

September 2013

# REDUCING ENERGY WASTE IN THE UNITED STATES

Conclusions from AEE's Industry Policy Forum on Energy Productivity

## Introduction

The United States is entering a new era in energy efficiency. State energy program funding from the American Recovery and Reinvestment Act has been deployed, President Obama issued a bold new energy productivity goal and a Race to the Top targeting energy waste in his February 2013 State of the Union Address<sup>1</sup>, federal appliance standards continue to raise the bar on efficiency, and utility-ratepayer-funded energy efficiency programs continue to grow nationwide. Perhaps even more importantly, beyond the regulatory and policy front new financing models are breaking down the upfront cost barrier to efficiency, and new and improved energy efficiency technologies are offering consumers and businesses superior performance with less energy waste. A suite of technologies and services is also being developed and deployed to engage utility customers more than ever before and to empower them to make informed choices on energy use and costs. The time of the "first fuel" seems to be at hand.

In order to achieve America's full potential to reduce energy waste, create jobs and save consumers money on their energy bills, an alignment of energy-efficiency business leaders, policy makers and lending institutions must occur. To further this objective, Advanced Energy Economy (AEE), working in conjunction with the Center for the New Energy Economy (CNEE) at Colorado State University, hosted an Energy Efficiency Policy Forum in Austin, Texas on April 2nd, 2013. At the forum, representatives from the energy efficiency industry were asked to identify various state policies that will help realize the country's energy efficiency potential.

These industry professionals covered the spectrum from energy efficiency equipment providers, service providers, utility program designers, and large demand side users of energy charged with maximizing energy efficiency. The views of these energy efficiency professionals and business leaders reflect the observations of these industry leaders as they innovate and implement energy efficiency efforts across the country.

Any conclusions drawn from this discussion, as summarized below, do not constitute a formal prioritization of energy efficiency policies for the industry as a whole, or AEE and CNEE as organizations.

***"new financing models are breaking down the upfront cost barrier to efficiency, and new and improved energy efficiency technologies are offering consumers and businesses superior performance with less energy waste."***

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1. President Obama's Blueprint for a Clean and Secure Energy Future. March, 15th 2013. <http://www.whitehouse.gov/the-press-office/2013/03/15/fact-sheet-president-obama-s-blueprint-clean-and-secure-energy-future>

## Background

In late 2012 and early 2013, three reports were issued by prominent energy efficiency organizations. In these reports, each organization offers trend analyses and policy recommendations. These reports served as a foundation for discussion at the policy forum. The three reports are:

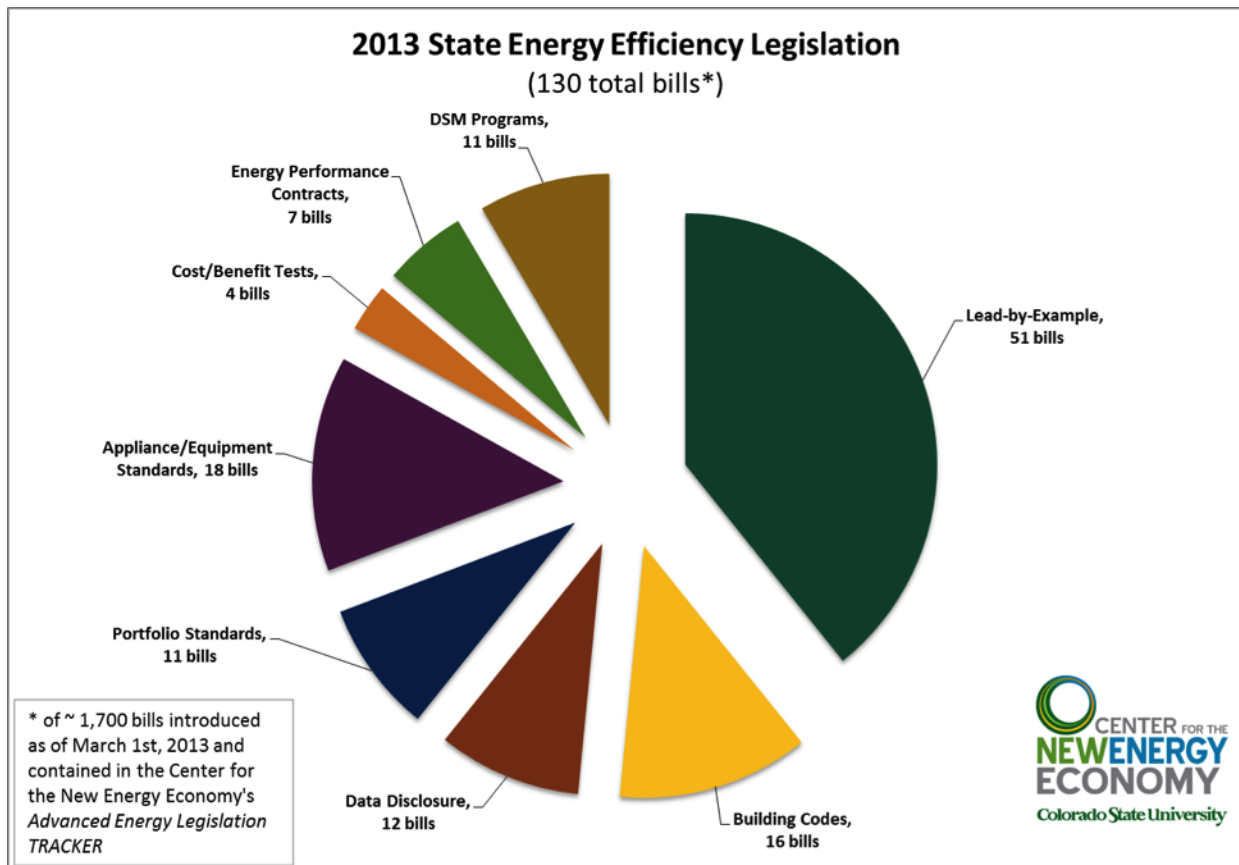
1. **Alliance Commission on National Energy Efficiency Policy: Recommendations to Double U.S. Energy Productivity by 2030.**<sup>2</sup> The Commission recommends doubling U.S. energy productivity by 2030 (GDP per unit energy consumed).
2. **American Council for an Energy Efficient Economy (ACEEE): Frontiers of Energy Efficiency: Next Generation Programs Reach for High Energy Savings.**<sup>3</sup> ACEEE offers five strategic recommendations for improving electric and natural gas utility energy efficiency program design and delivery.
3. **Southwest Energy Efficiency Project (SWEET). The \$20 Billion Bonanza.**<sup>4</sup> SWEET outlines the savings potential, specific policy recommendations by state, and best practices for utility energy efficiency programs for states in the interior southwest.

These reports all support the premise that there remains large, untapped, cost effective energy efficiency potential in the United States. At the same time, state legislatures are focusing on energy efficiency policy in the 2013 legislative session. In 2013, 130 bills had been proposed by policymakers in every state to promote some form of energy efficiency policy. Figure 1 breaks down all state-level energy-efficiency legislation by policy type, catalogued in the Center for the New Energy Economy's Advanced Energy Legislation Tracker,<sup>5</sup> which contains more than 2,700 advanced energy bills introduced in the 2013 session.

