# OPPORTUNITY KNOCKS: EXAMINING LOW-RANKING STATES IN THE STATE ENERGY EFFICIENCY SCORECARD

**Michael Sciortino, Rachel Young, and Steven Nadel**

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**529 14th Street, N.W., Suite 600, Washington, D.C. 20045**
**(202) 507-4000 phone, (202) 429-2248 fax, aceee.org**

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# EXECUTIVE SUMMARY

In recent years, many states have embraced new energy efficiency policies and as a result, investments in energy efficiency programs have steadily increased. However, a group of states, primarily in the Southeast and northern Great Plains, have not yet taken full advantage of energy efficiency and its economic, environmental, and energy security benefits, resulting in these states consistently ranking lower in ACEEE's *State Energy Efficiency Scorecard*.[1] In this report, we describe the results of numerous interviews with policy-makers and policy influencers in the states ranked in the bottom ten of the *Scorecard* to explore why they have not embraced energy efficiency and to investigate the approaches and policies in the utility sector, the public sector, buildings, and industry that might allow them to get started or accelerate their activities. While the report focuses on a group of ten states, the barriers we present as well as the ways forward are common to a much broader group of states, particularly those in the bottom two quintiles of the *Scorecard* rankings.

After interviewing fifty-five stakeholders, we found a number of successes, barriers, and ways forward both common and unique to the states we examined. In terms of past achievements, a number of states have taken steps to improve energy efficiency in public facilities, although there is plenty of room for improvement. When states have found success, collaborative efforts to educate stakeholders on the benefits of energy efficiency have been critical. One of the common barriers to energy efficiency in the states we examined was a lack of awareness of energy efficiency and its numerous benefits in the public and private sectors. In addition, many important stakeholders, most commonly utilities and their regulators, were often skeptical of how cost-beneficial energy efficiency programs would be for utilities and their customers. An overriding aversion to mandates and requirements also feeds the skepticism of policies advancing energy efficiency.

Each state has some pragmatic and cost-effective options available to advance energy efficiency. Each of these "ways forward" were described to us by stakeholders within the state as having some support from key actors. Many states noted that it would be important to build on past successes and model future actions on those taken in states nearby.

Fortunately, energy efficiency does have a foothold in every region of the country, and the policies and programs we recommend in the latter half of this report are grounded in past experience and success in states similar to those we examined for this report. The recommendations vary in scope and targeted sector, but we focused on low-cost, flexible solutions that made sense given the context of most states we analyzed. Successful adoption and implementation of these requirements will require collaboration and commitment from policymakers, utilities, the building industry, consumers, advocates, and other stakeholders. Low-ranking states in the *Scorecard* should seize the opportunity to tap into an abundant, yet under-utilized resource in energy efficiency, which can contribute to economic development, environmental well-being, and energy security.

[1] For free access to the *2011 State Energy Efficiency Scorecard*, as well as *Scorecards* from previous years, see http://aceee.org/sector/state-policy/scorecard.

**Table ES 1. Summary Table of Successes, Barriers, and Ways Forward**

| | |
|---|---|
| **Successes** | • Energy efficiency programs devoted to public facilities (Notable state: Kansas)<br>• Utility-sector energy efficiency program implementation (Notable states: South Carolina, South Dakota, and Wyoming)<br>• Adoption of up-to-date building energy codes (Notable state: Alabama) |
| **Barriers** | • Potential rate impact of energy efficiency programs<br>• Misalignment of utility business model with energy efficiency<br>• Participation rate uncertainty in energy efficiency programs<br>• Treatment of energy efficiency as a customer benefit, rather than a utility system resource<br>• Cost concerns over building code adoption and enforcement<br>• Lack of motivation to pursue energy efficiency in states focused on energy production and averse to government intervention<br>• Economic and policy barriers to the implementation of CHP systems |
| **Ways Forward** | • Use a collaborative and transparent process to develop a state energy plan that emphasizes the importance of energy efficiency<br>• Empower customers with information to improve participation in programs and drive markets for energy efficiency<br>• Advance energy efficiency in state and municipal-owned facilities and fleets<br>• Treat energy efficiency as a resource, align the utility regulatory business model with energy efficiency, and move forward on cost-effective utility-sector energy efficiency programs<br>• Provide tax incentives for energy-efficient technologies and practice<br>• Advance energy efficiency in manufacturing and agricultural sectors<br>• Remove regulatory barriers and provide financial incentives for combined heat and power (CHP)<br>• Adopt and enforce the most recent national model building energy codes, leveraging local government leadership |

**Table ES 2. State by State Table of Ways Forward**

| State (2011 Rank) | Successes | Barriers | Ways Forward |
|---|---|---|---|
| **Alabama (43)** | • Passage of mandatory statewide building energy codes<br>• AlabamaSAVES financing program | • Utility-sector cost concerns<br>• Lack of transparency in utility resource planning<br>• Aversion to mandates<br>• Lack of education or leadership on energy efficiency | • Implementation of utility program portfolios similar to Arkansas or Carolinas<br>• Continued implementation and improvement of public-sector efficiency |
| **Kansas (48)** | • Public-sector energy efficiency program<br>• Climate and Energy Project<br>• Energy disclosure policy | • Utility-sector cost concerns<br>• Aversion to mandates<br>• Lack of education or leadership on energy efficiency | • Implementing utility-sector energy efficiency programs<br>• Building on success of state government, USDA, and Climate and Energy Project programs<br>• Re-establishing state energy planning process<br>• Secure funding for Efficiency Kansas<br>• Adopt building energy codes at the local level |
| **Mississippi (49)** | • Drafting of a rule requiring utility sector energy efficiency programs (Rule 29)<br>• Public building and fleet energy management requirements and programs | • Utility-sector cost concerns<br>• Aversion to mandates<br>• Lack of education or awareness of energy efficiency | • Finalizing utility-sector energy efficiency rules (Rule 29)<br>• Commercial building energy code adoption<br>• Public-sector building energy efficiency requirements |
| **Missouri (44)** | • Comprehensive energy efficiency policy and accompanying rules<br>• Local building energy code adoption<br>• State “lead by example” policies and programs | • Disagreement over treatment of lost revenue due to EE programs<br>• Utility-sector cost concerns<br>• Aversion to mandates | • Resolution of lost revenue issue and implementation of comprehensive program portfolios<br>• Voluntary building energy disclosure or labeling policy |

| | | | |
|---|---|---|---|
| **North Dakota (51)** | • Implementation of utility DSM programs<br>• Local building energy code adoption | • Utility-sector cost concerns<br>• Aversion to mandates<br>• Lack of education or leadership on energy efficiency | • Re-tooling Natural Resources Trust Fund to fund energy efficiency projects<br>• Continued implementation of utility DSM programs and incorporation of EE in utility resource planning processes |
| **Oklahoma (47)** | • Statewide building energy code adoption<br>• State energy plan with strong efficiency component<br>• Utility-sector energy efficiency programs | • Utility-sector cost concerns<br>• Aversion to mandates<br>• Lack of education or awareness on energy efficiency | • Energy efficiency in public facilities<br>• Building code enforcement<br>• Continued implementation and improvement of utility DSM programs |
| **South Carolina (46)** | • Implementation of utility DSM programs<br>• State “lead by example” policies and programs<br>• State building code adoption | • Utility-sector cost concerns<br>• Aversion to mandates<br>• Lack of education and awareness of efficiency | • Continued implementation and improvement of utility DSM programs<br>• Implementation of comprehensive energy efficiency program (EERS)<br>• Financial incentives for energy efficiency |
| **South Dakota (42)** | • State financial incentives for energy efficiency programs<br>• Local building energy code adoption<br>• State “lead by example” policies and programs<br>• Implementation of utility DSM programs | • State funding constraints<br>• Utility-sector cost concerns<br>• Aversion to mandates<br>• Lack of education or awareness on energy efficiency | • Statewide building code adoption and improved enforcement<br>• Continue advancing financial incentives for energy efficiency programs<br>• Continued implementation and improvement of utility DSM programs |
| **West Virginia (44)** | • Local building energy code adoption; state “lead by example” policies and programs<br>• Utility-sector energy efficiency program implementation | • Utility-sector cost concerns<br>• Aversion to mandates<br>• Lack of education or leadership on energy efficiency | • Building code updates and improved enforcement of building codes<br>• Continued implementation and improvement of utility DSM programs |
| **Wyoming (50)** | • Implementation of utility DSM programs<br>• State government-led financial incentive programs | • Rural, hard-to-reach customers<br>• Aversion to mandates<br>• Limitations on co-operative utilities’ ability to run DSM programs | • Local adoption of building energy codes<br>• Continued implementation of utility DSM programs and incorporation of EE in utility resource planning processes |

## INTRODUCTION

Each year, ACEEE publishes a *State Energy Efficiency Scorecard*, which ranks each state and the District of Columbia based on measures of success toward implementing policies and programs that advance the efficient use of energy in buildings, transportation, and industry. For five years, much of ACEEE's focus has been to highlight best practices. Over this period, a number of states made important advancements in energy efficiency, particularly in the Midwest and Southwest. However, some states, mostly in the Southeast and Great Plains, have yet to make such strides.

This research report aims to elucidate ways forward for the lower-ranked states of the *Scorecard*. By addressing barriers common to all and unique to some, we hope to identify a path forward for energy efficiency in states that may not be convinced that what works for California or Vermont would work for them. After interviewing fifty-five experts in the bottom ten states of the *Scorecard*, we believe that the steps we outline to advance efficiency are pragmatic and necessary for the economic and environmental health of these states. Most importantly, we believe our recommendations are entirely possible based on the current political and economic conditions in the states we analyzed in this report. There is a wealth of experience for these states to draw from, and given the optimism expressed in many of our interviews, there is hope for energy efficiency moving forward in low-ranked states of the *Scorecard*.

## METHODOLOGY

In this report, we focus on the bottom ten states of the *2011 Scorecard*. Each of these states, with the exception of South Carolina, has resided in the bottom quintile of states at least two out of the last four years. It should be noted that a number of the states we examine have made solid strides over the past few years. The average overall score out of 50 for these states was 6.5 in 2011, up from 3.5 in 2008. Some of the strides taken were not taken into account for the *2011 Scorecard* because of issues with lagging data. The latest data available for utility program budgets, for example, was for 2010, and utility program savings were for 2009. Although this report focuses on the bottom tier of states in our rankings, we believe the findings of this report are applicable to most states in the bottom two quintiles of the *Scorecard* rankings.

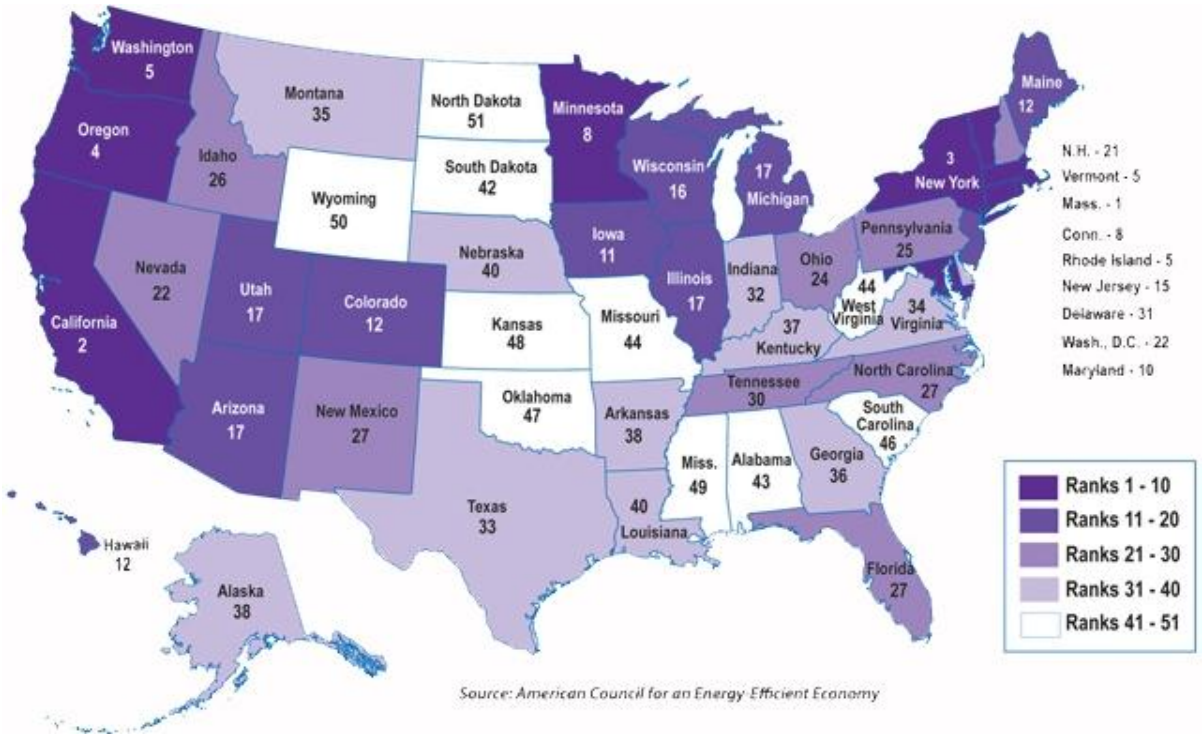
**Table 1. Historic Rankings of Bottom Ten States of *2011 State Energy Efficiency Scorecard***

| State | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|
| South Dakota | 42 | 39 | 36 | 47* |
| Alabama | 43 | 49 | 48 | 49* |
| Missouri | 44* | 43* | 41* | 45 |
| West Virginia | 44* | 43* | 45 | 43* |
| South Carolina | 46 | 40 | 37 | 34 |
| Oklahoma | 47 | 43* | 39* | 43* |
| Kansas | 48 | 46 | 39* | 38 |
| Mississippi | 49 | 50 | 49* | 47* |
| Wyoming | 50 | 48 | 51 | 51 |
| North Dakota | 51 | 51 | 49* | 49* |

*Tie

We conducted phone interviews with regulators, governmental officials, utility representatives, energy efficiency advocates, private business people, consumer advocates, and academic experts in each of the bottom ten states. In total, ACEEE contacted fifty-five stakeholders to inform our analysis. In order to elicit frank and meaningful responses, we have kept the names of interview participants confidential.

**Figure 1. Map of Results from the *2011 State Energy Efficiency Scorecard***




The report concentrates on the following energy efficiency topics:

- *State Government*
  - Energy efficiency in public facilities and vehicle fleets
  - Financial incentive programs for energy efficiency administered by state agencies
- *Utility Sector*
  - Investment of ratepayer funds in energy efficiency programs
  - Adjustments to the utility business model to make efficiency an attractive investment
- *Building Energy Codes*
  - Adoption of current building energy codes at state or local levels
  - Enforcement and compliance of building energy codes
- *Combined Heat and Power (CHP)*

The policies and programs discussed in this report account for thirty-nine of the fifty total points allotted in the *2011 Scorecard* methodology. A review of transportation policies was outside the scope of this analysis. Transportation policies and appliance standards are undoubtedly important for states to pursue and we hope their potential for application in the bottom states can be examined in future research.

**Table 2. Maximum Scores for each Policy Category in the *2011 Scorecard***

| Policy | Maximum Score |
|---|---|
| **1. Utility and Public Benefits Programs and Policies** | **20** |
| Electricity Efficiency Program Budgets | 5 |
| Natural Gas Efficiency Program Budgets | 3 |
| Annual Savings from Electricity Efficiency Programs | 5 |
| Targets (Energy Efficiency Resource Standards) | 4 |
| Performance Incentives/Alternative Regulatory Business Models | 3 |
| **2. Transportation Policies** | **9** |
| **3. Building Energy Codes** | **7** |
| Level of Stringency | 5 |
| Enforcement/Compliance | 2 |
| **4. Combined Heat and Power** | **5** |
| **5. State Government Initiatives** | **7** |
| Financial and Information Incentives | 3 |
| Lead by Example in State Facilities and Fleets | 2 |
| Research, Development, and Demonstration | 2 |
| **6. Appliance and Equipment Efficiency Standards** | **2** |
| **Maximum Total Score** | **50** |

## BARRIERS TO ENERGY EFFICIENCY IN LOW-RANKING STATES

Our first objective in this report is to broadly understand the perception of energy efficiency in the bottom ten states and the reasons behind the lack of interest or inability to make major new commitments to energy efficiency. In this section of the report, we detail what stakeholders in the lowest ranking states perceive to be the barriers to adopting energy efficiency policies and programs. In the lowest ranking states in the *Scorecard*, energy efficiency faces numerous barriers, some serious and some overstated, some common and some unique to certain regions and states. In cases where perceived barriers to energy efficiency run counter to established research and experience, we will counter these perceptions with evidence in support of advancing energy efficiency programs and policy. Barriers include:

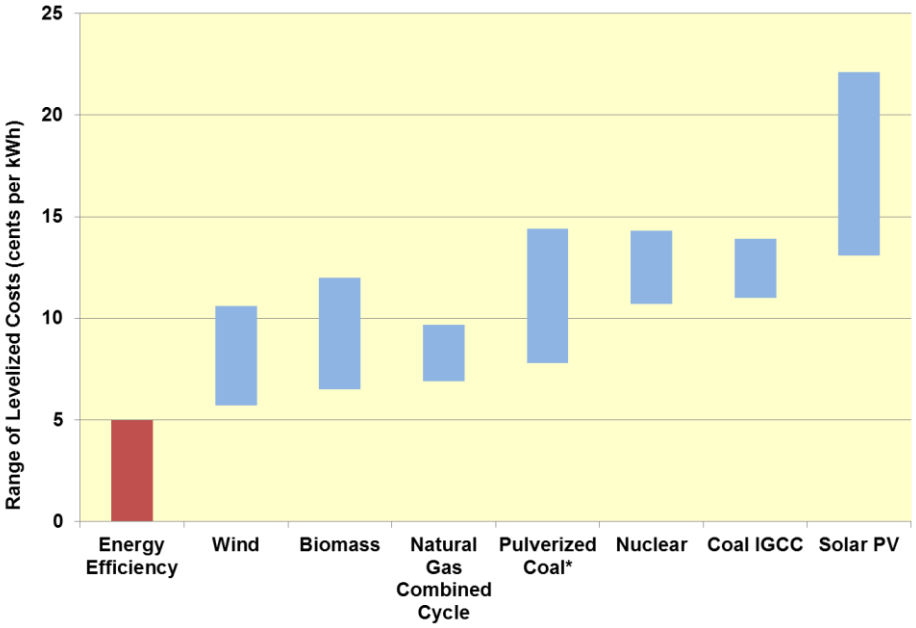
- Potential rate impact of energy efficiency programs
- Misalignment of utility business model with energy efficiency
- Participation rate uncertainty in energy efficiency programs
- Treatment of energy efficiency as a customer benefit, rather than a utility system resource
- Cost concerns over building code adoption and enforcement
- Lack of motivation to pursue energy efficiency in states focused on energy production and averse to government intervention
- Economic and policy barriers to the implementation of CHP systems

Easily the most widespread and tenuous argument against energy efficiency is that it is prohibitively expensive. While upfront costs are inevitable, just as they are for traditional energy resources, energy efficiency is a sound investment that pays for itself by reducing the need for expensive new power plants, while creating jobs for local economies (Friedrich et al. 2009; Laitner et al. 2012). Below, we also discuss regulatory, information, and political obstacles to energy efficiency and present examples of how states with similar political and regulatory environments to the bottom ten have overcome such barriers.

