6.2 Utility Incentives for Demand-Side Resources

Policy Description and Objective

Summary

Regulators in leading states are reworking traditional ratemaking structures to better align utilities' investment incentives and related decisions with state interest in providing affordable and reliable energy supplies with low environmental impacts. Financial incentive structures for utilities can help align company profit goals with the delivery of cost-effective demand-side resources such as energy efficiency and clean DG. Traditional regulatory approaches link a utility's financial health to the volume of electricity or gas sold via the ratemaking structure, thus providing a disincentive to investment in cost-effective demand-side resources that reduce sales. The effect of this linkage is exacerbated in the case of distribution-only utilities, since the revenue impact of electricity sales reduction is disproportionately larger for utilities without generation resources. Aligning utility aims by decoupling profits from sales volumes, ensuring program cost recovery, and providing shareholder performance incentives can "level the playing field" to allow for a fair, economically based comparison between supply- and demand-side resource alternatives and can yield a lower cost, cleaner, and more reliable energy system.

While some utilities manage aggressive energy efficiency and clean distributed generation (DG) programs as a strategy to diversify their portfolio, lower costs, and meet customer demand, many still face important financial disincentives to implementing these programs. Regulators can establish or reinforce several policies to help address these disincentives, including decoupling of profits from sales volumes, ensuring program cost recovery, and defining shareholder performance incentives.

Objective

Financial incentive structures for utilities can be designed to encourage utilities to actively promote implementation of energy efficiency and clean DG when it is cost-effective to do so. This includes first minimizing utilities' financial disincentives to deliver energy efficiency and DG resources and then instituting complementary incentive structures to promote and establish high-performing energy efficiency and DG resources. These utility disincentives can be reduced through the elimination or minimization of "throughput disincentives" embedded in traditional ratemaking mechanisms. Complementary incentive structure objectives include ensuring recovery of costs for effective, economic energy efficiency and DG programs and rewarding utility management and shareholders for well-run and well-performing energy efficiency and DG installation and promotion.

Benefits

States have found that a well-designed framework for utility incentives helps utilities increase the use of energy efficiency and clean DG, which reduces the demand for central station electric generation, lowers consumption and demand for natural gas, reduces air pollution, and decreases the load on transmission and distribution systems.

Such a utility incentive structure can also lead to an increase in the reliability of electric power and gas delivery systems resulting from the increased use of energy efficiency and DG resources. Delivering cost-effective energy efficiency or DG resources reduces a utility's need to build expensive new central station power plants or transmission lines—or expand existing ones—and thus maximizes the value of a utility's existing gas or electric capacity. Energy efficiency and clean DG programs can also lower overall production costs and average prices.

Background on Utility Incentive Structures

A large majority of electric utility costs, including costs for non-jurisdictional energy service companies such as municipalities and cooperatives, are fixed to pay for capital-intensive equipment such as wires, poles, transformers, and generators. Utilities recover most of these fixed costs through volumetric-based rates, which change with each major "rate case," the traditional and dominant form of state-level utility ratemaking. Between rate cases, however, utilities have an implicit financial incentive to see increased regulated retail sales of electricity (relative to forecast levels, which set "base" rates) and to maximize the "throughput" of electricity across their wires. This ensures recovery of fixed costs and maximizes allowable earnings; however, it also creates a disincentive to investing in energy efficiency during the time between rate cases. Recovery of variable costs in some states is assured through regular (usually quarterly) adjustments (e.g., for fuel) and thus does not impose analogous disincentives. Utilities with regular adjustments for variable fuel expenses have an even greater disincentive for energy efficiency than utilities that do not.

With traditional ratemaking, there are few or no mechanisms to prevent "over-recovery" of these fixed costs, which occurs if sales are higher than projected, and no way to prevent "under-recovery," which can happen if forecast sales are too optimistic (such as when weather or regional economic conditions deviate from forecasted or "normal" conditions). This dynamic creates an automatic disincentive for utilities to promote energy efficiency or DG, because those actions—even if clearly established and agreed-upon as a less expensive means to meet customer needs—will reduce the amount of money the utility can recover toward payment for fixed costs.

If ratemaking explicitly accounted for this effect, for example, by allowing more frequent true-ups to rates to reflect actual sales and actual fixed cost revenue requirements, then this disincentive would be removed or minimized and energy efficiency options would then be able to compete on a level playing field with alternative supply options. A simplified illustration of this decoupling rate effect is shown in Table 6.2.1. Separate, supplemental shareholder incentive mechanisms, such as performance-based return on equity (ROE) guarantees, could then operate more effectively in the absence of the disincentive that the standard ratemaking otherwise imposes on utilities. Frequent true-ups and shareholder incentives are more desirable relative to high fixed rates since fixed rates greatly diminish customers' incentives for energy efficiency.

Table 6.2.1: Simplified Illustration of Decoupling Rate Effect

Rates and fixed cost recovery during initial period:			
	Sales At Forecast	Sales Below Forecast	Sales Above Forecast
Sales Forecast	100 kWh		
Fixed Cost[a]	$6.00		
Variable Cost[b]	$0.04 per kWh		
Total Variable Cost	$4.00	$3.80	$4.20
Total Costs [Fixed + Variable]	$10.00	$9.80	$10.20
Authorized Rate [Costs Sales Forecast]	$0.100 per kWh		
Actual Sales	100 kWh	95 kWh	105 kWh
Actual Revenues	$10.00	$9.50	$10.50
Fixed Cost Recovery [Revenue - Cost]	Even $0.00	Under ($0.30)	Over $0.30
Rates in next period after decoupling true up:			
	Sales At Forecast	Sales Below Forecast	Sales Above Forecast
Sales Forecast[c]	100 kWh		
Total Costs[c]	$10.00		
Revenue Requirement [Total Costs - Fixed Cost Recovery]	$10.00	$10.30	$9.70
New Authorized Rate [Revenue Requirement Sales Forecast]	$0.100 per kWh	$0.103 per kWh	$0.097 per kWh

[a] Fixed costs include return on rate base.
[b] Variable costs include operating costs of power plants.
[c] Assumes values from initial period for illustrative purposes.

