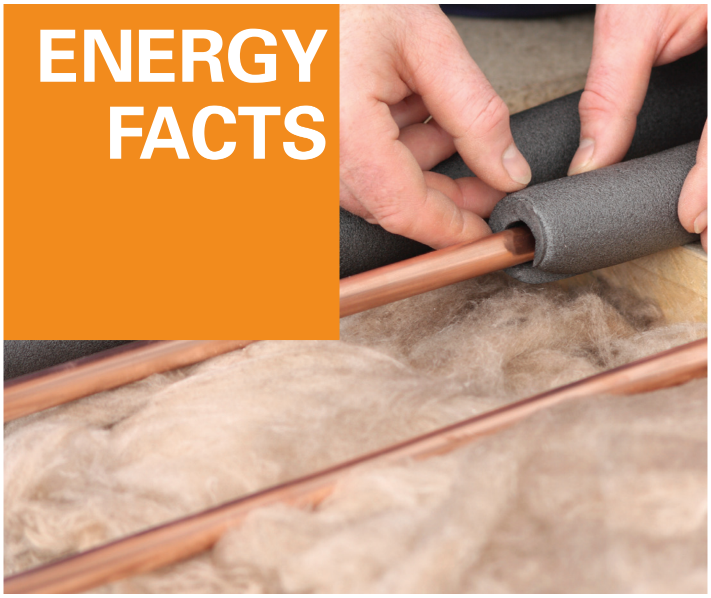
# ENERGY FACTS



# Removing Disincentives to Utility Energy Efficiency Efforts

Using energy more efficiently is the cheapest and cleanest way to serve America's energy needs, with enormous potential to save money (nearly $700 billion by 2020), create jobs, and reduce pollution (1.1 gigatons of carbon dioxide by 2020), through improvements in buildings, processes, and devices served by America's electric and natural gas utilities.[1] Energy-efficiency programs that provide customers with information, assistance, and incentives for energy-efficiency improvements are needed to overcome the persistent market barriers that prevent households, businesses, and industry from taking advantage of this opportunity.[2] Despite the benefits efficiency provides to customers, under traditional regulation, a utility that successfully helps its customers become more efficient risks not being able to cover its costs of serving customers and providing a return to investors. This creates a powerful disincentive to utility engagement in energy efficiency. Regulators can solve this problem by implementing decoupling mechanisms that adjust rates to ensure a utility collects the costs its regulator or governing board authorizes, no less and no more. More than half the states have adopted decoupling for either electric or natural gas utilities, and it is a necessary (but not sufficient) part of the package of policies that allow a utility to invest in the cheapest and cleanest energy resource: energy efficiency.

Utilities, together with their regulators and governing boards, are responsible for providing customers with reasonably priced, reliable energy services. Whether utilities only distribute energy, have competitively provided generation service but are responsible for resource acquisition, or provide fully integrated distribution, transmission, and generation service, they have a critical role in increasing energy efficiency. Utilities have existing relationships with customers as "energy authorities," and will collectively invest more than $2 trillion in infrastructure between 2010 and 2030.[3] They also have the ability to reduce transaction costs for third-party providers of efficiency services. But under traditional regulation, utilities are discouraged from investing in the best performing and cheapest resource—energy efficiency—because it hurts them financially.

Traditionally, utilities recover fixed costs from consumption (volumetric) charges. When sales fall, utilities may not recover all their fixed costs, and when sales increase, utilities may collect more than their authorized fixed costs and reasonable return. Motivated by this *throughput incentive*, utilities may work against energy efficiency despite policies promoting it.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THE EARTH'S BEST DEFENSE

For more information, please contact:

**Dylan Sullivan**
dsullivan@nrdc.org
(312) 663-9900
switchboard.nrdc.org/blogs/dsullivan/

**Devra Wang**
dwang@nrdc.org
(415) 875-6100
switchboard.nrdc.org/blogs/dwang/

**Donna De Costanzo**
ddecostanzo@nrdc.org
(212) 727-2700
switchboard.nrdc.org/blogs/ddecostanzo/

**Mona Yew**
myew@nrdc.org
011+86-136-1108-6118

**www.nrdc.org/policy**
**www.facebook.com/nrdc.org**
**www.twitter.com/nrdc**

The throughput incentive most often contributes to utility *inaction* on energy efficiency, even though it is the cheapest way to meet energy needs. In addition, various utilities have actively countered efficiency, for example by opposing—or not supporting—highly cost-effective efficiency codes for new buildings and standards for new appliances and equipment at the local, state, and national level.