## Energy Efficiency: A Real Utility System Resource

Energy efficiency is a real utility resource that can help offset the need to build costly new generation capacity, which saves money for all customers in the long term. In states where new capacity will be needed in the near future, energy efficiency is the most cost-effective resource when compared with supply-side resources. ACEEE research has found that the average cost to a utility for energy efficiency measures is 2.5 cents per kilowatt-hour (kWh); in comparison, new generation sources can range from 6 to 15 cents per kWh. Figure 2 below shows the range of costs for different energy generation resources (Friedrich et al. 2009; Lazard 2011).

**Figure 2. Levelized Utility Cost of New Electricity Resources**




Notes: All data from Lazard (2011). High-end range of advanced pulverized coal includes 90% carbon capture and compression.

Many utility regulators across the country recognize that energy efficiency is the most cost-effective utility resource available. Twenty-five states have an Energy Efficiency Resource Standard (EERS), which sets energy savings targets for utilities, and a number of states have ordered utilities to procure all cost-effective energy efficiency before any supply-side resource.

## Obstacles in the Utility Sector

The underlying barrier in the utility sectors of the states in the bottom of the *Scorecard* is that they do not treat energy efficiency as a real utility resource. Some states have made efforts to encourage utilities to embrace this perspective, but none have taken the action necessary to compel utilities to truly do so. Rather, the common perception of energy efficiency is that it is more of a societal benefit program that improves customer satisfaction and may provide marginal resource benefits. From this perspective, utilities will find it difficult to commit upfront and ongoing investments in energy efficiency (to be recovered through rates) like a typical supply-side resource. Indeed, when regulators use the cost-effectiveness test typically associated with customer benefit programs, the Ratepayer-Impact Measurement (RIM) Test, program approval proves difficult.

### *Concerns about Rate Impacts*

Many of our interviewees argued that energy efficiency programs cost too much for customers. Regulators and utilities argue that energy efficiency programs put upward pressure on rates, which negatively impact consumers, particularly poorer customers most vulnerable to potential rate increases. In addition, higher rates may decrease the competitiveness of the state in attracting industry. Opponents argue that energy efficiency only benefits a small group of participants, who can actually afford energy efficiency measures, while socializing the cost of programs onto the broader group of customers.

In practice, the benefits of energy efficiency programs to participants and non-participants outweigh their costs in the long run. Benefits include:

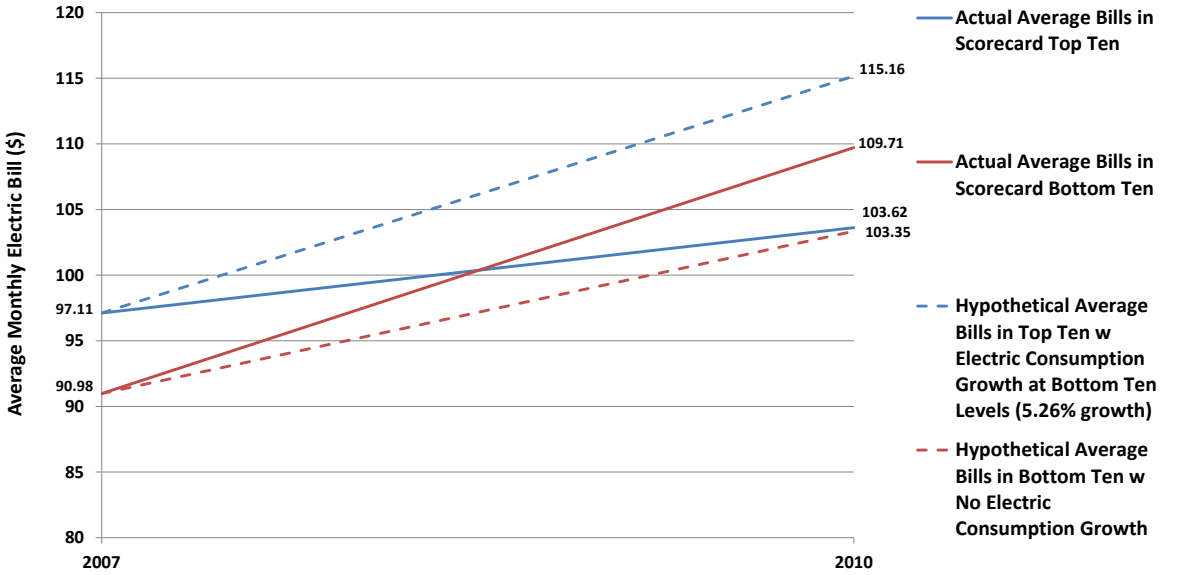
- Reduced energy costs for participants
- Increased customer satisfaction
- Improved electric system reliability due to lower base load and peak demand
- Reduced need for transmission and distribution facilities
- Reduced use of fossil fuels
- Improved home air quality and comfort for program participants
- Environmental benefits from reduced pollutant emissions

Respondents in our interviews, however, dwelled upon the rate impacts of programs and little else. While regulators and utilities are rightly concerned about the costs of energy efficiency programs, they must fully account for the costs and benefits of energy efficiency programs, as well as their supply-side alternatives, in any cost-effectiveness assessment.

States use a variety of benefit-cost tests for energy efficiency programs and the Ratepayer-Impact Measurement test, used in many of the bottom ten states, does not allow for a complete assessment of the benefits of energy efficiency programs. Often used to justify meager program offerings, the RIM test is an extremely restrictive measurement of the cost-effectiveness of energy efficiency programs that rejects energy efficiency programs even if they provide lower bills for customers and broad system benefits (SEE Action 2011b). Most new power plants would fail the RIM test (i.e., they cause rates to go up) and therefore applying the RIM test to just some resources but not others tilts the playing field in favor of supply-side generation. While the RIM test is not the primary cost-effectiveness test used in the states we interviewed (most states consider a range of tests; only Virginia places primary emphasis on the RIM test), its results weigh heavily in the determination of utilities, stakeholders, and regulators. Rejecting programs that minimally impact rates even if they produce energy bill reductions that outweigh costs runs counter to the public good. Alternatives to the RIM test are discussed in the recommendations section below.

Low rates mean little to customers if inefficient energy use leads to high bills. Customers in the bottom ten states have seen electricity bills rise unabatedly over the past four years (EIA 2011). Between 2007 and 2010, bills in these states increased by 17.1% on average, rates increased by 12.5% on average, and consumption increased by 5.3% on average. If consumption had been level in these states (consumption actually declined 1.45% in the top ten states of the *Scorecard*), bills would have only risen by 12% on average (of course, rates would have slightly risen with the implementation of energy efficiency programs). Without the presence of robust efficiency programs, bills in the bottom ten states will continue to rise. In an environment where clean air regulations, capacity constraints, and increasing costs for new generation all put upward pressure on electricity prices, energy efficiency can be a stabilizing force. Rates rose 6.4% in the top ten states between 2007 and 2010, but bills rose slightly less — by 6.3%. If the top ten states had the same rate of energy consumption increase as the bottom ten states, average bills would have risen 15.7%.

**Figure 3. Actual and Hypothetical Average Bills from 2007 to 2010**




Moving forward, however, regulators will be unconcerned with what would have happened if they had invested in energy efficiency. Rather, regulators and other parties must determine whether the minor rate increases resulting from energy efficiency program deployment can be justified in states with already escalating rates and high percentages of low-income customers. The justification for energy efficiency aligns with the primary goal for regulators in a "least cost" planning regime, which is to weigh all resources equally and choose those that will result in the lowest revenue requirement for consumers. It is then the goal of regulators to allocate revenue requirement across customer classes so that rates are just and reasonable. States across the country without any prior history of program implementation such as Arkansas, Tennessee, and Arizona have approved new, robust energy efficiency programs after determining that the long-term bill reduction benefits of energy efficiency programs outweigh the costs of programs recovered through rates. In addition, there is little evidence to justify the concern that energy efficiency might raise rates enough to discourage typical firms from locating in a state. Compared to factors such as labor costs, financial incentives, and location, electricity rates are unlikely to alter a firm's decision. The same may not be true for energy-intensive industrial firms, but the rate concerns may be outweighed if the state offers commercial and industrial energy efficiency programs from which the firm could benefit.

### *Utility Business Model*

Utility representatives as well as outside experts often argued that energy efficiency programs do not align with the utility business model and cost too much to operate. Without the proper regulatory mechanisms in place for the timely recovery of program costs and the lost revenues that result from falling sales due to the installment of efficiency measures, utilities will never wholeheartedly support energy efficiency.

It is clear that the traditional utility business model in states with vertically-integrated utilities as well as deregulated electricity markets does not work well for energy efficiency (York and Kushler 2011); however, states are steadily modifying regulations to account for the inherent disincentive a utility faces when asked to save the very product it sells. Cost recovery for programs is in place in virtually every state. Numerous states have adopted revenue decoupling, which eliminates the "throughput incentive" for utilities by breaking the link between energy sales and revenues. Many states have also adopted the acceptable but less preferable policy option of Lost Revenue Adjustment Mechanisms (LRAM), which allows utilities to recover "lost" revenue due to energy savings resulting from energy

efficiency programs.[2] On the electric side, twelve states have adopted true decoupling, sixteen have a LRAM or similar ratemaking approach to recover lost revenues, seven states have decoupling pending, and five have a LRAM or similar approach pending (Sciortino et al. 2011). Regulatory mechanisms to account for lost revenues on the natural gas side are equally as prevalent. Utilities may earn incentives for successfully implementing energy efficiency programs as well (Hayes et al. 2011b). Twenty-five states have shareholder incentives in place for electric energy efficiency programs, while sixteen have incentives for both electric and natural gas programs. Eleven states have incentives pending.

Through these efforts, states are adjusting the utility business model to make efficiency a source of profit that can also improve customer satisfaction. Ultimately, one can envision a utility business model for the 21st century in which utilities deliver energy *services* for their customers rather than energy *sales*.

Even a number of states in the bottom of the *Scorecard* rankings have regulation in place to encourage efficiency by allowing for lost revenue recovery. The experience in these states demonstrates, however, that a hospitable regulatory environment does not automatically drive efficiency. Alabama Power, for example, may recover revenues lost due to energy efficiency, but remains far behind on energy efficiency program implementation. Utilities in Kansas may recover lost revenue, but no utilities currently have the mechanism in place. Utilities must request the use of decoupling, LRAMs, and performance incentives, and it is incumbent on the utility to engage in robust, transparent evaluation; monitoring; and verification of savings in order to convince regulators of the need for such mechanisms. If energy efficiency does not factor into a utility's resource acquisition strategy and culture, no amount of regulatory adjustment will be sufficient to move efficiency forward.

### *Participation Uncertainty*

Many interviewees in the bottom ten states believe that low customer interest constitutes the greatest challenge to running cost-effective energy efficiency programs. Most customers are not aware of ways to make their homes and businesses more energy efficient, nor do they understand the value of such improvements. Furthermore, low-income customers do not have the resources to afford energy efficiency improvements that might require an upfront payment. These low-income customers are also hard markets to reach and the least likely to participate in energy efficiency programs because of a lack of awareness of program offerings. Many of our interviewees also mentioned the practical limitations of implementing statewide programs in rural states where vendors and energy efficiency professionals are so geographically dispersed. Finally, energy is simply not enough of an economic concern for potential customers to build participation in the bottom ten states. These are all valid concerns; however, every state faces participation barriers to energy efficiency programs and many have succeeded in building sustainable customer interest and participation.

To begin, there is already a basic level of support for energy efficiency that exists among potential customers. A recent survey, for example, found that 65% of North Dakotans report that energy efficiency is very important to them and another 32% indicate that it is somewhat important (Wood 2010). Across political ideologies, education backgrounds, economic standing, and urban and rural locations, energy efficiency has strong support (Maibach et al. 2009). Translating that support into action, however, presents a critical challenge for energy efficiency.

Program participation is a fundamental challenge in every state running energy efficiency programs. Building customer participation requires a focused and long-term approach to program design, marketing, and implementation. Lessons on how to drive demand are well-documented in a recent report from Lawrence Berkeley National Laboratory (Fuller et al. 2010). Every market sector faces challenges to building customer participation, including low-income and rural households.

[2] Full discussion of decoupling and LRAM can be found in Hayes et al. (2011a); York and Kushler (2011); and RAP (2011).

### *Middle- and Low-Income Customers*

A number of states with low median household income levels currently pursue energy efficiency, such as Arkansas, Kentucky, Tennessee, Montana, North Carolina, and New Mexico, which all spend more than 0.35% of utility revenues on energy efficiency programs. Many of these states are on paths towards more aggressive program development. Utility commissions and state energy offices in both Kentucky and Louisiana are undergoing stakeholder processes to ramp-up utility sector programs.

Utilities in low-income states strategically plan efficiency programs to overcome cost barriers to participation. The Public Service Company of New Mexico (PNM), which budgeted $18.3 million (or around 1.8% of revenues) for energy efficiency programs, implemented numerous programs aimed at low-income customers as part of its broader portfolio of programs in 2010. The utility plans to broaden its low-income programs to enhance customer participation in 2011, in part by launching an energy efficiency program aimed at low-income renters (PNM 2011).

**Table 3. Utility Energy Efficiency Budgets in States with Low Median Income**

| Household Median Income State Rank | State | Median Household Income (3-Year Average: 2008-2010; in 2010 Real Dollars) | 2010 Utility Energy Efficiency Program Budgets as a % of Revenues |
|---|---|---|---|
| 41 | New Mexico | 43,998 | 0.94% |
| 42 | North Carolina | 43,275 | 0.38% |
| **43** | **Alabama** | **42,218** | **0.22%** |
| 44 | Kentucky | 42,091 | 0.43% |
| **45** | **South Carolina** | **42,059** | **0.18%** |
| 46 | Montana | 42,005 | 0.82% |
| 47 | Louisiana | 41,896 | 0.00% |
| **48** | **West Virginia** | **40,824** | **0.00%** |
| 49 | Tennessee | 40,026 | 0.55% |
| 50 | Arkansas | 38,600 | 0.38% |
| **51** | **Mississippi** | **36,850** | **0.29%** |

Households with less disposable income will have less to spend on energy efficiency projects, even if they are subsidized with incentives, which is why a number of states have implemented financing programs that permit customers to finance energy efficiency upgrades with loans that are paid back through the project's energy savings. One financing mechanism that is becoming increasingly popular for defraying upfront investment costs in energy efficiency is on-bill financing. On-bill financing programs can leverage a utility's relationship with energy customers to pay back some or all of an efficiency investment through savings in utility bills. Currently, utilities in twenty states have implemented on-bill financing programs and three of the bottom ten states have such programs: Missouri, South Carolina, and Alabama (Bell et al. 2011). South Carolina currently has legislation in place to support their programs. These programs were spearheaded by the electric cooperatives of South Carolina and the current goal for on-bill financing is to utilize on-bill financing as a low interest loan to install 225,000 retrofit measures across the housing stock by 2020 (Bell et al. 2011). Over the life of the program, South Carolina is aiming to lend $750 million with 20% in reserves. Estimates from Coastal Carolina University claim the program will support 7,113 jobs by 2030 in areas served by the electric cooperatives (ECSC 2010).

### *Rural Customers*

The states we examine for this report have high rural populations with small co-operative utilities serving customers scattered across a low-density landscape, which causes many in these states to worry that energy efficiency programs would lack a customer base. In fact, many states with low

population density also implement energy efficiency programs. The states with the lowest population density (in order from lowest to tenth lowest) are Alaska, Wyoming, Montana, North Dakota, South Dakota, New Mexico, Idaho, Nebraska, Nevada, Utah, and Kansas (U.S. Census 2011). A number of these states, including Alaska and Nebraska, run effective programs. It should also be noted that some of the national leaders in energy efficiency (such as Iowa, Colorado, and Oregon) have significant rural populations.

In 2008, Alaska's state government ramped up their Home Energy Rebate program. The program is administered by the Alaska Housing Finance Corporation (AHFC) and allows rebates of up to $10,000 based on eligible home energy efficiency improvements. The legislature allocated $160 million to the program and the allocations were developed for different regions of Alaska based on climate, population, and energy costs. As of June 2010, the program had over 22,000 participants and approximately 70% of all individuals that received a rating followed through with improvements and received a rebate (Sciortino 2010).

Nebraska's state government ramped up its decades-old Dollar and Energy Saving Loans program in 2009. Nebraska's Dollar and Energy Saving Loans program allows Nebraskans to apply for loans through their local lenders at an interest rate of 2.5% for energy efficiency improvements, waste minimization, and alternative fuel projects. In the last 20 years (1990–2010), 26,230 projects totaling over $229 million have been financed from the energy office and participating lenders (NEO 2010). These loans financed projects in all 93 counties in Nebraska under five areas: residential; commercial/industrial; agriculture; transportation; and Nebraska Public Power District. More than 92% of the energy efficiency projects were in the residential sector and more than 72% of funds out of the total loan pool were used to finance these residential energy saving improvements.

