

Regulatory Regimes (Across Nine States) and Potential Improvements for Energy Efficiency Programs

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ABSTRACT

Energy efficiency (EE) programs are run in an environment defined by regulation. Regulations define who implements energy efficiency programs, who evaluates them, how much energy they should save, and how much can be spent capturing those savings. Given that the regulatory regimes are confined to states or regions, we have a natural experiment underway with each area taking a different approach to governing energy efficiency efforts. What can be learned by comparing the success of EE programs across these various experiments? What are the unintended consequences, both positive and negative, produced in these experiments? What does that tell us about the best way to encourage energy efficiency? Those are the questions that this paper will answer.

From research and interviews, the authors reviewed a typology of 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. Conclusions about the most effective policies and regulations for encouraging and innovative energy efficiency are assessed and documented.

Regulatory Structures and Goals for Energy Efficiency in Nine States (Central U.S.)

This paper looks at how the statutory and regulatory treatment of energy efficiency programs can influence the development of energy efficiency programs at the state level. 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 paper focuses on EE programs across nine mostly Midwestern states: Iowa, Illinois, Indiana, Kansas, Minnesota, Missouri, Ohio, Pennsylvania and Wisconsin. 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.

The nine states were chosen primarily based upon geographic proximity and the varied EE regulatory approaches. The variety of state-specific regulatory regimes across the states provides us with a natural EE experiment in the region; given available data, we determine if any conclusions could be drawn from analysis of those states' EE initiatives and relative EE performance. This analysis reveals that when various cost recovery mechanisms or incentives are put in place by state legislatures and/or state utility commissions, corresponding positive EE initiatives are witnessed in those states in the form of maturing EE programs and increasing annual savings (as is documented below). EE regulatory financial paradigms are typically designed around cost recovery, lost margin recovery and performance incentives.¹

¹ 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

Various initiatives have been established by states to promote the development of EE programs. Most such initiatives focus on cost recovery and performance incentives. Others include adjustable rate mechanisms or specific cost recovery riders. The corresponding absence of such incentives can be described as financial penalties and, thus, a disincentive to actively pursuing EE programs. Table 1 summarizes each of the nine state’s EE-regulatory regime with high-level detail.

Table 1. State Legislative and Regulatory EE Detail

<u>State</u> ²	<u>Regulation</u>	<u>Goals</u>	<u>Cost Recovery, Decoupling and Incentives</u>	<u>Penalties</u>
Illinois	<ul style="list-style-type: none"> • 2007 state legislation created increasing EE requirements – Demand-side management has been required since 1986 • Illinois Legislation 2007 (SB 1592; Public Act 95-0481); Illinois Consolidated Statutes – Public Utilities Act (220 ILCS 5/) 	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.	<ul style="list-style-type: none"> • Cost recovery of EE can be recovered through an automatic adjustment clause tariff (approved by the Commission) • Cost recovery is through a mechanism in the utility’s EE plan • decoupling can be an option • No pre-defined mechanism for utility incentives, but allowed through utility proceedings (ComEd has moved partially to a straight fixed variable approach) 	<ul style="list-style-type: none"> • Failure to recover utility-proposed throughput incentive • Possible non-recovery of costs upon annual review proceeding • Failure to meet the state mandates includes penalties

opportunity for recovery of these costs is a minimum requirement for the implementation of energy efficiency programs by utilities. *ACEEE Glossary*

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.) *ACEEE Glossary*

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*

² In addition to the sources noted in the footnotes below, the following sources were used: (i) The Regulatory Assistance Project, and (ii) American Council for an Energy-Efficient Economy – state database

