EPA Clean Energy-Environment Technical Forum
Aligning Utility Incentives with Investment in Energy Efficiency
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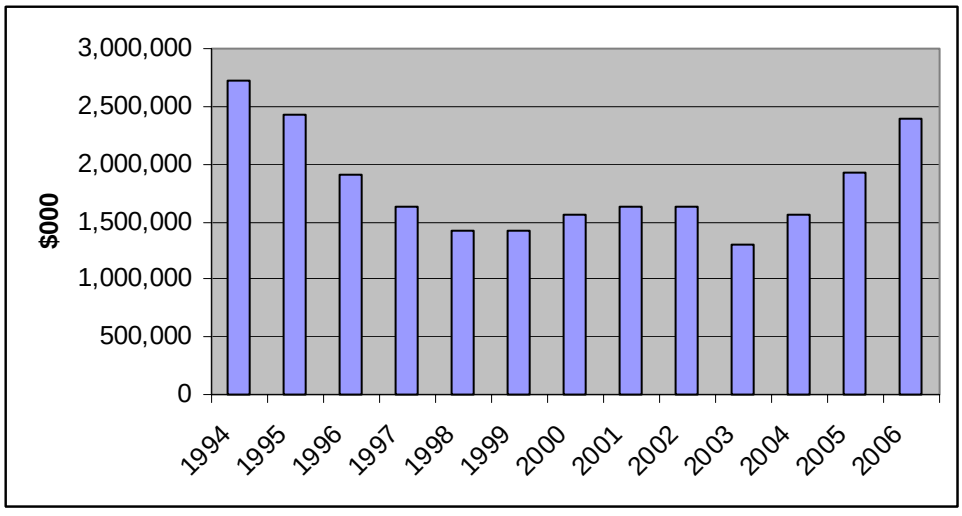
Produced for an EPA State Clean Energy-Environment Technical Forum, this summary is extracted from ***Aligning Utility Incentives with Investment in Energy Efficiency,*** *one of a series of reports produced as part of the National Action Plan for Energy Efficiency (for the full report, go to* http://www.epa.gov/cleanenergy/actionplan/resources.htm*). The report describes the financial effects on a utility of its spending on energy efficiency programs, how those effects could constitute barriers to more aggressive and sustained utility investment in energy efficiency, and how adoption of various policy mechanisms can reduce or eliminate these barriers. It also provides a number of examples of such mechanisms drawn from the experience of utilities and states.*

There are a number of possible regulatory mechanisms to consider for aligning utility incentives with energy efficiency investments, including ensuring recovery of prudently incurred energy efficiency program costs, addressing the typical utility throughput incentive, and providing utility incentives for the successful management of energy efficiency programs. Determining which mechanism will work best for any given jurisdiction is a process that takes into account the type and financial structure of the utilities in that jurisdiction; existing statutory and regulatory authority; and the size of the energy efficiency investment. The net impact of an energy efficiency cost recovery and performance incentives policy will be affected by a wide variety of other rate design, cost recovery, and resource procurement strategies, as well as broader considerations, such as the rate of demand growth and environmental and resource policies.

Actual and prospective investment in energy efficiency programs is on a steep climb. Data recently compiled by the Consortium for Energy Efficiency (2006) show total estimated electric utility energy efficiency spending exceeding $2.3 billion in 2006, on par with peak energy efficiency spending in the mid-1990s.[1] The rise in energy efficiency investment has produced an accompanying resurgent interest in how the costs of utility-sponsored energy efficiency programs are recovered, and in the question of whether utilities' financial interests are aligned with increased efficiency spending.

Figure 1. Annual Electric Utility Spending on Energy Efficiency

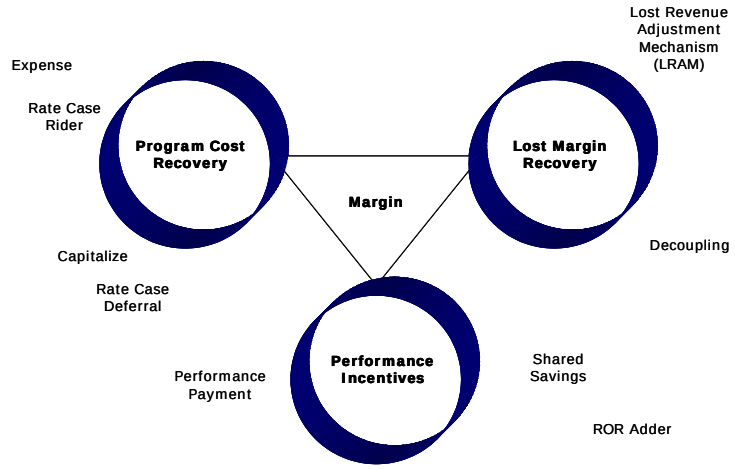


[1] The decline in energy efficiency spending in the mid-to late-1990s generally corresponded with the rise in interest in utility restructuring and the notion that the restructured utility was no longer the appropriate vehicle for encouraging customer energy efficiency.