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2. Alliance to Save Energy & Alliance Commission on National Energy Efficiency Policy. Energy 2030: Recommendations to Double U.S. Energy Productivity by 2030. February 2013. <http://www.ase.org/programs/ee-commission>
  3. American Council for an Energy Efficient Economy. Frontiers of Energy Efficiency: next Generation Programs Reach for High Energy Savings. January 2013. <http://www.aceee.org/research-report/u131>
  4. Southwest Energy Efficiency Project (SWEET). The \$20 Billion Bonanza; Best Practice Electric Utility Energy Efficiency programs and Their Benefits for the Southwest. October 2012. <http://www.swenergy.org/programs/utilities/20BBonanza.htm>
  5. Center for the New Energy Economy and Advanced Energy Economy's Advanced Energy Legislation Tracker, <http://aeltracker.colostate.edu/>



**Figure 1: State Energy Efficiency Legislative Activity in 2013**



These data reveal several trends.<sup>6</sup> First, the majority of states considering energy efficiency legislation are ranked in the top half of the 2012 American Council for an Energy-Efficient Economy (ACEEE) State Scorecard.<sup>7</sup> This may be evidence of a larger trend: a growing disparity between those states moving forward on energy efficiency legislation and those that are lagging behind. The fact that leading efficiency states continue to promote these policies, suggests growing recognition of their effectiveness.

The largest single class of energy-efficiency legislation is lead-by-example bills, which encourage state governments to reduce energy consumption in their own facilities and operations. Given that these initiatives tend to be highly cost-effective, it is not entirely surprising that these policies are the most common.

Among the types of bills introduced in the 2013 legislative session, data disclosure bills represent one of the more innovative measures. Disclosure policies have become common across the states, though only recently applied to energy efficiency. This type of legislation is designed to provide utility customers with more information about their own energy use, on the theory that “freeing the data” will result in reduced consumption, either through behavioral change or the installation of more energy efficient technologies.

6. Center for the New Energy Economy. Rediscovering the First Fuel: States Advance Energy Efficiency in the 2013 Session. [http://www.aetracker.org/graphics/uploads/Rediscovering-the-First-Fuel\\_Final-sm.pdf](http://www.aetracker.org/graphics/uploads/Rediscovering-the-First-Fuel_Final-sm.pdf)

7. American Council for an Energy Efficiency Economy: The 2012 State Energy Efficiency Scorecard. <http://www.aceee.org/sites/default/files/publications/researchreports/e12c.pdf>

Policies to achieve increasing levels of efficiency over time were also introduced in 2013. Currently, 24 states have Energy Efficiency Resource Standards (EERS) in place.<sup>8</sup> This session, 11 states have proposed expanding or diminishing existing standards whereas some states have proposed new standards altogether. Kentucky, Missouri, and West Virginia considered (and later rejected) legislation this year that would have established an EERS.

Changes to building codes represented another frequent legislative initiative. The International Code Council updates the efficiency code standards every three years. The most recent revision to the International Energy Conservation Code (IECC) was 2012 and represented a 50% improvement in efficiency over the 2009 code and 30% improvement over the 2006 code on a national basis.

Energy saving performance contract legislation proposed this session generally focuses on improving the regulatory structure of state programs that implement efficiency policies. Effective management of these and other programs plays an important role in states achieving their energy efficiency goals.

Finally, two types of bills related to utility demand side management (DSM) programs have been introduced, including a handful addressing revisions to the utility DSM cost/benefit tests that are used to assess the worthiness of certain energy efficiency measures for inclusion in ratepayer-funded programs.

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8. American Council for an Energy Efficiency Economy: Energy Efficiency Resource Standards (EERS) <http://aceee.org/topics/eers>



## Increasing Energy Productivity in the United States

A variety of proposals were discussed in the forum, and industry leaders reflected on the policies that were impactful to the expansion of energy productivity. While the focus was on state legislation, federal action was also discussed and those conclusions are also reflected here.

The order of presentation of these ideas does not reflect any level of prioritization by the assembled group, AEE or CNEE.

### 1. Promote policies to address the nexus between energy and water

- Direct Public Utilities Commissions to open proceedings pertaining to the energy/water nexus and to evaluate the contributions water conservation measures may make to overall energy demand and likewise energy conservation measures that may contribute to water conservation.

#### **Saving Energy, Saving Water (and vice versa)**

Energy efficiency can also be framed within the context of water conservation. There are two issues at play here: (i) water used in power generation for cooling, especially in the American West,<sup>9</sup> and (ii) energy consumed by the conveyance and treatment of water. Reducing electricity use has the potential to reduce water consumption at power plants, and reducing water use in homes and businesses will reduce electricity demand associated with water supply. According to the National Conference of State Legislatures, at least nine U.S. states recognize the connection between energy production and water consumption.<sup>10</sup> In California, for example, roughly 20% of the state's electricity demand is consumed by the conveyance and treatment of water.<sup>11</sup>

Recognizing the opportunity to reduce electricity consumption through water conservation, the California Public Utilities Commission recently directed the state's investor owned utilities (IOUs) to develop water conservation metrics for ratepayer-funded DSM programs.<sup>12</sup>

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9. Stacey Tullinghusien, Western Resource Advocates. A Powerful Thirst: Managing the Electricity Sector's Water Needs and the Impact of Drought (October, 2012). <http://www.westernresourceadvocates.org/media/pdf/powerfulthirstreport2012.pdf>
  10. National Conference of State Legislatures. Overview of Energy-Water Nexus in the United States. <http://www.ncsl.org/issues-research/env-res/overviewofthewaterenergynexusintheus.aspx>
  11. California Public Interest Energy Research (PIER) program. <http://www.energy.ca.gov/2007publications/CEC-999-2007-008/CEC-999-2007-008.PDF>
  12. California Public Utilities Commission. Energy Efficiency Guidance Decision 12-05-015. <http://www.cpuc.ca.gov/puc/>



## 2. Incorporate Measurement of Customer Satisfaction in Efficiency Program Performance Metrics

- Encourage statutory declarations of customer satisfaction as a performance metric in utility DSM programs as well as a metric to be included in any programmatic cost/benefit analysis.
- In states served by electric and gas utilities with below average customer satisfaction, legislatures should require Public Utilities Commissions direct utilities to expand DSM programs in order to address lagging satisfaction .

Customer satisfaction, already an important metric for utilities, is likely to become even more so as the range of energy products and services expands. Moreover, the U.S. Department of Energy’s State and Local Energy Efficiency Action Network (SEE Action) has identified what it believes to be a correlation between customer awareness of efficiency programs and overall utility customer satisfaction.<sup>13</sup>

The findings are based on an analysis of J.D. Power & Associates utility customer satisfaction scores.<sup>14</sup> For example, a 2011 study measuring business customer satisfaction with gas utility companies found only 32% of business customers overall were familiar with their gas utility’s energy efficiency programs. However, those who were familiar were significantly more satisfied with gas prices than those who were not. According to the DOE report, this one variable, awareness of energy efficiency programs, accounted for a 112 point difference on a 1,000 point scale of overall customer satisfaction.

