Dr. Chuck Carr Brown
Secretary
Louisiana Department of Environmental Quality
602 N. Fifth Street
Baton Rouge, LA 70802

March 31, 2016

Secretary Brown,

On behalf of the American Council for an Energy-Efficient Economy (ACEEE) and the Southeast Energy Efficiency Alliance (SEEA), we are pleased to provide the following comments to the Louisiana Department of Environmental Quality's (LDEQ) Clean Power Plan Listening Session. ACEEE and SEEA genuinely appreciate the leadership and thoughtfulness of LDEQ in pursuing a public input process to shape the development of Louisiana's compliance plan. While we are unable to attend the session in person due to scheduling conflicts, we submit these comments to share resources and perspective regarding the opportunity for Louisiana to leverage energy efficiency as a least-cost, maximum benefit compliance pathway.

The American Council for an Energy-Efficient Economy (ACEEE) is a nonprofit 501(c)(3) organization that acts as a catalyst to advance energy efficiency policies, programs, technologies, investments and behaviors. Since our founding in 1980, ACEEE has become known as America's leading center of expertise on energy efficiency. The Southeast Energy Efficiency Alliance (SEEA) is a 501(c)(3) nonprofit, nonpartisan organization headquartered in Atlanta, Georgia. Established in 2007, SEEA represents the 11-state territory of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.

Energy Efficiency Supports Least-Cost Compliance Opportunities

Energy efficiency is a proven win-win for the Southeast. In addition to offsetting CO_2 and other emissions, energy efficiency enhances the reliability of the electric grid, reduces power sector risks, improves public health and supports job creation and economic growth. Of critical importance for the implementation of the Clean Power Plan, energy efficiency remains the region's least-cost resource. A recent SEEA analysis documented that high-performing utilities in the Southeast are generating energy savings at a levelized cost of between one and three cents per kilowatt hour—lower than the spectrum of supply-side resources currently available.[1] National analyses by ACEEE and Lawrence Berkeley

[1] Katie Southworth and Abby Fox. Energy Efficiency Cost Considerations for State Compliance Plans. Atlanta: Southeast Energy Efficiency Alliance, 2015. http://www.seealliance.org/wp-content/uploads/Resource-Paper-5-Energy-Efficiency-Costs-FINAL.pdf.

National Laboratory find similar cost profiles for utilities implementing energy efficiency programs throughout the country. Accordingly, energy efficiency is an important tool for moderating compliance costs while supporting other critical economic benefits.

Louisiana Has Existing Infrastructure to Support Energy Efficiency Investments

EPA's Clean Power Plan allows for a variety of energy efficiency measures, policies and programs to support compliance both directly and indirectly, depending on the state plan approach selected. Louisiana has a variety of existing initiatives that can be utilized or expanded to support the fulfillment of compliance obligations, including the following:

- *Ratepayer-funded programs:* Earlier this month, Entergy, Cleco and SWEPCO submitted their first-ever annual reports under the state's energy efficiency rules. Together, they achieved a total of 38,036 MWh of energy savings from programs supporting energy efficiency in the residential, commercial and industrial sectors.[2] The statewide programs build on the groundwork laid by Entergy's Energy Smart programs in New Orleans, which have been operational since 2011.
- *Building energy codes:* In 2014, Louisiana adopted the 2009 IRC, with reference to the 2009 IECC, as its statewide residential code. Commercial and state-owned construction must meet ASHRAE 90.1-2007, effective since 2011. Louisiana has also invested in trainings and other resources to support in-field compliance.
- *Public buildings:* Louisiana requires construction or renovation of major state-funded facilities to be designed and built to exceed state energy codes by at least 30 percent, subject to a life-cycle cost analysis. Louisiana statutes also require that performance contracting be used to the "maximum extent possible."[3]

These programs represent a strong foundation that can support cost-effective and market-building strategies for fulfilling the state's compliance obligations under EPA's Clean Power Plan.

Energy Efficiency Represents a Significant Emissions Reduction Opportunity

By leveraging energy efficiency to reduce air pollution, Louisiana can comply with federal air regulations, while also strengthening the state's economy. Analysis conducted using ACEEE's State and Utility Pollution Reduction Calculator Version 2 (SUPR2) shows that implementation of just three popular energy efficiency policies can help Louisiana meet approximately 50 percent of its Clean Power Plan

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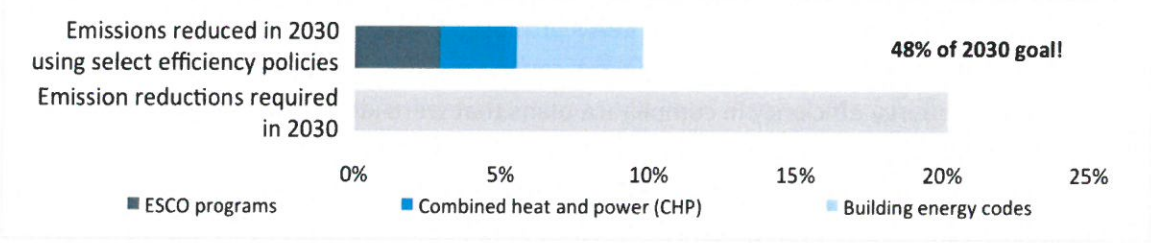
[2] See Louisiana Public Service Commission Docket No. R-31106. http://lpscstar.louisiana.gov/star/portal/lpsc/page/Dockets/portal.aspx.

[3] American Council for an Energy-Efficient Economy. "Louisiana." State Energy Efficiency Policy Database. http://database.aceee.org/state/louisiana.

target. These results do not even include utility-run energy efficiency programs, which when modeled at a 1% energy savings target would help the state to exceed its target.[4]

Figure 1. Energy Efficiency Contributions to Louisiana's Clean Power Plan Target, Select Policies



Resources for Consideration

To support the consideration of energy efficiency as a part of Louisiana's compliance strategy, we submit the following resources (attached herein) to LDEQ for review:

- *Louisiana's 2030 Energy Efficiency Roadmap: Saving Energy, Lowering Bills, and Creating Jobs*, Executive Summary, ACEEE, May 2013. This study finds that energy efficiency potential is largely untapped in Louisiana, and that a set of policies and programs can cost-effectively meet 5 percent cumulative of statewide electricity needs by 2020, increasing to 16 percent cumulative by 2030. The policies and programs outlined in this report help chart a path for Louisiana to take greater advantage of energy efficiency as a means to grow the economy.
- *How Much Does Energy Efficiency Cost?* Fact Sheet, ACEEE, March 2016. Using results from recent studies, this fact sheet provides further evidence that energy efficiency costs less than other sources of energy, and that the costs of energy efficiency have been level in recent years.
- *Energy Efficiency Lowers the Cost of Clean Power Plan Compliance,* Fact Sheet, ACEEE, March 2016. This fact sheet reviews findings from recent studies that demonstrate how including energy efficiency as part of state compliance plans can lower costs to utility customers.
- *Louisiana's Path to an Energy-Efficient Future*, Fact Sheet, ACEEE, March 2016. This fact sheet includes results from SUPR 2, demonstrating that by relying on three common energy efficiency policies, Louisiana can meet nearly 50 percent of its Clean Power Plan goal, while growing the economy and saving Louisianans money.
- *Answers to State Questions (ASQ),* Online Forum, accessible at http://111d.naseo.org/asq, created January 2016. ASQ is an online questions and answer service that allows state officials to submit Clean Power Plan-related questions — across a range of areas and in an unattributed format — and draw upon the knowledge of energy and environmental experts from ACEEE,

[4] ACEEE State and Utility Pollution Reduction Calculator Version 2 (SUPR2) http://aceee.org/research-report/e1601

National Association of State Energy Officials, E4theFuture and the Regulatory Assistance Project.

- *Clean Power Plan Resource Paper Series*, SEEA, Summer 2015. These six resource papers deliver targeted information and resources for southeastern stakeholders exploring the role of energy efficiency as a compliance strategy for EPA's proposed Clean Power Plan and other environmental regulations. Resource papers cover a number of topics related to the potential inclusion of energy efficiency in compliance plans that were identified by southeastern stakeholders during the Clean Power Plan public comment process.
- *Clean Power Plan Primer,* Fact Sheet, SEEA, October 2015. This document provides an overview of need-to-know provisions of the U.S. Environmental Protection Agency's final Clean Power Plan, as well as compliance options that focus on end-use energy efficiency. It also highlights current themes and perspective surrounding potential implementation of the Clean Power Plan in the Southeast, and is intended to serve as a starting point for conversation.

Concluding Remarks

Louisiana is well-positioned to leverage current energy efficiency momentum to facilitate compliance with the EPA's Clean Power Plan at least cost, while also supporting economic, quality of life and resiliency benefits for Louisianans.

As the state works to develop a compliance plan, SEEA and ACEEE stand ready and willing to provide technical support on energy efficiency and its use for Clean Power Plan compliance. Please do not hesitate to contact us if we can be of assistance to your efforts.