Sources: PG&E 2003, Bachrach et al. 2004.

States with Utility Incentive Programs for Demand-Side Resources

States have found three steps for leveling the playing field for demand-side resources through improved utility rate design:

- *Remove Disincentives*. Some states have removed structures that discourage implementation of energy efficiency and clean DG through "decoupling" efforts that divorce profits from sales volumes.
- *Recover Costs.* Some states have given utilities a reasonable opportunity to recover the costs of energy efficiency and clean DG programs (i.e., cost recovery of implementation costs). Cost recovery alone does not remove the financial disincentive needed to further expand a utility's commitment to maximizing energy efficiency and clean DG.
- *Reward Performance.* Some states have created shareholder incentives for implementing high-performance energy efficiency and clean DG programs. These incentives are usually in the form of a higher return on investment for energy efficiency if the programs demonstrate measured or verified success, i.e., an actual reduction of energy use from program implementation. States can also reward performance by using shared-savings mechanisms.

The first mechanism is critically important to allowing the second and third mechanisms to be meaningful. Removing disincentives first gives utility management a consistent framework for providing reliable, economic electric or gas service because it allows utilities to profitably invest in energy efficiency and DG resources without being penalized for lower sales volumes. Utilities can then aim to achieve implementation of high-performing energy efficiency and DG resources through superior management practices that result in assured cost recovery and lead to financial rewards for shareholders.

These three approaches, especially when used together, have helped provide a level playing field for demand-side resource consideration. A number of states, including Arizona, California, Connecticut, Colorado, Idaho, Maine, Massachusetts, Minnesota, New Hampshire, New Mexico, New York, Nevada, Oregon, Rhode Island, and Washington, have had or are reviewing one or more of these forms of decoupling and incentive regulation.

Remove Disincentives Through Decoupling or Lost Revenue Adjustment Mechanisms

Traditional electric and gas utility ratemaking mechanisms unintentionally include financial disincentives for utilities to support energy efficiency and DG. This misalignment can be remedied through "lost revenue" adjustment mechanisms or mechanisms that "decouple" utility revenues from sales.

Lost Revenue Adjustment Mechanisms (LRAMs) allow a utility to directly recoup the "lost" revenue associated with not selling additional units of energy because of the success of energy efficiency or DG programs in reducing electricity consumption. The amount of lost revenue is typically estimated by multiplying the fixed portion of the utility's prices by the energy savings from energy efficiency programs or the energy generated from DG. This amount of lost revenues is then directly returned to the utility. Some states have adopted these mechanisms, but experience has shown that LRAM can result in utilities being allowed more lost revenues than the energy efficiency program actually saved because the lost revenues are based on projected savings. Furthermore, because utilities still earn increased profits on additional sales, this approach leaves a disincentive for utilities to implement additional energy efficiency or support independent energy efficiency activities. The LRAM approach provides limited incentives and does not influence efficient utility operations company-wide like other decoupling approaches.

Decoupling is an alternative means of eliminating lost revenues that might otherwise occur with energy efficiency and DG resource implementation. Decoupling is a variation of more traditional performance-based ratemaking (PBR). Under traditional ratemaking, a utility's rates are set at a fixed amount until the next rate case occurs at an undetermined point in time. Under traditional PBR, a utility's rates are typically set for a predetermined number of years (e.g., five years). This type of PBR is referred to as a "price cap" and is intended to provide utilities with a direct incentive to lower cost (and thereby increase profits) during the term of the price cap.

Decoupling is a variation of traditional PBR, and it sometimes is referred to as a particular form of "revenue cap." Under this approach, a utility's *revenues* are fixed for a specific term, in order to match the amount of anticipated costs incurred plus an appropriate profit. Alternately, a utility's revenues per customer could be fixed, thus providing an automatic adjustment to revenues to account for new or departing customers. If the utility can reduce its costs during the term through energy efficiency or DG, it will be able to increase its profits. Furthermore, if a utility's sales are reduced by any means, including efficiency, DG, weather, or economic swings, its revenues and therefore its profits will not be affected. This approach completely eliminates the throughput disincentive and does not require an accurate forecast of the amount of lost revenues associated with energy efficiency or DG. It does, however, result in the potential for variation in rates or prices, reflecting an adjustment to the relationship between total revenue requirements and total electricity or gas consumed by customers over the defined term. Such rate adjustments, or "true-ups," are a fundamental aspect of the rate design resulting from decoupling profits from sales volumes.

Table 6.2.2 compares decoupling with a lost revenues approach and illustrates why decoupling is simpler and more effective than LRAM. As the table illustrates, decoupling appears to be a more comprehensive approach to aligning utility incentives. While it requires more effort to establish a complete decoupling mechanism, it avoids the downsides of lost revenue approaches.

As an example, California's original decoupling policy, an Electric Rate Adjustment Mechanism (ERAM), was in place between 1982 and 1996 and was successful in reducing rate risk to customers and revenue risk to the major utility companies (Eto et al. 1993). California dropped its decoupling policy in 1996 when restructuring was initiated. When competition did not deliver on its promise, California recently brought back a decoupling approach as part of a larger effort to reinvigorate utility-sponsored energy efficiency programs. Conversely, Minnesota tried a lost revenues approach and met strong customer opposition because there was no cap on the total amount of revenues that could be recovered.

Table 6.2.2: Approaches for Removing Disincentives to Energy Efficiency Investment: Decoupling vs. Lost Revenue Adjustments

Decoupling	Lost Revenue Adjustments
Removes sales incentive and all demand-side management (DSM) disincentives.	Removes some DSM disincentives.
Does not require sophisticated measurement and/or estimation.	Requires sophisticated measurement and/or estimation.
Utility does not profit from DSM, which does not actually produce savings.	Utility may profit from DSM, which does not actually produce savings.
Removes utility disincentive to support public policies that increase efficiency (e.g., rate design, appliance standards, customer initiated conservation).	Continues utility disincentive to pursue activities or support public policies that increase efficiency.
May reduce controversy in subsequent utility rate cases.	No direct effect on subsequent rate cases.
Reduces volatility of utility revenue resulting from many causes.	Reduces volatility of utility earnings only from specified DSM projects.