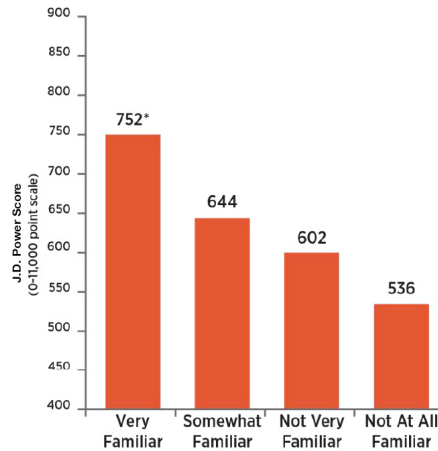


Figure 1. Residential electric customer satisfaction with overall price vs. familiarity with energy efficiency programs

\* Based on 2010 J.D. Power survey; small sample size in “very familiar” category

Similarly, a recent survey by the Shelton Group showed that less than 30% of survey respondents were aware their utility offers rebates and incentives.<sup>15</sup> A recent study by Accenture also found that the average American household spends only nine minutes, on average, interacting with their utility company over a 12-month period.<sup>16</sup> If there is indeed a correlation between awareness of energy efficiency programs and customer satisfaction, then a logical goal should be to increase this awareness, resulting in both higher levels of participation in energy efficiency programs and higher levels of customer satisfaction.

13. US DOE, State & Local Energy Efficiency Action Network: Impacts of Energy Efficiency Programs on Customer Satisfaction. [http://www1.eere.energy.gov/seeaction/pdfs/ratepayer\\_efficiency\\_customersatisfaction.pdf](http://www1.eere.energy.gov/seeaction/pdfs/ratepayer_efficiency_customersatisfaction.pdf)

14. J.D. Power and Associates: Electric Utility Business Customer Satisfaction Study. <http://www.jdpower.com/content/press-release/dTFT2FN/2013-electric-utility-business-customer-satisfaction-study.htm>

15. Shelton Group: Utility Pulse 2013. April 2013. [http://sheltongrp.com/files/2013/04/UtilityPulse2013\\_presentation\\_slide36.pdf](http://sheltongrp.com/files/2013/04/UtilityPulse2013_presentation_slide36.pdf)

16. Accenture: Actionable Insights for the New Energy Consumer, 2012. <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Actionable-Insights-New-Energy-Consumer.PDF>



### 3. **Grow Demand for Energy Efficiency by Differentiating offerings by Customer Class**

- Direct program administration to differentiate program approaches, offerings and measurements between residential and the Commercial/Industrial sectors.
- Promote programs that communicate both energy consumption and options for improvements in efficiency in easily consumable and actionable ways
- Centralize consumer engagement with efficiency measures, energy information, incentives, and service providers in one place.

Energy efficiency is customer class specific. Program delivery channels, messaging and the measures themselves address a range of target customers from low-income residential to high-usage industrial. Broadening participation will therefore require greater program differentiation by customer class. Below are several recommendations that emerged from the policy forum.

### 4. **Growing energy efficiency demand within the residential customer class**

- Focus on delivering greater insight to customers on their energy usage, not simply more data.
- Encourage the development of statewide incentive clearinghouses to simplify and centralize consumer access to information.<sup>17</sup>
- Encourage greater implementation of opt-out program delivery models in order to drive scale. Opt-out programs essentially automatically sign customers up to participate, though they may choose to not participate (or opt-out) anytime.

### 5. **Growing energy efficiency demand within the commercial and industrial (C&I) customer classes**

- Streamline complex program rules and develop standardized application processes.
- Promote more flexibility for C&I self-direct programs (in lieu of opting out). If program opt-out cannot be avoided, C&I customers should document how they will spend ratepayer funds on efficiency.
- Encourage utility investment in C&I sub-metering in order to drive deeper reductions in savings.
- Create C&I “Energy Savings Accounts” to ensure program funding (above a certain customer size threshold) is re-directed back to the customer account that it came from.
- Allow greater C&I directed efficiency measures in exchange for greater customer-led Evaluation, Measurement, and Validation procedures (EM&V).
- “Free the data” to promote data-driven efficiency, especially in the EM&V phase.
- Reduce or eliminate customer class cross-subsidization where it exists, i.e., funding for residential efficiency should not come from commercial and industrial customers, and vice versa since doing so would violate customer class rate allocation principles.

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17. For example: Mass Save, <http://www.masssave.com/>; Energy Trust of Oregon <http://energytrust.org/>; and Energy Upgrade California, <https://energyupgradeca.org/overview>

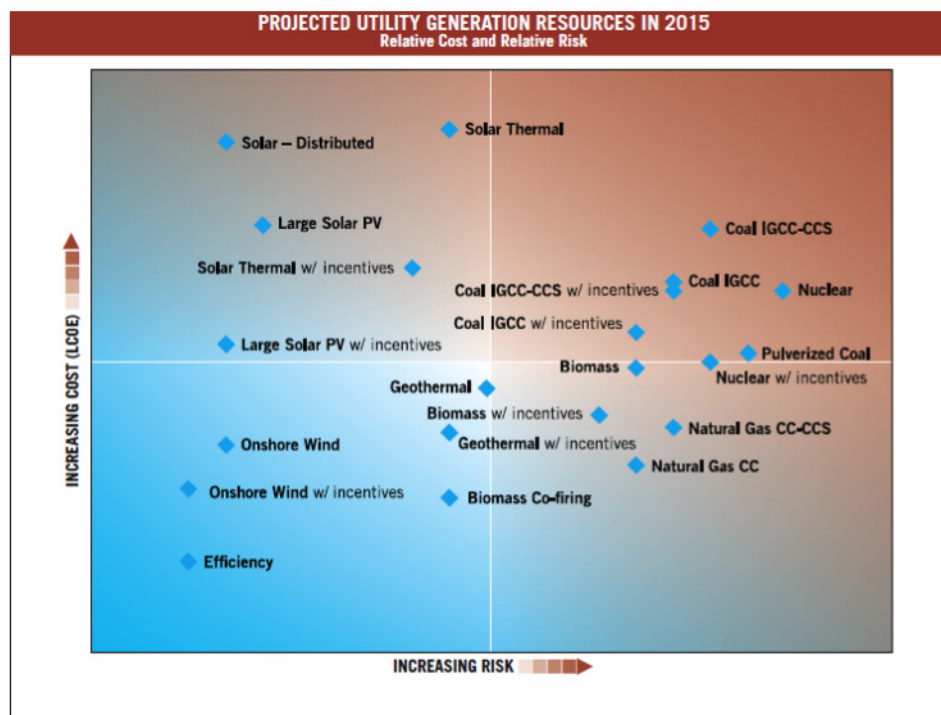


## 6. Mitigate Risk to Consumers with Energy Efficiency

- Promote risk-aware electric and natural gas utility regulation by designating “consumer risk mitigation” as a statutory objective of decisions made by regulators.
- Incorporate efficiency into all new resource decisions. Every utility engages in some kind of resource planning or scenario projection exercise. Scenarios should include low, medium and high penetration for efficiency and other demand side resources, like demand response.
- Where not already in place, require state regulatory agencies to incorporate efficiency within Integrated Resource Planning processes, rather than addressing it in separate regulatory proceedings and decisions.