### *Low Rates: A Deterrent to Energy Efficiency Program Participation?*

Many of our respondents claimed that because rates are low, energy is cheap and consumers will not participate in energy efficiency programs. In reality, however, low rates do not equal low energy costs. The table below illustrates that energy is a considerable expense in most states and should be costly enough to drive demand for energy efficiency. In fact, residential customers in some of the bottom-ranking states actually pay some of the highest electricity bills in the country. Five of the bottom-ranking states pay higher than the median U.S. residential electric bill. The average bill for residents in the bottom ten states ($109.71) of the *Scorecard* is higher than the average bill for customers in the top ten states ($103.62).[3]

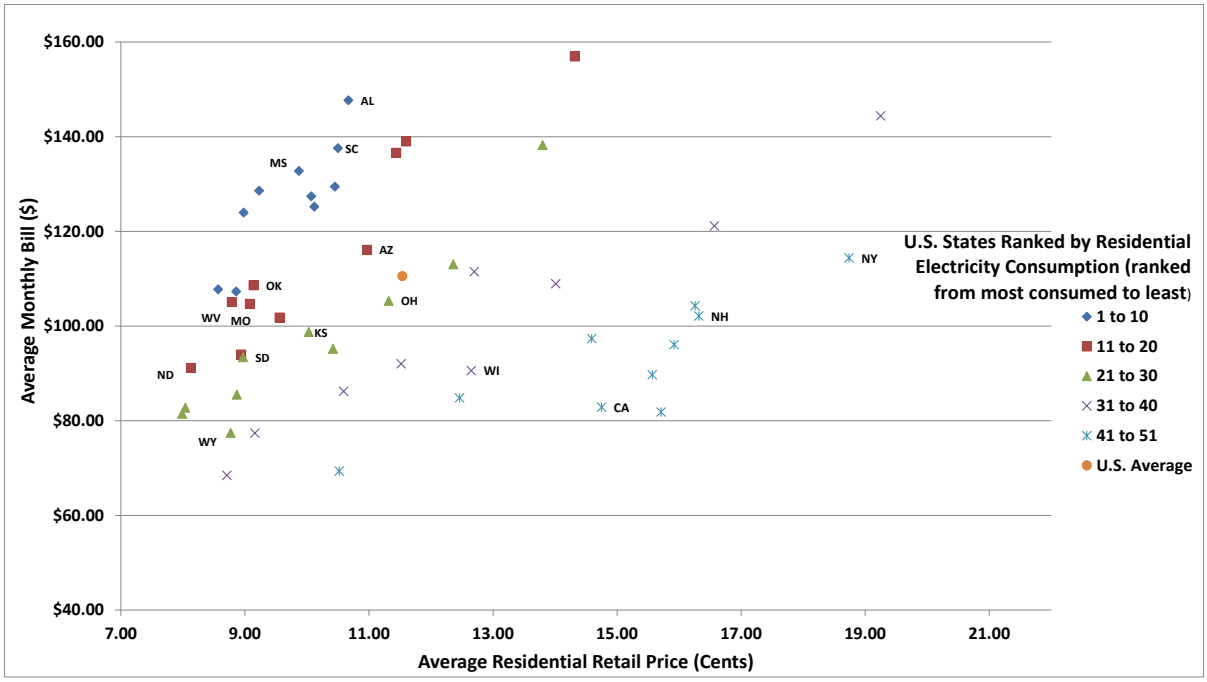
[3] A number of factors complicate state-by-state comparisons of average monthly bills, including weather and the prevalence of natural gas or heating oil as a fuel; however, we present this information to better draw the distinction between rates and bills.

**Table 4. Residential Electricity Bills in 2010**

| State | Average Monthly Consumption (kWh) | Average Retail Price (Cents per kWh) | Average Monthly Bill ($) |
|---|---|---|---|
| Hawaii | 601 | 28.10 | $168.86 |
| Maryland | 1,096 | 14.32 | $156.94 |
| **Alabama** | **1,384** | **10.67** | **$147.69** |
| Connecticut | 750 | 19.25 | $144.40 |
| Texas | 1,199 | 11.60 | $138.99 |
| Delaware | 1,001 | 13.80 | $138.24 |
| **South Carolina** | **1,310** | **10.50** | **$137.59** |
| Florida | 1,194 | 11.44 | $136.61 |
| **Mississippi** | **1,345** | **9.87** | **$132.76** |
| Virginia | 1,239 | 10.45 | $129.43 |
| Tennessee | 1,393 | 9.23 | $128.58 |
| Georgia | 1,265 | 10.07 | $127.41 |
| North Carolina | 1,238 | 10.12 | $125.20 |
| Louisiana | 1,380 | 8.98 | $123.96 |
| New Jersey | 731 | 16.57 | $121.13 |
| Arizona | 1,059 | 10.97 | $116.09 |
| New York | 610 | 18.74 | $114.39 |
| Nevada | 914 | 12.36 | $113.03 |
| Pennsylvania | 878 | 12.70 | $111.50 |
| District of Columbia | 778 | 14.01 | $108.93 |
| **Oklahoma** | **1,189** | **9.14** | **$108.61** |
| Kentucky | 1,258 | 8.57 | $107.77 |
| Arkansas | 1,211 | 8.86 | $107.28 |
| Ohio | 931 | 11.32 | $105.33 |
| **West Virginia** | **1,195** | **8.79** | **$105.05** |
| **Missouri** | **1,153** | **9.08** | **$104.66** |
| Alaska | 641 | 16.26 | $104.29 |
| New Hampshire | 626 | 16.32 | $102.11 |
| Indiana | 1,065 | 9.56 | $101.79 |
| **Kansas** | **985** | **10.03** | **$98.73** |
| Massachusetts | 667 | 14.59 | $97.34 |
| Rhode Island | 603 | 15.92 | $96.08 |
| Iowa | 913 | 10.42 | $95.19 |
| Nebraska | 1,051 | 8.94 | $93.97 |
| **South Dakota** | **1,041** | **8.97** | **$93.40** |
| Illinois | 799 | 11.52 | $92.03 |
| **North Dakota** | **1,121** | **8.13** | **$91.16** |
| Wisconsin | 716 | 12.65 | $90.59 |

| State | Average Monthly Consumption (kWh) | Average Retail Price (Cents per kWh) | Average Monthly Bill ($) |
|---|---|---|---|
| Vermont | 576 | 15.57 | $89.71 |
| Minnesota | 814 | 10.59 | $86.19 |
| Oregon | 964 | 8.87 | $85.52 |
| Michigan | 681 | 12.46 | $84.82 |
| California | 562 | 14.75 | $82.85 |
| Washington | 1,030 | 8.04 | $82.75 |
| Maine | 521 | 15.71 | $81.83 |
| Idaho | 1,020 | 7.99 | $81.46 |
| Colorado | 709 | 11.04 | $78.22 |
| **Wyoming** | **883** | **8.77** | **$77.43** |
| Montana | 845 | 9.16 | $77.37 |
| New Mexico | 659 | 10.52 | $69.35 |
| Utah | 786 | 8.71 | $68.43 |
| **U.S. Average** | **958** | **11.54** | **$110.55** |

The scatter plot below compares state retail prices with bills and breaks the states into five bins determined by their monthly residential electricity consumption. What the plot shows is that states with low rates and high consumption have some of the highest electricity bills in the country, while a number of states with high rates and low consumption, such as Wisconsin and California, maintain low bills. Of course, because this figure only takes into account electricity, differences for states with high use of natural gas and petroleum, as well as differences for weather, are not accounted for.




When considering overall residential energy consumption (including gas and petroleum use), the ten states we focus on in this report still rank among the highest in the country, with eight residing in the top fourteen energy consumers and the remaining two above the U.S. average. Only in Wyoming, South Dakota, and North Dakota are overall annual energy expenditures below the U.S. average.

This further strengthens the claim that consumption is just as important as rates in determining overall energy costs for customers.

Even the premise that participation in energy efficiency rests on energy bills is a tenuous one. In states where energy bills are low compared to the national average, such as Colorado (residential bills average $78.22 per month), utilities have seen relatively high participation levels driven by financial incentives and marketing efforts. Xcel Energy, for example, had around 10% of its residential customers participate in programs in 2010.[4]

## Building Sector Cost Concerns

One of the major barriers to the adoption of building energy codes according to interviewees is the concern that the cost of upgrading homes or buildings to meet the requirements of the latest model energy code would be prohibitive. Moving from current practice to the 2009 IECC for new homes, however, would provide net positive benefits to homeowners, as shown in Table 5 (OCEAN 2009).

**Table 5. Estimated Cost, Savings, and Payback Time of Building Energy Codes[5]**

| State | Weighted Average Incremental Cost | Median Annual Energy Savings | Mortgage Payback[6] (Months) |
|---|---|---|---|
| Alabama | $668.76 | $205.00 | 10 |
| Kansas | $1,403.96 | $468.50 | 9 |
| Mississippi | $699.54 | $211.50 | 10 |
| Missouri | 1,607.74 | $459.00 | 11 |
| North Dakota | $903.79 | $343.00 | 8 |
| South Carolina | $546.37 | $207.00 | 8 |
| South Dakota | $331.27 | $405.00 | 10 |
| Wyoming | $1,288.23 | $391.00 | 10 |
| **Average** | $896.16 | $336.08 | 9.5 |

Source: OCEAN (2009)

Indeed, energy-efficient homes are more affordable in the long term than those built to less stringent standards. While there may be an incremental cost at the time of sale, the energy savings embedded in efficient homes pay back homeowners in less than three years. When amortized over a thirty-year, 20% down payment loan, the monthly additional up-front cost on a mortgage would be significantly lower. In fact, when factoring in monthly energy savings, the homeowner would realize net savings within the first year (OCEAN 2009). Contrary to the view held by opponents of building energy codes, energy-efficient homes help to improve the affordability of homes for all households. In fact, energy efficiency can increase the value of a home's worth, as has been proven in Australia, where energy efficiency ratings increased home values (Burr and Faesy 2012).

[4] Based on Xcel Energy (2011). Because "participants" in CFL programs are measured by the unit, not the customer, we assume that one customer received 10 CFLs.
[5] The BCAP study referenced here did not include West Virginia or Oklahoma because of difficulties accessing a baseline statewide code for analysis.
[6] Amount of time it takes for monthly energy savings to offset added mortgage costs as a result of building to 2009 IECC Energy Code.

## Perceived Cost Constraints to State Government-Led Efficiency

State governments can advance energy efficiency through programs administered by energy offices, departments of administration, and other executive agencies. Programs include:

- "Lead by Example" programs aiming to improve the energy efficiency of state, local, and institutional buildings
- Financial and tax incentives for energy efficiency projects in buildings, transportation, and industrial sectors.
- Building code adoption and implementation

Some, but not all, of the states we examined are reluctant to implement state-led energy efficiency programs due to concerns regarding their cost to the taxpayer. In states pursuing a policy environment that emphasizes low taxes and lean government, state-led energy efficiency programs seemingly run counter to this governing approach.

In fact, energy efficiency programs actually correspond with fiscal conservatism and the desire to minimize costs to the taxpayer. Energy efficiency programs aimed at institutional buildings offer state governments an opportunity to reduce wasteful government spending on energy bills. State governments spend more than $11 billion annually on energy, which can account for as much as 10% of a typical government's annual operating budget (EPA 2009). These "Lead by Example" programs are a proven solution to reducing government-sector energy bills and promoting awareness of energy efficiency.

Financial incentive programs promoting energy efficiency in buildings, transportation, and industry do not have to break the bank. Low-cost, sustainable financing models are available that allow state governments to use public dollars to attract private investment. The use of energy savings performance contracts (ESPCs) is a widely-used and effective way to finance building energy efficiency and modernization projects by paying for projects with the energy savings produced by the measures installed over a long-term period. In addition, revolving loan funds (RLF) are self-renewing and provide a low-cost way to implement self-sustaining programs. There are currently 66 funds available in 34 states and some have been operating for years (NASEO 2012). The total revolving loan funding is over $925 million. Six out the ten bottom states currently have some sort of state energy revolving loan. State-designed and -implemented energy revolving loan programs are used as a tool to allow loan programs to continue over the long term, even after the initial funding is used. The revolving approach allows the central fund to be replenished and funds re-issued as individual projects repay their loans.

In our recommendations section, we outline a number of low-cost models states can pursue to provide financial incentives for energy efficiency technologies and practices. In many cases, states can leverage federal funding sources to run energy efficiency programs. Otherwise, states have options such as modest tax incentives and on-bill financing to encourage consumers to buy energy efficiency products and services.

## Aversion to Government Intervention

In the states we examined, energy efficiency policies and programs are often dismissed as burdensome and unnecessary options when compared to allowing the free market to determine if consumers want energy efficiency technologies. In practice, however, energy efficiency policies and programs can be administered as cost-beneficial and flexible tools for states to save consumers energy and promote economic development.

Policies to advance energy efficiency are necessary to address market failures that obstruct consumers and businesses from spending and investing in the most efficient way possible. While it is outside the scope of this report to analyze the role of government to remedy market inefficiencies,

there is a wealth of research that supports policies and programs to overcome widely acknowledged market barriers to energy efficiency (Golove and Eto 1996; Howarth and Andersson 1993; IEA 2008). The purpose of government intervention is not to create new bureaucracies that crowd out private investment, but to allow the free market to create wealth and meet the needs of the public good through good policy

According to a study done by ACEEE on the role of private industries and utilities in energy efficiency programs, private market actors each face significant limitations in delivering energy efficiency and have not demonstrated a realistic capability to replace government or utility programs to provide energy efficiency (Kushler and Witte 2001). The report used interviews and data showing that utilities, Energy Service Companies (ESCOs), and industry experts generally agree that private market actors cannot replace government or regulatory policies and that government programs can be used to maximize energy efficiency from the private sector. Many kinds of policies were specifically cited by respondents as effective in mitigating market barriers. ESCOs and industry experts agreed that standard offer payment type programs and rebates were the most favored public policies. Cash incentives are also extremely useful in helping align the interests of private agents and defraying financial disincentives. We heard similar feedback in our research as many interview respondents agreed that "carrots" or financial incentives are an effective way to encourage investment in energy efficiency.

Many states generally averse to government mandates have supported energy efficiency policies in a bi-partisan way. Indiana, Arkansas, and Arizona, for example, have long-term energy savings requirements in place for utilities, known as Energy Efficiency Resource Standards (EERS). Utilities in Utah and Idaho also run comprehensive portfolios of energy efficiency programs. Utah, Idaho, Georgia, Montana, Nebraska, Texas, and Kentucky have stringent building energy codes in place. In each of these states, regulators and policymakers recognized the need for policy to address market barriers limiting the ability of consumers to purchase energy efficiency goods and services.

Many of our interviewees emphasized the importance of local control in policymaking in many of the states we analyzed; however, states can advance flexible energy efficiency policy and programs, which allow local jurisdictions to tailor them to local conditions. While statewide codes may be ideal for the widespread adoption of energy-efficient building practices, states can also adopt voluntary building energy codes and encourage local adoption with incentives and training programs for code officials. We discuss how states can encourage local adoption of energy efficiency policies below in our recommendations section.

## Energy Efficiency in Energy-Producing States

In most of the states we interviewed, policymakers prioritize energy production over energy efficiency. Energy production is a major source of jobs and economic growth in many of these states. North Dakota, for instance, has witnessed an unprecedented boom in oil exploration and production over the past four years that has created jobs and economic prosperity in the state. In general, energy policy discussions revolve around how to increase production, and in some states, how to boost energy production from renewable resources like wind energy.

Energy efficiency plays a very distinct and separate role from energy production, however, and there is certainly opportunity for both priorities to be pursued simultaneously. States focusing on how to increase production of domestic energy sources can view energy efficiency as a way to stretch the value of those resources. A state that uses less of the energy it produces, whether it is from natural gas, wind, or coal, can export more of it and keep the jobs and energy bill savings in-state.

Energy efficiency initiatives create jobs and economic benefits that outpace losses in traditional supply-side industries. In an in-depth energy efficiency potential study done for Pennsylvania, ACEEE found that the electric power and natural gas service sectors directly and indirectly employ about 2.6 and 1.3 jobs, respectively, for every $1 million of spending (Eldridge et al. 2009). Energy efficiency projects in buildings are labor-intensive and could employ many in the construction and building

services sector. The energy bill savings consumers accrue are also re-invested in local communities, creating economic benefits (Bell and Laitner 2011). Like a tax reduction, energy efficiency measures enable consumers to keep more of the money they earn and spend it on more economically productive uses than on energy bills. Allowing consumers to spend more on groceries at a local store rather than on utility bills, for example, energy efficiency creates jobs and buoys local economies. In fact, the Pennsylvania report found that these energy efficiency sectors employ 7.8 jobs per $1 million of spending and that if the state were to implement a range of energy efficiency policies, it could create 27,232 net new jobs by 2025.

## Lack of Energy Efficiency Champions

Many interviewees noted that the states we examined generally do not have a strong base of advocates for energy efficiency. In state legislatures and utility commissions, it is critical to have champions for energy efficiency to educate peers and lead policymaking efforts. The presence of outside influencers in support of energy efficiency is equally important, and in many of the states we examine, there is not a critical mass of advocates consistently voicing support for a new approach to energy efficiency. States such as Georgia, North Carolina, and Tennessee, where energy efficiency has gained momentum, all possess strong advocacy groups complementing and supporting each other.

## Barriers to Combined Heat and Power (CHP)

Combined heat and power, also known as cogeneration, is a method of simultaneously generating thermal energy (heat) and electricity in a single, integrated system that substantially improves efficiency. States at the bottom of our rankings have had limited success advancing CHP applications for reasons similar to most other states: project economics can be unfavorable and regulation does not adequately create a market for excess power created by such systems. The technologies for CHP projects are generally available to manufacturers so technical barriers are uncommon. A more detailed analysis of market barriers to CHP in each state can be found in a recent ACEEE report (Chittum and Kaufman 2011).

### *Policy Barriers*

CHP projects often necessitate expensive and labor-intensive capital investments. Average capital costs can range from $700 to $3,000 per kW. However, despite the upfront economic costs, many facilities prefer CHP projects over heat and power options because they make economic sense over all, even with the high upfront costs. The financial barriers to CHP are not only the upfront costs, rather, many regulations and policies have an impact on the economic returns of CHP projects. These issues include constraints from the power industry that limit when, where, and how CHP developers can sell their excess power to the grid. CHP developers cannot sell back their excess power at retail price; rather, developers are constrained by franchise agreements, private wires laws, and high fees for sending excess power over privately owned distribution lines.

Standby rates, which are the rates an electric utility charges a CHP system's host firm for additional or backup power and backup system capacity, have the potential to ruin a project's economics. These rates are used to charge a facility for the power it buys for the following purposes: to supplement a CHP system, when a CHP system unexpectedly goes down, and when a CHP system is taken offline for scheduled maintenance.