Sincerely,

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EXECUTIVE SUMMARY
LOUISIANA'S 2030 ENERGY EFFICIENCY ROADMAP: SAVING ENERGY, LOWERING BILLS, AND CREATING JOBS
May 2013

Executive Summary

Louisiana stands at a turning point in its energy future. By 2030, Louisiana expects that future population and economic growth will require new energy resources. Energy efficiency – the energy we do not need to use as a result of improved technologies and practices – can play an important role toward meeting this need as the least-cost component of a well-diversified energy resource portfolio. As the least-cost resource, efficiency investments have the universal effect of lowering energy costs for all customers. Furthermore, investments in efficiency foster economic development in the state and create local jobs. The lower energy bills free up money that customers can use to invest in the local economy and help businesses to remain competitive in the global marketplace. Energy efficiency is the cheapest, cleanest, and lowest-risk solution to meet rising energy demand in Louisiana. How much energy efficiency potential is available in Louisiana, and what specific steps can stakeholders take to harness this potential through policies and programs? We explore these questions in this report, and examine the financial and macro-economic impacts of improved energy efficiency on Louisiana's economy. We find that Louisiana has large, untapped potential for cost-effective energy efficiency that can save consumers billions in lower energy bills and bolster the local economy.

KEY FINDINGS

Here, we present several key findings of our analysis:

- A comprehensive portfolio of energy efficiency policies, such as building energy codes, and utility customer efficiency programs have the potential to cost-effectively meet 5% cumulative of statewide electricity needs by 2020, increasing to 16% cumulative by 2030; and 3% cumulative of natural gas needs by 2020, increasing to 12% cumulative by 2030.
- Energy efficiency programs are the lowest-cost option to meet Louisiana's future electricity demand compared with supply-side alternatives. Efficiency program portfolios cost about $0.02–0.04 per kilowatt-hour (kWh)-saved[1] compared with the avoided cost of supply in Louisiana of about $0.03–0.07 per kWh through 2030. Efficiency also has avoided peak demand and avoided T&D benefits. Energy efficiency rate impacts are thus far lower than rate impacts from building new power plants or transmission infrastructure.
- The set of recommended efficiency policies and programs in this report can reduce Louisiana's energy costs by a net $4.2 billion over the life of the energy-saving measures, which is the total resource cost (TRC) test net reduction to all customers.

[1] While some programs and measures are more cost-effective than others, efficiency program portfolios on average across the country cost in this range, based on a forthcoming ACEEE review of efficiency program costs in about 20 states.

- Louisiana businesses are interested in achieving more energy efficiency, but face barriers such as high up-front costs and lack of technical expertise. Businesses that take advantage of energy efficiency upgrades can lower their energy bills as a way to improve their bottom line and remain competitive in the global marketplace.
- Combined heat and power (CHP) has the potential to cost-effectively provide an additional 600 MW of capacity in Louisiana by 2020, and 1,500 MW by 2030, equivalent to 5% and 12% of retail electricity sales, respectively. CHP can also serve a strategic role in improving reliability of the electric power system.
- The macroeconomic assessment finds that in 2030, the portfolio of residential and commercial efficiency programs will result in about $3 billion in net economic output, including $1 billion in wages, and $663 million in business income to small business owners, 27,100 person-years of employment, and increased state and local tax revenue by $114 million.
- There has been growing momentum toward energy efficiency among stakeholders in Louisiana, particularly in New Orleans, but the existing policies and regulations in place are far from sufficient to drive major investments in energy efficiency. Regulatory and policy changes will be needed to reduce the major market barriers to energy efficiency. Our report offers several program and policy options.

BACKGROUND

Louisiana ranked 43rd on ACEEE's *2012 State Energy Efficiency Scorecard* (Foster et al 2012), reflecting the state's fairly limited efforts to improve energy efficiency and that most consumers and businesses in the state do not have access to energy efficiency options and services to help lower their energy bills. But if Louisiana takes advantage of recent momentum toward efficiency in the state, especially in New Orleans, and elsewhere in the Southeast, such as in Arkansas, it can vastly improve economic benefits to the state. Within Louisiana, the New Orleans City Council has developed *Energy Smart* energy efficiency programs in partnership with Entergy New Orleans, has introduced an integrated resource planning (IRP) process to its electric utility planning, and has promoted the development of a skilled energy efficiency workforce through both the *Energy Smart* and the *NOLA Wise* programs. The Louisiana Public Service Commission (LPSC) has also established an IRP process for electric utilities, which establishes a framework for analyzing least-cost resource options, including demand-side energy efficiency, in utilities' long-term planning structures.

The Southeast region as a whole is also trending toward greater interest in and commitment to energy efficiency. For example, in 2010 the Arkansas PSC (APSC) established annual electricity savings goals that ramped up to 0.75% of sales per year by 2013, making Arkansas the first state in the Southeast to adopt long-term efficiency targets. Overall, the programs geared up and hit their targets in 2012 at a net benefit to all customers. Given the overall success of programs, the APSC is looking to continue ramping up, and recently issued an order recommending new targets for the next 3 years. Louisiana stakeholders can look to the successes, challenges, and lessons learned from Arkansas to help shape the state's investment in energy efficiency resources.

But while there has been some recent momentum on energy efficiency in Louisiana, there have also been setbacks, which appear to stem largely from misconceptions about energy efficiency.

In December 2012, the LPSC approved rules that would set up a framework for energy efficiency programs offered by investor-owned electric and natural gas utilities, and a diverse set of stakeholders agreed to the structure of these rules as a good first step toward improved efficiency. But in late February 2013, the LPSC under new leadership overturned those rules. Some Commissioners misjudged the efficiency programs as costly to customers, but, as our analysis shows, the benefits from energy efficiency accrue to all customers in lower energy bills, avoided energy supply costs, and economic development, and these benefits dwarf the small up-front rate impacts.

Given the potential economic benefits of efficiency there is a need for much more investment in energy efficiency in Louisiana. Both sustained leadership and effective implementation will be critical measures of success in tapping into the state's energy efficiency potential.

METHODOLOGY

This report provides a detailed, quantitative analysis of cost-effective energy efficiency potential in Louisiana's buildings and industrial sectors, focusing on end-use electricity and natural gas usage. We organized the analysis, which covers the period 2011–30, into four overall parts:

1. *Reference Case*: Develop a baseline reference case scenario of statewide forecast electricity and natural gas consumption data and prices by customer class.
2. *Cost-Effective Energy Efficiency Potential*: Estimate cost-effective resources potential in each sector using a bottom-up assessment of individual measures within each customer class.
3. *Program and Policy Potential:* Analyze a comprehensive set of program and policy options that Louisiana can adopt or expand to develop its energy efficiency potential.
4. *Macroeconomic Assessment:* Analyze the macroeconomic (jobs, gross state product, tax revenue) impacts from the program and policy scenario.

OVERVIEW OF FINDINGS

Our analysis presents two levels of energy efficiency potential: (1) *cost-effective* or *economic* potential and (2) *program and policy* or *achievable* potential. The program and policy potential is a *subset* of the cost-effective potential. The cost-effective energy savings potential provides an estimate of the overall energy efficiency resource available, but many market barriers and program infrastructure requirements exist that prevent all of the cost-effective resource potential savings identified from immediately being captured. Toward this end, the program and policy analysis is an estimate of the portion of the cost-effective resource potential that can be captured through energy efficiency policies and programs, given customer acceptance (i.e., program participation rates) and the time it takes to ramp up program infrastructure.

Cost-Effective Resource Potential

Our analysis finds that by 2030, there will be enough cost-effective energy efficiency potential to meet about 27% of the state's electricity needs and 19% of the state's natural gas needs (Table ES-1).

Table ES-1. Summary of Cost-Effective Energy Efficiency Resource Potential Results in 2030

Customer Class	Electricity		Natural Gas	
	GWh	%*	MMCF	%*
Residential**	8,253	29%	8,168	34%
Commercial	9,362	33%	9,879	35%
Industrial	6,892	20%	19,855	16%
Total	24,507	27%	37,902	19%

Notes: GWh = gigawatt hours. MMCF = Million cubic feet. *Percentages for each customer class are expressed as a portion of reference case for that customer class in 2030. **Residential analysis includes only single-family homes due to the scope of the building modeling software we used; efficiency potential from multi-family homes is included in the policy and program analysis.

Policy and Program Potential

The policy and program analysis considers the portion of the cost-effective potential that could be achieved through the adoption of several statewide policy options (Table ES-1) and the widespread adoption of tailored customer energy efficiency programs (Table ES-2).

Table ES-2. State Energy Efficiency Policy Options for Louisiana

Statewide Policies, Programs, and Initiatives	*Summary of Analysis Recommendation*
Integrate Energy Efficiency into Resource Planning and Set Energy Savings Targets	Successfully incorporate energy efficiency as least-cost resource into the integrated resource planning process, making an energy efficiency program portfolio considered on par with supply-side resources. Set incremental annual electricity savings targets ramping up to about 1%/year over 6 years and natural gas targets ramping up to 0.7%/year over 6 years (see Table ES-3 program options that together can reach these target levels, our analysis finds).
Utility Performance Incentives and Cost Recovery	Adopt energy efficiency rules that better align a utility's financial motivations with energy efficiency improvements; measures include timely cost recovery, performance incentives, and removal of the throughput incentive.
Updated Building Energy Codes for Residential and Commercial	Adopt at least 2009 IECC for Residential and ASHRAE 90.1-2010 for Commercial buildings
Lead by Example in State and Local Government Facilities	Benchmark energy usage in public buildings, streamline energy service company (ESCO) options and rules, and set public facility energy savings targets
Low-Income Weatherization	Coordinate state weatherization and utility program offerings
Combined Heat and Power (CHP)	Establish regulatory mechanisms to reduce market barriers to CHP, and explore utility participation in CHP markets

Table ES-3. Tailored Energy Efficiency Program Options by Customer Segment

Residential	Commercial	Industrial
New Construction and Building Energy Code Support	New Construction and Building Code Support	Strategic Energy Management
Multi-Family Buildings	Retrocommissioning and Monitoring-Based Commissioning	Custom Incentives for Retrofits
Home Energy Retrofits	Small Business Direct-Install	Prescriptive Equipment Rebates
Upstream Retail Appliances and Electronics	Custom Incentives for Retrofits	Combined Heat and Power
Lighting	Prescriptive Equipment Rebates	Self-Direct Option
Air-Conditioning	Computer and Plug Load Efficiency	Standard Offer or Reverse Auction
Water Heating	Combined Heat and Power	
Low-Income Weatherization		
Information Feedback		

Our review of national best-practice program deployment finds that it takes time to ramp up programmatic infrastructure and to roll out effective customer education and marketing efforts, which means that Louisiana should expect similar needs to ramp up savings over time. Our analysis of energy efficiency program potential in Louisiana finds that this combined set of energy efficiency policies and programs in the state could reach 5% cumulative electricity savings by 2020, increasing to 16% in 2030, and 3% cumulative natural gas savings by 2020, increasing to 12% by 2030 (Table ES-4 and Figures ES-1 and ES-2). In addition, the electricity efficiency gains will also have the impact of reducing peak demand.