Investor-owned electric and natural gas utilities are regulated by their respective state public utility commissions. A recent analysis on “Practicing Risk Aware Regulation” explores the relative risk of different power generation options. Figure shows one aspect of this analysis and plots these options according to their levelized cost of energy (LCOE) and their relative risk. The relative risk score was developed as a composite ranking of seven factors, including those related to construction cost, fuel and operating costs, the impacts of new regulations, water constraints, the availability and cost of capital, and planning risks (such as those related to inaccurate load forecasts and competitive pressure).<sup>18</sup> Although there are several implications of this analysis, one very notable one is that energy efficiency has both the lowest LCOE and the lowest risk. This suggests that energy efficiency should be a central component of any regulatory efforts to quantify and mitigate risks to utility customers.

**Figure 3: Relative Risks and Costs of different electricity generation resources**



18. Ronald J. Binz Public Policy Consulting & Regulatory Assistance Project. Practicing Risk-Aware Electricity Regulation: What Every State Regulator Needs to Know. A CERES Report, April, 2012. <http://www.ceres.org/resources/reports/practicing-risk-aware-electricity-regulation>



## 7. Update the Cost/Benefit Tests Used to Evaluate Utility DSM Programs

- State Legislatures and Public Utilities Commissions should require the use of UCT rather than TRC to determine qualifying energy efficiency measures and approval for cost recovery. UCT provides a better measurement of cost effectiveness for comparison to other generation alternatives.
- The California Standard Practice Manual; Economic Analysis of Demand-Side Programs and Projects (October, 2001) DSM programs should be re-evaluated and modernized to reflect new research with respect to appropriate cost-tests for comparing supply and demand side resources and which test(s) should be used to determine utility cost recovery.
- Legislation should encourage regulatory agencies to incorporate economic development metrics into cost benefit calculations.

Since utility energy efficiency programs involve using funds collected from all ratepayers to pay for benefits to program participants, which energy efficiency technologies and measures qualify for such programs is determined by tests of cost effectiveness. There are five primary standard practice DSM program cost effectiveness tests: a) Participant Test, b) Ratepayer Impact Measure Test, c) Total Resource Cost test, d) Program Administrator Cost Test (aka Utility Cost Test, or UCT), and e) Societal Cost Test.<sup>19</sup>

Historically, the Total Resource Cost (TRC) test has been the most commonly used by utilities and regulators. Stated simply, the TRC test is a measure of the total program benefits (for participants and non-participants) divided by the total program costs (for participants and non-participants). Importantly, the TRC test considers both utility incentives and individual customer costs as the “total cost” in determining cost effectiveness.

Recent analysis has suggested that applying TRC exclusively may not fully reflect the benefits to the utility and customer. For example, Cadmus Group proposed testing programs with the UCT to determine program approval and cost recovery.<sup>20</sup> The study finds that “The UCT accurately compares the utility (and, therefore, utility customer) costs with supply-side alternatives”. Yet most states use the TRC, not the UCT for program approval.

Using the UCT, only the costs to ratepayers would be considered in determining the application of ratepayer funds, not the cost to participating customers, allowing for small ratepayer-funded incentives to stimulate investments by program participants. Cadmus further argued that participation rates by customers are a better metric of whether, from the customer’s perspective, benefits outweigh costs to participate in a given program.

Similarly, the National Home Performance Council (NHPC) commissioned a report titled, Best Practices in Energy Efficiency Program Screening.<sup>21</sup> Synapse Energy Economics, the report’s author, found that: Many states are applying methodologies and assumptions that do not capture the full value of energy efficiency; leading to underinvestment in this low-cost resource...It is vitally important that states properly apply the cost-effectiveness tests. Driven by these findings, NHPC has commissioned a second Phase II report to explore alternative frameworks for assessing the program value.

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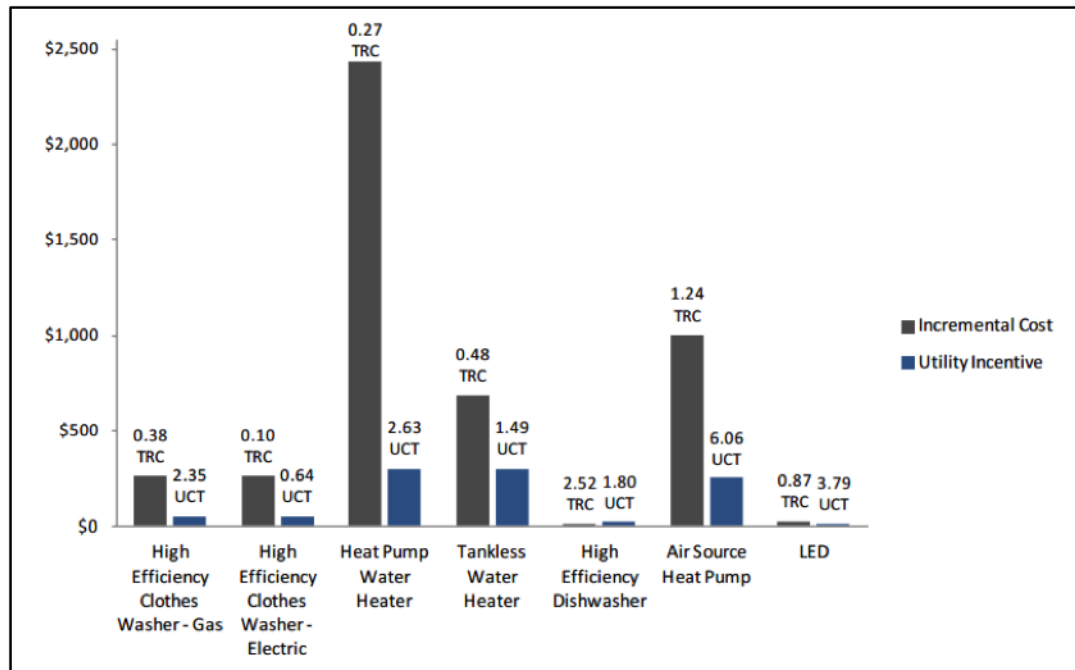
19. California Standard Practice Manual; Economic Analysis of Demand-Side Programs and Projects. October, 2001.  
[http://www.energy.ca.gov/greenbuilding/documents/background/07-J\\_CPUC\\_STANDARD\\_PRACTICE\\_MANUAL.PDF](http://www.energy.ca.gov/greenbuilding/documents/background/07-J_CPUC_STANDARD_PRACTICE_MANUAL.PDF)