Source: Mosovitz et al. 1992.

While decoupling is a critical step in optimizing the benefits of energy efficiency, states are finding that decoupling alone is not sufficient. Two other related approaches states are taking include assurance for energy efficiency program cost recovery, and shareholder/company performance incentives to reward utilities for maximizing energy efficiency investment where cost effective.

Program Cost Recovery

One important element of utility energy efficiency and clean DG programs is the appropriate recovery of costs. The extent to which this is a real risk for utilities depends upon the ratemaking practices in each state. Nonetheless, the perception of the risk can be a significant barrier to utilities, regardless of how real the risk. Under traditional ratemaking, utilities might be unable to collect any additional energy efficiency or DG expenses that are not already included in the rate base. Similarly, under a price cap form of PBR, utilities might be precluded from recovering "new" costs incurred between the periods when price caps are set. However, traditional ratemaking can nonetheless allow program cost recovery for well-performing energy efficiency or DG programs, if desired. If revenue caps are in place, well-performing program costs can be included as part of the overall revenue requirement, in the same way that supply-side fixed costs are usually included in revenue requirements. If energy efficiency/DG programs are not shown to meet minimum performance criteria, then these costs could be excluded from revenue requirements, i.e., these costs would not be passed on to ratepayers.

To overcome program cost recovery concerns, regulatory mechanisms can be used to assure that utility investments in cost-effective energy efficiency and DG resources will be recovered in rates, independent of the form of ratemaking in place. Under traditional ratemaking, an energy efficiency or DG surcharge could be included in rates and could be adjusted periodically to reflect actual costs incurred. Under a price cap form of PBR, the costs of energy efficiency and DG could be excluded from the price cap and could be adjusted periodically to reflect actual costs incurred. Many states with restructured electric industries have introduced a public benefits fund (PBF) that provides utilities with a fixed amount of funding for energy efficiency and DG, thus eliminating this barrier to utilities. For example, the New York Public Service Commission (PSC) approved a proposal in a ConEd rate case that included, among other demand-side measures, DSM program cost recovery through a PBF. In Colorado, a new bill has been introduced to require a Public Utilities Commission (PUC) Rulemaking to address gas energy efficiency program cost recovery and regulatory disincentives to cost-effective energy efficiency programs (Colorado Legislature 2006).

Shareholder/Company Performance Incentives

Under traditional regulation, utilities may perceive that energy efficiency or clean DG investment conflicts with their profit motives. However, states are finding that once the throughput disincentive is addressed, utilities will look at cost-effective energy efficiency and clean DG as a potential profit center and an important resource alternative to meet future customer needs. Utilities earn a profit on approved capital investment for generators, wires, poles, transformers, etc. Incentive ratemaking can allow for greater levels of profit on energy efficiency or DG resources, recognizing that many benefits to these resources, such as improved reliability or reduced emissions, are not otherwise explicitly accounted for. Adjustment of approved rate-of-return for capital investment—supply- or demand-side resources—is an important policy tool for state regulators.

States, including Massachusetts and New Hampshire, are using profit or shareholder incentives to make energy efficiency and clean DG investments seem comparable to, or preferable to, conventional supply-side investments. With throughput disincentives removed, utilities can be rewarded with incentives stemming from superior program performance. Such incentives include a higher rate of return on capital invested in energy efficiency and clean DG, or equivalent earnings bonus allowances. Rewards require performance: independent auditing of energy efficiency/DG program effectiveness can drive the level of incentive. Conversely, poorly performing programs or components can be denied full cost recovery, providing a logical "stick" to the "carrot" of increased earnings potential, and ensuring that energy efficiency and clean DG program choices exclude those that only look good on paper. The savings that result from choosing the most cost-effective resources over less economical resources can be "shared" between ratepayers and shareholders, giving ratepayers the benefits of wise resource use while rewarding management for the practices that allow these benefits to be secured.[42]

Implementation of a package of incentive regulation initiatives might include: (1) stakeholder discussion of the issues, (2) state commission rulemaking or related initiative proposing a change from traditional ratemaking, and (3) clear and comprehensive direction from the state commission establishing the explicit rate structure or pilot program structure to be put in place.

Designing Effective Utility Incentives for Demand-Side Resources

Participants

A number of stakeholders are typically included in the design of decoupling and incentive regulations:

- *State Legislatures*. Utility regulation broadly affects all state residents and businesses. State energy policy is affected by and affects utility regulation. Legislation may be required to direct the regulatory commission to initiate an incentive regulation investigation or to remove barriers to elements like periodic resetting of rates without a comprehensive rate case. Legislative mandates can also provide funding and/or political support for incentive regulation initiatives.
- *State PUCs*. State PUCs have the greatest responsibility to investigate and consider incentive regulation mechanisms. Staff and commissioners oversee the stakeholder processes through which incentive regulation issues are discussed. PUCs are the ultimate issuers of directives implementing incentive regulation packages for regulated gas and electric utilities.
- *State Energy Offices/Executive Agencies.* State policies on energy and environmental issues are often driven by executive agencies at the behest of governor's offices. If executive agency staff are aware of the linkages between utility regulatory and ratemaking policies, it may be more likely that executive agency energy goals can be fostered by successful utility energy efficiency and clean DG programs. Attaining state energy and environmental policy goals hinges in part on the extent to which incentive regulation efforts succeed.
- *Energy Efficiency Providers*. Energy efficiency providers have a stake in incentive regulation initiatives. In some states, they contract with utilities to provide energy efficiency program implementation. In other states, energy efficiency providers such as Vermont's "Efficiency Vermont" serve as the managing entity for delivering energy efficiency programs.
- *DG Developers*. DG developers, like energy efficiency providers, are affected by any incentive regulation that reduces throughput incentives, since they are likely to be able to work more closely with utilities to target the locations that maximize the benefits that DG can bring by reducing distribution costs.
- *Utilities*. Vertically integrated utilities and distribution or distribution-transmission-only utilities are affected to the greatest degree by incentive regulation, as their approved revenue collection mechanisms are at the heart of incentive regulation issues. Incentive regulation approaches differ in their impacts on utilities depending in part on the degree of restructuring present in a state.
- *Environmental Advocates*. Energy efficiency and clean DG resources can provide low-cost environmental benefits, especially when targeted to locations requiring significant transmission and distribution investment. Environmental organizations can offer perspectives on using energy efficiency and clean DG as alternatives to supply-side options.
- *Other Organizations***.** Other organizations, including consumer advocates and third-party energy

