

ENVIRONMENTAL LAW

Expert Analysis

State Public Utility Commissions' Powers to Advance Energy Efficiency

Improving energy efficiency is widely acknowledged as the most economical way to reduce greenhouse gas emissions and the other adverse environmental impacts of fossil fuel use. Indeed, efficiency measures often yield net cost savings over a fairly short period of time.¹

The United States lacks a comprehensive regulatory program for energy efficiency. The Environmental Protection Agency and the Department of Transportation set fuel economy standards for motor vehicles (and on Aug. 28, 2012, finalized a major tightening of those standards). The Department of Energy sets many appliance standards and administers certain grant and research programs. The Federal Energy Regulatory Commission has the primary role for, among other things, wholesale electricity transmission.

Often overlooked are the roles of the state public utility commissions (PUCs). They have long been in charge of setting retail electricity rates and service standards. In recent years, many of them have launched programs and set policies to encourage or require the electric and gas utilities that they regulate to use energy more efficiently or to help their customers do so.

This column summarizes the variety of powers and techniques of PUCs to advance energy efficiency.²

Energy Efficiency Targets

Mandates or targets have been shown to be effective drivers of private action for efficiency. The most popular method is Energy Efficiency Resource Standards (EERS), which have been adopted by 24 states. These usually come in the form of state legislation or a PUC order that require covered utilities to achieve a set level of electricity savings over a given period of time relative to a defined baseline.

There are many design variables in EERS: the stringency of the selected targets, to whom the

By
Michael B. Gerrard



target applies (utilities, specially created energy efficiency utilities, or state agencies), what counts toward the target (end-use efficiency measures at utility customers' homes or facilities, advancement of building codes and appliance standards, or more efficient generation, transmission and distribution infrastructure).

For example, the Arizona Corporation Commission adopted an EERS in 2010 under its state constitutional authority to ensure "just and

Mandates or targets have been shown to be effective drivers of private action for efficiency.

reasonable rates." The EERS requires investor-owned utilities to achieve increasing levels of annual savings, starting at 1.25 percent and ramping up to 2 percent in 2014, resulting in 22 percent cumulative savings by 2020. Utilities must file plans every other year, and may recover the costs of approved cost-effective energy efficiency investments. If successfully implemented, the Arizona program will save ratepayers \$9 billion, and may defer the need for new baseload power plants by 10 years.

States vary in the extent to which their EERS standards are firm, flexible, or voluntary. Quantifying and validating efficiency savings for the purpose of measuring compliance with the EERS is complex and can be costly.

As an alternative to EERS, some states require utilities to pursue "all cost effective energy efficiency." This general mandate to pursue all energy efficiency that is cost-effective is translated into numerical goals through an annual process run by the PUCs. California uses a variation called

a "loading order," which requires utilities, when planning their supply, to consider cost-effective efficiency before all other resources.

Some states, rather than having an EERS, include energy efficiency as an eligible resource in their renewable portfolio standards, which require utilities to procure a certain portion of their electricity from renewable sources. Some states cap the percentage of the renewable portfolio standards that can be met through efficiency.

Funding

Energy efficiency measures often have an up-front cost, and PUCs determine the manner in which this cost can be charged to ratepayers. The percentage of utility revenue that goes to efficiency projects varies widely; Vermont, Massachusetts and California (in that order) have the highest.

Higher levels of spending on energy efficiency do not correlate with higher electricity bills. One recent study found that many of the states with the lowest spending on energy efficiency have some of the highest average monthly bills.³ Ultimately they should lead to long-term savings in electricity bills.

In order to ensure that ratepayer dollars are wisely spent, the PUCs have developed a number of tests that compare the net present value of a stream of benefits over the life of an investment with the net present value of a corresponding stream of costs. These tests all rely on a calculation of avoided costs—i.e., what would have been spent if the efficiency measure had not been implemented.

These are the principal mechanisms by which this funding is provided: system benefits charges (surcharges on rates); rate case recovery (funding through general rate cases); tariff riders (periodic rate adjustments that account for the difference between the planned costs that are included in rates, and actual costs); and capitalization (treating efficiency costs like investments in physical capacity, as opposed to rate case recovery, which treats them as expenses).

As one example of a system benefits charge, the Massachusetts Department of Public Utilities requires utilities to levy a \$0.0025 per kWh monthly charge on all customer bills to fund energy efficiency programs. This money is supplemented by revenues from the Regional Greenhouse Gas Initiative and other sources.

MICHAEL B. GERRARD is Andrew Sabin Professor of Professional Practice and director of the Center for Climate Change Law at Columbia Law School, and senior counsel to Arnold & Porter. He is author of *The Law of Clean Energy: Efficiency and Renewables* (American Bar Association 2011). SHELLEY WELTON, Earth Institute Climate Law Fellow and deputy director of the Center for Climate Change Law, assisted in the preparation of this article.

Utility Incentives

Traditionally, the more electricity is consumed, the more money the utilities make. Thus they have little incentive (beyond compliance with clear cut mandates) to encourage efficiency. A number of methods have been adopted to change the utilities' incentives.

