SOUTHEAST ENERGY OPPORTUNITIES

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POWER OF EFFICIENCY

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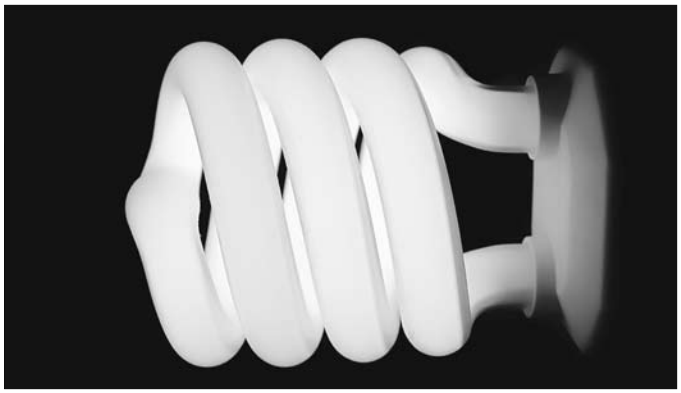

SUMMARY CONCLUSIONS

Abundant efficiency opportunities in the Southeast can help meet regional energy needs. Efficiency investments can lead to economic and environmental benefits across several sectors by reducing demand for electricity, natural gas, and transportation fuels. For the purposes of this brief we focus on efficiency's role in meeting future electric power needs. With prompt policy action, energy efficiency improvements could reduce electricity use more than 10 percent by 2015 and 20 percent by 2025.

Energy efficiency is the cheapest energy option, with costs that are substantially lower (less than $0.05 per kWh) than those for new power generation ($0.08 to $0.14 per kWh). Investments in efficiency can lead to tens of thousands of new local jobs and significant savings for Southeast consumers and businesses. Meanwhile, electricity savings can help reduce air pollution and relieve pressure on the region's freshwater resources (thermoelectric power plants currently account for two-thirds of the Southeast's total freshwater withdrawals).

State-level experience suggests successful programs can capture electricity savings of 1 percent or more each year. To achieve efficiency potential in the Southeast, state and federal policymakers should create the regulatory frameworks for cost-effective electric utility programs and take additional steps to capture near-term opportunities.

Policy Priorities

- Establish energy efficiency targets for electric utilities, using Energy Efficiency Resource Standards (EERS) or similar programs, to advance investments in efficiency. A national EERS for 15 percent savings by 2020 would have significant positive impacts for Southeast states.
- Develop alternative regulatory business models—through stakeholder engagement processes—to align utility and customer incentives for reducing electricity use.
- Adopt updated building energy codes, training programs, enforcement mechanisms, and verification tools to improve the energy performance of buildings.
- Develop energy labeling programs for homes and support commissioning and re-commissioning programs to enhance the energy performance of commercial buildings.
- Demonstrate state and local leadership with energy efficiency requirements for public buildings.
- Create financial incentives such as tax credits, low-interest loans, on-bill financing, or rebates to encourage home and building owners to invest in efficiency upgrades.
- Support regulatory efforts to encourage investment in industrial energy efficiency, including combined heat and power (CHP) and other energy recycling technologies. Expand funding for technical assistance and efficiency investments through Industrial Assessment Centers (IACs).

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Challenge: Capture Energy Efficiency Opportunities to Meet Increasing Energy Demand

Southeast states, like many others, face a daunting energy challenge over the next several years. Regional energy demands are increasing due to growth in population and per capita energy use (see Box 1). Building new power plants is one way to meet growing demand for energy. Energy efficiency is a lower-cost solution.[1] Energy efficiency has been called America's largest, cleanest, cheapest, and safest form of new power. It is widely recognized by states, utilities, and other stakeholders as a primary option to meet national energy needs.[2]

Energy efficiency is significantly cheaper than producing electricity with new power plants (see Figure 1) and offers additional economic and environmental benefits. Studies by the American Council for an Energy-Efficient Economy (ACEEE) have identified several co-benefits with efficiency programs, including: energy bill savings, job creation, and emission reductions. They estimate that a 20 to 30 percent gain in efficiency across the country could lead to a net increase of 500,000 to 1.5 million jobs along with a 0.1 percent increase in gross domestic product by 2030.[3] Other studies suggest that for every million dollars invested, state programs can generate between 35 and 55 job-years for manufacturing, supplying, selling, and installing high-efficiency goods and providing new energy efficiency services.[4] As states assess options for dealing with the impacts of a global economic downturn, energy efficiency should rank among the top priorities.

Recent analyses of energy efficiency potential in the Southeast suggest policy action can lead to tens of thousands of new jobs and save consumers billions of dollars. Energy efficiency gains that realize these economic benefits can help ensure a more secure and productive future. In 2009, while announcing a

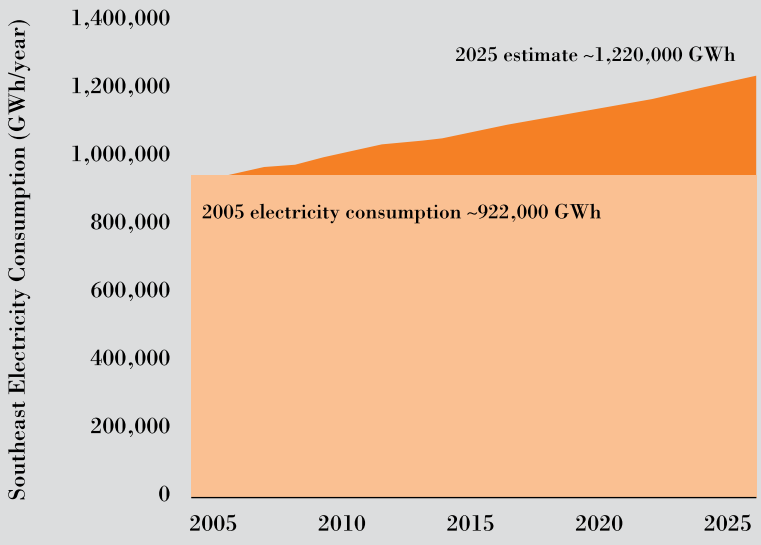
BOX 1 Efficiency Imperatives and Advantages

The Southeast is the fastest growing and most populous region in the United States. According to census data, the population increased by nearly 20 percent in the past decade and more than 420,000 new housing permits were issued in 2007—about 30 percent of the national total. Since 1990, the growth in population and energy use per person has outpaced the national average. This growth has important implications for future electric power generation, which accounts for nearly half of all total regional energy use. Estimates based on projections from the U.S. Department of Energy suggest that, in the absence of additional policy action, Southeast electricity consumption could increase 30 percent from 2005 to 2025 (see graph).

