

# **Regulatory Update: Regulatory Regimes and Effective Energy Efficiency Programs (Across Fifteen States) and Potential Improvements**

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## **ABSTRACT**

Energy efficiency (EE) programs are implemented in changing regulatory environments. State EE regulations define program implementation, program evaluation, and spending to meet established savings targets. Given this environment, a natural experiment is under way, with states taking different legislative and regulatory approaches to stimulate EE. These key questions were asked: What can be learned by comparing the success of EE programs against their legislative and regulatory environments? What are the unintended consequences produced in these experiments? What does a comparison of EE performance show about the best ways to encourage EE? This analysis is valuable for understanding how to obtain greater EE-related energy savings.

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. From research and interviews, we reviewed and categorized regulatory approaches to energy efficiency programs across specific states, and analyzed the range of positive and negative consequences that follow from the various types of regulatory approaches. We conclude that states in which EE targets are set by a legislature and are 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.

## **Introduction: Regulatory Structures and Goals for Energy Efficiency in Fifteen States**

This paper assesses state legislative and regulatory influence on electric energy efficiency program development across fifteen states.<sup>1</sup> The authors compare EE programs across forty-nine utilities in the fifteen selected states, spanning the entire United States. The analysis includes both qualitative and quantitative assessments of the fifteen states' EE policies as related to overall EE program costs and savings. The authors examine a variety of legislative and regulatory policy energy efficiency goals, program cost recovery provisions, financial incentives and penalties against a backdrop of state-level normalized energy savings and program costs. The authors compare EE programs across 49 utilities in 15 states across the United States. As part of this analysis, the authors reviewed a wide range of publicly available data and interviewed a number of state and utility EE experts.

This paper is a significant update to our paper on regulatory regimes that was presented at the 2012 ACEEE Summer Study. It includes new analyses of the original nine central states with the addition of key western and eastern states to add further state representation and comparative depth. The nine states that were reviewed in our 2012 paper utilizing 2010 performance data (Illinois, Iowa, Indiana, Kansas, Minnesota, Missouri, Ohio, Pennsylvania and Wisconsin) (Gunn

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<sup>1</sup> The analysis covers investor-owned utilities (IOUs).

2012) were chosen primarily based upon their Midwestern geographic proximity and their variety of EE regulatory approaches. In this paper, the authors added an additional 6 states (Arizona, California, Massachusetts, Michigan, New Hampshire and New York) to create a broader, national-scale assessment.

The variety of state-specific regulatory regimes across the states provides us with a natural, national-level EE experiment. Given available data, we determine if any conclusions could be drawn from analysis of the fifteen 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 positive 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 improvements are generally continuing in the 2012 states;
- the leading states are MN, CA and MA;
- CA and MA show strong savings with average costs;
- most of the remaining states show median costs with lower savings (e.g., AZ, IA, IL, IN, MI, NH, NY, OH, PA and WI); and
- cost recovery and incentive mechanisms appear to result in increased levels of EE programs and related savings.

Below we take a detailed look at state-specific legislative and regulatory paradigms before comparing them to the state-level cost and savings performance data that informed the above conclusions.

States have established a variety of 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>2</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 financial incentives*), which can be a *disincentive* to actively pursuing EE programs since utilities are concerned and focused on avoiding non-recovery of implementation costs. Table 1 summarizes each of the 15 state's EE-regulatory regimes with high-level detail.

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<sup>2</sup> Program Cost Recovery: Program costs include those for program administration, implementation and evaluation. Because program costs reduce utility revenues on a dollar-for-dollar basis, the reasonable, timely opportunity for recovery of these costs is a minimum requirement for the implementation of energy efficiency programs by utilities; Lost Margin Recovery: Energy efficiency 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 one of the most widely debated areas of policy related to utility-led energy efficiency programs. Decoupling is one approach – it is the separation of a utility's profit from its sales of electricity as a commodity. Instead, a utility's revenue is met by setting a revenue target, then electricity rates are regularly fine-tuned to meet that target.); Performance Incentives: While program cost and lost margin recovery mechanisms serve to mitigate the utility disincentive to invest in energy efficiency due to a reduction in sales, they do not necessarily provide an incentive for such investment. Even with a decoupling mechanism in place, investor-owned utilities often still have an incentive to make supply-side investments because of the beneficial effect on stock price. *ACEEE Glossary*

