

# Regulatory update: A twenty-state (US) review of regulatory regimes and effective energy efficiency programs

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## Abstract

The US regulatory environments in which program administrators operate energy efficiency (EE) programs are constantly changing. EE policies define program implementation, program evaluation and spending so as to capture savings and determine cost recovery. A continuing experiment is in progress with each state's regulatory regime taking a different approach to governing EE. This paper seeks to answer a number of key questions regarding the EE policy framework in 20 states and their ability to facilitate the achievement of regulatory goals, updating similar assessments conducted in 2012 and 2014. Key questions include: What can be learned by comparing EE programs? What are the unintended consequences? What does this show about how to encourage EE?

In addition to a comparison of EE program performance, our analysis includes a summary of state-by-state legislative and regulatory EE goals, cost recovery provisions and incentives. Based on research and interviews, we review and categorize regulatory approaches to EE programs across specific states, and analyze the range of positive and negative outcomes that follow from the various types of regulatory approaches. We conclude that states in which EE targets are set by a legislature and enabled by a state commission typically achieve greater EE savings than do states in which legislatures and commissions have done little to implement formal EE initiatives.

## Regulatory Structures and Goals for Energy Efficiency in Twenty States

This paper assesses state legislative and regulatory influence on electric energy efficiency (EE) program development across twenty states in the USA.<sup>1</sup> The authors compare EE programs across seventy-four utilities in the 20 selected states, based on a publicly available data and interviews with state and utility EE experts. This analysis includes both qualitative and quantitative assessments of the twenty states' EE policies as related to overall EE program costs and savings. The authors examine a variety of legislative and regulatory EE policy goals, program cost recovery provisions, and financial incentives and penalties against a backdrop of state-level normalized energy savings and program costs.

This paper significantly updates our previous papers on regulatory regimes presented at ACEEE Summer Studies in 2012 and 2014. It includes new analyses of the 15 states included in the 2014 analysis and key additional states adding data and depth to the analysis. The fifteen states that we reviewed in our 2012 and 2014 papers<sup>2</sup> used 2010 and 2012 performance data (Gunn, Neumann 2012 and 2014) were chosen primarily based upon their geographic diversity and diverse EE regulatory approaches. In this paper, the authors added five additional states (Arkansas, Maryland, North Carolina, Vermont and Washington) to create a deeper assessment.

The variety of state-specific regulatory regimes across these states provides us with a natural, national-level EE experiment.

1. The analysis covers investor-owned utilities (IOUs).

2. Arizona, California, Illinois, Iowa, Indiana, Kansas, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New York, Ohio, Pennsylvania and Wisconsin.

Given the available data, we determine whether any conclusions can be drawn from analysis of the twenty states' EE initiatives and relative EE performance. Our analysis reveals that various cost recovery mechanisms or incentives can be put in place by state legislatures and/or state utility commissions, and, typically, corresponding EE initiatives develop in those states in the form of maturing EE programs and increasing annual savings (*as is documented below*). Based upon our analysis, it appears that:

- EE savings are generally continuing within the 2014 states;
- Top performers are CA, MA, MD and VT;
- AR, IA, IL and MN show strong savings with average costs; and
- Many other states show mid-level savings and costs (AZ, IN, MI, MO, NH, NY, OH, PA and WI).

Below is a state-specific legislative and regulatory review, which precedes our state-level cost and savings performance data analysis. States have established various initiatives to promote the development of EE programs. EE regulatory financial paradigms are typically designed around cost recovery, lost margin recovery and performance incentives.<sup>3</sup> Many initiatives focus on cost recovery and performance incentives. Others include adjustable rate mechanisms or specific cost recovery riders. Corresponding absence of such incentives is described as financial penalties (*negative incentives*), or *disincentives* to actively pursuing EE programs since utilities are concerned and focused on avoiding non-recovery of implementation costs. Table 1<sup>4</sup> summarizes each state's regulatory regime with high-level detail.

Table 1 demonstrates the relative degree of legislative and regulatory oversight, which varies from state to state. Figure 1 summarizes Table 1 and shows that all states have some level of EE legislative and/or regulatory policy activity, but that the level of detail, specific requirements, length of EE in each state and the types of incentives and penalties differ across states. For example, low to light activity includes little to no legislative or policy effort; moderate to strong activity includes heavier policy, cost recovery and other incentive mechanisms.

The states with the least amount of policy oversight are Kansas, North Carolina, Indiana, Ohio and Maryland. North Carolina and Kansas have no legislation and limited state commission-initiated EE cases (EE programs are established by individual utilities with commission oversight), and Ohio and Indiana have frozen their legislated, ratepayer funded programs. Kansas utilizes a cost recovery rider mechanism and cases are granted or denied on a case-by-case basis. Missouri has adopted EE legislation, but it only establishes an EE struc-

ture, while the commission has not fully developed and adopted cost recovery mechanisms.