The Financial and Policy Context

Utility spending on energy efficiency programs can affect the utility's financial position in three ways: (1) through recovery of the direct costs of the programs; (2) through the impact of reduced sales; and (3) through the effects on shareholder value of energy efficiency spending versus investment in supply-side resources. The relative importance of each effect to a utility is measured by its impact on earnings. A variety of mechanisms have been developed to address these impacts, as illustrated in Figure 2.

Figure 2: Program Cost Recovery and Performance Incentive Options



How these impacts are addressed creates the incentives and disincentives for utilities to pursue energy efficiency investment. The relative importance of each of these depends on specific context—the impacts of energy efficiency programs will look different to gas and electric utilities, and to investor-owned, publicly owned, and cooperatively owned utilities. Comprehensive policies addressing all three levels of impact generally are considered more effective in spurring utilities to pursue efficiency aggressively. Ultimately, however, it is the cumulative net effect on utility earnings or net income of a policy that will determine the alignment of utility financial interests with energy efficiency investment. The same effect can be achieved in different ways, not all of which will include explicit mechanisms for each level.

Program Cost Recovery

The most immediate impact is that of the direct costs associated with program administration (including evaluation), implementation, and incentives to program participants. Reasonable opportunity for program cost recovery is a necessary condition for utility program spending, as failure to recover these costs produces a direct dollar-for-dollar reduction in utility earnings, all else being equal, and sends a discouraging message regarding further investment.

Program costs can be recovered as expenses or can be treated like capital items by accruing program costs with carrying charges, and then amortizing the balances with recovery over a period of years. Each of these tools can have different financial impacts, but the key factors in any case are the determination of the prudence of program expenditures and the timing of cost recovery. How each of these is addressed will affect the perceived financial risk of the policy. The more uncertain the process for determining the prudence of expenditures, and the longer the time between an expenditure and its recovery, the greater the perceived financial risk and the less likely a utility will be to aggressively pursue energy efficiency.

Lost Margin Recovery and the Throughput Incentive

The second impact, sometimes called the *lost margin recovery* issue is the effect on utility financial margins caused by the energy efficiency-produced drop in sales. Most utility rate designs attempt to recover a portion of fixed costs through volumetric prices—a price per kilowatt-hour or per therm. These prices are based on an estimate of sales: *price = revenue requirement/sales*. If actual sales are either higher or lower than the level estimated when prices are set, revenues will be higher or lower. All else being equal, if an energy efficiency program reduces sales, it reduces revenues proportionately, but fixed costs do not change. Less revenue, therefore, means that the utility is at some risk for not recovering all of its fixed costs. Ultimately, the drop in revenue will impact the utility's earnings for an investor-owned utility, or net operating margin for publicly and cooperatively owned utilities.

Many observers would agree that significant and sustained investment in energy efficiency by utilities, beyond that required under statute or order, will not occur without implementation of some type of mechanism to ensure recovery of lost margins. Others argue that the lost margin issue cannot be treated in isolation; margin recovery is affected by a wide variety of factors, and special adjustments for energy efficiency constitute single issue ratemaking.

Care should be taken to ensure that two very different issues are not incorrectly treated as one. The first issue is whether a utility should be compensated for the under-recovery of fixed costs when energy efficiency programs reduce sales below the level on which current rates are based. *Lost revenue adjustment mechanisms* (LRAMs) have been designed to estimate and collect the margin revenues that might be lost due to a successful energy efficiency program. Few states currently use these mechanisms.

The second issue is whether potential lost margins should be addressed as a stand-alone matter of cost recovery or by *decoupling* revenues from sales—an approach that fundamentally changes the relationship between sales and revenues, and thus margins. Decoupling not only addresses lost margin recovery, but also removes the *throughput incentive*—the incentive for utilities to promote sales growth, which is created when fixed costs are recovered through volumetric charges. The throughput incentive has been identified by many as the primary barrier to aggressive utility investment in energy efficiency.

