5, Plant Boulevard Units 2 and 3 and Plant Bowen Unit 6, filed January 31, 2013, Georgia PSC Docket No. 36498, available at http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=145981, at Technical Appendix Volume I, Ledger Tables, at 7.

[28] Matt Kempner, *New Vogtle Delays May Add $2M Daily*, THE ATLANTA JOURNAL-CONSTITUTION (Nov. 25, 2014).

[29] *See* Georgia Power Company's Application for the Certification of its Amended Demand Side Management Plan, Georgia Public Service Commission Docket No. 36499 (Oct. 18, 2013), *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=150278.

of their energy efficiency investments. Thus, using EPA's approach, as a net electricity importing state, Georgia receives credit for 88 percent (its share of in-state generation) of its energy efficiency investments. As we explain below in Part IV.B., we believe that EPA should not use that discount for importing states like Georgia. Nevertheless, even if Georgia can credit only 88 percent of these additional savings, if they are added to the 2012 energy efficiency levels, the effect is to lower Georgia's emission rate by 6 lbs/MWh.

G. Summary of planned carbon-reducing measures

In summary, when the above planned retirements, conversions and resource additions are factored in, Georgia's emission rate drops to 1,157 lbs/MWh, an almost 60 percent reduction from the 2012 baseline used by EPA. This aligns closely with projections by Georgia's Environmental Protection Division ("EPD"), which has estimated Georgia's 2020 "Business as Usual" case to be 1,170 lbs/MWh.[30] Therefore, as EPD has recognized, Georgia will be substantially on the way toward its target when the compliance period begins.

III. Renewable energy and energy efficiency provide Georgia with reasonable options for reaching the remaining 40 percent of its target.

The proposal provides Georgia the flexibility to deploy a variety of resources at achievable levels to cover the remaining 40 percent of its target. Our analysis shows that Georgia can achieve its remaining reductions through a combination of renewable resource additions and increased energy efficiency investments, with only minimal or no increased reliance on natural gas. For the purposes of this analysis, we ignored the potential reductions from the heat rate improvements of Building Block 1, which some utilities have cited as unfeasible or impractical.

Our analysis is set forth in the two spreadsheets included as Attachments 1 and 2. In both spreadsheets, we make an assumption that EPD did not make—that incremental (i.e., new) renewable and energy efficiency resources have the effect of displacing fossil generation. As EPA appears to recognize in its recent Notice of Data Availability, to assume otherwise is inconsistent with EPA's application of BSER for Building Block 2 and nonsensical as a practical matter: utilities will dispatch resources having no fuel costs in lieu of those that do.

In fact, because of the displacing effects of renewables and energy efficiency on fossil units, exact reliance on the four building blocks as used by EPA in the target setting would result in *over-compliance* – i.e., Georgia would achieve a target rate lower than its 2030 goal. This is an important reason to view application of the building blocks for target setting as distinct from their use for compliance. It also shows that Georgia's route to compliance is less burdensome than a narrow focus on the target-setting would indicate. Georgia's pursuit of renewable and energy efficiency resource additions will result in substantial carbon reductions, especially if those measures are allowed to displace fossil generation on a pro-rata basis.

Our analysis makes this adjustment and outlines two scenarios: the EPA case and what we have termed the "Enhanced Renewable Generation" case. The EPA case is outlined in the spreadsheet attached to these Comments as Attachment 1. There, after taking into account the

[30] *See* Comments of Georgia Environmental Protection Division in Docket ID No. EPA-HQ-OAR-2013-0602 (Sept. 16, 2014).

already-planned carbon-reducing measures discussed in Part II above, we apply EPA's assumptions regarding the amount of incremental renewable generation and energy efficiency that Georgia can achieve by 2030. EPA's assumptions regarding those resources are reasonable – if anything, they are overly conservative, for the reasons we discuss in Part IV below – so we adopt them for purposes of our first scenario. However, unlike EPA, we allow those resource additions to displace fossil generation on a pro rata basis. Our results show that by allowing for such displacement, Georgia can meet its target with natural gas re-dispatch of up to just 57 percent, an increase of just 6 percentage points from the current level of 51 percent, rather than all the way to 70 percent. For the reasons discussed in Part IV, this modest increase in gas usage is readily achievable in Georgia.

However, there are valid reasons to avoid *any* increase in natural gas generation. While cleaner burning than coal, natural gas combustion does produce carbon emissions, and its extraction and handling can be a source of methane emissions, a potent greenhouse gas. Furthermore, Georgia's utilities and regulators alike have already begun expressing concerns about the fuel price volatility risk associated with increased reliance on natural gas. These risks can be avoided through greater reliance on resources like renewable generation and energy efficiency, which consume no fuel and produce no emissions.

Accordingly, in our second spreadsheet, included as Attachment 2, we present an alternative scenario in which reliance on just one of those compliance measures – here, renewable generation – is increased above EPA's assumptions. In this Enhanced Renewable Generation case, we adopt a more robust assessment of Georgia's renewables potential, as developed by the Union of Concerned Scientists (UCS) in a recent report.[31] We believe this assessment is more in line with Georgia's recent experience with renewable generation and better reflects its potential going forward.[32]

As Attachment 2 shows, if Georgia were to achieve by 2030 the levels of renewables penetration that UCS shows is achievable (approximately 22.7 million MWh), and those incremental resource additions serve to displace fossil generation on a pro rata basis, Georgia can meet its target without any natural gas re-dispatch. In fact, by achieving just 75 percent of the renewable generation projected by UCS, Georgia would exceed its target by 10 percent, without any increased utilization of natural gas.

In summary, Georgia can achieve the remaining 40 percent of its target mainly, if not exclusively, through sensible, cost-effective investments in renewable generation and energy efficiency. Whether Georgia need increase its reliance on natural gas generation is purely a function of the levels of renewable generation and energy efficiency it elects to pursue. We believe Georgia's potential in both areas is far greater than EPA assumes. Accordingly, in the next section we provide several recommendations for improving EPA's assumptions. We also provide comments regarding the proposed treatment of under construction nuclear as well as our

[31] Union of Concerned Scientists, *Strengthening the EPA's Clean Power Plan* (Nov. 2014), *available at* http://www.ucsusa.org/sites/default/files/attach/2014/10/Strengthening-the-EPA-Clean-Power-Plan.pdf, last accessed November 22, 2014.

[32] In Section IV below, we make a number of recommendations to EPA that we believe will result in a significant reassessment of Georgia's renewables potential, in line with UCS's projections.

assessment of Georgia's potential for natural gas re-dispatch, should Georgia elect to pursue that measure for compliance purposes.

IV. Comments on Building Block Assumptions

A. EPA's renewable energy assumptions in Building Block 3 should be modified.

SELC strongly supports EPA's decision to include renewable energy as an eligible compliance option for states. We agree that a "best system of emission reduction" is one that allows states to decrease emissions from existing power plants through increases in renewable generation. The effectiveness of such a strategy has been "adequately demonstrated" in Georgia over the last three years. Indeed, Georgia has in that span emerged as a national leader in solar power and clean energy.

Nevertheless, EPA's approaches to the renewable energy building block – both its proposed approach, based on state renewable portfolio standards, and its alternative approach, based on individual state renewable technical and economic potential – suffer from flaws. Whatever route EPA takes in the final rule, it should be based on an updated and fair assessment of each state's renewable energy potential. Such an approach has been offered by the Union of Concerned Scientists in a recent report.[33] For the reasons that follow, SELC believes that UCS' conclusion for Georgia comports with recent state, regional, and national data and supports the UCS approach.

In both its preferred and alternative approaches, EPA's assumptions regarding the amount of renewable generation that can be feasibly and at reasonable cost added to Georgia's grid are overly conservative. As UCS notes in its report, EPA significantly underestimates the potential role of renewable energy in setting state targets. Several of the issues UCS identifies are evident in EPA's treatment of Georgia's renewables potential: EPA fails to account for both (1) the continued growth and falling costs of renewables projected by market experts and (2) the renewable energy deployment rates that states are already achieving. SELC agrees with UCS that EPA should revise and update several of its underlying assumptions. Doing so will show not only that EPA's current assumptions are reasonable, but that Georgia can in fact reach a much higher renewable energy target – almost double the levels assumed by EPA – at a reasonable cost.