Standby rates are often calculated on the assumption that a utility must brace itself in case every CHP system in its service territory breaks down at the exact same time, which is not a realistic concern. Standby rates are typically developed in close cooperation with regulatory commissions, and regulators tend to require utilities to plan for worst-case scenarios in order to ensure that all customers can have power if such a scenario does occur. In order to ensure that all necessary backup power can be provided simultaneously, utilities contend that they need to build the infrastructure for it—that is, the transmission and distribution wires to deliver the electricity. It is these

kinds of additional investments in infrastructure that are incorporated into calculations for standby power.

In many states, standby power charges can be exorbitant for CHP systems that have only needed utility power once, for a few minutes, during the whole year. Utilities employ "demand ratchets," which penalize a company for one moment of high demand by ratcheting up the rate at which all subsequent standby power is purchased. These kinds of practices are highly detrimental to the economics of some projects and frustrate developers and supporters across the country.

### *Market Barriers*

Because of the low cost of coal and natural gas in many of the bottom ten states, these states have poor "spark spread," or the difference between the cost of fuel required to power the CHP system and the cost of grid-provided heat and power to a facility had the CHP system not been installed. Spark spread is a product of several external realities including the price of natural gas, an unregulated fuel currently at historically low prices. Natural gas is the fuel source for over half of the CHP installed since 1990 (ORNL 2008; Bird 2012). Regions in the U.S. where spark spread is a main barrier to CHP are also areas with low electricity prices. After years of high price volatility, the prospect of low, stable natural gas prices would improve the spark spread, making CHP an increasingly attractive investment.

CHP also faces challenges from the economic recession, which dampens industry's willingness to invest in projects with long payback periods and moderate risk. Payback is one of the first benchmarks used by decision makers when they are prioritizing new capital investments and CHP programs have a payback range from 1.5 to 12 years (Chittum and Kaufman 2011). Since the economic recession, firms are looking for paybacks on capital investments to be under a year, sometimes closer to six months. However, many argue that payback models for CHP do not always fully account for the long-term benefits of CHP projects.

Barriers to CHP implementation are very real; however, regulators and policymakers have a number of options available to remove regulatory and financial barriers, as discussed in the recommendations section.

## RECOMMENDATIONS ON HOW TO ADVANCE ENERGY EFFICIENCY IN THE BOTTOM TEN STATES

Below, we lay out a set of recommendations on how to advance energy efficiency policy and programs specifically tailored to the group of states at the bottom of our *Scorecard*. Our recommendations build on ideas from our interviewees and existing initiatives in the states. Despite some pessimism surrounding the prospect of a comprehensive push for energy efficiency, most interviewees mentioned opportunities to move efficiency forward, particularly in ways that replicated successes in nearby states. When discussing successes in their states, many interviewees noted that actions in neighboring states compelled their own state to act. Every region in the U.S. has some experience implementing the recommended policies and programs below. It is not likely each recommendation could be pursued simultaneously, so each state should assess the momentum of each policy or program in their region, as well as the state's own conditions, in order to prioritize the recommendations.[7] Acknowledging that there is much diversity even within the ten states we focus on in this report, we find that the following recommendations are grounded, flexible, and achievable in most settings.

[7] See the state summaries in Appendix A for detailed analysis of each state's energy efficiency policy and program successes, barriers, and opportunities.

**Figure 4. Recommendations to the Low-Ranking States in the *State Energy Efficiency Scorecard***

1. Use a collaborative and transparent process to develop a state energy plan that emphasizes the importance of energy efficiency
2. Empower customers with information to improve participation in programs and drive markets for energy efficiency
3. Advance energy efficiency in state and municipal-owned facilities and fleets
4. Treat energy efficiency as a resource, align the utility regulatory business model with energy efficiency, and move forward on cost-effective utility-sector energy efficiency programs
5. Provide tax incentives for energy efficiency technologies and practices
6. Advance energy efficiency in manufacturing and agricultural sectors
7. Remove regulatory barriers and provide financial incentives for combined heat and power
8. Adopt and enforce the most recent national model building energy codes, leveraging local government leadership

## Develop a State Energy Plan that Emphasizes the Importance of Energy Efficiency

State energy plans lay out the vision and commitment necessary for public and private sector stakeholders to confidently pursue energy efficiency policy and investments. A good state energy plan comprehensively outlines a set of goals as well as policies and initiatives to achieve those goals. A key barrier to energy efficiency policy and programs identified by many of our interviewees was that without a plan in place, energy policy is made ad hoc and without consideration for long-term priorities or objectives. A state energy plan represents an opportunity for state policymakers to outline a vision for energy efficiency in the broader context of state energy policy and affirm the state's commitment to making homes and businesses more productive and energy efficient. To the private sector, a state energy plan signals commitment to the plan's objectives, providing the reassurance necessary to make investments and create businesses in energy efficiency services. A state energy plan provides the foundation and rationale for legislators and regulators to pursue energy efficiency policies as well. In Iowa, for example, the state energy plan's call for utilities to save 1.5% of sales annually through energy efficiency programs resulted in an order from the Iowa Utilities Board for utilities to consider such an effort (Iowa OEI 2008). Utilities in Iowa subsequently adopted goals at or near the 1.5% target.

State energy plans function as an educational tool for policymakers and consumers to understand how energy efficiency can provide economic, environmental, and health benefits. Placing energy efficiency in a state energy plan has the important effect of framing it as a resource on par with other supply-side resources. State energy plans are often connected to economic development agencies, which tout the energy sector's ability to create jobs and widespread economic benefits. When state energy plans include a serious role for energy efficiency, it allows readers to make the connection between energy efficiency and economic development, given that energy efficiency not only enables the creation of new businesses that make buildings more efficient, for example, but also benefits households by lowering energy bills. Energy efficiency is a particularly important strategy to assist households with low and fixed incomes most vulnerable to price increases. State energy plans also give states the opportunity to frame energy efficiency as more than an energy resource, but also a strategy to protect the environment and improve the comfort and health of residents and building occupants.

**Table 6. State Energy Plans in the Bottom Ten States**

| State | Energy Plan Status | Energy Efficiency Component of Plan | Lead Agency |
|---|---|---|---|
| Alabama | None | | |
| Kansas | Kansas Energy Report (2009 — not operational) | Energy efficiency savings goal; energy efficiency in new and renovated state buildings; energy-efficient transportation in public sector; energy efficiency in the agricultural sector (from the 2009 report) | Kansas Energy Council |
| Mississippi | Roadmap for Mississippi's Energy Future (2010 — operational) | Recommendations for building code adoption; state government building efficiency | Mississippi Energy Policy Institute |
| Missouri | None | | |
| North Dakota | Empower North Dakota: Comprehensive State Energy Policy 2010-2025 (2010 — operational) | Building energy codes; energy efficiency in state-government buildings and schools; public transportation; financial incentives for energy-efficient products; energy efficiency education; utility-sector energy efficiency | North Dakota Department of Commerce |
| Oklahoma | Oklahoma First Energy Plan (2011 — operational) | Energy efficiency in residential, commercial, and public buildings; support for utility-sector energy efficiency; encouragement of industrial energy efficiency; support of policies that encourage energy efficiency; energy efficiency as an environmental protection strategy | Office of the Governor |
| South Carolina | South Carolina Energy Advisory Council (2010 — operational) | Council has conducted planning sessions related to energy efficiency in utility sector and building codes | South Carolina Legislature |
| South Dakota | None | | |
| West Virginia | West Virginia Energy Opportunities: A Blueprint for the Future (2007; update expected in 2012) | Building codes; K-12 Building Energy Program; ENERGY STAR buildings; industrial energy efficiency | West Virginia Department of Commerce |
| Wyoming | None | | |

While plans can certainly underpin real policy change, they can also languish on shelves without making any real impact. In many cases, this is because of turnover due to elections, which create serious inconsistencies in priorities and governing styles; long-term energy planning is a difficult task. Such was the case with Florida's Energy and Climate Action Plan, which called for greater investment in energy efficiency as well as regulatory changes such as decoupling. In addition to government turnover, state plans emanating from the governor's office can be unenforceable, particularly in the utility sector. The distance in authority from governors to commissions creates difficulty in transferring findings and recommendations from a plan to tangible rules or action.

To address this problem, legislatures or public committees should be bound to contemplate the recommendations of the planning process and report on progress made to achieve a plan's goals. Before it was dissolved in 2009, the Kansas Energy Council adopted an annual process to create new recommendations and review progress on prior goals, resulting in an annual report to the legislature. While state energy planning is essential in broadening the awareness of energy efficiency and setting objectives for its advancement, it is critical to find ways to implement recommendations and ensure the plans serve a purpose beyond education.

## Empower Customers with Information to Improve Participation in Programs and Drive Markets for Energy Efficiency

Educational programs and marketing campaigns to increase awareness of energy efficiency options for homes and businesses are critical to improve program participation and drive markets for energy efficiency technologies and services. Every state has some type of energy efficiency education program in place, usually administered through state energy offices and utilities. State energy offices and utilities can offer brochures, websites, and utility bill inserts with tips for saving energy and resources for those interested in more information. While these programs are essential, plenty more can be done to raise awareness of the multiple benefits of investing in energy efficiency.

### *Building Energy Disclosure*

Empowering customers with energy use and cost data allows them to make informed buying decisions. A number of states have put in place policies to require or encourage home and commercial building sellers to disclose the energy use and typical monthly energy costs of a building to potential buyers. Similar to nutrition labels for food or fuel-economy standards for vehicles, a building energy rating provides transparency to the market (Burr et al. 2011). Both Kansas and South Dakota have energy disclosure policies in place for the sale of residential buildings, along with New York, Maine, and Alaska.[8] Commercial building disclosure policies are in place in Washington, California, New York City, and Washington, D.C. A number of interviewees, including homebuilders and building professionals, noted that a disclosure policy would be a welcome initiative that would encourage more energy-efficient construction and a greater number of home energy improvements prior to sale.

### *Utility Bill Design*

Utilities have an opportunity to inform customers about energy efficiency by improving the format of the utility bill. A recent ACEEE analysis of utility bills found that the common home utility bill could be greatly improved (Foster and Alschuler 2011). Not only can bills provide energy-saving tips and messages, but they can also educate consumers on how their energy use compares to previous years and to consumers in similar building types. As utilities seek to expand the use of "smart grid" practices and technologies, the utility bill presents an opportunity for utilities to engage with customers and enable them to better manage their energy usage and understand the options available to them to make energy efficiency improvements. Although there are a range of regulatory and institutional barriers to changing the information and format presented in utility bills, it represents a straightforward and effective way to enable informed consumer decisions.

## Advance Energy Efficiency in State and Municipal-Owned Facilities and Fleets

State and municipally-owned facilities and fleets present states with a wide range of energy savings opportunities. Every state pursues energy efficiency in state-owned facilities to some degree. The State Energy Program as well as other federally-funded programs, mostly administered by state energy offices, has been instrumental in state "Lead by Example" efforts, or initiatives to make energy-efficient public facilities that set the right example for the general public. The American

[8] Descriptions of these policies can be found at www.aceee.org/sector/state-policy

Recovery and Reinvestment Act (ARRA) spurred new energy efficiency projects in the Municipal, University, School, and Hospital (MUSH) buildings. While the MUSH market was already a well-established market for energy efficiency practitioners, drawing billions of dollars in energy efficiency investments annually (Bharvirkar et al. 2008), most state energy offices learned a great deal from the process, starting new financing programs and creating the staff expertise for such initiatives. Moving forward, state energy offices and other state and local policymakers face the challenge of maintaining the momentum created by ARRA and pursuing a comprehensive energy efficiency strategy for state- and municipal-owned facilities and fleets. Such a strategy should pair policy with programs aimed at achieving energy savings in a range of facility types such as schools and wastewater facilities as well as vehicle fleets. A comprehensive Lead by Example program not only benefits the taxpayer, but also state and local governments, which enjoy lower energy costs, better working environments, and a positive and useful message to communicate to consumers.

### *Foundational Policy Support*

Many states guide comprehensive Lead by Example initiatives with energy savings targets for state-owned facilities and fleets. In Missouri, for example, Executive Order 09-18 calls for a 2% reduction in energy use each year. Energy savings targets commit states to pursuing energy efficiency retrofits for existing buildings, which can be supported by complementary policies, such as a policy that encourages the use of Energy Savings Performance Contracts, which allows an energy services company to perform an energy efficiency upgrade and be paid through the savings the project generates over time. Georgia recently passed the Guaranteed Energy Savings Performance Contracting Act of 2010, which should help streamline the ESPC process for governmental units and ESCOs. Finally, to encourage the purchase of fuel-efficient vehicles, many states have adopted efficient fleet policies that require vehicles purchased or the entire fleet to meet a certain fuel-economy standard.

A critical step to ensuring a sound Lead by Example strategy is to measure and benchmark energy use in public facilities. Benchmarking energy use through tailored or widely available tools such as EPA ENERGY STAR Portfolio Manager ensures a comprehensive set of energy use data that drives cost-effective energy efficiency investments. State officials can use energy data to understand what buildings present the greatest opportunities for energy savings. Among the states focused on in this report, South Dakota, West Virginia, Mississippi, South Carolina, and Alabama all require or strongly encourage the measurement of energy use in state-owned facilities.

States can also require new public buildings to follow design guidelines that promote energy-efficient construction beyond established energy codes such as ENERGY STAR, LEED, or Green Globes. South Carolina, South Dakota, Missouri, and Oklahoma all require energy-efficient construction of new public facilities. States may also require school districts to build new schools in accordance to energy efficiency standards such as the protocol established by the Collaborative for High Performance Schools (CHPS). New Hampshire, for instance, encourages school districts to comply with the Northeast-CHPS protocol by providing up to an additional 3% in state construction aid.

### *Program Design and Implementation*

Aside from implementing energy efficiency targets or broad policy, states can offer technical and financial assistance programs to encourage energy efficiency improvements to facilities owned by both state and municipal governments. Lead by Example programs often employ a principal lead agency, which is supported by other executive agencies and leverages existing state, federal, utility, and non-governmental organization resources (EPA 2009). Financed in a variety of innovative ways, Lead by Example programs can unlock energy efficiency opportunities in a range of facility types that can offer states a positive message to communicate to the broader public.[9]

[9] See the ACEEE State Policy Toolkit for State Government Lead by Example for more information: http://www.aceee.org/sector/state-policy/toolkit/lbe

Comprehensive public building energy efficiency programs often guide facility managers through the process of financing energy efficiency upgrades. The Facilities Conservation Improvement Program (FCIP) in Kansas, for example, provides facility managers with a simple, streamlined program to assist in project design, finance, and implementation. The program focuses on guiding facility managers through the ESPC process. As Kansas has shown, state governments can play a leading role advancing the ESPC model by providing a pre-approved list of ESCOs, model contract language, and other technical assistance. Kansas' self-funded ESPC program reached almost all of the state's public floor space. Self-funded ESPC programs not only target government buildings, but all types of MUSH facilities.[10] Other public sector financing models such as revolving loan funds also provide the upfront capital necessary to upgrade facilities.

Discussed earlier, revolving loan funds are funds of capital used to provide loans for energy efficiency and renewable energy improvements. Sometimes dedicated to the MUSH market, RLFs are recapitalized by loan repayments to enable additional lending. The original sources of capital for many existing RLFs came from Petroleum Violation Escrow (PVE) funds (in Texas and Nebraska, for example), as well as funding from ARRA. RLFs can also be capitalized through state bond proceeds, treasury investments, and ratepayer funds. When RLFs target MUSH markets, the funds are generally administered by the state government rather than a third-party lender.[11]

Energy efficiency programs aimed at institutional buildings have a great deal of energy saving opportunities to draw from. Energy efficiency opportunities abound at the local level, particularly in public facilities such as schools, water, and wastewater treatment facilities. States are in a unique position to assist, encourage, or even require local governments to pursue energy efficiency in municipal operations (Sciortino et al. 2011).

Throughout the implementation of the program, LBE programs should be matched with a well-planned communications and outreach campaign to agency personnel, which can be achieved through training seminars and the dispersal of educational materials. Communications and outreach should extend to stakeholders outside the government as well. By creating a website and other public material extolling the numerous benefits of LBE initiatives, the general public can see the smart investments first-hand and learn how to "follow the lead."

[10] See the Energy Services Coalition for more information on self-funded ESPC programs: www.energyservicescoalition.org

[11] A number of resources are available on other ways to capitalize revolving loan funds, as well as other financing models for energy efficiency upgrades in public facilities. See http://www1.eere.energy.gov/wip/solutioncenter/financialproducts/revolvingloanfunds.html

**Table 7. State Lead by Example Policies[12]**

| State | Policies | Technical or Financial Assistance Programs |
|---|---|---|
| Alabama | Executive Order 25, signed in November 2011, requires state agencies to reduce energy consumption in all conditioned facilities by 30% by the end of FY 2015 from 2005 levels. An Energy Officer is to be assigned by each agency to oversee the implementation of energy efficiency programs and submit annual reports on progress. The state also has a revolving loan fund (AlabamaSaves) and a Performance Contracting Program that provides information for facility managers on how to procure and finance large energy improvement projects for the state's public facilities. All state departments and agencies must use ENERGY STAR Portfolio Manager as a method of measuring and reporting energy efficiency for facilities. | Local Government Energy Loan Program |
| Kansas | Energy audits required for all state-owned buildings every five years. The Kansas secretary of administration shall adopt rules and regulations that require that the average fuel economy standard for state-owned motor vehicles purchased during fiscal year 2011 shall not be less than 10% higher than the average fuel economy standard of state-owned motor vehicles purchased during fiscal year 2008, if such higher average fuel economy standards are life-cycle cost effective for such motor vehicles purchased during fiscal year 2011 (KAR 1-66-1 through 1-68-2). | Facilities Conservation Improvement Program |
| Mississippi | Mississippi Legislation mandates benchmarking for State Agencies, Community Colleges and Institutions of Higher Learning (IHL's); therefore, it is optional for other public facilities. By July 1, 2014, at least 75% of all vehicles titled under the Mississippi Bureau of Fleet Management must have a U.S. Environmental Protection Agency estimated fuel economy rating of at least 40 miles per gallon for highway driving. | Energy efficiency lease program |
| Missouri | Executive Order 09-18 in 2009 requires that all state agencies adopt policies designed to reduce energy consumption by 2% each year for the following 10 years. Missouri also requires life-cycle cost analysis for all new construction of state buildings and substantial renovations of existing state buildings when major energy systems are involved. Missouri also has statutes in place requiring the state to increase the average fuel economy of its vehicle fleet. | Energy Revolving Loan Funds for schools, local governments, and institutional buildings |
| North Dakota | None | None |
| Oklahoma | Passed in 2008, HB 3394 requires all new state-owned buildings or major renovations of state-owned buildings to meet Leadership in Energy and Environmental Design (LEED) standards. State energy plan calls for state to benchmark all public buildings and set a savings target of 0.5% to 2% per year across all state agencies. | Community Energy Education Management Program; Energy Loan Fund for Schools |
| South Carolina | All major new facility projects in the state must receive at least two globes using the Green Globes Rating System or receive the LEED Silver standard. Schools, correctional facilities, and a number of other types of projects are exempt from this requirement. | ConserFund Loan Program, Local Energy Planning Guide |
| South Dakota | Passed in 2008, SB 188 requires the use of high performance building standards for new state construction and renovation. The new standard must be at least as | Energy Efficiency Revolving Loan Fund |

[12] See the ACEEE State Policy Database for full descriptions and links: http://www.aceee.org/sector/state-policy

| State | Policies | Technical or Financial Assistance Programs |
|---|---|---|
| | stringent as the LEED Silver standard, the two-globe standard on the Green Globes rating system, or a comparable standard. South Dakota also measures energy use in buildings using Energy Cap. | |
| West Virginia | New public building construction must comply with ASHRAE 2007 and the IECC adopted by the State Fire Commission. State will benchmark all state-owned buildings according to state energy plan and will consider adoption of ENERGY STAR guidelines for all new state government buildings. A Portfolio Manager Program will continue benchmarking efforts in local governments. | Center for Building Energy Use (energy efficiency in public schools) |
| Wyoming | ESPC assistance and encouragement through Wyoming Conservation and Improvement Program | Wyoming Conservation and Improvement Program |

As the table above shows, most states have pursued LBE policies and programs to some degree. The challenge moving forward will be for states to take a comprehensive approach to energy efficiency in the public sector, implement the full range of policy and program options detailed above, and translate public sector success to the private sector.