Cost-effective efficiency gains can be a major opportunity to address future electricity needs. The region currently uses about 20 percent more electricity per person than the national average. In the residential sector, electricity consumption per person is nearly 40 percent higher than the national average—in part because the majority of households use electricity as their primary energy source for home heating and cooling. As a result, investments in efficiency can have a dramatic positive impact in reducing future electricity demand.

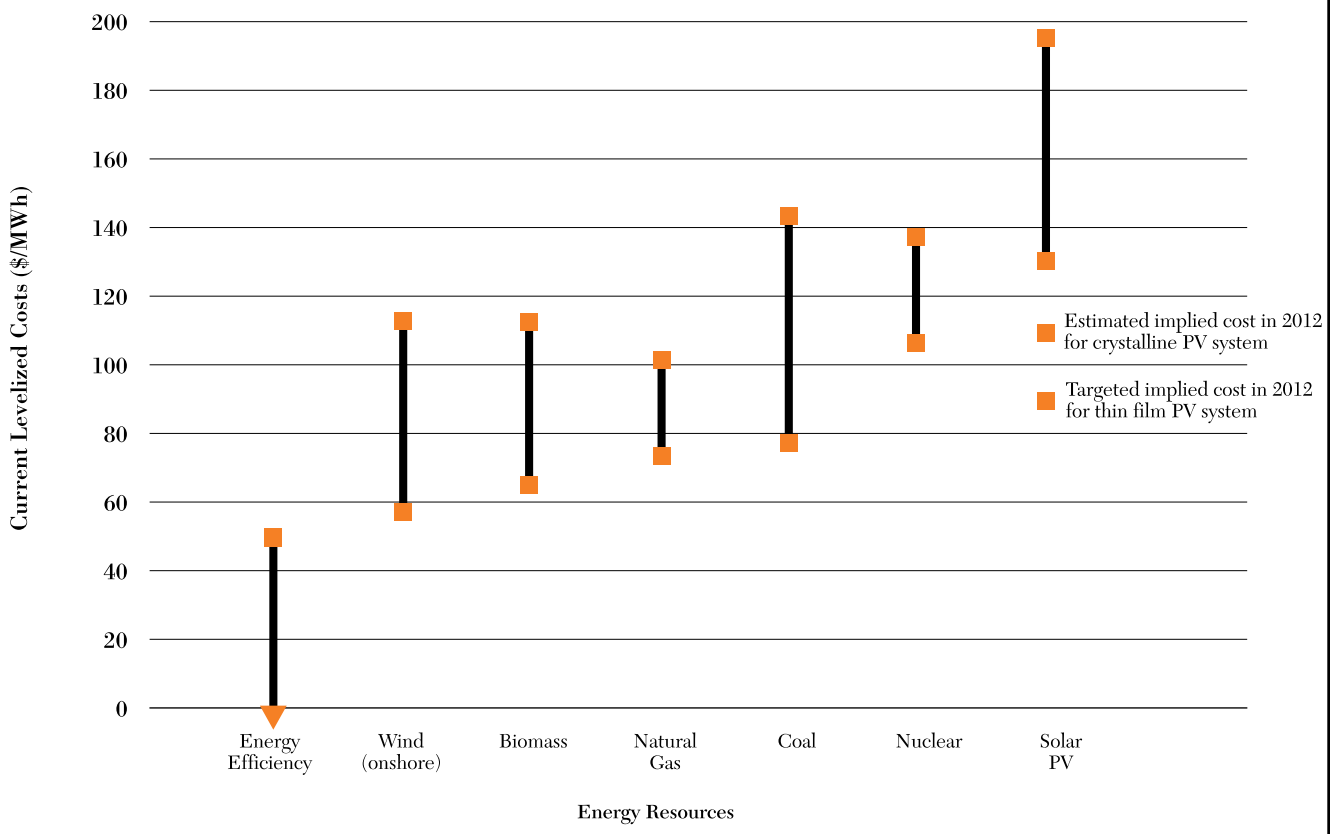
Data and information above are based on discussion in the companion brief on the Southeast energy challenge: www.wri.org/publication/southeast-energy-policy.

Potential Increase in Southeast Electricity Use Through 2025



Source: Based on state estimates from projections for the South Atlantic and East South Central subregions in the Energy Information Administration's 2008 Annual Energy Outlook (www.eia.doe.gov/oiaf/aeo/).

FIGURE 1 Costs of Various Electric Power Resources



Source: Adapted from Lazard's 2009 "Levelized Cost of Energy Analysis – Version 3.0."
Notes: Levelized costs attempt to provide full cost comparisons by factoring in expenditures for construction, fuel, and operations, among other costs (but do not include transmission and distribution costs, nor do they factor in a future cost on greenhouse gas emissions or externalities, such as air pollution and public health impacts). Cost assessments can be expected to change over time.

suite of new energy initiatives in Virginia, Governor Tim Kaine noted, "In today's economy, we can turn our energy challenges into an opportunity."[5]

Efficiency opportunities exist across all sectors. Efficiency gains in electric power and transportation energy use are two primary opportunities. For the purposes of this brief, we have focused discussion on electricity, which helps power the residential, commercial, and industrial sectors (and potentially the transportation sector in future years).

