Picking All the Fruit: All Cost-Effective Energy Efficiency Mandates

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ABSTRACT

As of April 2014, 25 states have adopted and fully funded an energy efficiency resource standard (EERS) policy. Though every state requires that efficiency programs be cost-effective, seven of these states have chosen to enforce *all* cost-effective efficiency requirements, in which utilities are required to determine and invest in the maximum amount of cost-effective efficiency feasible. In this paper, we examine policies and progress in the seven states with all cost-effective efficiency mandates. States use a variety of methods to determine cost-effectiveness, but typically rely on the total resource cost test to assess efficiency programs. Stakeholder groups also play a significant role in determining final multiyear efficiency targets. Though mandates in these seven states require investments in the complete set of available cost-effective efficiency resources, in reality targets tend to be slightly more conservative than what potential studies suggest is achievable. Nonetheless, on average, states with all cost-effective mandates are targeting and achieving savings that are significantly higher than states with more traditional EERS policies. These states are pushing the envelope, attempting to capture efficiency in traditionally hard-to-reach markets. Though some express doubt that high levels of savings are sustainable, targets continue to rise, and in coming years targets will reach over 2% of annual electricity sales in several states.

Introduction

Over the past decade, more than half of states have adopted policies establishing mandatory energy savings targets that utilities and third-party program administrators must meet through customer energy efficiency programs. The policies that create the framework for these mandatory energy savings targets are called energy efficiency resources standards (EERS). Similar to renewable energy standards, EERS policies create a binding, long-term vision for the role of energy efficiency within a state's energy portfolio. As of April 2014, a total of 25 states have adopted and fully funded an EERS policy. Figure 1 shows all states implementing an EERS.[1] These states are both geographically and politically diverse, and they have embraced energy efficiency for a variety of reasons, including customer cost savings, economic development, grid reliability, and pollution control.

In the absence of federal requirements for energy savings, states with EERS policies are leading the way with highly effective, forward-looking energy efficiency policies. These long-term savings targets not only set out a long-term vision for a state's energy portfolio, but also spur utilities and nonutility program administrators to invest in deeper savings measures. By setting long-term targets, EERS policies go beyond annual program planning to allow utilities to incorporate energy efficiency into their long-term integrated resource plans. Multiyear targets

[1] Indiana rolled back its EERS in early 2014, but is included in some research for this paper since its EERS was in effect in 2012. At the time of writing, the Ohio Senate passed a bill canceling annual EERS targets for two years. This bill is not considered in this paper.

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.

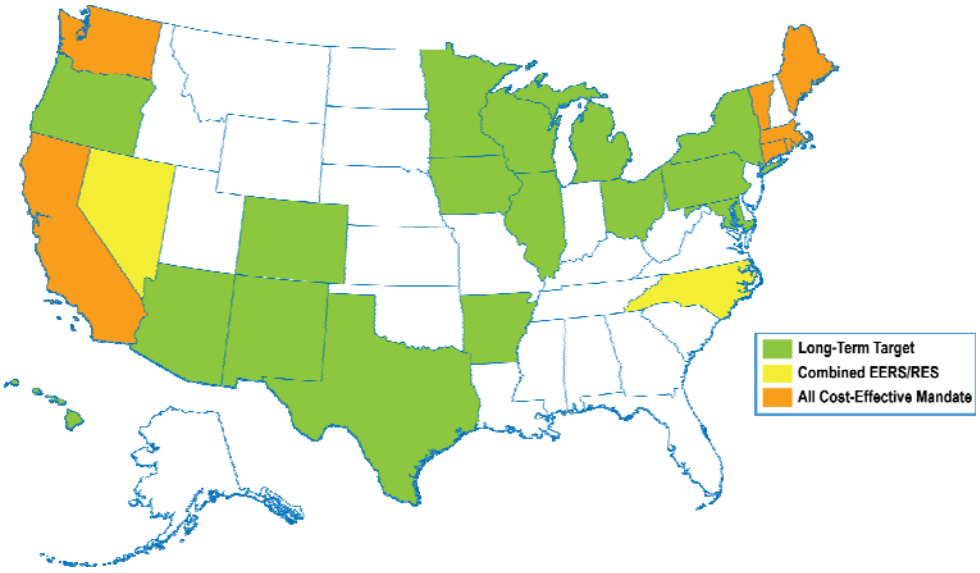

Figure 1. States with EERS policies in place as of April 2014. *Source*: ACEEE (2014).

