

IS ENERGY EFFICIENCY LOSING ITS EFFICIENCY?

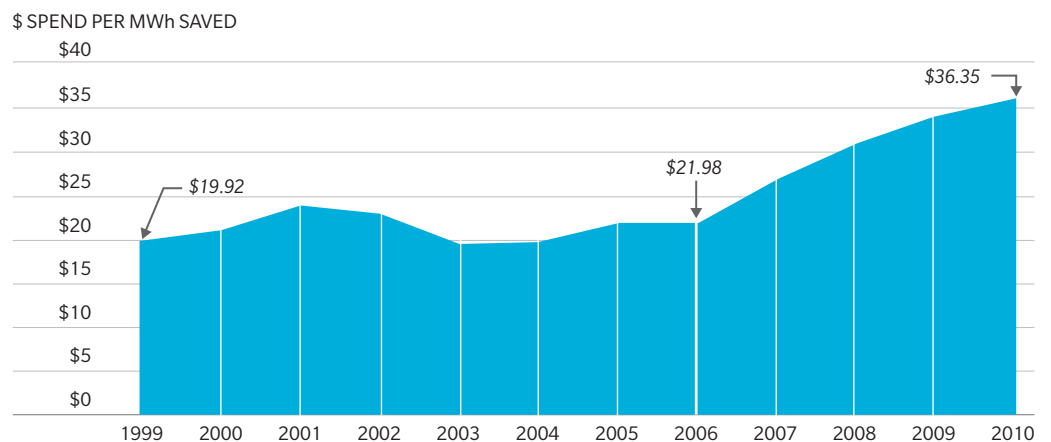
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Energy efficiency programs at utilities have been around for decades, are growing in popularity, and are facing increasingly aggressive targets from regulators. Recent research by Oliver Wyman, however, indicates that without innovative approaches to energy efficiency offerings, these programs are destined to become too expensive and fall short of their goals.

Decades of attempting to increase energy efficiency have proven that it is hard to capture energy efficiency gains—and only getting harder. Utility industry expenditures on energy efficiency programs have increased by more than 550 percent since 1999, with decreasing productivity for each dollar invested: The average cost of a MWh of consumption avoided has increased by 82 percent, from approximately \$20/MWh in 1999 to \$36/MWh in 2010, as depicted in Exhibit 1.

EXHIBIT 1: US UTILITY ENERGY EFFICIENCY PROGRAMS: COST PER MWH



Source: EIA Electric Power Annual 2010, EIA form 861, Oliver Wyman analysis.

While this basic metric does not reflect all of the moving parts that underlie it, the key insight it provides is that the United States is spending more on an average annual basis per MWh of energy efficiency savings. This significant change in cost per MWh may reflect several factors, including the extension of energy efficiency investment horizons driven by new Energy Efficiency Resource Standards (EERS) and the decreasing availability of low-cost, high-impact upgrades in jurisdictions with energy efficiency programs of long tenure. Nevertheless, energy efficiency is a critical part of the energy resource mix and is still one of the most effective source of “new generation.” It is imperative therefore that all stakeholders (utilities, regulators, legislators, etc.) continue pushing to lower the barriers to greater energy efficiency gains at efficient investment levels.

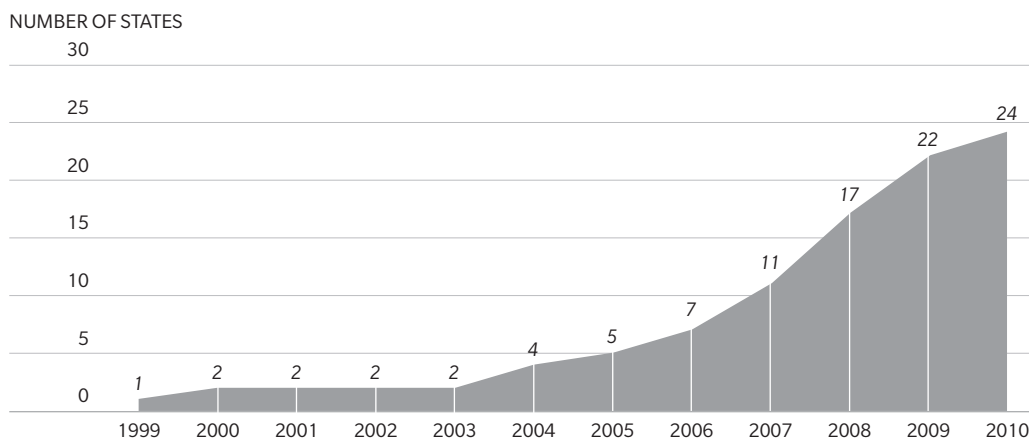
CURRENT STATUS OF ENERGY EFFICIENCY PROGRAMS

Energy efficiency programs have grown aggressively in recent years, as measured by program spending, states implementing mandates, and savings achieved. These programs are popular because they are the one form of energy policy that can deliver results in all regions of the country, in contrast to a renewable portfolio standard (RPS), which is highly dependent on the availability of renewable resources such as wind or solar radiation. If current program cost trends continue, however, energy efficiency initiatives could quickly become less attractive.

