

Energy Efficiency Resource Standards: A New Progress Report on State Experience

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April 2014

Report Number U1403

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Acknowledgments

The authors gratefully acknowledge external reviewers, internal reviewers, colleagues, and sponsors who supported this report. Representatives of state energy offices and public utility commissions were generous with their time, both in providing data and in reviewing the paper. External expert reviewers included Daniel Steinberg (National Renewable Energy Laboratory), Natalie Mims (Southern Alliance for Clean Energy), Josh Craft (Northeast Energy Efficiency Partnership), Tom Polikalas and Ellen Zuckerman (Southwest Energy Efficiency Partnership), Greg Ehrendreich (Midwest Energy Efficiency Alliance), Sam Huntington (Optimal Energy), Abigail Anthony (Environment Northeast), Ken Baker (Northwest Energy Efficiency Alliance), and Karen Palmer (Resources for the Future). Internal reviewers included Maggie Molina, Max Neubauer, Suzanne Watson, Neal Elliott, Seth Nowak, Dan York, and Steve Nadel. We would also like to thank Fred Grossberg for his assistance throughout the writing and editing process, and Patrick Kiker and Glee Murray for their help in launching this report.

Executive Summary

More than half the states have adopted an energy efficiency resource standard (EERS), which is a policy that sets long-term mandatory energy savings targets for utilities and efficiency program administrators. In the absence of federal requirements for energy savings, states are leading the way with effective, forward-looking energy efficiency policies. Their long-term savings targets not only set forth a vision for their energy portfolios, but they also spur utilities and non-utility program administrators to invest in deeper savings measures.

States with EERS policies are generally on track to meet long-term savings targets and are making a substantial contribution toward nationwide energy savings. In 2011 and 2012, many states ramped up their savings targets and savings levels compared to previous years. In 2011, 13 states exceeded their electricity savings targets, and 6 others came within 90% of them. Only two states achieved less than 80% of their targeted electricity savings. In 2012, 15 states met or exceeded their electricity savings targets, and 6 others came within 90% of their savings targets for the year. Only one state met less than 80% of its target. Figure E1 shows targets and achieved electricity savings in 2011 and 2012.

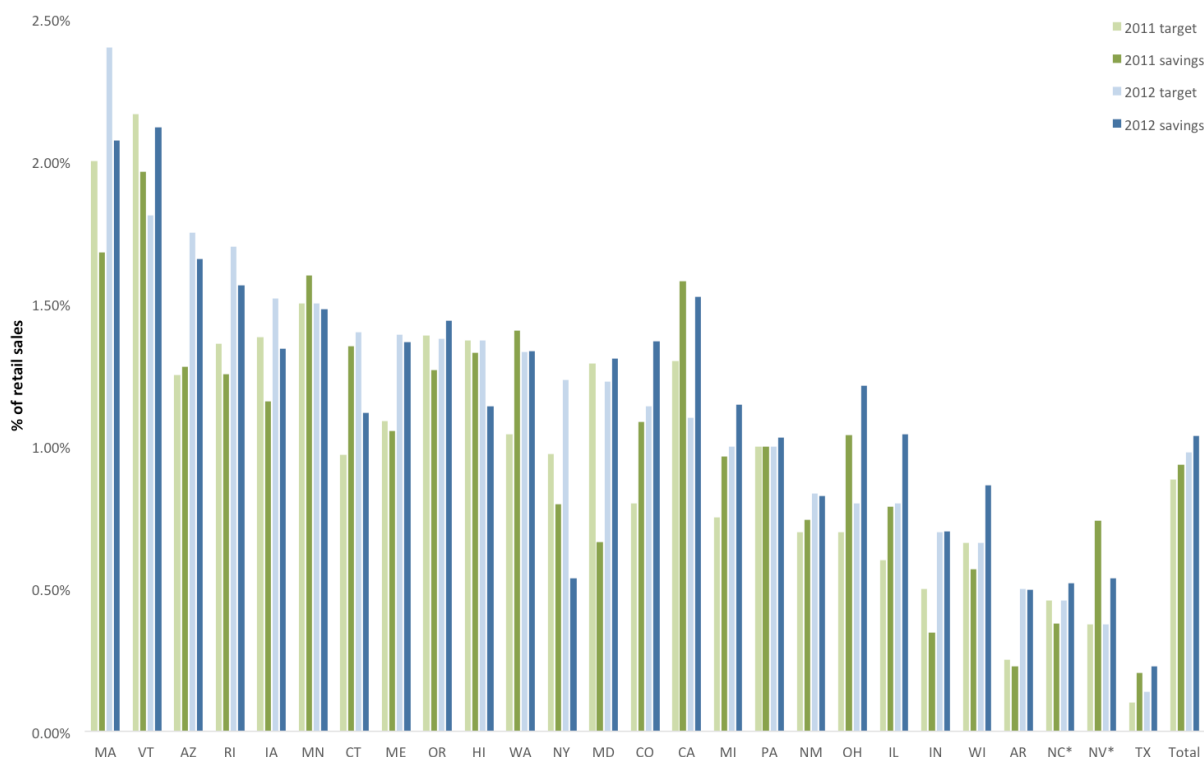


Figure E1. Annual incremental targets and savings for electricity, 2011 and 2012. Targets and savings are shown as a percent of retail sales covered by EERS rules.

Note that the stringency of targets is varied (as are the utilities and program administrators who are required to meet them). Individual state success is somewhat variable, but in aggregate, states are surpassing their savings targets. States with EERS policies in place planned to save a total of more than 18 million megawatt hours (MWh) in 2012, and they actually achieved over 20 million MWh of electricity savings. That is equivalent to about 85% of the total energy

savings that were realized in the United States in 2011, or enough electricity to power nearly 2 million homes for a year.¹

Of the 26 states with EERS policies in place in 2011 and 2012, 15 included mandatory savings targets for natural gas.² Eight of 13 states exceeded their natural gas savings targets in 2011. States continued to close the gap between savings and targets from 2011 to 2012. In 2012, five states exceeded their natural gas savings targets, and six others achieved at least 90% of their targeted savings.

In themselves, EERS policies are a key strategy that helps regulators, policymakers, and utilities plan ahead for a state's energy future. However, to be most effective, the targets must be paired with some other regulatory function, a carrot or a stick to spur utilities to action. Financial penalties for not meeting targets are largely clustered in midwestern states, possibly due to neighboring states influencing each other. More typically, states choose to reward utilities for meeting savings targets. Eighteen of the states in this report have financial performance incentives in place or pending for electric utilities, and 12 make financial performance incentives available for natural gas utilities. Many of the states with the highest savings targets also have established mechanisms to remove the throughput incentive, which is the link between increased energy sales and increased profits under traditional regulation. These mechanisms address one of the fundamental policy barriers to increased energy efficiency, namely that utilities have not traditionally viewed energy efficiency as part of their business model but as a threat to their revenue.

Based on targets required by their current EERS policies, states can expect total annual savings that will range from about 1% to nearly 30% in 2020 if annual savings targets are met each year. If states continue to meet targets – and if legislators and regulators maintain these targets in years leading up to 2020 – the combined annual electricity savings from the 26 states with an EERS will be equivalent to 6.2% of overall U.S. electricity sales in 2020. However, since many states have not yet set targets through 2020, reaching this level of savings will require continuous commitment from all parties and, more particularly, political support from state legislators, regulatory clarity, cutting edge program design, and utility business models that reward success in energy efficiency.³

In general, states are making notable progress toward meeting or exceeding savings targets. There is no one best policy: each state meets targets and saves energy in the way that best suits it. However, some general lessons do emerge from our comparison of policies and outcomes:

- Program administrators should run robust programs for all residential, commercial, and industrial customer classes.
- States should plan for ramp-up periods to give program administrators leeway to bulk up efficiency portfolios over time and account for regulatory lag.

¹ Total electricity savings for 2011 are reported in Downs et al. 2013. EIA reports the average household electricity consumption for 2012 at <http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3>.

² Connecticut and Illinois did not begin full implementation of natural gas EERS programs until 2012.

³ We have already seen the necessity of political support to reach projected savings levels. In late March, Indiana legislators voted to end Energize Indiana programs.

- States should encourage utilities to meet targets through complementary policies, including rate reform and performance incentives.
- In order to capture all cost-effective efficiency available, states should set challenging targets and allow a range of eligible savings measures.
- States should involve stakeholders in efficiency planning in order to smooth regulatory and legislative processes.
- Clear, transparent, and consistent tests for cost effectiveness should be used in the portfolio planning process.

The states remain the proving ground for energy efficiency policies. Even the states that have had policies solidly in place for several years continue to refine program design and implementation methods. The challenge in the years ahead will be to develop strategies for continuing to meet targets as they become more stringent.

States like Massachusetts—where annual electricity savings targets exceed 2% of retail sales—prove that high levels of savings are possible. But variability in energy prices and shifts in political support for energy efficiency may challenge some states' ability to provide sufficient energy savings. At present we see forward motion, with EERS policies spreading throughout the states and generating notable low-cost energy savings. Maintaining this momentum will depend on support in states across the country.

Introduction

Over the past decade, more than half the states have adopted policies establishing mandatory energy savings targets that utilities and third-party program administrators must meet through customer energy efficiency programs. The set of policies that creates the framework for these targets in each state is called an energy efficiency resources standard (EERS). Like renewable energy standards (RES), EERS policies are proven and effective mechanisms that create a binding, long-term role for energy efficiency in a state's energy portfolio. As of January 2014, 26 states have adopted and fully funded an EERS policy.⁴

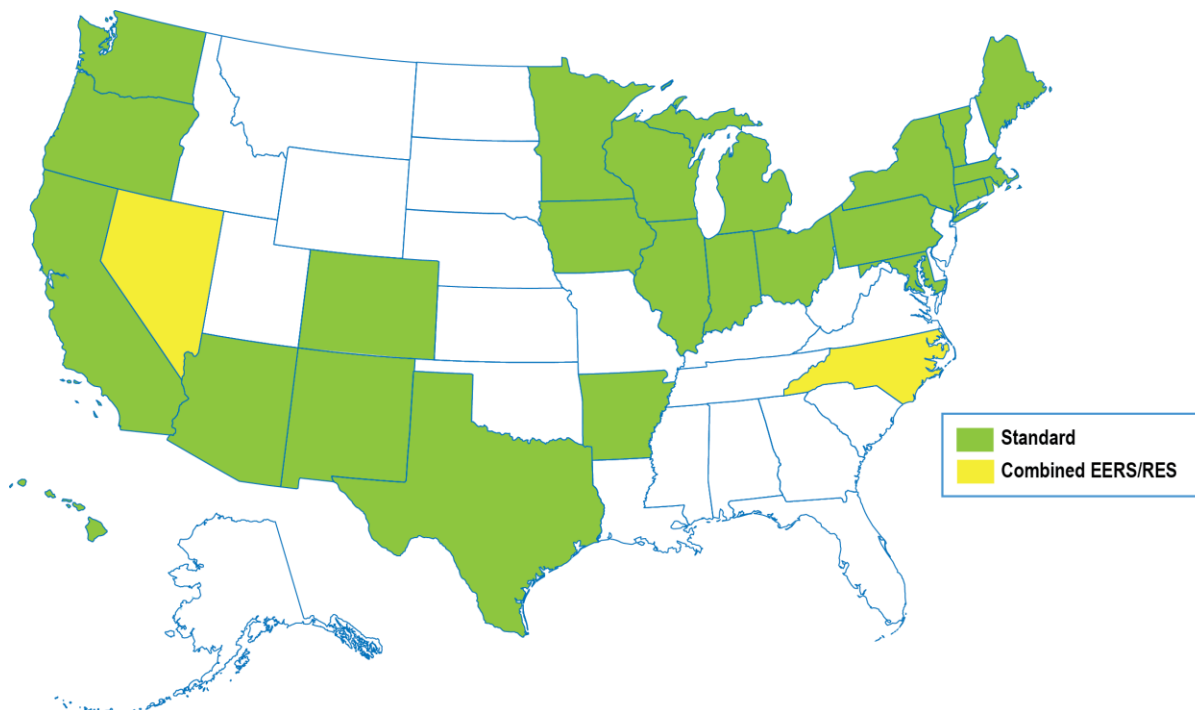


Figure 1. States with EERS policies in place

In the absence of federal requirements for energy savings, states that have an EERS in place are leading the way with forward-looking energy efficiency policies. Nearly every state in the country implements some level of energy efficiency programming, but the deepest savings are achieved in states with EERS policies.⁵ These savings targets not only establish a long-term vision for a state's energy portfolio, but they also spur utilities and non-utility program administrators to invest in deeper savings measures. Many utilities and program administrators begin by implementing basic energy efficiency programs, but as EERS goals ramp up, more cutting-edge and comprehensive programs are necessary to achieve the required levels of savings.

⁴ In March 2014, Indiana legislators voted to end the efficiency programs needed to implement the state's EERS. Research for this report was completed prior to that decision.

⁵ Every state that reported statewide electricity savings of over 1% in 2011 had an EERS in place according to an ACEEE survey of state energy offices and public utility commissions (Downs et al. 2013).

Though energy efficiency programs have been an important part of utility investment portfolios in many states for decades, the spread of EERS policies is relatively recent. Many states originally included demand-side management (DSM) in their integrated resource planning (IRP) process. However the utility restructuring movement of the mid-1990s led numerous utilities to limit or altogether abandon their efficiency programs. Electric utilities' spending on efficiency fell by half between 1994 and 1997 (York and Kushler 2005). EERS policies began to emerge when issues with electric system reliability in the late 1990s refocused attention on the importance of energy efficiency (Kushler et al. 2006). Texas adopted the nation's first EERS in 1999, and many states followed suit beginning in the mid-2000s. EERS policies shifted the focus from spending levels and specific program requirements (inputs) to quantifiable energy savings (outputs). Figure 2 illustrates the spread of EERS policies.

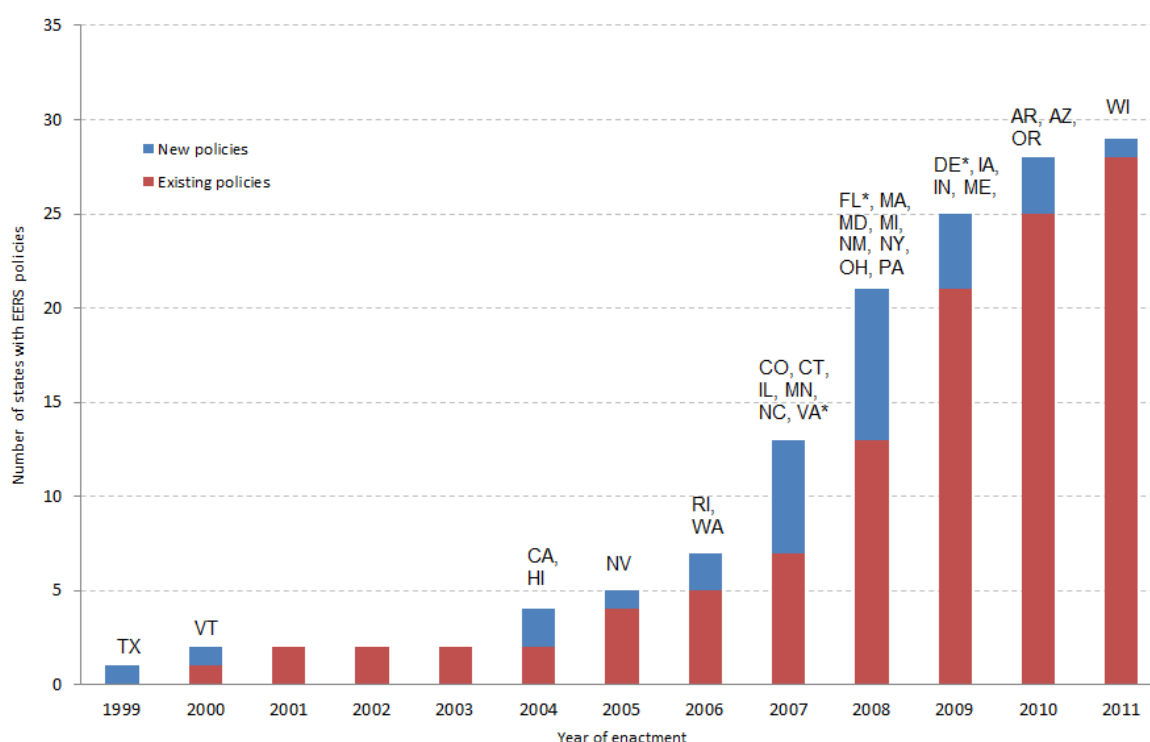


Figure 2. Year of initial state EERS adoption. * These states have enacted EERS legislation but have not enacted rules for implementation or committed necessary funding to efficiency programs.

As programs ramp up and states strive to meet more stringent targets, utilities, program administrators, and policymakers have expressed concern about the challenges involved in expanding the reach and efficacy of their programs. By examining state policies and the resulting savings, we hope to shed light on the EERS policy structures that are most effective in enabling success. We also look at some less successful structures that may serve as lessons for future policy design.

Updating a previous ACEEE study on the same topic (Sciortino et al. 2011), this report tracks the progress of the 26 states with EERS policies in place as of January 2014 to determine

whether they are meeting annual targets.⁶ The previous study found that most states were meeting or on track to meet energy savings targets as of 2010. Since then, many states have ramped up their savings targets, more states have begun implementing EERS policies, and new savings data have become available. We update the findings of the Sciortino study with new data, including 2011 and 2012 savings data. We also add several states to the analysis: Arizona, Arkansas, Indiana, Maine, North Carolina, Oregon, and Wisconsin. In addition, we assess 15 states' progress toward meeting natural gas savings targets.

This report also examines complementary policy mechanisms that help efficiency administrators meet their targets. These mechanisms remove disincentives for investment in energy efficiency and offer financial incentives for meeting energy savings targets. Finally, we extrapolate EERS policies into the future to estimate long-term outcomes. Having reached the point where more than half the states have adopted long-term savings targets, the United States as a whole can expect to see significant savings outcomes over time. However, to achieve maximum savings, programs will need to develop innovative programs, make a sustained effort to attract hard-to-reach customers, and maintain the support of the industrial sector.

THE PURPOSE OF AN EERS

In a 2013 study, Barbose and his coauthors identified several of the major policy drivers for energy efficiency (Barbose et al. 2013). States pursue these policies for a variety of reasons. Many emphasize reducing customer costs, creating jobs, improving environmental quality through reduced dependence on fossil fuels, and improving the reliability of the local energy supply. Policy mechanisms identified by Barbose include system benefit charges (SBC), long-term IRP requirements, DSM planning requirements, and EERS policies.⁷ Often used in conjunction with one another, each of these policies and funding mechanisms spurs investments in efficiency. However, EERS policies have driven larger and more sustainable energy savings than DSM planning requirements or IRP requirements.⁸

By setting long-term targets, EERS policies go beyond annual program planning and help utilities incorporate energy efficiency into their long-term IRPs. Multiyear targets offer regulatory certainty and encourage utilities to think of efficiency as a resource equivalent to supply-side assets as they plan to meet their customers' energy needs. Minimum savings targets—typically with incentives or penalties in place for program administrators—mean that both utilities and state governments can plan for the future with some degree of certainty. Furthermore, EERS policies typically increase target levels over time, allowing utilities to test and monitor programs and fine tune efficiency measures as savings levels ramp up. Although

⁶ We do not include Virginia, Florida, and Delaware in our analysis. Though these states have passed legislation setting energy targets, they have not taken clear steps toward implementation and have not established sufficient funding to achieve targets.

⁷ Barbose also refers to all cost-effective efficiency requirements and energy efficiency allowances under a renewable portfolio standard. For the purposes of this paper, we consider these policy drivers to be under the EERS umbrella.

⁸ Many states dropped DSM requirements as a result of restructuring and deregulation in the 1990s. EERS policies and system benefits charges may be seen as an effort to fill that void. See York et al. 2012 for a historical review of efficiency activity in the United States.

EERS policies are often paired with other complementary efficiency policies, there is no substitute for the prominence and long-term vision of mandatory savings targets.

Many of the states with an EERS in place also run efficiency programs that are not regulated by EERS rules and whose resulting savings do not count toward savings targets. This report does not consider savings that are achieved outside of EERS frameworks and that are not fully integrated into the long-term energy vision supported by an EERS. However it should be noted that non-EERS efficiency programs run by small utilities, nonprofits, and state entities do contribute to overall efficiency within a state.

WHAT IS—AND IS NOT—AN EERS

EERS policies differ from state to state, but each has the intent of establishing a sustainable and long-term role for energy efficiency in the state's overall energy portfolio. In our view, an EERS must:

1. Set clear long-term targets for electricity and/or natural gas savings⁹
2. Make clear that targets are mandatory
3. Include sufficient funding for full implementation of programs necessary to meet targets

Several states have chosen to enforce all cost-effective efficiency requirements, whereby utilities are required to determine and invest in the maximum amount of cost-effective efficiency feasible.¹⁰ ACEEE considers states with all cost-effective requirements to have EERS policies in place once these policies have led to multiyear savings targets. In fact, some of the states with all cost-effective energy efficiency mandates have the most aggressive savings targets in place. For example, Massachusetts' all cost-effective requirement translates into incremental savings targets reaching 2.6% of retail electricity sales by 2015.

Meanwhile, other states have pursued clean energy strategies that nest energy efficiency within renewable energy portfolio standards (RPS). Both Nevada and North Carolina have set clear and increasing standards for renewables, and they allow energy efficiency to meet a portion of these targets.¹¹ Since these policies generally spur large-scale energy efficiency investments by utilities, ACEEE does consider RPS policies with efficiency carve-outs to be EERS policies.

Combined RPS-EERS policies make it difficult to measure success since they set a ceiling, rather than a floor, for energy efficiency measures that can count toward energy targets. However, since energy efficiency is the lowest-cost resource (Molina 2014), it is likely that utilities will invest in it to the extent that it is cost effective and allowable under the combined RPS-EERS.

⁹ "Long-term" is defined as spanning three or more years. While many states have set targets for longer time periods, others align goals with a multiyear utility planning process.

¹⁰ States use a variety of methods for determining cost effectiveness. For further discussion, see Kushler et al. 2012 and Woolf et al. 2012.

¹¹ However energy efficiency will be phased out of Nevada's RPS by 2025.