Indiana	<ul style="list-style-type: none"> • 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 	Overall annual energy savings goal of 2% has to be achieved by electric utilities within 10 years, with interim savings goals established, starting with 0.3% of baseline sales for 2010	<ul style="list-style-type: none"> • Cost recovery is approved on a case-by-case basis concurrent with voluntary DSM program plan approval • Commission can approve lost revenue recovery mechanisms proposed by utilities • Performance incentives in place 	<ul style="list-style-type: none"> • Possible non-recovery of costs through rates
Iowa	<ul style="list-style-type: none"> • 2007 state law established Office of Energy Independence and requirement for annual Energy Independence Plans • Iowa Code 473.2, 476.6 and IAC 199—35.3Section 473.2; Iowa Rules IAC 199-35 	Goals established per individual plans established by each utility	<ul style="list-style-type: none"> • Automatic rate pass through reconciled annually • EE goals can be used to fulfill renewable goals or similar standards • Commission recognizes decoupling and pursues efficient EE measures • No specific incentives are mandated 	<ul style="list-style-type: none"> • Non-recovery of costs upon annual review proceeding • Failure to meet positive benefit-cost³ test could result in non-recovery • Failure to meet the state mandates can include penalties
Kansas	<ul style="list-style-type: none"> • No legislation – state commission is moving toward treating EE as an energy resource • 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 	EE programs are established by individual utilities with Commission oversight	<ul style="list-style-type: none"> • Cost recovery rider mechanisms • Decoupling considered on a case-by-case basis • Commission may grant 0.5-2% increased Return on Equity for utility investments on EE 	<ul style="list-style-type: none"> • Case-by-case cost recovery when not allowed in rider mechanisms

³ Benefit cost tests, include among other the societal test, that focus on arriving at energy efficiency program overall benefits as compared to the program total costs.

Minnesota	<ul style="list-style-type: none"> • 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 	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	<ul style="list-style-type: none"> • Recovery of cost effective program costs is allowed • Performance incentives in place for an extended period⁴ • Decoupling efforts are underway in MN 	<ul style="list-style-type: none"> • Costs not deemed appropriate or not cost effective could be denied • Failure to meet the state mandates can include penalties
Missouri	<ul style="list-style-type: none"> • 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 	Investor-owned electric utilities to capture all cost-effective energy efficiency opportunities	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Costs not deemed appropriate or not effective could be denied • Adoption and development of recovery mechanisms still ongoing
Ohio	<ul style="list-style-type: none"> • 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 	In 2009, target energy savings of 0.3% of total, annual average, kilowatt-hour during the preceding three years - target increases in steps to 1% from 2014 to 2018 and 2% from 2019 to 2025	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Recovery of lost revenues are allowed on a case-by-case basis • Failure to meet the state mandates includes penalties

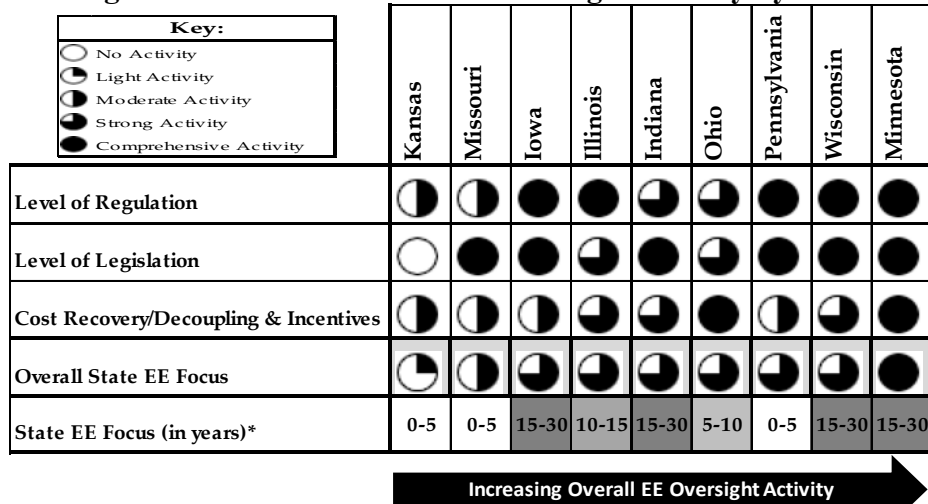
⁴ State utilities have performance incentives that are also meant to obviate the need for lost revenue recovery.