20. Cadmus Group: Whose Perspective? The Impact of the Utility Cost Test.  
[http://www.cadmusgroup.com/wp-content/uploads/2012/11/TRC\\_UCT-Paper\\_12DEC11.pdf](http://www.cadmusgroup.com/wp-content/uploads/2012/11/TRC_UCT-Paper_12DEC11.pdf)

21. Synapse Energy Economics. Best Practices in Energy Efficiency Program Screening (July 23, 2012).  
<http://www.synapse-energy.com/Downloads/SynapseReport.2012-07.NHPC.EE-Program-Screening.12-040.pdf>

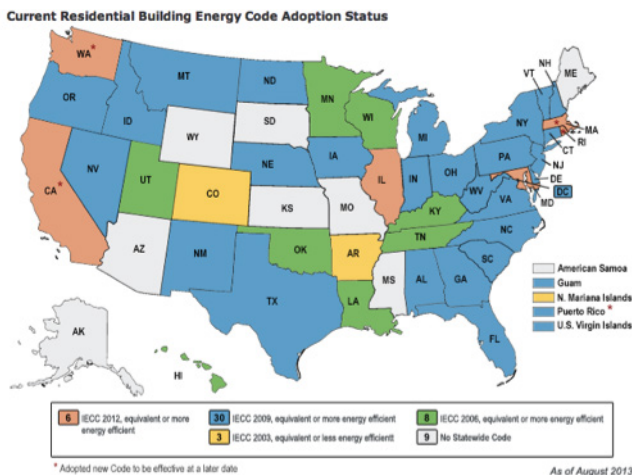


Figure 4. Incremental Cost versus Utility Incentive by Measure



### 8. Establish state policy for energy efficiency in building codes

- Introduce legislation to establish baseline for energy efficiency in building codes based on the International Energy Conservation Code.
- Establish a process for updating the state efficiency standard that is consistent with the three year process for updating the IECC



According to Ed Mazria of Architecture 2030, in the next 30 years  $\frac{3}{4}$  of the built environment in the US will be new or renovated buildings. Clearly, the decisions we make today on the ways in which these buildings are constructed will drive energy demand for generations to come.

The International Energy Code Council conducts a three-year review of energy efficiency codes to be incorporated into local and state building codes around the country. The efficiency codes incorporate the latest technologies and standards and are accompanied by guides for building code officials.

In comparing adoption of efficiency standards around the country, there is a disparity in code adoption,



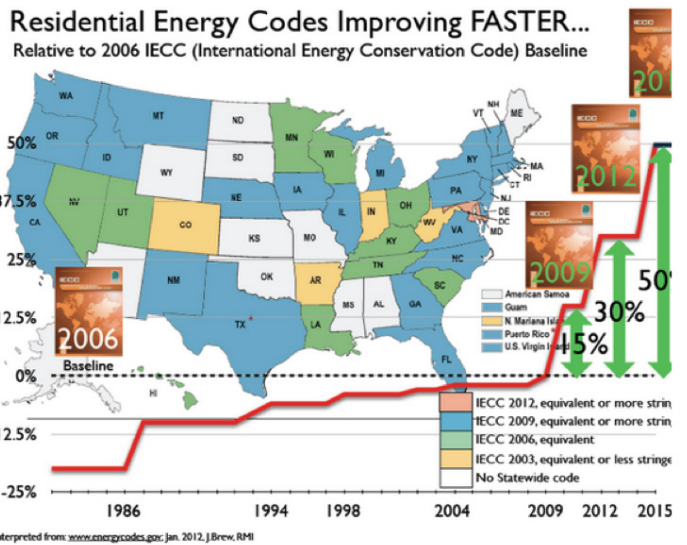
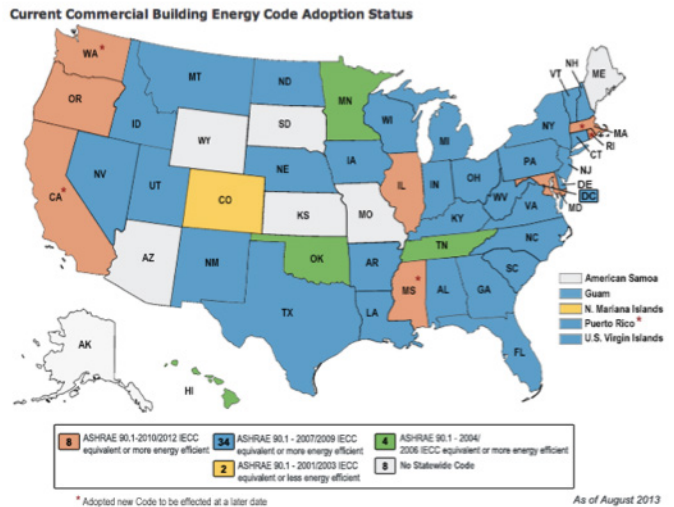
however, most states have adopted 2009 as the energy efficiency code for the state. This may be a result of the Department of Energy tying adoption of the 2009 standard to receipt of State SEP ARRA allocations upon passage of the Recovery Act in 2009.

While many states have adopted the 2009 IECC, most states don't have an established process for updating their code adoption standards. A good example is Colorado where legislation establishing a statewide minimum of 2003 IECC was passed in 2007. With no established mechanism for updating the code, 2003 remains the minimum statewide standard even after the 2012 standard has been passed by the code council.

The code council updates the codes every three years, incorporating recommendations from industry and other stakeholders to continue to drive more energy efficient building practices.

As reflected in Figure 2 from the Rocky Mountain Institute, relative to the 2006 IECC, the 2009 code represents a 15% improvement and the 2012 code represents a 30% improvement in energy performance.

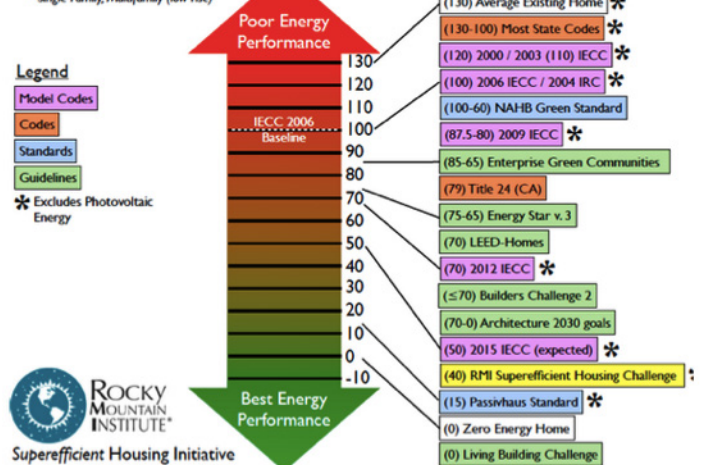
Relative to the HERS (Home Energy Rating System) score (figure 3), the IECC standards continue to push the envelope on energy performance.