## Move Forward on Cost-Effective Utility-Sector Energy Efficiency Programs

In most of the high-ranked states in our Scorecard, utilities help lead energy efficiency programs and investments. Utilities need to invest in adequate resources to meet consumer demand for electricity and natural gas, and energy efficiency is generally the lowest-cost resource available (Friedrich et al. 2009). In order for lower-ranking states in the *Scorecard* to advance energy efficiency anywhere close to its fullest possible scale, they must follow the path set by leading states and implement cost-effective programs in the utility sector. States should formally recognize, through regulation, statute, or utility planning process, that energy efficiency is a least-cost utility resource that provides an array of shareholder, customer, and system benefits. In addition, state regulators must align the utility business model with the objective of saving energy, which can be done through established regulatory fixes. Finally, program portfolios should seek a broad and diverse customer base, and be evaluated with a range of fair cost-effectiveness tests.

### *Transparent and Inclusive Process*

Altering the utility business model in such a fundamental way arouses great debate. Many of our respondents noted that in any push to adopt such regulations and portfolios, the process would have to be transparent, inclusive, and informed by impartial and accurate analysis in order to succeed. In many of the states that have recently adopted energy efficiency program portfolios, such as Arkansas and Illinois, open rulemakings and collaborative processes created forums for utility regulatory staff, utility representatives, energy efficiency advocates and experts, state government officials, and consumer advocates to build trust amongst each other and gain greater understanding of energy efficiency regulations. While such collaborative processes do not guarantee success, they are very useful for laying the groundwork for adoption and successful implementation of energy efficiency programs.

### *Treat Efficiency as a Resource*

State policymakers should define energy efficiency as a resource capable of yielding energy and demand savings that can displace electricity generation from coal, natural gas, nuclear power, and other supply-side resources. Defining efficiency as a resource and integrating it into utility decision making is especially critical because of the clear resource cost advantage of energy efficiency (Friedrich et al. 2009). Energy savings from customer energy efficiency programs are typically achieved at one-third the cost of new generation resources. Efficiency programs can also improve

system reliability and reduce the need to install, upgrade, or replace transmission and distribution equipment.

Among the states we focus on in this report, Kansas, South Carolina, Missouri, Oklahoma, and South Dakota have either defined energy efficiency as a resource or treat efficiency as a resource in utility planning processes. In many states, utilities conduct Integrated Resource Plans (IRP) to identify the mix of resources that will minimize future system costs while ensuring safe and reliable operation of the system. If states require or encourage energy efficiency to be considered as a true resource, IRPs can be a powerful device for promoting energy efficiency in the utility sector (SEE Action 2011a) and have been a driving factor in the recent embrace of energy efficiency by utilities such as Pacificorp (PacifiCorp 2011) and the Tennessee Valley Authority (TVA 2011).

### *Align Energy Efficiency with the Utility Business Model*

In a handful of the states, respondents asserted that regulatory change would be necessary for utilities to wholeheartedly embrace energy efficiency program implementation. The traditional utility business model is ill-suited to support and reward utilities for investing in energy efficiency. Stakeholders in a number of states we interviewed, particularly in states further along in the energy efficiency program implementation process like Missouri, asserted that concerns over the timely recovery of lost revenues was the primary barrier to fully tapping the energy efficiency resource.

Changes in regulation can create a new business model that changes the fundamental financial motivations for utilities (York and Kushler 2011). Three regulatory fixes are critical to addressing the barriers to utility-led energy efficiency: allowing cost recovery for programs; removing the “throughput incentive” (explained below); and providing an opportunity for utilities and their shareholders to earn from energy efficiency. While timely recovery of program costs is allowed in every state, the latter two fixes are essential, yet sometimes contentious policies that require a thoughtful and thorough approach.

As long as utility revenues are a direct function of energy sales, there will be an incentive for the utilities to increase “throughput” by selling more electricity or natural gas. Decoupling is a rate adjustment mechanism that allows the utility to recover its investment and operating costs independent of the volume of actual electricity sales. Generally, this is done through a symmetrical “true-up” that adjusts rates up or down to compensate for any difference between allowed and actual revenues. Another approach, the Lost Revenue Adjustment Mechanism (LRAM), allows utilities to recover revenues that are “lost” due to energy savings from approved customer energy efficiency programs. Decoupling is viewed among industry experts, including ACEEE, as the preferred approach to addressing the “throughput incentive” for a number of reasons, most importantly because decoupling is a more straightforward and thorough way to remove the throughput incentive (York and Kushler 2011).

Although decoupling can neutralize the disincentive to support energy efficiency programs, it doesn’t create a financial incentive to save energy through investing in energy efficiency that is comparable to the financial incentives that exist for utilities to invest in capital assets such as new power plants and facilities. Consequently, states that wish to establish energy efficiency as a comparable alternative to supply-side investments also need to establish a performance reward mechanism that allows utilities to earn a positive return on their energy efficiency investments. Such incentives can come in the form of shared benefits of successful programs, incentives for meeting savings targets set for programs, and allowing utilities to earn a rate of return based on efficiency spending or savings.

Numerous resources exist as guidance for states seeking to implement regulations addressing the throughput incentive, or the incentive utilities have to raise revenue by selling as much electricity as possible (RAP 2011). The same is true for states looking to provide incentives for utilities implementing energy efficiency programs (Hayes 2011b).

### *Use Fair Cost-Effectiveness Tests When Considering Energy Efficiency Programs*

In many of the states we focus on in this report, the cost-effectiveness of potential utility-sector energy efficiency programs is evaluated using restrictive and limited sets of testing methodologies. As a result, beneficial programs may be rejected. Energy efficiency cost-effectiveness tests measure whether a program's benefits exceed its costs, but there are key differences between the five types of tests, including the stakeholder perspective of the test, the elements included in the costs and the benefits, and the baseline against which the costs and benefits are measured (EPA and DOE 2008). The five tests include:

- Participant Cost Test (PCT)
- Utility/Program Administrator Cost Test (UCT/PACT)
- Ratepayer Impact Measure Test (RIM)
- Societal Cost Test (SCT)
- Total Resource Cost Test (TRC)

Each cost-effectiveness tests has strengths and weaknesses, which are outlined in detail in the California Standard Practices Manual (CPUC 2001) as well as in resources provided by the National Action Plan on Energy Efficiency. The most commonly used test, the TRC test, considers utility and consumer costs and utility benefits, but has been criticized for ignoring most or all customer benefits while accounting for all program costs (Neme and Kushler 2010; Hall et al. 2009; LeBaron 2011). In addition, the TRC test regularly rejects combined heat and power projects and programs that supporters argue produce far more benefits than the TRC test would indicate (Chittum and Kaufman 2011). The utility cost test (UCT) compares just utility costs and benefits, leaving out consumer costs but also consumer benefits under the supposition that consumers will not invest in an efficiency measure unless they decide that the benefits justify the cost.

Whatever tests a state decides to use, regulators should fairly weigh the costs of programs with the energy and non-energy benefits of energy efficiency programs. It is well-established that the RIM test is a highly flawed test, which explains why most states have abandoned its use (Biewald et al. 2003; Kushler et al. 2012). However, a number of states we focus on in this report still use the RIM test to discern the rate impacts of energy efficiency. While we recommend the RIM test be avoided altogether, if it is used, we recommend states not use it to screen out or reject programs. States should require a range of tests for energy efficiency programs that fairly compares the bill *and* rate impacts of energy efficiency with all other resources.[13]

### *Adopt Cost-Effective Energy Efficiency Program Portfolios*

Once the proper incentives and evaluation methods are in place, utilities must move forward on energy efficiency program implementation. Half of the states in the U.S. have in place mandatory energy savings targets for utilities, known as Energy Efficiency Resource Standards, that spur the implementation of efficiency programs. Of the states we interviewed, only Missouri and South Carolina has considered such a policy. EERS policies have commonly found bi-partisan support in the states. Arkansas, Colorado, Arizona, North Carolina, New Mexico, Ohio, Pennsylvania, and Nevada all have requirements for utilities to pursue energy efficiency. While meeting future goals will be challenging, almost every state with an EERS policy for over two years was on track to meeting goals cost-effectively in 2010 (Sciortino 2011b). Many utilities, including those in Nevada, Colorado, and Iowa, are reaching targets above 1% of annual sales.

Even hard savings targets can fail to drive effective energy efficiency program implementation. Without a highly professional system of comprehensive regulatory oversight, utilities may not develop

[13] The State and Local Energy Efficiency Action Network paper, *Analyzing and Managing Bill Impacts of Energy Efficiency Programs: Principles and Recommendations* (SEE Action 2011b), provides an excellent discussion of how states must take a broader approach to energy efficiency planning that takes into account both bill and rate impacts over the planning horizon: http://www1.eere.energy.gov/seeaction/pdfs/ratepayer_efficiency_billimpacts.pdf

effective programs capable of hitting energy efficiency targets. In Florida, the Public Service Commission approved utility program portfolios with slight budgets that could never meet the state's energy efficiency targets. While targets serve as a focal point that drives utilities in the right direction, the policy itself is no substitute for a well-functioning system of oversight and review.

Many of our interviewees strongly doubted an EERS would find support among policymakers and regulators and thus suggested a voluntary approach to program implementation may be more appropriate. While experience shows that a mandatory savings goal results in more effective and comprehensive program portfolios, there is certainly merit to pursuing such a voluntary approach. A number of utilities in the states we interviewed run effective energy efficiency programs without mandates, such as Progress Energy and Duke Energy in South Carolina, Oklahoma Gas and Electric, Public Service Company of Oklahoma, Midwest Energy in Kansas, Rocky Mountain Power in Wyoming, Appalachian Power in West Virginia, Otter Tail Power Company and Black Hills Power in South Dakota, and numerous co-operative utilities in South Carolina. While the savings levels tend to be lower overall, (according to EIA, Otter Tail Power achieved savings equivalent to about 0.57% of sales in South Dakota in 2010, whereas their Minnesota operation, where an EERS is in place, saved 1.59% of sales), these programs produce value for participants and introduce utilities and their regulators to the opportunities and challenges posed by energy efficiency program implementation.

Policymakers and regulators can support a flexible approach to energy efficiency program implementation by requiring utilities to file energy efficiency program portfolios, but leaving out any hard savings or spending target. This approach could be seen in Iowa throughout the last decade, until 2008 when the state required investor-owned utilities to file long-term savings targets. In Iowa, regulatory code required utilities to run cost-effective programs and as a result, utilities embraced energy efficiency as a core part of their business. Mississippi is currently deliberating a rule that would follow this less prescriptive path, requiring utilities to adopt comprehensive energy efficiency program portfolios (MS PSC 2011). It should be emphasized, however, that without a hard savings target, it is difficult for regulators to ensure that utilities will consistently pursue all cost-effective energy efficiency.

Without this regulatory certainty, utilities may not move ahead with robust portfolios of energy efficiency programs. In states such as Missouri, where legislation and regulatory orders proclaim energy efficiency a cost-effective resource deserving full deployment, the state still has not invested in all cost-effective energy efficiency. A number of states have the types of regulations in place such as lost revenue recovery and performance incentives that can make energy efficiency an attractive investment. Nonetheless, utilities stick to their traditional business of selling power and do very little to advance energy efficiency. While states in the bottom of the *Scorecard* clearly prefer to govern with "carrots" rather than "sticks," in order to compel utilities to maximize the benefits of energy efficiency, a mandatory approach can be more effective and provide more certainty.

**Table 8. Summary of Utility Policies in Low-Ranking States in Energy Efficiency**

| State | Treat Efficiency as a Resource? | Align EE with Utility Business Model | | | Benefit-Cost Testing |
|---|---|---|---|---|---|
| | | Cost Recovery | Decoupling/LRAM | Performance Incentives | |
| Alabama | No | Yes | LRAM (electric and gas) | Yes (electric and gas) | No mandatory evaluation methodology |
| Kansas | Efficiency considered a resource, but no IRP requirements | Yes | LRAM for electric, decoupling authorized for gas | Authorized (electric and gas) | Utilities should submit five tests, with emphasis on TRC and RIM tests |
| Mississippi | No | Pending | No | No | No mandatory evaluation methodology |
| Missouri | Yes, in statute and code. EE integrated into IRP process. | Yes | Straight-fixed variable pricing for gas, LRAM rules approved for electric | Authorized for gas and electric | TRC required, utilities may also use other tests |
| North Dakota | IRP required for Montana-Dakota Utilities Company. All utilities must consider full range of options and select most practicable least-cost option. | Yes | No | No | No mandatory evaluation methodology; utilities use variety of tests, giving most weight to RIM |
| Oklahoma | EE considered equivalent to supply side resources in IRP process required for regulated utilities | Yes | LRAM (electric) | Yes (electric) | Utilities should submit five tests, with emphasis on TRC test. |
| South Dakota | Yes, in code. No active IRP process. | Yes | LRAM (electric and gas) | Yes (electric and gas) | No specific test required — Primary test is TRC |
| South Carolina | Yes, in statute and code. IRPs required for regulated utilities, but energy efficiency included minimally. | Yes | LRAM (electric) | Yes (electric) | Utilities required to submit four tests, with emphasis on TRC and UCT tests |
| West Virginia | No | Yes | No | No | No mandatory evaluation methodology |
| Wyoming | Utilities filing IRPs in other states must file in Wyoming | Yes | LRAM for electric, decoupling for gas | No | No specific test required — TRC is primary test |

Note: Information gathered from ACEEE State Policy Database (www.aceee.org/sector/state-policy) and RAP State Policy Information (http://www.raponline.org/featured-work/rap-offers-state-by-state-analysis-of-energy-efficiency).

## Provide Tax Incentives for Energy Efficiency Technologies and Practices

While most of our respondents found it unlikely that major state-run financial incentive programs would find support due to an aversion to government spending, tax incentives allow states to support energy efficiency at low administrative costs. The most common energy efficiency tax credits are green building tax credits and efficient appliance credits. Tax incentives can come in many forms such as income tax reductions for individuals and businesses, sales tax credits, and property tax credits. Tax incentives, particularly sales tax incentives, are low in administrative costs to the state. States can also embed sunset clauses and funding caps into incentive provisions to manage the financial impact on the state (Brown et al. 2002).

**Table 9. Tax Incentives in Low-Ranking States in Energy Efficiency[14]**

| State | Policies |
|---|---|
| Alabama | Loan program for state-owned facilities |
| Kansas | Kansas Energy Efficiency Program for Schools (KEEPS); home energy disclosure policy |
| Mississippi | One loan program, one public-sector lease program for efficient equipment |
| Missouri | Tax deduction for home energy efficiency improvements; one loan program |
| North Dakota | One grant program for public facilities |
| Oklahoma | Three loan programs |
| South Carolina | Tax credit for purchase of new energy-efficient manufactured homes; one loan program |
| South Dakota | Home energy disclosure policy (new residential) |
| West Virginia | None |
| Wyoming | One loan and one grant program |

Source: Sciortino et al. (2011)

## Advance Energy Efficiency in Agricultural and Manufacturing Sectors

While utility programs typically target residential and commercial building sectors, states can also advance energy efficiency in the agricultural and manufacturing sectors. A number of respondents in our interviews noted that existing agricultural programs had experienced solid success, particularly in Missouri and Kansas, where states leveraged federal funding to run technical assistance and financial incentive programs promoting energy efficiency audits and upgrades. In addition, states can take advantage of existing resources at state agencies and universities to promote energy efficiency in the manufacturing sector. Previous ACEEE studies have detailed energy efficiency program recommendations in agriculture and manufacturing, and the following recommendations draw prominently from these reports (Molina et al. 2011; Neubauer et al. 2009). While the states we focus on for this report have varying levels of agricultural and manufacturing production in-state, these types of programs are broadly applicable and available at low cost.

### *Rural and Agricultural Initiatives*

Each of the states we focus on in our report has a prominent rural population, which, in many cases, drives agricultural and agribusiness sectors of the state economies where there is a great deal of potential for energy efficiency. The first step a state can take to advance efficiency in the agriculture sector should be to promote education and awareness through state departments of agriculture, farm

[14] Note: For details on each of these tax policies, see state financial incentive pages on the ACEEE State Energy Efficiency Policy Database: http://www.aceee.org/sector/state-policy

bureaus, and rural electric co-operatives. In addition, states can build upon existing funding sources from the U.S. Department of Agriculture (USDA) Rural Energy Assistance Program (REAP). While some states like Kansas have well-established REAP programs, most can improve awareness and participation in the program. The Nebraska Public Power District, for example, promotes the USDA grants alongside its own Energy Wise program that provides incentives for efficient pumps for irrigation. Elsewhere, the Wyoming state energy office partnered with co-operative utilities to procure USDA grants to run statewide energy efficiency programs to reach rural customers. The administrative structure of programs will vary by state, but the program offerings should generally assist agricultural producers and small businesses to audit and upgrade facilities through technical and financial assistance.