As a means to establish targets, several states have chosen to enforce "all cost-effective" efficiency requirements, under which utilities and program administrators are required to define and invest in the highest level of efficiency determined to be cost-effective. While all cost-effective requirements are not in themselves definitive savings targets, they do require utilities and program administrators to determine—and achieve—the maximum amount of cost-effective efficiency available in any given year.[2] Therefore, the American Council for an Energy-Efficient Economy (ACEEE) considers states with all cost-effective requirements to have EERS policies in place once these policies lead to multiyear savings targets. In fact, some of these states are testing the limits of achievable efficiency. In this report, we examine the policies and progress in seven states with all cost-effective efficiency mandates.

California, Connecticut, Maine, Massachusetts, Rhode Island, Vermont, and Washington have all enacted legislation that requires utilities and program administrators to capture all cost-effective efficiency resources available to them. All cost-effective efficiency mandates are unique to typical EERS targets in that they require an additional level of analysis by utilities and other stakeholders to determine maximum levels of cost-effective efficiency available within a state. Policymakers choose to set targets in this way in order to avoid artificially limiting the level of efficiency captured by program administrators. For example, a state with a traditional EERS policy may set a savings target of 1% per year. More energy efficiency may be available within the state, but utilities will likely not be incentivized to pursue efficiency beyond the required 1% level. In a state with an all cost-effective efficiency requirement, no artificial

[2] Note that all cost-effective mandates are distinct from requirements for cost-effective energy efficiency more generally. All cost-effective mandates go beyond simple cost-effectiveness requirements to direct utilities and program administrators to plan to achieve the *maximum* amount of energy savings available within the state through efficiency. Other states have alternative cost-effectiveness criteria that may constrict, rather than maximize, the level of available energy efficiency measures. For example, Illinois, Michigan, Wisconsin, Pennsylvania, and Texas have cost-caps in place that limit the costs utilities may incur.

savings target is set in statute for efficiency measures. These states have prioritized energy efficiency as a resource, requiring that customer needs be met to the greatest extent possible through energy efficiency. To fulfill this requirement, program administrators must clearly define the level of efficiency they believe to be cost-effective—in essence, they must set efficiency targets. All cost-effective mandates offer some flexibility in target determination, recognizing that energy efficiency potential in a state may change over time as electricity prices fluctuate and new efficiency programs are tried and tested. However, each piece of legislation has led to the setting of multiyear targets, serving the same purpose as a more traditional EERS.

The legislative language requiring implementation of all cost-effective efficiency measures is given in Table 1, below. Though each piece of legislation is worded differently, the spirit is typically the same. Each requires that utilities or third-party program administrators maximize the amount of cost-effective efficiency captured to their best ability. Methods for determining specific cost-effective efficiency targets are left largely to public utility commissions (PUCs) and advisory bodies, and are discussed further below.

Table 1. Legislative language requiring all cost-effective energy efficiency

State	All Cost-Effective Efficiency Language	Policy Source
California	The commission in consultation with the Public Utilities Commission and local publicly owned electric utilities, in a public process that allows input from other stakeholders, shall develop a statewide estimate of all potentially achievable cost-effective electricity and natural gas efficiency savings and establish targets for statewide annual energy efficiency savings and demand reduction for the next 10-year period.	California PRC § 25310
Connecticut	Resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible.	Public Act No. 07-242
Maine	The commission shall select capacity resources that are competitive and the lowest price when compared to other available offers.… The commission shall choose among capacity resources in the following order of priority: 1) New interruptible, demand response or energy efficiency capacity resources located in this state It is an objective of the triennial plan to design, coordinate, and integrate sustained energy efficiency and weatherization programs that are available to all energy consumers [and] that advance the targets of…capturing all cost-effective energy efficiency resources available for electric and natural gas utility ratepayers.	M.R.S.A. §3210-C M.R.S.A §10104, sub-§4
Massachusetts	The department shall require a mandatory charge of 2.5 mills[3] per kilowatt-hour for all consumers, except those served by a municipal lighting plant, to fund energy	MA Gen L ch. 25 § 19

[3] A mill is a tenth of a cent.