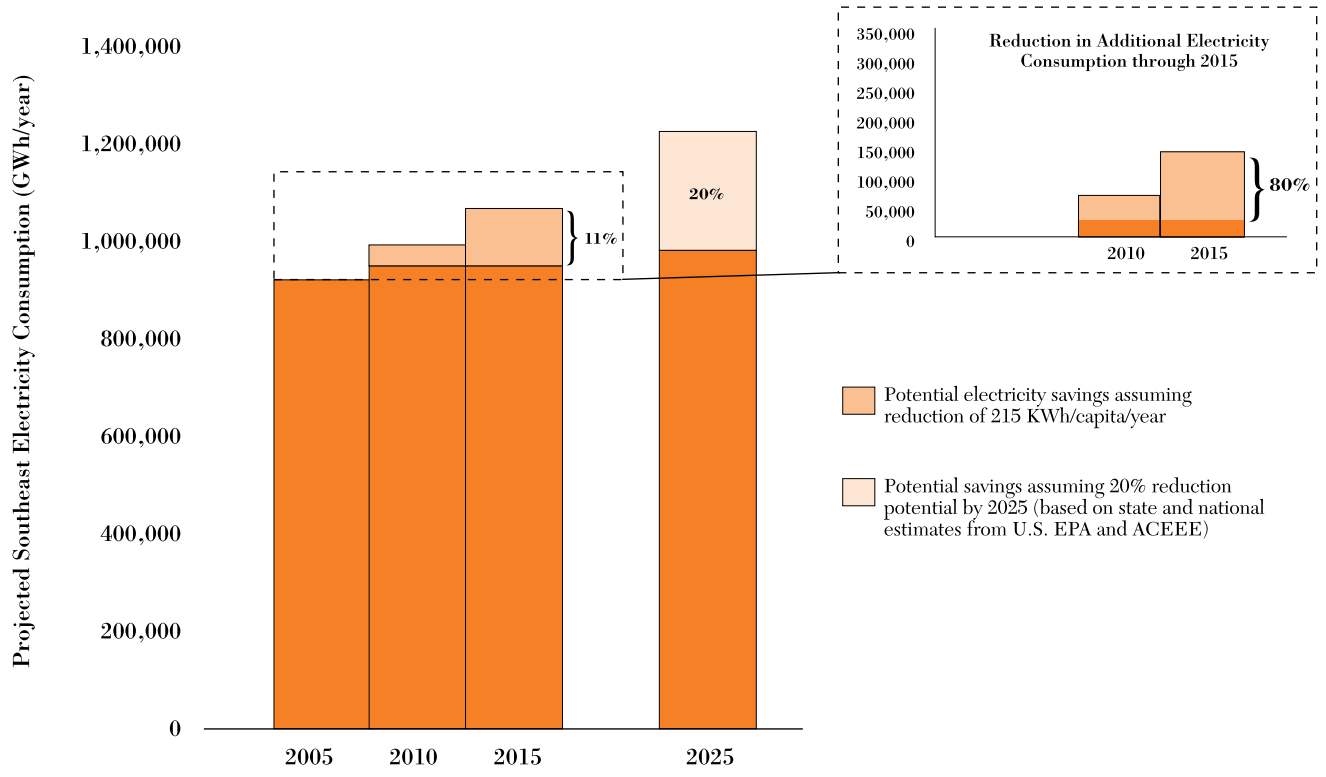
Potential Electricity Savings

Our assessment of efficiency potential in the Southeast suggests the region can reduce total expected electricity use 11 percent by 2015 and 20 percent by 2025.[6] Prompt policy action to achieve such reductions would reduce the expected increase in electricity demand (load growth) by 80 percent or more through 2015.

Energy efficiency potential in several Southeast states (Georgia, Florida, North Carolina, and Virginia) suggest policies and programs can achieve considerable near-term energy savings. State-level energy savings potential ranges from about 215 to 270 kilowatt hours (kWh) per capita per year through 2015. This range offers an approximation that allows for a rough estimate of the total regional efficiency potential.[7] Applying the low range (215 kWh/capita/year) across the region shows potential savings of more than 110,000 gigawatt hours (GWh)[8]—a reduction of approximately 11 percent compared to expected electricity use in 2015 (see Figure 2).

These savings could meet most of the Southeast's additional electric power needs through 2015, reducing the need to

FIGURE 2 Potential Electricity Savings through 2025



Source: Estimates are based on the Department of Energy's 2008 Annual Energy Outlook (AEO) and estimated consumption with near-term energy efficiency gains in the Southeast. Longer-term savings potential of 20 percent is based on scenario estimates from (a) U.S. EPA's National Action Plan for Energy Efficiency (www.epa.gov/cleanenergy/energy-programs/napee/index.html); and (b) ACEEE's analysis of Southeast state efficiency potentials (U.S.: www.aceee.org/pubs/e084.htm; FL: www.aceee.org/pubs/e072.html; VA: www.aceee.org/pubs/e085.htm).

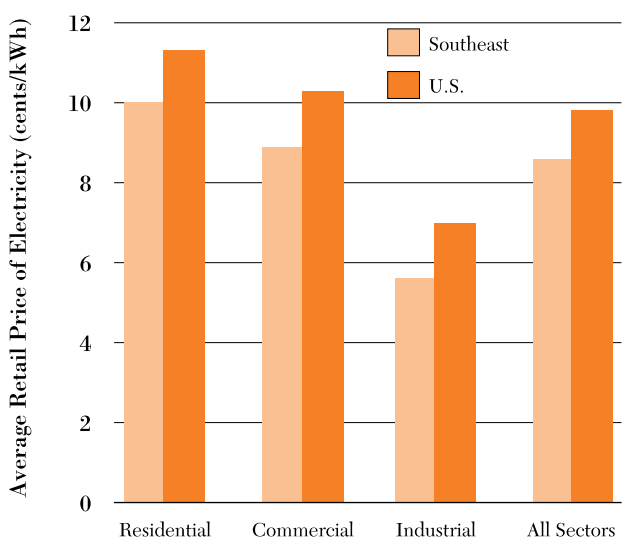
construct new power plants. Savings would be equivalent to the electricity produced by more than 30 typical coal-fired power plants,[9] but at lower costs and without the negative environmental impacts.

Achieving such efficiency gains would have numerous environmental benefits:

- Improved air quality and reduced climate change risks.
- Reduced strain on freshwater resources since thermoelectric power production in the Southeast requires more water than any other sector[10] (see companion brief on water-energy links in the Southeast at www.wri.org/publication/southeast-energy-policy).
- Opportunity to meet a higher proportion of total electricity needs with local clean energy resources (see companion brief on renewable energy opportunities in the Southeast at www.wri.org/publication/southeast-energy-policy).