### *Manufacturing and Industrial Initiatives*

Based on our conversations, a manufacturing initiative would likely gain traction if it were focused on increasing the availability of industrial energy assessments, access to industry-specific expertise, and a workforce trained in energy efficiency and manufacturing. One tactic many states use is to rely on utility-run programs to target industrial energy efficiency projects. In 2010, industrial energy efficiency programs run by utilities and public benefit fund organizations totaled an estimated $737 million, or about 84% of the total spending on industrial energy efficiency programs (Chittum and Nowak 2012). Utility-run industrial programs such as New York's FlexTech program pair industrial energy experts under contract with the program administrator (the New York State Energy Research and Development Authority, or NYSERDA) with facility managers to perform individualized energy audits and feasibility studies.

Utility-sector programs aimed at industry can run into barriers in addition to those that hinder utility-run programs for residential and commercial customers. In some states, industrial customers may opt-out of paying an energy efficiency utility-bill rider as long as they implement self-directed energy efficiency programs. While some utilities such as Rocky Mountain Power run effective opt-out and self-direct programs, the majority of these programs are either poorly structured, subject to minimal oversight, or not subject to stringent measurement and verification protocols (Chittum 2011). Among the states we examined for this report, Missouri, Wyoming, and South Carolina have opt-out provisions.[15]

States may also take advantage of existing programs provided by state and federal resources, such as Manufacturing Extension Partnerships (MEPs), which receive funding from the Department of Commerce and can play a helpful role advancing energy efficiency initiatives in the manufacturing sector. Each state has an MEP, which mainly focuses on increasing efficiency of overall production through lean manufacturing principles, but increasingly has focused efforts on energy efficiency (Sciortino and Watson 2009). The other resource, Industrial Assessment Centers (IACs), housed within universities, can also strengthen a state's industrial sector. IACs train students to conduct energy audits at industrial sites while also helping manufacturers to identify cost-effective ways to reduce energy use. Currently the IAC program graduates about 120 engineers per year and identifies an average of over $200,000 in savings for each industrial firm assessed — identifying over $100 million in annual savings as a result of a single year of assessments, with roughly half of these savings implemented (Trombley 2011).

Only a handful of the states we focus on have IACs, which can be established at major engineering universities. State governments can develop partnerships with MEPs and IACs to increase awareness of their offerings and build on their programs with additional financial and technical support. For example, West Virginia initiated the E3-WV program, a technical assistance program that marries three separate energy efficiency efforts in the states to help small businesses and manufacturers improve their economic, energy, and environmental performance. Three organizations

[15] For more information on self-direct programs and recommendations for how best to structure such programs, see Chittum (2011).

headquartered at West Virginia University (WVU) — Industries of the Future-West Virginia, the WVU IAC, and the West Virginia MEP — will all work together to carry out the project.

## Advancing CHP[16]

Combined heat and power applications face a number of economic and regulatory barriers in the states we focus on, but there are some ways for states to advance these efficient, cost-saving systems. While states cannot do much to affect low electricity prices, there are proven ways to encourage CHP implementation through the adoption of financial incentives and the removal of regulatory barriers to CHP. While the approaches outlined below may work in some states, these are not one-size-fits-all solutions.

State financial incentives are an effective way to lower the upfront cost of CHP and improve the economic case for a CHP installation. There are several different kinds of incentives, detailed in Chittum and Kaufman (2011), including tax credits, feed-in-tariffs, loans and loan guarantees, net metering, and grants. However, financing has become less of an issue for institutions such as hospitals and universities where a number of projects are financed with low-coast bonds or internal capital. In Oklahoma, a bottom ten state, the University of Oklahoma is developing a new 15 MW CHP project and the university is committed to fully funding the $70 million project with internal funds.

Financial incentives need to be coupled with other efforts to remove market barriers, (particularly the inability of CHP systems to sell back electricity at retail prices) to be effective. Some states have created policies and programs that stipulate that CHP can count towards a portfolio standard or earn a healthy return for selling back excess power (net-metering). CHP developers wish to be treated more as small independent distributed generators, able to sell power to whomever at a market-based rate, rather than restricted to selling to the gird or nearby facilities. Currently the utility regulatory business model protects utilities by preventing CHP facilities from selling power at a retail rate. Adjusting electricity markets would allow CHP developers to compete with larger centralized generators. For example, in Texas where most of the electricity market has been deregulated, CHP developers can sell power to different end-users at market prices. The state now boasts the highest MW amount of CHP in the country (Cooney et al. 2008).

States can also assist the deployment of CHP (particularity smaller CHP projects) by developing interconnection standards that delineate how to interconnect at least some CHP systems of varying sizes. Interconnection is the process of connecting a CHP system to the local distribution or transmission grid. An interconnection standard provides CHP developers an official avenue to apply for interconnection with the local utility. It also gives an official platform for developers to address grievances against a utility to the state's regulatory commission in an instance where the utility fails to adhere to the state's regulations. Though interconnection standards do not eliminate all issues between CHP developers and utilities, it does provide a path for recourse to challenge the utilities and is an area of steady progress for CHP across the country.

## Adopt and Enforce Building Energy Codes

Many of the recommendations thus far focus on how to improve the efficiency of existing buildings through home and commercial building retrofits, but it is also critical to focus on the energy efficiency of newly constructed buildings. Building energy codes are an essential tool for state policymakers to ensure that new buildings lock in energy savings from the start, providing occupants with lower energy bills and more comfort throughout the building's lifetime. Most residential building energy codes are based on the International Energy Conservation Code (IECC), which is updated every three years, while commercial building energy codes are typically based on ASHRAE 90.1, jointly developed by the American Society of Heating, Refrigerating, and Air Conditioning (ASHRAE) and the Illuminating Engineering Society (IES).

[16] For more on CHP barriers and recommendations, see http://aceee.org/research-report/ie111

The provision of stimulus funding spurred several dozen states to begin legislative or administrative processes leading to the statewide adoption of the 2009 IECC and ANSI/ASHRAE/IESNA Standard 90.1-2007 (hereafter referred to as the "ARRA codes"[17]). In this year's *Scorecard*, 29 states either adopted or are on a clear path towards the adoption of the ARRA codes for both residential and commercial buildings, while another 6 have adopted the ARRA codes for either residential or commercial buildings. Statewide building energy codes have recently been adopted in Alabama and Oklahoma, for instance. However, a number of our interviewees noted that in "home-rule" states, or those without a mandatory statewide code, there was little appetite among policymakers to adopt one.

Often the building industry (e.g., architects, engineers, builders, and other contractors) prefer a statewide code to a patchwork of local codes since most building industry practitioners operate in multiple local jurisdictions. Also, opponents to statewide building energy codes will have to reconcile their stance with the fact that as a condition for accepting funds, ARRA called for states to achieve 90% compliance with the ARRA minimum standard building energy code (2009 IECC for residential; ASHRAE 90.1-2007 for commercial) by 2017. If possible, statewide adoption would be the most effective way to reach this outcome, and numerous resources are available to assist states in the code adoption process (DOE 2011; BCAP 2012).[18]

As an alternative to statewide code adoption, however, a number of states are instead focusing efforts on adopting and enforcing codes at the local level in population centers. In our interviews with state energy offices, many officials noted that building code education, training, and enforcement at the local level represented a high priority. State energy offices can play a key coordinating role by attaining financial and technical support for local energy code initiatives. Often, energy offices will set up collaborative meetings where experts, building code officials, utility representatives, and the building industry can discuss ways to ensure that new construction is built according to code. These building code collaboratives are a proven and effective way to build support for building energy code adoption and enforcement.[19]

In addition, states can adopt standards at or above established codes for state and public buildings. As discussed above, a number of states require new public facilities to be built to energy-efficient standards, which can set the foundation for a statewide standard as builders and other stakeholders become comfortable applying it to the public sector.

Funding building energy code implementation efforts is a prerequisite for successful code implementation and can be pursued affordably in a number of ways. Raising permit fees and instituting re-inspection fees are two straightforward ways to raise funds for compliance efforts. Charging a nominal fee for energy code training can also help fund efforts to train code officials. Funding for compliance efforts can also come from utilities or state appropriations (BCAP 2012).

A number of utility representatives noted in interviews that their companies supported the adoption of building energy codes since it reduces bills for customers and lowers the need for additional efficiency measures in the future. If states hope to engage utilities in building energy code training or enforcement, which many are now hoping to do, it is essential to allow utilities to claim some credit for the savings they generate indirectly and treat it somewhat similarly to an energy efficiency program (Cooper and Wood 2011).

[17] In the building energy code community, the latest official versions of these codes are referred to as the ARRA codes because of the technical requirement in ARRA to adopt these codes as a prerequisite to dispersal of stimulus funds. Maryland is included in the 29 states, but is the only state that is on track to adopt the 2012 version of the IECC codes.

[18] The Building Codes Assistance Project (BCAP) has a series of analyses and fact sheets for states (including AL, MO, SC, SD, and WV) seeking to comply with the ARRA target: http://bcap-ocean.org/compliance-planning-assistance-program

[19] NASEO has a webinar developed by BCAP and others on building code collaboratives, available on its website: http://www.naseo.org/codes/events/2012-04-17/

**Table 10. Summary of State Building Code Stringency**

| State | Summary of State Building Code Stringency |
|---|---|
| Alabama | Alabama adopted mandatory statewide building energy codes in 2012. In March 2010 legislation was signed giving the Alabama Energy and Residential Codes (AERC) Board the authority to adopt mandatory residential and commercial energy codes for the entire state and residential building codes for jurisdictions that had not implemented a residential building code prior to March 2010. The AERC Board has adopted the 2009 International Energy Conservation Code for commercial buildings and the 2009 International Residential Code including the energy chapter for residential buildings, with a few modifications. For the first time in Alabama's history the state has mandatory energy codes for all new construction and substantial renovation. |
| Kansas | Kansas has no statewide residential building code, though realtors and homebuilders are required to fill out an energy-efficiency disclosure form and provide it to potential buyers. And although the commercial building code specifies the 2006 IECC as mandatory statewide, there is no enforcement mechanism in the statute (KSA 66-1227). The same statute also states that "the state corporation commission has no authority to adopt or enforce energy efficiency standards for residential, commercial, or industrial structures." |
| Mississippi | Mississippi's residential and commercial energy codes are voluntary, except for state-owned buildings, public buildings, and high-rise buildings. Mississippi's residential code is based on ASHRAE 90 — 1975 and the prior 92 MEC. The commercial code is also based on ASHRAE 90-1975. A bill passed in the Senate and awaiting a vote in the House would task the Department of Economic and Community Development to develop commercial energy standards that meet or exceed the stringency of ASHRAE Standard 90.1-2007. Should it pass, it would be effective July 1, 2012. |
| Missouri | Missouri has no mandatory state-wide codes but has significant adoption of codes in major jurisdictions. State-owned residential buildings must comply with latest edition of the MEC or the ASHRAE 90.2-1993 (single-family and multifamily buildings). As of July 1, 2009, state-owned commercial buildings must comply with the 2006 IECC. |
| North Dakota | North Dakota has no statewide mandatory energy codes. As of August 1, 2009, the 1993 MEC was removed as the voluntary state residential energy code and ASHRAE 90.1-1989 was removed as the voluntary state commercial energy code. The voluntary energy code has been placed under the purview of the North Dakota State Building Code and now the state Building Code Advisory Committee now has the authority to make recommendations that could include energy standards future editions of the State Building Code. Chapters 11 and 13 of the 2009 IRC and IBC are contingent upon adoption by local jurisdictions. |
| Oklahoma | Oklahoma has in place mandatory statewide building energy codes for residential and commercial buildings. Until recently, the state had been a home-rule state, but in June 2009, the Oklahoma Legislature passed a bill (SB 1182) creating the Oklahoma Uniform Building Code Commission that reviewed and recommended building codes (including energy codes) for residential and commercial construction for adoption (BCAP 2012). Beginning in October 2010, the Commission held several meetings discussing code change proposals. On March 31, the Commission formally recommended a residential code based on the 2009 IRC with Oklahoma amendments. This recommendation was approved by Governor Fallin on May 10, 2011. The Legislature chose not to disapprove the rule, leading to the official adoption of the code on May 27. The statute became effective July 15, 2011. |
| South Carolina | South Carolina's residential and commercial energy codes are mandatory statewide. All new residential and commercial buildings must meet the 2009 IECC. |
| South Dakota | South Dakota has no mandatory statewide energy codes for residential or commercial construction. Codes are adopted by jurisdiction voluntarily; the 2006 IECC is voluntary for new residential buildings. All state facilities are contractually required to be built to the ASHRAE 90.1-1999 standard. |
| West Virginia | West Virginia's residential and commercial building codes are mandatory statewide; however, adoption by jurisdictions is voluntary. Residential buildings are required to comply with the 2003 IECC and the 2003 IRC with amendments. Commercial buildings are required to comply with the 2003 IECC with amendments. On April 11, 2009, the West Virginia Legislature passed bills directing the State Fire Commission to promulgate rules adding the 2009 IECC and ASHRAE 90.1-2007. However, energy building and sprinkler standards in the 2009 IECC code were removed. |
| Wyoming | Wyoming's residential and commercial building codes are voluntary. Known as the ICBO Uniform Building Code, they are based on the 1989 MEC and may be adopted and enforced by local jurisdictions. |

Source: Sciortino et al. (2011)

## Conclusion

Each year we publish the *State Energy Efficiency Scorecard*, the gap widens between states pushing ahead with aggressive, yet sensible policies and programs in support of energy efficiency and those states with scant investment or commitment to energy efficiency. Often, states at the bottom of the *Scorecard* do have solid efforts happening, but none have the comprehensive suite of policies and programs necessary to capture the full potential of energy efficiency. Often, negative perceptions of energy efficiency — mainly surrounding its potential costs — impede any progress and while it is certainly true that each state has unique sets of barriers, none of them are insurmountable. Moving forward, the states we focused on in this report will likely advance incrementally, eschewing mandatory approaches for voluntary ones, and remaining conservative in their investments in energy efficiency. If these states wish to tap into the economic benefits of energy efficiency and climb in the rankings of the *Scorecard*, however, they will need to take bolder, all-encompassing approaches to energy efficiency, recognizing its tremendous value as a cost-effective energy resource.

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# APPENDIX A: STATE-BY-STATE SUMMARIES

Below, we give focus in on each of the states we analyze, highlighting past successes, current initiatives, and possible ways to push efficiency forward. We omit discussion on CHP as Chittum and Kaufman (2011) provides state by state summaries on CHP barriers and policy environments.

## Alabama

**Scorecard Rank and Score:** 43rd; 9.5/50
**EE Successes:** Passage of mandatory statewide building energy codes; AlabamaSAVES financing program.
**EE Barriers:** Utility-sector cost concerns; lack of transparency in utility resource planning; aversion to mandates; lack of education and awareness on efficiency.
**Ways Forward:** Implementation of utility program portfolios similar to Arkansas or Carolinas; continued implementation and improvement of public-sector efficiency.

Alabama had the peculiar distinction of being both one of the most improved states and one of the bottom ten states in the *2011 Scorecard*. As this indicates, the state has made some significant strides advancing sound energy efficiency policies and programs; however, there remains plenty of room for improvement. Driving the state's improvement, Alabama is on track to adopt mandatory statewide building energy codes in 2012. In March 2010 legislation was signed giving the Alabama Energy and Residential Codes (AERC) Board the authority to adopt mandatory residential and commercial energy codes for the entire state and residential building codes for jurisdictions that had not implemented a residential building code prior to March 2010. The AERC Board has adopted the 2009 International Energy Conservation Code for commercial buildings and the 2009 International Residential Code including the energy chapter for residential buildings, with a few modifications. For the first time in Alabama's history the state has mandatory energy codes for all new construction and substantial renovation. While numerous stakeholders can claim some credit for the state's achievement in building codes, the Energy Division of the Alabama Department of Economic and Community Affairs (ADECA) played a key role coordinating stakeholders and attaining the technical expertise of outside experts such as the Southface Institute.

In the utility sector, Alabama faces a number of obstacles to the implementation of energy efficiency program portfolios. Alabama's regulators have not pushed the state's sole investor owned utility (IOU), Alabama Power, to pursue energy efficiency and as a result, the utility has yet to implement a comprehensive set of programs. A number of interviewees noted that the Alabama Power's IRP process does not provide them with a meaningful opportunity to question the level of Alabama Power's effort with respect to energy efficiency, as it is "submitted" rather than "filed" in a docketed proceeding. The utility's IRP contains almost no meaningful data, making it unclear how efficiency was modeled and what type of role it could play as a utility resource (APC 2010). In contrast, TVA and its distribution utilities in northern Alabama are moving forward with substantial increases in their energy efficiency programs. The other public utilities in the state (primarily associated with the PowerSouth system), as well as Alabama Power, approach energy efficiency very skeptically, claiming it increases rates without providing enough benefits to justify implementation.

The Alabama energy office has made solid strides to advance energy efficiency, most recently in the form of a financing program: AlabamaSAVES. Capitalized with $25 million of State Energy Program (SEP) funds and leveraged with private capital, the AlabamaSAVES program provides an estimated pool of $60 million for low interest rate loans to install renewable energy systems and implement energy efficiency improvements for existing private commercial, industrial, and institutional entities in Alabama. In addition, Alabama's Local Government Energy Loan Program offers zero-interest loans to local governments, K-12 Public School Systems and public colleges and universities in Alabama for renewable energy systems and energy efficiency improvements that will eventually have a payback through utility savings.

Alabama has solid policy underpinning its efforts to implement energy efficiency in public sector buildings. Executive Order 25, signed in November 2011, requires state agencies to reduce energy consumption in all conditioned facilities by 30% by the end of FY 2015 from 2005 levels. An Energy Officer is to be assigned by each agency to oversee the implementation of energy efficiency programs and submit annual reports on progress. The state also has a Performance Contracting Program that provides information for facility managers on how to procure and finance large energy improvement projects for the state's public facilities. All state departments and agencies must use Energy Star Portfolio Manager as a method of measuring and reporting energy efficiency for facilities.