At the opposite end of the spectrum, California, Minnesota and Massachusetts continue to grow EE savings through legislated goals which are methodically implemented at the state public utility commission. All three states have cost recovery, performance incentives and decoupling initiatives in place, as do many of the states in the middle of the EE oversight spectrum, but the leading states have had EE policies in place for many years. The remaining states have varying degrees of policy oversight:

- Illinois has improved in the standings in the past few years based upon overall EE statewide focus, stakeholder group focus and enabling commission action.
- Iowa has an EE law on the books without a specific statewide goal. Instead, EE goals are established by each utility and there are no specific financial incentives available.
- Arkansas, Iowa and Missouri have statewide and utility goals, implemented through coordinated commission and state efforts and goals that have been in place for a number of years. Arkansas, in particular, is a leader in the Southeast.
- Arizona, Michigan, New Hampshire, Pennsylvania, Vermont, Washington and Wisconsin are strong contenders for leading EE states given their enabling legislation, regulation and policy goals, which are set clearly so that utilities move toward and implement those goals.
- Indiana and Ohio have historically achieved EE savings based on performance against statewide goals, but as of 2014, both state legislatures passed eliminated EE resource standards – however, utilities continue to implement programs with commission oversight.

We also conducted an EE program data analysis of the same states which is detailed below. The data analysis mirrors our legislative and regulatory analysis. *A main goal of utility benchmarking performance in the 20 states is to create a picture of relative EE performance (i) as a factor of kWh savings as a percentage of total state sales, and (ii) as a factor of dollar cost per kWh saved.* Benchmarking states allowed us to map state EE performance against policy and legislative regimes (e.g., kWh savings as percent of sales and dollar cost per kWh saved).

## Energy-Efficiency Program Performance by State – Data Analysis

We benchmarked the 20 states to assess the possible effects of state policy and regulation on EE program performance. Our methodology standardizes utility performance data so we can track, account and adjust for discrepancies wherever possible. Note that comparing programs and data across states is a difficult undertaking because programs and market conditions vary. The limitations of this analysis include reliance on varying sources for reported savings, varying methods for reporting savings are used across utilities and, in a few instances, normalizing data so that it could be effectively used for comparison purposes. Differences across utilities include definitions of energy savings (e.g., gross savings or net savings), savings at the

3. *Program Cost Recovery*: Costs include those for program administration, implementation and evaluation. Because program costs reduce utility revenues on a dollar-for-dollar basis, reasonable recovery of these costs is a minimum requirement for implementation of EE programs; *Lost Margin Recovery*: Programs are designed to reduce the amount of electricity that customers use, but this reduction in sales impacts utilities' marginal revenue. Lost margin recovery attempts to mitigate this impact and has been debated. Decoupling is the separation of a utility's profit from its sales of electricity. A utility's revenue is set as a revenue target, then electricity rates are regularly tuned to meet that target; *Incentives*: Financial incentives allowed in addition to cost-recovery if utilities meet EE goals. ACEEE Glossary.

4. Minnesota: State utilities have performance incentives that are also meant to obviate the need for lost revenue recovery.

Table 1. Detail on state EE legislation and regulation for Investor Owned Utilities (IOUs).

<b>ARKANSAS (AR)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>AR Public Service Commission (PSC) approved Rules for Conservation and Energy Efficiency Programs (2007) requiring electric and gas utilities to administer EE programs</li> <li>Utility AR PSC EE requirements established mostly through Arkansas PSC order</li> </ul>	<ul style="list-style-type: none"> <li>EE savings targets of 0.9 % for 2015 and extended through 2016</li> <li>AR PSC in 2013 issued an order setting an electricity savings target of 0.9 % for 2015 and these targets have been extended through 2016</li> <li>1 MW or greater monthly demand can opt out</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Cost recovery is permitted through individual cases</li> <li>Decoupling on a case-by-case basis</li> </ul>	<ul style="list-style-type: none"> <li>Possible non-recovery of costs for utilities not meeting EE goals</li> </ul>
<b>ARIZONA (AZ)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>Administrative codes require electric and gas utilities to administer EE programs to meet a goals set by state standard</li> <li>AZ Corporation Commission approves funding and spending</li> </ul>	<ul style="list-style-type: none"> <li>Cumulative annual electricity savings for each utility of 22 % of retail sales by 2020</li> <li>Targets started in 2011 of 1.25 % each year based on sales, ramp up to 2 % BY 2018</li> <li>Coops must propose savings goals too (75 % of this standard)</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Full revenue decoupling and incentives available</li> <li>Lost revenue adjustment mechanisms</li> <li>Arizona Public Service (APS) shareholder incentive is in place, set at 10 % of DSM program net economic benefits, capped at 10 % of expenditures</li> <li>Maximum incentive APS can earn is 8 % of net benefits (capped at 16% of program costs)</li> </ul>	<ul style="list-style-type: none"> <li>Cost disallowance</li> </ul>
<b>CALIFORNIA (CA)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>CA Legislature, AB 2021, 2006</li> <li>The California Public Utilities Commission (CPUC) formalized goals of an integrated policy report in September 2004</li> </ul>	<ul style="list-style-type: none"> <li>Goals called for electricity use reductions in 2013 of 23 billion kWh and peak demand reductions of 4.9 million kW from programs operated over the 2004–2013 period</li> <li>IOUs and Publicly Owned Utilities established a requirement that all load-serving entities procure all cost-effective EE measures</li> <li>CA utilities are required to develop long-term procurement plans</li> <li>Goal of 10% reduction in forecasted electricity use in 10 years</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>All major IOUs are decoupled</li> <li>Established a public goods charge from IOUs to provide baseline funding (extended by CPUC through 2014)</li> <li>Additional funding needed to meet savings goals comes from utility procurement budgets.</li> </ul>	<ul style="list-style-type: none"> <li>Risk/Reward Incentive Mechanism (RRIM) allows CPUC to charge fee dependent on performance – approved again by CPUC for 2013-2014</li> </ul>
<b>ILLINOIS (IL)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>2007 state legislation created increasing EE requirements</li> <li>Demand-side management has been required since 1986</li> <li>Illinois Legislation 2007; Illinois Consolidated Statutes – Public Utilities Act</li> </ul>	<ul style="list-style-type: none"> <li>Requirement that utilities meet 0.2% of their delivered load in 2008 with EE and increasing incrementally to 2% in 2015 and afterward, subject to about a 2 % rate impact cap</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Cost recovery of EE can be recovered through an automatic adjustment clause tariff (approved by the Commission)</li> <li>Decoupling is an option</li> <li>No pre-defined mechanism for utility incentives, but allowed through utility proceedings</li> </ul>	<ul style="list-style-type: none"> <li>Non-recovery of utility-proposed throughput incentive</li> <li>Possible non-recovery of costs upon annual review proceeding</li> <li>Failure to meet the state mandates includes penalties</li> </ul>