Pennsylvania	<ul style="list-style-type: none"> • Statutory and utility commission requirements established • PA Code Title 52, Chapter 57; PA Legislative Act 129 	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.	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Statutory and utility commission requirements established • WI 2005 Act 141; WI Statute §1.12(4), §1.12(5)(a) 	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 peak load and electric sales, amount to 0.75% in 2011, ramping up to 1.5% in 2014.	<ul style="list-style-type: none"> • Focus on Energy Program⁵ • 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 • Decoupling is being offered by at least one utility 	<ul style="list-style-type: none"> • Failure to meet state mandated goals could bar cost recovery

This information by state can be summarized in high-level findings as follows:

⁵ 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

Figure 1. Measurement of EE Oversight Activity by State



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

As shown in Figure 1, the analysis shows all states have some level of legislative and/or regulatory activity, but there are varying degrees of EE regulatory and legislative initiatives underway. The state with the least amount of policy oversight is Kansas with 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. In contrast, Minnesota is at the opposite end of the EE initiative spectrum with EE goals established by the legislature and those laws are implemented by the state commission. Furthermore, Minnesota also has cost recovery of programs, performance incentives in place and decoupling initiatives underway. The remaining states have varying degrees of policy oversight:

- Missouri falls into the left side of the policy oversight spectrum established in Figure 1, which indicates 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.
- 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. Indiana has a statewide goal of 10% cumulative savings within 10 years and a 0.3% goal starting in 2010 – cost recovery in Indiana is on a case-by-case basis.
- In comparison, Ohio, Wisconsin and Pennsylvania are leading EE initiative states 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.

This legislative and policy analysis is mirrored, to a great extent, by the EE program performance data analysis below. By collectively benchmarking utility performance in each of the nine states, we develop a picture of relative EE performance as a factor of kWh savings as a percentage of state sales, and as dollar cost per kWh saved. In doing so, we map state EE performance against their policy and legislative regimes.

Data Analysis of Energy-Efficiency Program Performance by State

Comparing programs and data across states can be a difficult undertaking due to the heterogeneous nature of programs and market conditions, including: the 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. Nonetheless, our benchmarking methodology standardizes the data and we track, account, and adjust for these discrepancies when possible. The resulting analysis should be treated as a high-level view of state energy efficiency performance that, in combination with our review of specific state policies above, provides evidence for the effect of state regulatory policy on energy efficiency program performance.

Another major comparability variable between utilities is the maturity of energy efficiency programs in each state. Iowa, Minnesota, and Wisconsin have been conducting large scale energy efficiency programs continuously since the 1980s, while most states in the region have just started or re-started conducting large scale programs in the past three to five years, and several individual utilities in the region have just started in the past one to two years. Maturity of various state programs is likely to have the benefit of driving ongoing EE programs throughout each state to improve overall ongoing energy savings – the flip side of this argument is that mature programs may also have diminishing returns in the long-run with less low hanging fruit left and cost effectiveness and savings becoming more challenging to achieve over time.

Data and Methodology

To assess the possible effects of state policy and regulation on EE program performance, we benchmarked nineteen utilities across nine 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 costs⁶ per first year kWh saved, both for the 2010 program year. We note where gross savings are not available or verified; furthermore, savings reported at the generator are adjusted for line loss factor to approximate “at the meter” savings (Table 2). 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’ energy efficiency performance. Where possible, we selected the largest utilities in each state to jointly account for at least 50% of the state’s sales as reported in EIA 861. By establishing standardized median savings and cost values for the nine states of interest we can compare their relative performance to one another before comparing their performance to their regulatory structures.

⁶ 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*).