Utility Performance Incentives

Under traditional regulation, investor-owned utilities earn returns on capital invested in generation, transmission, and distribution. Unless given the opportunity to profit from the energy efficiency investment that is intended to substitute for this capital investment, there is a clear financial incentive to prefer investment in supply-side assets, since these investments contribute to enhanced shareholder value. Providing financial incentives to a utility if it performs well in delivering energy efficiency can change that business model by making efficiency profitable rather than merely a break-even activity.

The three major types of performance mechanisms have been most prevalent include:

- Performance target incentives
- Shared savings incentives
- Rate of return adders

Performance target incentives provide payment—often a percentage of the total program budget—for achievement of specific metrics, usually including savings targets. Most states providing such incentives set performance ranges; incentives are not paid unless a utility achieves some minimum fraction of proposed savings, and incentives are capped at some level above projected savings.

Shared savings mechanisms provide utilities the opportunity to share with ratepayers the net benefits resulting from successful implementation of energy efficiency programs. These structures also include specific performance targets that tie the percentage of net savings awarded to the percentage of goal achieved. Some, but not all shared savings mechanisms include penalty provisions requiring utilities to pay customers when minimum performance targets are not achieved.

Rate of return adders provide an increase in the return on equity (ROE) applied to capitalized energy efficiency expenditures. This approach currently is not common as a performance incentive for several reasons. First, this mechanism requires energy efficiency program costs to be capitalized, which relatively few utilities prefer. Second, at least as applied in several cases, the adder is not tied to performance. On the other hand, capitalization, in theory, places energy efficiency on more equal financial terms with supply-side investments to begin with. Thus, any adder could be viewed more as a risk-premium for investment in a regulatory asset.

The premise that utilities should be paid incentives as a condition for effective delivery of energy efficiency programs is not universally accepted. Some argue that utilities are obligated to pursue energy efficiency if that is the policy of a state, and that performance incentives require customers to pay utilities to do something that they should do anyway. Others have argued more directly that the basic business of a utility is to deliver energy, and that providing financial incentives over-and-above what could be earned by efficient management of the supply business simply raises the cost of service to all customers and distorts management behavior.

The following Table summarizes the current level of state activity with regard to the financial mechanisms described above.

Table 1. The Status of Energy Efficiency Cost Recovery and Incentive Mechanisms for Investor-Owned Utilities

	Direct Cost Recovery			Fixed Cost Recovery		Performance Incentives
State	Rate Case	SBC	Tariff Rider/ Surcharge	Decoupling	Lost Revenue Adjustment Mechanism	
Alabama	Yes					
Alaska						
Arizona	Yes (electric)	Yes (electric)		Pending (gas)		Yes (electric)
Arkansas				Yes (gas)		
California	Yes	Yes		Yes		Yes
Colorado	Yes		Yes	Pending		Yes
Connecticut		Yes (electric)			Yes	Yes
Delaware	Yes			Pending		
District of Columbia	Yes			Pending (electric)		
Florida			Yes (electric)			
Georgia	Yes					Yes (electric)
Hawaii				Pending (electric)		Yes

	Direct Cost Recovery			Fixed Cost Recovery		Performance Incentives
State	Rate Case	SBC	Tariff Rider/ Surcharge	Decoupling	Lost Revenue Adjustment Mechanism	
Idaho	Yes (electric)			Yes (electric)		
Illinois	Yes (electric)					
Indiana	Yes			Yes (gas)	Yes	Yes
Iowa	Yes		Yes			
Kansas						Yes
Kentucky			Yes	Pending (gas)	Yes	Yes
Louisiana						
Maine		Yes (electric)				
Maryland				Yes (gas) Pending (electric)		
Massachusetts		Yes (electric)		Pending (electric)	Yes	Yes (electric)
Michigan				Pending (gas)		
Minnesota	Yes			Yes		Yes
Mississippi	Yes					
Missouri				Yes (gas)		
Montana	Yes (gas)	Yes (electric)				Yes
Nebraska						
Nevada	Yes (electric)			Yes (gas)		Yes (electric)
New Hampshire		Yes (electric)		Pending (electric)		Yes (electric)
New Jersey		Yes		Yes (gas) Pending (electric)		
New Mexico	Yes			Pending (gas)		
New York		Yes (electric)		Yes		
North Carolina				Yes (gas)		
North Dakota						
Ohio			Yes (electric)	Yes (gas)	Yes (electric)	Yes (electric)
Oklahoma						
Oregon		Yes		Yes (gas)		
Pennsylvania	Yes					
Rhode Island		Yes (electric)		Yes		Yes
South Carolina						Yes