*The table continues on the next page. →*

INDIANA (IN)	
Regulations	Goals
<ul style="list-style-type: none"> <li>Regulation established by the state utility commission (IUC)</li> <li>Indiana legislature recently passed law that eliminates the EE resource standard and all mandatory ratepayer funded EE programs at the end of 2014</li> <li>Utilities continue to implement EE on a utility-level basis – EE was not mandatory as of the end of 2014, but existing mechanisms remain in place through individual utility plans</li> </ul>	<ul style="list-style-type: none"> <li>Previous annual energy savings goal of 2 % were to be achieved by electric utilities within 10 years, with interim savings goals established, starting with 0.3 % of baseline sales for 2010 – although these requirements are eliminated, utilities have filed annual plans to continue implementing differing levels of EE</li> </ul>
Cost Recovery, Decoupling and Incentives	Penalties
<ul style="list-style-type: none"> <li>Cost recovery is approved on a case-by-case basis</li> <li>Commission approval of lost revenue recovery mechanisms</li> <li>Utility can earn a performance incentives based on goals</li> </ul>	<ul style="list-style-type: none"> <li>Possible non-recovery of costs through rates</li> </ul>
IOWA (IA)	
Regulations	Goals
<ul style="list-style-type: none"> <li>2007 state law established Office of Energy Independence and requirement for five-year Energy Independence Plans</li> <li>State law requires utilities to offer EE programs</li> </ul>	<ul style="list-style-type: none"> <li>Goals established per individual utility plans</li> </ul>
Cost Recovery, Decoupling and Incentives	Penalties
<ul style="list-style-type: none"> <li>Automatic rate pass through reconciled annually</li> <li>EE can be used to fulfill renewable goals or similar standards</li> <li>Decoupling allowed</li> <li>Incentives allowed on case-by-case basis</li> </ul>	<ul style="list-style-type: none"> <li>Non-recovery of costs upon annual review proceeding</li> <li>Failure to meet positive benefit-cost test could result in non-recovery</li> <li>Failure to meet utility goals can include penalties</li> </ul>
KANSAS (KS)	
Regulations	Goals
<ul style="list-style-type: none"> <li>No legislation – state commission is moving toward treating EE as an energy resource</li> <li>Commission policy sets standards</li> </ul>	<ul style="list-style-type: none"> <li>EE programs are established by individual utilities with Commission oversight</li> </ul>
Cost Recovery, Decoupling and Incentives	Penalties
<ul style="list-style-type: none"> <li>Cost recovery rider mechanisms</li> <li>Decoupling considered on a case-by-case basis</li> <li>Commission may grant 0.5-2 % increased Return on Equity</li> </ul>	<ul style="list-style-type: none"> <li>Non-recovery of costs</li> </ul>
MARYLAND (MD)	
Regulations	Goals
<ul style="list-style-type: none"> <li>EmPower Maryland EE Act 2008 created statewide goal to reduce electricity by 15 % by 2015</li> <li>MD PSC requires utilities 0.2 % per year to reach 2 % incremental savings through 2020</li> </ul>	<ul style="list-style-type: none"> <li>15 % goal to reduce per-capita electricity use by 2015 (2007 baseline)</li> <li>By 2016, utilities must ramp up programs by 0.2 % per year, reaching 2% incremental savings by 2020</li> </ul>
Cost Recovery, Decoupling and Incentives	Penalties
<ul style="list-style-type: none"> <li>Decoupling allowed</li> <li>No shareholder incentives</li> </ul>	<ul style="list-style-type: none"> <li>Case-by-case cost recovery (potential cost disallowance)</li> </ul>
MASSACHUSETTS (MA)	
Regulations	Goals
<ul style="list-style-type: none"> <li>In 2008, Chapter 169 of the Acts of 2008 enacted (Green Communities) - law requires utility EE plan approval every three years</li> </ul>	<ul style="list-style-type: none"> <li>Annual electric savings targets ramping up from 2.5 % to 2.6 % from 2013-2015. The state's three-year plan also includes gas savings of about 1.1% of retail sales annually</li> <li>Resource needs to be first met by EE and demand reduction</li> <li>Electric utilities must acquire all cost-effective EE that is less than the cost of supply</li> </ul>
Cost Recovery, Decoupling and Incentives	Penalties
<ul style="list-style-type: none"> <li>Cost recovery permitted through system benefits charge - funded through forward capacity market revenue, Regional Greenhouse Gas Initiative and other outside funds</li> <li>Decoupling allowed</li> <li>Commission approved statewide utility incentive mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>Threat of non-recovery of costs</li> </ul>