For the purposes of this report, we consider combined RPS-EERS policies equivalent to EERS policies, and assess savings levels based on maximum allowable efficiency.¹²

Several states have adopted voluntary standards for energy savings or have mandated savings targets without fully funding the programs necessary to meet those targets. ACEEE does not consider these mechanisms to be EERS policies. Similarly, more and more utilities are incorporating efficiency into their IRP processes. Their recognition of energy efficiency as a resource that is equivalent to traditional generation is the first step to large-scale energy savings. However a utility's decision to include efficiency in its IRP or to produce a standalone DSM plan does not constitute an EERS policy.

Challenges in Defining EERS Policies

One indication of the difficulty in tracking and comparing EERS policies is the lack of consensus on which states have an EERS in place. Several agencies track and report on EERS policies around the country, and they do not agree on how to categorize them. The National Renewable Energy Laboratory (NREL) defines an EERS as a “policy that requires utilities or other entities to achieve a specified amount of energy savings within a specified timeframe” (Steinberg and Zinaman 2014). Taken at face value, this definition aligns with ACEEE's definition of an EERS. However, since combined RPS-EERS policies *allow* a specified amount of energy efficiency rather than *requiring* it, NREL does not consider Nevada and North Carolina to have EERS policies in place. ACEEE does include these policies in our national EERS assessment.

In their tracking of energy efficiency program activity, researchers at Lawrence Berkeley National Laboratory (LBNL) define an EERS based on three criteria:

1. The target must be statewide for all utilities falling under the jurisdiction of the regulatory commission.
2. There must be consequences for failing to meet the target.
3. The target must extend at least three years.

While this definition is quite similar to our definition of an EERS, the first criterion eliminates several states in which targets are tailored to individual utilities. LBNL therefore counts only 15 states as having an EERS. It notes that other policy drivers are in place to promote energy efficiency spending and savings in several states, including energy efficiency eligibility under an RPS, statutory requirements mandating that utilities acquire all cost-effective energy efficiency, and other utility planning processes that set multiyear plans for resources including efficiency. However LBNL views these types of policy drivers as separate from an EERS. Table 1 lists states with an EERS as defined by each organization.

¹² While we consider combined policies to be equivalent to standalone EERS policies, it should be noted that some states with combined RPS-EERS policies have chosen to move to distinct policies in order to improve transparency and regulatory certainty and to drive greater levels of energy efficiency. Pennsylvania and Hawaii, for example, have both transitioned to standalone energy efficiency targets.

Table 1. States with an EERS in place as of January 2014

State	ACEEE	NREL	LBNL
Arizona	✓	✓	✓
Arkansas	✓	✓	
California	✓	✓	✓
Colorado	✓	✓	✓
Connecticut	✓		
Hawaii	✓	✓	✓
Illinois	✓	✓	✓
Indiana	✓	✓	✓
Iowa	✓	✓	
Maine	✓	✓	
Maryland	✓	✓	✓
Massachusetts	✓	✓	
Michigan	✓	✓	✓
Minnesota	✓	✓	✓
Missouri			✓
Nevada	✓		
New Mexico	✓	✓	✓
New York	✓	✓	✓
North Carolina	✓		
Ohio	✓	✓	✓
Oregon	✓	✓	
Pennsylvania	✓	✓	✓
Rhode Island	✓	✓	
Texas	✓	✓	✓
Vermont	✓	✓	
Washington	✓	✓	
Wisconsin	✓	✓	

Source: Steinberg and Zinaman 2014, Barbose et al. 2013

See Appendix A for an overview of the policy details in each of these states. Several states that have EERS-like legislation are not included in this report. For example, Missouri has legislation in place setting specific annual energy savings goals for utilities beginning in 2012. However these goals are voluntary and so ACEEE does not consider them to be a true EERS. Though Delaware passed legislation establishing an EERS in 2009, the state has not established final implementation rules, so utilities have no clear path forward. Furthermore, Delaware has

allocated insufficient funding to energy efficiency, making it unlikely that targets can be met. Similarly, the Virginia legislature passed a bill in 2007 setting a goal of 10% electricity savings by 2022, but the state's regulatory body still has not established requirements for energy efficiency programs.

Florida has also established specific energy savings goals, including annual goals set forth by the state's Public Service Commission. However the commission has declined to approve utility DSM plans in recent years, ordering utilities to continue to run programs established in 2004.¹³ Funding levels for energy efficiency are too low to meet annual savings targets, and so we do not consider Florida to have a functional EERS.

Several other states have energy efficiency programs and targets established by non-state entities. For example, the Tennessee Valley Authority, the largest provider of electricity in Tennessee, included savings goals in its 2011 integrated resource plan. However the degree to which these goals are binding is unclear. In Oregon, a significant amount of efficiency is attributable to the Bonneville Power Authority, which follows efficiency targets set by the Northwest Power and Conservation Council. These targets are regional, however, and are not attributed to the state.¹⁴

OPTIONS FOR TAILORING AN EERS

As mentioned above, EERS policies differ significantly from state to state. Although long-term mandatory energy savings targets are at the core of every EERS, states have several options when it comes to deciding how targets will be set, who will implement efficiency programs, and how savings will be measured and verified. The choices a state makes as it designs an EERS can substantially impact the outcomes of the policy. In establishing an EERS, state legislators and regulators must determine the following parameters.

The target and its baseline. States typically set targets based on studies that predict the available cost-effective efficiency within the state or on their prior experience implementing efficiency programs. Alternatively, they may adopt targets like those of neighboring states with similar economic and environmental conditions. States typically choose to ramp up targets, reaching large-scale savings over the course of several years. An EERS not only must lay out the level of savings the state hopes to achieve, but also must include a clear point of comparison. For example, an EERS policy that mandates 20% electricity savings by 2020 can result in varying levels of savings depending on the baseline. Several states have chosen to use forecast consumption levels as the baseline; for example, they may call for utilities to achieve 20% savings compared to 2020 business-as-usual forecasted energy sales. Other states require savings to be measured based on a single year or the previous year's sales. Indiana, Iowa, and Minnesota define a baseline based on the weather-normalized average sales of the preceding

¹³ Though often used interchangeably with "energy efficiency," DSM includes both energy efficiency and demand response programs.

¹⁴ We do include the long-term targets established for Energy Trust of Oregon in our analysis of EERS policies.

three years. Other states have chosen to set targets in terms of energy unit savings (i.e., gigawatt hours [GWh] or therms) rather than percent savings, eliminating the need for a baseline.¹⁵

The efficiency program administrator. EERS targets are often enacted by the state legislature, and the authority for creating an implementation framework tends to lie with the public utility commission (PUC). The PUC usually determines who will implement efficiency programs: utilities, a third party, or both. Since PUCs often oversee only a subset of retail energy suppliers, EERS targets tend to apply exclusively to regulated utilities.¹⁶ Many states also include stipulations regarding the size of a participating utility's customer base (e.g., utilities with more than 10,000 customers must comply), or they limit savings targets to investor-owned utilities (IOUs). Such stipulations ultimately limit overall savings by diminishing the customer base.

Several states have chosen to make a third party responsible for administering programs. Funding for efficiency typically comes from a public benefits charge or through rate recovery, and these funds may be transferred to a third-party program administrator who does not have a disincentive to implement efficiency. (Since efficiency may reduce sales, a utility may have such a disincentive under a traditional rate structure.) In Wisconsin and Maine, the third-party efficiency administrator is directly responsible for all savings stipulated in the EERS. Many states have a mix of third-party and utility responsibility, and others include state agencies in the savings targets. For example, the New York State Energy Research and Development Authority (NYSERDA) is responsible for a portion of that state's energy savings targets, while in Illinois the Department of Commerce and Economic Opportunity is responsible for a specific set of efficiency measures.¹⁷

Method for measuring savings. Regulators may require that utilities report savings as net savings, gross savings, or in some cases, both. Gross savings are the total energy savings realized by customers participating in energy efficiency programs. Net savings, on the other hand, are the savings directly attributable to the efficiency program; they do not include the savings participating customers would have achieved absent the program.¹⁸ Net savings calculations may also account for spillover effects, i.e., savings resulting from the program beyond the savings realized by directly participating customers. Many states constantly refine net savings calculations, and they may apply a net-to-gross ratio on a portfolio or program level. For a complete discussion of state methodology in calculating net savings, see Kushler et al. 2012 and 2014.

Allowable savings measures. The types of measures program administrators are able to count toward mandatory savings targets also vary from state to state. While utilities and program administrators in every state included in this report implement traditional efficiency measures like home weatherization and offer rebates for appliances and lighting, some states allow utilities to count additional measures. For example, utilities in several states are able to claim

¹⁵ For a complete discussion of EERS baselines, see Steinberg and Zinaman 2014.

¹⁶ There are exceptions. In Michigan and Minnesota, all utilities must meet savings targets.

¹⁷ See Appendix B for more details on Illinois and New York.

¹⁸ Customers who participate in efficiency programs but who would have undertaken the efficiency upgrade even in the absence of the program are termed "freeriders." Savings realized by these customers are subtracted in net savings calculations.

savings from actions they take to help localities adopt and enforce building energy codes. The idea is that utility involvement can increase code compliance, thereby reducing overall energy use.¹⁹ In other states, savings from combined heat and power (CHP) programs count toward eligible savings under an EERS policy.²⁰ Other measures whose eligibility varies from state to state include transmission and distribution improvements (line-loss reduction), appliance standards, and market transformation activities.

Reporting requirements. Reporting requirements also vary from state to state. Although in most cases, utilities and program administrators must report to the regulatory body at least once a year, the timeline for finalizing DSM plans and reports varies. Many states have multiyear cycles for efficiency programs: program portfolios are typically approved every three years, and utilities may request interim adjustments but are not likely to make any major changes. States with multiyear planning cycles may require program administrators to submit a complete report every year, or they may choose to leave the bulk of the reporting until the end of the cycle. Some states with cumulative targets require utilities to report regularly, but they do not regularly track incremental savings. In New York, for example, program administrators and utilities submit reports of cumulative acquired and committed savings.

Even beyond these main features, states have tailored their EERS policies in a variety of ways. Several require formalized stakeholder involvement processes. Others have set cost caps that limit the amount a utility may spend on energy efficiency programs. And several states have expansive EERS policies that incorporate savings achieved by parties outside the traditional EERS reporting framework. In Hawaii, for example, savings achieved by state and federal agencies outside of utility programs are estimated and added to total verified annual incremental savings.

This report attempts to analyze progress in each state based on its own specific policy framework. Appendix A outlines each state's EERS policies, Appendix B presents case studies of EERS frameworks in eight states, and Appendix C contains sample language for EERS legislation that addresses many of the issues discussed above.

Methodology

Since our analysis covers multiple policy variations, we were faced with distinctive challenges in nearly every state. This section describes our methodology for data collection and notes a variety of caveats.

For policy context, we reviewed legislation, reports by efficiency program administrators, and reports by PUC staff and consultants in each of the 26 states. We also conducted interviews with staff at PUCs, utilities, and regional energy organizations in states where policy details were

¹⁹ Including code compliance efforts as allowable savings also requires regulators to develop careful frameworks for attributing these savings in order to avoid double counting.

²⁰ Investment in CHP installations typically earns some partial efficiency credit. Though CHP is an efficient technology, states should account for these potential savings during the target-setting process so as not to undermine other savings measures.

unclear. Several of these interviews resulted in the case studies of a geographically diverse set of states that appear in Appendix B.

We reviewed efficiency program administrator reports to collect incremental annual savings data. In some cases, data came directly from utilities or third-party efficiency program administrators; in other cases, a PUC or another associated entity compiled efficiency program data. Where local program administrators or state-based agencies did not directly report program information, we relied on efficiency data supplied by the Energy Information Administration (EIA) on Forms 861 and 176. It should be noted that EIA data are not always consistent with data reported by utilities in reports to utility commissions. These inconsistencies may be due to a variety of factors: non-reporting by utilities, corrections made during the verification process, or definitional inconsistencies. For example, nearly every state has a unique definition of net incremental savings (Kushler et al. 2014). For this reason, we made our best effort to use data directly reported by efficiency program administrators. Energy savings reported by entities not covered by EERS rules were not included in this analysis.

We compared savings data to stated targets in each state to analyze progress in 2011 and 2012.²¹ We calculated targets based on the terms given in legislation. Although legislated targets in several states are volumetric, we had to calculate targets in many states based on available information. For example, we converted percentage-based targets (e.g., 2% by 2020) into electricity-based targets (e.g., 5,000 GWh) by multiplying percentage sales targets by baseline sales, consistent with the individual baseline used within each state.²² In a few cases, baseline sales were reported annually by utilities. However, where these data were unavailable, we relied on the closest approximation possible, using sales data supplied by EIA. In some cases, our methods may have led us to overestimate total sales, since several states allow large industrial customers to opt out of efficiency programs and do not include the energy consumption of these customers in baseline determination.²³

In several states, energy efficiency targets do not completely align with policy. In New York, for example, the target goals listed in the original rulemaking required all entities to achieve 15% energy savings by 2015. But these targets do not align with incremental goals for utilities and NYSEERDA as approved by the Department of Public Services. In Illinois, the PUC has recently approved utility goals lower than legislative targets due to cost constraints. Minnesota legislation sets a nominal savings goal for both electric and natural gas utilities of 1.5% per year, but 2009 legislation allowed the commissioner to approve lower natural gas targets for the 2010-2012 period (J. Plummer, Minnesota Commerce Commission, pers. comm., March 19, 2014). In general, we chose to measure savings against targets set out in original legislation unless the legislation itself had been updated.²⁴

²¹ For earlier data, see Sciortino et al. 2011.

²² As noted previously, a variety of baselines are used by states to measure savings, including weather-adjusted three-year average sales, previous year's total sales, or sales in a single year.

²³ We adjusted sales in Arkansas, Minnesota, New York, and Ohio based on data provided by state contacts. In all other states, we relied on EIA data.

²⁴ For example, state legislators adjusted New Mexico's long-term target from 10% to 8%. We therefore measured progress against the new 8% target. Since Minnesota legislation explicitly allowed a 0.75% savings target for natural

In states with combined RPS-EERS policies, we estimated targets based on the maximum efficiency allowable under the policy in any given year. These policies are typically cumulative, and so efficiency allowances are also cumulative (C. Zuniga, Public Utilities Commission of Nevada, pers. comm., January 24, 2014; J. Floyd, North Carolina Utilities Commission, pers. comm., January 16, 2014). We annualized these cumulative allowances to provide a reasonable target for any given year. For example, we distributed North Carolina's cumulative allowance of 1.5% savings due to energy efficiency among the years from 2010 to 2015, resulting in an annual incremental savings allowance of 0.25%. We used a similar methodology for states with cumulative or non-annual efficiency targets. In states that specified savings goals only for planning cycles, we annualized targets evenly over the planning period to generate an incremental target for each year.

Finally, comprehensive savings data were not available in several cases. In New York, Maryland, and Hawaii, efficiency targets encompass energy savings from a variety of sources beyond regulated utilities and third-party program administrators, e.g., from updated building energy codes, appliance standards, or nonregulated and nonreporting entities. Since these savings are not verified or reported, we could not include them in our analysis. In cases where a specific portion of the savings is assigned to reporting program administrators, we have limited our analysis to that part of the target.²⁵

Basing our analysis on the unique policies in place in each state has allowed us to track states against the same systems they use to judge themselves. However this approach is not conducive to comparing the stringency of state targets. Therefore this report should be used to measure each state's success in meeting its own individual targets, but not to judge one state's targets against another's.²⁶

Findings

States with EERS policies are generally on track to meet or even exceed long-term savings targets, and together they are making a substantial contribution toward nationwide energy savings. Furthermore, these 26 states continue to stretch themselves, looking to capture more efficiency each year. Many states ramped up their savings targets in 2011 and 2012. Massachusetts, New York, and Vermont all aimed to achieve electricity savings of at least 2% of retail sales.²⁷ Other states were in the early stages of ramping up. Arkansas set targets of 0.25% in 2011, ramping up to 0.5% in 2012. Indiana increased savings targets from 0.5% of sales to 0.7% of sales in 2012. Texas had the least stringent targets over the period examined, equivalent to about 0.1% of electricity sales.

gas utilities over the 2010-2012 period, we similarly recognized this as the legislative target over that period. In Illinois, savings targets for individual utilities were adjusted due to rate-cap constraints. We did not adjust our analysis to reflect this constraint, since legislative targets remain in place.

²⁵ In Maryland, utilities must achieve 10% of the 15% savings target. In New York, we have limited our analysis to savings targets assigned to utilities and NYSERDA SBC-III programs.

²⁶ Others have attempted to compare state target stringency directly. See Steinberg and Zinaman 2014 and Palmer et al. 2013.

²⁷ Although only EERS targets are analyzed in the incremental savings portion of this report, New York's cumulative savings targets include measures from non-EERS program administrators.

Table 2 lists current EERS targets in each state. Wide variation exists in the stringency of targets, as well as the utilities and program administrators that are required to meet them. Policies are described in greater detail in Appendix A.

Table 2. Average incremental savings targets for electricity and natural gas, 2013 onward

State	Approx. incremental electric savings target	Approx. electric sales covered by EERS	Approx. incremental natural gas savings target	Approx. natural gas sales covered by EERS
Massachusetts	2.6%	86%	1.1%	88%
Arizona ¹	2.4%	56%	0.6%	85%
Maryland ²	2.4%	100%	--	--
Rhode Island	2.4%	99%	0.9%	100%
New York ²	2.1%	100%	0.5%	100%
Vermont	2.0%	100%	--	--
Illinois ³	1.8%	89%	1.1%	88%
Maine	1.6%	100%	0.3%	100%
Colorado	1.5%	57%	0.2%	72%
Indiana ⁴	1.5%	74%	--	--
Minnesota	1.5%	100%	1.5%	74%
Connecticut	1.4%	93%	0.6%	100%
Hawaii ²	1.4%	100%	--	--
Oregon	1.4%	69%	0.4%	89%
Washington	1.4%	81%	--	--
Iowa	1.3%	74%	0.2%	100%
Ohio	1.2%	89%	--	--
Michigan	1.0%	100%	0.8%	100%
New Mexico	1.0%	68%	--	--
California	0.9%	78%	0.6%	82%
Arkansas	0.8%	53%	0.5%	60%
Pennsylvania	0.8%	97%	--	--
Wisconsin	0.7%	100%	0.5%	100%
North Carolina	0.4%	99%	--	--
Nevada	0.2%	62%	--	--
Texas	0.1%	70%	--	--

Savings targets are averaged from 2013 through the life of the policy. ¹ We do not consider Salt River Project savings targets in our assessment of EERS policies, but this efficiency portfolio accounts for considerable additional energy savings in Arizona. ² Savings originating from non-reporting entities may count toward targets. Only savings data from regulated program administrators were analyzed in this report. ³ Available efficiency measures have been limited by a rate cap, resulting in approval of targets below legislative levels. ⁴ Indiana legislators voted to end efficiency programs after the research for this report was completed.

The next section analyzes each state's progress toward meeting incremental savings targets in 2011 and 2012, and provides estimates for potential cumulative savings through 2020.

INCREMENTAL ELECTRICITY SAVINGS

Of the 26 states with energy efficiency resource standards in place, nearly all met or came close to meeting their incremental electricity savings target in 2011 and 2012.²⁸ Thirteen states exceeded savings targets, and an additional six states came within 90% of their 2011 targets. In 2012, 15 states met or exceeded their electricity savings targets, and an additional 6 states came within 90% of their targets for the year. Though Maryland achieved only half the savings it planned to achieve in 2011, it made a notable bounce back the next year, exceeding its 2012 target for utility savings. New York fell far short of its incremental target in 2012, in part because program administrators have committed portions of their budgets to longer-term projects that have not yet realized energy savings. Full results are given in table 3 below. Note that progress towards targets does not indicate the aggressiveness of the targets in each state.

Table 3. Progress toward annual incremental electricity savings targets, 2011 and 2012

State	% target met (2011)	State	% target met (2012)
TX	206%	OH	152%
OH	148%	TX	165%
CT	139%	CA	138%
WA	135%	IL	131%
CO	131%	NV*	129%
IL	129%	MI	125%
CA	122%	CO	123%
MI	116%	VT	117%
MN	107%	NC*	117%
NM	106%	PA	105%
AZ	105%	OR	104%
NV*	104%	WI	101%
PA	102%	MD	101%
HI	97%	WA	100%
OR	94%	IN	100%
RI	94%	AR	99%
ME	93%	NM	99%
AR	91%	MN	99%
VT	91%	ME	96%

²⁸ Slight variations between MWh targets and sales calculated by utilities, administrators, and the PUC, in addition to EM&V corrections over time, make results slightly different when assessing targets in GWh as opposed to percentage sales. For target and savings data in terms of GWh, see Appendix D.

State	% target met (2011)	State	% target met (2012)
MA	88%	AZ	95%
WI	86%	RI	93%
NC*	85%	MA	89%
IA	84%	IA	88%
NY	80%	HI	83%
IN	69%	CT	80%
MD	50%	NY	43%

Refer to Appendix D for target and savings data. * State has combined EERS-RPS policy.

Figure 3 shows electricity targets and savings in 2011 and 2012. Targets clearly vary widely, which may partially explain why some states (e.g., Texas) are able to easily surpass targets in any given year. Other states have set higher targets, challenging utilities and program administrators to achieve deeper savings.