Guided by UCS' suggestions, we make the following recommendations for improving EPA's assessment of Georgia's renewables potential:

1. EPA should use up-to-date renewable energy costs.

EPA relies on outdated assumptions about the costs of renewable energy. As UCS notes, the price of wind and solar have dropped precipitously in recent years, fueling tremendous growth in these technologies.[34] Since 2009, the national average cost of wind power has dropped more than 60 percent.[35] Solar has seen similar declines: solar PV costs fell by about 40 percent

[33] *See* UCS report, supra n. 31.
[34] *Id.* at 6.
[35] *Id.*

from 2008 to 2012, and by another 15 percent in 2013.[36] The cost decreases have been so substantial that both technologies are now out-performing fossil generation in many areas of the country.[37] Wind costs have dipped to as low as 1.4 cents per kWh,[38] while utility-scale solar has reached lows of under 5 cents per kWh.[39]

These trends have been evident in Georgia. As part of its Advanced Solar Initiative, Georgia Power Company is currently seeking approval of 515 MW of new utility-scale solar generation at an average price of 6.5 cents per kWh.[40] Georgia Power has stated that these contracts are priced below the utility's projected avoided costs, and thereby provide "overwhelming benefit" to customers in the form of projected energy savings.[41] Similarly, Georgia Power has described its first-ever wind deals as possessing "extraordinary value" for its customers because of their low pricing.[42]

In short, continuing cost declines have made renewable investments a great deal for utility customers, and this is one of many reasons why Georgia's utilities will meet – but more likely exceed – EPA's growth rate projections. As Georgia Power has stated, its recent procurements demonstrate it is "willing and able to procure cost-effective renewable resources for customers when such opportunities are available."[43] The availability of more such opportunities is apparent from the Company's recent filings. For example, in seeking to fulfill its utility scale offerings, the Company received bids totaling more than 5,100 MW, all within a bidding regime in which bid prices could not exceed the utility's projected avoided costs.[44]

The rapid cost declines that have made renewables investments so appealing in Georgia over the past year are not reflected in EPA's analysis. For wind, EPA projects capital costs of $2.26 per watt in 2016 to $2.04 per watt in 2030.[45] However, the U.S. Department of Energy

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[36] *Id.*
[37] Diane Cardwell, *Solar and Wind Energy Start to Win on Price vs. Conventional Fuels*, THE NEW YORK TIMES (Nov. 23, 2014).
[38] *Id.*
[39] Eric Wesoff, *Cheapest Solar Ever? Austin Energy Buys PV from SunEdison at Five Cents Per Kilowatt-Hour*, GREENTECH MEDIA (March 10, 2014), *available at* http://www.greentechmedia.com/articles/read/Cheapest-Solar-Ever-Austin-Energy-Buys-PV-From-SunEdison-at-5-Cents-Per-Ki, last accessed November 25, 2014.
[40] Stephen Lacey, *Georgia is the latest state to procure dirt-cheap solar power*, GREENTECH MEDIA (Oct. 15, 2014), *available at* http://www.greentechmedia.com/articles/read/how-cheaply-can-georgia-power-buy-solar-for-6.5-cents; last accessed November 23, 2014.
[41] Georgia Power Company, Direct Testimony, Application for Certification of 2015 and 2016 ASI Prime PPAs and Request for Approval of 2015 ASI PPAs, filed Oct. 21, 2014, Georgia Public Service Commission Docket No. 38877, at 12, *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=155492.
[42] *See* Direct Testimony of Georgia Power Company, Application for Certification of BCII and BCVI filed January 14, 2014, Docket No. 37854, at 5, available at http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=151433.
[43] Final Brief of Georgia Power Company filed June 28, 2013, Georgia Public Service Commission Docket Nos. 36498 and 36499, at 21, *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=148695.
[44] Georgia Power Company Application for Certification of 2015 and 2016 ASI Prime PPAs and Request for Approval of 2015 ASI PPAs, Georgia Public Service Commission Docket No. 38877, at 13, *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=155389.
[45] EPA Power Sector Modeling Platform v.5.13, Chapter 4: Generating Resources, Table 4-16, Performance and Unit Cost Assumptions for Potential (New) Renewable and Non-Conventional Technology Capacity in EPA Base Case v.5.13, *available at* http://www.epa.gov/powersectormodeling/BaseCasev513.html, last accessed November 22, 2014.

(DOE) has determined that wind projects installed in 2013 were already much cheaper than these projections, with pricing in the $0.90 to $1.30 per kW range.[46] As DOE notes, "[t]hese price reductions, coupled with improved turbine technology and more-favorable terms for turbine purchasers, have exerted downward pressure on total project costs and wind power prices."[47]

For solar, EPA's IPM modeling assumes solar PV installed costs ranging from $2.86 to $3.36 per watt.[48] This model adopts costs from the EIA's Annual Energy Outlook 2013. New industry data demonstrate that these cost assumptions are significantly out of date. The Natural Resources Defense Council compiled more recent solar cost information, which assessed the cost of solar PV as $1,770/kW.[49] These cost estimates are based on data from the Department of Energy, Bloomberg New Energy Finance and SEIA.[50] Updating these assumptions would lower the levelized cost of solar energy from $224/MWh to $153/MWh.[51]

The solar and wind cost declines projected by UCS and others are the product of rapid technological advances, so it is understandable that the proposal does not adequately capture them. However, EPA should ensure that the final rule does include updated cost projections. In addition, EPA should use those updated projections to more accurately quantify the amount of renewable energy that can be deployed at reasonable cost in Georgia.

2. EPA should assume a rate of renewables deployment that is consistent with recent trends.

As noted previously, EPA's proposed approach for determining the emissions reduction potential of renewable energy relies on regional targets. For the Southeast, EPA has established a regional target of 10 percent based upon the renewable portfolio standard (RPS) of North Carolina. EPA then calculated an annual growth rate that is needed to achieve the regional target, using state renewable generation levels in 2012 as the baseline. States are assumed to start, in 2017, at levels they achieved in 2012 and to cease adding renewable generation when they reach the regional cap. We agree with UCS that this "average system" approach fails to represent the "best system of emission reduction" that the Clean Air Act requires.[52] Among other things, it fails to account for demonstrated growth in states over the last several years, producing overly conservative targets that are already being exceeded by several states.[53]

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[46] *See* U.S. Dep't of Energy, *Wind Technologies Market Report 2013*, *available at* http://emp.lbl.gov/sites/all/files/2013_Wind_Technologies_Market_Report_Final3.pdf, last accessed November 22, 2014.
[47] *Id.* at viii.
[48] EPA Power Sector Modeling Platform v.5.13, Chapter 4: Generating Resources, Table 4-16, Performance and Unit Cost Assumptions for Potential (New) Renewable and Non-Conventional Technology Capacity in EPA Base Case v.5.13, *available at* http://www.epa.gov/powersectormodeling/BaseCasev513.html, last accessed November 22, 2014.
[49] NRDC, *Issue Brief: The EPA's Clean Power Plan Could Save Up to $9 Billion in 2030*. November 2014. Available at http://www.nrdc.org/air/pollution-standards/files/clean-power-plan-energy-savings-IB.pdf, last accessed November 25, 2014.
[50] *Id*. at Endnote 7.
[51] *Id*. at Endnote 3.
[52] Union of Concerned Scientists, *Strengthening the EPA's Clean Power Plan*, at 3, *available at* http://www.ucsusa.org/sites/default/files/attach/2014/10/Strengthening-the-EPA-Clean-Power-Plan.pdf, last accessed November 22, 2014.
[53] *Id*.