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

ARIZONA	
<i>Regulations</i>	<i>Goals</i>
<ul style="list-style-type: none"> <li>• Statutory and utility commission requirements established RE-00000C-09</li> <li>• Goals established AAC R14-2-2401, et seq. (electricity)</li> </ul>	<ul style="list-style-type: none"> <li>• EE savings targets of 22% of cumulative savings by 2020</li> <li>• In 2009, the Arizona Corporation Commission (ACC) ordered that all investor-owned utilities must achieve 1.25% annual electricity savings starting in 2011, ramping up to 2% beginning in 2013</li> </ul>
<i>Cost Recovery, Decoupling and Incentives</i>	<i>Penalties</i>
<ul style="list-style-type: none"> <li>• Cost recovery is permitted but the method is not specified in regulation</li> <li>• Decoupling on a case-by-case basis</li> <li>• APS shareholder incentive is in place, set at 10% of DSM program net economic benefits and capped at 10% of total DSM expenditures</li> <li>• Maximum incentive APS can earn is 8% of net benefits (capped at 16% of program costs) for achieving savings above 105% of goals</li> </ul>	<ul style="list-style-type: none"> <li>• Possible non-recovery of costs for utilities not meeting EE goals</li> </ul>
CALIFORNIA	
<i>Regulations</i>	<i>Goals</i>
<ul style="list-style-type: none"> <li>• CA Legislature, AB 2021, 2006</li> <li>• The CPUC formalized goals of an integrated policy report in Decision 04-09-060 in September 2004</li> </ul>	<ul style="list-style-type: none"> <li>• The 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 POUs established a requirement that all load-serving entities procure all cost-effective energy efficiency measures</li> <li>• CA utilities are required to develop long-term procurement plans</li> <li>• Goal of 10% reduction in forecasted electricity use within 10 years</li> </ul>
<i>Cost Recovery, Decoupling and Incentives</i>	<i>Penalties</i>
<ul style="list-style-type: none"> <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. This funding is due to increase incrementally over successive years.</li> <li>• All major IOUs are decoupled</li> <li>• California initially implemented decoupling through the Supply Adjustment Mechanism (SAM) for gas utilities beginning in 1978 (Decision 88835)</li> </ul>	<ul style="list-style-type: none"> <li>• Risk/Reward Incentive Mechanism (RRIM)- Allows CPUC to charge fee dependent on performance – this was recently approved again by CPUC for 2013-2014</li> </ul>
ILLINOIS	
<i>Regulations</i>	<i>Goals</i>
<ul style="list-style-type: none"> <li>• 2007 state legislation created increasing EE requirements – Demand-side management has been required since 1986</li> <li>• Illinois Legislation 2007 (SB 1592; Public Act 95-0481); Illinois Consolidated Statutes – Public Utilities Act (220 ILCS 5/)</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>
<i>Cost Recovery, Decoupling and Incentives</i>	<i>Penalties</i>
<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>• Cost recovery is through a mechanism in the utility's EE plan</li> <li>• Decoupling can be an option</li> <li>• No pre-defined mechanism for utility incentives, but allowed through utility proceedings (ComEd has moved partially to a straight fixed variable approach)</li> </ul>	<ul style="list-style-type: none"> <li>• Failure to recover 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> <li>• If utilities fail to meet energy efficiency goals they may be required to make a contribution to low-income EE programs and/or may have EE programs put under 3rd party administration</li> </ul>
INDIANA	
<i>Regulations</i>	<i>Goals</i>

- Regulation established by Order of the state commission
- Indiana Statutes - (170 IAC 4-7-8); IURC Order - Cause 42693, Phase II Order approved on December 9, 2009
- Indiana legislature recently passed law that eliminates the EE resource standard and all mandatory ratepayer funded EE programs at the end of 2014 – the governor neither vetoed nor signed the bill which allowed it to become law in IN
- Previous annual energy savings goal of 2% to be achieved by electric utilities within 10 years, with interim savings goals established, starting with 0.3% of baseline sales for 2010

<i>Cost Recovery, Decoupling and Incentives</i>	<i>Penalties</i>
<ul style="list-style-type: none"> <li>• EE implemented resources will not be mandatory at the end of 2014, but existing mechanisms will remain in place</li> <li>• Cost recovery is approved on a case-by-case basis concurrent with voluntary DSM program plan approval</li> <li>• Commission can approve lost revenue recovery mechanisms proposed by utilities</li> <li>• Utility can earn a performance incentives based upon meeting or exceeding goals</li> </ul>	<ul style="list-style-type: none"> <li>• Possible non-recovery of costs through rates</li> <li>• If utilities fail to meet EE goals, they must demonstrate to IURC how they plan to meet goals</li> </ul>

<b>IOWA</b>	
<i>Regulations</i>	<i>Goals</i>
<ul style="list-style-type: none"> <li>• 2007 state law established Office of Energy Independence and requirement for Energy Independence Plans which are 5 year plans</li> <li>• Iowa Code 473.2, 476.6 and IAC 199—35.3Section 473.2; Iowa Rules IAC 199-35</li> </ul>	<ul style="list-style-type: none"> <li>• Goals established per individual plans established by each utility</li> </ul>

<i>Cost Recovery, Decoupling and Incentives</i>	<i>Penalties</i>
<ul style="list-style-type: none"> <li>• Automatic rate pass through reconciled annually</li> <li>• EE goals can be used to fulfill renewable goals or similar standards</li> <li>• Commission applies decoupling and pursues efficient EE measures</li> <li>• No specific incentives are mandated</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<sup>3</sup> test could result in non-recovery</li> <li>• Failure to meet the state mandates can includes penalties</li> </ul>