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<b>MICHIGAN (MI)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>Legislation passed in October 2008, Public Act 295, reestablished utility EE programs in Michigan. The state's previous programs had been discontinued in 1996</li> </ul>	<ul style="list-style-type: none"> <li>Utilities must offer programs to customers in all sectors</li> <li>Spending for each utility ramped up from 0.75 % of total sales revenues in 2009, 1.0 % in 2010 and 1.5 % in 2011, and to 2.0 % in 2012 and each year thereafter</li> <li>Regulated utilities responsible for 88.9 % of statewide electric savings targets</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>MI PSC allows costs be capitalized and earn a normal rate of return</li> <li>Utilities can request a performance incentive for shareholders if utility exceeds annual energy savings target</li> <li>Performance incentives allowed - cannot exceed 15 % of the total cost of the EE programs</li> </ul>	<ul style="list-style-type: none"> <li>Threat of non-recovery of costs</li> <li>Threat of non-capitalization and lack of earning fair rate of return on investment</li> <li>Public Utilities Commission (PUC) can limit or eliminate incentives</li> </ul>
<b>MINNESOTA (MN)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>EE goals established by statute and implemented by the commission</li> <li>MN Next Generation Energy Act of 2007</li> </ul>	<ul style="list-style-type: none"> <li>MN Next Generation Energy Act of 2007 sets energy savings goals for both natural gas and electric utilities of 1 % to 1.5 % of retail sales starting in 2010</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Recovery of cost-effective program costs is allowed</li> <li>Performance incentives in place for an extended period</li> <li>Efforts to incorporate decoupling efforts have begun</li> </ul>	<ul style="list-style-type: none"> <li>Costs not deemed appropriate or not cost-effective could be denied</li> <li>Failure to meet the state mandates can result in penalties</li> <li>Possible denial of "certificate of need" required to build generation</li> </ul>
<b>MISSOURI (MO)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>The 2009 Missouri EE Investment Act establishes an EE program structure as documented in state rules and statutes</li> </ul>	<ul style="list-style-type: none"> <li>Investor-owned electric utilities to capture all cost-effective EE opportunities</li> <li>EE goals are voluntary with specific targets set forth in Senate Bill 376</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Recovery of all reasonable and prudent costs</li> <li>State law allows commission to develop recovery mechanisms</li> <li>State policy is to align incentives with supportive EE initiatives and provide utilities with timely earnings opportunities for efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Expenses not deemed appropriate or not cost-effective could be denied</li> <li>Adoption and development of recovery mechanisms still ongoing</li> </ul>
<b>NEW HAMPSHIRE (NH)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>NH restructured electric markets and maintained support for EE</li> <li>NH PUC Order established statewide EE utility programs (NHSaves)</li> </ul>	<ul style="list-style-type: none"> <li>No binding EE goals</li> <li>NH's CORE EE programs, the statewide programs undertaken by all utilities, are funded by a system benefits charge</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>The system benefits charge is 1.8 mills per kWh; there is a separate surcharge of 1.5 mills per kWh for low-income energy programs and renewable programs</li> <li>Utilities can earn performance incentive of 8-12 % of total program budgets for meeting cost-effectiveness and energy savings goals</li> <li>Exploring decoupling and lost-revenue recovery proposals</li> </ul>	<ul style="list-style-type: none"> <li>Lack of a specific performance incentive creates a penalty for well-managed EE programs and portfolios</li> <li>Costs not deemed appropriate could be denied</li> </ul>