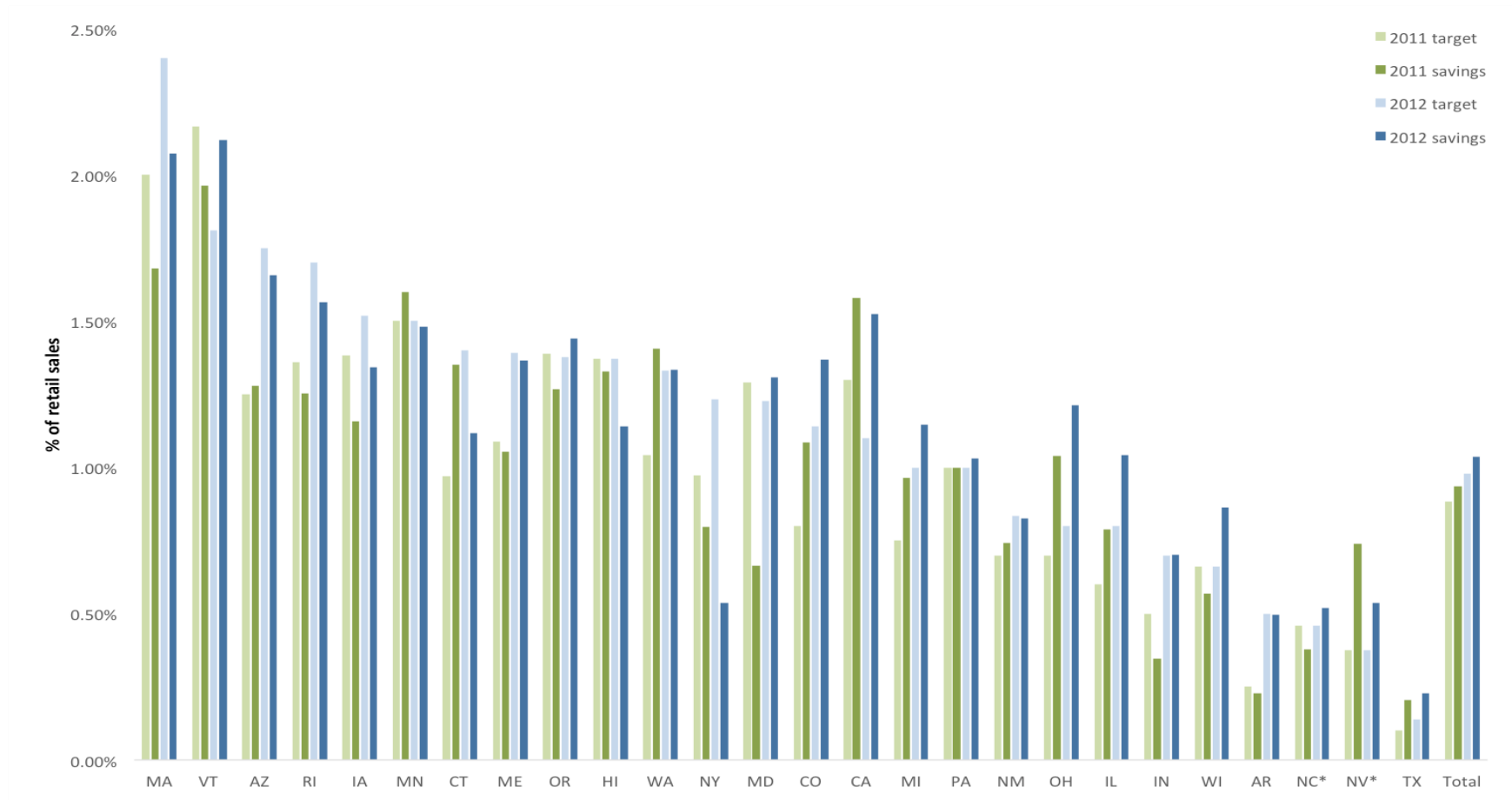


Figure 3. Electric targets and savings as a percentage of retail sales. Targets and savings are reported based on state-specific baselines and include only applicable sales and savings. Illinois targets are PY3 and PY4 targets based on legislation, although individual utility targets have been adjusted downward due to rate-cap constraints. Hawaii savings include only verified and high confidence savings as reported by the PUC. Only utility and NYSEERDA targets are considered for New York, as data are unavailable for other savings sources. Similarly, only the portion of targets assigned to utilities in Maryland is analyzed. * Targets represent maximum allowable efficiency under renewable portfolio standards.

Though individual success is somewhat variable, it should be noted that when aggregated, states are surpassing their savings targets. States with EERS policies in place planned to save a total of more than 18 million MWh in 2012, and they actually achieved over 20 million MWh of electricity savings.²⁹ States are proving that EERS policies add up to major energy savings.

Measurements of incremental progress do come with necessary caveats. Though several states have cumulative targets, in this report we examine incremental annual efficiency targets – and associated savings – in 2011 and 2012. This focus may underrepresent savings in some states. For example, in New York, savings are counted cumulatively rather than incrementally. Thus utilities and efficiency administrators plan for long-term savings rather than annual savings and are able to meet targets with both acquired and committed savings over the course of a measure lifetime. Here we look only at acquired incremental savings in a given year.³⁰

Additionally, several states rely on some portion of savings that do not go through a formal evaluation, measurement, and verification (EM&V) process. In Hawaii, nonverified savings – those achieved by state agencies, nonprofits, and private citizens without the help of utility programs – are estimated by the PUC and added to verified savings achieved by efficiency administrators. While we do consider some of these savings in our analysis, we do not include savings the Hawaii PUC deems “low confidence.” Similarly, Maryland assigns responsibility for 10% per-capita energy savings to utilities and requires an additional 5% per-capita energy savings to be achieved independently. In assessing incremental progress, we consider only the utility portion of the target, which is measured and verified through a formal process.³¹

Despite these complications, it is clear that, overall, states are making progress toward meeting electricity savings targets. However achieving new energy savings each year requires continual innovation. In states with the highest targets, program administrators are investigating ways of reaching new customer bases and transforming new markets upstream. On the other hand, efficiency measures in many other states are constrained due to loosely managed industrial self-direct and opt-out policies. With this large customer base partially or completely eliminated, utilities and program administrators must rely on commercial and residential efficiency measures to achieve the substantial savings they are targeting.

Savings spurred by EERS policies make up a meaningful portion – but not the entirety – of overall efficiency in the United States. In 2011, nearly every state in the country reported some level of electricity savings to ACEEE. However, states with EERS policies in place reported far greater levels of savings than those without them. Every state that reported savings greater than 1% of statewide retail electricity sales had an EERS in place (Downs et al. 2013). Since many of these states plan to continue to ramp up savings targets, it is likely that savings driven by EERS policies will contribute even more significantly to overall U.S. energy savings in the future.

²⁹ See Appendix D for savings and target data.

³⁰ Data on committed savings are available from the New York Department of Public Service at <http://www3.dps.ny.gov/W/PSCWeb.nsf/All/2197DAD6F78ECCB085257BA9005E71A6?OpenDocument>.

³¹ Though only utility and third-party administrator program savings are formally verified, goals in Hawaii and Maryland nonetheless apply statewide. We consider this fact in calculating expected cumulative savings as a result of these targets in table 6.

INCREMENTAL NATURAL GAS SAVINGS

Of the 26 states with EERS policies in place, 15 currently include mandatory savings targets for natural gas. Connecticut natural gas utilities did not have targets in place until 2012, and so 2011 natural gas savings within that state are not included in this report. Similarly, natural gas programs in Illinois did not begin until mid-2011. Savings and targets from Program Year 1, which ran from June 2011 until May 2012, are considered in the 2012 incremental savings assessment. Altogether we consider 13 natural gas EERS targets in 2011, and 15 in 2012.

The achievement of savings targets was similar to electric portfolios, with the majority of states making significant progress toward meeting annual targets. Eight of 13 states exceeded their natural gas savings targets in 2011. States continued to close the gap between savings and targets from 2011 to 2012. In 2012, five states exceeded their natural gas savings targets, and an additional six states achieved at least 90% of required savings. Table 4 shows results for 2011 and 2012.

Table 4. Progress toward annual incremental natural gas savings targets, 2011 and 2012

State	% target met (2011)	State	% target met (2012)
OR	142%	OR	135%
MI	134%	MN	128%
MN	133%	MI	125%
CO	122%	CA	122%
RI	117%	AR	110%
AR	110%	RI	99%
IA	104%	CO	98%
CA	104%	IA	98%
MA	84%	IL	96%
WI	67%	MA	92%
NY	49%	WI	90%
ME	44%	CT	69%
AZ	43%	NY	44%
CT	--	ME	43%
IL	--	AZ	28%

Refer to Appendix D for target and savings data.

Natural gas targets tend to require lower levels of savings than electricity targets in percentage terms, but nonetheless they are important for achieving significant savings within a state. In 2012, natural gas targets ranged from about 0.1% of baseline sales up to 1% of baseline sales. (See table 2 for approximate annual natural gas targets by state, and Appendix A for policy details). Several states are still at the beginning of their ramp-up periods for natural gas, and,

faced with low gas prices, they will have to innovate in order to achieve their targets. Figure 4 shows targets and savings by state in 2011 and 2012.

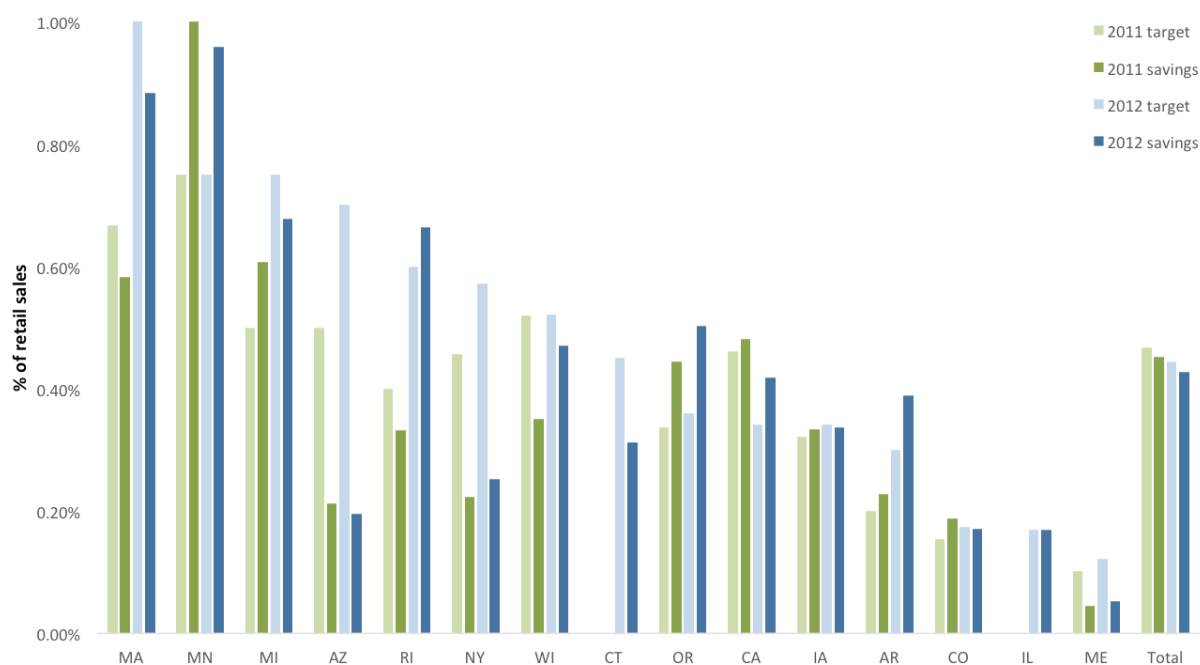


Figure 4. Natural gas targets and savings as percentage of baseline retail sales. Target and savings data are taken from utility and public utility commission reports unless otherwise indicated. Connecticut did achieve natural gas savings in 2011, but did not have targets in place at that time. Natural gas programs in Illinois began in June 2011. Program Year 1 savings are treated as 2012 savings in this analysis.

Several utility administrators report that the low cost of natural gas makes it more difficult to include cost-effective natural gas efficiency programs within their portfolios. Additionally, in some states industrial opt-out provisions and the exclusion of non-retail customers have also eliminated potential low-cost, high-savings programs for large customers. Nonetheless, states are making clear progress toward meeting natural gas savings goals. Many of these programs are still in the first few years of implementation and, as they mature, higher levels of savings will be achievable.

ENCOURAGING SUCCESS THROUGH CHANGES IN THE UTILITY BUSINESS MODEL

Though EERS policies are an important strategy to help regulators, policymakers, and utilities guide a state's energy future, ultimately the targets themselves must be paired with some other regulatory function, a carrot or a stick to spur utilities to action. Only a few states have opted to use the stick approach by assigning a penalty for not meeting targets. Most states use the carrot approach, offering utilities and non-utility program administrators a rate of return or financial reward if they meet or exceed their targets. Eighteen of the states in this report have financial incentives in place or pending for electric utilities, and 12 make financial incentives available for natural gas utilities. This approach addresses one of the fundamental policy barriers to increased energy efficiency, which is that utilities have traditionally viewed energy efficiency as a threat to their revenue rather than an important component of their business model.

In a traditional business model, utilities may increase revenues in two ways, either (1) by increasing their revenue requirement by widening their rate base or (2) by increasing their volume of sales after rates have been established. While state law generally requires them to maintain reasonable rates, utilities have an incentive to sell more of their product, be it electricity or natural gas, in order to increase revenue. Energy efficiency eats away at these potential sales. Though EERS policies require a certain level of savings achieved through energy efficiency, these targets themselves do nothing to address a utility's disincentive to invest in it. Without complementary incentive mechanisms in place, utilities may find that it is not in their financial interest to invest in the level of efficiency required.

Numerous states with EERS policies in place have also implemented complementary rules to help remove disincentives for investments in efficiency. In many cases, these policies go beyond simply removing a disincentive and offer utilities financial benefits for meeting or exceeding savings targets.³² Utility regulators have used three main mechanisms to incentivize success:

- *Program cost recovery*, which allows utilities to recover investments in energy efficiency either by treating these investments as capital expenses in rate cases, or by adding costs of efficiency programs to the rate base and capitalizing them just as they would investments in power plants.
- *Decoupling, or implementation of a lost revenue adjustment mechanism (LRAM)*. Decoupling is a mechanism that allows utilities to recover investments in efficiency fixed costs independent of the volume of electricity or natural gas sold. Regular true-ups ensure that utilities recover costs equal to allowed fixed costs. LRAM is a rate adjustment mechanism that allows utilities to recover “lost” revenues due to energy savings resulting from efficiency programs. LRAM allows for upward adjustment of rates to recover costs, but does not allow for the symmetrical true-up accounted for in decoupling.
- *Performance incentives*, which reward utilities financially for meeting energy savings goals. Performance incentives are meant to provide program administrators with a risk-adjusted financial incentive to achieve economic gains for customers through efficiency rather than through supply-side generation and infrastructure investments. Performance incentives may be offered for meeting or surpassing goals, or they may increase in proportion to the level of savings achieved.

Penalties are a less common mechanism for incentivizing utilities to meet energy savings targets. In some cases penalties are financial. For example, in Indiana, utilities achieving less than 40% of required energy savings are subject to a negative incentive of 4% of revenues. Other states may take responsibility for efficiency programs away from utilities or program administrators if they fail to meet goals. For example, Illinois statute states that if utilities do not meet savings goals for a three-year period, the regulatory commission shall give control of

³² For a complete discussion of utility business models and the “three-legged stool,” see York and Kushler 2011.

efficiency programs to the Illinois Power Agency. Table 5 shows states with decoupling, performance incentives, and penalty mechanisms in place.³³

Table 5. Utility policies to address lost revenues and financial incentives

	Decoupling or LRAM		Performance incentives		Penalty mechanisms	
	Electric	Natural gas	Electric	Natural gas	Electric	Natural gas
Arizona	Yes ²	Yes ³	Yes	No	No	No
Arkansas	Yes ²	Yes ²	Yes ¹	Yes ¹	No	No
California	Yes	Yes	Yes	Yes	No	No
Colorado	Yes ²	Yes ²	Yes	Yes	No	No
Connecticut	Yes ³	Yes ²	Yes	Yes	No	No
Hawaii	Yes	No	Yes	No	No	No
Illinois	No	Yes	No	No	Yes	Yes
Indiana	Yes ³	Yes	Yes	No	Yes	No
Iowa	No	No	No	No	No	No
Maine	No	No	No	No	No	No
Maryland	Yes	Yes	No	No	No	No
Massachusetts	Yes	Yes	Yes	Yes	No	No
Michigan	No	Yes	Yes	Yes	No	No
Minnesota	No	Yes	Yes	Yes	No	No
Nevada	Yes ²	Yes ³	No	No	No	No
New Mexico	Yes ²	Yes ²	Yes	Yes	No	No
New York	Yes	Yes	Yes	Yes	No	No
North Carolina	Yes ³	Yes	Yes	No	No	No
Ohio	Yes ³	Yes ²	Yes	Yes	Yes	No
Oregon	Yes	Yes	No	No	No	No
Pennsylvania	No	No	No	No	Yes	No
Rhode Island	Yes	Yes	Yes	Yes	No	No
Texas	No	No	Yes	No	No	No
Vermont	Yes ¹	Yes ^{2,1}	Yes	No	No	No
Washington	Yes	Yes	No	No	No	No
Wisconsin	Yes	Yes ³	Yes	Yes	Yes	Yes

¹ Decoupling for electric or gas utilities, or both, or performance incentives are authorized according to legislation or commission order but are not yet implemented. ² No decoupling, but some other mechanism for lost revenue adjustment. ³ Both decoupling and some other mechanism for lost revenue adjustment. *Source:* Downs et al. 2013.

³³ Many states also require energy efficiency to be considered as part of the IRP process. This may result in long-term plans for acquisition of energy efficiency. For more information, see Barbose et al. 2013.

A few patterns can be discerned from table 5:

- Nearly every state with an EERS has recognized the necessity of complementary policy mechanisms to achieve the level of savings targeted in rules and legislation.
- Many of the states with the highest savings targets have mechanisms in place for the recovery of lost fixed costs.
- While implementation of decoupling or LRAM removes the disincentive for efficiency investments, many of these high-target, high-savings states also rely on performance incentives to encourage utilities and program administrators to invest in the level of efficiency required to meet savings goals.
- Penalty mechanisms are largely clustered in midwestern states, possibly an example of peer influence. Several of these states also have performance incentives in place, motivating efficiency performance with both carrots and sticks.

In some states incentive frameworks were built into EERS rules, while in other states they were established apart from EERS targets. In both cases incentives may be modified over time. As states gain experience in implementing efficiency programs, they can fine tune the regulatory mechanisms required to meet savings targets. For example, California recently adopted a new framework that adjusted financial incentives and removed penalty mechanisms.

SUSTAINABLE SAVINGS

With the great majority of states either meeting, exceeding, or realizing at least 80% of their energy savings targets, the overall expected U.S. savings are significant. While incremental annual savings measure progress in any given year, efficiency measures have lifetimes that extend over multiple years. These savings add up as utilities and program administrators continue to implement their programs. Table 6 extrapolates savings targets to 2020 based on a state's final year of savings targets. Not all electric utilities are required to meet energy savings targets in every state. Therefore we calculated estimated total annual savings for both covered load (those sales included in baseline calculations for EERS targets) and the state as a whole.

Table 6. Annual electricity savings targets extrapolated to 2020

State	2020 annual savings (covered load only)	2020 annual savings (statewide)
Arizona	25.1%	15.2%
Arkansas	7.5%	4.5%
California	11.3%	8.6%
Colorado	14.0%	8.0%
Connecticut	15.5%	14.5%
Hawaii	22.8%	22.8%
Iowa	15.2%	14.9%
Illinois	15.9%	14.2%
Indiana*	13.8%	10.3%

State	2020 annual savings (covered load only)	2020 annual savings (statewide)
Massachusetts	26.3%	22.8%
Maryland**	28.7%	28.7%
Maine	17.1%	17.1%
Michigan	10.4%	10.4%
Minnesota	16.1%	16.1%
North Carolina	4.0%	4.0%
New Mexico	6.5%	4.3%
Nevada	5.0%	3.1%
New York**	26.9%	26.9%
Ohio	12.0%	10.8%
Oregon	15.9%	11.0%
Pennsylvania	8.7%	8.5%
Rhode Island	24.3%	23.8%
Texas	1.8%	1.1%
Vermont	24.2%	24.2%
Washington	14.2%	11.9%
Wisconsin	6.4%	6.4%

All savings calculations represent the sum of savings in each year as a percent of relative load in that year. We normalized savings targets by translating targets into GWh for each year. Annual savings in 2020 are the sum of incremental savings beginning in 2020 or the first year of EERS implementation extrapolated to 2020 based on the final year of savings required. Covered load refers to savings required by regulated entities. Statewide savings are based on total expected energy consumption in a business-as-usual scenario in each state. * Indiana estimated savings are based on targets in place as of January 2014. ** Though only the utility portion of Maryland's targets are analyzed in the incremental savings sections of this report, annual savings calculations are based on the entire EmPower Maryland goal of 15% per capita savings. Similarly, the entirety of New York's target is used in the annual projection while only savings required by utilities and NYSEERDA are assessed in the incremental savings sections.

Based on savings targets required by current EERS policies, states can expect annual savings ranging from only about 1% (Texas) to nearly 30% (New York and Maryland) in 2020 if they choose to continue setting and enforcing targets and if incremental savings targets are met each year.³⁴ If states continue to meet savings targets – and legislators and regulators maintain these targets in years leading up to 2020 – the combined annual electricity savings from the 26 states with EERS policies will be equivalent to 6.2% of electricity sales in the United States in 2020.

³⁴ Here we assume that targets are continued through 2020 based on the final year of targets currently required. It is plausible that states may choose to continue enforcing targets but at varying levels of stringency. Cumulative savings resulting from EERS policies have been estimated by several other authors with similar, but not identical, results. See Steinberg and Zinaman 2014, Palmer et al. 2013, and Sciortino et al. 2011 for additional information.

That is enough electricity to power almost a million homes for 20 years. Achieving this level of savings will certainly be a challenge; success will depend on program innovation and political will.

Those states with the highest savings targets suggest that it is feasible to continue to achieve high levels of cost-effective savings. Analysts have all heard talk of the low-hanging fruit of energy efficiency: when we have gathered it all up, what will be left to do? In reality, new opportunities continue to present themselves. Northeastern states are increasingly focused on grid modernization and integrated sustainability services. Compact fluorescent lighting (CFL) programs are being replaced by light emitting diode (LED) offerings. Moreover utilities are expanding market transformation efforts beyond lighting, and behavior programs are making up a growing portion of efficiency portfolios. Overall, program administrators are using market segmentation to create better value propositions for specific markets. Even as they are delivering deeper savings to traditional customers, they are reaching new ones in areas such as multifamily buildings and mobile homes. In Rhode Island, a state with one of the most aggressive energy savings targets, a recent review of its 2010 potential study found that though specific circumstances had changed, annual energy efficiency targets upwards of 2.5% remained feasible over the next ten-year period (RIPUC 2013).³⁵

Politically, the future is more uncertain. Many states have not yet set targets through 2020, and reaching the levels of savings we identify will require continuing commitment from all parties. We have seen EERS policies run hot and cold in several states, most recently with a bill passed by the Indiana legislature to prevent future contracts for efficiency programs. Efficiency opponents in Pennsylvania and Ohio have recently sought to let industrial customers opt out of efficiency programs. In Connecticut and Maine, we have seen political will take efficiency in both directions, first by passing legislation requiring aggressive programs, then by denying funding to those programs, and finally by allowing the rate reform necessary to implement full portfolios of cost-effective efficiency.

Still, many states remain committed to efficiency. In New York, program administrators, policy makers, and advocates are building a more effective energy efficiency implementation model. Maryland is on track to meet its targets and looking to extend them past 2015. Oklahoma has issued proposed rules that include energy savings targets and may become one of the next states to implement an EERS. Achieving increasingly higher levels of savings in these and other states will require cutting-edge program design, support from state legislators, and clear regulatory models that reward success.