We urge EPA to assume a rate of renewable energy deployment that is more consistent with recent rates of deployment. We encourage EPA to adopt UCS' Demonstrated Growth approach, which calculates a national average renewable energy benchmark growth rate of 1 percent of annual electricity sales based on actual state data from 2009 to 2013 from EIA. For states below the benchmark, EPA should assume they can gradually ramp up to 1 percent by 2020 and continue at that level through 2030, similar to the approach that EPA takes for the energy efficiency building block. For the leading 15 states, EPA should assume that they can continue at their 5-year average rate up to 1.5 percent per year.[54] This approach will produce targets more in step with recent trends.

Currently, EPA assumes for renewable generation that Georgia will be in 2017 exactly where it was in 2012, when non-hydro renewable generation accounted for just 3 percent of total generation. But the reality is that Georgia will have almost double that amount as a result of recent significant investments in solar and wind. In a period of just four years, Georgia Power Company is poised to grow its solar portfolio from approximately 50 MW to over 900 MW, and its wind portfolio from zero to 250 MW.[55] These dramatic increases over a very short time show that EPA's assumed annual growth rate for Georgia of 13 percent is overly conservative. Indeed, Georgia is likely to continue exceeding that rate by a wide margin.

Georgia's recent renewables investments have positioned it as a leader in clean energy. A recent report by the Pew Charitable Trusts found that Georgia attracted $666 million in private clean energy investment from 2009 to 2013 and will generate an additional $4.4 billion over the next decade.[56] Georgia's recent solar installations accounted for 3 percent of all new clean energy additions in the U.S. in 2013.[57] Pew projects solar to increase in Georgia by 535 percent between 2014 and 2023.[58] This is in line with other predictions regarding Georgia's abundant solar potential. For example, the Department of Energy's SunShot Initiative assumes that due to projected declines in solar costs, Georgia will have a cumulative installed solar PV capacity of 13.1 gigawatts (GW) by 2030.[59] Georgia's utility scale solar potential alone is over 45 times greater than current state generation.[60]

Georgia's in-state potential is not limited to solar. The recent technological advances and cost declines affecting wind generation have led to vastly improved estimates of in-state wind potential across the Southeast, including Georgia.[61] Increased hub heights and other

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[54] *Id.*
[55] Christine Hall, *State nears 1 gigawatt in solar energy*, ATLANTA BUSINESS CHRONICLE (July 4, 2012), *available at* http://www.bizjournals.com/atlanta/print-edition/2014/07/04/state-nears-goal-of-1-gigawatt-in-solar-energy.html?page=all.
[56] Pew Charitable Trust, *Clean Economy Rising: Georgia solar energy looks bright* (November 2014), *available at* http://www.pewtrusts.org/~/media/Assets/2014/11/Georgia_clean_economy_rising.pdf, last accessed December 1, 2014.
[57] *Id.*
[58] *Id.*
[59] U.S. Dep't of Energy, *SunShot Vision Study* (Feb. 2012), at 257, *available at* http://www.eere.energy.gov/solar/sunshot/vision-study.html, last accessed November 22, 2014.
[60] Lopez, A. et al. 2012. *U.S. Renewable Energy Technical Potentials: A GIS-Based Analysis.* National Renewable Energy Laboratory. *Available at* http://www.nrel.gov/docs/fy12osti/51946.pdf.
[61] *See* NREL, *New National Wind Potential Estimates for Modern and Near-Term Future Turbine Technologies* (2014), *available at* http://www.nrel.gov/docs/fy14osti/62318.pdf.

technological advances have helped increase Georgia's inshore wind potential from 130 MW to over 3,000 MW.[62]

We urge EPA to update its projected renewable generation targets for Georgia both in the final rule and again in 2017. Georgia's renewables target should be based on its actual renewable generation levels in 2017 as well as its abundant potential for future growth. Under its Demonstrated Growth approach, UCS has determined that Georgia can achieve more than 22 million MWh of renewable generation by 2030 – almost double EPA's projections. As discussed previously in Part III, if Georgia were to achieve even three-quarters of the UCS-projected levels of renewable penetration, and those renewables displace fossil generation (along with energy efficiency increases under Building Block 4), Georgia could reach its target reduction without *any* natural gas re-dispatch – in fact, Georgia would exceed the target, reaching an emission rate of 782 lbs/MWh.[63]

3. EPA should update its formula to correctly account for the displacing effects of renewable energy.

In its October 27, 2014 Notice of Data Availability, EPA explains that the formula used in the proposal did not adequately account for the emission reductions from renewable energy. As EPA explains, the original proposed formula failed to account for the reduction in generation at coal and gas power plants that is likely to occur when more renewables are added to the grid. Under EPA's proposed approach, new renewables are factored into the denominator when calculating emission rate goals, but they have no effect on the numerator.

This approach is inconsistent with EPA's treatment of Building Block 2, in which increased utilization of natural gas plants is presumed to displace equivalent amounts of coal generation. Moreover, this approach is contrary to EPA's description of its renewable energy assumptions in the original proposal. For example, in the proposal EPA describes Building Block 3 as "[r]educing emissions from affected EGUs in the amount that results from *substituting generation* at those EGUs with expanded low-or zero-carbon generation."[64] Despite these statements, EPA's calculations did not substitute generation or reduce generation from fossil-fired resources in the amount associated with new renewable energy resources, with the result that EPA's target-setting fails to capture the full extent of available carbon emission reductions.

When EPA sets final state targets, it should use the corrected formula proposed in the Notice of Data Availability[65] to ensure that renewable energy is given full credit for its carbon reduction benefits.

4. EPA should allow out of state RECs to count towards compliance.

Georgia's least-cost approach to renewables development is likely to include additional purchases of wind energy, and associated renewable energy credits (RECs), from wind farms in

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[62] *Id.*
[63] *See* SELC Spreadsheet, Enhanced Renewable Generation Case, included as Attachment 2.
[64] 79 Fed. Reg. at 34,836 (emphasis added).
[65] Between the two proposed formulas for backing out historical fossil generation, we favor substitution on a pro rata basis across generation types.

the Midwest. As noted previously, Georgia Power is currently in the process of issuing a "request for information" for additional wind opportunities, and will present findings to the Georgia PSC by March 1, 2015.[66] For that reason, we urge EPA to make clear in the final rule that bundled REC purchases from other states may count for compliance.

Record-low prices are making wind deals more attractive to utilities across the nation,[67] and Georgia's utilities (and by extension, their customers) stand to benefit from increased wind opportunities. For example, the Plains & Eastern Clean Line Transmission Project will include an overhead ± 600 kilovolt (kV) high voltage direct current (HVDC) electric transmission system and associated facilities with the capacity to deliver approximately 3,500 megawatts (MW) primarily from renewable energy generation facilities from the Oklahoma Panhandle region to load-serving entities in the Mid-South and Southeast.[68] The proposed project will traverse Oklahoma, Arkansas, and Tennessee, a distance of approximately 700 miles.[69] The western portion of the project will interconnect to the transmission system operated by the Southwest Power Pool in Texas County, Oklahoma,[70] while the eastern portion will interconnect to the transmission system operated by the Tennessee Valley Authority (TVA) in Shelby County, Tennessee.[71] Commercial operation is expected in 2018.[72]

States that choose to rely on imported renewable energy to meet carbon reduction targets will need to account for that energy for compliance purposes. EPA is proposing that a state could take into account all of the CO_2 emissions reductions from renewable energy implemented by the state, whether they occur in the state or in other states.[73] This would acknowledge the existence of RECs that allow for interstate trading of renewable energy attributes. This approach would also be consistent with existing state RPS policies, which often allow for the use of renewable energy located in another state to be used to comply with that state's RPS, so long as RECs are exchanged.