Table ES-4. Summary of Customer Energy Efficiency Program and Policy Potential for 2030

Customer Class	Electricity		Natural Gas	
	GWh	%*	MMCF	%*
Residential	6,391	17%	6,850	16%
Commercial	6,658	24%	6,388	22%
Industrial	3,028	9%	10,205	8%
Total	16,078	16%	23,442	12%

Combined heat and power (CHP) also has significant potential to cost-effectively meet an additional 12% of electricity needs (Figure ES-1). Our assessment of CHP is based on a previous study that examined Louisiana potential (Chittum & Sullivan 2012), and considers two areas of potential CHP growth: (1) industrial or institutional CHP systems that are operated on-site at facilities, and (2) utilities that make investments in CHP and become full or partial owners in CHP systems as assets in their portfolio of energy capacity. The analysis finds that Louisiana has the potential to add about 600 MW of cost-effective CHP capacity by 2020 and 1,500 MW by 2030.

Figure ES-1. Electricity Energy Efficiency (EE) and CHP Program and Policy Potential by 2030

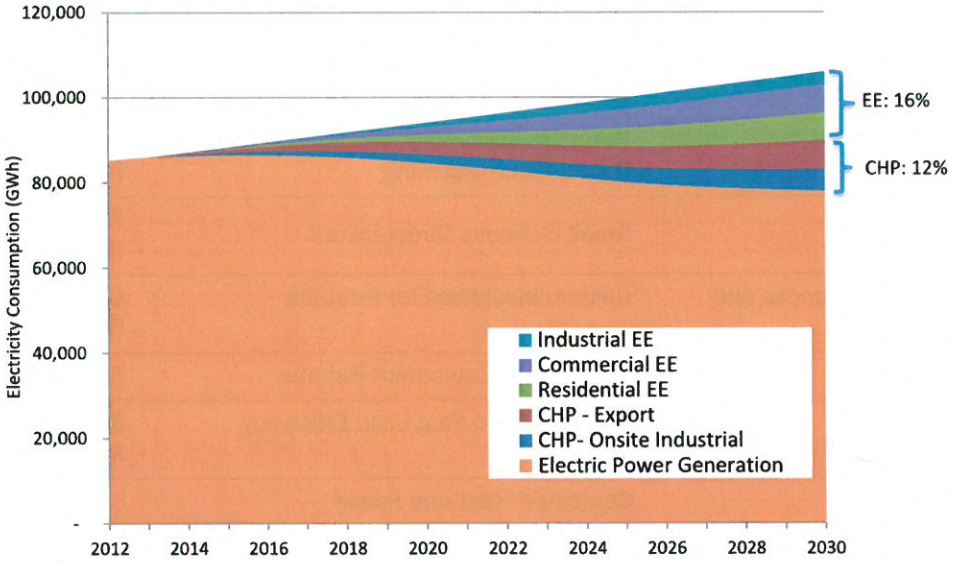
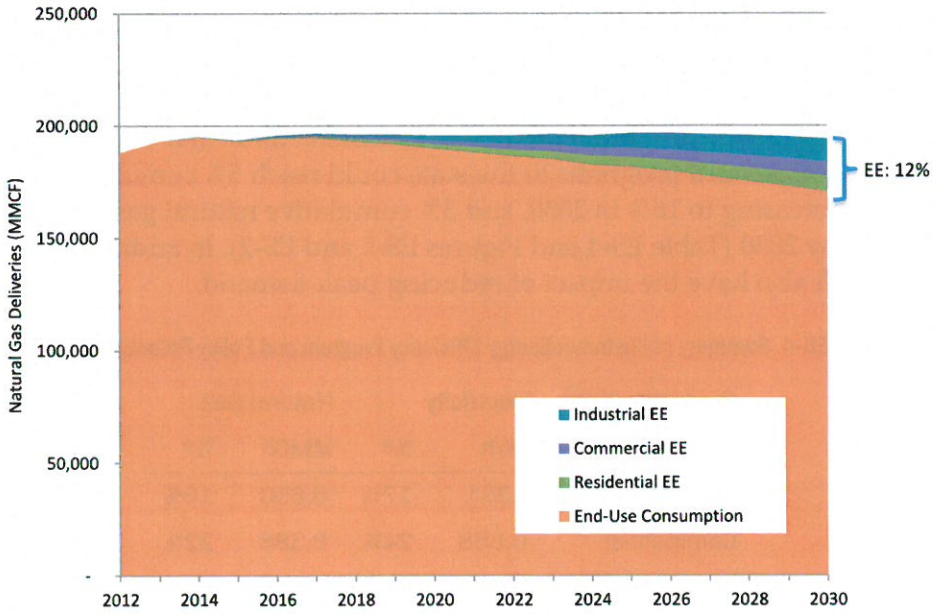


Figure ES-2. Natural Gas Energy Efficiency Program and Policy Potential by 2030



Costs and Benefits

Efficiency measures continue saving energy over the lifetime of the upgrades, which can add up to significant savings over the long term and delay or avoid the need to build new power generation. Investments in new power plants or power purchases can be costly and risky long-term investments, which means that the benefits of efficiency to the utility system, and ultimately to all Louisiana ratepayers, can be significant. A recent analysis finds that energy efficiency is the least-risk resource compared with other energy resource options.[2]

[2] See Binz et al. 2012. *Practicing Risk-Aware Electricity Regulation.* CERES.

Our analysis finds that the set of recommended policies and programs can reduce Louisiana's energy costs by $4.2 billion net over the life of the energy savings measures. The estimated total resource cost (TRC) ratio is 1.8; i.e., each $1 invested in efficiency upgrades and programs (customer and program cost) would yield $1.80 benefits in avoided energy costs to the whole system. These impacts would benefit all ratepayers, because utilities could delay or avoid costlier investments in energy supply and in T&D.

Efficiency programs cost about $0.02–0.04 per kWh-saved, which is lower than the avoided cost of energy in Louisiana of about $0.03–0.07 per kWh through 2030. Efficiency also contributes avoided peak demand and avoided T&D benefits. Thus, energy efficiency rate impacts are far lower than rate impacts from building new power plants or transmission infrastructure. A modest energy efficiency program portfolio such as the quick-start proposal could cost a Louisiana residential customer about $0.47 per monthly bill and a commercial customer about $5.41 per month.[3] Rate increases from fuel price volatility or new supply or transmission needs can be far higher. As an illustrative example for comparison, the recently proposed rate increases by Entergy Louisiana could mean the same residential customer would see an increase of about $7.56 per monthly bill and the same commercial customer would see an increase of about $76.81.[4] Stakeholders should be careful not to let the short-term rate impacts from energy efficiency detract from the medium- and long-term benefits of energy efficiency that accrue from delaying or avoiding the need for supply investments. Energy efficiency is a least-cost and least-risk option that should be considered as part of a diversified energy portfolio.

Macroeconomic Analysis

The final component of our study is a macroeconomic assessment of the impacts of the set of programs and policies, conducted by Evergreen Economics. This comprehensive, analysis finds that the portfolio of efficiency programs and policies would result in the following annual benefits by the year 2030: $3 billion in net economic output, including $1 billion in wages, and $663 million in business income to small business owners, 27,100 person-years of employment, and increased state and local tax revenue by $114 million.

Conclusion

Our analysis finds that energy efficiency can play a critical role in Louisiana's energy future as a least-cost resource that benefits all customers and as an economic development tool. The state's current policies and programs, however, are not sufficient to take advantage of the full energy efficiency potential. The suite of program and policy options presented in this report can help the state improve its energy efficiency, lower energy bills for all customers, and foster economic growth. Both sustained leadership and effective implementation will be critical measures of success in tapping into the state's energy efficiency potential.

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[3] This assumes an efficiency program portfolio budget equivalent to 0.5% of revenue, an average residential customer in Louisiana using 1,000 kWh per month, and an average commercial customer using 12,500 kWh per month.