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<b>NEW YORK (NY)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>EE programs established via NY PSC Order</li> <li>NY Gov. established Reforming the Energy Vision (REV) in 2015 directing NY commission to implement market design changes and incorporate clean energy options</li> </ul>	<ul style="list-style-type: none"> <li>NY has established EE as a high priority, 15 % reduction in total state energy use by the year 2015</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>EE costs are recovered through a systems benefit charge</li> <li>Decoupling is allowed</li> <li>Incentives for utilities achieving more than 80 % of reduction targets</li> </ul>	<ul style="list-style-type: none"> <li>Negative/positive incentive depending on achievement level</li> </ul>
<b>NORTH CAROLINA (NC)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>Limited state legislation, EE levels agreed to through utility negotiation; Renewable energy portfolio standard established by legislature that includes a carve-out for EE (no specific goals)</li> <li>EE goals from Duke Energy Progress (merger) – 1 % retails sales savings target started in 2015, 7 % cumulative target from 2014–2018</li> </ul>	<ul style="list-style-type: none"> <li>Renewable Energy and EE is combined in a state portfolio standard (REPS) – 12.5 % by 2021 and going forward after 2021</li> <li>EE is capped at 25 % of 2012–2018 targets and 40 % of 2021 target</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Decoupling allowed (only gas today)</li> <li>Incentives and cost recovery are allowed</li> </ul>	<ul style="list-style-type: none"> <li>Case-by-case cost recovery (potential cost disallowance)</li> </ul>
<b>OHIO (OH)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>Statutory and PUC requirements were established, but the legislature has frozen EE programs after review</li> <li>Legislature determined EE should not be “mandated”</li> <li>Utilities continue to implement EE on their own with PUC oversight</li> </ul>	<ul style="list-style-type: none"> <li>Goals are on hold – In 2009, energy savings target of 0.3 % of annual average, kilowatt-hours during the preceding three years is used – target increases in steps to 1 % from 2014 to 2018 and 2 % from 2019 to 2025</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Cost recovery through rate adjustment mechanisms</li> <li>T&amp;D costs for improved efficiencies can be recovered</li> <li>Revenue decoupling allowed if aligned with customer interests</li> <li>Utilities have performance incentives</li> </ul>	<ul style="list-style-type: none"> <li>Recovery of lost revenues are allowed on a case-by-case basis</li> <li>Failure to meet the state mandates results in penalties</li> </ul>
<b>PENNSYLVANIA (PA)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>Statutory and utility commission requirements established</li> </ul>	<ul style="list-style-type: none"> <li>Requires utilities to achieve cumulative savings of 1 % by 5/31/11 and 3 % by 5/31/13; peak load must also be reduced</li> <li>In 2012, PUC ordered Phase II of the EE and Conservation Program, electricity cumulative savings targets for each company b/w FY2014–2016 on avg. 2.3 % over the 3-years</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Cost recovery through rate cases as a prudent cost</li> <li>Utilities only allowed to spend up to 2 % of annual revenue</li> <li>No use of decoupling or specific utility incentives</li> </ul>	<ul style="list-style-type: none"> <li>Possible failure to recover costs through rate case</li> <li>No recovery for spending beyond 2 % cap unless approved on a separate case-by-case basis</li> <li>Failure to meet the state mandates results in penalties</li> </ul>
<b>VERMONT (VT)</b>	
<b>Regulations</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>Legislation and regulatory orders – VT has a statewide EE utility (EEU) to deliver programs – Efficiency Vermont EEU serves most of the state</li> <li>VT law requires EEU to set budgets to realize reasonable, cost-effective EE</li> </ul>	<ul style="list-style-type: none"> <li>Average yearly incremental electricity savings of approximately 2.1 % (2015–2017)</li> <li>Efficiency Vermont 2012–2014 budget set to achieve 2 % annual savings savings set target savings to equal approximately 2.1 % ea. year</li> </ul>
<b>Cost Recovery, Decoupling and Incentives</b>	<b>Penalties</b>
<ul style="list-style-type: none"> <li>Decoupling allowed through alternative regulation</li> <li>Performance incentives allowed</li> </ul>	<ul style="list-style-type: none"> <li>Potential disallowance of cost recovery</li> </ul>

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WASHINGTON (WA)	
Regulations	Goals
<ul style="list-style-type: none"> <li>Starting in 2006, Washington implemented a voter ballot (Energy Independence Act) to set EE requirements</li> <li>Requires utilities to pursue all reasonable, cost-effective EE</li> </ul>	<ul style="list-style-type: none"> <li>Utilities use biennial targets to set and achieve cost-effective EE</li> <li>Targets of approx. 1.4 % incremental electricity savings each year</li> </ul>
Cost Recovery, Decoupling and Incentives	Penalties
<ul style="list-style-type: none"> <li>Decoupling allowed</li> <li>Performance incentives allowed</li> </ul>	<ul style="list-style-type: none"> <li>Potential disallowance of cost recovery</li> </ul>
WISCONSIN (WI)	
Regulations	Goals
<ul style="list-style-type: none"> <li>WI EE programs established in 1980s with integrated resource planning</li> <li>Statutory and utility commission requirements established in 2005 with statewide oversight of EE through Focus on Energy</li> </ul>	<ul style="list-style-type: none"> <li>Requirement for utilities to spend no more than 1.2 % of revenues - Commission Order from 2010 set annual reductions for the first 4-year planning period</li> <li>Electric energy and demand goals, as a percent of electric sales – 0.75 % in 2011, ramping up to 1.5 % in 2014.</li> </ul>
Cost Recovery, Decoupling and Incentives	Penalties
<ul style="list-style-type: none"> <li>Cost recovery through rates and conservation escrow accounts</li> <li>Various monthly customer recovery charge methods</li> <li>Incentives allowed and decoupling allowed for at least one utility</li> </ul>	<ul style="list-style-type: none"> <li>Failure to meet state-mandated goals could bar cost recovery</li> </ul>