Table 2. Table of EE Data Attributes

State	Organization	Savings Verified	EE/PDR GWh At meter or generator	Net or Gross
IA	IPL (IA)	Yes	Not Specified	Gross
	MAEC (IA)	Yes	Meter	Gross
IL	Ameren (IL)	Yes	Meter	Gross
	ComEd (IL)	Yes	Meter	Gross
IN	Duke Energy (IN)	Yes	Meter	Gross
	I&M (IN)	Yes	Meter	Gross
MN	MN Power (MN)**	No	Meter	Not Specified
	XE (MN)	No	Generator**	Net*
OH	AEP OH	Yes	Meter	Gross
	First Energy (OH)	Yes	Meter	Gross
MO	KCP&L (MO)	Yes	Meter	Gross
	Ameren (MO)	Yes	Meter	Gross
KS	KCP&L (KS)	Yes	Meter	Gross
PA	Allegheny (PA)	Yes	Meter	Gross
	First Energy (PA)	Yes	Meter	Gross
	PECO (PA)	Yes	Meter	Gross
	Duquesne (PA)	Yes	Meter	Gross
WI	PPL Electric Utilities (PA)	Yes	Meter	Gross
WI	Focus on Energy (WI)	Yes	Meter	Gross

*Xcel (MN)'s net savings reporting is comparable to other utilities' gross savings reporting

**Xcel (MN) reports at the generator, but our figures are adjusted for line loss factor to make them comparable to meter-level reporting

***MN Powers 2009 sales included 61% opt outs, so we took out 61% of C&I Sales in 2010 to provide an estimate (2010 opt outs not available)

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) Energy Information Administration (EIA) 861 data. For our savings and cost data, preference was given 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, EIA has not always been 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 for which EIA 861 data was relied upon. Table 3 outlines states, utilities and the sources of the data.

In selecting utilities in each state, the authors' 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 Indiana and Kansas utilities, the other utilities did account for at least 50% of the state's total sales in energy (*See Table 3*). The 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. It should be noted, however, that from the standpoint of energy efficiency, the chosen Kansas utility makes-up 94% of the state's energy efficiency savings and the Indiana utilities account for approximately 75% of the 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.

Table 3. State and State-Representative Utility Data Sources

State: Utility	Benchmarking Data Source	Total GWh Savings	Total GWh Sales	Total GWh Savings/Sales	Utility Percent of State Sales as Reported in EIA 861
IA: Interstate Power and Light (IPL)	Annual Report	162.17	14,431.75	1.1%	75%
IA: MAEC	Annual Report	218.52	19,434.37	1.1%	
IL: Commonwealth Edison Co (ComEd)	Annual Report	724.37	90,524.00	0.8%	61%
IL: Ameren IL	Annual Report	187.33	37,872.80	0.5%	
IN: Duke Energy	Annual Report	23.01	28,258.84	0.1%	42%
IN: Indiana-Michigan Power	Utility-Provided	36.14	15,764.70	0.2%	
KS: Kansas City Power and Light (KCP&L)**	Utility-Provided	21.25	6589.00	0.3%	16%
MN: Xcel Energy	Annual Report	407.96	34,812.04	1.2%	64%
MN: MN Power	Annual Report	53.52	4,046.20	1.3%	
MO: Kansas City Power and Light (KCP&L)**	Utility-Provided	32.45	8,878.00	0.4%	55%
MO: Ameren	EIA 861	188.52	38,427.46	0.5%	
OH: American Electric Power (AEP) Ohio	Annual Report	342.90	47,434.81	0.7%	50%
OH: First Energy (OH)	Annual Report	76.37	53,324.80	0.1%	
PA: PECO	Annual Report	391.89	39,343.26	1.0%	78%
PA: DQE	Annual Report	164.85	14,071.96	1.2%	
PA: Alleghany	Annual Report	87.57	20,027.03	0.4%	
PA: First Energy (PA)	Annual Report	401.75	32,613.41	1.2%	
PA: PPL	Annual Report	413.42	36,897.64	1.1%	NA*
WI: Focus on Energy	Annual Report	579.80	68,752.42	0.8%	