Lessons Learned

In general, states are making notable progress toward meeting savings targets. However every state has faced challenges. Each regulatory environment is different, and program administrators have access to different resources. There is no one best policy, and each state

³⁵ A potential study is an analysis predicting all the possible cost-effective energy savings available within a state over a long period of time, usually 10 or 20 years.

should meet targets and save energy in the way that best suits it. However some broad lessons do emerge from comparing policies and outcomes.³⁶

RUN ROBUST PROGRAMS FOR ALL CUSTOMER CLASSES

Energy efficiency benefits all customer classes. Even as natural gas prices continue to fall, energy efficiency is the lowest-cost resource available to utilities to meet demand (Molina 2014). Cost-effective investments in energy efficiency help utilities avoid the need for expensive new power plants. The result is lower costs for both participants and nonparticipants in efficiency programs. At the same time, benefits are maximized through program participation. Administrators should develop broad portfolios with worthwhile programs for all customer classes. They should focus on maximizing participation rates and helping all customers realize the full value of efficiency programs. Many utilities have found that customer satisfaction improves when customers work with them outside the context of bill payment. Well-designed programs for large industrials can also help prevent opt-out requests.

PLAN FOR RAMP-UP PERIODS

The states we examined had varying levels of efficiency programming in place when EERS policies were first implemented. Some utilities who were already running efficiency programs before EERS implementation found that they could meet targets with ease. Typically, however, utilities need to engage in a significant amount of planning and adjustment when an EERS is instituted. In many states, lengthy regulatory processes make it difficult for utilities and administrators to set up programs and have them approved by PUCs in the time period required by legislation. For example, in Maryland, utilities found that it took several years to begin implementing a full portfolio of programs, and they were not on track to hit their targets during the first years of implementation. Similarly, some cooperatives in Arizona are still in the process of having their initial efficiency portfolios approved several years after the state's EERS went into effect. Though regulatory lag is an issue, a ramp-up period gives program administrators some breathing room to bulk up efficiency portfolios over time.

INCENTIVIZE UTILITIES TO MEET TARGETS

Nearly every state in the country has some sort of cost recovery in place that allows utilities to recover direct program costs for efficiency measures. However many states have taken steps beyond cost recovery, implementing decoupling/LRAM and performance incentives to align the utility business model with energy efficiency investments. As discussed above, 18 states with EERS policies in place offer incentives for electricity and/or natural gas utilities. Shareholder incentives have a significant influence on utility decision making. When incentives are available, utilities will do what they must do to earn them as long as they exceed forgone earnings (Hayes et al. 2011).

The fact that each performance incentive is designed differently makes for a murkier picture. In New Mexico, utilities receive incentives based on portfolio spending rather than achievement of

³⁶ See the case studies in Appendix B for more specific information on policies, challenges, and processes in Illinois, Hawaii, Maryland, Arkansas, Arizona, Massachusetts, New York, and Ohio.

energy savings. In Massachusetts, program administrators receive several types of incentives, some for aspects of their portfolio that accomplish goals apart from verified energy savings. In Indiana, performance incentives are offered on a sliding scale: utilities are penalized for low levels of savings, but they can receive positive incentives without reaching the entirety of their savings goals in any given year. California, a state with a long history of efficiency activity, has revamped its incentive structure several times.

PLAN FOR MEANINGFUL ENERGY SAVINGS

In most cases, eligible savings measures are adjusted over time as utilities and program administrators submit plans or proposals to state regulatory commissions. For example, in Ohio, banked savings and credit for transmission and distribution improvements have helped utilities far exceed their targets every year. As the boundaries of acceptable efficiency measures expand, however, states may find that they are not capturing all the cost-effective efficiency available. As they begin to recognize these possibilities, they may consider setting higher targets to encourage utilities to invest in deeper efficiency measures.

Similarly, many states consider credit for CHP installations after savings targets have been determined. By not accounting for this efficiency potential, states likely set targets too low, allowing utilities to rely on CHP projects to meet targets they might have been able to meet through other cost-effective measures. It is unlikely that any state will be able to anticipate all potential efficiency measures when setting targets, but it is important to make targets both challenging and achievable.

Planning for meaningful energy savings means not only selecting eligible measures, but also determining how savings from these measures will count toward savings targets. States have dealt with attributing savings in a variety of ways, choosing to measure either net savings, gross savings, or at times, both. While the choice of a savings attribution methodology depends on priorities and circumstances, states should be transparent in their reporting. Although simplified savings verification methods (e.g., a standard net-to-gross ratio or use of gross savings) may help speed up regulatory processes, clear and correct calculations of net savings will help utilities and other program administrators fine tune program portfolios and better understand the effects of their program offerings.

RELY ON CLEAR AND BALANCED COST-EFFECTIVENESS TESTS

Tests for cost effectiveness vary greatly from state to state. A good cost-effectiveness test should capture the entire value of energy resources. In Maryland, an imbalanced total resource cost (TRC) test caused several programs that might have passed a more balanced test to be eliminated from program portfolios in early years.³⁷ Failing to account for the complete benefits of efficiency resources leads utilities and program administrators to underinvest in energy efficiency. Since efficiency is the lowest-cost resource, this leads to higher costs for customers.³⁸

³⁷ TRC tests should account for the complete set of benefits, both to utilities and to customers. Since customer benefits are more difficult to quantify, they are often not fully included in cost-effectiveness calculations. See Neme and Kushler 2010 for more details.

³⁸ See Molina 2014 for a discussion of the levelized cost of efficiency and supply-side resources.

In the absence of a well-balanced TRC, other cost-effectiveness tests may be preferable. The utility cost test (UCT), also known as the program administrator cost test, includes energy costs and benefits experienced by the program administrator. Since these costs and benefits are likely known and tracked by the administrator, the UCT may allow for more a more straightforward, balanced judgment of cost effectiveness. Recently, the Energy Efficiency Screening Coalition (EESC) proposed the use of a “Resource Value Framework” to identify efficiency programs that are in the public interest. This framework addresses the limits of other cost-effectiveness tests while accounting for the varying energy policy goals of a state.³⁹

It should be noted that a balanced portfolio necessarily includes some programs or measures that may be less cost effective than others in order to meet other goals. For example, states may place value on assisting low-income customers, though measures that do so are often less cost effective than measures targeted to other customer bases. Testing for cost effectiveness at the program and/or portfolio level rather than at the measure level allows program administrators to reach a broad and diverse customer base.

INVOLVE STAKEHOLDERS IN THE PLANNING PROCESSES

While all efficiency planning processes allow for some public comment period, Rhode Island, Connecticut, and Massachusetts each has a formal stakeholder process in place. Stakeholder boards in these states ensure that a variety of interests have a seat at the table. Environmental groups, businesses, industrial customers, consumer advocates, residential and low-income stakeholders, utilities, and government representatives all participate in regular stakeholder meetings. During these meetings, members work together to formalize targets for each planning cycle. Stakeholders also collaborate on other aspects of efficiency programming such as data collection and aggregation.⁴⁰ Whether or not the notably high targets in these states are a result of their formalized stakeholder collaboration, just having the support of so many parties can help smooth regulatory and legislative processes.

Conclusions

As more states adopt EERS policies, the diversity of these policies continues to grow. Flexibility in fashioning EERS legislation and rulemaking has both its upside and its downside. States have tailored policies in ways that fit well within the political and regulatory confines of their current environments, and they have customized reporting requirements and incentives for meeting targets in ways that best suit local stakeholders. However even long-established EERS policies are continually changing, and many sources of regulatory uncertainty still remain.

Despite the uncertainty, EERS policies are unquestionably spurring a significant amount of energy savings. The states remain the proving ground for energy efficiency policies. Even the states with policies solidly in place for several years continue to refine program design and implementation. Utilities and program administrators in states with the most stringent targets are seeking even more innovative ways to capture savings, ranging from behavior programs to

³⁹ See EESC 2013 for more details on the Resource Value Framework.

⁴⁰ For example, the Massachusetts Energy Efficiency Advisory Committee has convened a working group to create a centralized statewide reporting database.

new financing mechanisms to methods for streamlining program delivery. These strategies may provide helpful examples not only to states just beginning to ramp up their programs but to all utilities and program administrators. All this innovation ultimately drives significant energy savings at low cost.

In 2011, ACEEE reported that states with EERS policies were on track to meet savings targets. In the two years since then, states have significantly ramped up their energy efficiency portfolios. More states are implementing programs to meet EERS targets and, even as targets are growing, states are still making notable progress toward meeting them. Nearly every state included in this analysis met the majority of its incremental energy savings targets in 2011 and 2012. Natural gas targets are being met with a similar level of success.

Whether targets will continue to be reached as they become more stringent over the next several years remains to be seen. States like Massachusetts – where annual electricity savings targets exceed 2% of retail sales – are proof that high levels of savings are possible. But variability in energy prices and limited political support for energy efficiency may limit potential savings in some states. Though higher levels of cost-effective efficiency may be technically achievable, policies can limit the measures available to program administrators. In Illinois, for example, utilities have already bumped up against the rate cap. In several other states, large customers have been allowed to opt out of energy efficiency programs.

Still, the energy savings achieved by the states with EERS policies in place are meaningful on both a state and a national scale. By embracing long-term energy efficiency, states are creating benefits not only for their own citizens but for the country as a whole. As states continue to ramp up programs, the savings will ripple across the economy, saving customers money on their energy bills, increasing the reliability of energy delivery systems, securing the energy supply, and reducing greenhouse gas emissions.

Maintaining this forward motion will depend on support across the country. Many states are approaching the final years of their EERS targets. With energy efficiency continuing to prove the lowest-cost resource, many of them will likely extend their target timeframes. However several states are facing political pushback to EERS policies. Evidence supporting energy efficiency as a cost-effective and readily available resource may help keep existing EERS policies in place and may influence states with nascent programs to adopt long-term standards. But it will also take a unified push by stakeholders to ensure that EERS policies continue to play a central part in our energy-efficient future.

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Appendix A. Summary of EERS Policy Status by State

	<ul style="list-style-type: none"> • State • Year enacted • Electric/natural gas • Applicability (% sales affected) 	Energy Efficiency Resource Standard	Reference
1	Arizona 2010 Electric and Nat. gas IOUs, Co-ops (~59%)	Electric: Annual savings targets began at 1.25% of sales in 2011, ramping up to 2.5% in 2016 through 2020 for cumulative annual electricity savings of 22% of retail sales, of which 2% may come from peak demand reductions. Natural gas: ~0.6% annual savings (for cumulative savings of 6% by 2020).	Docket No. RE-00000C-09-0427, Decision 71436 Docket No. RE-00000C-09-0427, Decision 71819 Docket No. RG-00000B-09-0428 Dec. No. 71855
2	Arkansas 2010 Electric and nat. gas IOUs (~53%)	Electric: Annual reduction of 0.75% of total electric kWh sales in 2014 and 0.9% in 2016. Natural gas: Annual reduction of 0.40% in 2014 and 0.5% in 2015. The Commission has withheld a ruling on targets for 2016-2017 pending a potential study.	Order No. 17, Docket No. 08-144-U; Order No. 15, Docket No. 08-137-U Order No. 1, Docket No. 13-002-U Order No. 7, Docket No. 13-002-U
3	California 2004 and 2009 Electric and nat. gas IOUs (~78%)	Electric: ~0.9% annual savings through 2020. Demand reduction of 4,541 MW through 2020. Natural gas: 619 gross MMTh between 2012 and 2020. Utilities must pursue all cost-effective efficiency resources.	CPUC Decision 04-09-060; CPUC Decision 08-07-047; CPUC Decision 09-09-047
4	Colorado 2007 Electric and nat. gas IOUs (~57%)	Electric: Black Hills follows PSCo savings targets of 0.8% of sales in 2011, increasing to 1.35% of sales in 2015 and 1.66% of sales in 2019. Natural gas: Savings targets commensurate with spending targets (at least 0.5% of prior year's revenue).	Colorado Revised Statutes 40-3.2-101, et seq.; Docket No. 08A-518E Dec. R09-0542 COPUC Docket No. 12A-100E Dec. R12-0900; Docket 10A-554EG
5	Connecticut 2007 and 2013 Electric and nat. gas IOUs (~94%)	Electric: Targets equivalent to annual savings of ~1.4% through 2015. Natural gas: Average annual savings of ~60 MMTherms through 2015. Utilities must pursue all cost-effective efficiency resources.	Public Act No. 07-242 Public Act No. 13-298 2013-2015 Electric and Natural Gas Conservation and Load Management Plan
6	Hawaii 2004 and 2009 Electric Statewide Goal (100%)	In 2009, transitioned away from a combined RPS-EERS to a standalone EERS goal to reduce electricity consumption by 4,300 GWh by 2030 (equal to ~30% of forecast electricity sales, or 1.4% annual savings).	HRS §269-91, 92, 96 HI PUC Order, Docket 2010-0037

	<ul style="list-style-type: none"> • State • Year enacted • Electric/natural gas • Applicability (% sales affected) 	Energy Efficiency Resource Standard	Reference
7	Illinois 2007 Electric and nat. gas Utilities with over 100,000 customers, Illinois DCEO (~88%)	Electric: 0.2% annual savings in 2008, ramping up to 1% in 2012, 2% in 2015 and thereafter. Annual peak demand reduction of 0.1% through 2018. Natural gas: 8.5% cumulative savings by 2020 (0.2% annual savings in 2011, ramping up to 1.5% in 2019). Energy efficiency measures may not exceed an established cost cap.	S.B. 1918 Public Act 96-0033 § 220 ILCS 5/8-103
8	Indiana 2009 Electric Jurisdictional utilities (IOUs and Muni's) (75%)	0.3% annual savings in 2010, increasing to 1.1% in 2014. Initial orders ramped savings up to 2% by 2019, but current legislation ends existing programs in 2015.	Cause No. 42693, Phase II Order S.B. 340
9	Iowa 2009 Electric and nat. gas IOUs (75%)	Electric: Varies by utility from 1-1.5% annually through 2014. Natural gas: Varies by utility from 0.74-1.2% annually through 2014.	Senate Bill 2386 Iowa Code § 476
10	Maine 2009 Electric and nat. gas Efficiency Maine (100%)	Electric and natural gas savings of 20% by 2020, with annual savings targets of ~1.6% for electric and ~0.3% for natural gas. Efficiency Maine operates under an all cost-effective mandate.	Efficiency Maine Triennial Plan H.P. 1128 – L.D. 1559
11	Maryland ¹ 2008 Electric Statewide goal (100%)	15% per-capita electricity use reduction goal by 2015 (10% by utilities, 5% achieved independently). 15% reduction in per capita peak demand by 2015 compared to 2007. Next round of targets currently under discussion.	Md. Public Utility Companies Code § 7-211
12	Massachusetts 2009 Electric and nat. gas IOUs, Co-ops, Muni's, Cape Light Compact (~86%)	Electric: 1.4% in 2010, 2.0% in 2011, 2.4% in 2012, 2.5% in 2013, increasing to 2.6% by 2015. Natural gas: 0.63% in 2010, 0.83% in 2011, 1.0% in 2012, 1.1% in 2013, increasing to 1.15% by 2015. All cost-effective efficiency requirement.	D.P.U. Order 09-116 through 09-128 D.P.U. Order 12-100 through 12-111
13	Michigan 2008 Electric and nat. gas Statewide goal (100%)	Electric: 0.3% annual savings in 2009, ramping up to 1% in 2012 and continuing through 2015. Natural gas: 0.10% annual savings in 2009, ramping up to 0.75% in 2012 and continuing through 2015.	M.G.L. ch. 25, § 21; Act 295 of 2008

	<ul style="list-style-type: none"> • State • Year enacted • Electric/natural gas • Applicability (% sales affected) 	Energy Efficiency Resource Standard	Reference
1 4	Minnesota 2007 Electric and nat. gas Statewide goal (100%)	Electric: 1.5% annual savings in 2010 and thereafter. Natural gas: 0.75% annual savings from 2010-2012; 1% annual savings in 2013 and thereafter.	Minn. Stat. § 216B.241
1 5	Nevada 2005 and 2009 Electric IOUs (~62%)	20% of retail electricity sales to be met by renewables and energy efficiency by 2015, and 25% by 2025. Energy efficiency may meet a quarter of the standard through 2014, but is phased out of the RPS by 2025.	NRS 704.7801 et seq. NRS 704.7801 as amended
1 6	New Mexico 2008 and 2013 Electric IOUs (68%)	5% reduction from 2005 total retail electricity sales by 2014, and an 8% reduction by 2020.	N.M. Stat. § 62-17-1 et seq.
1 7	New York 2008 Electric and nat. gas Statewide goal (100%)	Electric: 15% cumulative savings by 2015. Natural gas: ~14.7% cumulative savings by 2020.	NY PSC Order, Case 07-M-0548 NY PSC Order, Case 07-M-0748
1 8	North Carolina 2007 Electric Statewide goal (100%)	Renewable Energy and Energy Efficiency Portfolio Standard (REPS) requires renewable generation and/or energy savings of 6% by 2015, 10% by 2018, and 12.5% by 2021 and thereafter. Energy efficiency is capped at 25% of target, increasing to 40% in 2021 and thereafter.	N.C. Gen. Stat. § 62-133.8 04 NCAC 11 R08-64, et seq.
1 9	Ohio 2008 Electric IOUs (~89%)	22% by 2025 (0.3% annual savings in 2009, ramping up to 1% in 2014 and 2% in 2019). Peak demand reduction targets of 1% in 2009 and an additional 0.75% each year thereafter until 2018.	ORC 4928.66 et seq. S.B. 221
2 0	Oregon 2010 Electric and nat. gas Energy Trust of Oregon (~70%)	Electric: Targets are equivalent to 0.8% of 2009 electric sales in 2010, ramping up to 1.4% in 2013 and 2014. Natural gas: 0.2% of sales in 2010, ramping up to 0.4% in 2014.	Energy Trust of Oregon 2009 Strategic Plan
2 1	Pennsylvania 2004 and 2008 Electric Utilities with over 100,000 customers (~93%)	3% cumulative savings 2009-2013; ~2.3% cumulative savings 2014-2016. EERS includes peak demand targets. Energy efficiency measures may not exceed an established cost cap.	66 Pa C.S. § 2806.1 ; PUC Order Docket No. M-2008-2069887 ; PUC Implementation Order Docket M-2012-2289411

	<ul style="list-style-type: none"> • State • Year enacted • Electric/natural gas • Applicability (% sales affected) 	Energy Efficiency Resource Standard	Reference
2 2	Rhode Island 2006 Electric and nat. gas IOUs, Muni's (~99%)	Electric: Annual savings of 1.7% in 2012, 2.1% in 2013, 2.5% in 2014. EERS includes demand response targets. Natural gas: Annual savings of 0.6% in 2012, 0.8% in 2013, and 1.0% in 2014. Utilities must acquire all cost-effective energy efficiency.	R.I.G.L § 39-1-27.7 Docket 4284, 4295
2 3	Texas 1999 and 2007 Electric IOUs (~73%)	20% incremental load growth in 2011 (equivalent to ~0.10% annual savings), 25% in 2012, 30% in 2013 onward. Peak demand reduction targets of 0.4% compared to previous year. Energy efficiency measures may not exceed an established cost cap.	Senate Bill 7 ; House Bill 3693 ; Substantive Rule § 25.181 Senate Bill 1125
2 4	Vermont 2000 Electric Efficiency Vermont, Burlington Electric (100%)	Expected cumulative savings of ~6% 2012-2014. EERS includes demand response targets. Energy efficiency utilities must set budgets to realize all cost-effective energy efficiency.	30 V.S.A. § 209 ; VT PSB Docket EEU-2010-06
2 5	Washington 2006 Electric IOUs, Co-ops, Muni's (~81%)	Biennial and ten-year goals vary by utility. Law requires savings targets to be based on Northwest Power Plan, which estimates potential annual savings of ~1.5% through 2030 for Washington utilities. All cost-effective conservation requirement.	Ballot Initiative I-937 WAC 480-109 WAC 194-37
2 6	Wisconsin 2011 Electric and nat. gas Focus on Energy (100%)	Electric: Annual savings of ~0.66% of sales in 2011-2014. Natural gas: Annual savings of ~0.5% of sales in 2011-2014. Energy efficiency measures may not exceed established cost cap.	Order, Docket 5-GF-191

IOUs are investor-owned utilities. ¹The 15% per-capita electricity use reduction goal translates to around 17% cumulative savings over 2007 retail sales.

Appendix B. Case Studies

State models for EERS policies vary widely. These policy variations impact whether states meet their energy savings targets and the types of measures program administrators choose to pursue. To explore these variations, we interviewed regulators and program administrators in 8 of the 26 states with EERS policies in place as of January 2014: Illinois, Hawaii, Arkansas, Massachusetts, Arizona, Ohio, Maryland, and New York.

ILLINOIS

Legislative Background

Energy efficiency activity in Illinois scaled up greatly beginning in 2007 with the passage of the Illinois Power Agency Act (IPAA). The legislation laid the framework for an EERS for investor-owned utilities (IOUs), establishing annual savings targets for electricity and requiring utilities to include demand-response measures in their program planning. As directed by IPAA, electric IOUs in Illinois must implement cost-effective energy efficiency measures to meet savings equivalent to 0.2% of electricity delivered in 2008, ramping up to 1% in 2012, and reaching 2% by 2015.

The legislation also divides responsibility for achieving savings targets between IOUs and the Illinois Department of Commerce and Economic Opportunity (DCEO). DCEO is directed to implement 25% of total efficiency measures. Both utilities and DCEO may outsource programs, but DCEO is required to target programs toward state and local governments, school districts, and low-income customers. The remaining 75% of program savings and spending are assigned to utilities.

Spending for electric energy efficiency programs is capped. In 2008, customer rate increases were limited to 0.5% of the amount paid per kilowatt by each customer class during the previous year. The legislation also established a ramp-up period for spending, with the cap increasing to approximately 2%. In 2011, the Illinois Commerce Commission (ICC) reported on the impact of the rate cap to the Illinois General Assembly, noting that both of the state's major electric utilities would be constrained by the spending limits and would be unable to achieve the savings called for in IPAA. Modified savings targets, accounting for the cost cap, are listed in table B1 below.

Natural gas utilities are also subject to savings targets under IPAA. The act was amended to create an EERS for natural gas utilities in 2009, with programs beginning in 2011. Natural gas utilities are required to achieve 0.2% savings in 2012, ramping up to 1.5% in 2019. Like electric programs, natural gas programs are subject to a maximum rate impact of 2%.