<b>KANSAS</b>	
<i>Regulations</i>	<i>Goals</i>
<ul style="list-style-type: none"> <li>• No legislation – state commission is moving toward treating EE as an energy resource</li> <li>• KSA 66-1239(c)(2); KCC, Docket No. 08-GIMX-442-GIV; KCC, Docket No. 07-GIMX-247- GIV, October 10, 2007; KCC, Docket No. 08-GIMX-441-GIV, November, 14, 2008</li> </ul>	<ul style="list-style-type: none"> <li>• EE programs are established by individual utilities with Commission oversight</li> </ul>

<i>Cost Recovery, Decoupling and Incentives</i>	<i>Penalties</i>
<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 for utility investments on EE</li> </ul>	<ul style="list-style-type: none"> <li>• Case-by-case cost recovery when not allowed in rider mechanisms</li> </ul>

<b>MASSACHUSETTS</b>	
<i>Regulations</i>	<i>Goals</i>
<ul style="list-style-type: none"> <li>• In 2008, the governor signed Chapter 169 of the Acts of 2008, An Act Relative to Green Communities. The new law altered the approval process and timeline for electric and natural gas utility energy efficiency plans and required the utilities to file the plans every three years</li> <li>• 25 M.G.L. § 21</li> </ul>	<ul style="list-style-type: none"> <li>• Resource needs shall first be met by energy efficiency and demand reduction resources</li> <li>• Electric utilities must acquire all available energy efficiency that is cost effective or less than the cost of supply</li> <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> </ul>
<i>Cost Recovery, Decoupling and Incentives</i>	<i>Penalties</i>

<sup>3</sup>The benefit-cost test focuses on estimating the overall benefits and savings of energy efficiency programs by adding in societal factors (societal costs and benefits).

- Cost recovery is permitted and occurs through system benefits charge. Funded through revenue from the forward capacity market, regional greenhouse gas initiative and other outside funds.
- Decoupling plan approved for National Grid and several other utilities have plans pending
- Commission approved statewide utility/shareholder incentive mechanisms, mechanisms include savings component, value component, and metrics based component
- Shareholder incentive provides opportunity to earn ~5% of program costs as an incentive for meeting program goals
- Threat of non-recovery of costs

## MICHIGAN

### Regulations

- Legislation passed in October 2008, Public Act 295, reestablished utility energy efficiency programs in Michigan. The state's previous programs had been discontinued in 1996
- PA 295 (2008) contains two provisions whereby utilities can receive an economic incentive for implementing energy efficiency programs

### Goals

- Utilities must offer programs to customers in all sectors
- 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.
- This is a rapid and significant change, since there were essentially no utility energy efficiency programs in Michigan in 2007
- Regulated investor-owned utilities are responsible for 88.9% of the statewide electric savings targets; municipal utilities represent 7.8% of savings; and electric cooperatives, 3.4% percent

### Cost Recovery, Decoupling and Incentives

- MI PUC allowed costs be capitalized and earn a normal rate of return - utilities are allowed to request a performance incentive for shareholders if the utilities exceed the annual energy savings target
- Performance incentives cannot exceed 15% of the total cost of the energy efficiency programs
- In 2009 the MI PUC authorized financial incentive mechanism for Detroit Edison (U-15806), MichCon (U-15890) and Consumers Energy (U-15805 & U-15889)

### Penalties

- Threat of non-recovery of costs
- Threat of non-capitalization and lack of earning fair rate of return on investment
- PUC can limit or eliminate incentives

## MINNESOTA

### Regulations

- EE goals established by statute and implemented by the commission
- Minn. Next Generation Energy Act of 2007 (Minn. Stat. 2008 § 216B.241); MPUC Docket No. 08-132

### Goals

- Minnesota 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

### Cost Recovery, Decoupling and Incentives

- Recovery of cost effective program costs is allowed
- Performance incentives in place for an extended period<sup>4</sup>
- Efforts to incorporate decoupling efforts have begun in MN

### Penalties

- Costs not deemed appropriate or not cost effective could be denied
- Failure to meet the state mandates can include penalties
- Possible denial of "certificate of need" which is required to build new energy supply if a utility has not met energy efficiency targets

## MISSOURI

### Regulations

- The 2009 Missouri Energy Efficiency Investment Act establishes an EE program structure
- Missouri Rules CSR 240-22.010(2)(A); MO Revised Statutes 25 MRS 393.1075.3; 25 MSR 393.1075.4

### Goals

- Investor-owned electric utilities to capture all cost-effective energy efficiency opportunities
- EE goals are voluntary with specific targets set forth in SB 376

### Cost Recovery, Decoupling and Incentives

- Recovery of all reasonable and prudent costs
- State law allows commission to develop recovery mechanisms
- State policy is to align incentives with aiding EE initiatives and provide utilities with timely earnings opportunities for efficiency

### Penalties

- Costs not deemed appropriate or not effective could be denied
- Adoption and development of recovery mechanisms still ongoing

<sup>4</sup> State utilities have performance incentives that are also meant to obviate the need for lost revenue recovery.