State	All Cost-Effective Efficiency Language	Policy Source
	efficiency programs including, but not limited to, demand side management programs… In authorizing such programs, the department shall ensure that they are delivered in a cost-effective manner capturing all available efficiency opportunities, minimizing administrative costs to the fullest extent practicable, and utilizing competitive procurement processes to the fullest extent practicable.	
Rhode Island	Least cost procurement…shall include procurement of energy efficiency and energy conservation measures that are prudent and reliable and when measures are lower cost than acquisition of additional supply, including supply for periods of high demand.… The commission shall issue an order approving all energy efficiency measures that are cost-effective and lower-cost than acquisition of additional supply.	Rhode Island Code § 39-1-27.7
Vermont	The charge established by the Board…shall be in an amount determined by the Board by rule or order that is consistent with the principles of least cost integrated planning.… As circumstances and programs evolve, the amount of the charge shall be reviewed for unrealized energy efficiency potential and shall be adjusted as necessary in order to realize all reasonably available, cost-effective energy efficiency savings.	30 V.S.A. § 209
Washington	Each qualifying utility shall pursue all available conservation that is cost-effective, reliable and feasible.… By January 1, 2010,…each qualifying utility shall identify its achievable cost-effective conservation potential through 2019. At least every two years thereafter, the qualifying utility shall review and update this assessment for the subsequent ten-year period.	RCW 19.285.040

The above table lists all states currently implementing an all cost-effective energy efficiency mandate. However, in compiling the list of similar legislation, it became clear that other states have codified, but not enforced, such mandates. In Hawaii, HRS § 269-92 requires the public utility commission to establish energy efficiency portfolio standards (EEPS) that will "maximize cost-effective energy-efficiency programs and technologies." At face value, this language seems equivalent to a requirement for the acquisition of all cost-effective energy efficiency. However, the law goes on to require that the state's EEPS be designed to achieve 4,300 gigawatt-hours (GWh) of electricity-use reductions by 2030. To date, the Hawaii Public Utilities Commission (PUC) has chosen to approve program portfolios designed to achieve the 4,300 GWh target set forth in the law, rather than exploring the less explicit all cost-effective efficiency mandate. The requirement to maximize cost-effective energy efficiency programs remains in state code, however, giving the PUC the option to enforce that portion of the law (and thereby adjust savings targets up or down) should it choose to do so.

New Mexico is another state where *specific* energy savings targets and all cost-effective efficiency mandates were at odds. The Efficient Use of Energy Act, passed in 2005, required public utilities providing electricity and natural gas service to New Mexico customers to acquire all cost-effective and achievable energy efficiency and load management resources available in their service territories. In 2008, amendments to the law set specific electricity savings targets of 5% in 2014 and 10% by 2020. The New Mexico Public Regulation Commission (PRC) enforced these targets until they were amended in 2013 with the passage of House Bill 267. The bill lowered the 2020 target to 8% of retail electricity sales, and struck the word *all* from the phrase "all cost-effective." Though the PRC was already implementing the specific percentage targets rather than the all cost-effective mandate in practice, removing the word *all* from state code clarified the PRC's charge. By their very nature, all cost-effective mandates must be continually updated, and for this reason are not compatible with specific energy unit or percentage legislative savings targets.