Renewable energy has been tracked and traded in the United States for nearly 20 years, resulting in integrated electronic tracking systems and standardized approaches to trading and establishing ownership.[74] The currency for these trading systems is the REC, which represents the "renewableness" of a MWh of energy.[75] The precise content of a REC depends on state law,

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[66] *See* Kristi E. Swartz, *Georgia Power Moves toward Adding Wind to its Power Mix*, E&E REPORTER (Nov. 21, 2014).
[67] Diane Cardwell, *Solar and Wind Energy Start to Win on Price vs. Conventional Fuels*, THE NEW YORK TIMES (Nov. 23, 2014).
[68] U.S. Dept. of Energy, *Plains & Eastern EIS, Project Overview, available at* http://www.plainsandeasterneis.com/, last accessed November 22, 2014.
[69] *Id.*
[70] *Id.*
[71] *Id.*
[72] *See* Clean Line Energy Partners, *Plains and Eastern Clean Line Schedule, available at* http://www.plainsandeasterncleanline.com/site/page/schedule, last accessed November 22, 2014.
[73] 79 Fed. Reg. at 34922.
[74] Quarrier, R. and D. Farnsworth. 2014. *Tracking renewable energy for the U.S. EPA's clean power plan: Guidelines for states to use existing REC tracking systems to comply with 111(d), available at* http://www.resource-solutions.org/pub_pdfs/Tracking%20Renewable%20Energy.pdf, last accessed November 23, 2014.
[75] *Id.* at 4.

but typically it includes the legal right to claim delivery and usage of renewable energy.[76] The consistent feature of REC trading is that each REC should only be used (or "retired") once.

Currently, a voluntary market exists in states that do not have RPS obligations. For much of the Southeast except North Carolina, the North American Renewables Registry is the REC tracking system. This system operates in much of the Southeast, some Midwest states, and much of Canada. North Carolina operates its own REC trading system, known as NC-RETS; Virginia operates within the PJM-GATS trading system.[77] Georgia could, if it chooses, participate in the development of a regional trading system for the Southeast states that will allow for tracking of renewable energy generated in the region for purposes of compliance with the Clean Power Plan. This database could be used to track renewable energy that is generated in-state and used by load-serving entities in that state for compliance, as well as renewable energy generated out-of-state and transferred to a load-serving entity within the state. This would give Georgia confidence that investments in renewable energy will be credited toward compliance.

The use of regional REC markets is consistent with EPA's approach of determining state renewables targets based on the regional availability of renewable power resources. Allowing states to comply using out of state purchases of renewable energy will greatly increase the cost-effectiveness of renewable resources by capturing regional efficiencies. But for this to work effectively, EPA should ensure that compliance credit goes to the states where the purchasers of RECs and energy reside, regardless of where the renewable energy was physically generated.

We support the flexibility that EPA has given states to comply in the proposed rule. States can ensure compliance with targets by requiring load-serving entities to purchase renewable energy and by establishing backstop measures that apply to regulated sources in the event of a shortfall. Renewable energy credits should not be limited to utility scale projects, but should also be allowed to come from commercial and residential distributed solar systems.

B. **EPA's Energy Efficiency Assumptions in Building Block 4 Should be Modified.**

We likewise strongly support EPA's inclusion of energy efficiency in its target-setting for Georgia and other states. As with renewable energy, energy efficiency is appropriately considered as part of the "best system of emission reduction" for reducing carbon emissions from the power sector. Utilities across the nation, including in Georgia, have long relied on energy efficiency as a system resource that avoids the need for more costly resource additions and retrofits.

Energy efficiency is the lowest cost option for reducing carbon emissions. On average, energy efficiency programs now cost just 2.8 cents per kWh, and costs are continuing to fall.[78] EPA itself finds that the average cost of CO_2 reductions achieved from energy efficiency measures will range from $16 to $24 per metric ton of CO_2,[79] compared to $30 per metric ton for

[76] *Id.*
[77] *Id.* at 5.
[78] *See* Molina, M. 2014. *The Best Value for America's Dollar: A National Review of the Cost of Utility Energy Efficiency Programs.* Washington, DC: American Council for an Energy-Efficient Economy, *available at* www.aceee.org/research-report/u1402.
[79] 79 Fed. Reg. at 34,875.

natural gas re-dispatch.[80] And energy efficiency provides benefits extending well beyond carbon emission reductions: demand-side measures save customers money on their energy bills – EPA projects average electric bill savings of 9 percent by 2030[81] – and can create thousands of new jobs. A study by the Southeastern Energy Efficiency Alliance has found that every million dollars invested in energy efficiency programs in the Southeast, including Georgia, created more than 17 full-time jobs and produced over $3.8 million in economic output per year.[82] Going forward, energy efficiency can be as much the job creation engine that solar has been for Georgia over the last two years.

Nevertheless, the EPA's current proposal fails to reflect Georgia's full energy efficiency potential; relies on unreasonable cost assumptions; fails to account correctly for the emissions reduction benefits that cost-effective efficiency measures provide; and inappropriately discounts credit for Georgia's efficiency measures based on its current status as a net importer of electricity. In addition, the proposal lacks clarity regarding whether gross or net energy savings will be the appropriate metric for demonstrating compliance. To address these issues, we offer the following recommendations.

1. Ensure that energy efficiency potential assumptions reflect Georgia's true potential.

EPA should revise its assessment of Georgia's energy efficiency potential in three ways: (1) to reflect that Georgia's starting point in 2017 will be higher than EPA assumes; (2) to take into account a series of estimates of Georgia's efficiency potential, including by its largest utility, Georgia Power Company, that show greater potential than EPA assumes; and (3) to account for recent trends in other states that reveal the conservative nature of EPA's target goal of 1.5 percent annual savings.

a. Reassessing Georgia's starting point

There is no doubt that Georgia has yet to realize its potential for significant energy savings through cost-effective energy efficiency. Georgia ranks near the bottom of states in achieving electricity savings. According to the 2014 State Energy Scorecard developed by the American Council for an Energy-Efficient Economy (ACEEE), Georgia's current position is 35th, a drop of two positions from its 2013 ranking.[83] Although Georgia's sole regulated utility, Georgia Power, recognizes energy efficiency as a priority resource, and includes it within its integrated resource plans, it nevertheless spend little on efficiency programs compared to utilities in other states.[84]

Nevertheless, Georgia Power is already achieving higher levels of energy savings than EPA assumes, and it can achieve greater savings faster than EPA projects. EPA's approach

[80] *Id.* at 34,865.
[81] *Id.* at 34,934.

[83] *State Scorecard: Georgia*, Am. Council for an Energy-Efficient Econ., *available at* http://www.aceee.org/files/pdf/state-sheet/georgia.pdf (last visited Nov. 26, 2014).
[84] *Id.*

assumes that in 2017 Georgia will be where it was in 2012, with incremental and cumulative savings at just 0.18 percent and 0.67 percent, respectively. However, based on programs approved in 2013, Georgia Power will by 2017 achieve incremental savings of 0.4 percent and cumulative savings of 1.6 percent.[85] Georgia Power is not, of course, the only player. Nevertheless, it is the state's largest utility, accounting for more than half of all retail electricity sales. If EPA were to correct its assumptions and include Georgia Power's actual projected savings in 2017, Georgia's starting point would be higher, meaning it could achieve the target rate of 1.5 percent annual savings earlier than EPA assumes.

b. Accounting for independent assessments of Georgia's efficiency potential

EPA's projections for Georgia are exceeded by independent assessments of Georgia's energy efficiency potential, including by Georgia Power itself. For example, in 2005, a state agency assessment of Georgia's energy efficiency potential found that by 2010 the state could achieve annual savings levels ranging from 2.3 to 8.7 percent.[86] A 2007 assessment prepared for Georgia Power reached similar conclusions, finding potential reductions by 2010 ranging from 1.7 percent to 6.2 percent.[87] The report concluded that "[a]n apparently significant potential for increased energy efficiency exists in Georgia, where the economy could benefit from effects associated with reduced energy consumption and peak power requirements."[88] These findings are echoed in Georgia Power's most recent assessment (from 2012), which shows hypothetical achievable energy savings ranging from about 6 percent to 15 percent of forecasted 2023 energy sales depending on the level of incentives paid to customers.[89]

Similarly, earlier this year, ACEEE determined that Georgia could reduce electricity consumption by 24 percent below 2012 levels by 2030 by implementing four common efficiency practices.[90] These four practices – implementing an annual energy efficiency savings target of 1.5 percent, enacting national model building codes, constructing combined heat and power systems, and adopting efficiency standards for products and equipment – are well within Georgia's ability to adopt.