## NEW HAMPSHIRE

### Regulations

- NH Revised Statutes 378:38
- NHPUC Order No. 23,982

### Goals

- No binding EE goals
- Electric and Gas offer joint programs that are regulated by the PUC, known as CORE program

### Cost Recovery, Decoupling and Incentives

- NH's CORE EE programs, the statewide programs undertaken by all utilities, are funded by a system benefits charge
- 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
- Utilities can earn performance incentive of 8-12% of total program budgets for meeting cost-effectiveness and energy savings goals
- Exploring decoupling and lost-revenue recovery proposals

### Penalties

- Lack of a specific performance incentive creates a penalty for well managed EE programs and portfolios
- Costs not deemed appropriately could be denied

## NEW YORK

### Regulations

- NY PSC Order, Case 07-M-0548, Case 07-M-0548, Case 07-M-0548, Case 07-M-0548, Case 07-M-0548, Case 07-M-0548

### Goals

- NY has established EE as a high priority, 15% reduction in total state energy use by the year 2015

### Cost Recovery, Decoupling and Incentives

- EE costs are recovered through a systems benefit charge
- Decoupling is allowed
- Utilities achieving more than 80% of their reduction targets receive incentives. NG program utilities may opt to participate in incentive mechanisms

### Penalties

- Negative/Positive incentive depending on achievement level

## OHIO

### Regulations

- Statutory and utility commission requirements established
- OH General Assembly SB 221; OH Revised Code 4928.66; OH PUC Rules 4901:5-5; OH PUC Rules 4901:1-39

### Goals

- 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

### Cost Recovery, Decoupling and Incentives

- Cost recovery through rate adjustment mechanisms
- T&D costs for improved efficiencies can be recovered
- Revenue decoupling allowed if aligned with customer interests
- Utilities have performance incentives

### Penalties

- Recovery of lost revenues are allowed on a case-by-case basis
- Failure to meet the state mandates includes penalties

## PENNSYLVANIA

### Regulations

- Statutory and utility commission requirements established
- PA Code Title 52, Chapter 57; PA Legislative Act 129

### Goals

- Requires electric utilities to achieve cumulative EE savings of 1% by 5/31/11 and 3% by 5/31/13 - peak load must also be reduced by 4.5% by 5/31/13
- In August 2012, the PA PUC ordered Phase II of the Energy Efficiency and Conservation (EE&C) Program, establishing electricity savings targets for each electric distribution company between FY2014-2016. The targets amount to an average of 2.3% cumulative savings over the 3-year period.

### Cost Recovery, Decoupling and Incentives

- Cost recovery through rate cases as a prudent cost
- Utilities only allowed to spend up to 2% of annual revenue
- No use of decoupling or specific utility incentives

### Penalties

- Possible failure to recover costs through rate case
- No recovery for spending beyond 2% cap unless approved on a separate case basis
- Failure to meet the state mandates includes penalties

**WISCONSIN**

**Regulations**

- Statutory and utility commission requirements established
- WI 2005 Act 141; WI Statute §1.12(4), §1.12(5)(a)

**Goals**

- Requirement for utilities to spend no more than 1.2% of revenues - Commission Order from November 2010 set annual targets for electricity reductions for the first 4-year planning period. The electric energy and demand goals, as a percent of electric sales and peak load, respectively, amount to 0.75% in 2011, ramping up to 1.5% in 2014.

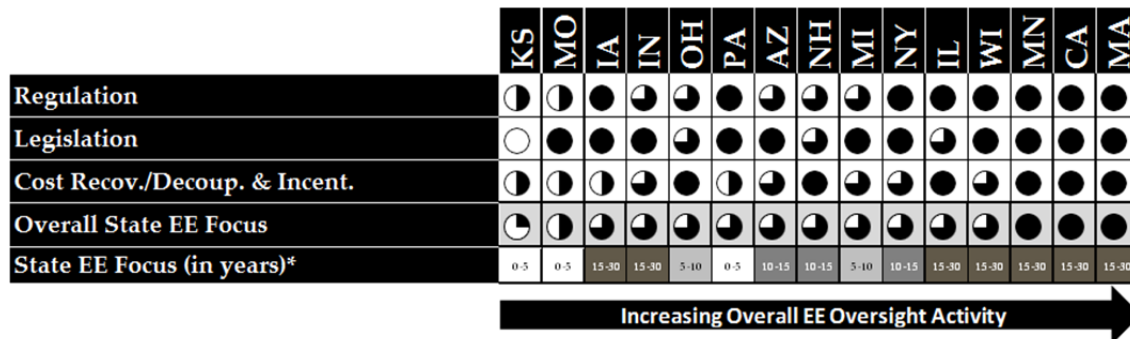
**Cost Recovery, Decoupling and Incentives**

- Focus on Energy Program<sup>5</sup>
- Cost recovery through rates and through conservation escrow accounts
- Large consumer self-funded EE measures
- Various monthly customer recovery charge methods
- Ongoing examination of proper ratemaking changes to promote incentives
- Commission has allowed decoupling by at least one utility

**Penalties**

- Failure to meet state mandated goals could bar cost recovery

Table 1 strongly demonstrates the varying degree of legislative and regulatory oversight across the states. Figure 1, below, summarizes Table 1 and shows that all states in this comparison have some level of EE legislative and/or regulatory activity, but the variances appear to be across the level of detail and requirements in the rules and the types of incentives and penalties found in each state.