The Target Setting Process

In general, states with all cost-effective mandates have similar processes for setting targets. Most begin with an energy efficiency potential study, in which the long-term efficiency available within a state or service territory is calculated.[4] Potential studies have been conducted by states and utilities since the 1980s. The goal of such studies is to quantify the size of the energy efficiency resources within an available region—a state or service territory. Typically, potential studies look at three categories of efficiency potential: technical potential, in which all efficiency measures are considered that are feasible given the current state of technology; economic potential, which looks at the portion of technical potential that is cost-effective; and achievable potential, or the portion of economic potential that is likely attainable given the current market. Though potential studies are carefully informed, they nonetheless face some common shortcomings. For example, they may face issues with sales and savings forecasts, fail to fully incorporate savings from codes and standards, come up against policy constraints, or exclude measures and savings opportunities.[5] Despite these pitfalls, potential studies are useful in that they can provide the long-term view, and also inform short-term targets. This is typically a starting point for the seven states surveyed for this report, rather than a straightforward end point. Targets are typically approved or reviewed by stakeholders in a formal or informal context before they are finalized. State rules may also require adjustments—either making targets more aggressive than a potential study would suggest, or giving program administrators some leeway. States with all cost-effective efficiency mandates tend to set firm savings targets in three-year cycles. As circumstances change, potential studies are typically updated or a new study is commissioned, and the target-setting process begins again. While the process is similar in each state, there are several notable differences, outlined below.

[4] While this is typically true, it is not a rule that states with all cost-effective mandates begin the target setting process with a potential study. Efficiency Vermont is currently working on a long-term potential study, but earlier targets were set in the absence of a potential study using historical performance data.

[5] See Eldridge, Elliott, and Neubauer 2008 and Kramer and Reed 2012 for further information on potential studies.

Cost-Effective Determinations

Not all determinations of cost-effectiveness are created equal, and the means by which utilities determine whether their efficiency offerings are cost-effective can have a significant effect on efficiency portfolios. Cost-effectiveness tests are often influenced by political will and policy judgments, reflecting the priorities of policymakers and regulators. There are a range of tests for cost-effectiveness, but the seven states surveyed in this report tend to rely on three:

- *The total resource cost (TRC) test,* which includes the costs and benefits experienced by the entire customer base, including nonparticipants. Costs include those incurred by the efficiency program administrator and those borne by participants, while benefits include avoided utility costs and non-energy benefits.
- *The utility cost test (UCT),* which includes only the energy costs and benefits experienced by the efficiency program administrator.
- *The participant cost test (PCT),* which includes the costs and benefits experienced by efficiency program participants. Costs include the direct costs of purchasing and installing an efficiency measure, while benefits include reduced energy bills and financial incentives for participating in the program.[6]

Most states rely primarily on the TRC, and use the other tests for different levels of evaluation. Vermont is the single state surveyed for this report to rely heavily on the societal cost test (SCT), which includes the costs and benefits experienced by all members of society (C. Hakstian, Consultant, Vermont Energy Investment Corporation, pers. comm., February 18, 2014). Table 2, below, shows the types of cost-effectiveness tests used most regularly in each state that has an all cost-effective efficiency mandate as well as the level at which those tests are applied.

Table 2. Cost-effectiveness determinations

State	Primary cost-effectiveness test	Other tests	Level at which benefit–cost test is applied
California[1]	TRC	PCT, UCT	Portfolio
Connecticut[2]	TRC	UCT	Portfolio, program
Maine	TRC	-	Portfolio, program
Massachusetts	TRC	-	Varies
Rhode Island[3]	TRC	-	Program
Vermont[4]	SCT	UCT	Portfolio, program
Washington	TRC	PCT, UCT	Portfolio

Sources: ACEEE (2013); [1]D. Mackin, pers. comm.; [2]D. Duva, pers. comm.; [3]S. Huntington, pers. comm.; [4]C. Hakstian, pers. comm.

Both the nature of cost-effectiveness tests and the level at which each is used can have an influence on the overall portfolio of programs offered by a utility or program administrator.

[6] For more information on cost-effectiveness screening, see Woolf et al. (2012).