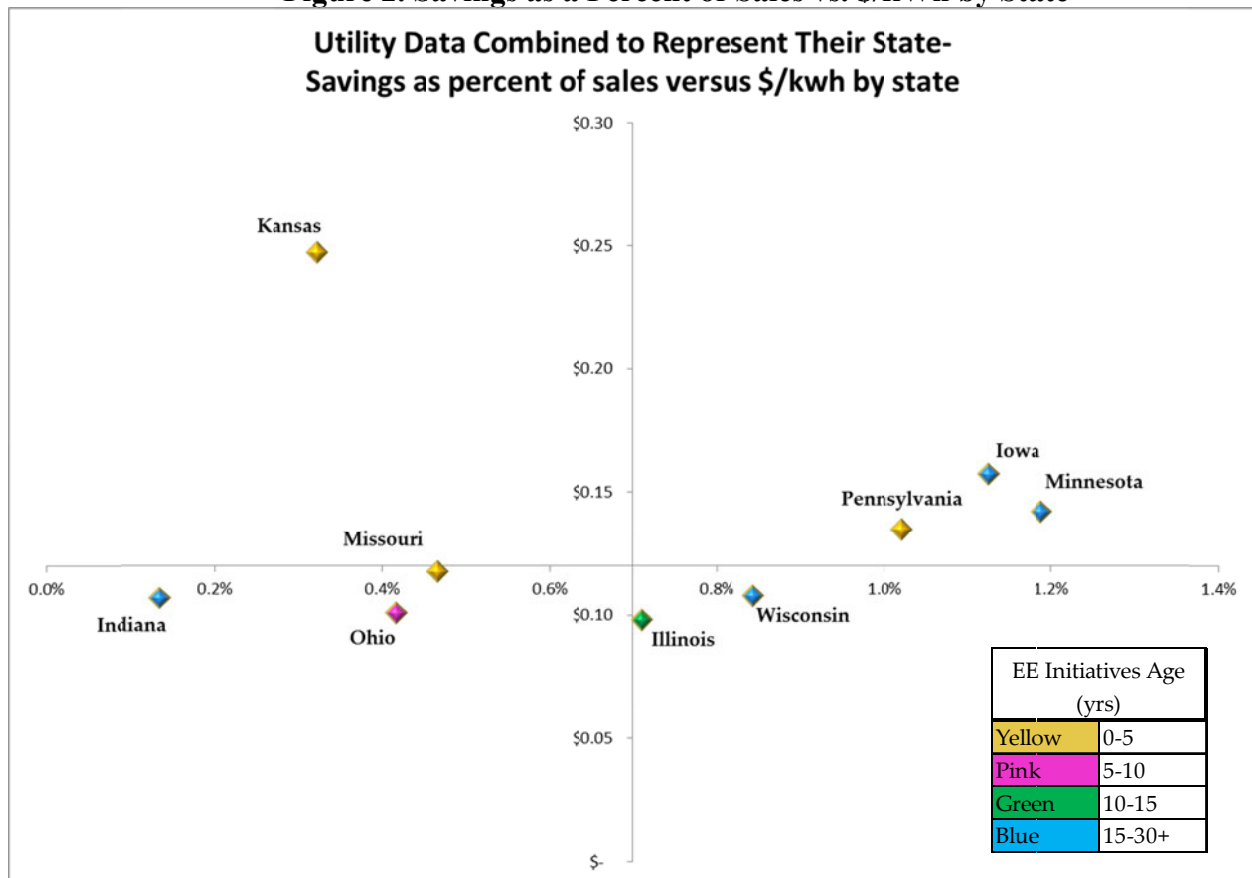
*Focus on Energy does not have sales data in EIA 861

**KCP&L savings in KS and MO are reported separately for each state. The high share of the KS state results is due to other KS utilities not being required to pursue EE programs

We are particularly interested in 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 produce below median savings at above median costs. To compare these criteria, a scatterplot (Figure 2) with four performance quadrants was created. 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 and Wisconsin. Kansas has energy savings less than the median and costs greater than the median. Iowa, Minnesota, and Pennsylvania have greater than median savings at higher than median costs, while Indiana, Missouri, and Ohio have below median savings and below median costs. 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 at lower overall costs. Conversely, states with less legislative and regulatory oversight typically are experiencing fewer savings and higher than median costs, but, it is important to note, also have a shorter history with formal legislated EE policies (e.g., Indiana, Kansas).