42 The utility industry uses the term "shared savings" in several ways. Alternative meanings include, for example, the sharing of savings between an end user and a contractor who installs energy efficiency measures. Throughout this *Guide to Action,* "shared savings" refers to shareholder/ratepayer sharing of benefits arising from implementation of cost-effective energy efficiency/DG programs that result in a utility obtaining economical energy efficiency/DG resources.

efficiency and clean DG providers, can provide cost-effectiveness information as well as perspectives on other complementary policies.

Interaction with Federal and State/Regional Policies

Incentive regulation is closely intertwined with almost all state-level energy policy involving electric and gas utility service delivery, since it addresses the fundamental issue of establishing a means for a regulated utility provider to recover its costs. The following state policies will be affected by changing to a form of incentive regulation:

- *Integrated Resource Planning (IRP) and Portfolio Management Policies*. These are an important complement to utility incentives because they provide vertically integrated utilities (through use of IRP) and distribution-only utilities (through use of portfolio management) with the long-term planning framework for identifying how much and what type of energy efficiency and clean DG resources to pursue. Without removing throughput disincentives, utilities undertaking IRP and portfolio management that include cost-effective energy efficiency and clean DG resources can lose revenue.
- *PBFs.* Also known as system benefits charges (SBCs), PBFs may eliminate the need for (or provide another way of addressing) cost recovery.
- *PBR Mechanisms*. PBR includes a host of mechanisms that can help achieve regulatory objectives. Many are tied to specific elements of ratemaking, such as price caps (i.e., a ceiling on the per unit rate charged for energy), revenue caps (i.e., a ceiling on total revenue), or revenue per customer caps. Typically, all PBR mechanisms are established with the goal of rewarding utility performance that results in superior customer service, reliability, or other measured outcome of utility company effort. Reducing the throughput disincentive is one important form of PBR, and if it is not addressed, the effectiveness of other aspects of PBR can be undermined.
- *Low-Income Weatherization.* Low-income weatherization and other energy efficiency improvement programs target the consumer sector with the least incentive to invest in energy efficiency. A fundamental market failure exists, for example, in the landlord-tenant relationship where landlords are responsible for building investment (e.g., new boilers) but tenants are responsible for paying utility bills. The result is that least-first-cost, rather than least-life-cycle-cost appliances are often installed. As with any other energy efficiency program, a utility company's incentive to see such programs succeed is reduced if overall profits remain linked to sales volume; thus, successful decoupling approaches can help to ensure low-income weatherization program success.

Best Practices: Designing Effective Incentive Regulations for Gas and Electric Utilities

The best practices identified below will help states develop effective incentive regulations to support implementation of cost-effective energy efficiency and DG programs.

- Survey the current regulatory landscape in your state and neighboring states.
- Determine if and how energy efficiency and clean DG are addressed in rate structures. In particular, determine if traditional ratemaking formulas exist. Do they create obstacles to promoting energy efficiency and clean DG?
- Gather information about potential incentive rate designs for your state.
- Assemble key stakeholders and provide a forum for their input on utility incentive options.
- Devise an implementation plan with specific timelines and objectives.

Evaluation

States are evaluating their decoupling activities to ensure program success. For example, independent evaluation of the Oregon initiative for Northwest Natural Gas included a summary of the program's intentions, recognition that deviations from forecast usage affects the amount of fixed costs recovered, and acknowledgement that partial, rather than full, decoupling was attained. States are evaluating decoupling activities to ensure program success. The report stated that the program had reduced the "variability of distribution revenues" and "alter[ed] NW Natural's incentives to promote energy efficiency" (Hansen and Braithwait 2005).

California's earlier decoupling policies (from 1982 to 1996), combined with intensive utility-sponsored DSM activity, resulted in comprehensive program evaluation. Existing reports illustrate the impact of California's decoupling during that period (Eto et al. 1993).

The following information is usually collected as part of the evaluation process to document additional energy efficiency or clean DG savings, customer rate impacts, and changes to program spending that arise due to changes to regulatory structures:

- Utility energy efficiency and clean DG program expenditure and savings information.
- Additional data on weather and economic conditions, to control for factors influencing retail sales other than program actions.
- Rate changes occurring during the program, if any, such as those arising from use of a balancing mechanism.

State Examples

Numerous states previously addressed or are currently exploring electric and gas incentive mechanisms. Experiments in incentive regulation occurred through the mid-1990s but generally were overtaken by events leading to various forms of restructuring. There is renewed interest in incentive regulation due to recognition that barriers to energy efficiency still exist, and utility efforts to secure energy efficiency and clean DG benefits remain promising. States are looking to incentive mechanisms to remove barriers in order to meet the cost-effective potential of clean energy resources.

California, Washington, Oregon, Maine, Maryland, Minnesota, New York, Idaho, Nevada, Massachusetts, Connecticut, New Hampshire, Rhode Island, New Mexico, and Arizona have had or are reviewing various forms of decoupling or incentive regulation, including performance incentive structures. The following state examples are listed in the approximate order of the extent to which decoupling mechanisms have been considered in the state.