Studies also suggest significant long-term economic advantages with energy efficiency (for electric power and other sectors), including new jobs and consumer savings. ACEEE's in-depth studies in Florida estimated the state could add 14,000 jobs and see cumulative net savings of $28 billion ($2004) in 2023. Consumers would see a total annual electricity cost savings of about $5 billion in 2023.[11] A similar study in Virginia suggested a potential for 10,000 jobs and $15 billion in savings ($2006), reducing the average household's monthly electricity bill by $20 in 2025.[12] To achieve this potential, Southeast states can tap into abundant unexploited efficiency. A 2009 Rocky Mountain Institute assessment that ranked states based on opportunities to enhance energy efficiency placed six of the eight Southeast states in the top ten.[13]

FIGURE 3 Average Southeast and U.S. Retail Electricity Prices by Sector, 2008



Source: EIA, 2008. *Electric Power Monthly.*

If there are abundant opportunities, and economic and environmental benefits, then why do energy efficiency opportunities remain untapped? In part, there are persistent misconceptions about energy efficiency investments. For example, many point to low electricity rates as a barrier to efficiency. Average retail electricity rates in the Southeast are lower than the national average (see Figure 3), but this does not preclude cost-effective investments in energy efficiency. As noted above, efficiency is substantially cheaper than new power generation and economic analyses suggest abundant opportunities to realize substantial returns on efficiency investments in Southeast states. There are, however, important regulatory and financial barriers to overcome to realize the full electricity savings potential:[14]

- Initial costs – Efficiency projects that require significant upfront investments can be difficult to finance.
- Misaligned incentives – In some cases, the party that would make the investment in efficiency upgrades may not reap the rewards. The owner of a building, for example, has little incentive to invest in upgrades if it is the renter or lessee that collects the savings with lower energy bills.
- Regulatory structures – Current regulatory structures can undervalue or even discourage energy efficiency improvements. Efforts to update regulatory business models and resource planning processes can realign incentives such that utilities and customers are encouraged and rewarded for improving efficiency.
- Education and awareness – Information gaps prevent energy providers, users, and regulators from capturing available efficiency potential. More education and awareness can help address this and other barriers.

ACEEE identifies state progress in addressing such barriers as part of its annual review of state efficiency performance, policies, and investments. Their analysis scores states based on current programs and policy infrastructure to realize efficiency opportunities. While some Southeast states—particularly Florida and North Carolina—have shown progress in advancing energy efficiency programs, the scorecard shows that all states can take additional steps toward national best practice (see Figure 4).

Prompt policy action is needed to help deal with projected rises in electricity demand and realize the benefits of energy efficiency. Federal funding and technical support is now available for states to advance efficiency investments.[15] State and federal policymakers should capitalize on near-term efficiency investment opportunities and develop comprehensive frameworks to capture regional energy efficiency potential.

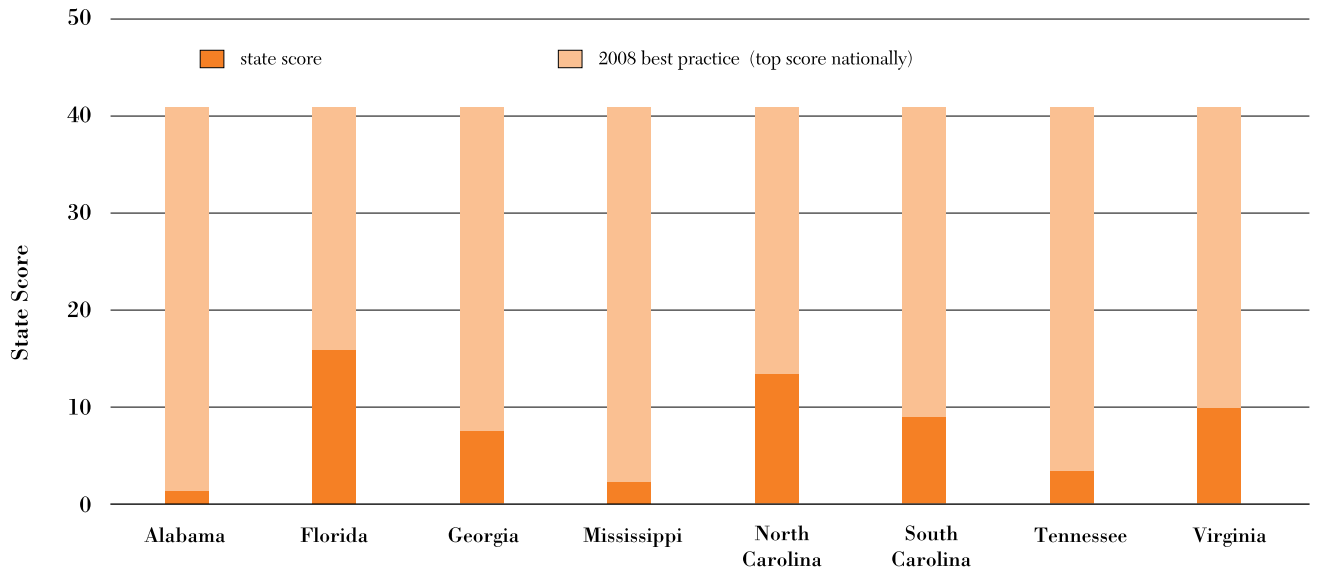
Realizing Energy Efficiency Potential: State and Federal Policy Priorities

Policy action to capture efficiency opportunities should be part of a comprehensive approach that maximizes economic benefits from efficiency improvements. A broad approach to energy efficiency can also help improve air quality and reduce water demands for electric power production (see companion brief on water-energy links in the Southeast at www.wri.org/publication/southeast-energy-policy). Regulatory frameworks and realigned incentive structures for energy efficiency should be top priorities for state and federal policymakers in the Southeast.

Create Frameworks and Markets for Efficiency

Several states have adopted an Energy Efficiency Resource Standard (EERS) or Energy Efficiency Portfolio Standard (EEPS) to advance efficiency investments, programs, and long-term energy savings goals.[16] More than 20 states, including Florida, North Carolina and Virginia, have implemented (or are developing) programs that set specific efficiency goals for utilities serving customers in that state.[17] Recently, other Southeast states have been exploring EERS policy options. A governor's stakeholder group in South Carolina found that electric utility efficiency goals and complementary outreach

FIGURE 4 Scores for Southeast states in ACEEE's 2008 State Energy Efficiency Scorecard Compared to National Best Practice



Source: ACEEE (www.aceee.org/pubs/e086.htm).
Notes: Several Southeast states have taken steps to advance efficiency policies, but there are many additional opportunities to implement additional policies and programs. Rankings include transport and natural gas efficiency.

programs could save approximately $1.1 billion through 2020.[18] These targets in general can accelerate deployment of high-efficiency technologies, save energy, and create a more productive and competitive state economy.[19]

Federal policymakers can structure similar programs to capture broader energy savings with an efficiency target for utilities across the country. ACEEE's review of state experience with EERS policies suggests that a federal EERS can complement existing state action and capture additional efficiency opportunities.[20] In effect, a national EERS would expand the energy and economic benefits seen to date at the state level. ACEEE estimates that a federal EERS policy that addresses both electricity and natural gas use could reduce peak energy demand in Southeast states by the equivalent of 126 power plants[21] and create more than 56,000 additional jobs. It could also triple the investment made in efficiency and return a net savings of nearly $38 billion to consumers (see Table 1).[22]

These state and federal policies can complement action to increase the percentage of electricity coming from domestic renewable energy resources. With energy efficiency action reducing overall energy demand, the addition of renewable energy capacity represents a larger percentage of total electricity needs (for more on the renewable energy opportunities in the Southeast see the companion issue brief at www.wri.org/publication/southeast-energy-policy).