Fortunately, there is a simple, effective, and proven way to eliminate this conflict: break the link between the utility's revenue and the amount of energy it sells by adjusting rates to ensure that the utility collects its authorized fixed costs, no less and no more. Combined with other key policies to encourage energy efficiency, such *decoupling mechanisms* can free utilities to help customers save energy whenever it is cheaper than producing and delivering it.

## THE CONFLICTED UTILITY

Despite the important role utilities can play to help customers be more energy efficient, most utilities' cost recovery is tied to meeting or beating the sales level assumed when rates are established, despite the environmental and economic risks associated with rising sales.

With traditional regulation, a regulator (for investor-owned utilities) or governing board (for publicly-owned utilities) determines the amount of revenue the utility needs to collect from customers to recover its prudently-incurred costs of maintaining and investing in the system's wires, pipes, and generators—including, for investor-owned utilities, providing the utility's investors with reasonable returns on investments. Then, the regulator or governing board divides this authorized revenue by the amount of energy it expects customers to consume, and establishes a rate—a charge per *kilowatt hour* (kWh) or *therm*.

Once rates are set, usually every few years, the utility's *actual* revenue is based on how much energy customers use, and any increases or decreases in consumption affect a utility's ability to recover its authorized fixed costs, even though the short-term costs themselves do not change. Much of a typical utility's cost of serving customers—for example, servicing debt, and paying for generation, transmission, and distribution equipment already installed—is independent of energy use in the near term. Typically, more than three-fifths of the retail value of kilowatt hours and one-fourth of the retail value of therms represent fixed costs. With this framework, any increase in sales above forecasted levels means the utility will collect more revenue than the regulator or governing board intended, creating windfall profits at customer expense. Conversely, any decrease in sales means the utility collects less than its approved fixed costs of service, including its return on rate base for investor-owned utilities, incurring financial harm.

The utility thus faces a strong disincentive to invest or engage in anything that decreases sales, including energy-efficiency, distributed renewable energy generation, or combined heat and power generation, even if they are the most cost-effective way to meet customer needs. This also has the perverse effect of focusing regulator and utility attention on throughput and the commodity cost of energy instead of on performance, energy services (like light or heat) and total energy bills. Customers lose in every scenario: if sales are higher than projected, they pay for windfall profits; if sales are lower, the utility can still recover its approved costs but has to go through a costly litigated regulatory proceeding to do so, which customers pay for. And regardless of whether sales go up or down, customers lose the economic benefits they would have enjoyed if their utility invested in cost-effective energy efficiency.

## DECOUPLING: BREAKING THE LINK BETWEEN UTILITY COST RECOVERY AND ENERGY SALES

A decoupling mechanism is simply a system to regularly adjust rates to ensure a utility's *actual* revenues match its *authorized* revenues to recover its fixed costs. Regulators of investor-owned utilities and governing boards of publicly owned utilities can use regular, small adjustments in rates (typically less than ±3 percent[4]) to ensure that utilities recover their authorized fixed costs—no more and no less. The small rate adjustments break the link between—or decouple—a utility's revenues and sales by either restoring to the utility or giving back to customers the money that was under- or over-collected as a result of fluctuations in retail sales. This ensures that utilities:

- Recover only the prudently incurred fixed costs that were approved by their regulator or governing board
- Cannot make a windfall by encouraging higher sales
- Are not penalized when energy-efficiency programs, clean distributed generation, and other demand-side efforts reduce sales