### Comparison of Residential\* Energy Codes & Standards

(on a relative HERS index)

\* Single Family, Multifamily (low rise)



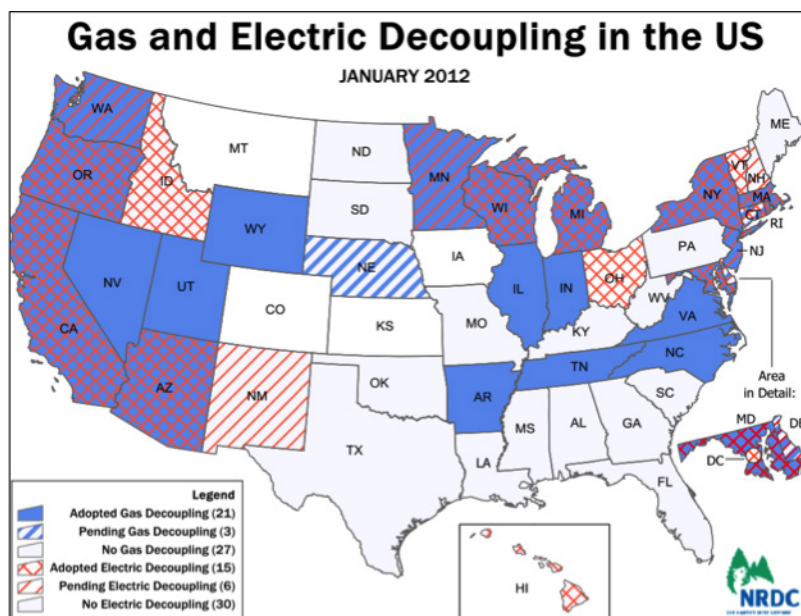
## 9. Reward Utilities for Energy Efficiency Over All Supply-Side Resources

Promote legislation requiring state Public Utilities Commissions to :

- De-couple revenues from commodity sales in states that have not yet done so.
- Promote regulatory approaches that hold utilities harmless for any loss of revenue due to lower commodity sales and also provide financial incentives for continuous reductions.
- Allow utilities to recover DSM costs as a basic cost of service or utility regulatory asset rather than as a special charge.

Historically, utility revenues have been based on energy sales (kWh of electricity and cubic feet of natural gas). As such, revenues rose with sales volume, encouraging utilities to sell more and more energy. On that basis, utilities have no incentive – indeed, they have a disincentive – to promote energy efficiency. Rate decoupling eliminates this by, as the name suggests, decoupling utility revenues from the volume of energy sold. Decoupling works because – aside from fuel costs, which are generally passed through to customers – a utility’s costs are driven by its asset base, and are therefore largely fixed. Although decoupling is becoming more common, as of January 2012, 30 states still had no electric decoupling and 27 states have no natural gas decoupling (see Figure ).<sup>22</sup>

Figure 4: Status of utility rate decoupling



It is important to note that decoupling simply gets utilities to the point of indifference with respect to energy efficiency (from a purely financial perspective).

To maximize energy efficiency gains, decoupling should be paired with another policy such as an EERS requirement or requirement to purchase “all cost effective” energy efficiency.

Some states have gone significantly further in implementing incentives to align increased efficiency with utility financial performance.<sup>23</sup> In addition, some have argued that including the costs of energy efficiency programs in base rates renders energy efficiency more of a core component of utility service and not an ‘add on’.

22. NRDC, Electric and Gas Decoupling. <http://www.nrdc.org/energy/decoupling/>

23. A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs, and Observations. Pamela Morgan, Graceful Systems, LLC. Revised May, 2013. <http://switchboard.nrdc.org/blogs/rcavanagh/decouplingreportMorganfinal.pdf>

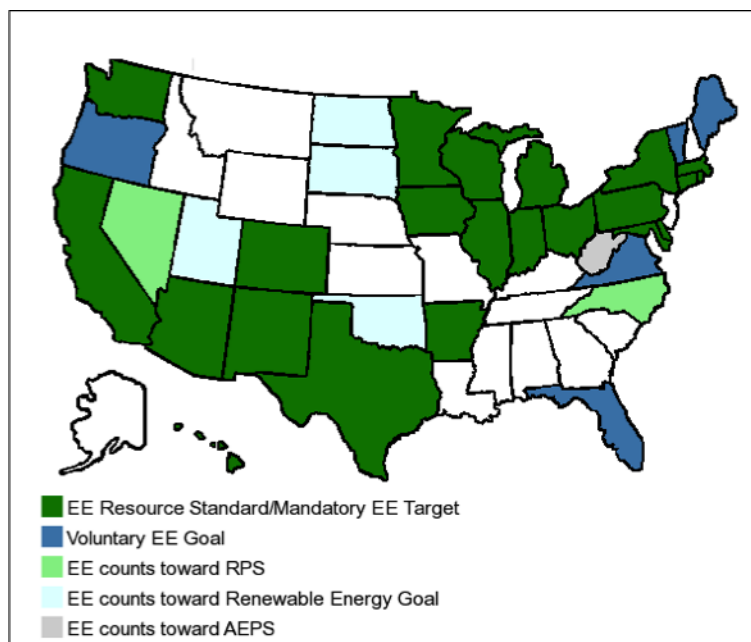
## 10. Establish Energy Efficiency Resource Standards in States that Don't Have One, and Defend Existing Standards

Establish utility efficiency goals in every state.

- Goals should be based on overall savings by some date with incremental growth in annual savings. Legislation may identify specific annual goals, or direct a PUC to establish such goals.
- Require utilities to achieve all cost-effective energy efficiency wherever possible and specify the preferred cost-effectiveness test.

EERS policies have emerged as a primary driver for the U.S. energy efficiency industry. According to ACEEE, as of September 2012, 24 states had established energy savings targets and corresponding funding.<sup>24</sup> Approximately 240 million Americans now live in states with an EERS. While this represents an important achievement, there remains significant room for improvement, most notably in the Southeast and some Great Plains states (Figure ).<sup>25</sup>

**Figure 5: Status of State Energy Efficiency Resource Standards**



24. ACEEE. State EERS Policy Brief. <http://aceee.org/files/pdf/policy-brief/state-eers-summary-0912.pdf>

25. Center for Climate Solutions. <http://www.c2es.org/us-states-regions/policy-maps/energy-efficiency-standards>

### Eligible Utility DSM Lighting Savings Going Away

Even in mature efficiency markets, some utilities are achieving as much as two-thirds of their electrical energy efficiency goals through lighting programs. With new federal lighting efficiency standards taking effect, many lighting programs will no longer generate EERS-eligible savings. Thus, it will be incumbent upon regulators, utility managers and advocates to continue to find new sources of savings for achieving increasing efficiency targets even as they are no longer able to rely on what was historically an important measure.

In response to a marked reduction in eligible savings from DSM lighting programs due to higher federal lighting efficiency standards, legislation should require the adoption of all best practice energy efficiency programs in order to fill the savings gap. Such programs include behavioral information feedback reports, building energy code support and combined heat and power programs. A complete list of best practice energy efficiency programs is contained in the Southwest Energy Efficiency Project's \$20 Billion Bonanza report (Pgs vii-x) and below.