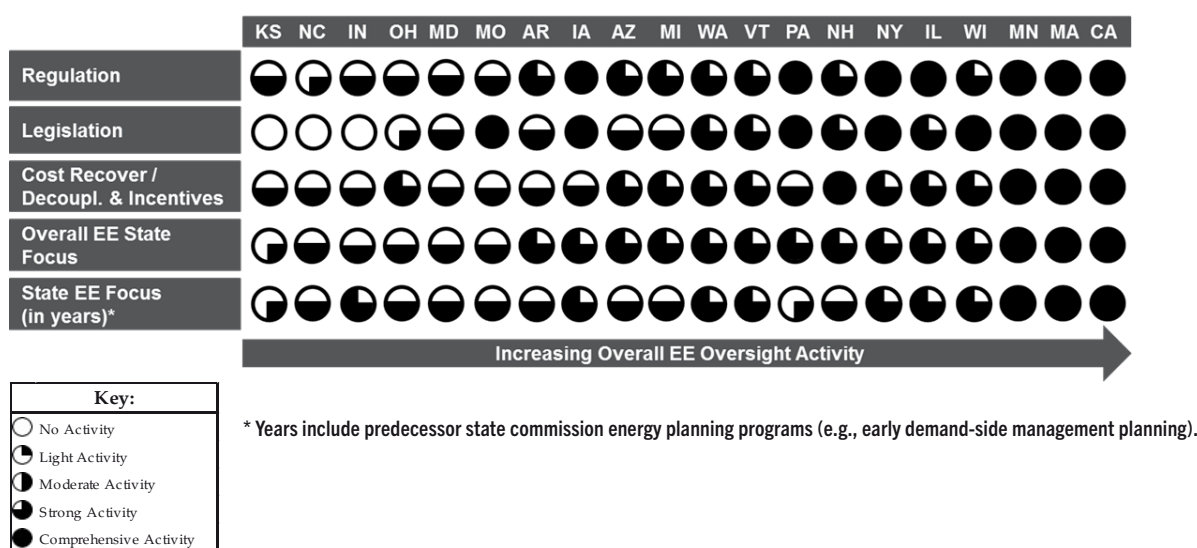


Figure 1. Measurement of EE Oversight Activity by State - original analysis which is derived from the regulatory analysis in Table 1 in the preceding pages.

generator or meter, and rigor of evaluation, measurement and verification practices in each state. We identify and label these characteristics of the data. Our state-level EE performance data analysis illustrates the effect of state policy on EE program performance, which is assessed along with our earlier qualitative review of state policies.

#### DATA AND METHODOLOGY

We benchmarked seventy-four utilities across twenty policy-diverse states using two normalizing criteria: (i) verified gross electric energy savings at the meter as a percentage of baseline

electric sales, and (ii) program costs<sup>5</sup> per first year kWh saved (2013/2014 program year). We combine utility savings and cost data in their respective states to establish an estimate of overall EE performance and compare the states along those lines. Our goal was to account for 50 % of the states' sales as reported in

5. Analyzed program costs are utility reported costs – costs include the sum of total direct and indirect utility costs for the year. Direct costs are the costs for EE program implementation and indirect costs are the administrative, incentive and EM&V costs (*not every utility conducts EM&V*). Many utilities estimate net savings, we use gross savings. Many utilities report generator savings, but for comparison purposes, we estimated savings at the meter.

Energy Information Administration (EIA) Form 861. If available, we chose the largest utilities in each state. By establishing standardized savings and cost values for the 20 states, we compared relative performance to one another before comparing their performance at the aggregate state level. We set the data target values of 1 % of total savings based on sales and costs of \$0.20/kW (this is the median cost level) (“Target”).

Also, we take into consideration the maturity of EE initiatives in each state since we expect (and have witnessed through our prior studies) that savings and costs are affected by maturity of EE programs. A number of states have had EE programs for many years, while some have only had EE programs for a comparatively short time. California, Iowa, Massachusetts, Minnesota and Wisconsin have been conducting large-scale EE programs continuously since the 1980s. Conversely, many states have just started or re-started conducting large-scale programs in the past five to ten years (e.g., KS, MO and NC). It appears that program maturity makes it more likely that EE programs have been thoroughly implemented throughout a given state, and this improves potential for overall stronger savings. However, mature programs may have diminishing returns in the long-run and less low-hanging fruit remaining, leading to increasing costs and possibly decreasing savings. For example, this is seen with some light bulb savings (e.g., residential lighting programs, multi-family programs). Also, our data indicates mature programs often show higher spending levels, but those programs achieve greater than median savings.

#### EE DATA ATTRIBUTES

We gathered data from three sources: (i) utility and EE program data from utility EE reports submitted to state commissions, (ii) data obtained directly from utilities, and (iii) EIA 861

data. The authors gave preference to data from commission-filed reports since it is verified data.

When commission reports were not available, the authors contacted utilities directly for the data. We looked to EIA 861 savings and cost data when other data sources were unavailable. Though EIA 861 data is the quickest method to locate utility-specific savings and cost data, it's our experience that EIA data is not always accurate in relation to the same data obtained from verified, commission-filed documents. In this report, we use commission- or utility-provided data for almost all utilities except those in Missouri and Kansas (EIA data), and those in the northeastern states, where we use data from the NEEP-REED database. In Ohio and Washington State, we used some data from EIA to bring the state close to 50 %.