States have approached energy efficiency in recent years by developing Energy Efficiency Resource Standards (EERS). These policies mandate that administering bodies (typically utilities) achieve a certain level of energy savings each year of the program through customer initiatives. Typically, these programs have multi-year structures, with goals increasing each year.

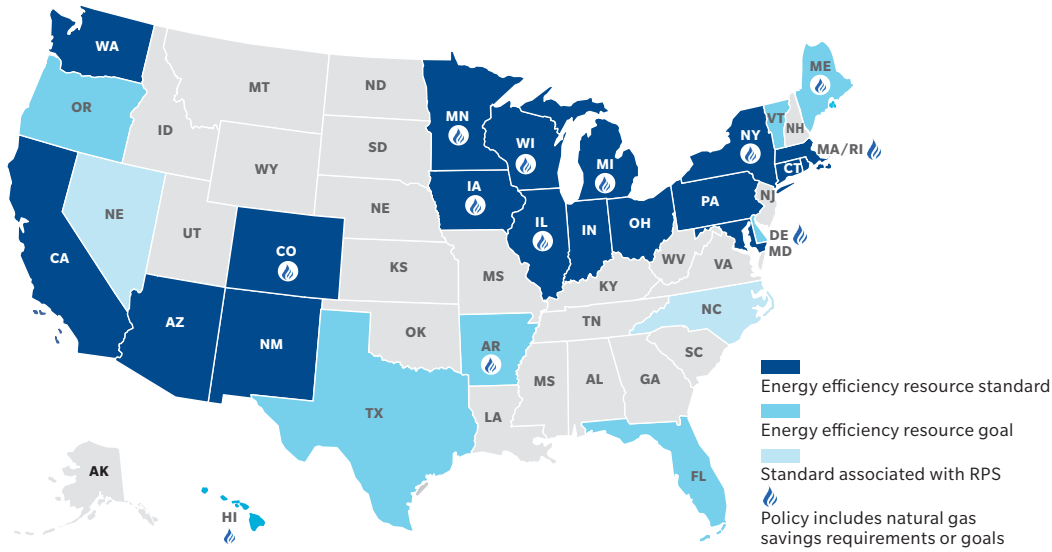
Texas was the first state to implement an EERS in 1999, and the model has rapidly spread across the country: The number of new states introducing these policies accelerated through the late 2000s, as shown in Exhibit 2. In total, 24 states now have some form of energy efficiency standards or goals (Exhibit 3).

EXHIBIT 2: GROWTH OF ENERGY EFFICIENCY RESOURCE STANDARDS (EERS), 1999-2010



Source: EIA, ACEEE, state report cards, Oliver Wyman analysis.

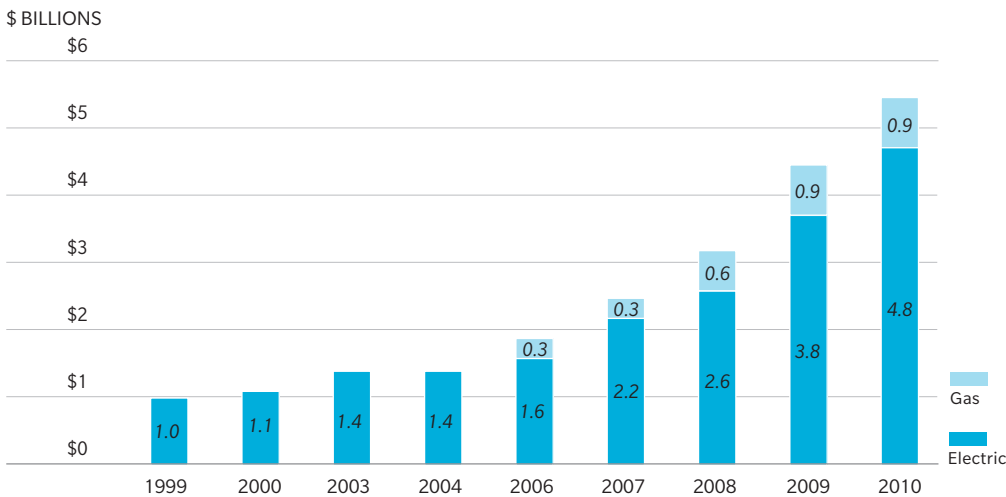
EXHIBIT 3: CURRENT STATES WITH EERS OR ENERGY GOALS



Source: DSIRE database, FERC, ACEEE.