Funding Levels Required to Meet Legislative Targets

Energy efficiency programs in Illinois are subject to a rate cap of 2.015%. In 2011, the ICC issued a report to the Illinois legislature noting that rate caps had not limited available efficiency measures in prior years. However, the ICC predicted that beginning in June 2011, spending limits would constrain attainment of goals in the Ameren service territory. Beginning in June 2013, ComEd would also be constrained by the rate cap. The ICC estimated that achievement of the 2% savings target in 2015 would cost over \$574 million annually, almost two and a half times the budget available to utilities. Of this, \$186 million falls within the Ameren service

territory, representing a 6.1% increase in rates. \$388 million falls in ComEd's territory, corresponding to a 4.8% increase in rates.

The commission did note significant difficulties in estimating future incremental savings due to a variety of factors including spillover and free ridership, the masking effects of the American Recovery and Reinvestment Act (ARRA) tax credits and rebates in early program years, and more stringent federal lighting standards that could affect gross savings from utility measures. The commission did not consider a change to the rate cap, and recommended that the General Assembly maintain current spending limits. As both Ameren and ComEd testified that they would be unable to meet targets under the spending cap in future years, the commission allowed utilities to alter targets based on budget constraints. Table B1 presents the results.

Table B1. Revised savings targets as approved by the ICC

Year*	Statutory target	Ameren revised targets**	ComEd revised target**
PY1	0.2%	0.2%	0.2%
PY2	0.4%	0.4%	0.4%
PY3	0.6%	0.6%	0.6%
PY4	0.8%	0.7%	0.8%
PY5	1.0%	0.6%	1.0%
PY6	1.4%	0.5%	1.0%
PY7	1.8%	No revised targets have been considered for this time period.	
PY8	2.0%		

* Program years run June 1 to May 31. PY1 begins June 1, 2008. ** Targets include 25% DCEO measures.

Incentives and Alternative Business Models

Illinois began pilot decoupling programs for several gas companies in 2008. However no such mechanism is in place for electric companies. Similarly, no shareholder incentives are in place for energy efficiency. Illinois legislation has to date avoided the subject of incentives. While utilities are ramping up programs in accordance with approved targets, only basic cost recovery has been put in place. However external markets also provide an incentive for utilities to incorporate energy efficiency into their portfolios. For example, ComEd bids demand response and energy efficiency into the PJM capacity market.⁴¹ Efficiency therefore constitutes a revenue stream for ComEd to the extent that it clears capacity auction and also helps it meet state savings goals. Not all utilities fall within the PJM service territory, and so the benefits drawn from capacity markets vary by utility.

Illinois does have a statutory penalty for noncompliance with energy efficiency standards. Utilities must file energy efficiency plans by the time specified by the commission or face a penalty of \$100,000 per day until the plan is filed. The same penalty applies to the refiling of

⁴¹ PJM Interconnection is a Regional Transmission Organization (RTO).

plans that have been disapproved by the commission and require revision. Utilities that fail to meet efficiency goals must make contributions to low-income home energy assistance programs. Illinois statute states that utilities that fail to meet goals may also have their rights to administer energy efficiency programs removed and put under third-party administration, although that part of the statute has never been enforced.

Banked Savings

During the planning period for Program Years 5 and 6, ComEd submitted a request to accumulate and apply banked kWh savings across years. The commission approved ComEd's request, allowing the utility to use savings from PY1 through PY4 for application in PY5. Banked savings are subject to several stipulations. In any plan year, no more than 15% of that year's compliance obligation may be met with banked savings. However, if targets are adjusted downward due to rate caps and the banked savings in excess of 15% allow ComEd to come closer to reaching the statutory target, the target may be adjusted upwards and additional banked savings may be applied.⁴²

Stakeholder Involvement

The ICC established the Illinois Energy Efficiency Stakeholder Advisory Group (SAG) in 2008 to strengthen energy efficiency portfolios and monitor progress toward achieving energy efficiency goals. The SAG meets monthly and monitors both electric and natural gas program portfolios. The public meetings are typically attended by efficiency advocates, consultants, utilities, representatives of DCEO, and consumer advocates.

In 2010 and 2011, the ICC directed stakeholders to develop a statewide technical reference manual (TRM). The SAG worked with utilities, the Illinois attorney general, and the Citizens Utilities Board to develop the TRM, which was meant to provide transparency and consistency in calculating savings generated by the state's energy efficiency programs, including those delivered by DCEO. The first edition of the TRM was approved in January 2013, although the SAG had not reached consensus on the full range of policy issues. Stakeholders continued to negotiate these issues, and a final order, issued in March 2013, established consensus views meant to eliminate the inefficiencies of litigating each policy during individual utility triennial efficiency dockets.

Voluntary Efficiency Programs

The Illinois Association of Electric Cooperatives also runs a substantial set of energy efficiency programs, although cooperatives are not mandated to do so.

Energy Savings Achieved

Both ComEd and Ameren are covered by the state's EERS requirements. Together, these two utilities make up about 90% of the state's retail sales. Each utility directs 25% of its energy efficiency program budget to DCEO. DCEO savings have been reported jointly with Ameren and ComEd, although the ICC recently opened a separate docket for DCEO for the first time. In all program years, ComEd and Ameren have surpassed their energy savings goals. However it

⁴² See Docket 10-0570 p. 19.

is important to note that utility-specific targets are approved by the ICC and in later years reflect a rate-cap constraint. Continuing onward, it is likely that the rate cap will continue to play a determining role in utility targets. Table B2 presents ComEd and Ameren targets and savings.

Table B2. Electricity savings and targets as reported by utilities (MWh)

	ComEd			Ameren		
	Net MWh achieved	Energy savings goal	% of goal achieved	Net MWh achieved	Energy savings goal	% of goal achieved
PY1	163,717	148,842	110%	89,955	55,709	161%
PY2	472,132	312,339	151%	129,748	113,186	115%
PY3	626,715	458,919	137%	263,374	181,765	145%
PY4	892,303	610,804	146%	353,664	273,534	129%
PY5	853,104	827,575	103%	330,836	245,871	135%

Targets reflect MWh targets as approved by the ICC for each program year. *Source:* ComEd and Ameren PY5 year-end presentations.

Targets for natural gas have been in place since 2011, and apply to Ameren, Nicor, Peoples Gas, and Northshore Gas. As with electric programs, 25% of program budgets is transferred to DCEO for programs in public facilities and for low-income customers. As table B3 shows, Ameren, a dual-fuel utility with several years of previous experience working under the electric EERS targets, surpassed goals in both program years, while the other utilities fell short in at least one of the two program years.

Table B3. Natural gas savings and targets as reported by utilities

	PY1			PY2		
	Net MMTherm achieved	Energy savings goal	% of goal achieved	Net MMTherm achieved	Energy savings goal	% of goal achieved
Ameren	5.8	4.3	133%	6.1	4.4	140%
Nicor	5.7	6.8	83%	9.7	13.7	71%
Peoples	2.1	2.8	73%	7.8	6.6	118%
Northshore	0.4	0.6	72%	1.0	1.3	74%
Total	13.9	14.5	96%	24.5	25.9	95%

Source: Utility year-end reports for PY 1 and 2

HAWAII

Legislative Background

Hawaii's energy efficiency programs stem from the Hawaii Clean Energy Initiative (HCEI), launched in 2008 as a partnership between the state and the U.S. Department of Energy. The HCEI was created in response to the state's oil dependence: Hawaii is the most petroleum-dependent state in the U.S. and has the highest electricity prices in the nation. The goals of the HCEI include transforming Hawaii to a 70% "clean energy economy" by 2030, increasing Hawaii's energy and economic security, fostering innovation, and building a stronger work force. HCEI itself is nonbinding, but it is the driving force behind Hawaii's mandatory energy efficiency and renewable energy requirements, and several parts of the initiative have subsequently been translated into law.

The HCEI sets forth four goals for 2030, including meeting 40% of delivered electricity through renewable energy sources, reducing petroleum used in transportation by 70%, meeting as much in-state demand for renewable fuels as is feasible, and achieving energy savings of 4,300 GWh through end-use efficiency. In accordance with these goals, Act 155, signed in June 2009, set renewable portfolio standards reaching 40% by 2030. Savings from energy efficiency may count toward meeting up to 50% of the standard through 2014, after which energy efficiency programs and savings are phased into a stand-alone energy efficiency portfolio standard (EEPS).

In May 2009, the Hawaii Public Utility Commission (HIPUC) issued an order initiating the Clean Energy Scenario Planning docket. The docket examined proposed amendments to utility IRPs and temporarily suspended existing IRPs. HIPUC adopted the framework for meeting standalone EEPS targets in 2012, although savings measures beginning in 2009 may count toward the 2030 target of 4,300 GWh of electricity savings.

Alternative Business Models

HIPUC began investigating the adoption of decoupling mechanisms in October 2008, and issued a final decision approving decoupling for Hawaiian Electric, Maui Electric, and Hawaii Electric Light Company (jointly, HECO companies) in 2010. The HECO utilities filed for decoupling on the basis that unlinking revenues from sales would encourage utility support for clean energy policies and reduce the frequency of rate cases. HIPUC reviews energy commitments during rate cases, and may modify and terminate the decoupling mechanism for a utility based on overall performance.

Beginning in 2009, HECO companies also transferred administration of efficiency programs to a third-party administrator, as discussed below.

Program Funding and Administration

In 2006, the Hawaiian legislature authorized HIPUC to implement a DSM surcharge called a public benefits fee (PBF). The legislation includes a provision preventing the state treasury from reappropriating the funds collected through the PBF. The PBF legislation also authorizes HIPUC to contract with and transfer funds to a third-party administrator of efficiency programs. HIPUC began investigating the issues and requirements raised by the legislation in 2007, and in 2008 outlined the structure of the PBF.

Replacing an existing DSM surcharge, the PBF surcharge consists of separate residential and commercial components and is designed to collect a target revenue equal to 1.5% of a utility's total electric revenue and revenue taxes. Residential and commercial components are divided based on proposed DSM program budgets for each program year. Since PBF programs are intended to be virtually statewide, each customer within a given rate schedule pays the same per-kWh surcharge, regardless of service territory.⁴³ The surcharge is added as a separate line item on customer bills, and it may be modified at the commission's discretion.

The commission also transferred responsibility for HECO efficiency programs to Hawaii Energy, a third-party administrator, in 2009.

Measurement and Verification of Savings Targets

Hawaii's EEPS allows savings generated outside of utilities and third-party program administrators to be counted toward the state's overall 2030 goal. Nonprofits, communities, military entities, state agencies, and independent citizens may contribute to energy savings. While it is reasonable to assume that savings are being generated outside of traditional efficiency programs, that poses a challenge for EM&V of total savings. HIPUC therefore includes rough estimates of these savings – deemed “low confidence” savings – in its report to legislators.

Energy Savings Achieved

Hawaii's goal is set in terms of cumulative savings in 2030. HIPUC tracks progress annually, and has set a constant annual target of 196.5 GWh. Savings from Hawaii Energy and Kauai Island Utility Cooperative alone do not meet this annual target. However, as discussed above, HIPUC incorporates savings from unverified programs that track energy use, as well as a rough estimate of savings attributable to private citizens outside the bounds of both state and utility programs. Taken together, these three forms of savings (shown below in figure B1) put Hawaii on track toward achieving its cumulative target. However verified and “high confidence” savings alone fall below the annual savings required to meet the cumulative target in 2030.

⁴³ The PBF does not include customers in Kauai, who are served by Kauai Island Utility Cooperative. HECO companies serve approximately 95% of the state's population.

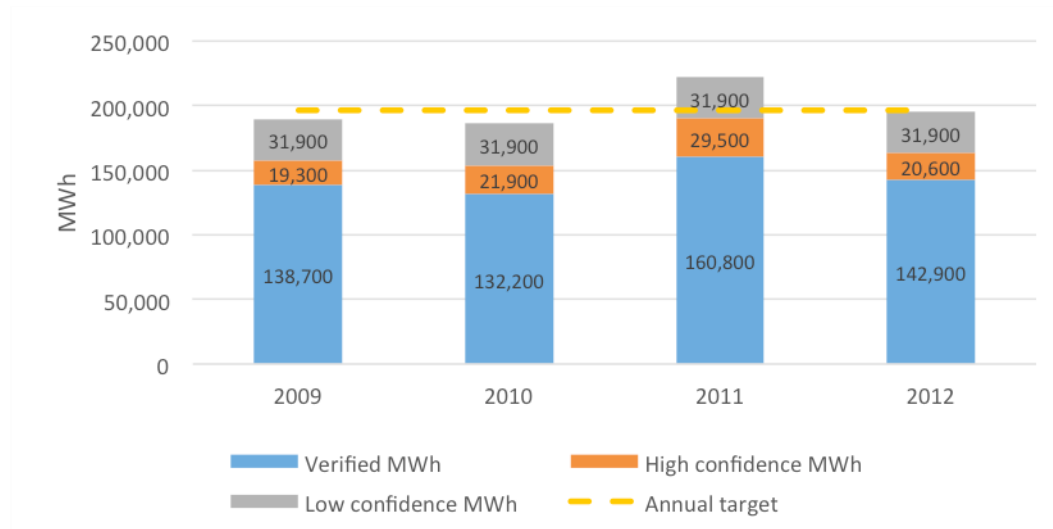


Figure B1. HIPUC estimated energy savings from all sources. *Source:* HIPUC report to the legislature.

ARKANSAS

Legislative Background

While the general statutory authorities of the Arkansas Public Service Commission (APSC) might be said to authorize energy efficiency programs, the Energy Conservation Endorsement Act of 1977 (ECEA) clearly established the APSC's role in requiring energy efficiency measures. The law recognized that it was the APSC's proper and essential function to engage in energy conservation programs, including both energy efficiency measures and demand response measures as well as renewable energy programs. The ECEA authorized the commission to propose, require, implement, and monitor energy conservation programs and measures and adjust utility rates accordingly. The APSC may only approve programs determined to be beneficial to both ratepayers and utilities, must declare the costs of these measures to be reasonable, and must allow utilities to recover incurred costs.

Energy efficiency rules in Arkansas were first established as an initiative of the APSC in 2007. The Rules for Conservation and Energy Efficiency Programs require electric and natural gas utilities to propose and administer energy efficiency programs in cycles of up to three years. After an initial three-year period of "Quick Start" programs modeled on successful programs in other jurisdictions, the APSC developed detailed guidance for full-scale programs to be implemented from 2011 through 2013. This guidance included an EERS with targets for electricity and natural gas savings, a shareholder performance incentive, guidelines for efficiency program cost recovery, and requirements for the use of demand-side resources in utility resource planning. These rules were established as a set of ten orders complementing the APSC's Sustainable Energy Resource Action Plan, and were directed at the state's investor-owned utilities. Rural electric cooperatives, which had several efficiency programs already in place prior to the APSC's issuance of efficiency rules, were granted a waiver from full compliance with the rules. Municipal utilities are outside the jurisdiction of the APSC and are therefore not covered by efficiency rules.

The APSC's energy efficiency targets required an annual reduction of 0.25% of sales in 2011, ramping up to 0.75% of sales in 2013. Natural gas targets were also established, beginning at 0.2% in 2011 and ramping up to 0.4% in 2013. Savings are measured against a baseline of 2010 energy consumption.

While the APSC rules contemplate three-year program cycles, in practice additional time has been required between cycles to address issues such as the development of rules for EM&V, the establishment of new targets, and the consolidation and improvement of core programs. In January 2013, the APSC sought comment on proposed annual electricity savings targets for 2014-2016 that would rise from 1% in the first program year to 1.5% by the third year. Proposed natural gas targets would rise from 0.6% of sales to 1.0% of sales over the same period.

Recent orders approved joint motions by utilities and intervening parties to extend the same 2013 targets to 2014. All parties involved in the docket noted that more time was necessary to consider the goals. As a result, the commission ordered that 2014 targets be held at the same level as 2013 targets and pushed back the filing date for the next three-year cycle. In September 2013, the APSC issued an order setting an electricity target of 0.9% and a natural gas target of 0.5% in 2015. Based on stakeholder feedback, the commission has delayed a ruling on 2016-2017 targets pending completion of a potential study.

Large Customer Opt-Out

In Arkansas, an opt-out provision has notably diminished the potential savings resulting from utility efficiency targets. Large commercial and industrial customers submitted several proposals to the APSC calling for opt-out provisions. Stakeholders had a mixed response to these provisions: while large utility customers like Kroger and Walmart supported them, Southwestern Electric Power Company (SWEPCO) noted that large customers within the industrial class accounted for nearly 33% of the utility's efficiency potential. An opt-out provision would effectively eliminate this easily reached customer class from the pool of efficiency projects. Larger utilities like Entergy Arkansas Inc. initially suggested a fairly robust standard to measure the quality of opt-out customer energy savings, but ultimately went along with a proposal for modest reporting requirements. In December 2010, the commission issued an order allowing large consumers of electricity and natural gas to opt out of efficiency programs through a Self-Directed Energy Efficiency Program Option. The commission ordered the establishment of a stakeholder collaborative to develop this option.

Rules were finalized in Docket 10-101-R Order 10, and later modified in Order 28. Large customers of electric and natural gas utilities (those with minimum peak electrical demand of at least 1MW, or annual natural gas consumption greater than 70,000 MMBtu) may request a certificate of exemption and opt out of utility-provided energy efficiency programs. To receive the certificate, the customer must demonstrate that they have invested in an efficiency measure during the previous ten years, that they will implement a measure approved by the commission in the future, or that they have exhausted the opportunity to conduct meaningful cost-effective energy efficiency programs. The rules require customers to report on the actual implementation of the projects in the applications, with that information taken into account in future self-direct applications. Utilities may also exclude the energy consumption of customers participating in the self-direct option from their calculation of energy savings.

Due to the large number of industrial customers choosing to opt out of programs, applicable sales as reported by utilities – and thus overall energy savings – have been significantly diminished within the state. Legislation approved during the 2012-2013 session of the Arkansas General Assembly further amended the self-direct program so that large manufacturers may opt out with minimal requirements and no subsequent reporting.

Incentives and Business Models

Though Arkansas initiated quick-start efficiency programs beginning in 2007, the APSC did not expand utility cost recovery to address financial disincentives for energy savings or efficiency performance incentives until the package of orders that created the state's EERS in December 2010. Order No. 14 in Docket 08-137-U approved the joint motion of IOUs that the commission allow the awarding of "lost contributions to fixed costs," or the reduction in fixed-cost recovery caused by lost sales resulting from publically-funded energy efficiency programs. Utilities may recover these lost revenues annually as part of the energy efficiency program tariff docket.

The APSC's current utility energy efficiency performance incentive structure awards 10% of net benefits to a utility for achieving more than 80% of savings goals. However total incentive awards are capped at 5% of proposed program budgets for achievement of 80-100% of targets. They may be raised to 7% of proposed budgets for utilities that exceed targets. Recent orders will refine this structure during the next full three-year program cycle so that the performance incentive rises as a linear function of performance between 80% and 120% of savings targets. Incentive caps on awards will also rise symmetrically on either side of the target, from 4% to 8% of program budgets.

Funding Levels

Efficiency programs in Arkansas are not subject to a predetermined cap on costs. Utilities propose budgets to the APSC designed to meet the commission's savings targets, and performance incentives reward more cost-effective administration through the shared savings mechanism. Utilities have tripled the size of programs over the course of the first three-year program cycle. Targets, similarly, have tripled in size. Several utilities sought interim budget adjustments during the three-year program cycle in order to shift or increase funds to successful programs.

Measuring Savings

As the first state in the Southeast to implement an EERS, Arkansas did not have a formal EM&V system in place prior to the commission's 2010 rule. By order of the APSC, during the first year of the three-year program cycle, the parties collaboratively developed and proposed EM&V rules based on national best practices and involving an annual expert review by a joint-utility-funded independent evaluation monitor (IEM). The parties were also required to develop a TRM, which is updated annually and approved by the commission. During the first program year, the commission set a generic net-to-gross ratio of 80% for all utility measures, but allowed utilities to offer alternative figures based on formal evaluation measures. Net-to-gross ratios are currently calculated program by program for each utility.

Energy Savings Achieved

Energy savings in Arkansas illustrate the necessity of a ramp-up period that gives utilities time to plan and improve programs. In 2011, electric utilities in Arkansas met about 91% of the aggregate target. In 2012, savings more than doubled, and utility savings were about equivalent to the target for that year. Table B4 details the savings.

Table B4. Reported electric savings (MWh), Arkansas IOUs

Utility	2011 reported savings	2012 reported savings
Entergy Arkansas	41,958	107,627
SWEPCO	10,955	17,767
Empire	3	158
Oklahoma Gas & Electric	4,985	--
Total savings (all IOUs)	57,901	125,552
Target (MWh)	63,340	126,681
% of target achieved	91%	99%

Target is calculated based on covered load reported by utilities. Energy savings are net savings as reported by utilities. *Source:* Utility annual reports.

As shown in table B5, in both 2011 and 2012 the three utilities subject to natural gas savings requirements surpassed the aggregate natural gas savings target.

Table B5. Reported natural gas savings (MMTherms), Arkansas IOUs

Utility	2011	2012
Centerpoint	1.71	2.02
Sourcegas	0.32	0.93
Arkansas Oklahoma Gas Co.	0.19	0.38
Total (All IOUs)	2.21	3.32
Target (MMTherms)	2.01	3.01
% of target achieved	110%	110%

Target is calculated based on covered load reported by utilities. Energy savings are net savings as reported by utilities. *Source:* Utility annual reports.

Though targets for the next planning cycle are contingent on a potential study, it is likely that the stringency of both electric and natural gas savings targets will increase.

MASSACHUSETTS

Legislative Background

Recent energy efficiency targets in Massachusetts are the result of the Green Communities Act, passed in 2008. The law included a variety of provisions related to energy efficiency, including a requirement for utilities to invest in all cost-effective efficiency and the implementation of three-year energy efficiency planning cycles for gas and electric utilities. The legislation did not set targets directly, but created the framework for a planning process in which stakeholders negotiate targets for all cost-effective and achievable energy efficiency.

The target setting process begins at the Department of Energy Resources (DOER) and the Energy Efficiency Advisory Council (EEAC). No potential study has been completed in Massachusetts, but the EEAC uses data from several sets of analyses to derive proposed three-year targets for the states' efficiency administrators. Specific annual savings targets and corresponding performance incentives and program budgets are the result of stakeholder negotiations led by the EEAC with all Massachusetts program administrators including IOUs and Cape Light Compact, and they must be approved by the Department of Public Utilities (DPU).