Screening for cost-effectiveness at the portfolio or program level may allow for more flexibility in program offerings than screening at the measure level does.[7] Typically, states with all cost-effective mandates have chosen to screen at more than one level, ensuring that they offer a wide range of programs that are cost-effective when taken individually and as a whole. However, it should also be noted that in any given test there is some room for subjectivity. Recently, many have argued that the TRC test as commonly applied ignores critical non-energy benefits (Neme and Kushler 2010). Since states are able to tailor tests to include the costs and benefits they deem relevant, each may include different assumptions within their cost-benefit testing.

Stakeholder Involvement

Cost-effectiveness is not typically the only requirement for approval of an efficiency program portfolio in the seven states surveyed. As with any process, target setting is subject to some political interference. In some cases, this results in higher targets. In others, there is a downward adjustment. The nature of an adjustment is due both to internal circumstances within the state (e.g., prioritizing environmental benefits) and the extent of stakeholder involvement. Investments in energy efficiency affect all energy consumers, and states use a variety of strategies to incorporate feedback from stakeholder groups. Many states allow—or even encourage—feedback during the regulatory review process. Others have mandatory requirements for stakeholder involvement, specifying the types of stakeholders that must contribute to efficiency plans and the ways in which they must do so. Vermont has the most limited stakeholder involvement of the seven states with all cost-effective efficiency mandates. The state does not convene a formal stakeholder group or actively seek public input during the target setting process (although the public may intervene in the regulatory process). Efficiency Vermont, which implements the majority of the efficiency programs for the state, uses a societal screening tool to determine all programs that are cost-effective. Rather than set targets that are equivalent to the savings expected as calculated in the screening tool, Efficiency Vermont sets targets that are about 10% higher than expected savings (C. Hakstian, Consultant, Vermont Energy Investment Corporation, pers. comm., February 18, 2014).

Several utilities in states with all cost-effective mandates incorporate public comment in more traditional ways. Burlington Electric also implements efficiency programs within the state of Vermont, and, as a distribution utility, it must include efficiency within its integrated resource plan (IRP). Since targets are imbedded in the IRP, customers and advocates are able to comment on them. Burlington Electric's targets must pass through a local electric commission and the city council before going to the utility commission. Through this fairly traditional process, customers can influence Burlington Electric's overall portfolio, including its efficiency targets. Historically, there has been little opposition to the utility's proposed targets (C. Burns, Director of Energy Services, Burlington Electric District, pers. comm., February 2014). Washington utilities work within a similar context, proposing targets using methods outlined by the Northwest Power and Conservation Council. Efficiency and consumer advocates, along with other interveners, are able to comment both on the methodology used to calculate efficiency potential within the state (at Northwest Power and Conservation Council meetings) and on specific utility demand-side management plans (at meetings sponsored by investor-owned utilities). Like Burlington Electric, utilities in Washington have found that, though the public is able to participate in the resource

[7] See Energy Efficiency Screening Coalition (2013) for more information on screening levels.

planning process, there has been little interest (C. Murray, Washington Department of Commerce, pers. comm., February 2014).

Rhode Island, Connecticut, and Massachusetts all have formalized stakeholder groups that oversee and approve efficiency targets. Connecticut established its Energy Efficiency Board nearly 15 years ago during utility restructuring (Howland 2013). The Massachusetts Energy Efficiency Advisory Council and the Rhode Island Energy Efficiency and Resource Management Council were established more recently. Legislation in all three states requires that specific stakeholder types be represented on the councils. In all three states, these stakeholder boards are actively involved in the target setting process, assessing the program portfolios utilities put forth and providing recommendations to state regulatory bodies. California also has a public stakeholder process that involves utilities, ratepayer groups, environmental and industry groups, and state agencies throughout the target development process. Stakeholder comments are put on record and incorporated into final target determinations (D. Mackin, Regulatory Analyst, California Public Utilities Commission, pers. comm., February 2014). By emphasizing stakeholder involvement, states are transforming energy efficiency markets. Program portfolios reflect the priorities of a wide range of groups rather than the at-times politics-limited goals of PUCs.