	Direct Cost Recovery			Fixed Cost Recovery		Performance Incentives
State	Rate Case	SBC	Tariff Rider/ Surcharge	Decoupling	Lost Revenue Adjustment Mechanism	
South Dakota						
Tennessee						
Texas	Yes					
Utah	Yes (electric)		Yes (electric)	Yes (gas)		
Vermont		Yes (electric)			Yes	Yes
Virginia				Pending (gas)		
Washington	Yes (electric)		Yes (electric)	Yes (gas)		
West Virginia						
Wisconsin	Yes (electric)	Yes (electric)		Pending (electric)		
Wyoming						

Understanding Objectives— Developing Policy Approaches That Fit

The overarching goal in every jurisdiction that considers an energy efficiency investment policy is to generate and capture substantial net economic benefits. Achieving this goal requires aligning utility financial interests with investment in energy efficiency. The right combination of cost recovery and performance incentive mechanisms to support this alignment requires a balancing of a variety of more specific objectives common to the ratemaking process. Each of these objectives is not given equal weight by policymakers, but most are given at least some consideration in virtually every discussion of cost recovery and performance incentives.

- **Strike an Appropriate Balance of Risk/Reward Between Utilities/Customers**
- **Promote Stabilization of Customer Rates and Bills**
- **Stabilize Utility Revenues**
- **Administrative Simplicity and Managing Regulatory Costs**

Finding the right policy balance hinges on a wide range of factors that can influence how a cost recovery and performance incentive measure will actually work. These factors will include: industry structure (gas or electric utility, public or investor-owned, restructured or bundled); regulatory structure and process (types of test year, current rate design policies); and utility operating environment (demand growth and volatility, utility cost and financial structure, structure of the energy efficiency portfolio). Given the complexity of many of these issues, most states defer to state utility regulators to fashion specific cost recovery and performance incentive mechanism(s).

Final Thoughts

The history of utility energy efficiency investment is rich with examples of how state legislatures, regulatory commissions, and the governing bodies of publicly and cooperatively owned utilities

have explored their cost recovery policy options. As these options are reconsidered and reconfigured in light of the trend toward higher utility investment in energy efficiency, this experience yields several lessons with respect to process.

- **Set cost recovery and incentive policy based on the direction of the market's evolution.** The rapid development of technology, the likely integration of energy efficiency and demand response, continuing evolution of utility industry structure, the likelihood of broader action on climate change, and a wide range of other uncertainties argue for cost recovery and incentive policies that can work with intended effect under a variety of possible futures.
- **Apply cost recovery mechanisms and utility performance incentives in a broad policy context.** The policies that affect utility investment in energy efficiency are many and varied and each will control, to some extent, the nature of financial incentives and disincentives that a utility faces. Policies that could impact the design of cost recovery and incentive mechanisms include those having to do with carbon emissions reduction; non-CO_2 environmental control, such as NO_X cap-and-trade initiatives; rate design; resource portfolio standards; and the development of more liquid wholesale markets for load reduction programs.
- **Test prospective policies.** Complex mechanisms that have many moving parts cannot easily be understood unless the performance of the mechanisms is simulated under a wide range of conditions. This is particularly true of mechanisms that rely on projections of avoided costs, prices, or program impacts. Simulation of impacts using financial modeling and/or use of targeted pilots can be effective tools to test prospective policies.
- **Policy rules must be clear.** There is a clear link between the risk a utility perceives in recovering its costs, and disincentives to invest in energy efficiency. This risk is mitigated in part by having cost recovery and incentive mechanisms in place, but the efficacy of these mechanisms depends very much on the rules governing their application. In some states, significant expenditures on energy efficiency by utilities are precluded by lack of clarity regarding regulators' authority to address one or more of the financial impacts of these expenditures.
- **Collaboration has value.** The most successful and sustainable cost recovery and incentive policies are those that are based on a consultative process that, in general, includes broad agreement on the aims of the energy efficiency investment policy.
- **Flexibility is essential.** Most of the states that have had significant efficiency investment and cost recovery policies in place for more than a few years have found compelling reasons to modify these policies at some point. These changes reflect an institutional capacity to acknowledge weaknesses in existing approaches and broader contextual changes that render prior approaches ineffective. Policy stability is desirable, and policy changes that have significant impacts on earnings or prices can be particularly challenging. However, it is the stability of impact rather than adherence to a particular model that is important in addressing financial disincentives to invest.