Develop Alternative Regulatory Business Models

Energy efficiency is the most cost-effective option for meeting future electricity demands. However, current financial and regulatory structures do not necessarily encourage or reward energy savings. Alternative business models for electric power utilities can help recognize additional efficiency opportunities and reward efforts to reduce electricity demands.

Cost-effective efficiency opportunities are often overlooked when utilities and regulatory agencies compare options for meeting future electricity needs. Instead of evaluating efficiency investments against current electricity costs, utilities and regulators should consider efficiency options against the costs of constructing new power plants. States can adopt such resource procurement processes as part of standard utility resource planning. It is important that state regulators assess the costs of new power options with recognition of how future regulations (for example, limits on carbon dioxide and other greenhouse gas emissions) will affect the price of producing electricity. Utility strategies to meet future electricity demands

TABLE 1 ACEEE's Estimates of Savings in 2020 with a National Energy Efficiency Resource Standard

	Annual Electricity Savings (GWh)	Peak Demand Savings (equivalent 300 MW power plants)	Energy Savings (millions)	Net Jobs Created	CO_2 Emission Savings (million metric tons)
Alabama	12,440	13	$3,641	5,202	9.8
Florida	33,553	36	$14,007	19,754	20.6
Georgia	18,972	20	$6,326	8,894	15.2
Mississippi	5,854	6	$1,935	2,731	4.1
North Carolina	13,840	15	$3,017	6,426	11.5
South Carolina	11,662	12	$3,102	4,495	9.5
Tennessee	13,026	14	$3,505	5,104	12.3
Virginia	8,473	9	$2,342	3,744	7.5
Southeast Total	**117,820**	**126**	**$37,875**	**56,350**	**90.5**
U.S. Total	*364,100*	*390*	*$168,600*	*222,100*	*262*

Source: ACEEE's March 2009 report "Laying the Foundation for Implementing a Federal Energy Efficiency Resource Standard" (www.aceee.org/pubs/e091.htm).

Notes: Assumes electricity savings target of 15 percent and natural gas efficiency target of 10 percent by 2020. Estimated savings, net jobs created, and CO_2 emission reductions are based on electricity and natural gas reduction targets.

should recognize the value of energy efficiency and other options with co-benefits, such as renewable energy resources. Southeast states seeking to implement such processes can build on guidance from the U.S. Environmental Protection Agency and a diverse set of public stakeholders (see www.epa.gov/cleanenergy/documents/resource_planning.pdf).

Similarly, utilities that rely on electricity sales to generate revenue have a basic financial incentive to increase sales and avoid energy efficiency. Southeast states will need to overcome this barrier to realize its full energy savings potential. States and utilities should work with customers and other stakeholders to develop an effective alternative regulatory business model that ensures utilities and consumers are rewarded for investments in energy efficiency.

If customers reduce consumption, utilities' revenues are reduced as well. There should be appropriate financial mechanisms to engage utilities as partners in advancing efficiency. These mechanisms can include minimal charges on monthly electricity bills that create stable funding for customer efficiency programs (often referred to as Public Benefit Funds) and incentive structures for utilities that successfully reduce demand.

There needs to be an equivalent incentive on the customer side as well. Consumers that invest in efficiency should be able to reap the financial benefits of their investments. If the fixed costs on a customer's monthly electricity bill increase, it will be difficult to recognize cost savings as electricity consumption goes down. Instead, consumers that have paid for efficiency upgrades and reduced their monthly electricity use should be rewarded with lower electricity bills.

Efforts to realign incentives and create an alternative regulatory business model should involve an inclusive stakeholder process. Regulators, utilities, consumers, and others should be able to provide input. States should act promptly to initiate such processes to review barriers in current regulatory structures and develop alternatives that provide both utility and consumer investments in efficiency. States can review the different approaches taken elsewhere and determine what might fit within the context of their electric power system. Officials can draw on various research and resources, including work by ACEEE, Lawrence Berkeley National Laboratory, and the Regulatory Assistance Project.[23] The Alliance to Save Energy has also several resources for states seeking to develop and fund cost-effective energy efficiency models (www.ase.org/section/_audience/policy/statepolicies).

Energy Efficiency Action: Complementary State Policy Opportunities

As policymakers and stakeholders develop utility efficiency program frameworks, they should take advantage of additional opportunities to save energy and create jobs with policies targeting residential, commercial, and industrial energy use.

In North Carolina, economic modeling suggests a suite of residential/commercial/industrial efficiency policies could lead to nearly 15,000 new full-time equivalent jobs by 2020.[24] Similar economic modeling exercises in South Carolina suggest efficiency improvements in these sectors (together with utility efficiency targets) could lead to a net cost savings across the state of more than $3 billion by 2020.[25] Not surprisingly, policy options that enhance efficiency in these sectors have received broad support among state stakeholder workgroups and other energy task force initiatives throughout the Southeast.

States can draw on several successful examples of efficiency policies and programs in the region and experiences elsewhere (see Box 2 and additional resources available at www.seealliance.org and www.southface.org). The following sections describe policy opportunities that states can implement today to realize energy savings well into the future.

All Buildings: Energy code updates, training, and enforcement

Several Southeast states have been leaders in adopting updated building energy codes, both for residential and commercial buildings (see Figure 5). Other states are using outdated codes. Some have no codes at all. Even with building energy codes, a lack of enforcement and training can still prevent states from achieving actual savings.[26] States can leverage federal funds to support programs that create advanced energy codes and ensure that buildings are meeting performance requirements.

Adopt energy codes for residential and commercial buildings

Alabama, Mississippi, and Tennessee can each take a significant step toward higher efficiency by adopting up-to-date residential and commercial building energy codes. Similarly, South Carolina can advance updated residential energy codes that require homes be built to basic energy perfomance standards.