To implement a decoupling mechanism, regulators or governing boards set up a periodic automatic process to compare actual and authorized revenues and adjust rates accordingly. These rate reconciliations can take place as frequently as every month or as seldom as every year; most mechanisms use annual adjustments.[5]

Decoupling adjusts rates between *rate cases* (the formal process that utilities are mandated to go through to set the rate at which they are allowed to charge consumers for their service). Decoupling ensures a utility collects no more and no less than its authorized revenue—the amount of revenue the regulator or governing board determined is necessary for the utility to maintain reliability and provide reasonable returns to its investors. Decoupling removes the throughput incentive and is suitable for any utility network system (electricity or natural gas, investor-owned or publicly owned). A utility that implements decoupling is free to invest in energy efficiency without endangering recovery of its fixed costs. Decoupling also enables regulators and governing boards to maintain volumetric rates that give customers an incentive to conserve or use energy efficiently.

## Eliminating Utility Disincentives for Energy Efficiency: Illustrating the Problem and the Solution

### THE PROBLEM

Regulators of investor-owned utilities or governing boards of publicly-owned utilities set rates by determining required revenue—which includes both fixed and variable costs of service—assuming a level of sales for the year(s) ahead, and dividing the revenue requirement by the assumed sales.

**Example of Setting Initial Rates:**

Assumed annual sales = 100 kWh
Variable cost = $.04 per kWh (mostly operating costs of power plants)
Fixed cost = $6 (the costs of investments in and operation of the system, of which $.60 is intended to provide a return to investors)
Revenue requirement = $4 variable cost + $6 fixed cost = $10
Rate per kWh = $.10 per kWh ($10/100kWh)

When annual sales diverge from the sales assumption, the utility will either under- or over-recover the fixed-cost element of its revenue requirement, which has a large impact on profits.

**Example: Sales *Below* Assumption**

Actual annual sales = 95 kWh
Variable costs total $.04 per kWh x 95 kWh = $3.80
Fixed costs = $6, including $.60 of investor return
Actual revenue requirement = $9.80 ($3.80 + $6)
Actual revenues = $9.50 (95 kWh x $.10 per kWh)
Loss = $.30 ($9.80-$9.50)
*Utility has under-collected its fixed costs and foregone its opportunity to profit.*

**Example: Sales *Above* Assumption**

Actual annual sales = 105 kWh
Variable costs total $.04 per kWh x 105 kWh = $4.20
Fixed costs = $6, including $.60 of investor return
Actual revenue requirement = $10.20 ($4.20 + $6)
Actual revenues = $10.50 (105 kWh x $.10 per kWh)
Windfall profit = $.30 ($10.50-$10.20)
*Utility has over-collected its fixed costs, and it has received a 50 percent profit windfall.*

**The bottom line:**

Every kWh of reduced sales loses the company $.06 in fixed cost recovery; every kWh of increased sales yields an equal windfall. If higher levels of consumption incur higher rates—to promote efficient use—the problem worsens.

### THE SOLUTION

Decoupling mechanisms use modest, regular rate reconciliations every year to compensate for under- or over-collection of fixed costs during the previous year.

**Example: Reconciliation for Utility *Over-collection* of $.30:**

Sales assumption for the following year = 100 kWh
Variable cost = $.04 per kWh (no change from prior year)
Fixed cost = $6.00 (no change from prior year)
Revenue requirement = $4.00 variable cost + $6.00 fixed cost – $0.30 over-collection = $9.70
Rate per kWh = $.097 per kWh ($9.70 / 100 kWh)
*The utility's rate is adjusted to return the $.30 to customers that were over-collected the previous year.*

## Proven Effective

Years of experience in numerous states shows that decoupling eliminates the disincentive for utilities to help their customers become more energy efficient. For example, an independent review of Northwest Natural's decoupling mechanism commissioned by Oregon regulators found that the utility, in response to decoupling, shifted marketing resources from image-building advertising to energy-efficiency, took a strong public stance in favor of energy-efficiency, and changed compensation policies.[6] The report concluded:

> Based on the information and input that we have received and reviewed, we recommend that some form of revenue decoupling be retained. It has been effective in reducing the variability of distribution revenues and in altering NW Natural's incentives to promote energy-efficiency. While [the decoupling mechanism] does not provide an *incentive* for NW Natural to promote energy-efficiency, it does remove most of the *disincentive* that exists with the standard rates.[7]

The experience of California's investor-owned electric utilities also shows the impact of decoupling: as part of a package of policies that includes aggressive energy-saving targets and incentives for good performance in delivering energy efficiency, utilities more than doubled their energy savings in 2008 compared to a decade earlier when regulators had eliminated decoupling for several years.[8]

Nationally, decoupling clearly supports investment in energ-efficiency. In 2010, seven of the 10 states with the highest per-capita investment in electric energy-efficiency programs, and eight of the 10 states with the highest per-capita investment in natural gas energy-efficiency programs had decoupling in place or had adopted decoupling as state policy.[9] Over the last few years regulators around the country have increasingly adopted decoupling policies; half the states in the nation now have policies to break the link between recovery of fixed costs and sales for natural gas and/or electric utilities. (Please see http://www.nrdc.org/energy/decoupling/).

## Real Results from Small Adjustments

Decoupling has a powerful impact on a utility's incentives, but requires only a small change in the ratemaking process. The regulator or governing board still determines the utility's authorized amount of revenue to recover its fixed costs (and a reasonable return for investor-owned utilities) and divides the authorized revenue by sales to determine the rate. The primary difference is that the regulator or governing board then sets up an automatic process to regularly compare the amount of revenue the utility *actually* collected from its customers to the *authorized* revenue, and periodically adjusts rates up or down to ensure that they match. This process does *not* ensure that the utility attains a certain level of profit: profit will continue to be determined by the difference between a utility's authorized revenues and actual costs.

A study of the rate impacts of decoupling found that they "tend to be small, even miniscule," and that they "go both ways, providing both refunds and surcharges to customers."[10] The study also found:

> "Compared to total residential retail rates, including gas commodity and variable electricity costs, decoupling adjustments have been most often under 2%, positive or negative, with the majority under 1%. Using Energy Information Administration (EIA) data for 2007 on gas and electric consumption per customer and average rates, this amounts to less than $1.50 per month in higher or lower charges for residential gas customers and less than $2.00 per month in higher or lower charges for residential electric customers."[11]

## Alternatives to Decoupling Have Significant Drawbacks

Regulators have implemented other policies to attempt to remove the throughput incentive and manage utilities' energy efficiency related revenue erosion. However, these policies have significant drawbacks.

- **High fixed charges:** Raising fixed (customer) charges to collect what regulators determined are fixed costs removes *utilities'* disincentive to invest in efficiency as effectively as decoupling, but harms *customers* because it reduces their rewards for saving energy since less of the customer bill varies with energy usage. It also shifts costs to customers who use less energy—because of choice, necessity, or investment in energy efficiency—and sends the wrong long-term price signals to customers, since costs that are fixed in the short-term are often variable in the long-term.
- **Lost revenue adjustment mechanisms (LRAM):** Giving a utility *lost revenues* from its energy-efficiency programs removes the utility's disincentive to support those programs, but still allows the utility to benefit from increased sales. Because a utility does not have to give up *found revenues*—when sales are higher than assumed in the rate-setting process—lost revenues are asymmetric and cause customers to pay a windfall to the utility when sales are above the volume used to set rates. An LRAM makes it unlikely that a utility will implement valuable market transformation programs, because savings from these programs are difficult to evaluate. LRAMs add controversy to the process of measuring energy savings from efficiency programs because significant dollars are now attached to savings. Finally, an LRAM presents an opportunity for gaming: if a utility runs an energy-efficiency program that looks good on paper but saves little or nothing in practice, the utility keeps the revenue associated with the unsaved energy while also collecting lost revenues.
- **Forecasting:** Using a sales forecast that assumes a certain amount of energy-efficiency savings when setting rates still allows the utility to benefit from increased usage, requires consumers to pay for windfalls whenever sales are higher than projected, and encourages the utility to seek no more efficiency than that assumed in the rate-setting process.