In selecting utilities in each state, our goal was to collectively account for ~50 % of the state's sales in energy or at least 50 % of the state's total EE savings. Except for Arizona and Pennsylvania, all the utilities benchmarked accounted for ~50% of the state's total sales in energy (See Table 2). We pay particular attention to states and utilities whose EE programs saved greater than median amounts of electricity, and at the other end of the spectrum, states and utilities whose EE programs produced below median savings and had higher costs. Comparing the criteria, we created a scatterplot (Figure 2) with four performance quadrants. Clockwise from upper left: low savings and high costs (“inefficient” performers); high savings and high costs, high savings and low costs (“efficient” performers); and low savings and low costs.

Figure 2 shows the results of our benchmarking. An interesting outcome is that many states have moved toward the top right quadrant: higher savings and higher costs. But many of the states are gathered near the center of Figure 2. Those

Table 2. Outlines states, utilities and the sources of the data.

State	Benchmarking Data Source	Total GWh Savings	Total GWh Sales	Total GWh Savings / Sales	Utility % of State Sales in EIA 861
AR	Annual Report 2014	265	25,068	1.06%	53%
AZ	Annual Report 2014	664	36,750	1.81%	48%
CA	Annual Report 2014	2,015	194,405	1.04%	67%
IA	Annual Report 2014	482	35,204	1.37%	75%
IL	Annual Report 2014	1,807	125,478	1.44%	52%
IN	Annual Report 2013	481	75,245	0.64%	70%
KS	EIA 861	1	21,962	0.00%	54%
MA	NEEP-REED Database 2014	1,473	46,207	3.19%	58%
MD	Annual Report 2014	852	59,912	1.42%	64%
MI	Annual Report 2014	1,187	84,190	1.41%	73%
MN	Annual Report 2014	448	40,144	1.12%	58%
MO	EIA 861	403	45,577	0.89%	54%
NC	Annual Report 2014	886	94,257	0.94%	71%
NH	NEEP-REED Database 2014	63	10,022	0.63%	63%
NY	NEEP-REED Database 2014	906	141,757	0.64%	63%
OH	Annual Report 2014, EIA 861	2,306	132,107	1.75%	53%
PA	Annual Report 2014	1,112	123,719	0.90%	43%
VT	Annual Report 2014	91	4,729	1.93%	85%
WA	Annual Report 2014, EIA 861	762	53,033	1.44%	56%
WI	Annual Report 2014	757	48,096	1.57%	69%



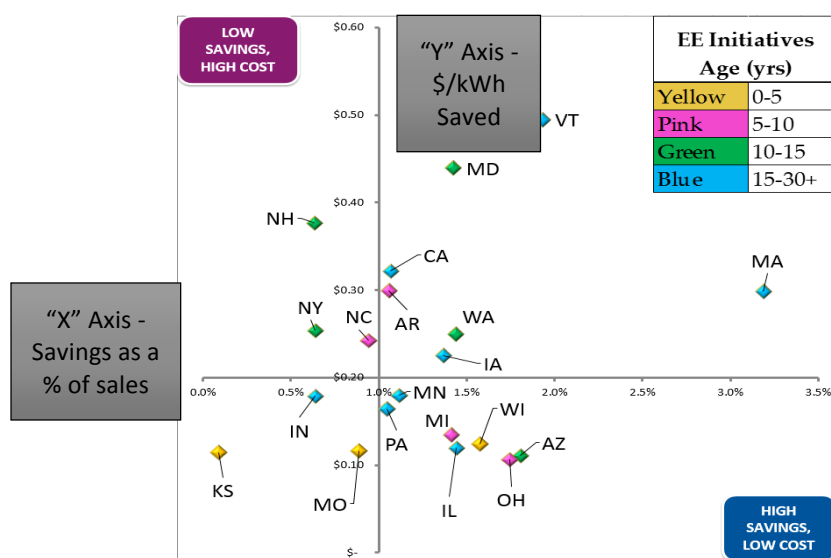


Figure 2. Savings as a Percent of Sales vs. \$/kWh by State. Source: 2013/2014 annual reports, EIA 861, NEEP-REED.

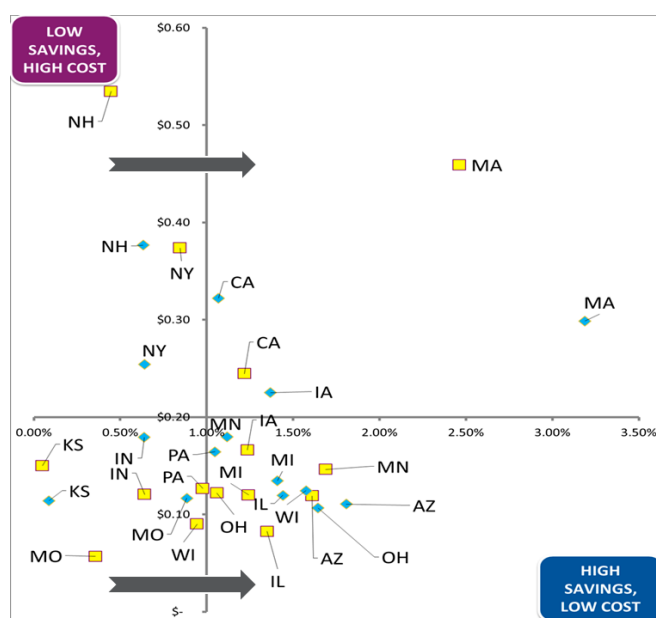


Figure 3. Comparison of 2014 Data to 2012 Data. Source: 2014 and 2012 annual reports, EIA 861, NEEP-REED.