Final Targets

States with all cost-effective targets have set some of the most aggressive targets in the country. Of the states with electricity EERS policies in place in 2012, targets ranged from about 0.15% incremental annual electricity savings (Texas) to 2.4% annual incremental savings in Massachusetts (Downs and Cui, 2014). Targets for states with all cost-effective energy efficiency mandates were on average notably higher than targets in states with EERS policies that did not reference all cost-effective efficiency. This disparity is shown in Figure 2, with an average electricity savings target of 1.58% in the seven states with all cost-effective mandates compared to an average target of 0.96% in other states with EERS policies. This figure may be skewed by states with less aggressive targets. Texas, Nevada, and North Carolina, for example, all set targets under 0.5% in 2012.[8] However, the difference between median targets is similarly obvious: 1.4% in states with all cost-effective mandates compared to about 1% in states with EERS policies that do not require all cost-effective efficiency.

[8] Nevada and North Carolina have combined RPS–EERS policies. Targets are considered the maximum amount of efficiency allowable under these policies. See Downs and Cui (2014) for more details.

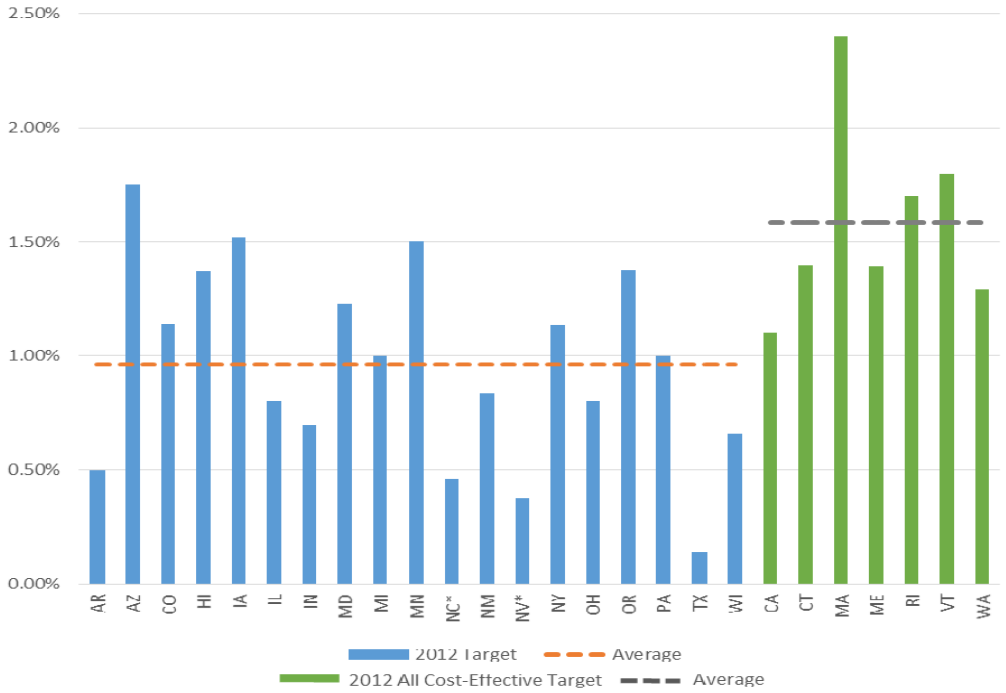

Figure 2. Incremental electricity savings targets, 2012. States with all cost-effective efficiency mandates are shown in green. All other states with EERS policies are shown in blue. Note that Indiana's EERS was rolled back in early 2014. *Source:* Adapted from Downs and Cui (2014).