**Key:**

- No Activity
- ◐ Light Activity
- ◑ Moderate Activity
- ◒ Strong Activity
- ◓ Comprehensive Activity

\* Years include predecessor state commission energy planning programs (e.g., early demand-side management planning)

\*\* Indiana’s position on the EE Oversight chart is likely to diminish and move to the left at the end of 2014 due to legislation that ceases

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.

The states with the least amount of policy oversight are Kansas and Missouri. Kansas has no legislation and limited state commission initiated EE cases – EE programs are established by individual utilities with commission oversight – a cost recovery rider mechanism is used in Kansas and cases are granted or denied on a case-by-case basis. Missouri falls into the left side

<sup>5</sup> Under the 2005 Wisconsin Act 141 (Act 141), oversight of the statewide energy efficiency and renewable resources program called Focus on Energy transferred to the Public Service Commission of Wisconsin.

of the policy oversight spectrum indicating less overall EE oversight activity. Missouri has EE legislation, but it only establishes an EE structure, while the commission has not fully developed and adopted cost recovery mechanisms. In contrast, California, Minnesota and Massachusetts are at the opposite end of the EE initiative spectrum with EE goals established by the legislature and those laws implemented by the state commission. Massachusetts, Minnesota and California also have cost recovery for programs, performance incentives, and decoupling initiatives in place. 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 and cost recovery mechanisms.
- Similarly, Iowa has an EE state law passed by the legislature without a statewide goal - EE goals are established by each utility and there are no specific financial incentives which are mandated by the commission.
- In comparison, Arizona, New Hampshire, Ohio, Pennsylvania and Wisconsin are strong contenders for leading EE states (*based upon legislation, regulation and policy*) where statutory and commission requirements are established and the EE goals are clearly outlined so that utilities are required to implement EE programs that meet documented goals.
- Indiana was achieving savings, but as of March 2014, the Indiana legislature passed a law that eliminates Indiana's EE resource standard effectively terminating all ratepayer funded EE programs at the end of 2014.

This legislative and policy analysis is mirrored, to a great extent, by the EE program performance data analysis outlined below. *By collectively benchmarking utility performance in each of the 15 states, we developed a picture of relative EE performance as a factor of kWh savings as a percentage of total state sales and as a factor of dollar cost per kWh saved.* The benchmarking allows us to map state EE performance (e.g., kWh savings as percent of sales and dollar cost per kWh saved) against their policy and legislative regimes.

## **Data Analysis of Energy-Efficiency Program Performance by State**

Our benchmarking methodology standardizes utility performance data, and we track, account, and adjust for discrepancies when possible. It should be noted that comparing programs and data across states can be a difficult undertaking, since programs and market conditions are heterogeneous. These differences include specific definitions of energy savings in each state, such as gross savings or net savings, savings at the generator or meter, and the rigor of evaluation, measurement, and verification practices in each state. We identify and label these characteristics of the data. The state-level energy efficiency performance analysis provides evidence for the effect of state regulatory policy on EE program performance when combined with our earlier review of specific state policies.

### **Data and Methodology**

To assess the possible effects of state policy and regulation on EE program performance, we benchmarked forty-nine utilities across fifteen 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>6</sup> per first year kWh saved (2012 program year). In order to compare the performance of states, we combine utility savings and cost data in their respective states to establish an estimate of the states' overall energy efficiency performance. Where possible, we selected the largest utilities in each state to, ideally, jointly account for at least 50% of the state's sales as reported in Energy Information Administration (EIA) Form 861. By establishing standardized median savings and cost values for the 15 states of interest, we compare their relative performance to one another before comparing their performance at the aggregate state level to their respective state regulatory structures.

We also take into consideration and note the maturity of energy efficiency initiatives in each state as we expect that savings and costs are affected by maturity of EE programs. Some states have had EE programs for numerous years, while others have not. California, Iowa, Massachusetts, Minnesota and Wisconsin have been conducting large-scale energy efficiency programs continuously since the 1980s. In comparison, many states have just started or re-started conducting large scale programs in the past five to eight years (e.g., KS and MO). Program maturity probably makes it more likely that EE programs have been more thoroughly implemented throughout a given state and with improved potential for overall energy savings. On the other hand, mature programs may have diminishing returns in the long-run and less low hanging fruit remaining leading to increasing cost effectiveness and savings attainment challenges. This is true of some programs driven by light bulb savings (e.g., residential lighting programs, multi-family programs). Our data below indicates that mature programs tend to be associated with higher spending levels, but those programs achieve greater than median savings.