Indeed, more than eight years ago, Georgia developed a State Energy Strategy declaring that Georgia's "highest priority" should be to "aggressively pursue all cost-effective energy

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[85] *See* Georgia Power Company's Application for the Certification of its Amended Demand Side Management Plan, Georgia Public Service Commission Docket No. 36499 (Oct. 18, 2013), *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=150278.

[86] ICF Consulting, *GEFA Assessment of Energy Efficiency Potential in Georgia*, Final Report (May 5, 2005), *available at* http://www.cleanairinfo.com/airinnovations/2005/Addl%20Info/Cyrus%20Bhedwar/GEFA%20Energy%20Efficiency%20Potential%20Study.pdf, last accessed Dec. 1, 2014.

[87] Nexant, *Achievable Energy Efficiency Potential Assessment*, Final Study for Georgia Power (March 2007), *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=100970.

[88] *Id.* at 1-10.

[89] Nexant, *Report on Achievable Energy-Efficiency Potentials Assessment* (Jan. 31, 2012), *available at* http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=140174.

[90] Hayes, S. et al, American Council for an Energy Efficiency Economy (ACEEE), *Change is in the Air: How State Can Harness Energy Efficiency to Strengthen the Economy and Reduce Pollution*, April 2014.

efficiency opportunities."[91] Georgia's failure, thus far, to heed its own policy prescription should not be read as a sign of diminished potential for cost-effective efficiency measures. Georgia's significant potential remains, and EPA should revise its assessment of Georgia accordingly.

c. Accounting for Recent Trends.

Finally, EPA should take into recent national trends showing that Georgia and other states can ramp up to significant savings sooner than EPA projects. Eleven states achieved energy savings of over 1 percent of retail sales in 2012.[92] National investments in utility energy efficiency programs have grown at a rapid pace—increasing from $1.6 billion in 2006 to $5.9 billion in 2011[93]—and are projected to continue to increase between $8.1 billion and $12.2 billion over the next decade, with the most significant increases occurring in regions with lower levels of historical program spending.[94] Given these trends, and the comparatively low levels of energy efficiency currently being realized in Georgia, the potential to quickly ramp up energy savings across the state is enormous.[95]

In summary, while EPA's assessment of Georgia's energy efficiency potential would, if achieved, represent progress, it fails to capture Georgia's full potential. Georgia will occupy a higher starting point in 2017 than EPA assumes, and can achieve higher cumulative savings by 2030. Those larger savings will provide greater benefits to all Georgians.

2. EPA should update its energy efficiency cost assumptions to reflect up-to-date costs of efficiency programs

Energy efficiency is recognized as the most widely available and lowest-cost option for reducing carbon emissions. EPA's Regulatory Impact Analysis on the Clean Power Plan cites two studies finding that demand-side efficiency improvements can be realized at less cost than the savings from avoided power generation. However, EPA's estimates of energy efficiency costs, even though they reflect a very low cost compared to supply-side resources, are likely too high. EPA estimates the levelized cost of energy efficiency savings at 8.3 to 9 cents/kWh.[96] Yet EPA directly acknowledged that it "has taken a conservative approach (i.e., leading to higher estimates to costs) to the development of the EE state goals as well as to other factors that affect the EE cost estimates…"[97]

In practice, energy efficiency costs are one third to one fourth the cost that EPA assumed. For example, the Lawrence Berkeley National Laboratory found that the average levelized cost

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[91] *See* Governor's Energy Policy Council, Georgia Environmental Finance Authority, *State Energy Strategy for Georgia* (Dec. 14, 2006) at 7, *available at* https://gefa.georgia.gov/sites/gefa.georgia.gov/files/related_files/site_page/STATE_ENERGY_STRATEGY_FINAL_12.14.06.pdf.
[92] Abatement TSD at 5-17–5-19.
[93] Abatement TSD at 5-2, 5-14–5-15, 5-19.
[94] *Id.*
[95] *Id.* at 5-19.
[96] EPA, "GHG Abatement Measures," Technical Support Document at page 5-60, *available at* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-ghg-abatement-measures.pdf.
[97] *Id*. at 5-52.

of energy saved from efficiency programs is 2.1 cents/kWh at a 6% discount rate.[98] ACEEE also performed a study of the cost of efficiency programs and found that, on average, the levelized cost is roughly 2.8 cents/kWh under a 5-percent discount rate and 2.5 cents/kWh under a 3-percent discount rate.[99]

Cost assumptions that reflect the true cost of energy efficiency programs are vital if states are to realize the full benefits of these resources. As a result, EPA's cost assumptions should include the more realistic assessments that are now being seen in the marketplace.

3. EPA should revise its target-setting formula to correctly account for emissions reductions from energy efficiency resources.

As described previously in Part IV.A, EPA failed to properly account for energy efficiency and renewable energy resources in the target-setting formula. Rather than backing out the equivalent level of existing fossil-fired generation that these resources would displace, EPA simply added the MWh of generation or energy savings from these resources into the denominator of the lbs/MWh emissions rate. EPA should revise its methodology in line with the information released in its NODA to capture the emissions-reduction benefits of efficiency programs.

4. **EPA should revise its target-setting formula for states that are net importers of electricity.**

In its target-setting formula, EPA assumed that states that are net importers of electricity should receive credit for only a portion of their energy efficiency investments. The portion is represented as the share of in-state generation that is not imported. As a net electricity importing state, Georgia receives credit for 88 percent of its energy efficiency investments, which represents its share of in-state generation in 2012. The problem with this assumption is that it discounts the value of energy efficiency programs as a compliance mechanism. In addition, it assumes that Georgia is likely to remain a net importer of electricity during the compliance period. With the expected completion of Vogtle Units 1 and 2, and the added generation they will furnish, this is not likely to remain true.

EPA should revise its formula so that the full level of energy efficiency resources that a state invests in will be counted as a compliance mechanism. This will be especially important if EPA adopts the approach described in its recent NODA and adjusts the emissions rate formula to reflect displacement of fossil generation by energy efficiency and renewable generation. In that event, for the displacement assumption to be accurate, energy efficiency resources must be fully credited. For states like Georgia that are (at least currently) net importers, it is important that they get full credit for their investments in energy efficiency where such investments are reducing generation from fossil-fired resources. Failing to provide such credit will mean that a significant amount of energy efficiency is not recognized as a compliance option, even when they are having the practical effect of displacing in-state generation.

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[98] *See* Megan A. Billingsley *et al*., Lawrence Berkeley National Laboratory, "The Program Administrator Cost of Energy Saved for Utility Customer-Funded Energy Efficiency Programs," at xi (March 2014).

[99] *See* Maggie Molina, American Council for an Energy Efficient Economy, "The Best Value for America's Energy Dollar," at 20 (March 25, 2014).

5. EPA should recognize gross savings as an appropriate metric for state compliance plans.

In the proposal, EPA states that it calculated state energy efficiency goals based on net savings.[100] As EPA states,

> This incremental savings rate and all others discussed in this subsection represent net, rather than gross, energy savings. Gross savings are the changes in energy use (MWh) that result directly from actions taken by program participants, regardless of why they participated in the program. Net savings refer to the changes in energy use that are directly attributable to a particular energy efficiency program after accounting for free-ridership, spillover and other factors.[101]

EPA did not specifically seek comment on this issue, and SELC does not disagree with EPA's use of net savings for purpose of target-setting. Compliance, however, is another issue. In its State Considerations Technical Support Document, EPA states that a consideration for energy efficiency programs in state compliance plans "is whether reporting of energy savings should be specified on either gross or net basis, or both, to promote consistency in measuring the impact of energy efficiency measures across state plans."[102]

Net savings establish whether a utility expenditure caused a consumer to adopt an energy efficiency technology or measure. As such, they are a useful metric for determining whether a utility should receive a performance incentive or lost revenue adjustment for its program. But this is a separate issue from whether a utility program has the effect of reducing carbon emissions for a state carbon reduction goal. From that standpoint, any measure that actually reduces emissions by reducing the need for generation should count for compliance, regardless of whether the measure was installed by a free rider, or resulted from spillover or other factors. Accordingly, we believe that gross savings are the appropriate metric for compliance purposes, and EPA should so clarify in the final rule.