In states with current energy codes, there is still room for additional savings with advanced energy codes. Advanced codes seek to promote buildings that perform a certain percent above basic residential and commercial energy codes. The U.S. Department of Energy recently awarded Florida a grant of approximately $500,000 for efforts to implement advanced residential and commercial energy codes that will be at least 30 percent above current codes.[27]

Establish code enforcement protocols to ensure buildings are meeting energy performance requirements; develop builder training and code verification tools

To ensure that energy codes are leading to actual energy savings, states should also develop supportive enforcement mechanisms, training programs, and evaluation, measurement

BOX 2

Southface Spotlight: Virginia's Efforts to Advance Energy-Efficient Low-Income Housing

Standard design and construction practices for low-income housing needlessly waste energy. High energy costs are passed on to building tenants, which presents an enormous burden, especially for low-income families. In such cases, energy-efficient buildings not only offer solutions to the regional energy challenge, but also help achieve basic affordable housing objectives.

The low-income housing tax credit (LIHTC) is a dollar-for-dollar federal tax credit available to approved developers of low-income housing. Competition for these tax credits is fierce. Each state is given the autonomy to develop their own scoring criteria, known as the qualified allocation plan (QAP), based on their most relevant needs. Several states in the region have used the QAP criteria to ensure that energy efficiency and other green features are incorporated into low-income housing developments.

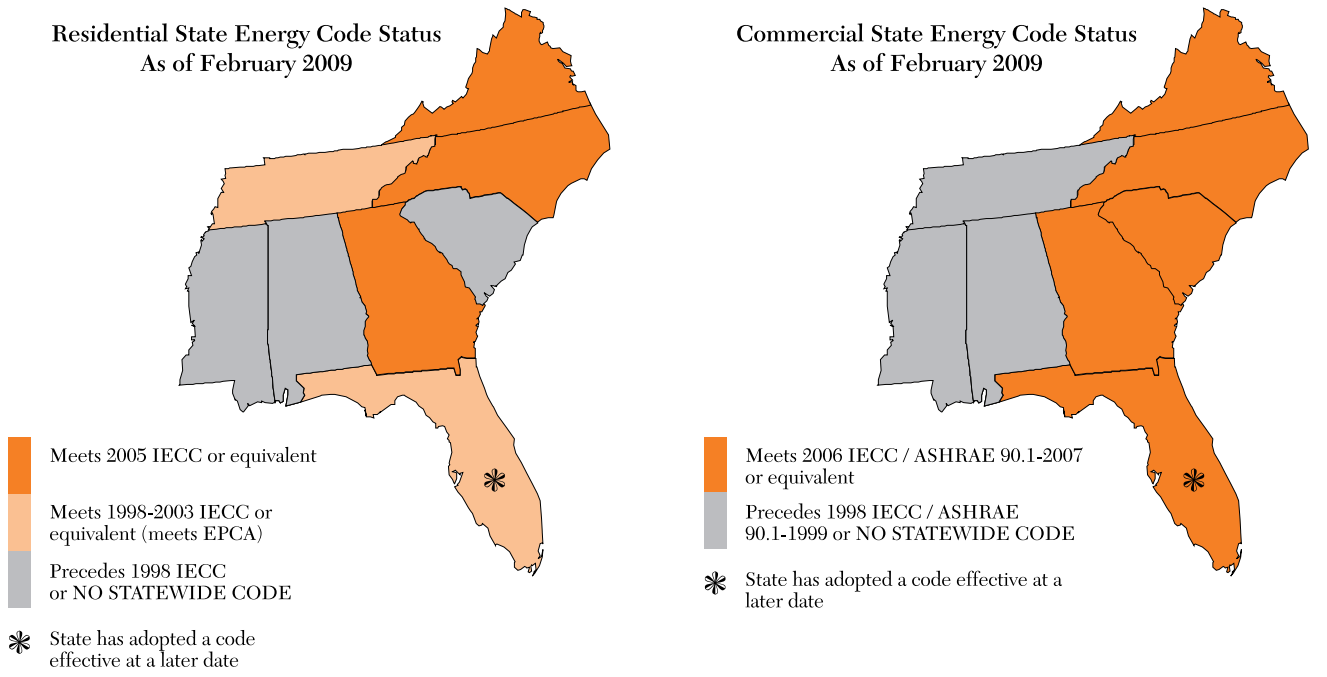
In Virginia, the Housing Development Authority allocated more than $15 million in 2008 to such tax credits. To capture energy savings and other benefits of sustainable construction practices, the state included two recognized green building standards in its scoring criteria: (1) EarthCraft Multifamily, and (2) Leadership in Energy and Environmental Design (LEED) certification for new construction. A commitment to build to an EarthCraft or LEED building qualified a developer for 30 points in the QAP scoring. An additional 5 points was awarded if the developer attended an EarthCraft training session and 10 points if the project team included a LEED-accredited professional.

Certain high-efficiency building features, such as windows and heat pumps, receive additional points. In total, sustainability measures accounted for 60 to 70 available points—typically more than 10 percent of the total score of qualified projects.

In 2008, 32 of the 34 (nearly 95 percent) QAP-qualified projects in Virginia pursued a green building certification. These approved green building projects helped significantly reduce energy costs for low-income residents. One Virginia tax credit recipient gathered energy data and billing information that showed occupants reduced electricity use by more than 25 percent and saved an average of 15 percent on total monthly utility costs (for more information on Virginia's LIHTC program, see www.vhda.com).

By: Paul Bostrom

FIGURE 5 Status of Building Energy Codes



Source: Building Code Assistance Project (www.bcap-energy.org/node/5).

and verification (EM&V) tools. To do so, states can look to approaches in other states and basic training and compliance tools from the U.S. Department of Energy (www.energycodes.gov) and others. States should advance a mix of incentives and penalties to ensure homes and commercial buildings are meeting the performance and comfort criteria outlined in energy codes.

Residential Opportunities

The average American household spends more on energy for their home than it does on gasoline.[28] Simple policies and programs can help make home energy use more transparent, enhance efficiency, and save consumers money.

Create financial incentives and support for household efficiency upgrades

States, utilities, and local governments can all play roles in ensuring that homeowners make the efficiency investments that will lead to significant savings. About 40 percent of the Southeast's electricity goes towards heating, cooling, and powering homes.[29] A Southface analysis in Georgia suggests that efforts to reduce residential energy use by 1 percent annually could save households in the state $700 million in energy costs (electricity and natural gas) per year in 10 years.[30] Estimated costs would be approximately $570 million per year, providing a 14 percent return on investment.