[4] This is for illustrative purposes only, to put the relative size of the rate impact in perspective. The Entergy Louisiana proposed rate increase estimates are from: http://www.entergy-louisiana.com/content/2013ratecase/RateCase_FactSheet.pdf

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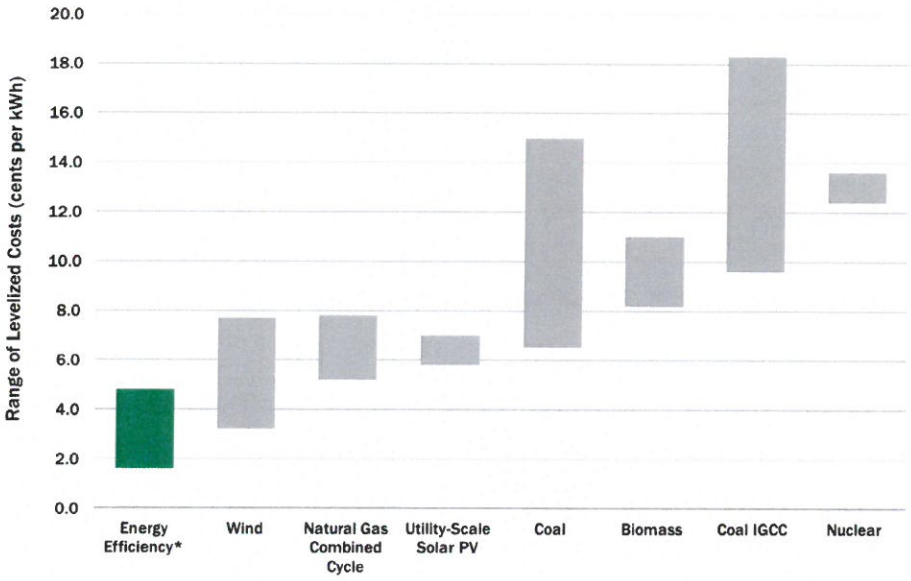
How Much Does Energy Efficiency Cost?



* Source: Energy efficiency program portfolio data from Molina, *The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs* (Washington, DC: ACEEE, 2014) http://aceee.org/research-report/u1402. All other data from Lazard 2015. https://www.lazard.com/media/2390/lazards-levelized-cost-of-energy-analysis-90.pdf. High-end range of coal includes 90% carbon capture and compression.

Many states are considering expanding energy efficiency efforts to help customers reduce bills, replace retired power plants, create local jobs, and reduce pollution. A key question many are asking is: How much will energy efficiency cost? Recent studies from Lawrence Berkeley National Laboratory (LBNL) and ACEEE help to answer that question. While energy efficiency investments reduce energy use and energy bills, the energy efficiency measures do have an up-front cost, a cost that is ultimately covered by energy bill savings. The table on the right summarizes the data from LBNL's most recent analysis. On average, across all sectors, LBNL finds that energy efficiency programs are costing program administrators about 2.4 cents per kWh saved over the lifetime of the energy efficiency measures installed.[1]

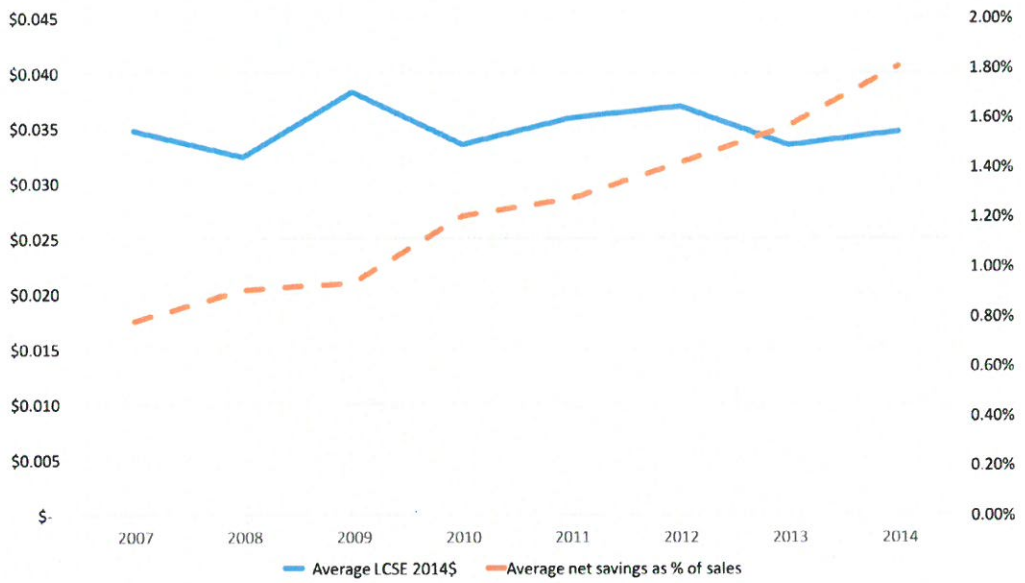
Several ACEEE analyses have found slightly higher costs. For example, a review of energy efficiency programs in 20 states found an average program administrator cost of $0.028 per kWh saved.[2]

Sector	Program Administrator Cost of Saved Electricity (2014 cents/kWh)
Residential	2.0
Commercial, industrial, and agricultural	2.6
Low-income	13.8
All sectors	2.4

Source: Hoffman et al., The Total Cost of Saving Electricity through Utility Customer-Funded Energy Efficiency Programs (Berkeley: Lawrence Berkeley National Laboratory, 2015) https://emp.lbl.gov/sites/all/files/total-cost-of-saved-energy.pdf. They report in 2012$; we adjust to 2014$ using the GDP implicit price deflator.

These costs are substantially less than the cost of meeting electricity needs with new power plants, as shown in the figure above.

Likewise, a forthcoming ACEEE report on 14 program administrators with particularly high energy savings finds an average cost to the program administrator of about 3.5 cents per kWh saved, as shown in the figure below. Interestingly, the cost



Source: Baatz et al., Big Savers (Washington, DC: ACEEE, 2016). LCSE is the levelized cost of saved energy.

per kWh has not changed appreciably from year to year, even as energy savings as a percentage of total electricity sales steadily mounted.

In the documentation accompanying the Clean Power Plan, EPA estimates that energy efficiency programs will cost program administrators 58 cents up front per kWh saved in the first year for low savings levels, with costs declining to 46 and then 35 cents as programs ramp up (we have updated these values to 2014$).[3] These figures compare all the costs to the kWh saved in just one year and not to savings over the entire lifetime of the efficiency measures. Translating to cost per kWh saved over the lifetime of the measure, the figures work out to 7.5 cents/kWh saved initially, ramping down to 6 cents/kWh and then 4.5 cents/kWh.[4]

The EPA costs are derived from a 2009 ACEEE study, but EPA doubled the costs for the initial savings and then reduced them by 20% and 40% as savings reached 0.5% of sales and 1.0% of sales respectively. EPA argues that initial costs will be higher, even though the ACEEE analysis it used includes several states that were just getting started and therefore include start-up costs. Also, the more recent data in the figure above show steady costs per kWh as savings rise. EPA calls its estimates conservative.[5] To us, it appears that the agency wanted a relatively high cost in order to show that even if costs are high, energy efficiency is cost effective.

In our view, based on the data summarized above, EPA is overly conservative. Most likely, energy efficiency will cost program administrators under 4 cents per kWh saved, much less than a new power plant. EPA's very conservative numbers are higher, but still show an energy efficiency cost that is likely to be less than most new power plants.

[1]LBNL also finds that program administrators on average pay about half the total costs, with program participants paying about as much as the administrators.

[2]Part of the difference between the LBL and ACEEE estimates is that ACEEE includes performance incentives that utilities earn for energy efficiency; LBNL does not.

[3]EPA's numbers were in 2011$ and were $0.55, $0.44, and $0.33 per kWh saved in the first year. We made the adjustment to 2014$ using the GDP implicit price deflator.

[4]We translate based on a 10-year average measure life and a 5% real discount rate. EPA used a 10.2-year measure life. EPA's primary analysis used a 3% real discount rate, but it also reports results with a 7% real discount rate.

[5]EPA, *Demand-Side Energy Efficiency Technical Support Document*, August 2015, http://www.epa.gov/sites/production/files/2015-11/documents/tsd-cpp-demand-side-ee.pdf. See page 69.

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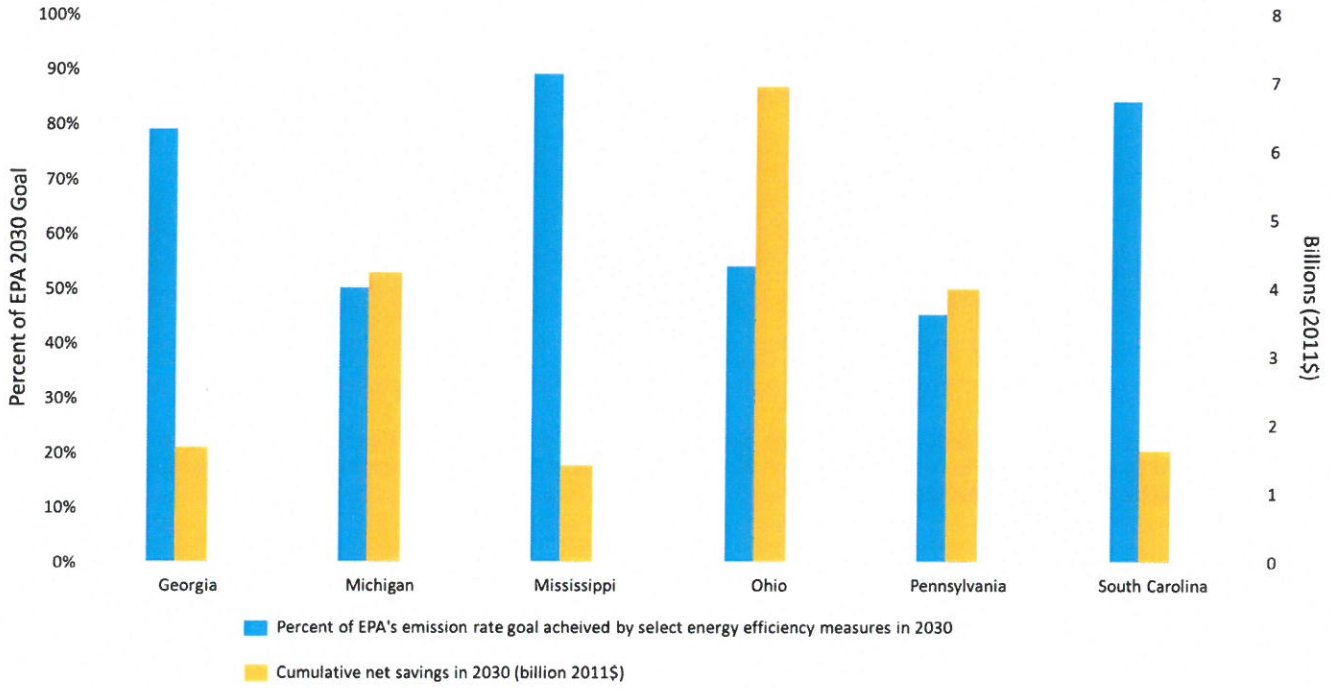
Energy Efficiency Lowers the Cost of Clean Power Plan Compliance