<b>Model Residential Programs</b>	<b>Model Commercial Programs</b>
Low-Income Weatherization	Commercial new Construction and Code Support
Multi-Family Retrofit	Small Business Direct Install
Residential New Construction and Code Support	Prescriptive Rebates and Upstream Incentives
Home Retrofit	Custom Retrofits, Process Efficiency, and Self Direct
Retail Products	Computer Efficiency and Other Plug Loads
Residential Lighting	Commercial Lighting Redesign
Refrigeration and Freezer Recycling	Retrocommissioning
Residential Cooling	
Water Heating	
Home Energy Reports	



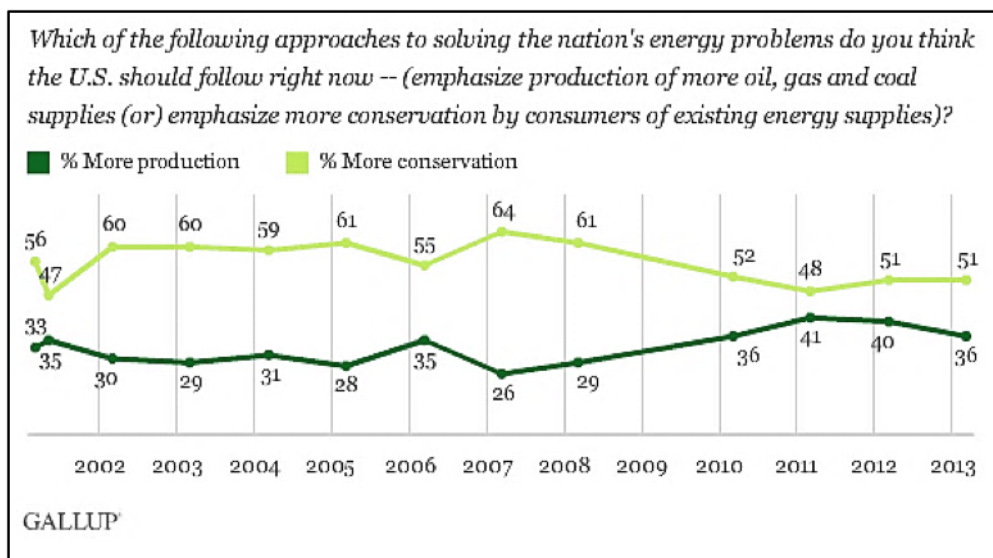
## 11. Utilize Stronger Messaging for Efficiency

Promote messaging of the benefits from energy efficiency to consumers and policymakers in terms of:

- increasing U.S. productivity
- reducing energy bills and saving households money
- boosting customer engagement and satisfaction
- mitigating risk to consumers
- matching household and businesses investment in efficiency

A majority of consumers are in favor of conserving energy over traditional forms of energy production, and have been so for the last decade, according to Gallup surveys taken over the past decade (Figure 2).<sup>26</sup> There is a disconnect between this sentiment and customer action on energy efficiency. Utility and third party administered energy efficiency programs typically see very low participation rates, commonly in the single digits,<sup>27</sup> yet more than 51% of consumers think the U.S. should implement more conservation. Significant expansion of the energy efficiency marketplace can only happen if the messaging behind the benefits of energy efficiency is strengthened.

**Figure 4: Consumer support for energy efficiency**



While some advocates may tout the environmental benefits of energy efficiency, the economic benefits in cost savings and employment impacts of putting energy dollars into efficiency retrofits instead of fuels resonate with both consumers and policy makers. For example, the Alliance to Save Energy estimates that a doubling of US energy productivity would put \$1,040 per year back in the pocket of the average American household.<sup>28</sup> In addition, a growing energy efficiency services sector would be a source of increased employment. The energy efficiency industry has seen significant job growth over the last decade and is projected to grow as much as 11% per year, to up to 1.2 million total jobs by 2020.<sup>29</sup>

Framing the benefits of energy efficiency with targeted, audience-specific messaging around cost savings, keeping energy dollars local, and job creation can boost participation in energy efficiency programs and bolster support for expanded energy efficiency funding among legislators and regulators.

26. GALLUP, Energy. <http://www.gallup.com/poll/2167/energy.aspx>

27. ACEEE, Frontiers of Energy Efficiency: Next Generation Programs Reach for Higher Energy Savings. January, 2013. <http://www.aceee.org/sites/default/files/publications/researchreports/u131.pdf>

28. ACEEE. State EERS Policy Brief. <http://aceee.org/files/pdf/policy-brief/state-eers-summary-0912.pdf>

29. Center for Climate Solutions. <http://www.c2es.org/us-states-regions/policy-maps/energy-efficiency-standards>



## FEDERAL POLICY PROPOSALS

### Base Race to the Top awards on 'biggest improvement' on the ACEEE Scorecard.

"I'm also issuing a new goal for America. Let's cut in half the energy wasted by our homes and businesses over the next 20 years. We'll work with the states to do it. Those states with the best ideas to create jobs and lower energy bills by constructing more efficient buildings will receive Federal support to help make that happen."

- President Barack Obama (2013 State of the Union Address).

Shortly after the President established this goal, it was announced that \$200 million would be made available to states to compete for an energy productivity Race to the Top program.<sup>30</sup> Recognizing that this program will attempt to leverage private sector investment, the efficiency business community should play a direct role in recommending policy goals for states. One option may be to use select categories (such as those highlighted here) within the well-established ACEEE State Scorecard as policy scoring criteria.

### Policy Forum Conclusions

- Use specific categories in the ACEEE Scorecard<sup>31</sup> as scoring criteria for Race to the Top awards. Allocate some awards based on 'biggest improvement' on the Scorecard.
- Allow municipalities to participate in Race to the Top, even within states that have declined to compete. Set a deadline by which states would have to express their intent to compete.