Program Funding

In the event that program costs exceed available revenue sources, the DPU authorized the use of an Energy Efficiency Reconciliation Factor (EERF). In addition to the system-benefits charge of 2.5 mills previously added as a rider on customer bills, the EERF recovers program costs in proportion to the costs of programs directed to each customer sector. (Low-income programs receive subsidies from other sectors.) Performance incentives are included as program costs that are recovered through these factors.

Utilities in Massachusetts are also able to bid savings from demand response and energy efficiency measures into the ISO New England (ISO-NE) Forward Capacity Market (FSM). The ability to participate in the FSM provides a funding source that helps limit the total amount of energy efficiency funding that must be recovered directly from customers. Massachusetts also has a legislative mandate to direct at least 80% of its proceeds from Regional Greenhouse Gas Initiative (RGGI) auctions to customer energy efficiency programs. Proportional funding sources for efficiency programs are shown below in figure B2.

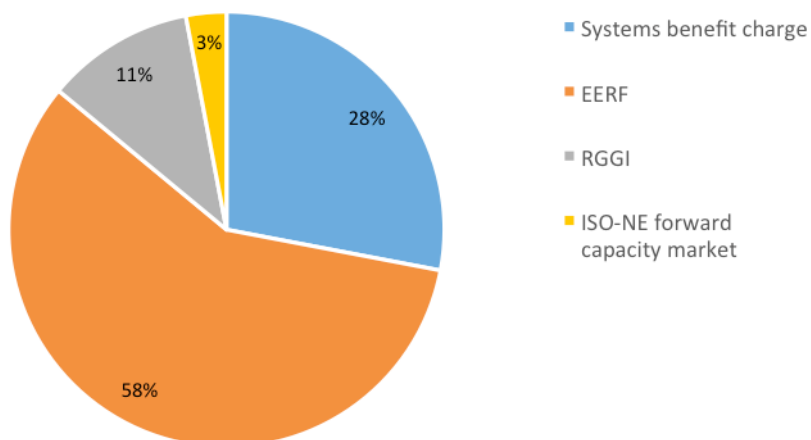


Figure B2. Funding sources for Massachusetts electric efficiency programs under its all cost-effective mandate

Stakeholder Involvement

Stakeholder involvement is critical to Massachusetts' EERS. Created by the Green Communities Act, the EEAC guides the development of utility and efficiency provider energy efficiency plans and monitors plan implementation. It also makes recommendations for studies and research to develop a long-term vision of the state's energy future. The EEAC is composed of appointed voting representatives of organizations and interests including the following:

- DOER (chair)
- Residential consumers
- Low-income weatherization network
- Environmental community
- Large commercial and industrial customers
- Manufacturing industry
- Energy efficiency experts
- Organized labor
- Department of Environmental Protection
- Attorney general
- Executive Office of Housing and Community Development
- Cities and towns
- Realtors
- Nonprofits
- Energy efficiency small businesses

Voting members of the EEAC serve five-year terms and may be reappointed. Nonvoting members include energy efficiency businesses, heating oil industry representatives, municipal aggregators, regional electric transmission organizations, and program administrators.

Reporting

The DPU is required to approve program administrators' three-year plans within a certain time frame. The department has established reporting requirements including those focused on documenting program performance based on evaluated results. The EEAC has also created reporting requirements for program administrators, which include monthly data dashboards as well as more detailed quarterly reports. The reporting procedures institutionalized during the first three-year planning period called for utilities to submit full reports annually. The DPU is currently reviewing these requirements. To ease the volume of work required to track programs, stakeholders have proposed submitting truncated annual performance metrics, with a full program report at the end of the three-year cycle.

Commercial and Industrial Opt-Out and Self-Direct

A self-direct option for large customers is available although not widely used. Recent legislation initiated a pilot program wherein the five largest gas and five largest electric customers may choose to recoup energy efficiency funds in order to implement self-directed energy efficiency initiatives. Large customers participating in the self-direct program must verify energy savings, and savings projects must still pass cost-effectiveness tests. A small carve-out is available for certain projects that are not required to pass benefit-cost tests independently, including net metering. No large customer had chosen to access the funds set aside in the pilot program as of January 2014, although some commercial and industrial customers have enrolled in the pilot.

Incentives and Business Models

Electric and gas utilities in Massachusetts have the opportunity to earn a shareholder incentive based on their performance. Performance is based on both total and net benefits achieved by utilities as well as other performance metrics. A "design level" performance incentive is collected on a current basis through either the EERF (for electric utilities) or the energy efficiency cost recovery factor used by gas utilities. These collections are trued up based on documented performance that is reviewed and approved by the DPU. Utilities must achieve at least 75% of their expected performance in order to earn an incentive, with higher incentives available for utilities that exceed their goals. Incentives are capped at 125% of the total that could be earned by meeting targets.

In addition to performance incentives, Massachusetts also has a decoupling mechanism in place to remove utilities' disincentive to invest in energy efficiency. The DPU began considering decoupling beginning in 2008, and by 2013 all gas and electric utilities in the state were decoupled.

Energy Savings Achieved

Massachusetts has some of the most aggressive energy savings targets in the country. Given these targets, meeting energy goals is a challenge. In the first three-year efficiency planning cycle, utilities came close to achieving the stringent savings targeted, but did not meet them in all years. Aggregate targets and savings for electric efficiency programs are shown in table B6.

Table B6. Annual electric targets and savings, all program administrators

	Annual target (MWh)	Target (% retail sales)	Annual savings (MWh)	% achieved
2010	600,000	1.4%	610,000	102%
2011	907,224	2.0%	797,987	88%
2012	1,107,000	2.4%	980,113	89%

Targets reflect updated 2011 targets. Targets and savings are net figures. *Source:* EEAC reports to the legislature and annual reports.

Similarly, utilities came close to meeting natural gas targets in the 2010-2012 efficiency planning cycle. Results are given in table B7.

Table B7. Annual natural gas targets and savings, all program administrators

	Annual target (MMtherms)	Target (% retail sales)	Annual savings (MMtherms)	% achieved
2010	14.4	0.55%	14	97%
2011	18.1	0.66%	15.2	84%
2012	25.3	1.00%	23.3	92%

Source: EEAC reports to the legislature and annual reports

Energy savings targets increase over the next three-year phase of efficiency implementation. Achieving these goals will be a challenge for program administrators, and will require exploring new, cutting-edge efficiency services and increasing participation in existing programs.

ARIZONA

Legislative Background

Arizona's EERS was formalized in 2010, when the bipartisan Arizona Corporation Commission (ACC) unanimously ordered that, by 2020, investor-owned utilities would need to achieve cumulative annual electricity savings of at least 22% of retail electric sales. Emphasizing the importance of both annual and long-term savings targets, the commission specified cumulative annual targets for each year, beginning at 1.25% in 2011.⁴⁴ The state also adopted a separate EERS for natural gas in 2010 whereby IOUs must achieve 6% cumulative savings by 2020. Since Arizona uses limited amounts of natural gas, even a 6% cumulative target is quite aggressive. Though the targets set forth in the rulemaking apply only to IOUs, cooperatives must also achieve savings equivalent to 75% of the IOU targets. Co-ops have taken several years to get programs up and running, and some program portfolios are still pending approval by the ACC.

⁴⁴ Cumulative savings targets include savings from measures completed in prior years.

Arizona's targets were the result of a process begun in 2003 by the ACC to explore potential DSM policies. The commission facilitated a series of workshops between 2003 and 2005, and issued a staff report outlining a proposed DSM policy based on stakeholder input. After receiving comments on the draft, the commission issued a series of questions related to energy efficiency in January 2009. The questions concerned existing energy efficiency programs, potential new programs, regulatory frameworks, overall goals, impacts on utilities and customers, and funding mechanisms for energy efficiency programs. The ACC continued to receive comments and hold workshops and stakeholder meetings through 2009 before issuing final targets and rules in 2010.

The state legislature has given the ACC full power to set reasonable rates and make rules and orders, including energy efficiency provisions.

There is no cost cap in place for energy efficiency measures.

EERS targets do not apply to Salt River Project (SRP), the state's second largest electric utility, since it is a public power utility. However, SRP does administer a substantial portfolio of energy efficiency programs that contribute to overall energy savings within the state. SRP's investment in energy efficiency is guided by its Sustainable Portfolio Principles (SPPs), which direct the utility's current and future use of energy efficiency and renewable resources. The SPPs establish annual energy savings targets for the utility through its 2020 fiscal year, ramping up to 2% beginning in 2018.

Applicable Savings Measures

In addition to energy savings through traditional DSM programs, utilities in Arizona are able to meet portions of their annual targets through additional savings measures. EERS rules allow peak demand savings to count toward the target: peak savings achieved through demand response programs may qualify for up to 2% of the total 22% goal. Credit for demand response and load management peak-demand reductions may not exceed 10% of the energy savings target in any single year.

Utilities are also able to count savings resulting from building energy codes, provided they quantify and verify those savings. Arizona is a home rule state, meaning that codes are adopted and enforced at the local level. Utilities are actively involved in code adoption and enforcement efforts, and they may apply up to one third of the resulting savings from these efforts toward their EERS savings targets. CHP installations that do not qualify under the state's Renewable Energy Standard are also eligible resources that utilities may use to meet their energy savings requirements. Additionally, some utilities have been granted special permission to count savings toward work on appliance standards.

Banking

The ACC allows Arizona utilities to use banked savings to meet savings targets in any given year, including savings from DSM programs implemented prior to EERS rules and after 2004. Utilities may take pre-rules credit for up to 4% of 2005 retail energy sales and spread it over several years, as illustrated in table B8.

Table B8. Allowable banked credit for pre-rules energy savings

Year	Annual allowable credit (% of total allowable pre-rules credit that may be applied)	Cumulative allowable credit
2016	7.5%	7.5%
2017	15.0%	22.5%
2018	20.0%	42.5%
2019	25.0%	67.5%
2020	32.5%	100.0%

Source: ACC Docket No. RE-00000C-09-0427

Self-Direct

The Arizona Public Service Company administers a self-direct program option for large industrial customers. Participating customers must demonstrate that projects are cost effective. The option gives customers access to 85% of their cost-recovery mechanism fee to fund eligible energy efficiency measures. APS retains 15% for administrative costs, low-income programs, and EM&V. Large customers may direct their cost-recovery mechanism fee toward a self-direct project for up to ten years.

Energy Savings Achieved

Arizona electric utilities surpassed total efficiency targets in 2011. In 2012, the Arizona Public Service Company exceeded its goal, but Tucson Electric Power fell short as it faced temporary program suspensions due to regulatory delays. Utilities will need to do more to continue to meet savings targets as they ramp up. Table B9 gives aggregate data for IOUs and electric cooperatives. Only those cooperatives whose programs have been approved by the ACC or are currently awaiting approval are included.⁴⁵

⁴⁵ Efficiency plans for Mohave, Navopache, Sulphur Springs Valley, and Trico Electric Cooperatives have been approved or are pending before the ACC. Graham County Electric Cooperative and Morenci Water and Electric Cooperative do not have energy efficiency plans to date.

Table B9. Targets and savings for electric IOUs and cooperatives

	2011	2012
IOU target (MWh)	485,730	696,130
Coop target (MWh)	23,888	33,847
Combined target (MWh)	509,618	729,977
Total MWh savings	537,229	692,655
Savings as % retail sales	1.28%	1.66%
% of target achieved	105%	95%

Targets for IOUs and coops are calculated by multiplying legislative goals and sales figures. *Source:* Sales data are from EIA Form 861, and savings data are from utility annual reports.

Arizona's natural gas utilities were less successful in meeting targets. The low cost of gas and the minimal amount of gas used for heating within the state limit the cost-effective efficiency measures available to utilities. In addition, targets increased significantly between 2011 and 2012. Though natural gas savings increased, they did not keep pace with savings targets. Utilities will need to invest in more comprehensive natural gas efficiency measures in order to meet targets in the future. Table B10 shows targets and savings.

Table B10. Targets and savings for natural gas utilities

	2011	2012
Southwest Gas	1.39	1.38
UNS (Unisource)	0.29	0.21
Total	1.68	1.59
Target	3.95	5.78
% of target achieved	43%	28%

Source: Utility dockets and E. Zuckerman, Southwest Energy Efficiency Project, pers. comm., July 9, 2013.

OHIO

Legislative Background

Ohio's EERS was established in 2008 with the passage of Senate Bill 221. The bill included a range of energy provisions, including an Energy Efficiency Portfolio Standard (EEPS) and an Alternative Energy Portfolio Standard. The EEPS set savings requirements for all regulated electric companies, including electric IOUs and retail suppliers, beginning in 2009. Savings targets were set at 0.3% of retail sales in 2009, ramping up to 1% in 2014 and 2% in 2019. Savings are measured against the average weather-normalized retail sales over the preceding three years. The Public Utilities Commission of Ohio (PUCO) has the authority to alter the baseline to account for changes in a utility's territory.

The state's EEPS also includes targets for peak demand reduction, equivalent to 0.75% of peak sales annually through 2018. In that year the legislature must make recommendations for future

peak demand reduction targets. Senate Bill 221 did not include provisions for natural gas savings, and no equivalent EEPS has since been created for natural gas.

Applicable Savings Measures

In addition to traditional residential and commercial efficiency programs, utilities are able to count savings from several other measures. The Ohio Revised Code allows utilities to include transmission and distribution infrastructure improvements to reduce line losses to meet benchmarks. Such projects may include reconductoring (replacing existing wires with improved wires), substation improvements, use of capacitor banks to reduce losses by improving system power factors, and use of voltage regulators to maintain delivery voltage. These transmission and delivery projects currently make up a small part of utility plans for compliance with savings requirements.⁴⁶

CHP is an allowable EEPS resource, but regulation surrounding energy savings credit is uncertain. Ohio legislators passed a bill allowing CHP to count under the EEPS in 2011, but PUCO has not yet put rules in place. Utilities are able to file applications that include CHP programs in the absence of rules, and several pilot programs are underway.

Incentives and Alternative Business Models

Several regulatory mechanisms encouraging energy efficiency are in place in Ohio. With the exception of Duke, all electric utilities within the state recover program costs and lost revenues resulting from energy efficiency programs through a DSM rider. Duke recovers lost revenues through their Save-a-Watt program. PUCO has also approved pilot decoupling programs for Duke and AEP. Utilities may file for and receive shareholder incentives on a case-by-case basis. Duke, AEP, and First Energy have all had performance incentives approved. Ohio offers tiered incentives, which increase as utilities exceed minimum targets. Columbia Gas was also approved for a shared-savings mechanism in 2011. Table B11 shows available performance incentives.

Table B11. Available performance incentives for electric utilities

Amount achieved over savings target	Shared savings	Program investment cost cap for measurable programs
Greater than 100% to 106%	15%	6%
Greater than 106% to 115%	15%	12%
Greater than 115%	15%	17%

Performance incentives are the lesser of shared savings or program investment cap percentage. *Source:* OPUC Docket 09-1089-EL-POR.

Utilities are also able to bid energy efficiency into the PJM market, offering an additional source of revenue from efficiency programs. All IOUs have participated in PJM's base residual auction, which allows them to procure resource commitments to satisfy the region's capacity obligations over the course of a delivery year. Bidding efficiency into the PJM capacity market is a relatively

⁴⁶ In 2012, AEP Ohio's transmission and distribution projects resulted in reported savings of 22.4 GWh of electricity.

new development for Ohio utilities, one that PUCO encourages but has not yet institutionalized. Constituency groups hope that the additional PJM revenue will allow utilities to reduce the efficiency rider cost for customers, but currently PUCO has not issued a directive.

Banking Savings

Ohio utilities may bank savings from year to year in order to meet savings targets in any given year. However there are restrictions on how they may use those savings. Utilities may not count banked savings toward the “shared savings calculation” that determines the current year’s total avoided cost. In other words, while these savings may count toward the overall annual target, utilities may not receive an additional shareholder incentive for banked savings. Customers who performed an energy efficiency project in the past may also retroactively apply for rebates, but, as with banked savings, those measures do not count toward a utility’s shareholder incentive. There is no rule in place that dictates the time period during which banked savings are eligible.

Utilities have banked savings every year since 2009. For example, AEP has banked at least 100 GWh of energy savings each year, reaching a total cumulative banked savings of 646 GWh in 2012. These can be applied to savings goals in future years.

Industrial Opt-Out and Self Direct

Ohio currently does not have strict opt-out rules in place. However commercial and industrial customers that consume more than 700,000 kWh per year or are part of a national account involving multiple facilities may participate in the Mercantile Customer Program. The program offers exemptions from efficiency riders based on electricity use averaged over the previous three years. Utilities may count efficiency savings achieved by mercantile customers toward their savings targets, while mercantile customers that work independently of utilities may be exempt from efficiency tariffs for the lifetime of the efficiency measures. In late 2013, there was a strong push for full opt-out provisions for industrial customers as part of substitute Senate Bill 58.⁴⁷ However the bill did not pass.

Energy Savings Achieved

Ohio utilities have surpassed targets in each year of EEPS implementation. Performance incentives and the ability to bank savings likely encourage utilities to surpass savings targets. Allowable measures including transmission and delivery improvements and CHP programs also give utilities additional means for meeting targets, which have not been adjusted upward to account for this additional efficiency potential. Table B12 shows savings and targets.

⁴⁷ The substitute SB58 also included a number of other provisions that would water down efficiency targets, including allowing credit for power plant upgrades.

Table B12. Aggregate targets and savings for electric utilities (MWh)

	2009	2010	2011	2012
Baseline sales	138,374,275	135,051,057	130,906,432	129,479,622
Reported savings	472,205	1,389,895	1,376,761	1,571,350
Savings as % of sales	0.3%	1.0%	1.1%	1.2%
EERS target	0.3%	0.5%	0.7%	0.8%
% of target achieved	114%	206%	150%	152%

Source: Utility DSM reports

Savings targets in Ohio hold steady at 1% through 2018 when they are scheduled to ramp up to 2%. Utilities have already banked a significant amount of energy savings to help them meet goals in upcoming years, and they likely will continue to have little trouble meeting their targets.

MARYLAND

Legislative Background

Maryland utilities have been running energy efficiency programs since the 1980s. However the majority of these programs came to a halt when the state removed regulations during utility restructuring in the late 1990s. The state's energy efficiency efforts were renewed in 2008 with the passage of the EmPower Maryland Energy Efficiency Act. The legislation set a goal of achieving a 15% reduction in per-capita electricity consumption by 2015 compared to 2007 levels. The EmPower Maryland legislation also included a requirement to reduce per-capita peak demand by 15%. The Public Service Commission (PSC) was directed to calculate per-capita consumption and demand in each year beginning in 2008.

Utilities are required to consult with the Maryland Energy Administration (MEA) every three years regarding their energy efficiency goals, in addition to submitting annual updates to the PSC and the MEA. Once plans are approved, they may only be altered with the formal approval of the PSC.

Other entities also contribute to Maryland's savings goals, including the MEA, other government agencies, and private stakeholders. The state has set a specific target for energy savings in state buildings, supported by legislation passed in 2006 that required state agencies to reduce energy consumption by 5% by 2009 and 10% by 2010. State agency energy reduction goals currently continue as part of the Better Buildings Challenge. Maryland has committed to achieving a 20% electricity and natural gas consumption reduction across the state agency building portfolio by 2020 based on a 2010 baseline. Although a database tracks state agency electricity consumption, these savings programs are not subject to the same stringent proceedings as utility efficiency portfolios.

Alternative Business Models

Maryland law allows the PSC to approve financial incentive mechanisms for both electric and natural gas utilities in order to promote energy efficiency programs. However no such incentives have been approved to date. The PSC began allowing decoupling in 2007, prior to mandatory energy savings requirements, and has approved decoupling for four of the five utilities that are required to achieve savings under the EmPower Maryland Act.

Stakeholder Involvement

Both the MEA (a state agency) and the PSC are heavily involved in target setting and performance monitoring for utilities required to meet savings targets. No other stakeholder involvement is mandated by a rule or law, but processes for regular stakeholder input have evolved over time. The PSC convenes stakeholder meetings upon receipt of quarterly and semiannual reports from utilities. Advocates, commission staff, state representatives, and utilities attend these meetings. In addition to regular progress updates, the commission holds a hearing for all interested parties on a semiannual basis.

Energy Savings Achieved

The unique structure of Maryland's targets means that progress is measured through two channels. Not only are utility targets and savings monitored and verified at the public service commission level, but utilities are responsible for achieving 10% of the per-capita electricity savings required in the EmPower Maryland Act. Due to an overambitious implementation schedule, it took longer than expected to get the full suite of programs off the ground. Utility electricity savings fell far below targets in 2010 and 2011. However in 2012, with programs fully running, Maryland's electric utilities exceeded annual targets. Annual savings by utility are shown in figure B3.

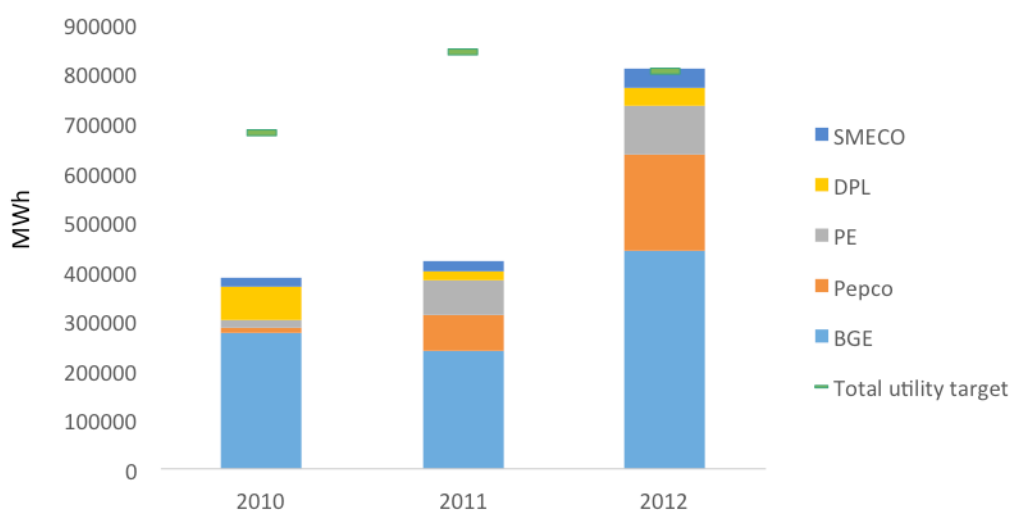


Figure B3. Achieved savings by utilities, 2010-2012 (MWh). Savings are gross. *Source:* EmPower Maryland annual reports, 2011-2013.