California

California has recently re-adopted a revenue balancing mechanism that applies between rate cases and removes the throughput disincentive by allowing for rate adjustment based on actual electricity sales, rather than test-year forecast sales. The California Public Utility Commission (CPUC) established this mechanism to conform to a 2001 law that dictated policy in this area, stating that forecasting errors should not lead to significant over- or under-collection of revenue. As a result, California public utilities are returning to larger-scale promotion of energy efficiency through their DSM programs. Simultaneously, the CPUC is revising its policies to establish a common performance basis for energy efficiency programs that defer more costly supply-side investments.

California's rate policies are not new. Between 1983 and the mid-1990s, California's rate design included an ERAM, a decoupling policy that was the forerunner of today's policy and the model for other balancing mechanisms implemented by other states during the early 1990s. The impact of the original ERAM on California ratepayers was positive, with a negligible effect on rates, and led to reduced rate volatility. Overall utility energy efficiency program efforts in California, along with state building and appliance energy efficiency programs, have reduced peak capacity needs by more than 12,000 megawatts (MW) and continue to save about 40,000 gigawatthours (GWh) per year of electricity (CEC and CPUC 2005).

California also implemented a shared-savings incentive mechanism in the 1990s. The CPUC authorized a 70%/30% ratepayer/shareholder split of the net benefits arising from implementation of energy efficiency measures in the 1994–1997 time frame. This mechanism first awarded shareholder earnings bonuses based on measured program performance. Between 1998 and 2002, the performance incentive was changed to reward "market transformation" efforts by the utilities. The incentives were phased out after 2002, because of the state's overhaul of its energy efficiency policies, but recent ongoing activity pursuant to an energy efficiency rulemaking process promises to revisit shareholder incentive structures.

The CPUC continues to promote utility-sponsored energy efficiency efforts. A recent decision approves expenditures of $2 billion over the 2006–2008 time period for the four major California investor-owned utilities. These expenditures will contribute toward overall spending goals of $2.7 billion, with savings targeted at almost 5,000 peak MW, 23 terawatt-hours, and 444 million therms per year (cumulative through 2013). Under an ongoing rulemaking on energy efficiency policies, the CPUC is currently analyzing the risk/reward incentive structure that will apply over this time for the utilities.

Web sites:
http://www.cpuc.ca.gov/Published/Final_decision/40212.htm (energy efficiency goals)

http://www.cpuc.ca.gov/word_pdf/FINAL_DECISION/30826.pdf (shared savings)

http://www.cpuc.ca.gov/word_pdf/FINAL_DECISION/49859.pdf (current energy efficiency program spending plans with reference to new incentive plans)

Washington

In the early 1990s, Washington's Utility and Transportation Commission (WUTC) implemented incentive regulations for Puget Sound Power and Light by establishing a revenue-per-customer cap, a deferral account for revenues, and a reconciliation process. The mechanism lasted for a few years, but was phased out—without prejudice—a few years later when a package of alternative rate proposals was accepted.

Puget's "Periodic Rate Adjustment Mechanism" (PRAM) was successful in achieving "dramatic improvements in energy efficiency performance," and according to the WUTC, it "achieved its primary goal—the removal of disincentives to conservation investment" (WUTC 1993).

Washington held a workshop in May 2005 as part of a rulemaking to investigate decoupling natural gas revenues from sales volumes to eliminate disincentives to gas conservation and energy efficiency. Based on stakeholder feedback, the Utilities and Transportation Commission withdrew the rulemaking in favor of addressing decoupling through specific proposals (WUTC 2005).

Web site:
http://www.wutc.wa.gov/webimage.nsf/6c548b093c5f816c88256efc00506bb6/0e699dd89acd5b1888256fdd00681656!

Oregon

In September 2002, Oregon adopted a partial decoupling mechanism for one of its gas utilities, Northwest Natural Gas. The mechanism was established through a settlement process that established a price elasticity adjustment and a revenue deferral account, even though it did not fully decouple sales from profits. An evaluation found that the mechanism reduced, but did not completely remove, the link between sales and profits and that it "is an effective means of reducing NW Natural's disincentive to promote energy efficiency" (Hansen and Braithwait 2005).

In the past, Oregon adopted and then abandoned lost revenue and shared savings mechanisms for two larger utility companies, PacifiCorp and Portland General Electric (PGE). Lack of support from customer groups, new corporate owners after acquisition, and shifting of DSM implementation to the non-utility sector ended these efforts.

The history and outcome of the NW Natural case in Oregon demonstrates that incentive regulation must be designed to address a number of stakeholders and many related issues that have financial impacts on ratepayers. In its approval of the regulation, the Oregon Commission acknowledged that it was only a "partial decoupling mechanism," but did recognize that decoupling allows for energy efficiency without harming shareholders (Oregon PUC 2002).

Web site:
http://apps.puc.state.or.us/orders/2002ords/02%2D388.pdf (Northwest Natural Gas Order)

Maine

In 1991, the Maine PUC adopted a revenue decoupling mechanism for Central Maine Power (CMP) on a three-year trial basis. "Allowed" revenue was determined in a rate case proceeding and adjusted annually based on changes in the number of utility customers. CMP's ERAM was not, however, a multi-year plan, so CMP was free to file a rate case at any time to adjust its "allowed" revenues. The mechanism quickly lost the support of major stakeholders in Maine due to a serious economic recession that resulted in lower sales levels. The lower sales levels caused substantial revenue deferrals that CMP was ultimately entitled to recover. CMP filed a rate case in October 1991 that would have increased rates at the time, but likely would have caused lower amounts of revenue deferrals. However, the rate case was withdrawn by agreement of the parties to avoid immediate rate increases during unfavorable economic times.

By the end of 1992, CMP's ERAM deferral had reached $52 million. The consensus was that only a very small portion of this amount was due to CMP's conservation efforts and that the vast majority of the deferral resulted from the economic recession. Thus, ERAM was increasingly viewed as a mechanism that was shielding CMP against the economic impact of the recession, rather than providing the intended energy efficiency and conservation incentive impact. The situation was exacerbated by a change in the financial accounting rules that limited the amount of time that utilities could carry deferrals on their books. Maine's experiment with revenue cap regulation came to an end on November 30, 1993, when ERAM was terminated by stipulation of the parties.