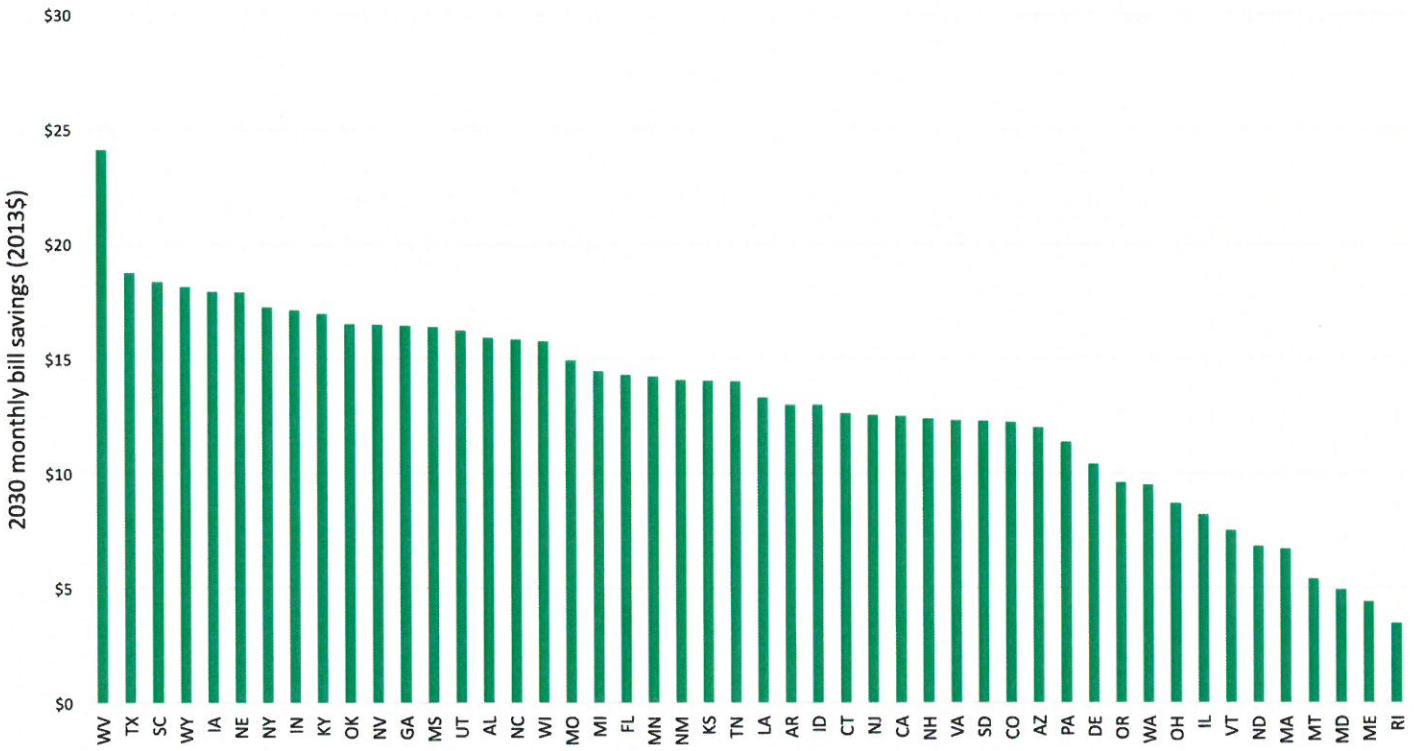


Impact of using energy efficiency for Clean Power Plan compliance in select states. Source: ACEEE estimate using ACEEE SUPR2 model for the states shown. http://aceee.org/research-report/e1601

The Clean Power Plan provides extra incentive to ramp up efficiency efforts. Energy efficiency is often the low-cost compliance strategy and, as shown above, can get most states more than 50% towards their emissions target.

The figure above comes from ACEEE's SUPR2 calculator. SUPR2 allows states to estimate the energy savings, carbon reductions, and costs of various energy efficiency programs and policies. The chart looks at the impact of three energy efficiency policies in six states: a 1% per year energy savings target, updated building codes, and a medium level of new combined heat and power systems. In all these states, these energy efficiency policies can meet 45–90% of the state's emissions targets with cumulative net savings (benefits minus costs) of $1–$7 billion by 2030. And these benefits do not include the fact that energy efficiency reduces the need for other investments that would be necessary to meet the targets if energy efficiency were not pursued.

Several recent studies have compared the cost of Clean Power Plan compliance with and without energy efficiency. These studies use different cost metrics and hence it is difficult to directly compare them. However, all of them come to the same conclusion: that energy efficiency can reduce compliance costs. For example, MJ Bradley and Associates analyzed the average national cost of an allowance for one ton of carbon emissions, comparing scenarios using current levels of efficiency with scenarios where efficiency savings



Monthly energy bill savings from energy efficiency in 2030 by state. Source: Knight, P., et al. 2016. Cutting Electric Bills with the Clean Power Plan – EPA's Greenhouse Gas Reduction Policy Lowers Household Bills: March 2016 Update. Synapse Energy Economics, Inc. http://www.synapse-energy.com/sites/default/files/cutting-electric-bills-cpp-march2016.pdf

are 1% or 2% of sales each year. The study found that greater efficiency means lower allowance prices (see table). Perhaps even more important than the cost of allowances is the cost impact on customers' bills. MJ Bradley found that if states use energy efficiency programs to total 2% savings per year, retail electric bills will be reduced by 17%.[1]

Scenario	Average allowance price 2025	2030
Existing + new plants, current EE, nationwide	$0.76	$19.55
Existing + new plants, 1% EE, nationwide	$0	$16.37

Source: MJ Bradley and Associates, "EPA's Clean Power Plan, Summary of IPM Modeling Results," 2016 http://www.mjbradley.com/sites/default/files/MJBA_CPP_IPM_Analysis.pdf. Prices in 2012$.

Likewise, Synapse Energy Economics looked at possible compliance plans for each state and found that consumer energy bills would be $3–$24 lower per month if states ramped up energy efficiency savings to 3% per year by 2029 relative to likely state-by-state scenarios without energy efficiency (see above).

These analyses show that energy efficiency can make a substantial contribution to the emissions reductions states need. Including energy efficiency in states' plans will lower their compliance costs.

[1]MJ Bradley and Associates, "EPA's Clean Power Plan, Summary of IPM Modeling Results," 2016 http://www.mjbradley.com/sites/default/files/MJBA_CPP_IPM_Analysis.pdf.

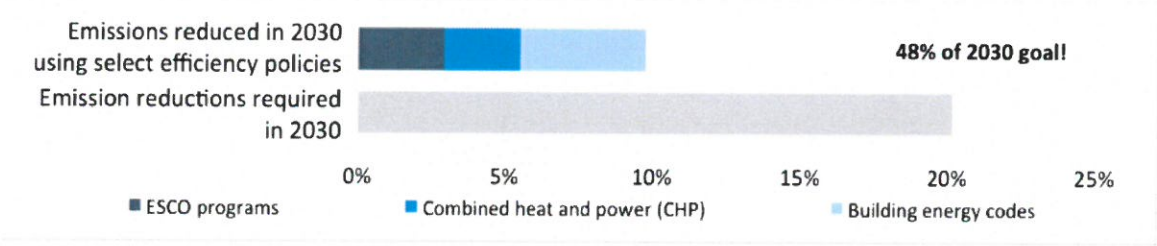
Louisiana's Path to an Energy-Efficient Future

Energy efficiency can help Louisiana generate local jobs, avoid thousands of tons of air pollution, and make the state a healthier place to live. Here's why energy efficiency should be central to state plans for a reliable and affordable energy future with clean air and a strong economy.

Energy Efficiency Cuts Waste, Avoids Pollution, and Saves Money

A lot of useful energy is wasted in Louisiana. Energy efficiency can reduce this waste, cutting energy costs for Louisianans through programs that upgrade their homes, replace old furnaces, and insulate their walls. This means more money in people's pockets and fewer taxpayer dollars spent on heating and cooling leaky government buildings.

By using energy efficiency to reduce air pollution, Louisiana can comply with federal air regulations and strengthen the state economy at the same time. In fact, implementation of a few popular energy efficiency policies can help Louisiana meet **48% of its goal** to cut carbon pollution under the EPA's Clean Power Plan.