C. Under-Construction Nuclear

EPA's proposed treatment of under-construction nuclear in Georgia and two other states has been a source of controversy.[103] In comments to EPA dated September 16, 2014, the Georgia EPD urged EPA to remove under-construction nuclear generation from the state emission goals but to allow it to be used for compliance.[104] Currently, the anticipated generation from the two units under construction at Plant Vogtle accounts for 30 percent of Georgia's target reduction. Removing those units from the target-setting would substantially relax Georgia's carbon reduction requirements. At the same time, allowing the nuclear generation to be used for compliance (i.e., added to the denominator of EPA's rate-setting equation, as EPD recommends) would mean that Georgia could achieve much of its target without lowering actual carbon

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[100] 79 Fed. Reg. at 34,872.
[101] *Id.*
[102] EPA, *Technical Support Document: State Plan Considerations*, Docket ID No. EPA-HW-OAR-2013-602, at 53.
[103] *See, e.g.,* Mary Landers, *Utility and Regulators Push Back on Carbon Cutting Plan for Georgia*, SAVANNAH MORNING NEWS (Nov. 29, 2014).
[104] *See* EPD Comments to EPA in Docket ID No. EPA-HQ-OAR-2013-0602 (Sept. 16, 2014).

emissions (lbs of CO_2) at all. For this reason, we find EPD's suggested approach deeply problematic and offer the following comments to guide EPA's resolution of this issue.

1. The CPP's Approach to Nuclear Power

The CPP recognizes nuclear generation as a method for reducing greenhouse gas emissions, characterizing it as carbon-free generation with high construction costs and relatively low variable operating cost.[105] Thus, EPA reasons that states can reduce their greenhouse gas emissions by increasing nuclear generation to displace fossil fuel-fired generation.[106]

A brief summary of how EPA treats nuclear is below. We note that its treatment differs in some respects from that of other resources, both traditional fossil-fuel sources and from renewable generation. As a general matter, we believe that such disparate treatment is allowable, and may even be compelled by the material differences in the nature of these resources. For instance, unlike nuclear, under-construction fossil-fuel fired sources fall under 111(d) in their own right, since they directly contribute to greenhouse gas emissions, and can follow load.

Even between zero-emitting resources like nuclear and renewables, differing treatment can be traced to inherent differences that bear consideration under a scheme like the Clean Power Plan with its system-wide approach. For instance, nuclear units differ from renewables due to the tremendous scale on which nuclear resources are deployed, their massive up-front costs (often in the billions of dollars), federal permitting oversight, and their extensive lead times (usually taking years, or even decades, to complete). Moreover, assessing renewable energy's potential to reduce CO_2 emissions in a given state depends much more on that state's particular technologic, geologic, geographic, and economic condition than it depends on the resource's construction status. In contrast, the degree to which a state can fairly be expected to utilize nuclear generation to reduce its emissions depends far more on a project's construction status. Lastly, the Clean Air Act itself envisions taking into account factors other than strictly CO_2 impacts when establishing BSER.[107] For nuclear, these factors would include environmental and human health risks associated with potential accidents and radioactive waste storage.

a. New Generation

As EPA correctly notes, while nuclear generation has carbon-reduction benefits, building new nuclear generation costs far more than other types of generation both in terms of dollars and time.[108] EPA therefore concludes that *requiring* states to construct new nuclear generating units would not constitute BSER.[109] However, EPA does propose to give existing nuclear and nuclear projects already under construction a role in setting BSER.

b. Existing Generation

For existing nuclear generation, EPA finds that states could reasonably and cost-effectively take steps to prevent cuts in their existing nuclear fleets. Such steps would contribute

[105] 79 Fed. Reg. at 34,870.
[106] *Id.*
[107] 42 U.S.C. § 7411(a) (BSER must take into account "the cost of achieving such reduction and any nonair quality health an environmental impact and energy requirements").
[108] 79 Fed. Reg. at 34,870.
[109] *Id.* at 34,923.

to the Clean Power Plan's goals because lost nuclear generation requires replacement generation from some source, likely a fossil-fired plant. As EPA notes, between 2012 and June 2014, utilities either closed or announced closure plans for six nuclear EGUs at five plants across the country.[110] EPA notes that the EIA forecasts an additional 5.6 GW of capacity cuts in the U.S. nuclear fleet.[111] That forecast is used as a proxy to determine that six percent of the U.S. nuclear fleet is at risk of retirement due to (1) increased fixed operation and maintenance costs, (2) relatively low wholesale electricity prices, and (3) additional capital investment associated with ensuring plant security and emergency preparedness.[112]

EPA posits that, under a Clean Power Plan-compliance approach, utilities and states can prevent that six percent loss without incurring unreasonable costs, and that preserving the six percent "at risk" nuclear generation could avoid 200 to 300 million metric tons of CO_2 emissions over a ten-year phase in period, at a cost of $12 to $17 per metric ton.[113] EPA accordingly concludes that each state could take steps to "retain" the existing "at risk" nuclear generation and incorporates this retention into its BSER target-setting calculus. Notably, this six percent retention calculus reduces a state's target emissions rate even if a particular state has no existing nuclear generation at risk.

On the whole, while factoring "at risk" nuclear generation into a state's target serves to reduce that state's target, most states need not take any actual steps (or expend any additional dollars) to incorporate this "at risk" generation when calculating their emissions rates in a proposed compliance plan. Essentially, the "at risk" nuclear provision becomes a "one in, one out" book exercise with no real-world burdens placed on the states.[114]

c. Under-Construction Generation

While EPA concludes that the CPP should not include entirely new nuclear construction as BSER, EPA does note that three states (Georgia, South Carolina, and Tennessee) currently have nuclear projects under construction. While docket proceedings continue, the proposed projects in both South Carolina and Georgia have received their Certificates of Public Convenience and Necessity.[115] The new unit in Tennessee is nearly complete.[116] As a result, EPA concludes that those states could expect these new under-construction nuclear units to reduce carbon emissions at no additional compliance cost.[117] In other words, these units' multi-billion dollar price tag would be ignored when considering relative Clean Power Plan

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[110] *Id.*
[111] *Id.* at 34,871.
[112] *Id.*
[113] *Id.*
[114] If a state actually does have "at risk" nuclear generation, that state would incur real-world costs in either preserving that capacity or making up for the lost nuclear generation in some other manner.
[115] Order No. 2009-104(A), *In Re: Combined Application of South Carolina Electric and Gas Company for a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order for the Construction and Operation of a Nuclear Facility in Jenkinsville, South Carolina*, No. 2008-196-E (March 2, 2009); Amended Certification Order, *Georgia Power's Application for the Certification of Units 3 and 4 at Plant Vogtle and Updated Integrated Resource Plan*, No. 27800 (March 30, 2009).
[116] Press Release: *Watts Bar Unit 2 Over 90 Percent Complete, Key Milestones Ahead, August 12, 2014.* Available at http://www.tva.com/news/releases/julsep14/wb2.html, last visited December 1, 2014.
[117] *Id.* at 34,870.

compliance costs, on the theory that the states were going to build the units regardless of whether the Clean Power Plan goes into effect.

Adding these under-construction units' generation into the target-setting formula substantially changes the result. For example, the Clean Power Plan currently sets Georgia's target emissions rate at 834 lbs/MWh, down from a starting point of 1,598 lbs/MWh. If EPA did not include under-construction nuclear generation in Georgia's target but left all other Building Blocks the same, the Clean Power Plan would set Georgia's target at 972 lbs/MWh.