- **Frequent rate cases:** A utility that engages in annual rate cases would still benefit from increased sales *between* these rate cases, and all parties would endure the time and expense of a rate case with limited benefit because costs may not materially change over a year.

## DECOUPLING IS NECESSARY BUT NOT SUFFICIENT

Decoupling removes a utility's disincentive to improve the efficiency of customer energy use and makes it indifferent to pursuing energy efficiency. However, decoupling alone will not necessarily turn a conflicted utility into one committed to capturing all cost-effective energy efficiency. Decoupling is part of a package of policies that lead to maximum energy-efficiency success. Other critical policies include:[12]

- Making cost-effective energy efficiency the highest priority energy resource and setting aggressive energy- and demand-saving targets to capture the full potential
- Allowing utilities timely recovery of prudently incurred costs of delivering energy-efficiency programs
- Providing performance-based shareholder incentives for investor-owned utilities to reward energy efficiency and ensure that investments in cost-effective energy-efficiency opportunities are at least as attractive over time as alternative investments in generation and infrastructure
- Conducting independent evaluation, measurement, and verification of energy-efficiency program impacts
- Ensuring that energy-efficiency program portfolios comprehensively address all major energy uses by residential, business, and industrial customers, and include programs targeted to assist lower-income households

Efficiency efforts will be significantly compromised if they have to compete against utilities with powerful financial incentives to encourage customers to increase energy consumption. Moreover, utility engagement and support is important to the success of energy-efficiency programs, regardless of the entity administering programs.[13] Regulators recognize this; electric and/or natural gas utilities in states that have used third party administrators, including Wisconsin, New York, Vermont, and Oregon, are decoupled. As more states implement aggressive energy-efficiency targets, regulators, governing boards and stakeholders should consider decoupling a necessary component of a policy package that will maximize energy and cost-savings for customers.

### Exploring Further Resources on Decoupling

For more detailed information on policies to break the link between recovery of authorized fixed costs and sales, see:

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2. Devra Wang, Rebecca Stanfield, Donna DeCostanzo, Mona Yew, “Doing More and Using Less: Regulatory Reforms for Electricity and Natural Gas Utilities Can Spur Energy Efficiency,” http://www.nrdc.org/energy/doingmoreusingless.asp (accessed October 27, 2011).

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7. *Ibid*, 75.

8. Sierra Martinez, Devra Wang, James Chou, “California Restores its Energy Efficiency Leadership,” Natural Resources Defense Council, March 9, 2010, http://docs.nrdc.org/energy/files/ene_10030901a.pdf. (accessed October 27, 2011); Devra Wang, “Energy efficiency continues to save money and cut pollution in California,” Natural Resources Defense Council Switchboard, May 26, 2010, http://switchboard.nrdc.org/blogs/dwang/energy_efficiency_continues_to.html (accessed October 27, 2011).

9. California, Connecticut, Idaho, Massachusetts, New York, Oregon, and Vermont. Consortium for Energy Efficiency, “State of Efficiency Program Industry Report,” Table 6, January 12, 2011, http://www.cee1.org/ee-pe/docs/Table%206.pdf (accessed October 27, 2011); California, Massachusetts, Minnesota, New Jersey, New York, Oregon, Utah, and Wisconsin, Consortium for Energy Efficiency, “State of Efficiency Program Industry Report,” Table 9, January 12, 2011, http://www.cee1.org/ee-pe/docs/Table%209.pdf (accessed October 27, 2011).

10. *Supra* at 4.

11. *Ibid*, 4.

12 Devra Wang, Rebecca Stanfield, Donna DeCostanzo, Mona Yew, "Doing More and Using Less: Regulatory Reforms for Electricity and Natural Gas Utilities Can Spur Energy Efficiency," Natural Resources Defense Council, January 2011, http://www.nrdc.org/energy/files/doingmoreusingless.pdf (accessed October 27, 2011).

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