## **EE Data Attributes**

Savings, cost, and baseline sales data were gathered 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. For our savings and cost data, the authors gave preference to data from commission-filed reports since it is verified data. However, when commission reports were not available, utilities were contacted directly for the data. As a last resort, 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, prior experience with EIA data revealed that it 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 all utilities except Ameren Missouri, KCP&L, and Wisconsin Focus on Energy where we used EIA 861 data and the northeastern states (MA, NH, and NY), where we use data from the NEEP-REED database. Table 3 outlines states, utilities and the sources of the data.

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<sup>6</sup> Analyzed program costs are those costs reported by each utility – these costs include the sum of the total direct and indirect utility costs for the year. Direct costs are the costs for implementation of EE programs and indirect costs are the administrative costs, incentive costs and EM&V costs (*if applicable, since not every utility conducts EM&V*). In addition, many of these utilities also estimate net savings, but we use gross savings for purposes of comparability between utilities. In addition, many utilities also report generator savings, but for purposes of comparability of date between utilities, we are using savings estimated at the meter.

Table 2. State and state-representative utility data sources

State Utility	Benchmarking Data Source	Total GWh Savings	Total GWh Sales	Total GWh Savings / Sales	Utility % of State Sales in EIA 861
IA: Interstate Power and Light (IPL)	Annual Report 2012	196	14,544	1.35%	75%
IA: MAEC	Annual Report 2012	227	19,678	1.15%	
MI: Detroit Edison (DTE)	Annual Report 2012	628	47,991	1.31%	75%
MI: Consumers Energy	Annual Report 2012	437	37,737	1.16%	
IL: Commonwealth Edison Co (ComEd)	Annual Report 2012	1,230	89,024	1.38%	56%
IL: Ameren	Annual Report 2012	478	37,442	1.28%	
IN: Duke Energy	Annual Report 2012	215	27,459	0.78%	41%
IN: Indiana-Michigan Power	Annual Report 2012	60	15,556	0.39%	
MN: MN Power*	Annual Report 2012	56	3,071	1.82%	49%
MN: Xcel Energy	Annual Report 2012	507	30,261	1.68%	
OH: American Electric Power (AEP) Ohio	Annual Report 2012	496	46,905	1.06%	49%
OH: First Energy (OH)	Annual Report 2012	570	53,595	1.06%	
OH: Dayton Power & Light	Annual Report 2012	185	13,997	1.32%	
MO: Kansas City Power and Light (KCP&L)	EIA 861	163	16,661	0.98%	65%
MO: Ameren	EIA 861	28	36,746	0.08%	
KS: Kansas City Power and Light (KCP&L)	EIA 861	4	6,331	0.06%	16%
PA: Alleghany	Annual Report 2012	174	38,654	0.45%	60%
PA: First Energy (PA)	Annual Report 2012	133	14,011	0.95%	
PA: PECO	Annual Report 2012	294	20,091	1.46%	
PA: Duquesne	Annual Report 2012	284	32,628	0.87%	
PA: PPL Electric Utilities	Annual Report 2012	504	36,846	1.37%	
WI: Focus on Energy	EIA 861	722	68,820	1.05%	NA**
CA: Southern California Edison Co	Annual Report 2012	1,744	86,480	2.02%	68%
CA: San Diego Gas & Electric Co	Annual Report 2012	325	20,026	1.62%	
CA: PacifiCorp	Annual Report 2012	6	783	0.82%	
CA: Pacific Gas & Electric Co	Annual Report 2012	1,829	86,829	2.11%	
AZ: Tucson Electric Power Co	Annual Report 2012	106	9,265	1.14%	50%
AZ: Arizona Public Service Co	Annual Report 2012	497	28,154	1.76%	
MA: Bay State Gas	NEEP-REED Database 2012	1,157	47,004	2.46%	58%
MA: Berkshire Gas	NEEP-REED Database 2012				
MA: Cape Light Compact	NEEP-REED Database 2012				
MA: National Grid Electric and Gas	NEEP-REED Database 2012				
MA: New England Gas	NEEP-REED Database 2012				
MA: NSTAR Electric and Gas	NEEP-REED Database 2012				
MA: Unitil Electric and Gas	NEEP-REED Database 2012				
MA: WMECO	NEEP-REED Database 2012				
NH: Liberty Utilities	NEEP-REED Database 2012	48	10,752	0.45%	72%
NH: Unitil	NEEP-REED Database 2012				
NH: Public Service of New Hampshire	NEEP-REED Database 2012				
NY: Central Hudson	NEEP-REED Database 2012	1,172	138,505	0.85%	65%
NY: Con Edison	NEEP-REED Database 2012				
NY: Keyspan Long Island	NEEP-REED Database 2012				
NY: Keyspan New York	NEEP-REED Database 2012				
NY: Long Island Power Authority	NEEP-REED Database 2012				
NY: Niagara Mohawk	NEEP-REED Database 2012				
NY: NYSEG	NEEP-REED Database 2012				
NY: NYSERDA	NEEP-REED Database 2012				

State Utility	Benchmarking Data Source	Total GWh Savings	Total GWh Sales	Total GWh Savings / Sales	Utility % of State Sales in EIA 861
NY: RG&E	NEEP-REED Database 2012				
NY: Orange and Rockland	NEEP-REED Database 2012				

\* MN Power’s 2012 sales are their reported adjusted weather-normalized average retail energy sales excluding opt-out customer; \*\*Focus on Energy does not have sales data in EIA 861 because it is a consortium.