As with "at risk" nuclear, EPA's proposal factors the under-construction generation into the denominator when setting Georgia, South Carolina, and Tennessee's target emissions rate. EPA then proposes to allow those states to count 100 percent of the generation from these units when calculating the state emissions rates in a compliance plan. Again, on paper, under construction nuclear amounts to little more than a "one in, one out" book exercise since that generation reduces the states' emissions rates in target setting but then also reduces the rate in calculating a compliance plan.

2. Alternatives to the CPP's Treatment of Under-Construction Nuclear

a. Possible Alternative Treatments If EPA Determines That Under-Construction Nuclear is BSER

EPA's proposed target-setting calculus assumes Georgia will complete Vogtle Units 3 and 4, while further assuming that Georgia can, and will, include the same amount of megawatt hours of generation from these units in demonstrating compliance with the proposed 834 lbs/MWh target. It is possible, however, that cost overruns and delays could so adversely impact the economics that Georgia would prefer to abandon the project.[118] If Georgia abandoned the project, the proposed target would require the state to make up the additional rate reduction in some other fashion, a challenging proposition given the size of the two units. The proposed nuclear units will generate 2,200 megawatts of electricity, which will in turn amount to an estimated 17.4 million megawatt hours per year. If Georgia cannot complete these units, it cannot produce *any* electricity from them. Unlike other zero-emitting resources, such as renewable energy and energy efficiency, which are typically deployed in much smaller portions, where the utility can simply build fewer installations, new nuclear is a bulky, "all or nothing" resource. If the state abandons the project, it will enjoy none of those zero-carbon megawatt hours. In essence, EPA's approach presents a considerable deterrent to states *not* completing these units and effectively encourages their completion by assuming they provide compliance at no incremental cost compared to other compliance measures.

No new nuclear units have come online in the United States in nearly twenty years, largely due to cost overruns, controversy, and delays. These issues continue to threaten the current under-construction nuclear projects, and a possibility certainly exists that Georgia, South Carolina, and Tennessee may cancel their projects. Such a decision would drastically change

[118] Matt Kempner, *New Vogtle Delays May Add $2M Daily*, THE ATLANTA JOURNAL-CONSTITUTION (Nov. 25, 2014).

each state's expected energy mix and its ability to meet EPA's target emissions rate. Georgia EPD has cited this precise concern in its comments to EPA.[119]

To address this concern, we ask EPA to clarify whether and how it could revise a state's target to reflect that contingency, should it occur. We additionally request EPA to consider whether, due to the fact that new nuclear units are massive, incredibly expensive, "all or nothing" undertakings with significant and continued risks, EPA could make the state target effectively contingent on the state maintaining its current course of action of allowing completion of the units despite the delays and escalating costs.[120] In Georgia's case, that would mean that if the state abandons Vogtle Units 3 and 4, the emissions target would revert to 972 lbs/MWh instead of 834 lbs/MWh.

Additionally, if EPA continues to treat under-construction nuclear generation as part of BSER, it might adjust the way it does so. We ask EPA to consider whether to treat the resource like under-construction natural gas, focusing on the extent to which the under-construction nuclear units will displace existing fossil-fuel fired sources. For under-construction natural gas, EPA assumes that those units will operate at 55 percent capacity factor under a "business as usual" approach to meet projected demand growth. EPA then assumes that utility operators could actually increase dispatch of those new natural gas units from 55 percent capacity factor to 70 percent capacity factor by applying Building Block 2. According to EPA, then, states could use the increased 15 percent capacity factor to displace existing fossil-fueled generation. This assumption lowers the state's emissions rate target. Constructing the new natural gas units and operating them above a 55 percent capacity factor would be a means of compliance.

EPA should consider whether it could make a similar calculation for under-construction nuclear units. However, we do not believe that the exact approach EPA took for under-construction natural gas applies to under-construction nuclear. Both types of generation likely will meet some demand growth and offset some portion of existing fossil-fueled generation. But the Clean Power Plan appropriately views under-construction nuclear differently than it views under-construction natural gas because operators can scale natural gas dispatch depending upon load, whereas nuclear operators lack such flexibility. Therefore, while EPA would review data from Georgia, South Carolina and Tennessee to estimate what percentage of the under-construction nuclear generation could reasonably be said to be available to displace existing fossil-fuel generation and what percentage to meet demand growth, it would have to find a different, reasonable basis for the displacement-to-demand-growth ratio.[121]

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[119] *See* EPD Comments, *supra* n. 104, at 6.

[120] EPA has anticipated elsewhere in the Clean Power Plan that state-specific factors might necessitate revising a state's targets. 79 Fed. Reg. at 34,898. *See also* 79 Fed Reg. at 34,895 (Noting the severability of the building blocks as they apply to a state and associated adjustment of the state goal) and 79 Fed. Reg. at 34,904 (Referring to the on-going relationship between EPA and states to continue to work on implementation). However, we note that EPA appropriately includes in the proposal an anti-backsliding provision, which we strongly endorse. 79 Fed. Reg. at 34,917.

[121] EPA could, for instance, look at the expected demand growth when the projects were first proposed and compare that number with a more current demand growth forecast. Since nuclear is less easily dispatched, any generation from an under-construction nuclear unit that does not meet demand growth will offset existing fossil-fueled generation. If a state now forecasts smaller demand growth than it originally expected, that difference could serve as an estimate of fossil-fueled displacement. Both historic and current regional or sub-regional demand growth projection might also be relevant.

In this process, when calculating those states' emissions targets, EPA would factor in that percentage of under-construction nuclear expected to actually displace existing fossil-fueled generation. Total generation in megawatt hours would remain constant[122], but the replacement of fossil-fueled generation with zero-carbon generation would reduce the total pounds of CO_2 emitted. In other words, assuming the same amount of energy is produced, more of it would come from zero-carbon sources, such that the state's total target emissions rate would go down. This process would lower the state's target emissions rate by the amount that EPA estimated under-construction nuclear would actually displace existing fossil. EPA would then allow states that complete their under-construction nuclear units to add the same amount of that nuclear generation to the denominator when demonstrating compliance.[123] That is, since EPA will use that displacement estimate in setting the target, those states could use the same displacement percentage when demonstrating compliance.

b. Possible Alternative Treatment If EPA Determines Under-Construction Nuclear Is Not BSER

Some parties in Georgia, South Carolina, and Tennessee have objected to EPA's inclusion of under-construction nuclear generation in setting their target emissions levels, but seek to count 100 percent of their under-construction nuclear generation in demonstrating compliance. Georgia EPD is among those advocating this approach. EPA should understand that this approach could provide excessive credit for under-construction nuclear projects beyond their ability to displace existing fossil generation.

Calculating a CO_2 emissions rate (lbs/MWh) requires estimating both the total pounds of CO_2 emitted and the total megawatt hours of generation. Although presented as a rate of CO_2 emissions, EPA's proposal includes generation from certain sources that have no CO_2 emissions.[124] As a result, the CPP's "target" CO_2 emissions rates are not just the in-state average of CO_2-emitting sources. The targets are actually the average of CO_2-emitting sources and a select few zero-carbon sources that qualify as BSER. Mathematically, anything that increases the total generation (*i.e.*, the denominator) lowers the emissions rate. This is especially true when zero-carbon generation is added to the denominator, because such an addition adds no new pounds of CO_2 to the numerator. How EPA, or a state, includes zero-carbon emitting sources radically changes the calculated result.

Including 100 percent of under-construction nuclear generation in compliance denominators would give the appearance of dramatically lower emissions rates, even if the under-construction nuclear does not actually displace or reduce actual CO_2 emissions from existing fossil-fueled units. One possible solution to this dilemma is to recognize that under-construction nuclear units *will* reduce a state's emissions rate to the extent the under construction nuclear units actually displace existing fossil sources, as discussed above. Under this approach, EPA would remove under-construction nuclear generation from the target setting and also not add that generation into their compliance formulas. If and when those units come online, and to

[122] The estimated generation from existing fossil-fuel generation would decrease, but the state's total generation would increase by an equivalent amount due to the added under-construction nuclear generation calculated to meet existing demand.