Often the high initial costs for energy efficiency upgrades prevent homeowners from pursuing these opportunities, despite the fact that energy savings often pay back the up-front costs in less than five years. Current economic conditions may exacerbate this barrier. Although consumers report a willingness to pay for energy-efficient upgrades, actual investments generally do not match the implied interest in energy-efficient products.[31]

Sales figures for high-efficiency products bearing the ENERGY STAR® label show only a 20 percent market penetration in the Southeast, compared to 30 percent penetration rates in other areas of the country.[32] Some states are starting to recognize the opportunity to encourage markets for energy-efficient products. Georgia, North Carolina, South Carolina and Virginia have used sales tax holidays to reduce the costs of purchasing ENERGY STAR and/or WaterSense® labeled products that save energy and water. Additional or extended state and federal tax benefits, including refundable or transferable credits, can help advance investments in high-efficiency goods and services. Utility rebates or credits can also help overcome ini-

tial cost hurdles. For examples of incentives in the Southeast, see SEEA's State Energy Efficiency Programs and Incentives database (www.seealliance.org) and the Database of State Incentives for Renewables & Efficiency (www.dsireusa.org).

Utilities, depending on state and local regulatory structures, can also facilitate easier investments and payments to help encourage customer investments in energy-efficient building systems. One approach, known as on-bill financing, allows homeowners to pay for efficiency investments over time, as part of their electricity or natural gas bills, instead of facing high up-front costs. Cherokee Electric Cooperative in Alabama, for example, offers an Energy Conservation Home Improvement Loan Program that provides money for efficiency upgrades through low-interest loans with periods up to 10 years and on-bill payment.[33] Experience to date suggests that on-bill financing options, tailored for local markets and regulations, can help overcome investment barriers to efficiency upgrades.[34]

State and local efficiency loan programs can help expand residential investments (as well as efficiency investments in commercial or public buildings). States have had success leveraging bond or treasury funds to finance upgrades in the $5,000 to $20,000 range that would otherwise be beyond reach for the average homeowner.[35] Laws that allow property owners to apply efficiency upgrades and payments directly to local or state taxes can help extend payment horizons to make upgrades more affordable. Virginia recently passed a law that authorizes localities to provide loans to property owners for the "acquisition and installation of clean energy improvements" and pay back loans over time through real estate assessments or water and sewer bills.[36] This can make the investment decision easier for homeowners who may sell their house before the payback period is complete.[37]

Develop home energy labeling programs

Home energy labeling programs or home energy disclosures provide information to home buyers (for new and resale residences) on the energy efficiency performance of the home. Energy labeling or rating programs do not mandate efficiency improvements, they simply make information more transparent. This transparency allows home buyers to consider the energy costs of the homes they purchase, which can encourage more responsible purchases and drive greater investment in retrofits before or after homes are sold.

An energy labeling policy might require that homes on the market add energy use in an additional field in the Multiple Listing Service (MLS) database. The MLS in Atlanta, Georgia, for example, voluntarily lists ENERGY STAR and EarthCraft House certified homes. To avoid costs related to audits or rating systems, utilities (or other energy providers) can provide data on a home's energy consumption with comparisons to an average and/or high-efficiency home of comparable size. This information is readily available from utilities (or other energy providers) and would not require additional assessment or audits.

In some states, home energy performance information has been required on new residential construction for several years and is being extended to include sales of existing homes.[38] There is strong support for such programs among builders, realtors, and architects.[39] Other areas, from Texas to Maryland, are now developing programs to make home energy performance more transparent for homebuyers with information on anticipated monthly energy bills. Depending on experience in the residential sector, states may consider applying similar labeling programs for commercial buildings.

Commercial Building Performance

As in the residential sector, commercial buildings can also benefit from state- and utility-led financial incentive programs and sharing of best practice.

Broaden commercial building commissioning programs

Many commercial buildings do not perform as designed and can suffer problems ranging from temperature control to indoor air quality. Commissioning is a process that helps ensure newly constructed buildings are performing as designed and that the building's operation meets the needs of its occupants. Even when a new building operates as designed, over time its equipment can become obsolete or inconsistent. Retro-commissioning or re-commissioning can address performance in existing buildings.

State programs that support basic measurement and evaluation can ensure buildings are meeting performance standards. These programs can help identify cost-effective improvements such as insulation, automatic lighting controls, and programmable climate control. In states with up-to-date commercial energy codes, standards apply only to new commercial construction while approximately 70 percent of existing commercial buildings were constructed before 1990.[40] A meta-analysis by Lawrence Berkeley National Laboratory found median energy savings of 15 percent (and a payback time of less than one year) for existing building commissioning, with some buildings saving up to 57 percent.[41]

Utilities can also work with commercial customers to ensure buildings are using energy efficiently. For example, state regula-

tors and utilities can develop utility-supplied incentives (gradually scaled back over time) to encourage commercial developers and property owners to commission their buildings. Programs can also include complementary public-awareness campaigns and partnerships with local private-sector commissioning companies. These programs can also take advantage of publicly-available guidance and tools, such as ENERGY STAR's Portfolio Manager tool (see www.energystar.gov/istar/pmpam).

Create financial incentives for commercial building upgrades

An effective commercial building retrofit program can provide information and incentives to replace older, inefficient building systems with new high-efficiency technologies. Investments in energy-efficient lighting can pay for themselves in about a year, and high-efficiency heating and cooling equipment can reduce energy costs by 25 percent.[42]

Some states and utilities have recently implemented innovative programs that provide incentives for commercial building efficiency upgrades. State EERS policies and other programs have encouraged utilities to partner with energy services companies (ESCOs) to enhance energy performance at commercial buildings and other facilities.[43] ESCOs can provide performance contracting that allows the property owner to pay back costs over time based on the energy savings generated by the efficiency upgrades. Utilities can play a role in this process, providing financial incentives tied to the resulting reduction in electricity demand.

States can play an important role in demonstrating leadership in energy-efficient public buildings. According to the U.S. Environmental Protection Agency, several Southeast states (Alabama, Florida, North Carolina, and Virginia) have policies that encourage energy efficiency in public buildings.[44] South Carolina also requires new or substantially renovated state buildings to meet LEED Silver certification or equivalent standards. Dozens of local governments across the region require energy and green building certification for public buildings.[45]

To broaden participation, states can work with utilities and local governments to deploy federal funding for additional financial support. Depending on the source of funding, states can advance efficiency grants, tax credits, low-interest loans, and rebates. Flexible financial incentives that are widely applicable and communicated can help encourage small, medium, and large commercial property owners, as well as other institutional or nonprofit organizations, to invest in high-efficiency upgrades.