As stated above, in selecting utilities in each state, our goal was to collectively account for at least 50% of the state’s sales in energy or at least 50% of the state’s total EE savings. Except for the Minnesota, Ohio, Indiana, and Kansas utilities, the other utilities accounted for at least 50% of the state’s total sales in energy (See Table 3). The Minnesota, Indiana, and Kansas chosen utilities were less than 50% of the state’s total sales in energy due to the large number of municipal and cooperative utilities in those states. Furthermore, we were unable to obtain data for Duke Energy Ohio to make Ohio representative IOU utility percent of total state’s sales above 50% for Ohio. It should be noted, however, that from the standpoint of energy efficiency, the chosen Kansas utility makes-up 43% of the state's energy efficiency savings, the Indiana utilities account for approximately 45%, and the Minnesota utilities account for approximately 74% of each respective state’s savings according to EIA estimates. Wisconsin Focus on Energy (FOE) does not report sales data in EIA 861 as an entity, so a state sales percentage was not estimated - FOE runs Wisconsin’s largest EE programs for numerous utilities.

We pay particular attention to states and utilities whose energy efficiency programs saved greater than median amounts of electricity at below median costs, and at the other end of the spectrum, states and utilities whose energy efficiency programs produced below median savings at above median costs. To compare these criteria, the authors 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. States whose energy savings are greater than the median and whose costs are less than the median include Illinois, Michigan, and Arizona, making these the “efficient” performers. Missouri, Indiana, Pennsylvania, Ohio, and Wisconsin have below median savings at below median costs. Iowa, Minnesota, California, and Massachusetts have above median savings at above median costs. Kansas, New York, and New Hampshire have below median savings at above median costs, making them “inefficient” performers. These findings are consistent with the legislative and regulatory analysis, above, in that states with stronger EE legislative and regulatory oversight appear to have greater savings. In addition, it appears that moderately mature programs with strong regulatory and legislative environments achieve greater savings at lower overall cost, while more mature programs in similar regulatory environments spend more than median but also achieve more than median in savings. Conversely, states with less legislative and regulatory oversight typically are experiencing fewer savings in addition to often higher than median costs. However, it is important to note that four of these states also have a shorter history with legislated EE policies (e.g., Kansas, Missouri, New York, and New Hampshire).

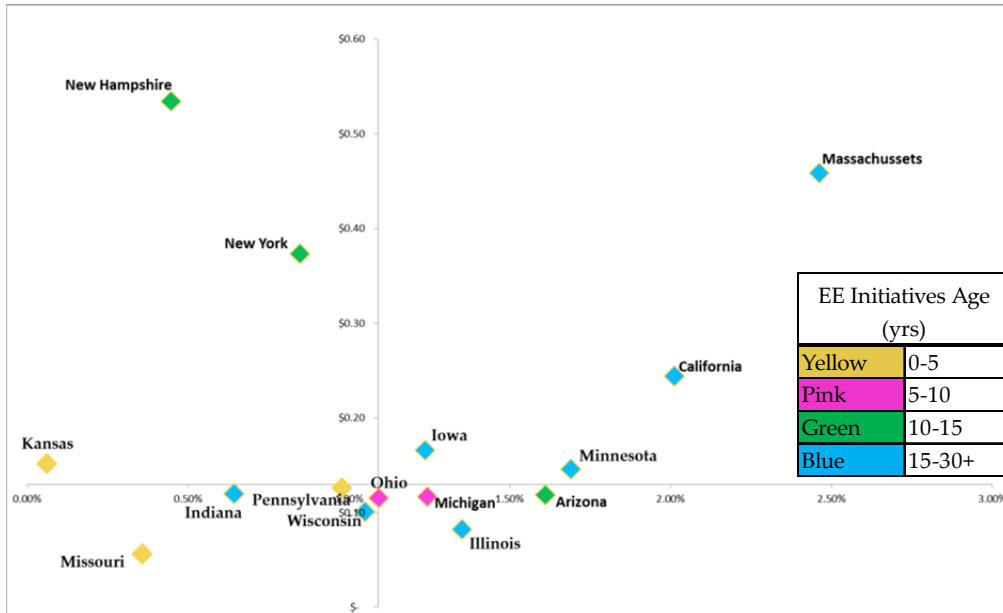


Figure 2. Savings as a Percent of Sales vs. \$/kWh by State. *Source:* 2012 annual reports, EIA 861, NEEP-REED.