While these bottom-up measurements of utility savings are important in tracking progress toward Maryland's statewide goal, the EmPower Act mandates per-capita savings achieved

through a variety of measures, not just utility DSM programs. In addition to the energy reductions achieved by utilities, savings may also be achieved through numerous other measures including programs led by the state, updated building codes, increased consumer awareness, and economic impacts on energy consumption. Overall progress is tracked by comparing annual consumption data to population data. According to MEA, overall per-capita consumption was reduced by 9.4% between 2007 and 2012. However the state predicts that it will be a challenge to reach the 2015 15% reduction goal.⁴⁸ Figure B4 illustrates projected per-capita electricity consumption through 2015.

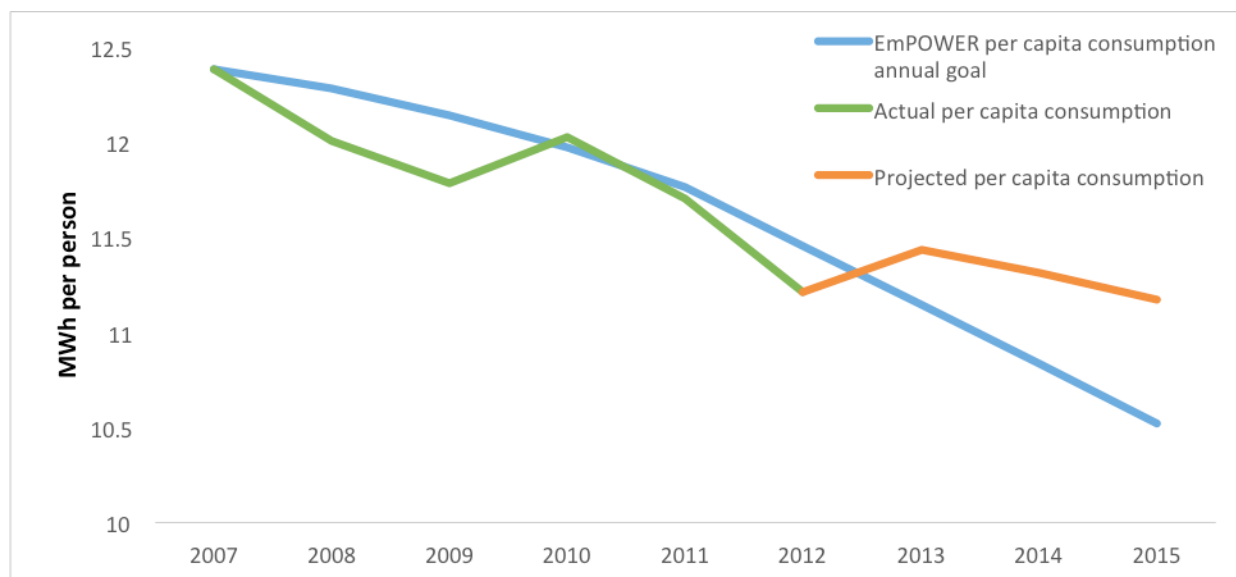


Figure B4. Actual and projected per capita electricity consumption in Maryland (MWh per person). *Source:* Annual data on per-capita consumption (including projections) from Maryland StateStat.

NEW YORK

Legislative Background

New York is a leading state in utility-sector energy efficiency programming. It has been implementing efficiency programs since 1996, although early programs were not designed to meet mandatory savings targets. New York's energy efficiency targets stem from a potential study commissioned by the state and conducted by Optimal Energy in 2007. The study showed that, by 2015, New York could reduce energy consumption by nearly 20% by implementing an aggressive suite of energy efficiency measures.⁴⁹ The New York Public Service Commission (PSC) built off the study when it issued an order establishing an EEPs in 2008. The order established a long-term cumulative energy savings target based on the difference between a business-as-usual scenario and a demand reduction of 15% by 2015 ("15 by 15"). The commission termed this difference the "Jurisdictional Gap" and directed entities under its

⁴⁸ See <https://data.maryland.gov/goals/energy-efficiency> for more details.

⁴⁹ The study also included potential savings from codes and standards.

jurisdiction to achieve savings equivalent to the gap. Expected statewide savings and the resulting jurisdictional gap as determined by the PSC are shown in table B13.

Table B13. Cumulative expected incremental savings established by the New York PSC (MWh)

Authority	2009	2010	2011	2012	2013	2014	2015
LIPA	403,744	831,679	1,212,213	1,488,880	1,642,605	1,829,422	2,167,035
NYPA	336,858	685,654	992,115	1,208,715	1,339,404	1,490,974	1,756,426
State agencies	246,400	333,073	421,376	505,280	602,862	695,964	790,718
Utilities	330,459	353,806	353,806	353,806	353,806	353,806	353,806
Codes and standards	764,444	824,581	1,343,010	2,774,762	4,907,057	6,920,062	7,947,588
T&D	0	0	0	0	238,728	479,128	724,379
SBC III (NYSERDA)	1,076,000	1,413,500	1,751,000	2,188,250	2,625,500	3,062,750	3,499,995
Jurisdictional gap	832,771	2,820,474	4,557,063	5,562,772	5,897,764	6,389,651	7,687,095
Total	3,990,676	7,262,767	10,630,583	14,082,465	17,607,726	21,221,757	24,927,042

Combined savings from all of the above entities plus the jurisdictional gap make up the 15 by 15 goal. Utility EEPS programs are designed to meet a portion of the jurisdictional gap. NYSERDA energy savings are split between expected SBC III savings and the jurisdictional gap, and are also considered in this report. *Source:* Case 07-M-0548.

Though the order laid out the pathway to 15 by 15, it did not set mandatory interim targets for all years leading up to 2015. The PSC instead established overall goals for the period ending in 2011, known as EEPS 1. EEPS targets addressed only the jurisdictional gap and the New York State Energy Research and Development Agency (NYSERDA) SBC III programs, and did not address other savings expected to be achieved through codes and standards, transmission and distribution improvements, and by state agencies, the Long Island Power Authority (LIPA), and the New York Power Authority (NYPA). However, even entities not subject to EEPS requirements were expected to achieve savings as part of the 15 by 15 goal, and both LIPA and NYPA run energy efficiency programs in their service territories.

Under EEPS rules, utilities and NYSERDA were required to establish cumulative targets equivalent to 50% of the jurisdictional gap for each service territory for the period from October 2008 through the end of 2011. The June 2008 order also established electric funding levels through 2011, identified fast-track programs, and set protocols for EM&V. Natural gas goals and budgets for EEPS I were approved later, in May of 2009.⁵⁰ In 2011, the commission reauthorized a majority of programs for the second phase of the EEPS, extending through the end of 2015. Targets and budgets were revised for specific programs at later dates. The most up-to-date EEPS targets are shown in figure B5. Though EEPS targets do not align with the

⁵⁰ See EEPS proceedings in Case 07-M-0548 for more details on electric and natural gas efficiency targets and incentives.

jurisdictional gap in every program year, the total energy savings required amount to 98% of the jurisdictional gap by 2015.

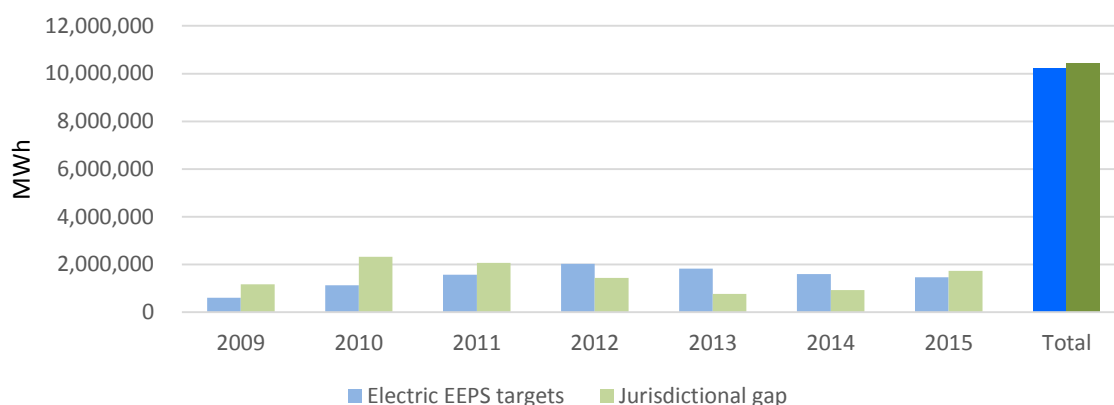


Figure B5. EEPS targets for incremental electricity savings compared to the expected jurisdictional gap. Also includes NYSERDA SBC III programs. *Source:* B. Wade, New York Department of Public Service, pers. comm., December 12, 2013; Case 07-M-0548.

Incentives and Utility Business Models

New York addressed the utility business model in 2007 with an order requiring electric and gas utilities to file proposals for true-up-based decoupling mechanisms in future rate cases. To date, all six major electric and all ten major gas companies have revenue decoupling mechanisms in place. Furthermore, a large portion of the state's efficiency programs are administered by NYSERDA, a state agency. NYSERDA is primarily funded by utility customers through a systems benefits charge (SBC) that utilities collect and pass through to NYSERDA for efficiency programs. Since NYSERDA is not a distribution utility and its funding is not linked to energy sales, it does not face the same disincentives to invest in efficiency as utilities that earn revenues from selling energy.

In addition to addressing utility disincentives for investment in energy efficiency, the PSC also established performance incentives for energy efficiency programs as part of the EEPS proceedings. EEPS 1 performance incentives were awarded based on performance over the course of the entire three-year period, and included both positive and negative incentives. Performance incentives for EEPS 2 are awarded over the course of the entire four-year period with only positive incentives. To encourage utilities to work collaboratively with NYSERDA, EEPS 2 incentives are based both on utilities' achievement within their service territory and on statewide progress toward energy savings goals. The PSC considers both acquired and committed savings in awarding EEPS 2 performance incentives. As a state agency, NYSERDA does not receive performance incentives.

Implementation Challenges

Following Hurricane Sandy in 2012, New York engaged the Moreland Commission to investigate the practices of the state's utilities. The commission focused on a variety of areas, including infrastructure and public power authorities, but it also made recommendations related to EEPS implementation. NYSERDA and the utilities under PSC jurisdiction implement about 100 energy efficiency programs, many of them targeted to similar sets of customers. The

commission found that this overlap in program offerings had led to confusion among customers and competition between state agencies and IOUs. The commission also noted that data gaps were making it difficult to determining program best practices (Moreland Commission 2013).

In response, the PSC issued a proposal for EEPS restructuring in September 2013. The PSC acknowledged that the regulatory process had been burdensome and that NYSEERDA and the IOUs were struggling with duplicative program offerings. It proposed streamlining the regulatory process by establishing broad, long-term guidelines as opposed to short-term reporting requirements, and by adjusting PSC staff roles accordingly. The commission also proposed delineating NYSEERDA and utility roles in order to offer complementary, rather than competing, programs.⁵¹ The PSC identified a second set of issues related to the monitoring and evaluation of EEPS programs. They proposed revising cost-effectiveness testing, creating a comprehensive information technology program to track EEPS programs, and developing a planning process that incorporated potential studies, best practices, and integrated program review and revision cycles.

Energy Savings Achieved

Achieved energy savings show the emphasis on cumulative, rather than annual, savings. Utilities and NYSEERDA track and report both acquired and committed energy savings. Completed energy efficiency projects contribute to the acquired savings, while committed savings are attributed to projects that are in the pipeline but have not yet been completed. Particularly since NYSEERDA focuses on longer-term efforts like market transformation, tracking committed savings helps maintain the balance between budgets and savings. Since program administrators are able to commit funds to long-term projects, EEPS 1 budgets continued to contribute to incremental savings in 2012 and 2013, though the EEPS 1 planning cycle ended in 2011.

Acquired and committed savings for electricity and natural gas are shown in figure B6. On aggregate, both natural gas and electricity efficiency program administrators have fallen short of their targets to date. However the addition of expected savings from committed projects brings program administrators much closer to closing the jurisdictional gap. Furthermore, savings patterns follow a ramp-up period, with program administrators coming much closer to their goals toward the end of EEPS 1.

⁵¹ See Case 07-M-0548 EEPS Restructuring Proposal for further details.

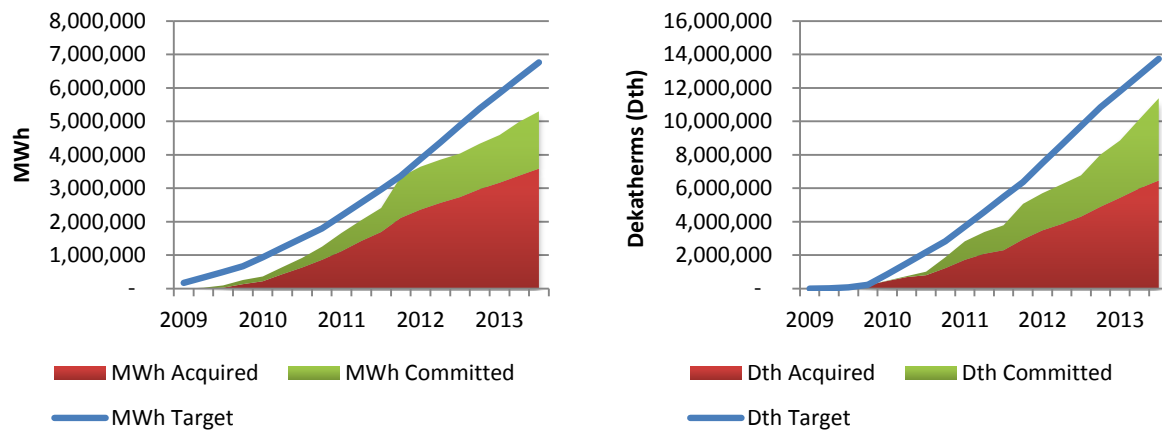


Figure B6. Cumulative acquired and committed electric and natural gas EEPS savings through 2013. *Source:* <http://documents.dps.ny.gov/public/EEPS/Reports> with data updates from B. Wade, New York Department of Public Service.

Though New York has not met its targets to date, it continues to achieve some of the highest levels of energy savings in the country. The state is approaching the end of its 15 by 15 timeline, but it appears that EEPS savings targets may continue into a third phase. The PSC recently authorized a Green Bank (Case 13-M-0412) and has been working with stakeholders to determine what energy savings targets might look like after 2015.

Appendix C. Designing Successful Energy Savings Targets

Although successful energy savings targets share common elements, state policymakers and regulators have flexibility in designing targets to take advantage of existing market conditions and institutional capacity related to energy efficiency. In 2009, ACEEE published sample language for an EERS policy. Below is updated language, adapted from Furrey and Black 2009.

Sample EERS Language

A bill to establish an energy efficiency performance standard; to establish energy efficiency programs in this state for electric and natural gas utilities; to prescribe the powers and duties of the [[*state public utilities commission*]] relating to energy efficiency within the state; and to provide for enforcement.

SECTION 1. DEFINITIONS

(A) As used in this Act

- (1) *Combined Heat and Power (CHP) System* means a system that
 - (a) uses the same energy source for the simultaneous or sequential generation of electrical power, mechanical power, or both, in combination with the generation of steam or other forms of useful thermal energy (including heating and cooling applications);
 - (b) produces at least 20 percent of its total useful energy in the form of thermal energy, and at least 15 percent of its total useful energy in the form of electrical or mechanical power (or a combination thereof);
 - (c) has a net effective heat rate of no more than 7,500 Btu/kWh, calculated on a higher heating value basis;
 - (d) is designed for continuous operation; and
 - (e) if generating electricity, provides such electricity primarily for use by a facility or group of facilities located near the point where the electricity is generated, and from which net wholesale sales of electricity are not in excess of 50 percent of total annual generation.
- (2) *CHP Savings* means the displaced electricity due to the electric and mechanical output of a new or upgraded combined heat and power system, adjusted to reflect any increase in fuel consumption by the that system compared to the fuel that would have been required to produce the useful thermal energy output in a separate thermal-only system, as determined in accordance with such regulations as the Commission may promulgate.
- (3) *Commission* means the [*state public utilities commission*]
- (4) *Cost Effective* means that the portfolio or program being evaluated meets the utility cost test (See subparagraph 10).⁵²
- (5) *Energy Efficiency* means a decrease in customer consumption of electricity or natural gas achieved through measures or programs that target customer behavior, equipment, devices, or materials without reducing the quality of energy services.

⁵² There are other options for measuring cost effectiveness. The Resource Value Framework best prioritizes a state's policy goals to determine whether efficiency programs are in the public interest. The Total Resource Cost Test, which includes spillover and non-energy benefits, may also be used.

- (6) *Energy Efficiency Plan* means an energy efficiency plan under Section 4.
- (7) *Natural Gas Utility* means any of the following:
- (a) an investor-owned business engaged in the sale and distribution of natural gas within this state whose rates are regulated by the Commission;
 - (b) a municipally owned natural gas utility in this state; and/or
 - (c) a cooperative natural gas utility in this state.
- (8) *Peak Demand Reduction Programs* means any of the following:
- (a) programs designed to reduce peak demand through load curtailment or direct load control;
 - (b) programs designed to shift load from on-peak to off-peak periods, including demand response programs; and/or
 - (c) energy efficiency programs specifically designed to achieve savings during peak time periods
- (9) *Retail Electric Distribution Utility* means any of the following:
- (a) any person or entity that is regulated by the Commission for purposes of selling electricity to retail customers in this state;
 - (b) a municipally-owned electric utility in this state; and/or
 - (c) a cooperative electric utility in this state.
- (10) *Utility Cost test (UCT)* means a standard that is met for an investment in energy efficiency programs or portfolios if, on a net present value basis, the total avoided supply-side costs, including representative values for electricity or natural gas supply, transmission, distribution, and other associated costs, are greater than the total costs total cost incurred by the program administrator, including program costs and incentive costs borne by the administrator.
- (11) *Verified Electricity or Natural Gas Savings* means electricity savings or natural gas savings that meet the requirements of Section 5.

SECTION 2. ENERGY EFFICIENCY PERFORMANCE STANDARD

(A) Performance Standard

- (1) For each of calendar years 20XX through 20XX, retail electric and natural gas distribution utilities shall implement energy efficiency programs that achieve electric and natural gas energy savings equivalent to the following applicable percentages.⁵³

Program year	Electricity incremental savings target %	Electricity cumulative savings target %	Natural gas incremental savings target %	Natural gas cumulative savings target %
PY1	0.25	0.25	0.25	0.25
PY2	0.5	0.75	0.25	0.5
PY3	0.75	1.5	0.5	1.0

⁵³ While EERS timeframes are adjustable, it is important that they set long-term targets. Utility commissions often work in three-year planning cycles; the strongest legislation sets targets at least ten years into the future. The savings targets laid out here are equivalent to savings targets already cost effectively implemented in many states. A potential study may also help establish reasonable and cost-effective targets for the state.

Program year	Electricity incremental savings target %	Electricity cumulative savings target %	Natural gas incremental savings target %	Natural gas cumulative savings target %
PY4	1.0	2.5	0.5	1.5
PY5	1.0	3.5	0.75	2.25
PY6	1.25	4.75	0.75	3.0
PY7	1.25	6.0	1.0	4.0
PY8	1.5	7.5	1.0	5.0
PY9	1.5	9.0	1.0	6.0
PY10	1.5	10.5	1.0	7.0
PY11	1.75	12.25	1.0	8.0
PY12	1.75	14.0	1.0	9.0
PY13	2.0	16.0	1.0	10.0
PY14	2.0	18.0	1.0	11.0
PY15	2.0	20.00	1.0	12.0

- (2) If a utility's incremental energy savings in any year exceed the applicable performance standard established in this section, those extra savings may be carried forward and credited to the next year's standard, subject to the following provisions:
- The amount of those savings carried forward shall not exceed 1/3 of the next year's standard.
 - Any such savings carried forward shall not be used toward claiming any utility incentive under Sections 7 or 8.
 - However any such savings carried forward may be applied in the consideration of any penalties under Section 10.
- (3) Beginning in 20XX, a retail electric distribution utility shall implement additional or expanded peak demand reduction programs that achieve incremental peak demand savings, beyond any peak demand reduction programs existing at the time of this legislation, equivalent to at least seventy-five hundredths of one percent (0.75%) of the baseline for peak demand savings. In 20XX, the Commission shall make recommendations to the general assembly regarding future peak demand reduction targets.
- (B) A utility may promote new combined heat and power (CHP) installations as part of their programs to achieve the savings targets outlined in this section,⁵⁴ provided that all of the following apply:
- New CHP installations put into operation after the effective date of this legislation can qualify.

⁵⁴ While CHP is an effective efficiency resource, states that include CHP as an eligible measure for achieving savings associated with an EERS should consider increasing targets to account for this potential.

- (2) Savings from upgrades to existing CHP systems can qualify, counting only those savings above what was achieved with the prior system and that save energy relative to the supply-side alternative.
- (3) Total claimed savings from such CHP installations can account for no more than twenty percent of the utility's annual savings requirements.
- (C) For the purposes of subsections A1, 2, 3, and 4 of this section,
 - (1) The baseline for energy savings under subsections A1 and 3 of this section shall be the total kilowatt-hours the retail electric distribution utility delivered in the preceding calendar year to customers in this state.⁵⁵
 - (2) The baseline for energy savings under subsections A2 and 3 of this section shall be the total cubic feet of natural gas delivered by the natural gas utility in the preceding calendar year to customers in this state.
 - (3) The baseline for peak demand reduction under subsection A4 of this section shall be the annual peak demand of the retail electric distribution utility in the preceding calendar year.