states include: AR, CA, IA, IN, MI, MN, MO, NC, PA, WA and WI. States whose energy savings are greater than those targeted and whose costs are less than our Target include AZ, IL, MI, MN, PA and OH, making these the “efficient” performers. Less efficient states include NC, NH and NY. IN, KS and MO have below Target savings and costs. These findings are largely consistent with the legislative and regulatory analysis, above, in that states with stronger EE legislative and regulatory oversight appear to have greater savings and managed costs. It appears that moderately mature programs with strong policy environments achieve greater savings at lower overall cost, while more mature programs in similar regulatory environments spend more than Target states, but also achieve more than Target savings. Conversely, states with less policy oversight typically experience fewer savings in addition to often higher costs.

A comparison of 2014 data against utilities benchmarked in 2012 was done to identify changes in utility performance over two years. This is shown in Figure 3, which shows states’ EE standing relative to their peers has remained relatively constant. However, many states appear to have shifted to the right, towards higher savings as a percent of state sales since 2012; some also have been reducing costs (e.g., MA, NH). States with greater legislative and regulatory oversight have seen the largest increases in savings, while states with the least oversight (e.g., KS, IN) appear to generate fewer saving than in 2012. Most states witnessed an overall improvement in performance.

Table 3 further compares the overall state EE focus and the change in savings and costs between 2012 and 2014 for each of the states in Figure 3. This confirms that states’ focus on legislation and regulation steadily increase savings, while mostly containing or decreasing costs.

**Table 3. Change in Savings and Costs from 2012 to 2014.**

State	% Change in Savings / Sales	Change in Cost (\$)	Overall State EE Focus (years)
AZ	12%	2%	10 to 15
CA	-12%	-17%	20 to 30
IA	11%	54%	10 to 15
IL	7%	53%	20 to 30
IN	0%	159%	10 to 15
KS*	-93%	-24%	5 to 10
MA	30%	-17%	20 to 30
MI	11%	12%	10 to 15
MN	-34%	-2%	20 to 30
MO*	148%	105%	5 to 10
NH	42%	-7%	10 to 15
NY	-24%	-47%	15 to 20
OH	65%	89%	10 to 15
PA	7%	4%	10 to 15
WI	67%	38%	15 to 20

Source: 2014 and 2012 annual reports, \*EIA 861, NEEP-REED.

## Conclusions

A key point is that states that set EE targets, established by legislatures and policy set by state commissions, achieve greater EE savings than states where legislatures and commissions have done little to formalize EE initiatives. (Gunn 2012 and 2014) EE savings appears to mostly improve over time. The longer utilities and states implement EE programs, along with supporting legislative and regulatory policies, the more utilities and states increase EE savings. Energy savings and cost data show that energy savings continue to improve over time. This is true across a range of states and across different program and portfolio structures. Thus, when states focus on EE initiatives, utilities and states achieve some level of savings, although at different savings and costs levels. For example, Arkansas, California, Iowa, Massachusetts, Maryland, Vermont and Washington are achieving strong energy savings. The data also shows that Illinois continues achieving strong energy savings after a relatively brief ramp-up period. Ohio reveals solid savings and lower cost, but with the legislative changes since 2014, Ohio may see a change in savings and costs going forward.

States that achieve relatively high levels of energy savings appear to share a number of similar EE-related regulations, policies and practices that have been in place for several years – the main one being that each state specifies EE goals that utilities or agencies must meet. This is the case even though energy savings goals vary in structure and focus (e.g., Massachusetts sets a savings target of 2.5 % of electricity sales, and California sets a target of 10% of forecasted electricity use in 10 years). Most of the states also specify penalties for not meeting the required energy savings goals. However, in practice, few penalties have actually been assessed on the program administrators in these states, since virtually all of the covered program administrators have been meeting the mandated energy savings goals. States with more recent legislation and regulatory activity appear able to catch-up quickly: states that have recently scaled up their EE regulatory programs are achieving savings that can be favorably compared to states with much more mature EE regulation. Indiana's and Ohio's EE efforts were changed politically in the past

two years, removing the “mandatory” EE element, although utilities continue EE programs on a utility-specific basis. It will be interesting to see if current levels of savings in those states continue given those significant changes.

Overall, our current research shows that legislative and policy directives coupled with utility EE initiatives improves the energy savings achieved by states over time. There isn't a single path to achieve savings from EE efforts. Our research shows that clear legislative and regulatory policy aids greatly in fostering EE state improvements, typically resulting in greater EE savings. Even though states have their own approaches to EE programs and portfolios, savings do accrue albeit at different levels. This is apparent with the states with limited legislative and policy oversight as well as those states with strong oversight; states with less legislative or policy guidance achieve EE savings, but at lower levels. Iowa continues to be an exception since it does not have detailed legislation and policy oversight (less established cost recovery, decoupling and incentive mechanisms), but still creates relatively strong savings.

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