Incentivizing Success

Setting targets alone does not ensure success. Many states with EERS policies in place have also implemented complementary rules that help remove disincentives for investments in efficiency. In many cases, these policies go beyond simply removing a disincentive, offering utilities financial benefits for meeting or exceeding savings targets.[9] The three main mechanisms utility regulators have used to incentivize success include:

- *Program cost recovery* 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 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 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* reward utilities financially for meeting energy savings goals. Performance incentives may be offered for meeting or surpassing goals, or may increase

[9] For a complete discussion on utility business models and the "three-legged stool," see York and Kushler (2011).

in proportion to the level of savings achieved by a utility. These incentives are typically awarded by the PUC upon verification of the achievement of goals.

Performance incentives in California, Connecticut, Massachusetts, Rhode Island, and Vermont take slightly different forms, but all emphasize achievement of efficiency program goals. Incentives are largely based on overall portfolio energy savings. However, shareholder incentives can also be used to reward additional outcomes. In Connecticut, performance incentives are program specific and may include actions targeted at specific customer classes. In Massachusetts, program administrators receive incentives based on the value of net benefits created in their plan and other design features. Incentives can be received prior to ex-post evaluation of the complete three-year portfolio, although a large portion of the incentive is directly tied to energy savings performance. Similarly, Efficiency Vermont receives performance awards based on operations and quantifiable performance indicators, including total net benefits. While energy savings is the major goal of these efficiency programs, incentive design allows emphasis on simultaneous non-energy benefits. Table 3, below, outlines the mechanisms these states use to remove barriers to efficiency implementation and encourage program administrators to meet targets. The table also outlines states with penalty mechanisms, or regulatory sanctions for utilities and program administrators that fail to meet savings targets.

Table 3. Utility business models and performance incentives

	Decoupling or LRAM		Performance incentives		Penalty mechanism	
	Electric	NG	Electric	NG	Electric	NG
California	Yes	Yes	Yes	Yes	No	No
Connecticut	Yes	Yes	Yes	Yes	No	No
Maine	No	No	No	No	No	No
Massachusetts	Yes	Yes	Yes	Yes	No	No
Rhode Island	Yes	Yes	Yes	Yes	No	No
Vermont	Yes	Yes	Yes	No	No	No
Washington	Yes	Yes	No	No	No	No

Source: Downs et al. (2013)

These methods of incentivizing success have been widely embraced by states with all cost-effective energy efficiency mandates. Maine is the only state surveyed that does not rely on performance incentives or an adjustment to the traditional utility business model. However, the state's efficiency programs are administered by an independent third-party rather than an energy provider. Efficiency Maine does not face the same disincentives to invest in efficiency as a distribution utility might.[10]

[10] Having a third-party administrator does not necessarily remove incentives as a useful tool for regulators. Vermont has used financial incentives to encourage success in its third-party administrator.

Achieving Notable Savings

States with all cost-effective mandates have challenged themselves to invest heavily in energy efficiency, with targets of between 1 and 2.5% in 2012. California, Vermont, and Washington exceeded their aggressive savings targets, while Maine and Rhode Island achieved 96% and 93% of their 2012 goals, respectively. Massachusetts and Connecticut were not far behind, both achieving over 80% of the savings they planned for in 2012 (Downs and Cui, 2014). On average, the seven states with all cost-effective efficiency mandates saved 1.5% of their electric retail sales in 2012, while other EERS states saved just under 1%. While there are likely several factors driving these seven states to achieve such high levels of savings, their cost-effective mandates and robust stakeholder involvement are certainly major motivations. Figure 3, below, shows savings in 2012 for all states with EERS policies in place.