How Energy Efficiency Strengthens Louisiana's Economy and Cuts Pollution

By adopting a few common efficiency policies, Louisiana can cut air pollution and save electricity customers money while the state economy grows. Here are some of the benefits of investing in energy efficiency[1]:

Private sector energy service contracts, coupled with national model building codes and 500 MWs of new combined heat and power, will help Louisiana avoid more than 4.3 million tons of carbon dioxide (CO_2) in 2030. More than 8.1 million MWh of electricity will be saved, eliminating pollution from power plants.

In addition to helping with Clean Power Plan compliance, these efficiency policies will save 41,000 tons of nitrogen oxide (NO_x) and 74,000 tons of sulfur dioxide (SO_2) by 2030. Air pollution can damage the lungs, heart, and brain, so lower emissions mean healthier communities and a higher quality of life.

Louisianans can realize large financial benefits from increasing energy productivity. By 2030, efficiency policies will save the people of Louisiana $1 billion. These savings can ensure that the state achieves clean air goals while strengthening the economy and reducing electricity costs for vulnerable populations.

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[1] The information below comes from SUPR2 available for download here: http://aceee.org/research-report/e1601.

A SOUTHEASTERN SNAPSHOT: EPA'S CLEAN POWER PLAN

Updated August 2015

A SOUTHEASTERN SNAPSHOT:

EPA'S CLEAN POWER PLAN

AUGUST 2015

The following document provides an overview of need-to-know provisions of the U.S. Environmental Protection Agency's final Clean Power Plan, as well as compliance options that focus on end-use energy efficiency. It also highlights current themes and perspective surrounding potential implementation of the Clean Power Plan in the Southeast, and is intended to serve as a starting point for conversation.

SEEA thanks the American Council for an Energy-Efficient Economy and the Southwest Energy Efficiency Project for their contributions to this document.

Additional information and resources, updated regularly, are available on SEEA's website at http://goo.gl/3jD2KK.

CONTENTS

I. OVERVIEW

On August 3, 2015, the U.S. Environmental Protection Agency (EPA) issued a final rule regulating carbon dioxide (CO_2) emissions from the nation's power sector under Section 111(d) of the Clean Air Act (the "Clean Power Plan," or CPP).[1] The CPP cuts carbon pollution from the power sector by 32 percent below 2005 levels by 2030, using 2012 as a baseline for emission reduction targets. This rule was originally published in draft form in June 2014, followed by a comment period that generated more than 4 million stakeholder comments. A list of key changes from the draft rule to the final rule is available in **Appendix A** to this document.

The CPP will be implemented according to the following timeline:[2]

SUBMITTALS

- **September 6, 2016:** All states submit final plans, or an initial submittal with an extension request.
- **September 6, 2017:** States that have received an extension submit a progress update.
- **September 6, 2018:** Deadline to submit final state plans, for states with the maximum two-year extension.
- **July 1, 2021:** States submit a milestone (status) report.

INTERIM AND FINAL GOAL PERIODS

- **2022-2024:** Interim step one period (Reporting: July 1, 2025).
- **2025-2027:** Interim step two period (Reporting: July 1, 2028).
- **2028-2029:** Interim step three period (Reporting: July 1, 2030).
- **2030:** Start of the final goal compliance period (Reporting: July 2, 2032 and every two years beyond).

Following the publication of the final rule in the Federal Register, stakeholders will have 90 days to comment on a number of draft provisions. These include EPA's draft EM&V guidance,[3] as well as a proposed federal plan, which includes both a rate- and mass-based approach.

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[1] Also on August 3, EPA released final standards for new, modified and reconstructed power plants, in addition to a proposed federal plan and model rule to assist states in implementing the Clean Power Plan.

[2] Some stakeholders have stated their intent to litigate the EPA rule in court; these proceedings will ramp up when the final rule is released and may impact the proposed implementation timeline. States taking legal action will do so through their Attorney General's Office.

[3] The comment period for the draft EM&V guidance is tied to the publication of the model trading rule.

II. FRAMEWORK AND REQUIRED REDUCTIONS

Regulation under Section 111(d) occurs through a two-step process: First, EPA sets a level of stringency that constitutes the "best system of emission reduction (BSER)" for a given pollutant, and then states develop compliance plans to meet EPA's prescribed level of stringency. At its core, BSER is a best practice solution set used to set the stringency of the required reductions, taking into account key considerations like cost-effectiveness.

In the case of CO_2, EPA has broken the BSER down into three "building blocks."

- **Building Block 1: Heat Rate Improvements —** reducing the carbon intensity of generation at affected coal steam units through heat rate improvements.
- **Building Block 2: Re-dispatching to Natural Gas Combined-Cycle (NGCC) —** substituting increased generation from lower-emitting NGCC units for reduced generation from higher-emitting affected steam generating units.
- **Building Block 3: Renewable Energy —** substituting greater use of new renewable energy generating capacity for reduced generating at affected fossil fuel-fired generating units.

EPA applied these three building blocks to two subcategories of fossil fuel-fired electric generating units (EGUs) – fossil fuel-fired steam units and natural gas combined cycle units – within the Western Interconnection, the Eastern Interconnection and the Electricity Reliability Council of Texas Interconnection, producing regional emission rates. Next, EPA selected the most readily achievable regional rate to generate national performance rates for each subcategory. To provide additional flexibility, these rates were applied to each state and its unique generation mix to arrive at individual statewide goals.

EPA's prescribed BSER building blocks directly inform the stringency of the required emission reduction targets; however, states have broad flexibility in determining the mix of strategies they use to reach the targets, and compliance strategies are not confined to those used in setting the targets. In the draft rule, energy efficiency was included in the BSER as the fourth building block, but in the final rule, EPA removed energy efficiency, likely due to legal considerations. However, energy efficiency is still available to states as a compliance strategy, and EPA has included a number of provisions within the rule that directly encourage the use of energy efficiency in compliance.

III. SOUTHEASTERN STATE GOALS

EPA has established interim and final goals in three forms:

- A rate-based state goal measured in pounds per megawatt hour (lbs/MWh);
- A mass-based state goal measured in total short tons of CO_2;
- A mass-based state goal with a "new source complement," inclusive of new NGCC capacity, measured in total short tons of CO_2.

Specific goals for each southeastern state are provided on the pages that follow.

FIGURE 1. RATE REDUCTIONS FOR SOUTHEASTERN STATES (ADJUSTED OUTPUT-WEIGHTED-AVERAGE POUNDS OF CO_2 PER NET MWH FROM ALL AFFECTED FOSSIL FUEL-FIRED EGUS)

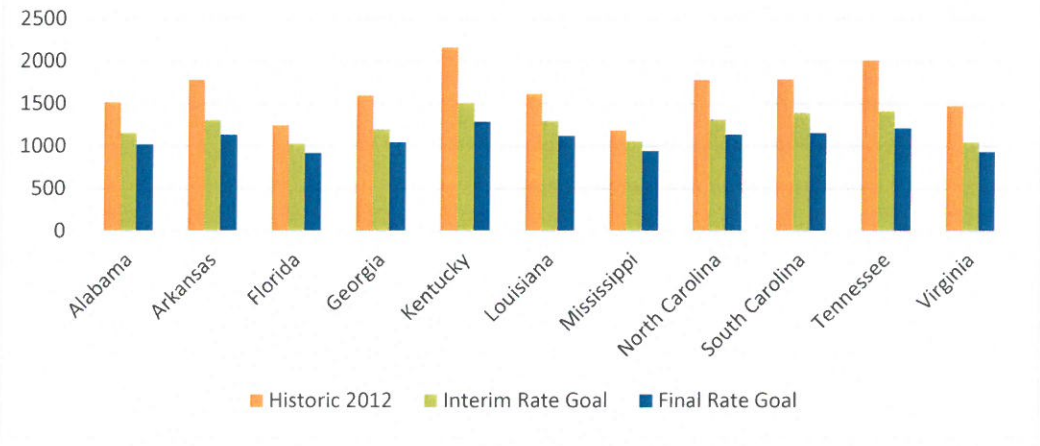


FIGURE 2. STATEWIDE MASS-BASED CO_2 EMISSION PERFORMANCE GOALS FOR SOUTHEASTERN STATES (ADJUSTED OUTPUT-WEIGHTED-AVERAGE TONS OF CO_2 FROM ALL AFFECTED FOSSIL FUEL-FIRED EGUS)