This experience illustrates the temporal dimension of decoupling approaches; immediate rate increases can be perceived negatively. However, under traditional forms of regulation, declining consumption trends such as those associated with economic downturns can also result in a need to increase rates to allow for fixed cost recovery.

Web site:
http://www.state.me.us/mpuc/industries/electricity/index.html (electric division of Maine PUC)

Maryland

The gas distribution side of Baltimore Gas and Electric (BG&E) and Washington Gas are each subject to a monthly revenue adjustment by the Maryland Public Service Commission. BG&E's "Rider 8" and Washington Gas' "Monthly Revenue Adjustment" (MRA) decouple weather and energy efficiency impacts from the revenue ultimately recovered by the gas companies. This decoupling mechanism achieves the aim of greater revenue stability for the gas companies, while preventing "over-recovery" from ratepayers during colder-than-normal heating seasons. The base revenue amount is set based on weather-normalized patterns of consumption, but monthly revenue adjustments are accrued based on actual revenues, and rates are adjusted monthly based on the accrued adjustments.

The rate structure has been in place for seven years for BG&E and is new for Washington Gas.

Web sites:
http://www.energetics.com/madri/pdfs/timmerman_101105.pdf (description by Maryland PSC Director of Rates and Economics)

http://www.psc.state.md.us/psc/gas/gasCommodity.htm (Maryland PSC gas commodity fact sheet)

Minnesota

Northern States Power, now Xcel Energy, petitioned the Minnesota PUC in 2004 for a partial decoupling of its natural gas revenue requirement from sales, offering an annual true-up to rates to address reduced sales volume trends. In an approved offer of settlement, this portion of the company's petition was withdrawn, without prejudice, over concerns of the evidence of declining gas usage and whether the Commission had the legal authority to approve such a rate structure change.

Minnesota experimented with a lost revenue recovery approach in the 1990s, but terminated it in 1999 in favor of a "shared savings" approach because of the cumulative impact of the lost revenues. Its shared savings incentive mechanism is similar to the approach used by Massachusetts, Connecticut, New Hampshire, and Rhode Island (see page 6-35), where utility incentives increase if energy efficiency targets are exceeded.

Web site:
http://www.xcelenergy.com/XLWEB/CDA/0,3080,1-1-1_1875_1802_3576-15057-5_406_652-0,00.html (gas decoupling information)

New York

In the 1990s, the New York Public Service Commission experimented with several different types of performance-based ratemaking, including revenue-cap decoupling mechanisms for Rochester Gas and Electric, Niagara Mohawk Power, and Consolidated Edison Company (ConEd) (Biewald et al. 1997). More recently, the Commission approved a joint proposal from all the stakeholders in a ConEd rate case that included significant increases in spending on DSM, a lost revenue adjustment mechanism, DSM program cost recovery through a PBF, and shareholder performance incentives. The Commission did not establish a decoupling mechanism, but left open the possibility to do so in another proceeding that is assessing DSM incentives for all New York utilities (NY PSC 2005).

Web site:
http://www.dps.state.ny.us/fileroom.html (CASE 04-E-0572–Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of ConEd of New York, Inc. for Electric Service)

Idaho

In May 2004, the Idaho PUC initiated a series of workshops to investigate the disincentives to energy efficiency that exist with traditional ratemaking. The Commission noted that disincentives are inherent in company-sponsored conservation programs and directed Idaho Power Company to examine balancing mechanisms and consider how much rate adjustment might be needed to remove energy efficiency investment disincentives.

The workshops resulted in a recommendation to establish a pilot project to allow Idaho Power Company to recover fixed-cost losses associated with new construction energy efficiency programs. This "lost revenue" approach is an initial foray by Idaho into incentive mechanisms that could eventually include a broader, fixed-cost true-up mechanism as part of the next general rate case.

Web site:
http://www.puc.idaho.gov/internet/cases/summary/IPCE0415.html (Idaho Power Company application, Commission Order, staff investigation documents)

Nevada

Nevada resurrected DSM efforts in 2001 in the wake of the California energy crisis. The two Nevada electric utilities recently participated in a DSM collaborative to obtain stakeholder input regarding the number and type of DSM programs, and have moved away from the strict Rate Impact Measure (RIM) Test to more lenient cost-effectiveness tests, allowing for greater DSM implementation. The Nevada IRP regulations include a shareholder performance incentive, whereby the electric utilities can place their DSM expenditures in rate base and earn the base rate of return on equity plus 5%. Nevada has not considered decoupling, in part because the state law appears to prevent balancing accounts for fixed cost recovery.

Web sites:
http://energy.state.nv.us/efficiency/default.htm (statewide conservation/efficiency resources)

http://gov.state.nv.us/pr/2005/PR_01-12ENERGY.htm (energy efficiency strategy)

Massachusetts, Connecticut, New Hampshire, and Rhode Island

While Maine is the only New England state with a history of a decoupling mechanism, other New England states have adopted shareholder incentive regulations that reward utility shareholders by allowing earnings on DSM program expenditures, analogous to allowing a rate of return on fixed, or "rate base" assets such as wires, poles, and generators. In these states, different levels of incentives are granted depending on the level of efficiency savings seen with DSM programs, also known as "shared savings." There are typically three levels of program savings defined, which align with three levels of incentives granted. A "threshold level" defines the minimum savings that must be reached for any shareholder incentives to apply. A "target" level incentive is based on the goals of the most recent energy efficiency plan, and an "exemplary" level of incentives is seen if savings beyond the target level (above a certain amount) is achieved.