Industrial Efficiency Resources

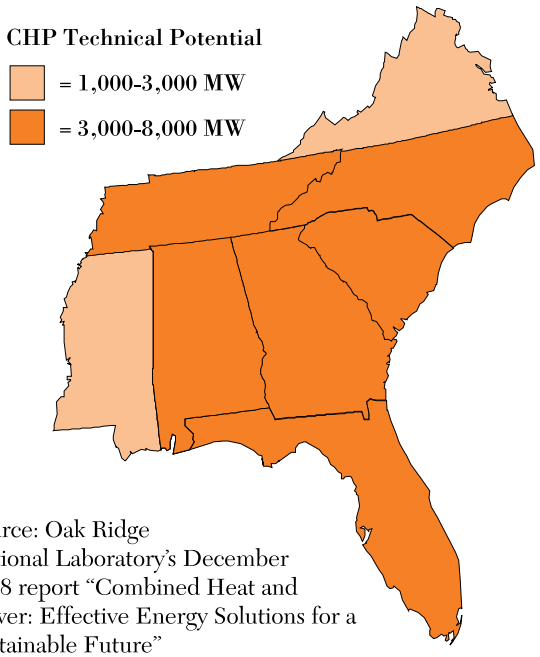
Industrial facilities throughout the Southeast can use energy recycling technologies, such as combined heat and power (CHP) systems, to capture and utilize otherwise wasted energy. Efficiency assessments and technical assistance can identify other opportunities and help ensure a productive, competitive industrial sector in the Southeast.

Eliminate market barriers for investments in energy recycling technologies

Energy recycling technologies capture excess power produced as part of industrial or other processes and reuse the energy for useful purposes. Common examples include combined heat and power (CHP or cogeneration) and other waste heat recovery systems. Because of their high efficiencies, these systems can produce energy at lower levelized costs than conventional power resources—less than $0.10 per kWh.[46] They also provide additional power reliability benefits, particularly important for hospitals, manufacturers, and critical city services.[47]

CHP and combined cooling heat and power (CCHP) technologies are able to produce electricity and recover thermal energy for heating and cooling. A recent Oak Ridge National Laboratory (ORNL) report highlighted the technical potential for additional CHP in the Southeast (see Figure 6). Utilities

FIGURE 6 Technical CHP potential in the Southeast



Source: Oak Ridge National Laboratory's December 2008 report "Combined Heat and Power: Effective Energy Solutions for a Sustainable Future" (www1.eere.energy.gov/industry/distributedenergy/pdfs/chp_report_12-08.pdf).

TABLE 2 Industrial Assessment Center Audits, Upgrades, and Payback Periods

State	Audits	Recommendations	Payback (years)	Implemented	Payback (years)	Imp (%)
Alabama	126	919	1.5	363	1.3	40
Florida	562	4,395	1.4	1,801	1.1	41
Georgia	658	4,485	1.6	1,946	1.5	43
Mississippi	308	2,022	1.1	719	0.9	36
North Carolina	502	3,582	1.1	1,753	0.9	49
South Carolina	93	672	1.4	308	1.4	46
Tennessee	479	3,064	1.0	1,367	0.8	45
Virginia	264	1,768	1.2	775	1.2	44
TOTAL	**2,992**	**20,907**	**1.3**	**9,032**	**1.1**	**43**

Source: U.S. Department of Energy's Industrial Assessment Center Database (iac.rutgers.edu/database/state.php).

and commercial and industrial energy users in the Southeast can capture much of this energy efficiency opportunity. In Florida, an additional 400 MW of cost-effective CHP could be deployed by 2025, and modest economic incentives ($600/kW) could increase this to 800 MW.[48] Other studies in Virginia economic potential to expand CHP capacity from 332 MW to 1384 MW.[49]

Policy action can help capture CHP potential in the Southeast. In particular, states should standardize interconnection rules and permitting to help encourage additional energy recycling investments. States that allow generators to sell electric and thermal power to meet energy market demands and/or provide modest financial incentives for CHP energy production can realize even greater CHP opportunities.[50] Finally, adapting air quality standards to regulate emissions based on output (kWh) instead of input (fuel) can help capture CHP benefits while ensuring emissions standards are being met.[51] States can promote CHP by following examples in other states. The U.S. Environmental Protection Agency's Combined Heat and Power Partnership offers several useful state policy resources (www.epa.gov/chp/state-policy/).

Expand support for Industrial Assessment Centers (IACs)

Industrial facilities throughout the Southeast can benefit from additional technical assistance and knowledge sharing. One prime opportunity is to expand the Industrial Assessment Center initiative. There are 26 universities participating in the Department of Energy's Industrial Assessment Center program, including seven in the Southeast.[52] Teams comprised of both faculty and students perform thorough analyses—free of charge—for small to medium-sized industrial facilities with up to 500 employees and annual sales of up to $100 million. These assessments highlight savings improvements in energy efficiency, waste minimization, pollution prevention, and productivity.

Recommendations and efficiency upgrades resulting from IAC assessments have produced savings with returns on investment (ROI) of less than two years. However, only 43 percent of recommendations have been implemented (See Table 2). Additional staff and resources can help increase implementation rates. Additional funding support will help expand IAC staff and resources, open additional centers in the region, and most importantly, ensure affordable capital to industrial facilities interested in pursuing upgrades. Focused advertising and information campaigns can help reach out to additional small and medium-sized industrial facilities.

Additional Guidance

Policies and strategies noted in the above sections present a sampling of options, which together with other policy actions will help capture the full energy efficiency potential in the Southeast. As the region moves forward with efficiency efforts, states should include mechanisms to monitor and report on program effectiveness, suggesting improvements as needed. States can build on regional and national experiences to ensure program effectiveness. For additional resources and guidance to develop, fund, and implement state efficiency programs, see:

- Alliance to Save Energy: http://ase.org/section/_audience/policy/statepolicies
- American Council for an Energy-Efficient Economy: www.aceee.org/energy/state/index.htm
- Southeast Energy Efficiency Alliance: www.seealliance.org/energy/energyresources.php

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