In addition, Alabama Act 2009-650 adopts a procedure for implementing and administering a green fleets program of procuring state motor vehicles based on criteria that include fuel economy and life cycle costing; requires fleet managers of state motor vehicles to classify their vehicle inventory for compliance with this act; establishes goals for fuel efficiency for state motor vehicles; establishes procurement policies; creates the Green Fleets Review Committee to ensure compliance; provides for advisory subcommittees; and provides that fleet managers submit annual plans for procuring fuel-efficient vehicles.

## Kansas

**Scorecard Rank and Score:** 48th; 5.5/50
**EE Successes:** Public sector energy efficiency program; Climate and Energy Project; Energy disclosure policy.
**EE Barriers:** Utility-sector cost concerns; aversion to mandates; lack of education or leadership on energy efficiency.
**Ways Forward:** Implementing utility- sector energy efficiency programs; Building on success of state government, USDA, and Climate and Energy Project programs; re-establishing state energy planning process; secure funding for Efficiency Kansas; adopt building energy codes at the local level.

Hindered by a lack of commitment or leadership among policymakers and regulators to advance energy efficiency, Kansas has resided in the bottom of the *Scorecard* for a number of years. Utilities in Kansas, most notably Midwest Energy, run limited sets of energy efficiency programs. Midwest Energy runs the How$mart Energy Efficiency Finance Program, which offers commercial and residential customers on-bill financing for energy efficiency improvements. Customers must engage in an energy audit before projects move forward, which are free as long as a customer elects to participate in the program. Aside from Midwest Energy, however, only the Kansas City Public Utility Board and Westar Energy run meaningful programs. Overall, utilities in Kansas invest very little in energy efficiency as a percent of revenues compared to states elsewhere in the Midwest.

The situation in Kansas is unfortunate because the Kansas Corporation Commission has emphasized the importance of energy efficiency as a resource and has indicated its openness to cost recovery, decoupling, and performance incentives to adjust the utility business model so that energy efficiency makes sense for the bottom line. Without a mandate to run energy efficiency programs, however, utilities in Kansas are unlikely to ramp up programs.

Kansas does have some positive efforts happening that the state can build upon. The Kansas State Energy Office spearheads the Facilities Conservation Improvement Program, which promotes energy efficiency projects and the use of Energy Savings Performance Contracting in state- and municipally-owned facilities through technical assistance and guidance materials. The state energy office also initiated Efficiency Kansas, a major revolving loan fund program, to finance energy efficiency improvements. Capitalized with ARRA funds, Efficiency Kansas is seen as both a major success and failure in the state. The program was set to become a foundational program for the state, but because it could not loan its funds out fast enough to comply with ARRA regulations, its funding was stripped and the future of the program is now in flux.

Kansas has found success advancing energy efficiency in a number of other ways. Agriculture is a cornerstone of the Kansas economy and the state's branch of the USDA Rural Energy for America Program has encountered solid success promoting energy efficiency in the sector. Kansas also has a voluntary energy disclosure policy that encourages builders or sellers of new residential single-family or multi-family buildings of four units of less to disclose information regarding the energy efficiency of the structure to buyers (or prospective buyers) prior to the signing of the contract to purchase and prior to the closing of the sale. Finally, Kansas is also home to the Climate and Energy Project (CEP), which runs the Take Charge Challenge, an initiative that puts communities in competition with each other to save the most energy. A non-profit organization, the CEP has received national recognition for its unique approach to leveraging community leaders to spread the message of energy efficiency (Fuller et al. 2010).

Kansas has no statewide residential building code and although KSA 66-1228 specifies the 2006 IECC as "the applicable state standard" for commercial buildings, there is no enforcement mechanism. The state energy office works with local jurisdictions to encourage cities and counties to voluntarily adopt building energy codes for residential and commercial structures that are at least as stringent as the 2009 IECC standard. An advisory group, the Energy Efficiency Building Codes Working Group, was established to assist the State in meeting this goal: By 2017, 90% of all new and renovated residential and commercial structures meet the 2009 IECC standard. The Working Group endorsed the voluntary adoption approach and the development of effective equivalency options for builders and owners.

In the fall of 2010, the Kansas Energy Office surveyed cities and counties with the most building activity, including all Cities of the First Class, and findings are summarized in the Status of Residential and Commercial Building Codes in 55 Jurisdictions. Results were mixed and did not reveal a specific percentage of compliance: at that time, two cities, Lawrence and Manhattan, had adopted the target code, 2009 IECC, for commercial and residential buildings. This summary will be updated annually.

Many of our interviewees noted that moving forward, Kansas would benefit greatly from a plan or policy that laid out the state's commitment to energy efficiency. Many lamented the state's ad hoc approach to energy policy, and the failure of policymakers and leaders in the state to embrace energy efficiency as a real, cost-effective resource. Like other states in the region, Kansas is in the midst of an energy production boom, but lost in the rush to produce is the fact that energy efficiency offers customers an opportunity to manage increasing energy costs. The state has some foundation to build upon. The state could reconstitute the Kansas Energy Council, which recommended worthy energy efficiency policies between 2006 and 2009.

The state could also explore re-capitalizing Efficiency Kansas to provide customers with loans for energy efficiency projects. The KCC might build on its previous orders in support of energy efficiency with requirements for program implementation in order to help customers lower their consumption in the face of rising energy costs. The state could ramp up its support for the REAP, FCIP or the Climate and Energy Project. Whatever path the state chooses for its energy future, energy efficiency must play a greater role.

## Mississippi

**Scorecard Rank and Score:** 49th; 4/50
**EE Successes:** Drafting of a rule requiring utility sector energy efficiency programs (Rule 29); public building and fleet energy management requirements and programs.
**EE Barriers:** Utility-sector cost concerns; aversion to mandates; lack of education and awareness on efficiency.
**Ways Forward:** Finalizing utility-sector energy efficiency rules (Rule 29); commercial building code adoption; public-sector building energy efficiency requirements and program implementation.

Mississippi ranked 49th in the *2011 Scorecard*, scoring 4 points out of a possible 50. Much of the progress Mississippi has made on energy efficiency has been around the edges. The state seems to be headed in the right direction, however, as Governor Bryant, the state legislature, and the state Public Service Commission embrace energy efficiency in a variety of ways. Continuing the work of the Mississippi Energy Policy Institute, initiated by Governor Barbour, Governor Bryant has used the body to focus on energy efficiency as part of the state's broader energy policy. The state looks to implement a portfolio of utility energy efficiency programs, a success owing much credit to a collaborative of utilities and stakeholders that informed the PSC rulemaking process. Governor Bryant also plans to release a state energy plan, which will likely include energy efficiency as a large component.

Traditionally, Mississippi utilities, comprised of three IOUs, the Tennessee Valley Authority (TVA), and a number of co-operative utilities, have offered very few energy efficiency programs. Mississippians pay more for energy as a percent of income than most states, so it is impossible to discuss energy efficiency without taking into consideration the high levels of poverty in the state. As a result of this economic hardship, there is less money to invest in energy efficiency improvements, which often necessitate upfront costs to reap long-term benefits. The most common concern over energy efficiency programs was the potential upward pressure the programs would put on rates, and how this might disadvantage low-income customers as well as those who do not participate in programs.

Despite skepticism of energy efficiency among many in the state, regulators at the state utility commission drafted an energy efficiency rule (Rule 29) that lays out guidance for utilities on how to design a mandatory "Quick Start" energy efficiency program portfolio. Borne out of a collaborative process, Rule 29 remains pending as of the publication of this report. The rules apply to regulated electric and natural gas service providers, defining elements of both "Quick Start" and "Comprehensive" portfolios. The rule also lays out criteria for program cost-benefit tests, cost recovery, and evaluation, monitoring, and verification (EM&V). Utilities oppose the rule as drafted for a variety of reasons, mostly dealing with the potential economic impacts of the programs on customers and utilities, so the final outcome of the rulemaking process remains unclear.

TVA has also taken great strides to advance energy efficiency in its service territory. In its 2007 Strategic Plan, TVA stated its commitment to be a leader in energy efficiency. Since the Plan's release, TVA has drafted an energy efficiency and demand response plan and an environmental policy. TVA's goal, approved by the Board in May 2008, is to reduce peak demand 4% by 2012. As part of the ramp-up process, TVA released a suite of pilot energy efficiency programs, including in-home energy auditing programs and prescriptive incentive programs for HVAC technologies.

A "home-rule" state, Mississippi does not have a mandatory statewide building energy code, but recent activity suggests the state may soon have a commercial code. The Mississippi Energy Policy Institute, commissioned by former Governor Haley Barbour, recommended the state adopt a statewide building energy code similar to other states in the region in its "Roadmap for Mississippi's Policy Future." Moving towards this goal, the Mississippi Senate passed a bill that that would task the Department of Economic and Community Development to develop commercial energy standards that meet or exceed the stringency of ASHRAE Standard 90.1-2007. Should it pass, it would be effective July 1, 2012. DECA would not be responsible for enforcement; local jurisdictions are tasked with adopting rules and regulations to administer and enforce the code and charge inspection fees. As of the time of publication, this bill has been approved by the House Energy Committee and the House should vote on it soon.

Many experts in and outside the state assert that residential building code adoption at the local level would be the preferred mode of action. Some interviewees noted that the Mississippi state energy office could play a leading role in the push for local adoption of codes, and some believe utilities may have a role to play as well. The state energy office has begun to step into this leadership role with an on-line training center and educational materials on energy codes posted on its website. Presently,

however, the homebuilding community is mostly opposed to any mandatory building energy code and most sense that it is unlikely a statewide code could come into place anytime soon.

Mississippi has some basic programs and policies in place to advance energy efficiency in its public facilities. Governor Bryant is pushing for energy efficiency in Mississippi through HB 1330. The bill would reconstitute the State Energy Office with a new name and new authority, giving it enforcement authority over a lead by example initiative. The initiative would complement existing Mississippi legislation, which mandates benchmarking and monitoring for state-funded new construction which is larger than 5,000 square feet and state-funded renovation projects which involve more than 50% of the replacement value of the facility. The state energy office also has some limited programs in place encouraging energy-efficient product procurement and energy management. Aside from requirements to track energy use in buildings, the Mississippi Department of Finance and Administration's Bureau of Fleet Management (Bureau) coordinates and promotes fuel efficiency and economy when state agencies purchase, lease, rent, acquire, use, maintain, and dispose of vehicles. By July 1, 2014, at least 75% of all vehicles titled under the Bureau must have a U.S. Environmental Protection Agency estimated fuel economy rating of at least 40 miles per gallon for highway driving.

## Missouri

**Scorecard Rank and Score:** 44th; 8.5/50
**EE Successes:** Comprehensive energy efficiency policy and accompanying rules; local building energy code adoption; state "lead by example" policies and programs.
**EE Barriers:** Disagreement over treatment of lost revenue due to EE programs; utility-sector cost concerns; aversion to mandates.
**Ways Forward:** Resolution of lost revenue issue and implementation of comprehensive program portfolios; voluntary building energy disclosure or labeling policy.

Missouri ranked 44th in the *2011 State Energy Efficiency Scorecard,* scoring 8.5 points out of 50. In 2011, ACEEE released a major report detailing the potential for energy efficiency in Missouri and policy and program recommendations for how to fully capture this potential (Molina et al. 2011).

Missouri seemed poised for a major transformation in the implementation of utility-sector energy efficiency programs in 2009 when the state adopted SB 376, the Missouri Energy Efficiency Investment Act (MEEIA), which, among other provisions, requires Missouri's investor-owned electric utilities to capture all cost-effective energy efficiency opportunities. Since the passage of MEEIA, progress towards implementation has hit major barriers as regulators, utilities, and stakeholders try and come to consensus on how to move forward with comprehensive utility programs. Although the PSC did promulgate rules to implement MEEIA, the major IOUs, Ameren and Kansas City Power and Light, have yet to implement comprehensive program portfolios akin to leading utilities in the Midwest.

The central issue according to some in the state is that as the MEEIA rules are written, utilities may not recover lost revenues quickly enough. Others simply argue that the state's IOUs are reluctant to support energy efficiency no matter what the regulations may be. Whatever the case may be, a great deal of uncertainty remains as to whether IOUs will embrace energy efficiency moving forward, or if the PSC will use more "stick" than "carrot" and implement savings targets.

Missouri is a home-rule state for building codes, meaning there is no mandatory state energy code. The state's four major population centers, however, have adopted building energy codes. In partnership with the Building Codes Assistance Project, the Missouri Department of Natural Resources leads building code workshops in local jurisdictions to coordinate the building industry and code enforcement communities. A number of interviewees praised this effort, noting that the local approach works well in Missouri, where statewide mandates play poorly politically. To drive the market for energy-efficient housing even further, some noted, a voluntary policy to disclose energy use in homes or a building labeling policy would help educate consumers and empower them with the right information on building energy use.

Aside from advancing building codes at the local level, the Missouri state government has also pursued energy efficiency in its own facilities and fleets. Governor Nixon signed Executive Order 09-18 in 2009, which mandated that all state agencies adopt policies designed to reduce energy consumption by 2% each year for the following 10 years. In April 2011, the Governor announced that Missouri state agencies had achieved a 5.5% reduction in energy use over the policy period. Missouri also has a policy in place seeking to improve the fuel efficiency of its state-owned vehicle fleet.

In order to move efficiency forward, our interviewees from Missouri had a broad set of observations and recommendations. Noting the contentious debate surrounding the implementation of MEEIA, some respondents suggested establishing a collaborative dialogue between stakeholders to promote a more civil, well-informed debate than what exists today. In many regards, the Missouri Energy Initiative (MEI) was created for this purpose. Chaired by stakeholders representing a range of perspectives, MEI could play a convening role ironing out the details of MEEIA, most critically ways to create the regulatory environment that supports utility-sector energy efficiency.

The following is an excerpt from ACEEE's recommendations section of Molina et al. (2011), which describes how Missouri might improve cost and lost revenue recovery mechanisms:

> *Cost Recovery*
>
> Missouri presently provides that utilities may recover the cost of prudent energy-efficiency investments through the DSIM. However, cost-recovery decisions are made after-the-fact and utilities must front funds in anticipation of future cost-recovery. Missouri is one of the only states that amortizes program expenses, which creates a time lag for recovery and also creates a "regulatory asset" (essentially a regulatory accounting asset, not a physical/capital asset such as a power plant). Recent rulings by the Missouri PSC have reduced the amortization period (from ten years to six years for Ameren as an example), but this remains somewhat of a financial barrier and risk for utilities. Most states now allow utilities to recover costs as expenses are incurred. For example, Arkansas allows utilities to recover program costs in rates on a monthly basis through an energy efficiency cost recovery rider (EECR) for cost recovery. Utilities are also permitted to seek a true-up of the costs when they file their annual reports on the performance of their efficiency programs. A similar system should be considered in Missouri.
>
> *Lost Revenue Recovery*
>
> Lost revenue recovery is an important issue to the state's utilities.[20] Recognizing this, the Missouri PSC allows utilities to recover the fixed cost portion of sales "lost" to energy efficiency programs. In the MEEIA rules, lost revenues are defined as the net reduction in revenues that occurs when a utility's approved efficiency programs cause a drop in net system retail kWh delivered to its customers below the level used to set the electricity rates.[21] Utilities are not happy with this last provision because growing sales have typically provided utilities with extra revenues absent energy-efficiency programs and this last provision can cut into this revenue stream. A variety of approaches can be used to address this problem. First, the Commission could move to a forward-looking test year, so that projected sales, costs and energy-efficiency impacts could all be considered when setting rates. Second, the Commission could institute revenue decoupling, in which revenues are adjusted up or down depending on actual sales. Decoupling removes the link between sales and profits, and allows utilities to recover fixed costs if sales go down and prevents

[20] As Ameren Missouri's Bill Davis notes, in a subrebuttal testimony in MO PSC Case No. ER-2011-0028, that even with direct program cost recovery, "The reduction to sales, and thus revenues, between rate cases is still a severe and unique economic disadvantage to energy efficiency."

[21] As defined in MEEIA rules, *Demand-Side Programs Investment Mechanism,* 4 CSR 240-20.093(1)(Y)

over collection of fixed costs if sales go up.[22] As part of such a system, the Commission could consider how much profit utilities typically make through growing sales and include such profits in allowed rates of return in lieu of earning them from the arbitrage between historic and actual sales. Third, compensating incentives could be provided, as discussed in the section below. Fourth, adjustments could be made to the current lost revenue provision, although changes proposed by Ameren were recently rejected by the Commission in a July 2011 decision in the Ameren rate case.[23] Additional information about lost revenues is provided in a forthcoming ACEEE report (Hayes 2011).

## North Dakota

**Scorecard Rank and Score:** 51st; 2.5/50
**EE Successes:** Implementation of utility DSM programs; local building energy code adoption.
**EE Barriers:** Utility-sector cost concerns; aversion to mandates; lack of education or leadership on energy efficiency.
**Ways Forward:** Re-tooling Natural Resources Trust Fund to fund energy efficiency projects; continued implementation of utility DSM programs and incorporation of EE in utility resource planning processes

North Dakota placed last in the *State Energy Efficiency Scorecard* in 2010 and 2011. North Dakotans familiar with the state's experience with energy efficiency programs and policies seemed unconvinced that the state would move forward on any major energy efficiency policy or programs in the near future. State legislators and regulators govern under the principles of limited regulation or mandates, which deeply affects the way policymakers view energy efficiency regulation and policy. Furthermore, the state is currently experiencing an extraordinary increase in energy production in the Bakken oil formation in the state. Any discussion of energy policy usually focuses on production. The EmPower North Dakota Energy Policy, the state's guiding energy plan, is mostly focused on energy production, allotting some space to a goal to improve energy efficiency education, best practices, and programs (North Dakota Department of Commerce 2010).

While the PSC does not require energy efficiency program implementation, regulated utilities are required to meet their power needs through least cost planning, which includes the consideration of Demand Side Management (DSM) programs. North Dakota's utilities do run a limited set of programs in order to meet resource needs. Otter Tail Power offers a loan program for customers to finance energy efficiency improvements as well as rebates. Xcel Energy as well as a number of co-operative utilities also offers rebates.

North Dakota does not have a mandatory statewide building energy code. Instead, some local jurisdictions such as Fargo have adopted codes. Few considered the possibility of statewide code adoption very likely in the near future.