We also compared the 2012 utility data against the utilities that were benchmarked by the authors in 2010 to identify changes in utility performance over two years. This is shown in Figure 3, below. The data show that state EE standing relative to peers has remained relatively the same. However, the energy efficiency landscape, as a whole, appears to have shifted right, towards higher savings as a percent of state sales since 2010. States with greater legislative and regulatory oversight have seen the largest increases in savings, while states with the least oversight appear to be generating fewer saving than in 2010. Most states have witnessed overall improvement in state performance with the exception of Kansas, Missouri, and Pennsylvania.

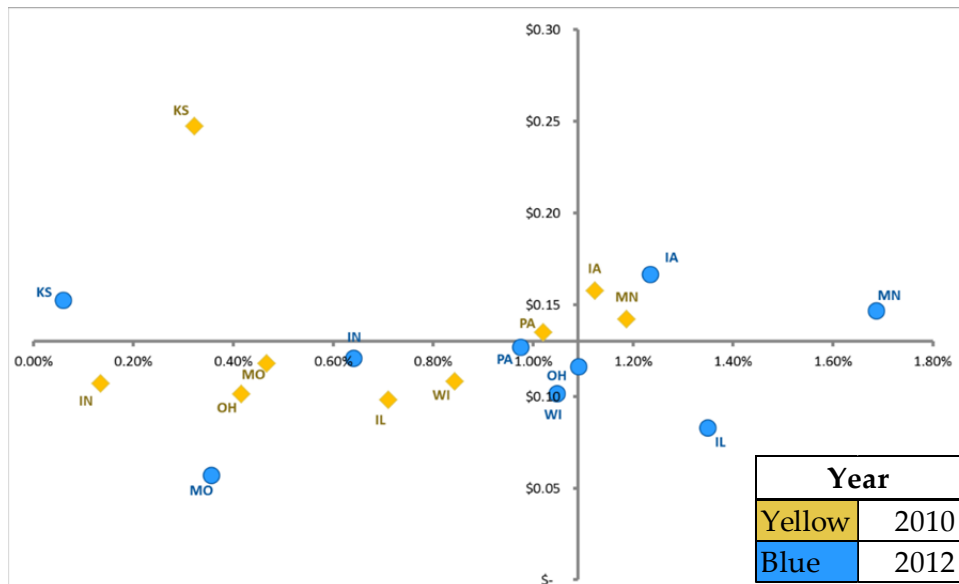


Figure 3. Comparison of 2012 State Performance to 2010 Data. *Source:* 2012 and 2010 annual reports, EIA 861, NEEP-REED.

Table 3 below further compares the overall state EE focus and the change in savings and costs between 2010 and 2012 for each of the states in Figure 3. We see that the states with the highest growth in savings per unit of sales have tended to experience the highest increase in cost per unit of savings.

Table 3. Change in Savings and Costs from 2010 to 2012.

State	Total GWh Savings/ Sales	Total \$/KWh	Overall State EE Focus
KS	-433%	-63%	
MO	-31%	-108%	
IA	9%	5%	
IL	47%	-19%	
IN	79%	11%	
OH	61%	17%	
PA	-5%	-7%	
WI	20%	-7%	
MN	30%	3%	

Source: 2012 and 2010 annual reports, EIA 861, NEEP-REED.

## Conclusions

As seen in our 2012 review of EE legislation and regulations, a key learning point is 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. (Gunn 2012) It is also clear that EE success appears to improve over time – that is, the longer utilities and states implement EE programs, and the greater the legislative and regulatory focus on EE, the greater utilities and states realize savings. Regardless of the type of legislative or regulatory policy actions, the energy savings and cost data appear to show that energy savings continue to improve over time - across a range of states and through different program administrators. This means that a focus by state government on EE initiatives will aid in achieving some level of savings (*albeit at different savings and cost levels*). For example, Arizona, California, Iowa, Massachusetts, Minnesota, Ohio and Wisconsin are achieving significant energy savings. The data also show that Illinois is achieving similar percentages of energy savings after a relatively brief ramp-up period, while Pennsylvania’s savings appear to be slightly lagging compared to 2010.

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 of these states specifies EE goals that utilities or agencies must meet. This is the case even though energy savings goals vary (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. Interestingly, 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 EE initiatives were politically sidetracked this year by legislation that removed the "mandatory" EE element as of the end of 2014. Indiana was moving in a positive direction with strong EE gains, but political forces were able to sidetrack that success regardless of EE success in Indiana. Looking forward, Indiana may provide an interesting case study to further gauge the effects of state policy on energy efficiency performance.

Overall, our current research clearly shows that legislative and policy directives coupled with utility EE initiatives improves the energy savings achieved by states over time. However, there is no one clear path for states to achieve savings from their EE initiatives. Based on our ongoing research, it appears that detailed legislative and policy direction from state regulators and legislatures helps foster improvements in EE initiatives and programs, and typically results in greater EE savings. Each state has its own variation of how it pursues EE initiatives - this is most apparent with the states at each end of the spectrum where states with less legislative or policy guidance still are achieving EE savings albeit not as great as the savings of the states with more detailed, legislated EE goals. Iowa may be an exception since it does have detailed legislation and policy, and is achieving strong savings, but has less established mechanisms for cost recovery, decoupling, and incentives.

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