In corresponding fashion, the growth in spending on these programs has been dramatic (Exhibit 4). Spending has increased from under \$1 billion in 1999 to almost \$5.7 billion in 2010 as new programs and new targets have been set by each state. (Spending is associated with the costs of administering the programs and incentives to entice consumers to adopt energy efficient initiatives.)

EXHIBIT 4: ENERGY EFFICIENCY PROGRAM SPENDING, 1999-2010



Source: EIA, ACEEE, IEE state report cards, Oliver Wyman analysis.

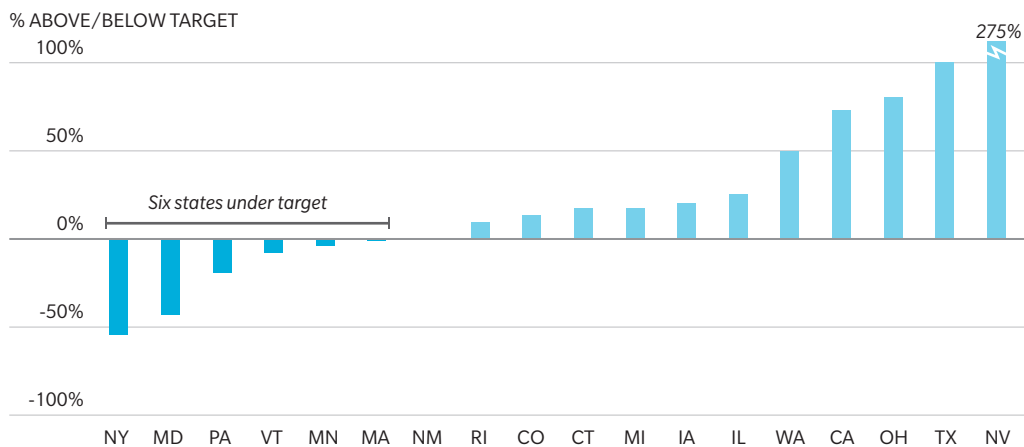
Note: Various sources have slightly different results in spending.

While this growth in spending indicates a willingness to make significant investments in improving efficiency, it doesn't necessarily mean that EERS goals will be met, as coordinated, efficient spend is often difficult to achieve with such a rapid ramp up. As noted, there is a growing body of evidence that aggressive targets are becoming increasingly difficult to meet as energy efficiency spending becomes less efficient. For example, of the 20 states that have had an EERS in place for more than 2 years, six states (30 percent) did not meet their targets in the most recent reference year (Exhibit 5).

The potential for missing targets under accelerating goals and the associated financial consequences is concerning to a number of utilities. They are now looking for ways to make up lost ground or to continue to achieve targets in an ever more challenging environment. But without changes to energy efficiency programs, each incremental gain likely will become more difficult to justify for the consumer and the utility.

EXHIBIT 5: ACHIEVEMENT OF EERS TARGETS (2009, 2010)

States with EERS for more than 2 years



Note: HI and NC not available. Source: EIA, ACEEE, state report cards, Oliver Wyman analysis.

WHY ARE ENERGY EFFICIENCY GOALS SO HARD TO ACHIEVE?

Energy efficiency program goals are becoming harder to achieve because the industry is running into a combination of structural, economic, and regulatory barriers:

- **The “low hanging fruit” is gone.** Several waves of effort have captured those sources of energy efficiency and demand reduction that were the most economical and achievable with existing technology. This is particularly true in the large commercial and industrial segments, where rate design and rational decision making traditionally drive long-term investment decisions such as energy management systems, lighting retrofits, building envelope improvements, and energy-intensive equipment upgrades. The early days of energy efficiency programs often achieved great success, as they addressed latent demand from eager customers. Many utilities have found, however, that the same broad market approaches lose effectiveness over time, as they are not specific enough to address the needs of different customer segments with different motivations.
- **Electricity and natural gas have been “set and forget” commodities.** There is just not enough money involved for most residential and small business consumers to focus on energy efficiency. Electricity and natural gas are categorized as “low involvement” purchases, meaning that consumers do not focus on energy as a means of reducing expenditures, particularly if the achievable savings will not significantly impact lifestyles or business operations.
- **Traditional utility marketing and data analytics lack sophistication.** Utility marketing organizations typically have lacked the deep customer data analytics and target marketing capabilities necessary to impact mass market customers at scale. When utilities face the added challenge that energy efficiency is not seen as “cool,”¹ the need for break-through marketing intensifies.
- **Energy efficiency offers do not speak to customers.** The average residential consumer moves every 7 years in North America, and thus is unlikely to be willing to invest in complex energy efficiency upgrades with long payback periods. Utility marketing messages and offerings are often complex and burdened by regulatory requirements that result in the offer’s value proposition being far from clear and installation and operation less than compelling.
- **Mixed incentive and regulatory recovery structures.** Currently, utilities in certain jurisdictions are not properly incented to invest significantly in energy efficiency efforts. As demonstrated recently by the limited traction of utility energy efficiency programs in Maryland, less constructive regulatory treatment can negatively impact program effectiveness. In cases where regulatory recovery and penalties are properly aligned with shareholder and consumer interests, energy efficiency program performance typically is strong (e.g., in California).

¹ See the Oliver Wyman article “Making Efficiency Cool,” published in PUF, and available at <http://www.oliverwyman.com/3850.htm>.

- **Recessions can override consumers' desire for social good.** Social benefits are notoriously difficult to quantify and, as a result, energy efficiency programs designed to capitalize on the social benefits of reduced energy consumption are often the first casualties during economic downturns. If energy costs rise as a result of efficiency programs, impacting economic recovery and growth, energy efficiency becomes more difficult to justify for regulators, utilities, and consumers.
- **Energy efficiency programs are not aligned with overall customer experience management.** In many cases, energy efficiency programs are set up and run separately from the rest of a utility's customer service efforts. As a result, efficiency efforts often are not aligned with overall customer strategy and planning, business processes, and organizations, diminishing these programs' overall effectiveness.

These barriers to capturing targeted energy efficiency gains will need to be overcome to achieve the efficiency goals planned for the next 10 years. Many of these barriers are interrelated and reducing or eliminating them will require a holistic solution. In particular, regulators and utilities will need to work collaboratively with technology partners and vendors to create better solutions for improving energy usage.

WHAT MITIGATION STRATEGIES CAN ADDRESS THESE BARRIERS?

Oliver Wyman's research into each of the barriers listed above has identified a range of mitigation strategies that could make energy efficiency targets more achievable in the future. Based on our analysis, we have identified the following five key strategies for accelerating the success of utility energy efficiency programs:

- Better customer data analytics
- Creative and customized offerings
- More powerful communication campaigns
- Integration with overall utility customer experience management
- Updated regulatory incentives and recovery methodologies

Each of these approaches can be pursued individually; however, the best approach will be one that blends these options to create a customized strategy, with a goal of positioning a utility for success in accelerating its energy efficiency objectives.

BETTER CUSTOMER DATA ANALYTICS

Historically, utilities have had little need to perform sophisticated customer marketing, as electricity and gas have generally been one-size-fits-all products. Utility information systems have not been designed for customer analytics, marketing skill sets have not been consistently fostered at utilities, and delivery organizations have not been designed with the flexibility to deliver differentiated services.

Energy efficiency requires a new approach. Customers all have different needs and wants, even utility customers, and efficiency is an “optional” product. Residential customers have different viewpoints about efficiency as well as differing energy usage characteristics. Commercial customers will have different appliance portfolios. Thus, as with any product or service, understanding what individual customer groups want can lead to the development of more tailored efficiency programs that are likely to achieve much broader acceptance.

Utilities need to develop as much granular detail as possible on customers. This will require substantial analysis of customer information that utilities often have not had in-house or have not consistently gathered and maintained. It also requires appropriate segmentation of the customer base so that programs can be developed based on recursive customer learnings developed from customer interactions.

Utilities need to develop as much granular detail as possible on customers

CREATIVE AND CUSTOMIZED OFFERINGS

It is a given that customers will be more interested in efficiency programs that target their specific needs and address their unique values. One option worth exploring is to provide incentives based on an individual customer segment’s portfolio of products/appliances. A restaurant for example, will have a very different product/appliance portfolio from a hospital. This approach not only will deliver more value for customers (and increase adoption), it can help utilities better allocate resources and achieve more energy savings per dollar spent.

Another example would be a customized program designed to incent the best appliance replacements, thereby achieving greater energy savings. In the restaurant example, a customer replacing an older less efficient model of ice machine would receive a greater monetary incentive than one replacing a newer, more efficient model.