- **Culture matters.** One important test of a cost recovery and incentives policy is its impact on corporate culture. A policy providing cost recovery is an essential first step in removing financial disincentives associated with energy efficiency investment, but it will not change a utility's core business model. Earnings are still created by investing in supply-side assets and selling more energy. Cost recovery plus a policy enabling recovery of lost margins might make a utility indifferent to selling or saving a kilowatt-hour or therm, but still will not make the business case for aggressive pursuit of energy efficiency. A full complement of cost recovery, lost margin recovery, and performance incentive mechanisms can change this model, and likely will be needed to secure sustainable funding for energy efficiency at levels necessary to fundamentally change resource mix.

Notes

1 Revenue requirement refers to the sum of the costs that a utility is authorized to recover through rates.

2 For example, see the National Association of State Utility Consumer Advocates' Resolution on Energy Conservation and Decoupling, June 12, 2007.

References

Consortium for Energy Efficiency (2006). *U.S. Energy-Efficiency Programs: A $2.6 Billion Industry.* <http://www.cee1.org/ee-pe/ee-pe-main.php3>

Resources for Further Information

National Action Plan for Energy Efficiency Resources

(These reports and tools can be found at:
http://www.epa.gov/cleanenergy/actionplan/resources.htm)

Guide to Resource Planning with Energy Efficiency - Describes the key issues, best practices, and main process steps for integrating energy efficiency into resource planning. The Guide details how to use a variety of methods to help ensure that energy efficiency programs provide a resource as dependable and valuable to utilities and their customers as any supply-side resource. The Guide organizes the planning process into ten important steps, each with their own associated technical issues, best practices, and information resources.

Guide for Conducting Energy Efficiency Potential Studies - Identifies three main applications for energy efficiency potential studies and provides examples of each, along with a description of how key decisions regarding scope and methodology were made to best achieve the studies' objectives. It also provides an overview of the main analytical steps in conducting a potential study and introduces several related concepts.

Model Energy Efficiency Program Impact Evaluation Guide - Describes a structure and several industry-standard approaches for calculating energy, demand, and emissions savings resulting from facility (non-transportation) energy-efficiency programs that are implemented by cities, states, utilities, companies, and other similar entities. By utilizing best practices and consistent, standard procedures, evaluations can support the adoption, continuation, and expansion of efficiency programs.

Building Codes and Energy Efficiency Fact Sheet - Building energy codes establish a minimum level of energy efficiency for residential and commercial buildings. This can reduce the need for energy generation capacity and new infrastructure while reducing energy bills. States and municipalities are updating existing codes, adopting new codes, and expanding code programs to improve compliance and achieve real results.

Energy Efficiency Benefits Calculator - Can be used to help educate stakeholders on the broad benefits of energy efficiency. It provides a simplified tool to demonstrate the business case for energy efficiency from the perspective of the consumer, the utility, and society. It can be adapted to apply to various utility structures, policy mechanisms, and energy growth scenarios.

Other Resources

Aligning Utility Interests with Energy Efficiency Objectives: A Review of Recent Efforts at Decoupling and Performance Incentives, Martin Kushler, Dan York, and Patti Witte, American Council for an Energy Efficient Economy, Report Number U061, October 2006.

Decoupling for Electric and Gas Utilities: Frequently Asked Questions (FAQ), September 2007, available at http://www.naruc.org.

Regulatory Assistance Project, http://www.raponline.org.

Ken Costello, *Revenue Decoupling for Natural Gas Utilities – Briefing Paper*, National Regulatory Research Institute, April 2006.

American Gas Association, *Natural Gas Rate Round-Up, Update on Decoupling Mechanisms – April 2007*.

DOE, *State and Regional Policies that Promote Energy Efficiency Programs Carried Out by Electric and Gas Utilities: A Report to the United States Congress Pursuant to Section 139 of the Energy Policy Act of 2005*, March 2007.

Revenue Decoupling: A Policy Brief of the Electricity Consumers Resource Council, January 2007.