Policy Category & Subcategory	Maximum Score	% of Total Points
<b>Utility and Public Benefits Programs and Policies</b>	<b>20</b>	<b>40%</b>
<i>Electric Efficiency Program Budgets</i>	5	10%
<i>Natural Gas Efficiency Program Budgets</i>	3	6%
<i>Annual Savings from Electric Efficiency Programs</i>	5	10%
<i>Energy Efficiency Resource Standards (EERS)</i>	4	8%
<i>Performance Incentives and Fixed Cost Recovery</i>	3	6%
<b>Transportation Policies</b>	<b>9</b>	<b>18%</b>
<i>Greenhouse Gas (GHG) Tailpipe Emissions Standards</i>	2	4%
<i>Integration of Transportation and Land Use Planning</i>	2	4%
<i>Vehicle Miles Traveled (VMT) Targets</i>	2	4%
<i>Transit Funding</i>	1	2%
<i>Transit Legislation</i>	1	2%
<i>Complete Streets Policies</i>	0.5	1%
<i>High-Efficiency Vehicle Consumer Incentives</i>	0.5	1%
<b>Building Energy Codes</b>	<b>7</b>	<b>14%</b>
<i>Level of Stringency</i>	5	10%
<i>Enforcement/Compliance</i>	2	4%
<b>Combined Heat and Power</b>	<b>5</b>	<b>10%</b>
<i>Interconnection Standard</i>	1	2%
<i>Treatment under Energy Efficiency Resource Standards (EERS)/Renewable Portfolio Standards (RPS)</i>	1	2%
<i>Financial Incentives</i>	1	2%
<i>Net Metering Rules</i>	0.5	1%
<i>Emissions Treatment</i>	0.5	1%
<i>Financing Assistance</i>	0.5	1%
<i>Additional Policy Support</i>	0.5	1%
<b>State Government Initiatives</b>	<b>7</b>	<b>14%</b>
<i>Financial and Information Incentives</i>	3	6%
<i>"Lead by Example" Efforts in State Facilities and Fleets</i>	2	4%
<i>Research, Development, and Demonstration (RD&amp;D)</i>	2	4%
<b>Appliance and Equipment Efficiency Standards</b>	<b>2</b>	<b>4%</b>
<b>Maximum Total Score</b>	<b>50</b>	<b>100%</b>

30. GALLUP, Energy. <http://www.gallup.com/poll/2167/energy.aspx>

31. ACEEE, Frontiers of Energy Efficiency: Next Generation Programs Reach for Higher Energy Savings. January, 2013. <http://www.aceee.org/sites/default/files/publications/researchreports/u131.pdf>





## 12. Incorporate Energy Efficiency as an allowable component in the development of State Implementation Plans.

The US EPA entered into two settlement agreements in late 2010 that will result in rulemakings to address greenhouse gas emissions from stationary sources.<sup>32</sup> The first rulemaking will address a New Source Performance Standard (NSPS) for new generation as proposed under Clean Air Act Section 111(b). A subsequent rulemaking will address existing generation plants under Section 111(d) of the Clean Air Act.

On the same day as his speech outlining a Climate Action Plan for the nation, President Obama directed the Environmental Protection Agency to issue revised draft rules for new power plants by September 20, and draft regulations for existing power plants by June 20 of next year. Regarding existing plants, he directed the agency to “develop approaches that allow the use of market-based instruments, performance standards, and other regulatory flexibilities.”<sup>33</sup>

Energy efficiency holds great promise as a means of achieving compliance for states under the standards for existing power plants. In the event that these rulings are upheld and state utilities and regulators are given the option of developing a State Implementation Plan (SIP) to achieve the directives of the order, the EPA should allow energy efficiency to be included in SIPs to maximize their use in achieving the EPA’s emissions objectives.

### Policy Forum Conclusions

FEDERAL - Introduce a resolution, which encourages the EPA to allow verified end-use efficiency savings as an allowable compliance option for State Implementation Plans as authorized by Section 111(d) of the Clean Air Act.

STATE - State Legislatures should instruct State Public Utilities Commissions to open relevant dockets (rulemakings, investigatory dockets, etc.) to establish clear parameters for qualified energy efficiency programs that could contribute to incremental savings in state SIP plans.

## NRDC Proposed Energy Efficiency Process Standards under Section 111(d) of the Clean Air Act

1. *State air regulator (in consultation with the public utility commission and other relevant state/local agencies) determines the energy efficiency savings baseline... State air regulator submits the baseline and qualifying programs and standards with savings estimates to EPA as part of the state’s Section 111(d) plan.*
2. *Savings are generated through state or local regulator approved energy efficiency programs and state or local building codes or standards, using independently verified measurement methodologies and assumptions approved by EPA.*
3. *EM&V is conducted and verified savings are submitted to state air regulator by the administrator of the qualifying state or local energy efficiency programs and standards.*
4. *State air regulator establishes emission credits (tons) by multiplying the verified energy savings above the baseline (MWh) by the applicable state emissions standard (tons/MWh) in accordance with EPA guidelines.*
5. *These emission credits are distributed to sources that need them through a process determined by the state.*
6. *Credits submitted by power plant owners as part of their compliance demonstration are retired by state air regulator.*

32. ACEEE. State EERS Policy Brief. <http://aceee.org/files/pdf/policy-brief/state-eers-summary-0912.pdf>

33. Center for Climate Solutions. <http://www.c2es.org/us-states-regions/policy-maps/energy-efficiency-standards>



## CONCLUSIONS

Most state regulatory bodies derive their purpose and mandate from state statute. As such, State Legislatures have a critical role in establishing state objectives for utility commission decisions. Beyond simply dependable, reliable and low cost service, the state's utility consumers have an interest in ensuring energy delivery and consumption is managed at the highest level of efficiency and maximum system productivity. By establishing these objectives, the state sends a clear message to the industries that supply energy efficiency services that there is a long term market to support private investment.

Key state legislative actions include:

1. Direct PUCs to open proceedings pertaining to energy/water nexus and prioritize low water consumptive resources and water conservation measures in areas of the country where water is a critical and restricted resource.
2. Incorporate an evaluation and measurement of customer satisfaction in performance metrics for utility return on equity calculations.
3. Differentiate programs between customer classes and centralize consumer engagement with energy efficiency measures.
4. Establish consumer risk mitigation as a statutory directive to commissioners when making long term investment decisions and resource allocations.
5. Modify cost effectiveness tests for efficiency programs to align investments in efficiency and energy benefits with comparative investments in generation by switching from a total resource cost test to a utility costs test.
6. Establish a state policy for energy efficiency conservation code to be included in the state and local building codes and updated on a regular basis.
7. Establish energy efficiency investments as highest return investment for investor owned utilities.
8. Establish Energy Efficiency Resource Standards
9. Instruct PUCs to open dockets to evaluate incorporation of energy efficiency in state implementation plans as authorized through section 111(d) of the Clean Air Act to respond to potential adoption of new standards regulating greenhouse gas emissions from the EPA.



**About Advanced Energy Economy (AEE)**

Advanced Energy Economy is a national association of businesses and business leaders who are making the global energy system more secure, clean, and affordable. The vision of AEE is a prosperous world that runs on secure, clean, affordable energy. Its mission is to transform public policy to enable the rapid growth of advanced energy companies. AEE's members include companies involved in technology development; component and product manufacturing; project and infrastructure development; equipment installation; and engineering, finance, and advisory services, among other activities that help business and residential consumers meet their energy needs in better ways. <http://aee.net>

**About the Center for the New Energy Economy (CNEE)**

Colorado State University's Center for the New Energy Economy was founded in February 2011. CNEE is a privately funded initiative to support the growth of a clean energy economy across the United States. The Center is led by former Colorado Governor Bill Ritter and is assisted by some of the nation's most important thought leaders in clean energy research, development and commercialization. The Center works directly with Governors, legislators, regulators, planners, policy makers and other decision makers with technical assistance to help them create the policies and practices that will facilitate America's transition to a clean energy economy. The mission of the Center is to incorporate best practices from around the nation and world to accelerate the development of a New Energy Economy. <http://cnee.colostate.edu>