Of course, the utility will need to receive a larger “credit” for the replacement to make this effort pay off. Most utility programs are not structured to handle this kind of differentiated benefit stream, as it requires the appropriate system infrastructure to track, appropriate program structures to receive differentiated energy savings credits (which often requires regulatory involvement), and the appropriate processes in place to manage this approach on a large scale. For these reasons, this approach requires developing a medium- to long-term outlook regarding cost/benefit tradeoffs.

Another often overlooked component of program design is the maintenance offer. Maintenance activities are one of the most effective ways of increasing the energy efficiency of appliances, yet these often are not even on a utility's radar. Incorporating activities such as replacing filters, lubricating parts, and cleaning components in the customized offer portfolio, particularly for commercial customers, can be an effective means of achieving major energy reductions. This is also a longer-term item, since it requires the involvement of various parties, including regulators.

Utilities and regulators need to develop incentives that recognize efficiency costs are rising

MORE POWERFUL COMMUNICATION CAMPAIGNS

To improve results, utilities will need to develop more targeted marketing and communications campaigns and continuously monitor results. Customers will respond most actively of course to the messages and media/channels that most appeal to them. For example, "environmentally concerned" customers and businesses could be targeted with messages that focus more on sustainability and less on saving money. E-savvy customers (e.g., those with online billing) can be contacted via email, text message, and online social media channels, rather than paper mailings.

Learning from your customers is the first step in this process, and developing campaigns with that knowledge is crucial. Tracking the results of each approach and offer is a critical step in refining the learning process and the targeting strategy.

INTEGRATION WITH OVERALL UTILITY CUSTOMER EXPERIENCE MANAGEMENT

Within a utility, energy efficiency needs to be managed on an equal footing with other key customer touchpoints. In thinking about how it comprehensively manages all of its key customer interactions, a utility needs to consider the role of energy efficiency in its planning and service delivery decision-making. Integration has clear customer as well as shareholder benefits. In our recent study, utilities that managed the overall customer experience holistically, including energy efficiency, achieved earned returns on equity that were 1.7 percentage points higher than average performers.²

UPDATE REGULATORY INCENTIVES AND COST RECOVERY MECHANISMS

Today's regulatory incentive structures range from the innovative to the punitive. What is clear from Oliver Wyman's research, however, is that states with the best performance have incentive structures that align with shareholder and consumer interests.

² See the Oliver Wyman perspective "What's Your Share of the \$5 Billion Prize?" available at <http://www.oliverwyman.com/4647.htm>.

Utilities need to work collaboratively with their regulators to benefit from lessons learned with regard to innovative and effective regulatory structures, with the goal of tailoring incentive structures to meet local market conditions. More traditional regulatory structures for energy efficiency tended to focus on preventing “free riders” and abuse by utilities. Today’s utility industry needs incentives that recognize that the marginal cost of energy efficiency is continuing to rise, and that future program gains are likely to be more expensive than previous efforts. In particular, incentives need to drive new investment toward energy efficiency and away from other infrastructure alternatives.

Oliver Wyman’s analysis of regulatory incentives and recovery mechanisms found that all but six states offer some form of direct cost recovery. The vast majority, however, offer just one other incentive, such as return recovery (four states), lost revenue recovery (eight states), decoupling (19 states), or performance incentives (24 states).

We know that when energy efficiency is the most profitable investment available to utility management, utilities will allocate their resources and creativity to driving greater levels of energy efficiency, despite existing barriers. If on the other hand, energy efficiency gains are susceptible to subjective reviews, an environment will be created where the incremental dollar of investment is likely to go elsewhere.

FINDING THE BEST SOLUTIONS

At an overall level, utilities will need to tailor mitigation solutions to their specific market and regulatory conditions. Oliver Wyman has observed an increase in program adoption of as much as 50 percent for leading players utilizing advanced customer data analytics and targeted marketing. Creative and customized offerings can add significant additional value, particularly by targeting appliance replacement and maintenance. Finally, collaborative efforts with regulators to agree on a definition for energy efficiency, clear program objectives, and well designed regulatory structures can enable the creation of innovative incentives and cost recovery methods that align shareholder, regulator, and consumer interests. All of these types of changes will be needed to reverse the trend of rapidly increasing costs, while achieving tomorrow’s energy efficiency targets.

This is the first in a series of articles; the remainder of the series will provide more detail on Oliver Wyman’s perspective on how utilities can specifically put the above mitigation strategies into effect.

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Oliver Wyman's Energy team helps utilities and related energy companies address strategic and operational challenges through proven, results-oriented approaches. We have completed hundreds of engagements for more than 75 leading electric, gas, and water utilities across North America, Europe, and the Middle East creating sustainable shareholder value.

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