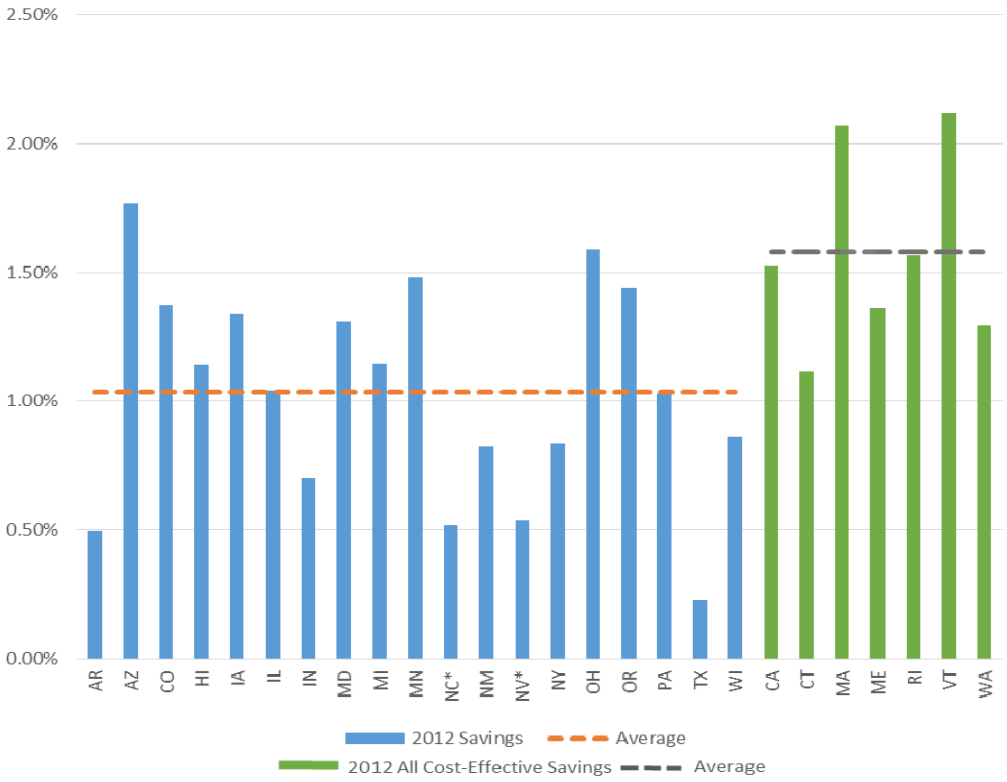

Figure 3. Incremental electricity savings, 2012. States with all cost-effective efficiency mandates are shown in green. All other states with EERS policies are shown in blue. *Source:* Adapted from Downs and Cui (2014).

States with all cost-effective energy efficiency mandates are capturing some of the highest levels of electricity savings in the country. As these states search for ways to realize broader and deeper savings, they must determine whether the ambitious savings targets they have set for themselves are achievable and sustainable. Efficiency program administrators in several states have expressed that they are finding it more challenging to hit aggressive targets as efficiency programs mature and the most basic programs are completed. In California, though efficiency portfolios are still cost-effective, the cost–benefit ratio is somewhat lower than it was in years past (D. Mackin, CPUC, pers. comm., February 19, 2014). Massachusetts has also

struggled with meeting its targets, though it continues to aim for the highest level of savings in the country.

Even as states exhaust more traditional energy efficiency offerings, new opportunities continue to present themselves. Compact fluorescent lighting (CFL) programs are being replaced by light-emitting diode (LED) lighting programs. Program administrators are beginning to reach out to once-hard-to-reach customers in multifamily buildings and mobile homes. Behavior programs are making up a growing portion of efficiency portfolios, and utilities are expanding market transformation efforts beyond lighting. In Rhode Island, a recent review of its 2010 potential study found that though specific circumstances have changed, annual energy efficiency targets upwards of 2.5% remain feasible over the next ten-year period (RIPUC 2013).

States also continue to revise their methodologies in order to better account for available potential. In Washington, utilities have moved from the Northwest Power and Conservation Council's calculator method for determining available cost-effective efficiency to a system that takes into account the evolving utility landscape in which adjustments to potential are made every few years. Using the calculator method, utilities were seeing available potential drop as they implemented efficiency programs. Using resource planning, utilities continue to find new sources of available cost-effective efficiency. This reinforces the idea that low-hanging fruit can grow back. Technology continues to improve and new program strategies are developed. Though states with all cost-effective efficiency mandates are stretching themselves to achieve aggressive targets, they have not yet reached the upper bounds of energy efficiency.

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