SECTION 3. COMMISSION RULEMAKING

- (A) Within 90 days after the effective date of this act, the Commission shall promulgate rules specifying the procedure for a retail electric distribution utility or a natural gas utility to develop and submit an energy efficiency plan as described in Section 4 to meet the energy efficiency performance standard set forth in Section 2.⁵⁶

SECTION 4. ENERGY EFFICIENCY PLAN

- (A) An energy efficiency plan shall do all of the following:
 - (1) Propose a set of energy efficiency programs, including peak demand reduction programs, that include offerings for each customer class, including low-income residential. The Commission shall allow providers flexibility to tailor the relative amount of effort devoted to each customer class based on the specific characteristics of their service territory.
 - (2) Specify necessary funding levels for proposed energy efficiency programs
 - (3) Describe how energy efficiency costs will be recovered, as provided in Section 7
 - (4) Seek, to the extent feasible and reasonable, that charges collected from a particular customer rate class are spent on energy efficiency programs for that rate class
 - (5) Demonstrate that the proposed energy efficiency programs and funding are sufficient to ensure the achievement of applicable energy efficiency performance standards under Section 2
 - (6) Demonstrate that the utility's energy efficiency portfolio will be cost-effective, using the Utility Cost Test provided in Section 1
 - (7) Provide for the practical and effective administration of the proposed energy efficiency programs. The Commission shall allow utilities flexibility in designing their energy efficiency programs and administrative approach. A utility's energy efficiency programs or any part thereof, may be administered, at the utility's option,

⁵⁵ States with variable weather may wish to refer to a weather-normalized multiyear average baseline.

⁵⁶ As EERS policies are typically administered at the public utility commission level, legislation that does not include a stipulation directing a rulemaking within a given timeframe risks major regulatory lag.

- by the utility, alone or jointly with other utilities, by a state agency, or by an appropriate, experienced organization selected after a competitive bid process.
- (8) Include a process for measurement and verification of incremental energy savings from each energy efficiency program pursuant to Section 5. All such evaluations shall be subject to public review and Commission oversight.
 - (9) Allow for the coordination of energy efficiency programs with the energy efficiency programs of other utilities under the direction of the Commission pursuant to subsection E.
- (B) An energy efficiency plan may provide for the utility to facilitate third-party loans to customers to finance energy efficiency measures.
 - (C) Within 90 days after Commission rules have been promulgated and triennially thereafter, a retail electric distribution or natural gas utility shall file an energy efficiency plan with the Commission.
 - (D) Within 90 days of receiving an energy efficiency plan from a utility and after an opportunity for public comment, the Commission shall approve, approve with changes consented to by the utility, or reject the plan.
 - (1) If the Commission rejects the plan, the Commission shall state the reasons for its action.
 - (2) Within 30 days after the Commission rejects a plan, the utility shall submit a revised plan that addresses the reasons for rejection cited by the Commission.
 - (3) Within 30 days after receiving a revised plan and after an opportunity for public comment, the Commission shall approve, approve with changes consented to by the utility, or reject the revised plan. If the Commission rejects the revised plan, the Commission shall state the reasons for the rejection.
 - (4) Any delay caused by the failure of a utility to file an acceptable revised plan under subparagraph 2 shall not be used as a reason to avoid penalties under Section 10.
 - (5) The procedure for rejected plans shall be repeated until a revised plan is approved or approved with changes consented to by the utility. The Commission's action under this subsection does not affect the applicability of the requirements of Section 2 or Section 10.
 - (E) The Commission may coordinate energy efficiency programs among consenting utilities where feasible, if doing so would help to maximize energy savings on a statewide basis. However, money spent by a utility to comply with this act shall generally be used to fund energy efficiency programs that provide services in that utility's service territory.

SECTION 5. MEASUREMENT AND VERIFICATION

- (A) Within 180 days after the effective date of this act, the Commission shall promulgate rules regarding measurement and verification of electricity and natural gas savings under this section, including:
 - (1) Procedures and standards for defining and measuring eligible electricity savings and natural gas savings which shall
 - (a) specify the types of eligible energy efficiency and energy conservation measures;
 - (b) require that energy consumption estimates for customer facilities or portions of facilities in the applicable base and post-participation time periods used for estimating savings be adjusted, as appropriate, to account for changes in weather, level of production, and building area;

- (c) account for the useful life of electricity and natural gas saving measures;
- (d) allow for the use of deemed savings values, where justified, for specific, commonly-used efficiency measures;
- (e) allow for savings from a program to be estimated based on a statistical sample of participating customers and extrapolated to all participating customers; and
- (f) exclude savings that
 - (i) are not properly attributable to measures carried out by the entity seeking the credit for such savings (or a designated agent of the entity); or
 - (ii) have already been credited under this section to another entity or to the same entity.
- (2) Procedures and standards for third-party verification of reported electricity savings or natural gas savings.

SECTION 6. REPORTING

- (A) By a time determined by the Commission, each utility shall submit to the Commission an annual report that provides information relating to the actions taken by the utility to comply with the energy efficiency performance standards under Section 2.⁵⁷ By that same time, a municipally-owned utility shall submit a copy of the report to the governing body of the municipally-owned utility, and a cooperative utility shall submit a copy of the report to its board of directors.
- (B) An annual report under subsection A shall include all of the following information, both at the aggregate portfolio level and customer class level:
 - (1) The estimated annual electricity or natural gas savings achieved by the utility through energy efficiency programs provided during the reporting period
 - (2) An estimate of the annual and life-cycle carbon dioxide emissions avoided by the energy efficiency programs operated during this reporting period
 - (3) The estimated incremental and total peak reduction achieved through peak demand reduction programs during this reporting period
 - (4) Expenditures made on energy efficiency and peak demand reduction programs during the reporting period and anticipated future expenditures to comply with this subsection
 - (5) The cost effectiveness of implemented programs
 - (6) Any other information that the Commission determines necessary
- (C) Concurrent with the submission of each report under subsection A, a municipally-owned utility shall submit a summary of the report to its customers in their bills with a bill insert and to its governing body.
- (D) Concurrent with the submission of each report under subsection A, a cooperative utility shall submit a summary of the report to its members in a periodical issued by an association of rural electric cooperatives and to its board of directors.
- (E) A municipally-owned utility or cooperative utility shall make a copy of the report available at its office and shall post a copy of the report on its website. A summary

⁵⁷ Commissions should consider referencing specific reporting guidelines to ensure complete and consistent reporting by utilities. See, for example, the Northeast Energy Efficiency Partnerships [Common Statewide Energy Efficiency Reporting Guidelines](#).

under this section shall indicate that a copy of the report is available at the office or website.

- (F) The Commission shall monitor reports submitted under subsection A and ensure that actions taken under this act by utilities serving customers in the same distribution territory do not create an unfair competitive advantage for any of those utilities.
- (G) In accordance with rules it shall adopt, the Commission shall produce and make publicly available an annual report containing the results of its verification of the annual levels of energy efficiency and of peak demand reductions achieved by each utility pursuant to subsection A of this section. A copy of the report shall be provided to the consumers' counsel and be made available on the Commission's website.
- (H) Three years after the effective date of this legislation, and every three years thereafter, the Commission shall produce a report that includes all of the following information:
 - (1) A summary of data collected under this section, including the required annual reports
 - (2) The status of energy efficiency in this state
 - (3) For the total portfolio of energy efficiency programs, a comparison of the cost of the energy efficiency and the cost of electricity from a new conventional coal-fired electric generating facility and a new combined-cycle natural gas generating facility
 - (4) A discussion regarding how the Commission is fulfilling the requirements of subsection F.
 - (5) An evaluation of whether this Act has been cost effective
 - (6) A description of the impact of this Act on employment in this state. The Commission shall consult with other appropriate agencies of the department of labor and economic growth in the development of this information.
 - (7) Any recommendations the Commission may have concerning amendments to this subpart, including changes in the performance standard percentage limits under Section 2

SECTION 7. COST RECOVERY

- (A) The Commission shall allow a utility that undertakes approved energy efficiency programs to recover the actual costs of implementing the programs. Costs exceeding the overall funding levels specified in the energy efficiency plan may be recovered as long as those costs are prudent and reasonable.
 - (1) Costs shall be recovered from all classes of customers by volumetric charges applied to utility bills.
 - (2) Upon petition by a utility and after an opportunity for public comment and hearing, the Commission may authorize the utility to capitalize certain costs of implementing approved energy efficiency programs.
 - (3) To the extent feasible, charges collected from a particular customer rate class shall be devoted to energy efficiency programs and services for that rate class. However, the established funding level for low-income residential programs shall be provided from each customer rate class in proportion to that customer rate class's funding of the utility's total energy efficiency programs.
 - (4) Charges shall be applied to distribution customers regardless of the source of their electricity or natural gas supply.

SECTION 8. FINANCIAL INCENTIVES

- (A) Within 90 days after approval of initial plans, the Commission shall promulgate rules regarding the ability of a utility to earn a financial incentive, on an annual basis, for exceeding the energy efficiency performance standard under Section 2.

SECTION 9. BUYOUT OPTION

- (A) In lieu of achieving actual savings to comply with the applicable performance standard under Section 2, a retail electric distribution or natural gas utility may pay each year to the [*energy efficiency fund*] created [*in Section 11*] by not later than a time determined by the Commission a buyout fee in an amount equal to, as adjusted for inflation in accordance with such regulations as the Commission may promulgate:
 - (1) \$0.08 per kWh otherwise required to be procured that year through energy efficiency measures by the retail electric distribution utility; or
 - (2) \$0.80 per therm otherwise required to be procured that year through energy efficiency measures by the natural gas utility.
- (B) Utility costs under this section shall be recoverable under the method identified in Section 7A1.
- (C) If a utility chooses to exercise its option under paragraph A it shall be ineligible for any financial incentives such as those created under Sections 7 or 8.

SECTION 10. PENALTIES

- (A) If the Commission determines, after notice and opportunity for hearing, that a retail electric distribution or natural gas utility has failed to comply with an energy efficiency or peak demand reduction requirement of Section 2, the Commission shall assess against the utility a civil penalty for each such failure in an amount equal to:
 - (1) \$0.10 per kWh of undercompliance or noncompliance by the retail electric distribution utility; or
 - (2) \$1.00 per therm undercompliance or noncompliance by the natural gas utility; or
 - (3) \$100 per kW of undercompliance with the peak reduction requirement.
- (B) The costs of any civil penalty assessed under this subsection shall in no circumstance be recoverable by the utility from utility customers through rates, surcharges, or under any other cost recovery mechanism, including those created pursuant to Section 7.
- (C) Revenue from any civil penalty assessed under this subsection shall be deposited to the credit of the [*energy efficiency fund*] created [*in Section 11*] for the sole purpose of reinvestment in energy efficiency programs.

SECTION 11. ENERGY EFFICIENCY FUND

- (A) There is hereby established in the state treasury the [*state*] Energy Efficiency Fund, into which shall be deposited all energy efficiency revenues remitted under division B of this section. Revenues deposited into this fund shall be for the exclusive purposes of funding state energy efficiency programs created under [*relevant state code/act*] and paying the programs' administrative costs. Money unspent in a year shall be carried forward to be spent in the subsequent year. Interest on the fund shall be credited to the fund.
- (B) Energy efficiency revenues shall include all of the following:
 - (1) Revenues from payments, repayments, and collections under the state energy efficiency program and from program income;
 - (2) Revenues from buyout payments under Section 9;

- (3) Revenue from civil penalties assessed under Section 10; and
- (4) Interest earnings on the energy efficiency fund.
- (C) Funds committed to the Energy Efficiency Fund shall not be reassigned to the state treasury, and shall be used exclusively for funding state energy efficiency programs.
- (D) The Commission shall select a qualified organization or agency to serve as administrator of the Energy Efficiency Fund.
- (E) The Commission shall arrange for a biennial independent audit of the Energy Efficiency Fund and the administration thereof.

Appendix D. Quantitative Data on State Targets and Savings

Table D1. Electricity targets and savings (MWh)

State	2011 target	2011 savings	2012 target	2012 savings
AZ	509,618	537,229	729,977	692,655
AR	63,341	57,901	126,681	125,552
CA	2,513,000	3,054,502	2,164,000	2,995,309
CO	251,522	328,939	340,209	419,237
CT	270,384	376,922	385,519	307,714
HI	196,400	190,300	196,400	163,500
IA	460,540	385,501	506,621	447,358
IL	773,742	999,412	1,015,860	1,331,342
IN	384,988	267,453	535,387	535,968
MA	907,224	797,987	1,107,000	980,113
MD	843,183	421,344	802,970	808,621
ME	129,000	120,211	165,000	157,631
MI	862,910	1,000,437	961,202	1,198,644
MN	904,688	965,000	910,116	899,000
NM	97,282	103,442	116,362	114,977
NY	2,679,656	1,791,302	1,820,830	1,338,060
OH	916,245	1,358,443	1,035,837	2,061,598
OR	438,000	410,844	446,760	463,404
PA	1,466,618	1,489,749	1,466,618	1,533,976
RI	102,627	96,009	128,570	119,666
TX	256,645	529,334	307,825	507,177
VT	119,900	108,691	99,506	116,607
WA	893,700	1,034,163	978,845	980,643
WI	454,080	390,380	454,080	460,488
NC*	602,337	514,195	581,331	678,603
NV*	793,138	827,164	788,937	1,015,762

Targets calculated based on relevant baseline sales and legislative or regulatory targets.

*Targets represent maximum allowable efficiency under renewable portfolio standard.

Source: Savings data reported by utilities and public utility commissions.

Table D2. Natural gas targets and savings (MMTherms)

State	2011 target	2011 savings	2012 target	2012 savings
AZ	4.0	1.7	5.8	1.6
AR	2.0	2.2	3.0	3.3
CA	57.0	59.4	42.0	51.4
CO	4.1	5.0	4.7	4.6
CT	--	--	5.3	3.7
IA	9.5	9.9	10.1	9.9
IL	--	--	14.5	13.9
MA	18.1	15.2	25.3	23.3
ME	0.4	0.2	0.4	0.2
MI	29.4	39.2	35.2	43.8
MN	21.4	28.5	21.5	27.4
NY	44.5	27.2	35.3	23.2
OR	3.8	5.4	4.4	5.9
RI	1.0	1.2	2.3	2.3
WI	18.3	12.3	18.3	16.5

Targets calculated based on relevant baseline sales and legislative or regulatory targets. *Source:* Savings data reported by utilities and public utility commissions.

Appendix E. State Data Sources

Arizona

ACC, 2010, Docket No. RE-00000C-09-0427, Decision No. 71819
 APS DSM Annual Report 2009-2012
 TEP DSM Progress Report 2009-2012
 SWG Docket No. G-00000G-13-0066
 E. Zuckerman, Southwest Energy Efficiency Project, pers. comm., December 5, 2013.
 B. Keene, Arizona Corporation Commission, pers. comm., January 18, 2014.

Arkansas

Docket No. 13-002-U
 Docket No. 08-137-U
 Docket No. 07-075-TF (OG&E PY 2010-2012)
 Docket No. 07-076-TF (Empire PY 2010-2012)
 Docket No. 07-081-TF (CenterPoint PY 2010-2012)
 Docket No. 07-082-TF (SWEPCo PY 2010-2012)
 Docket No. 07-085-TF (Entergy PY 2010-2012)
 W. Moore, Arkansas Public Service Commission, pers. comm., December 13, 2013.

California

Decision 08-07-047 (July 2008), Rulemaking 06-04-010
 M. Molina, 2014. *The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs*. Washington, DC: ACEEE. <http://aceee.org/research-report/u1402>
 K. Wu, California Public Utilities Commission, pers. comm., January 16, 2014.

Colorado

Docket No. 07A-420E, Decision C08-0560
 Docket No. 12A-100E, Decision No. R12-900
 Docket No. 10A-554EG, Decision No. C11-0442
 Xcel Energy DSM Status Report for 2009-2012
 Black Hills Electric DSM Status Report for 2009-2012

Connecticut

H.B. No. 6360, Session Year 2013
 Electric and Natural Gas Conservation and Load Management Plan (2012, 2013-2015)
 NEEP-REED Net Savings Data
 D. Duva, Connecticut Department of Energy and the Environment, pers. comm., January 17, 2014.
 M. Molina, 2014

Hawaii

Docket No. 2010-0037, Decision and Order No. 30089

HIPUC (Public Utilities Commission, State of Hawaii). 2013. *Report to the 2014 Legislature on Hawaii's Energy Efficiency Portfolio Standard*. http://puc.hawaii.gov/wp-content/uploads/2013/04/2013-PUC-EEPS-Report_FINAL.pdf

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Illinois

Public Act 096-0033

ComEd PY1-5 Annual Report

Ameren PY1-5 Annual Report

DCEO PY1-3 Annual Report

Nicor Gas EEP Annual Report 8-20-2013 PY1 and PY2

Peoples Gas and Northshore Gas Q4 Report PY1 and PY2

G. Ehrendreich and S. Paradis, Midwest Energy Efficiency Alliance, pers. comm., December 18, 2012.

D. Baker, DCEO, pers. comm., January 3, 2014.

Indiana

Cause 42693, Phase II Order

State Utility Forecasting Group, Annual Report

B. Borum, Indiana Utility Regulatory Commission, pers. comm., January 16, 2014.

Iowa

EEP-08-1

EEP-2012-0001, IP&L 2014-2018 Energy Efficiency Plan

Electric Cooperatives' Joint Report Pursuant to SF 2386

Iowa's Municipal Electric and Gas Utilities Joint Report to the Iowa Utilities Board

IP&L Annual Report

MidAmerican 2009 Annual Report

Black Hills Natural Gas Programs

G. Dunn, Iowa Utilities Board, pers. comm., February 6, 2014.

Maine

Efficiency Maine Trust First Triennial Plan and Second Triennial Plan

A. Downs, A. Chittum, S. Hayes, M. Neubauer, S. Nowak, S. Vaidyanathan, K. Farley, and C. Cui. 2013. *The 2013 State Energy Efficiency Scorecard*. Washington, DC: American Council for an Energy-Efficient Economy. <http://aceee.org/research-report/e13k>.

Maryland

2009-2011: Annual 2010 EmPOWER Maryland Overall Implementation & EM&V Progress Report

NEEP-REED Savings Data

Downs et al. 2013

D. Hurley, Maryland Public Service Commission, pers. comm., December 23, 2013.

K. Lucas, Maryland Energy Administration, pers. comm., January 8, 2014.

Massachusetts

MA EEAC 2011 Report of the Massachusetts Energy Efficiency Advisory Council
 Docket No 09-116, STATEWIDE EEAC Q4-11 Report B – Electric
 D.P.U. 12-100 to D.P.U. 12-111. Three-Year Energy Efficiency Plan 2013-2015
 NEEP-REED Savings Data
 C. White, National Grid, pers. comm., December 18, 2013.
 C. Halfpenny, Massachusetts Department of Energy Resources, pers. comm., December 17, 2013.

Michigan

Report on Implementation of P.A. 295 Utility Energy Optimization Programs, 2009-2011, 2012
 Downs et al. 2013

Minnesota

M.S. 216B.241, Next Generation Energy Act
 Downs et al. 2013
 Centerpoint Status Report 2010-2012
 Xcel MN DSM CIP Status-Report 2010-2012
 MERC MN-DSM-2013-2015-CIP-Triennial-Plan 2010-2012
 IPL Status Report 2010-2012
 Greater Minnesota Status Report 2010-2012
 J. Plummer, Minnesota Department of Commerce, Division of Energy Resources, pers. comm., January 17, 2014.

Nevada

NV Power DSM report 2009-2011
 Downs et al. 2013
 C. Zuniga, Public Utilities Commission of Nevada, pers. comm., January 24, 2014.

New Mexico

Sciortino, M., S. Nowak, P. Witte, and M. Kushler. 2011. *Energy Efficiency Resource Standards: A Progress Report on State Experience*. Washington, DC: American Council for an Energy-Efficient Economy.
 PNM DSM annual report
 SPS Energy Efficiency and Load Management Annual Report
 NM El Paso Electric 2012 Energy Efficiency Plan and Report

New York

NY PSC Case 07-M-0548
 NY PSC Case 13-M-0412
 NEEP-REED Net Savings Data
 Downs et al. 2013
 Moreland Commission (Moreland Commission on Utility Storm Preparation and Response). 2013. *Final Report*.
<http://www.governor.ny.gov/assets/documents/MACfinalreportjune22.pdf>
 B. Wade, New York Department of Public Services, pers. comm., December 12, 2013.

J. Williams, New York State Energy Research and Development Authority, pers. comm., March 4, 2013.

North Carolina

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Ohio

Senate Bill 221

AEP Demand Side Management Reports (2009-2012)

Duke Demand Side Management Reports (2009-2012)

Dayton Power & Light Demand Side Management Reports (2009-2012)

First Energy Demand Side Management Reports (2009-2012)

G. Scheck, Ohio Public Utilities Commission. pers. comm., December 18, 2013.

Oregon

ETO 2010-14 Strategic Plan

ETO Annual Report

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A. Schick, Energy Trust of Oregon, pers. comm., January 22, 2014.

Pennsylvania

PA PUC Docket No. M-2008-2069887

PA PUC Docket No. M 2012 2289411

PA PUC Docket No. M-2008-2069887

NEEP-REED Savings Data

Rhode Island

Docket No 4284 & 4295 Order approving 2012-14 program plans

National Grid Year End Reports (2010-2012)

Texas

Sciortino et al. 2011

Energy Efficiency Accomplishments of Texas Investor-Owned Utilities

SWEPCO EEPR (2007-2013)

AEP TNC EEPR (2007-2013)

AEP TCC EEPR (2007-2013)

CenterPoint Report (2007-2013)

El Paso EEPR (2007-2013)

Entergy Texas, Inc. EEPR (2007-2013)

Oncor EEPR (2007-2013)

TNMP EEPR (2007-2013)

Xcel EEPR (2007-2013)

Sharyland EEPR (2011-2013)

Vermont

Efficiency Vermont Annual Plan (2007-2014)
 Efficiency Vermont Annual Report (2006-2013)
 Sciortino et al. 2011
 C. Hakstian, Vermont Energy Investment Corporation, pers. comm., February 20, 2014.
 Burlington Electric Energy Efficiency Annual Report (2012)
 Demand Resources Plan Proceeding (2010-2011 and 2013-2014)

Washington

Energy Independence Act Utility Reports (2012-2013)
 Department of Commerce. 2013. *2013 Biennial Energy Report*. Report to Legislature. Olympia, WA: Washington State Department of Commerce.
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Wisconsin

PSC 5-GF-191 Order
 Focus on Energy Evaluation Report (2011-2012)
 Downs, et al. 2013

General

EIA (U.S. Energy Information Administration.) 2013a. *Annual Electric Power Industry Report*. Form EIA-861. Washington, DC: U.S. Department of Energy, Energy Information Administration.

———. 2013b. “Form EIA-826 Monthly Electric Utility Sales and Revenue Data.” Washington, DC: U.S. Department of Energy, Energy Information Administration.

———. 2013c. *Annual Report of Natural and Supplemental Gas Supply and Disposition*. Form EIA-176. Washington, DC: U.S. Department of Energy, Energy Information Administration.

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———. 2013e. *Annual Energy Outlook Early Release*. Washington, DC: U.S. Department of Energy, Energy Information Administration.