[123] This is analogous to how EPA currently allows states to use "at risk" nuclear in demonstrating compliance.

[124] Specifically, 6% "at risk" nuclear, under-construction nuclear, and expanded renewable generation and energy efficiency.

the extent they actually displace existing fossil units, those states' actual CO_2 emissions rates will reflect that displacement because their total fossil-fueled generation in MWh will decrease (by way of reduced or shut down fossil-fired plants), which will in turn lower the total pounds of CO_2 emitted. Thus, EPA need not factor in the under-construction nuclear units' megawatt hours of generation in either the target-setting or the compliance phases because the Clean Power Plan already allows credit for under-construction nuclear to the extent that it has a real-world impact on the state's emission rate.[125]

D. Georgia has sufficient natural gas capacity for re-dispatch.

Georgia is in the midst of an historic transition away from coal. With increased supplies of natural gas, Georgia's utilities have steadily decreased their reliance on coal.[126] This shift has already produced lower carbon emissions, helping Georgia achieve 38 percent reduction between 2007 and 2012.[127]

The Clean Power assumes Georgia will continue this trend. Under Building Block 2, EPA assumes that Georgia can reasonably and cost effectively increase the dispatch of its natural gas fleet by another 13.8 million MWh, while proportionately decreasing its coal generation, over a period of 14 years. Such a shift is both feasible and in line with pronouncements by Southern Company, the parent company to Georgia's largest utility, Georgia Power Company.[128]

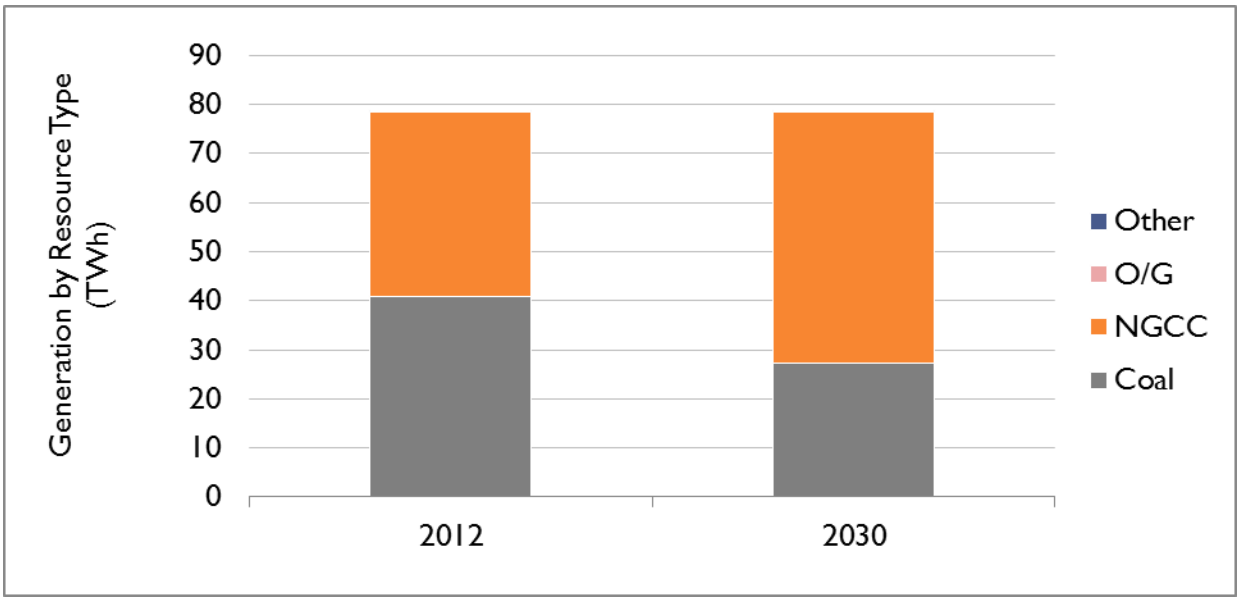
The following figure illustrates the effect of Building Block 2 on Georgia's fossil-fired generation:

[125] Unless Georgia, South Carolina, or Tennessee experience such growth that their under-construction nuclear projects only meet demand growth, their projects will have real-world impacts on the amount of CO_2 emitted by 111(d) units each of those states. The Clean Air Act requires that any state plan be at least as stringent as the emission rate achieved by applying BSER. If a state adopts a mass-cap compliance strategy in place of a rate-based target, EPA should ensure that the mass-cap achieves carbon emissions reductions at least as stringent as what the Clean Power Plan would require of that state under a rate-based target.

[126] Matt Kempner, *Georgia electric plants cut carbon faster than the nation*, THE ATLANTA JOURNAL-CONSTITUTION (May 28, 2014).

[127] *Id.*

[128] Kristi E. Swartz, *Frustrations mount at Southern Co. as costly coal project dings earnings*, E&E NEWS ENERGY WIRE (Oct. 30, 2014), *available at* http://www.eenews.net/energywire/2014/10/30/stories/1060008110 (quoting Southern Company CEO Tom Fanning as describing the company as "the pre-eminent competitive generator in gas" and as well-positioned to add more gas generation).



Source: EPA Clean Power Plan Technical Support Document: Appendix 1 "Goal Computation

Georgia has significant amounts of natural gas combined cycle (NGCC) capacity – more than 8,000 MW. EPA's analysis shows this capacity was utilized at a rate of just 51 percent in 2012. Georgia thus has sufficient underutilized capacity to allow for re-dispatch up to the target rate 70 percent.

A key related consideration is whether Georgia has sufficient natural gas supply. EPA's analysis assumes that Georgia's NGCC units are fully unconstrained in terms of pipeline capacity. It is important to test this assumption because states requiring pipeline expansion to allow their NGCC units to achieve 70 percent capacity factors will have higher costs of compliance associated with Building Block 2, and may therefore elect to pursue other more cost-effective compliance strategies.

We retained Synapse Energy Economics, Inc. ("Synapse") to help answer that question.[129] Synapse analyzed the amount of increased gas consumption that would occur as a result of increasing Georgia's NGCC utilization to 70 percent. Synapse determined that with gas re-dispatch, the total gas delivered to consumers during the peak winter month would increase by approximately 350 MMcf per day.[130] This estimated increase in peak month gas use represents an 18-percent increase in consumption, but is less than 5 percent of the total pipeline capacity into the state.[131] Synapse determined that while some amount of additional pipeline capacity may be required to facilitate this level of re-dispatch, the need for gas infrastructure does not appear to be as critical as it would be for other states.[132]

Synapse also performed an analysis to determine whether there would be sufficient natural gas capacity to meet demand during peak hours. Synapse examined hourly markets data

[129] Spencer Fields et al, *Calculating Georgia's 111(d) Target*, Synapse Energy Economics, Inc. (Nov. 26, 2014), included as Attachment 3 to these comments.
[130] *Id.* at 9.
[131] *Id.* at 10.
[132] *Id.*

for Georgia's two eGrid subregions – SERC South and SERC Tennessee Valley – and determined that in both there is sufficient natural gas capacity to meet peak loads.[133]

In summary, Georgia has both sufficient existing NGCC capacity and sufficient natural gas supplies for re-dispatch to a 70 percent capacity factor. Accordingly, EPA's assumptions for Georgia under Building Block 2 are not unreasonable. Nevertheless, for compliance purposes, Georgia is not bound to pursue natural gas re-dispatch to the degree assumed by EPA provided the state meets the overall 2030 target, and our analysis in Section III above shows it does not need to. By displacing fossil generation with new investments in renewable generation and energy efficiency, Georgia can meet its compliance obligations with minimal or no natural gas re-dispatch. This would allow Georgia to achieve its target without assuming undue risk of fuel price volatility, moving the state more firmly toward a low-carbon future.

We appreciate the opportunity to provide these comments and look forward to EPA's finalization of the proposal.

Respectfully Submitted,

Kurt Ebersbach
Senior Attorney

On behalf of the
Southern Environmental Law Center

[133] *Id.* at 10-12.