Web site:
http://www.mass.gov/dte/restruct/competition/index.htm#PERFORMANCE (Massachusetts Department of Telecommunications and Energy (DTE), Performance Based Ratemaking/Service Quality Proceedings)

New Mexico and Arizona

New Mexico and Arizona have recently undertaken legislative or regulatory efforts to address incentive regulation, although neither has an explicit decoupling policy in place. New Mexico's energy efficiency legislation adopted earlier this year promotes and permits convenient cost recovery of both gas and electric utility DSM. In Arizona, the Southwest Gas Company has proposed a set of gas DSM programs in conjunction with decoupling sales from revenue.

Web site:
http://www.cc.state.az.us/ (Arizona Corporation Commission)

What States Can Do

States are leveling the playing field for demand-side resources through improved utility rate design by removing disincentives through decoupling or lost revenue adjustment mechanisms. These actions make it possible for utilities to recover their energy efficiency and clean DG program costs, and/or provide shareholder and company performance incentives. Key state roles include:

- *Legislatures*. Legislative mandate is often not required to allow state commissions to investigate and implement incentive regulation reforms. However, legislatures can help provide the resources required by state commissions to effectively conduct such processes. Legislative mandates can also provide political support or initiate incentive regulation investigations if the commission is not doing so on its own.
- *Executive Agencies.* Executive agencies can support state energy policy goals by recognizing the important role of regulatory reform in providing incentives to electric and gas utilities to increase energy efficiency and clean DG efforts. Their support can be important to encourage utilities or regulators concerned about change.
- *State Commissions*. State regulatory commissions usually have the legal authority to initiate investigations into incentive regulation ratemaking, including decoupling. Commissions have the regulatory framework, institutional history, and technical expertise to examine the potential for decoupling and consider incentive ratemaking elements within the context of state law and policy. State commissions are often able to directly adopt appropriate incentive regulation mechanisms after adequate review and exploration of alternative mechanisms.

Action Steps for States

States can take the following steps to promote incentive regulation for clean energy, as well as overall customer quality and lower costs:

- Survey the current utility incentive structure to determine how costs are currently recovered, whether any energy efficiency programs and shareholder incentives are in place, and how energy efficiency and DG costs are recovered.
- Review available mechanisms.
- Review historical experience in the relevant states.
- Open a docket on these issues.
- Determine which incentive regulation tools might be appropriate.
- Engage commissioners and staff and find consensus solutions.

Information Resources

State and Regional Information on Incentive Regulation Efforts

State	Title/Description	URL Address
California	Background and historical information on CPUC shared savings mechanism in the mid-1990s and general energy efficiency policies.	http://www.cpuc.ca.gov/Published/Final_decision/30826.htm
	California Energy Commission (CEC).	http://www.energy.ca.gov/
	California's "Energy Action Plan II," an implementation roadmap for California energy policies.	http://www.cpuc.ca.gov/PUBLISHED/REPORT/49078.htm
	CPUC.	http://www.cpuc.ca.gov/static/index.htm
	CPUC current rulemaking on energy efficiency policies.	http://www.cpuc.ca.gov/static/energy/electric/energy+efficiency/rulemaking/docs_inr0108028.htm
	CPUC Decision establishing energy savings goals for energy efficiency program years 2006 and beyond. September 23, 2004.	http://www.cpuc.ca.gov/Published/Final_decision/40212.htm
	CPUC Decision on energy efficiency spending—phase I. September 22, 2005.	http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/49859.htm
Colorado	House Bill 1147 addresses funding and cost recovery mechanism for natural gas energy efficiency.	http://www.leg.state.co.us/clics2006a/csl.nsf/fsbillcont3/CCC36D78DB009296872570CB006CBA70?open&file=1147_01.pdf
Idaho	Idaho PUC, Case No. IPC-E-04-15. Idaho Power—Investigation of Financial Disincentives. This Web site summarizes regulatory proceedings and workshop results regarding the Commission's investigation of financial disincentives to energy efficiency programs for Idaho Power under Case No. IPC-E-04-15.	http://www.puc.idaho.gov/internet/cases/summary/IPCE0415.html
Maryland	Maryland PUC, Gas Commodity Rate Structure reference.	http://www.psc.state.md.us/psc/gas/gasCommodity.htm
Mid-Atlantic Distributed Resources Initiative (MADRI)	MADRI is developing a model rule, called the Electric Utility Revenue Stability Adjustment Factor, to reduce a utility's throughput incentive.	http://www.energetics.com/madri/
Oregon	Oregon PUC, Order on NW Natural Gas Decoupling. This order reauthorized deferred accounting for costs associated with NW Natural Gas Company's conservation and energy efficiency programs.	http://apps.puc.state.or.us/orders/2002ords/02%2D388.pdf
Washington	WUTC, Natural Gas Decoupling Investigation. This Web site describes the Commission's action to investigate decoupling mechanisms to eliminate disincentives to gas conservation and energy efficiency programs.	http://www.wutc.wa.gov/webimage.nsf/6c548b093c5f816c88256efc00506bb6/0e699dd89acd5b1888256fdd00681656
General	The Regulatory Assistance Project (RAP) has published several reports on decoupling and financial incentives.	http://www.raponline.org

General Articles and Web Sites About Utility Incentives for Demand-Side Resources