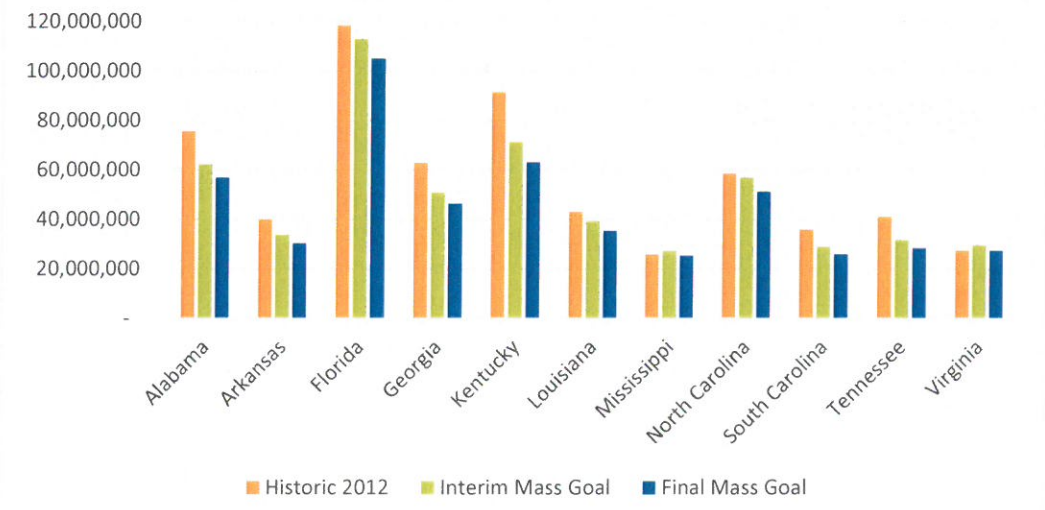
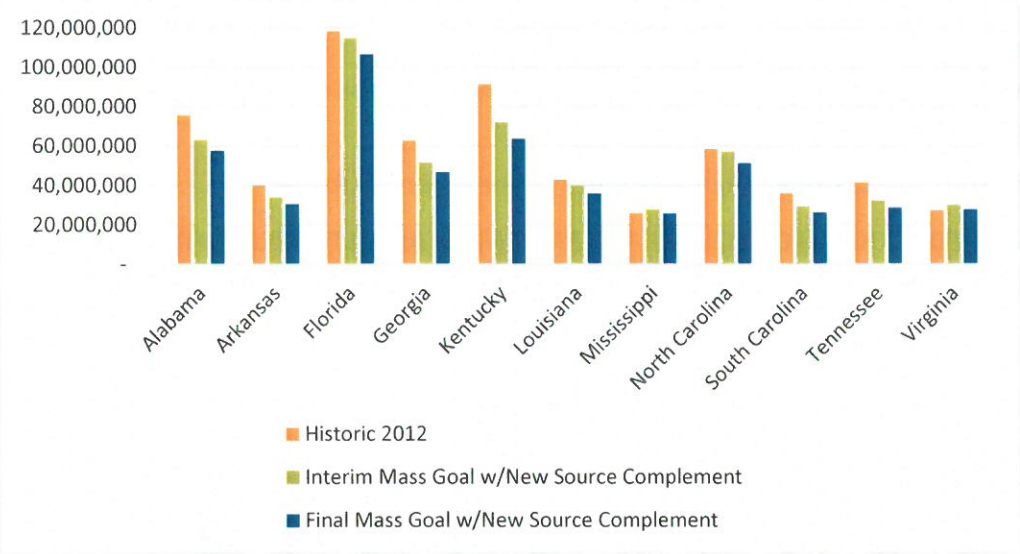


FIGURE 3. MASS GOALS WITH NEW SOURCE COMPLEMENT FOR SOUTHEASTERN STATES (ADJUSTED OUTPUT-WEIGHTED-AVERAGE TONS OF CO_2 FROM ALL AFFECTED FOSSIL FUEL-FIRED EGUS)



III. IMPLEMENTATION

State plans may follow either a rate- or a mass-based approach in compliance. In addition, states may decide to implement an **"emission standards" state plan**, which assigns all requirements to affected EGUs, or a **"state measures" state plan**, which contains a mix of measures that may apply to affected EGUs and other entities, with a backstop of federally-enforceable standards on affected EGUs. States may use the final model rule as their backstop.[4]

TABLE 1. RATE-BASED COMPLIANCE APPROACHES

Approach	Type	Treatment of Energy Efficiency	EM&V
Sub-Categorized Emission Rates	Emission Standards	May be used in generating Emission Rate Credits (ERCs).	ERCs must be supported by adequate EM&V.
State Emission Rates	Emission Standards	May be used in generating ERCs.	ERCs must be supported by adequate EM&V.
Differing Emission Rates	Emission Standards	May be used in generating ERCs.	ERCs must be supported by adequate EM&V.

TABLE 2. MASS-BASED COMPLIANCE APPROACHES[5]

Approach	Type	Treatment of Energy Efficiency	EM&V for Energy Efficiency
Mass Goal for Existing Units	Emission Standards	Energy efficiency as a strategy for meeting limit at lesser cost, but complementary to the plan.	No EM&V required for state plan.
Mass Goal for Existing and New Units (Mass Complement)	Emission Standards	Energy efficiency as a strategy for meeting limit at lesser cost, but complementary to the plan.	No EM&V required for state plan.

[4] Requirements assigned to affected EGUs are federally enforceable; other measures are enforceable at the state level.

[5] EPA taking comment on end-use energy efficiency set-aside.

State Measures: Mass Goal for Existing Units	State Measures	Could include energy efficiency policies and programs that are enforceable under state law.	All state measures must be documented as quantifiable, verifiable, enforceable, non-duplicative and permanent.
State Measures Mass Goal for Existing and New Units (Mass Complement)	State Measures	Could include energy efficiency policies and programs that are enforceable under state law	All state measures must be documented as quantifiable, verifiable, enforceable, non-duplicative and permanent.

The final rule provides additional clarity and flexibility regarding multi-state approaches, including the explicit sanction of "trading ready" approaches, which allow states to opt in to a trading market with other states taking parallel approaches without the need for interstate agreements.

IV. ENERGY EFFICIENCY'S ROLE WITHIN THE RULE

The final Clean Power Plan prioritizes end-use energy efficiency as a strategy for meeting compliance obligations at least cost. As noted above, energy efficiency is not directly included in the goal calculation formula, but can serve a number of diverse functions within compliance frameworks.

Under a **rate-based approach**, energy efficiency measures and programs – including utility DSM programs, transmission and distribution system efficiency upgrades, combined heat and power (CHP), building codes and state appliance standards – can qualify for Emissions Rate Credits (ERCs). These bankable, tradable instruments[6] are issued based on MWh reductions achieved and added into the denominator of an emission rate. ERCs must be supported by adequate EM&V and must be quantifiable, verifiable, non-duplicative and permanent. States and utilities, as well as private sector actors and local governments may be eligible for ERCs.

[6] ERCs are generally bankable and tradable, subject to certain conditions. For instance, ERCs cannot be issued based on energy savings achieved in states with mass-based goals. States with rate-based goals can receive and trade ERCs as long as both states have rate-based goals, with goals based either on the emissions performance rates established by the EPA for both sub-categories of EGUs or on uniform rate-based goals established as part of a multi-state plan. In addition, states must adopt ERC registries with compatible functionality and avoid double counting of credits.

If a state chooses a **mass-based approach**, energy efficiency serves a complementary role and may not need to be explicitly included in a state plan, since energy savings directly assist states in achieving "at the stacks" reductions. An exception is plans that use the state measures approach, which allows states to incorporate energy efficiency measures that are enforceable under state law. [7] Mass-based state plans can also include energy efficiency set-asides in order to encourage energy efficiency savings during plan implementation.

Under both approaches, states may choose to participate in the Clean Energy Incentive Program (CEIP), which encourages the deployment of renewable energy projects (wind and solar) and energy efficiency programs within low-income communities in 2020 and 2021. This program will make matching allowances or Emission Rate Credits (ERCs) from EPA available to the states up to an amount equal to the equivalent of 300 million short tons of CO_2 emissions, to encourage early reductions through clean energy investment. The CEIP provides a 2:1 match for implementing energy efficiency in low-income communities, which have generally lacked widespread access to energy efficiency programs.

EPA has not limited the types of energy efficiency programs and measures that can be included in a state plan. In other words, a state can look to a broad spectrum of compliance tools for reaching emission reduction goals. **All energy efficiency measures in a state plan must be evaluated per EPA's** Evaluation, Measurement and Verification (EM&V) guidance (additional information provided in **Section V**).

[7] Under a state measures approach, state plans must include "backstop" enforceable emissions standards on EGUs in case implementation of the state measures is not adequate to meet the mass-based goals.

V. STATE PLANS

According to the requirements set forth in the Clean Power Plan, state compliance plans must include the following elements:

- Description of the plan approach and geographic scope;
- Applicability of state plans to affected EGUs;
- Demonstration that the plan submittal is projected to achieve the state's CO_2 emission performance rates or state CO_2 goal;
- Monitoring, reporting and recordkeeping requirements for affected EGUs;
- State recordkeeping and reporting requirements;
- Public participation and certification of hearing on state plan;
- Supporting documentation;
- Documentation demonstrating consideration of electric system reliability;
- Demonstration of meaningfully engaging all stakeholders, including workers and low-income communities, communities of color and indigenous populations living near power plants and otherwise potentially affected by the state's plan; and
- Description of engagement with stakeholders, including vulnerable communities.

State plan submittals using the **emission standards approach** must also include:

- Identification of each affected EGU; identification of federally enforceable emission standards for the affected EGUs; and monitoring, recordkeeping and reporting requirements.
- Demonstrations that each emission standard will result in reductions that are quantifiable, non-duplicative, permanent, verifiable and enforceable.

State plan submittals using the **state measures approach** must also include:

- Identification of each affected EGU; identification of federally enforceable emission standards for affected EGUs (if applicable); identification of backstop of federally enforceable emission standards; and monitoring, recordkeeping and reporting requirements.
- Identification of each state measure and demonstration that each state measure will result in reductions that are quantifiable, non-duplicative, permanent, verifiable and enforceable.

VI. EVALUATION, MEASUREMENT AND VERIFICATION (EM&V)

With the release of the final rule, EPA has also released draft guidance on EM&V, which is open for comment for 90 days following the publication of the CPP's model trading rule in the Federal Register. Additional perspective on EM&V requirements is available in EPA's draft federal plan. This section covers key takeaways from both documents.

EM&V is not required for state plans that do not include energy efficiency as a measure, unless the state intends to generate energy efficiency-driven ERCs or access early action ERCs or allowances under the CEIP. EPA also proposes to periodically provide updates to reflect changing industry standards and best practices.