Figure 2. Savings as a Percent of Sales vs. \$/kWh by State⁷



Conclusions

A learning point from this EE analysis is that states with targets set by a legislature and enabled by a state commission have made more progress than states where legislatures and commissions have taken limited action on EE initiatives. One element of this finding is that it is unclear if this EE success is due to the length of time EE programs have been implemented (e.g., consumer uptake and resulting savings) as shown in Figure 1 or if it is also due to the legislative/policy direction from the state. The energy efficiency savings and cost data appear to show that varying levels of energy savings are being achieved by a variety of states and program administrators (*regardless of the legislative or policy action*). Iowa, Minnesota and Wisconsin continue to achieve significant energy savings, as they have for many years. The data also show that Illinois and Pennsylvania are achieving similar percentages of energy savings after a relatively brief ramp up period. It should be noted that for many of the states in the evaluated sample, the second year of recent large scale program savings results were assessed and savings levels for these states may improve in the future as programs mature. The assessed data sample was from 2010 and that sample is the most recent for the data set available since 2011 program results data is not available for all the states.

⁷ States are color coded by length of time energy-efficiency programs existed in each state: Yellow is 0-5yrs; Pink is 5-10 years, Green is 10-15 years, and Blue is 15-30 years.

States with relatively high energy savings have a number of similar regulatory policies and practices regarding energy efficiency that have been in place for several years - each of these states specify energy efficiency goals that utilities or agencies must meet regarding their energy efficiency programs. In 2010, the year of focus for this analysis, these energy savings goals varied from 0.4% of baseline sales in Illinois to at least 1.0% of baseline sales in Minnesota. Most of these states also specify penalties for utilities or agencies for not meeting the required energy savings goals. However, in practice, few if any penalties have actually been assessed for the program administrators in these states, generally because virtually all of the covered program administrators have been meeting the mandated energy savings goals. About half of these states, Minnesota, Ohio, Pennsylvania, and Wisconsin provide financial incentives to utilities for energy efficiency programs. Illinois and Iowa do not provide any financial incentives to utilities for their energy efficiency programs. The main Wisconsin energy efficiency program administrator is a state agency, the Focus on Energy, so financial incentives are not a factor there, but Wisconsin utilities are provided financial incentives for their “voluntary” energy efficiency programs. In comparison, states with the least savings are associated with shorter periods of implemented EE programs. Interestingly, states with the least savings may have limited legislative or policy direction, but other states with recent large scale program ramp-ups are still achieving savings that can be favorably compared to the more mature EE states. Indiana and Missouri recently passed energy efficiency policies that have recently begun to be fully implemented.⁸ These states are learning from other states’ experiences.

A clear lesson to be learned is that there is not one clear path to achieving EE initiative energy savings – each state has taken a slightly different path, but each path has resulted in varying degrees of savings. It does appear that clear legislative and policy direction from state utility regulators and legislatures does help foster EE initiative program development at the state level and also results in greater EE savings from the data assessed in this paper. 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 strong savings, but less established cost recovery, decoupling and incentives mechanisms.

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⁸ For example, in Indiana, the first energy efficiency performance target of 0.3% of baseline sales just took effect in 2010, the main year of analysis for this paper. Neither Indiana nor Missouri specify penalties for utilities if they meet states’ energy efficiency targets are not met (except for disallowance of program cost recovery).

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