The North Dakota state government does advance energy efficiency in a limited capacity. The state energy office has assisted in an energy efficiency project at the capitol complex in Bismark. The state does not have any type of energy efficiency goal for state buildings or fleets, nor does the state energy office work with local governments to assist in energy efficiency projects for municipally-owned facilities. The state does offer a financial incentive program for state facilities, but none for customers. While the USDA Rural Energy for America Program (REAP) operates in the state, the state government does not offer any type of programs or incentives to assist its agricultural sector to become more energy-efficient.

Moving forward, few expect the state legislature or PSC to advance any comprehensive or aggressive energy efficiency policy. Some interviewees did note, however, that there might be an

[22] This approach is discussed in detail in a recent report by the Regulatory Assistance Project, *Revenue Regulation and Decoupling: A Guide to Theory and Application:* http://www.raponline.org/Publications.asp.
[23] Missouri Public Service Commission. 2011. July 13.

appetite for a policy that requires state facilities to track and manage energy use. In addition, an existing fund, the Natural Resources Trust Fund, may offer an opportunity for greater investment in energy efficiency for state and local facilities. The Fund, established to support both water and energy conservation initiatives, has been solely focused on water since its inception. Some experts in the state believe the Fund could serve to bolster energy efficiency in the state, perhaps to capitalize a revolving loan fund for public sector efficiency projects.

## Oklahoma

**Scorecard Rank and Score:** 47th; 6.5/50
**EE Successes:** Statewide building energy code adoption; state energy plan with strong efficiency component; utility-sector energy efficiency programs
**EE Barriers:** Utility-sector cost concerns; aversion to mandates; lack of education and awareness of efficiency.
**Ways Forward:** Energy efficiency in public facilities; building code enforcement; continued implementation and improvement of utility DSM programs.

Oklahoma utilities offer a limited set of programs. One of the two main IOUs in the state, Oklahoma Gas and Electric, has a goal to build no new generation until at least 2020. So far, OG&E has mostly eschewed energy efficiency programs for demand response, becoming one of, if not the national leader in the deployment of “smart grid” technologies such as smart meters. Energy efficiency still does play a role, albeit limited, as a resource for the state’s utilities. In 2008, the Oklahoma Corporation Commission initiated a "Demand Programs Collaboration" to examine issues associated with the funding and provision of customer energy efficiency programs by the state's energy utilities. The Commission approved a portfolio of demand-side management programs proposed by the state’s other main IOU, AEP Public Service Oklahoma (PSO). In 2011, Oklahoma ranked 28th in the country in energy efficiency program budgets, which accounted for 0.64% of utility revenues. The state also budgeted $11 million for natural gas efficiency programs, and the Energy Information Administration reports that utilities in Oklahoma achieved energy savings of about 0.23% of sales in 2010, making the state a clear leader in the Southern region for utility-sector DSM programs.

The state’s IOUs may recover lost revenues and earn an incentive for implementing successful energy efficiency programs. Even so, Oklahoma’s regulators, utilities, and key stakeholders like the Attorney General’s office remain unfamiliar with the concept of energy efficiency. Without an understanding of the best practices of energy efficiency, Oklahoma fails to treat it as a real utility system resource. The state’s IRP process requires no Commission approval or monitoring. Utilities may include energy efficiency in their plans, but it is not required, nor do utilities have to adhere to the plans. Without a sound understanding of the role energy efficiency could play in meeting Oklahoma’s resource needs, it remains unlikely that the state’s utilities or their regulators will fully embrace energy efficiency in the near-term.

Oklahoma has in place mandatory statewide building energy codes for residential and commercial buildings. Until recently, the state had been a home-rule state, but in June 2009, the Oklahoma Legislature passed a bill (SB 1182) creating the Oklahoma Uniform Building Code Commission that reviewed and recommended building codes (including energy codes) for residential and commercial construction for adoption (BCAP 2012). Beginning in October 2010, the Commission held several meetings discussing code change proposals. On March 31, the Commission formally recommended a residential code based on the 2009 IRC with Oklahoma amendments. This recommendation was approved by Governor Fallin on May 10, 2011. The Legislature chose not to disapprove the rule, leading to the official adoption of the code on May 27. The statute became effective July 15, 2011.

Oklahoma’s building code adoption process benefitted from leadership across sectors, including homebuilders, the advocacy community, and state government officials. The process emphasized collaboration and education, and central to this initiative was the “Bring it Home” project, led by the

Oklahoma Sustainability Network, which coordinated much of the effort to adopt mandatory building codes. Moving forward, the challenge rests in enforcement and training code officials.

Oklahoma does seem poised for improvement in its state government commitment to energy efficiency. Elected in 2010, Governor Mary Fallin adopted an Energy Plan that called for a range of energy efficiency initiatives, most notably in state government facilities. The Plan calls for the state to establish savings targets between 0.5 to 2% per year. A bill (SB 1096) currently under consideration that has received considerable support would set an energy cost reduction target of 20% by the year 2020. Governor Fallin's Secretary of Energy, Michael Ming, is a strong proponent of energy efficiency, seen by many as a leader who may be able to push the state in the right direction on energy efficiency policy and programs.

## South Carolina

**Scorecard Rank and Score:** 46th; 8/50
**EE Successes:** Implementation of utility DSM programs; state "lead by example" policies and programs; statewide building code adoption.
**EE Barriers:** Utility-sector cost concerns; aversion to mandates; lack of education and awareness of efficiency.
**Ways Forward:** Continued implementation and improvement of utility DSM programs; implementation of comprehensive energy efficiency program (EERS); financial incentives for energy efficiency.

South Carolina ranked 46th in the *2011 State Energy Efficiency* Scorecard, scoring 8 points out of 50. Despite past efforts to advance energy efficiency South Carolina remains low on the *State Scorecard* and has a variety of barriers and constraints to furthering progress. And while many of South Carolina's utilities offer energy efficiency programs, the state does not have in place fundamental energy efficiency policies to drive cost-effective energy efficiency investments.

The barriers to promoting energy efficiency in South Carolina range from misinformation or lack of information to barriers in the utility regulatory business model to the lack of political will. A great deal of efficiency advances are prevented by a lack of communication and leadership from the government. South Carolina's politicians and regulators are averse to mandates and regulations requiring investment in energy efficiency and renewable energy. South Carolina has an energy generation surplus, making energy efficiency less attractive than in states that need to make up for capacity shortfalls.

Despite these constraints South Carolina has a few ways it can move forward. South Carolina has seen progress in energy efficiency efforts from its utilities. Programs run by Duke Energy and Progress Energy Carolinas have achieved greater savings at a lower cost than estimated initially. Duke has a goal of just under 2% cumulative savings during the 4-year modified "Save-a-Watt" pilot program term. As a condition of the potential merger between Progress and Duke, the utilities entered into an agreement to commit to savings targets of 1% annually starting in 2015 and 7% cumulative savings from 2014-2018. Additionally, South Carolina Electric & Gas Company (SCE&G) is heading into its second full year of program implementation. In 2010 SCG&E proposed a lost revenue recovery mechanism which was approved (Docket No. 2009-261-E and Docket 200-251-E). The mechanism is nearly identical to the approved mechanisms for Progress and Duke. Lost revenues are estimated annually and are trued-up annually based on actual penetration rates and energy savings data.

South Carolina's electric co-operatives offer customers an on-bill financing program that allows members to reduce the upfront cost of energy efficiency investments. Leveraging the cooperatives' existing relationships with members, the program utilizes funds from USDAs Rural Economic Loans and Grants Program (REDLG) to offer loans to customers, which are paid back on utility bills. The loans are tied to utility bills and the building's meter, removing split incentives for homeowners who do

not wish to stay in their home for the life of the loan. Electric Cooperatives of South Carolina (ECSC) estimates the program will impact 185,000-195,000 homes (Bell et al. 2011).

South Carolina has also seen success with the Conserfund program, a revolving loan program focused on energy efficiency improvements in state agencies, public colleges or universities, school districts, local governments, and private nonprofit organizations. Borrowers may finance projects from $25,000 up to $50,000 per fiscal year. Newly constructed public buildings must meet LEED standards or equivalent. In June 2008, the state enacted additional legislation, H.B. 4766, requiring state agencies and public school districts to develop energy conservation plans towards an ultimate goal of a 20% reduction in energy use by 2020. Most recently, SB 268 was enacted in 2009, which requires all agencies to perform an energy audit and implement energy conservation measures by July 2011

South Carolina's residential and commercial energy codes are mandatory statewide. The South Carolina Legislature recently passed updated residential and commercial codes with the support of the home builders association. All new residential and commercial buildings must meet the standards equivalent to the 2009 IECC. The state also offers tax incentives for the purchase of energy-efficient manufactured homes.

South Carolina also has a variety of energy efficiency focused bills up for debate during this next two year legislative session including tax credits for energy efficient construction projects and thermal heat pumps, creation of a separate building council into residential and commercial councils, and a bill limiting the liability of third-party contractors on efficiency and conservation projects. A voluntary EERS may also be considered and energy efficiency advocates in that state are cautiously optimistic about the potential adoption. Legislation to introduce clean energy goals is on the docket and the Public Service Commission is asking the utilities to set goals for energy efficiency and renewable energy.

## South Dakota

**Scorecard Rank and Score:** 42nd; 9.5/50
**EE Successes:** State financial incentives for energy-efficiency programs; local building energy code adoption; state “lead by example” policies and programs; implementation of utility DSM programs
**EE Barriers:** State funding constraints; utility-sector cost concerns; aversion to mandates; lack of education and awareness on efficiency.
**Ways Forward:** Statewide building code adoption and improved enforcement; continue advancing financial incentives for energy efficiency programs; continued implementation and improvement of utility DSM programs.

South Dakota was ranked 42nd in the *2011 State Energy Efficiency Scorecard*, the highest ranking of the bottom ten states. People familiar with the state legislature and South Dakota’s energy efficiency policy seemed doubtful that South Dakota would see major improvements in energy efficiency programs. The recent political climate and the state’s general aversion to mandates are halting progress in the legislature. South Dakotan energy efficiency experts agreed that the South Dakota’s municipalities could improve the oversight and enforcement of their current energy efficiency codes. In addition, South Dakota’s electricity prices have historically been low. However, the state is facing steady increases in energy prices due to the onset of federal transmission policies and an influx of natural gas into their energy supply mix.

South Dakota's utilities offer portfolios of customer energy efficiency programs. The Public Utilities Commission reports that electric program budgets for 2010 were $3.5 million. Over the last 6 years South Dakota’s utilities have been implementing ratepayer funded energy efficiency programs. Only one utility does not currently have a program in place but it is currently requesting permission from the Commission to do so. In addition, South Dakota instituted an electric utility performance incentive program. In 2010 the South Dakota Public Utilities Commission authorized a lost revenue adjustment mechanism for Northwestern Energy for both gas and electric efficiency programs.

South Dakota has no mandatory state wide energy code for residential or commercial construction and codes adopted by municipal jurisdictions are voluntarily. Few cities have adopted the building codes and many have shaped the commercial building codes to what fits with their municipalities. There is no state wide enforcement for commercial building codes and it is up to the local jurisdiction to enforce their own codes as they adopt them. Residential buildings can adopt 2009 IECC standards on a voluntary basis and there is a disclosure policy where newly constructed residential homes must disclose whether they meet the IECC code and explain how.

South Dakota's state government does offer some incentive programs for energy efficiency projects, including a revolving loan program capitalized through ARRA. The program loans to nonprofits, schools, and government agencies to pay for energy audits, energy efficiency improvements and renewable energy installations. Loans must be repaid in 10 years and they carry 0% interest rate. Under this funding South Dakota had an energy efficient appliance rebate program that provided rebates for Energy Star appliances but the funds ran out in March of 2010.

Currently it seems unlikely that any new aggressive energy efficiency legislation will move in South Dakota. Though their state is on the right track with energy efficiency in several areas, particularly the state and utility programs, there is much room for improvement for the state's building energy codes and state government initiatives.

## West Virginia

**Scorecard Rank and Score:** 44th; 8.5/50
**EE Successes:** Local building energy code adoption; state "lead by example" policies and programs; utility-sector energy efficiency program implementation.
**EE Barriers:** Utility-sector cost concerns; aversion to mandates; lack of education and awareness on efficiency.
**Ways Forward:** Building code updates and improved enforcement of building codes; continued implementation and improvement of utility DSM programs

West Virginia was ranked 44th in the *2011 State Scorecard* (tied with Missouri), with a score of 8.5 out of 50. Experts interviewed for the study all conveyed that ratepayer impacts from energy efficiency programs is paramount in West Virginia. However, the state is facing dramatic energy price increases for residential customers and a general interest in energy efficiency is emerging as a way to create jobs and lower energy bills.

West Virginia tied in last place with Alaska on utility a public benefits programs and policies metric scoring 0 out of 20 points. In early February of 2012, state delegate Mike Manypenny (D-Taylor) lead the sponsorship of legislation was introduced that would establish an EERS which will set out long term energy efficiency targets for electric utilities. The legislation was designed to spur investment in energy efficiency and address customer impacts by keeping rates lower over the long term. The bill laid out goals for electric utilities to reduce electricity consumption by 5% from 2010 levels by 2018 and 15% by 2025. The bill also would have provided financial incentives for utilities that meet or exceed their targets. The utility regulatory business model has been a long-standing barrier to energy efficiency in West Virginia and the presence of an EERS that includes financial incentives for utilities that meet their targets could have moved the state to a much higher rank in the *Scorecard*. Unfortunately bill never made it to a vote in the House Judiciary Committee.

Recent progress has been made for energy efficiency and demand-side management programs as a result of case 09-0177, which ordered Appalachian Power to submit an energy efficiency plan with its 2010 rate case. The final order was in 2010 and it directed power companies to implement approved programs, which included: low-income weatherization; residential home audit; residential lighting; and commercial/industrial prescriptive incentives. In February 2012, several other utilities followed suit, as Monongahela Power and Potomac Edison began offering limited sets of programs. The Public

Service Commission may be open to residential home energy audits similar to programs implemented by Appalachian Power.

There are currently efforts to strengthen the state energy building code to the 2009 IECC standards. West Virginia's residential and commercial building codes are mandatory statewide, however, adoption by jurisdictions is voluntary. Residential buildings are required to comply with the 2003 IECC and the 2003 IRC with amendments. Commercial buildings are required to comply with the 2003 IECC with amendments. On April 11, 2009, the West Virginia Legislature passed bills directing the State Fire Commission to promulgate rules adding the 2009 IECC and ASHRAE 90.1-2007. However, energy building and sprinkler standards in the 2009 IECC code were removed during West Virginia's legislative review session because of strong opposition from the builders associations. In state experts expect that the State Fire Commission will introduce a rule to bring all residential and commercial building codes into alignment with 2009 IECC standards in the next legislative session. The Code Officials of West Virginia had their first inspections training for the 2009 IECC standards in early March to prepare for the new standards alignment to pass.

West Virginia also passed its' Green Buildings Act (SB 76), which requires that all state-funded construction that begins after July 1, 2012 must comply with ASHRAE Standard 90.1-2007 and the IECC adopted by the State Fire Commission, this rule includes public schools. The state will benchmark all state-owned buildings according to state energy plan and will consider adoption of ENERGY STAR guidelines for all new state government buildings. A Portfolio Manager Program will continue benchmarking efforts in local governments. They have already had success in their public school Green Ribbons School program with public building weatherization and retrofits.

## Wyoming

**Scorecard Rank and Score:** 50th; 3.5/50
**EE Successes:** Implementation of utility DSM programs; state government-led financial incentive programs.
**EE Barriers:** Rural, hard-to-reach customers; aversion to mandates; limitations on co-operative utilities' ability to run DSM programs.
**Ways Forward:** Local adoption of building energy codes; continued implementation of utility-sector DSM programs and incorporation of EE in utility resource planning processes.

In general, Wyoming is moving in the right direction on energy efficiency. The state's main IOU, Rocky Mountain Power, which accounts for around 57% of the state's electricity sales, is currently in the third year of a four-year pilot portfolio of energy efficiency programs. Supported by the PSC, the portfolio was largely driven by resource needs identified in the utility's IRP. RMP anticipates spending about $25 million on these programs and saving 138 million KWh per year by the end of the four-year effort. This is equivalent to 1.7% of RMP's electricity sales in Wyoming as of 2006. RMP's programs were slow to start, failing to reach intended rates of participation in its first year. A shift in marketing strategy that allowed for more personal interaction has greatly improved program performance since the first year. Aside from RMP, Cheyenne Light and Power, Black Hills Power, and Questar Gas also run limited sets of energy efficiency programs. Some interviewees noted that a number of rural co-operative utilities (co-ops) buy power from Tri-State Generation and Transmission, which limits the amount of DSM these co-ops can pursue.

The primary challenge to utility-sector energy efficiency program implementation in Wyoming is the state's rural, lightly populated nature, which creates challenges in establishing program delivery infrastructure. The lack of "big-box" stores and appliance vendors in rural parts of the state, for instance, forces customers to go out of state to buy appliances, making rebates an unattractive program option in some cases. In addition, customers are generally unaware of energy efficiency opportunities and due to energy prices among the lowest in the nation, energy costs are not a primary concern for most residential and small business customers. Nonetheless, utilities as well as the state government are moving forward with programs and policies intended to reach customers statewide.

The Wyoming state energy office, for instance, partnered with co-operative utilities to procure USDA grants to run statewide energy efficiency programs to reach rural customers.

Wyoming's state government is supportive of energy efficiency, running programs that advance energy efficiency in state and local government facilities. The state energy office runs a grant program supporting energy audits at non-profits, as well as a number of educational programs for residential and business customers. In addition, the energy office encourages the use of energy savings performance contracts through its Energy Conservation Improvement Program. Wyoming has also embraced financing options for energy efficiency projects. The Wyoming Community Development Authority offers low-interest loans for home energy retrofits and the state legislature passed a bill (HB 179) in 2011 that enables local governments to establish a loan program to finance energy efficiency retrofits in residential, commercial, or industrial facilities.

A home rule state, Wyoming does not have a statewide mandatory building energy code. Interviewees noted that for Wyoming to move forward on energy codes in a meaningful way, the state needed leadership either at the state and local levels. Currently, a few local jurisdictions, including Teton and Albany counties have made much progress training code officials and building homes in compliance with the latest building energy codes. No interviewees expected the state to pass statewide codes any time soon. Instead, most expressed a need for the state to focus on adoption at the local level.