"Decoupling" is the principal device. The usual method of ratemaking is to set rates by adding up the expected expenses, the allowable return, and taxes (collectively, the revenue requirement) and dividing the sum by the number of units expected to be sold. Utilities can then increase revenue by lowering expenses or increasing sales. In order to decouple utility revenues from sales, revenue is fixed during a rate case, and price adjustments are allowed between rate cases to approximate that level of revenue. Thus revenue is tied only to expenses, so that utilities have no incentive to increase electricity demand.

California, the nation's leader in energy efficiency, has one of the oldest decoupling programs; it dates back to 1982. Utilities submit their revenue requirements and estimated sales to regulators at the beginning of a rate case. California's PUC sets each utility's rates and then adjusts them regularly to ensure that revenue requirements are met. Any excess revenue is credited back to consumers, and if there is a shortfall, the utility later recovers from customers.

An alternative to decoupling is the "Lost Revenue Adjustment Mechanism," which attempts to determine the portion of lost revenue that results from energy efficiency measures, and recovers that revenue through rate adjustments.

In order to go beyond reducing the disincentive to engage in efficiency measures, and to give utilities an affirmative incentive, a variety of performance incentives have been attempted. These incentives tend to fall within three categories:

Performance Targets. These measure utility performance against certain energy efficiency metrics, and offer them payment for a percentage of the project budget based on performance.

Shared Benefit. Shareholders receive some of the net benefit of efficiency programs, typically measured by comparing program spending to the avoided cost of investments in increasing supplies. Rewards to utilities increase if they go above established savings targets. In some programs, there are also penalties for falling below the targets.

Rate of Return. Utilities earn an increased rate of return on equity for capitalized energy efficiency costs, such that investments in efficiency are especially attractive. (However, this requires the costs to be capitalized rather than treated as expenses, which is an unattractive feature.)

On-Bill Financing

This allows customers to finance energy efficiency improvements through their utility bills. This reduces the transaction costs of loans, and helps customers unable to access other forms of credit.

At least 20 states now require or encourage their utilities to implement on-bill financing programs.

Some of these were authorized by the legislatures, and others by the PUCs.

Some PUCs give utilities an incentive to develop on-bill financing programs by extending EERS credits to utilities that implement such programs.

From the consumers' perspective, on-bill financing is comparable to the Property Assessed Clean Energy (PACE) programs that many states developed to allow homeowners to finance home energy efficiency improvements through extra payments on their real estate tax bills. However, the use of this technique for residential properties was derailed due to objections from the Federal Housing Finance Agency that in most programs, the PACE loans would have a senior position in the event of bankruptcy, which would create risks that Fannie Mae and Freddie Mac mortgages (holding more junior positions) would not be repaid. On-bill financing provides an alternative means of allowing homeowners to borrow the money for efficiency efforts.

Low-Income Programs

Some states have developed low-income efficiency programs that are targeted to customers below a set income level. The funding for these programs comes from ratepayers.

The most common kinds of assistance provided are weatherization, energy education, and energy-efficient appliance upgrades.

Siting of Facilities

Utilities typically must obtain a "certificate of public convenience and necessity" before they may build new generation or transmission. These certificates are granted either by the PUCs or special siting boards. When assessing need, some of these bodies require the consideration of energy efficiency as an alternative to new construction. Even if efficiency does not eliminate the need for facilities, it may lead to smaller facilities.

Merger Review

Some state PUCs have the power to approve or disapprove utility mergers, and may condition approval on certain actions that are in the public interest. In 2011 Maryland used its authority over Exelon Corporation's planned takeover of Constellation Energy to require development of a certain amount of renewable energy, and also the contribution of a substantial sum to help spur energy efficiency and demand-side management.

State NEPA Review

Nineteen states require formal environmental impact reviews before certain state actions can be taken, modeled after the National Environmental Policy Act (NEPA). In several states, these laws apply to PUCs. Such reviews typically involve an evaluation of feasible alternatives, and energy efficiency can be included in this category.

Energy Efficiency Utilities

Some states have established non-profit ratepayer-funded entities that formulate, publicize, and administer energy efficiency programs. The first such entity was Efficiency Vermont, established in 1999. Using specific legislative

authority, Vermont's Public Service Board approved a settlement among the state's electric utilities, various consumer and environmental groups, and the Department of Public Service (Vermont's PUC). The entity is funded with a fee on each customer's energy bill. It provides energy efficiency services to customers. The costs of the electricity savings effected by Efficiency Vermont have been found to be significantly lower than the cost of generating a like amount of power.

More recently, Delaware has established a "Sustainable Energy Utility," which is legislatively directed to provide market development for high-efficiency alternatives in energy-using equipment, to provide expanded weatherization services, and to promote a certain amount of renewable energy applications on customer sites. So far, this entity has focused mainly on retrofitting existing public buildings.



1. McKinsey Global Energy and Materials, *Unlocking Energy Efficiency in the U.S. Economy* (2009).

2. For more detail and for extensive citations, see Columbia Law School Center for Climate Change Law, *Public Utility Commissions and Energy Efficiency: A Handbook of Legal & Regulatory Tools for Commissioners and Advocates* (August 2012), available at https://www.law.columbia.edu/null/download?&exclusive=filemgr.download&file_id=611933.

3. Michael Sciortino et al., "Opportunity Knocks: Examining Low-Ranking States in the State Energy Efficiency Scorecard" (American Council for an Energy-Efficient Economy, May 2012), pp. 9-11.