Title/Description	URL Address
Barriers to Energy Efficiency. This presentation identifies barriers to energy efficiency programs, describes differences between lost base revenue adjustments and revenue decoupling as ways to remove such barriers, and presents other solutions for consumer advocates and regulators to further promote energy efficiency.	http://www.raponline.org/Slides/MACRUCEnergyEfficiencyBarriersWS%2Epdf
Breaking the Consumption Habit: Ratemaking for Efficient Resource Decisions. This Natural Resources Defense Council (NRDC) article from The Electricity Journal (December 2001) describes the concept and history of decoupling mechanisms and calls for re-examination of the mechanisms in order to remove disincentives to deployment of distributed energy resources under the restructured electric industry.	http://www.nrdc.org/air/energy/abreaking.asp
Clean Energy Policies for Electric and Gas Utility Regulators. This article examines policy options for distributed energy resources (e.g., EE/RE and DG) and rate design, and also discusses the importance of regulatory financial incentives to support dissemination of distributed energy resources.	http://www.raponline.org/Pubs/IssueLtr/RAPjan2005.pdf
Decoupling and Public Utility Regulation (publication no. NRRI 94-14). Graniere, R. and A. Cooley. National Regulatory Research Institute. August 1994. This report explores the relationship between decoupling and public utilities regulation. One of the conclusions is that decoupling could preserve the financial integrity of the utility and protects the environment, but at the cost of a high probability of periodic increases of electricity prices.	http://www.nrri.ohio-state.edu/phpss113/search.php?focus=94-14&select=Publications
Decoupling vs. Lost Revenue: Regulatory Considerations. Moskovitz D., C. Harrington, T. Austin. May 1992. This article identifies characteristics and distinctions between decoupling and lost revenue recovery mechanisms and concludes that decoupling is preferable because unlike the lost-base revenue approach, decoupling removes the utilities' incentive to promote new sales and does not provide utilities with an incentive to adopt ineffective DSM programs.	http://www.raponline.org/Pubs/General/decoupling.pdf
Financial Disincentives to Energy Efficiency Investment. Direct Testimony of Ralph Cavanagh, NRDC, Wisconsin, 2005. This testimony identifies financial disincentives to the Wisconsin Power and Light Company's cost-effective energy efficiency programs and identifies solutions.	http://psc.wi.gov/apps/erf_search/default.aspx (PSC Ref.# 31965, filed April 4, 2005)
Joint Statement of NRDC and American Gas Association on Utility Incentives for Energy Efficiency. This statement identifies ways to promote both economic and environmental progress by removing barriers to natural gas distribution companies' investments in urgently needed and cost-effective resources and infrastructure.	http://www.aga.org/Content/ContentGroups/Rates/AGANRDCJointStatement.pdf
Link to All State Utility Commission Web sites. This NARUC Web site provides links to all state utility commission sites.	http://www.naruc.org/displaycommon.cfm?an=15
Southwest Energy Efficiency Project (SWEEP). SWEEP is a nonprofit organization promoting greater energy efficiency in Southwest states.	http://www.swenergy.org/

References

Title/Description	URL Address
Bachrach, D., S. Carter and S. Jaffe, "Do Portfolio Managers Have an Inherent Conflict of Interest with Energy Efficiency?" *The Electricity Journal*, Volume 17, Issue 8, October 2004, pp. 52-62.	http://www.neep.org/policy_and_outreach/ACEEEStudy.pdf
Biewald, B., T. Woolf, P. Bradford, P. Chernick, S. Geller, and J. Oppenheim. 1997. Performance-Based Regulation in a Restructured Electric Industry. Prepared for the National Association of Regulatory Utility Commissioners (NARUC) by Synapse Energy Economics, Inc., Cambridge, MA. November 8.	http://www.synapse-energy.com/Downloads/pbr-naruc.doc
CEC and CPUC. 2005. CEC and CPUC. Draft Energy Action Plan II, Implementation Roadmap For Energy Policies. July 27.	http://www.energy.ca.gov/energy_action_plan/2005-07-27_EAP2_DRAFT.pdf
Colorado Legislature. 2006. Colorado House Bill 06-1147.	http://www.leg.state.co.us/clics2006a/csl.nsf/fsbillcont3/CCC36D78DB009296872570CB006CBA70?open&file=1147_01.pdf
Eto, J., S. Stoft, and T. Beldon. 1993. The Theory and Practice of Decoupling. LBL-34555. Lawrence Berkeley National Laboratory (LBNL). January.	http://eetd.lbl.gov/EA/EMP/reports/34555.html
Hansen, D.G. and S.D. Braithwait. 2005. Christensen Associates. A Review of Distribution Margin Normalization as Approved by the Oregon PUC for Northwest Natural. March.	Contact: Christensen Associates Energy Consulting, LLC 4610 University Avenue, Suite 700 Madison, Wisconsin 53705-2164 Phone: 608-231-2266 Fax: 608-231-2108
Mosovitz, D., C. Harrington, and T. Austin. 1992. Decoupling vs. Lost Revenue: Regulatory Considerations. Other decoupling/financial incentives information. RAP, Gardiner, ME. May.	http://www.raponline.org/Pubs/General/decoupling%2Epdf
NY PSC. 2005. Case 04-E-0572. Proceeding on Motion of the Commission as to the Rates, Charges, Rules, and Regulations of ConEd, Order Adopting a Three-Year Rate Plan. March 24. New York PSC.	http://media.corporate-ir.net/media_files/nys/ed/Three-YearRateplan-3-24-05.pdf
Oregon PUC. 2002. Order No. 02-634, Application for Public Purposes Funding and Distribution Margin Normalization. Oregon PUC. September 12.	http://apps.puc.state.or.us/ Click on Orders, View Orders 2000 to Current, List Orders for 2002, Order No. 02-634.
PG&E et al. 2003. Motion of Pacific Gas and Electric Company, Office of Ratepayer Advocates, The Utility Reform Network, Aglet Consumer Alliance, Modesto Irrigation District, Natural Resources Defense Council and the Agricultural Energy Consumers Association for Approval of Settlement Agreement. A.02-11-017 et al. San Francisco, California. PG&E. September 15. Attachment A, p. 17.	http://www.cpuc.ca.gov/proceedings/A0211017.htm
WUTC. 1993. WUTC, Docket Nos. UE-901183-T and UE-901184-P. Puget Sound Power & Light Company. Petition for order approving periodic rate adjustment mechanism and related accounting, Eleventh Supplemental Order. September 21. WUTC Web site.	http://www.wutc.wa.gov/rms2.nsf?Open Click "docket number" on the left side and search the docket numbers.
WUTC. 2005. Washington Utilities and Transportation Commission Web Site. UTC closes rulemaking for natural gas decoupling to increase conservation investment. October 17.	http://www.wutc.wa.gov/webimage.nsf/6c548b093c5f816c88256efc00506bb6/0e699dd89acd5b1888256fdd00681656