EM&V must be done on an ex-post basis, or after programs and measures are implemented. Both EM&V plans and periodic reports to EPA are required. Energy savings are measured as incremental to a "common practice baseline," representing what would have happened if the measure had not been installed. EM&V must include normalization where appropriate for variations in weather, building occupation and other factors, and should provide estimates of measure lifetime.

EPA's draft EM&V guidance provides a high-level discussion and guidance regarding 12 key EM&V topics, in addition to supplemental guidance on specific program categories, as follows:

- EM&V methods;
- Electricity savings metrics and baselines;
- Reporting timeframes and considerations;
- Deemed savings;
- Independent factors affecting energy consumption and savings;
- Accuracy and reliability of quantified savings;
- Avoiding double counting;
- Effective useful life and persistence of savings;
- Savings quantification and verification cycles;
- Transmission and distribution (T&D) savings adders;
- Interactive effects; and
- Use of energy efficiency EM&V protocols and guidelines

As noted above, supplemental guidance on specific categories of programs is provided for the following program categories:

- Utility- and publicly-administered energy efficiency programs;
- Project-based energy efficiency (evaluated site-by-site);
- State and local government building energy code and compliance programs; and
- State and local government incremental product energy standards.

VII. ADDITIONAL INFORMATION

EPA has issued a number of guidance and technical support documents (TSDs) surrounding energy efficiency's role in the rules. These include:

- Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy Efficiency (draft for input): http://goo.gl/NZCBAq
- TSD, GHG Mitigation Measures: http://goo.gl/OA2niC
- TSD, Incorporating RE and Demand-Side Energy Efficiency Impacts into State Plan Demonstrations: http://goo.gl/1v4aUx
- TSD, Demand-Side Energy Efficiency: http://goo.gl/QPRh3n
    - Data File, Demand-Side Energy Efficiency Appendix, Illustrative 3% Scenario: http://goo.gl/oTDqRv
    - Data File, Demand-Side Energy Efficiency Appendix, Illustrative 7% Scenario: http://goo.gl/isrs5c
    - Data File, Demand-Side Energy Efficiency Appendix, Potential Studies: http://goo.gl/dWIU5C

In addition, as noted above, the proposed federal implementation plan[8] contains extensive information on "presumptively approvable" EM&V approaches.

SEEA is providing information and resources to promote energy efficiency as a pathway to compliance, where appropriate and suited to local needs, while helping states to reap the benefits of energy efficiency. In addition, SEEA has produced a number of targeted materials, including regional CPP-related news, resources and information portals, and a breakdown of CPP-related activity by state, available on the website at http://goo.gl/4vchHd.For more information on the draft rules, please contact Abby Fox, Policy Manager, at afox@seealliance.org.

[8] Available at http://goo.gl/IlNou2.

APPENDIX A: KEY CHANGES IN THE FINAL CLEAN POWER PLAN

EXCLUSION OF ENERGY EFFICIENCY FROM THE BSER

In the draft rule, energy efficiency was one of the four "building blocks" that EPA used to set the stringency of state targets, and was referenced as an acceptable compliance strategy – even beyond the levels and scope included in the BSER. In the final rule, EPA has removed energy efficiency as a component of the goal-setting equation. However, EPA places increased emphasis on energy efficiency as a compliance pathway and provides additional tools such as the Clean Energy Incentive Program (CEIP) for ensuring that energy efficiency is accessible as a means to shield low-income communities and offset potential upward pressure on utility bills.

APPLICATION OF BUILDING BLOCKS AT A REGIONAL LEVEL

Comments on the draft rule noted that application of the BSER building blocks at the state level did not adequately reflect the interconnected nature of the grid, and resulted in widely ranging state goals, raising fairness concerns and potentially complicating multi-state compliance options.

In the final rule, EPA has set nationally uniform goals by applying the BSER to average emission rates in the Eastern Interconnection, Western Interconnection and Electric Reliability Council of Texas; selecting the most readily achievable goals from the results; and only then applying these national rates to states based on the weighting of their electric generating sector. This regionally-driven approach has resulted in a tighter band of state goals.

ADJUSTMENTS TO COMPLIANCE TIMELINE

Stakeholder comments cited the fast-moving compliance timeline as a concern, and in response, EPA has relaxed it in the final rule. State plans must be submitted by September 2016, with the potential for an extension of up to two years upon request and approval. The interim compliance period will begin in 2022, rather than 2020, and reductions wills be phased in on a gradual "glide path" to 2030 via stepped interim goals. See **Section I** of this document for a full timeline of compliance obligations.

TREATMENT OF UNDER-CONSTRUCTION NUCLEAR

Under the draft rule, the stringency of targets for three southeastern states – Georgia, South Carolina and Tennessee – were largely driven by the inclusion of under-construction nuclear capacity within the BSER. In the final rule, nuclear is not included in determining the stringency of state goals, but is available as a compliance strategy.

ADDITION OF CLEAN ENERGY INCENTIVE PROGRAM AND TREATMENT OF EARLY ACTION

States will also be able to leverage a Clean Energy Incentive Program, which will encourage the deployment of end-use energy efficiency and renewable energy (wind and solar) before 2022. This program will allow states to credit electricity generated by renewable sources in 2020 and 2021 to projects that begin construction after states submit final implementation plans. In addition, the program encourages the deployment of energy efficiency in low-income communities in 2021 and 2021 by doubling the number of credits that they receive.

RELEASE OF FEDERAL PLAN

The draft plan referenced a federal plan, which would serve as a backstop for states unable to comply with their emissions reductions obligations under the Clean Power Plan, but was not provided to states for comment. The final rule includes a proposed federal plan (rate- and mass-based), which may also serve as a useful reference for states as they develop their own plans.

INCLUSION OF RELIABILITY "SAFETY VALVE"

In response to a common concern articulated by commenters and industry stakeholders, EPA has included a "safety valve" provision, through which states can request revisions to their plans if system reliability is found to be compromised. In addition, the rule includes a requirement that each state demonstrate in its final plan that it has considered reliability issues in developing its plan.

ADDITIONAL CLARITY ON MARKET-BASED APPROACHES

The final rule provides more flexibility in how state plans can be designed and implemented, including: streamlined opportunities for states to include proven strategies like trading and demand-side energy efficiency in their plans, and allows states to develop "trading ready" plans that will allow them to "opt in" to an emission credit trading market with other states taking parallel approaches without the need for upfront interstate agreements.

APPENDIX B:
SOUTHEASTERN STATE EMISSION RATE REDUCTION GOALS

State	Historic 2012 Emission Rate	Interim Rate Goal	Interim Goal % Reduction	Final Rate Goal	Final Goal % Reduction
Alabama	1,518	1,157	24%	1,018	33%
Arkansas	1,779	1,304	27%	1,130	36%
Florida	1,247	1,026	18%	919	26%
Georgia	1,600	1,198	25%	1,049	34%
Kentucky	2,166	1,509	30%	1,286	41%
Louisiana	1,618	1,293	20%	1,121	31%
Mississippi	1,185	1,061	10%	945	20%
North Carolina	1,780	1,311	26%	1,136	36%
South Carolina	1,791	1,388	23%	1,156	35%
Tennessee	2,015	1,411	30%	1,211	40%
Virginia	1,477	1,047	29%	934	37%

APPENDIX C:

SOUTHEASTERN STATE EMISSION MASS REDUCTION GOALS

State	Historic 2012 Emissions	Interim Mass Goal	Interim Goal % Reduction	Final Mass Goal	Final Goal % Reduction
Alabama	75,571,781	62,210,228	18%	56,880,474	25%
Arkansas	39,935,335	33,683,258	16%	30,322,632	24%
Florida	118,395,844	112,984,729	5%	105,094,704	11%
Georgia	62,851,752	50,926,084	19%	46,346,846	26%
Kentucky	91,372,076	71,312,802	22%	63,126,121	31%
Louisiana	43,028,425	39,310,314	9%	35,427,023	18%
Mississippi	25,903,886	27,338,313	-6%[9]	25,304,337	2%
North Carolina	58,566,353	56,986,025	3%	51,266,234	12%
South Carolina	35,893,265	28,969,623	19%	25,998,968	28%
Tennessee	41,222,026	31,784,860	23%	28,348,396	31%
Virginia	27,365,439	29,580,072	-8%	27,433,111	-0.25%

[9] This represents an increase in absolute terms. Similarly, Virginia's interim and final mass reductions represent an absolute increase.

APPENDIX D:
SOUTHEASTERN STATE MASS REDUCTION GOALS (WITH NEW SOURCE COMPLEMENT)

State	Historic 2012 Emissions	Interim Mass Goal w/New Source Complement	Interim Goal % Reduction	Final Mass Goal w/New Source Complement	Final Goal % Reduction
Alabama	75,571,781	63,066,812	20%	57,636,174	24%
Arkansas	39,935,335	34,094,572	17%	30,685,529	23%
Florida	118,395,844	114,738,005	3%	106,641,595	10%
Georgia	62,851,752	51,603,368	22%	46,944,404	25%
Kentucky	91,372,076	72,065,256	27%	63,790,001	30%
Louisiana	43,028,425	39,794,622	8%	35,854,321	17%
Mississippi	25,903,886	27,748,753	-7%[10]	25,666,463	1%
North Carolina	58,566,353	56,986,025	3%	51,266,234	12%
South Carolina	35,893,265	29,314,508	22%	26,303,255	27%
Tennessee	41,222,026	32,143,698	28%	28,664,994	30%
Virginia	27,365,549	30,030,110	-10%	27,830,174	-2%

[10] This represents an increase in absolute terms. Similarly, Virginia's interim and final mass reductions represent an absolute increase.