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State Policy Series: Impacting Industrial Energy Efficiency

Natural Gas Revenue Decoupling Regulation:

Impacts on Industry

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EXECUTIVE SUMMARY

In recent years, the United States has seen an upward trend in the use of natural gas revenue decoupling. This report serves to examine how revenue decoupling works, how it is implemented, and what it means for the largest natural gas consumers—industrial customers.

Revenue decoupling is one type of innovative rate design that Public Utility Commissions (PUCs) use to delink a utility's revenues from the volume of gas distributed. With revenue decoupling regulation, a natural gas utility's revenues are essentially fixed by the PUC. If a utility's actual revenues are above the fixed level due to a larger volume of sales than expected, customers receive a credit from the utility for the difference; if actual revenues are below the fixed level due to a smaller volume of sales than expected, the utility issues a customer surcharge for the difference. To this end, a utility's revenues are decoupled from its volume of sales because its revenues are fixed as sales fluctuate.

Revenue decoupling has a number of benefits, such as smoothing variations in customer bills and utility earnings. In recent years, it has gained more attention in states across the country because it removes a utility's incentive to increase sales. As long as utilities have an incentive to increase sales, they tend to have a disincentive to promote energy efficiency. States that are motivated to reduce energy consumption and greenhouse gas (GHG) emissions have turned to natural gas revenue decoupling as a means to align utility interests with state energy policies. Between mid-2007 and early-2010, the number of states that adopted natural gas revenue decoupling nearly doubled.[1]

Industry consumes roughly one-third of all the natural gas delivered in the United States.[2] Therefore, states with mandated energy and emissions reductions are beginning to see the potential for natural gas utilities to help industry achieve large energy savings. A study conducted by the American Gas Association (AGA) found that natural gas utilities had implemented energy efficiency programs in nearly every state with revenue decoupling.[3] The study also found that natural gas utilities' energy efficiency programs achieved significant energy savings, especially in programs for commercial and industrial (C&I) customers. In the 2008 program year, participating C&I customers represented more than half of the total energy savings—compared to residential customers that only represented one-third.[4] This outcome is especially impressive because C&I programs regularly receive less funding than residential programs, and on average, natural gas utilities offer far fewer C&I energy efficiency programs than residential programs.[5]

Of the 15 states with the largest industrial natural gas energy consumption, 6 states—California, Colorado, Illinois, Indiana, Minnesota, and Wisconsin—have adopted revenue decoupling and 2 others are considering the policy.[6] However, PUCs rarely apply revenue decoupling to industrial customers. As of May 2010, only two states—California and Massachusetts—have ordered natural gas revenue decoupling for industrial customers.[7] Revenue decoupling regulation that does not apply to industrial customers means that natural gas utilities continue to operate with an incentive to distribute more natural gas to the largest end-users. This results in states, utilities, and industry missing an opportunity to align their interests and achieve energy efficiency in the industrial sector.

Revenue decoupling does not inherently cause a natural gas utility to promote energy efficiency, but it does remove the penalty for doing so. In order to encourage utilities to invest in energy efficiency programs, states regularly employ three complementary policies alongside revenue decoupling. First, states with mandated energy and emissions reductions also tend to require that natural gas utilities offer energy efficiency programs. Of the natural gas utilities that offered energy efficiency programs and responded to an AGA survey, all were legally required to do so.[8] The second policy provides natural gas utilities with a way to fund mandated energy efficiency programs. There are a variety of ways states design policies to recover program costs, but nearly all of them allow the utility to recover costs from the rate payer.[9] Third, states are embedding attractive, performance-based incentives for utilities that achieve predetermined energy-savings targets.[10]

OVERVIEW

In recent years, an increasing number of state Public Utilities Commissions (PUCs) have implemented revenue decoupling for natural gas utilities. Revenue decoupling is a regulatory mechanism that separates an investor-owned utility's revenues from its level of sales by ensuring that the utility earns a reasonable and fixed level of revenues, even as sales fluctuate. For decades, partial and limited decoupling mechanisms have been used for a number of purposes in a variety of forms. Revenue decoupling—a type of full decoupling—is a comprehensive, non-volumetric rate design that adjusts for disruptions to a utility's revenues for all circumstances, including those within a utility's control (such as energy efficiency programs).[11] In recent years, the United States has experienced a dramatic increase in the number of state PUCs that approved natural gas revenue decoupling for at least one natural gas utility.[12] State utility regulators increasingly view revenue decoupling as a tool for aligning the interests of natural gas utilities with state energy policies.[13]

Full Decoupling:

A utility recovers the allowed revenue no matter the reason for the variation in the allowed revenue and the actual revenue.

Partial Decoupling:

A utility recovers only some of the difference between the allowed revenue and the actual revenue.

Limited Decoupling:

Occurs only when revenue deviates from allowed revenue for specific reasons defined by the policy, such as unusual weather, economic downturns, or energy efficiency.

Source: Shirley, Wayne et al. Revenue Decoupling Standards and Criteria: A Report to the Minnesota Public Utilities Commission. *The Regulatory Assistance Project.* (June 30, 2008)

Many states have employed a variety of policies to encourage or mandate energy reductions, which can leave utilities with contradictory incentives. Currently, 30 states have implemented an Energy Efficiency Resource Standard (EERS),[14] 35 states have mandated Public Benefit Funds (PBF),[15] and 22 states have mandated greenhouse gas (GHG) emissions reduction targets—either state-wide or for electric utilities.[16] Only 17 states have not implemented any of these policies (see Appendix 1). The Regulatory Assistance Project (RAP) states, "aggressive [federal and state energy efficiency] standards make it even more urgent that state commissions reject structural conflict in traditional regulation that frustrates the least-cost, least-risk path to a low carbon future. Without decoupling—that is, under traditional ratemaking—utilities are told to do one thing (promote energy efficiency) while they typically make more money when they do the opposite (increase sales)."[17] Numerous states that have implemented an EERS, PBF, and/or emissions reduction policies have turned to natural gas revenue decoupling as a means to address the financial conflict utilities experience when efforts to reduce energy consumption are successful. Only three of the states that have implemented natural gas revenue decoupling—Arkansas, Indiana, and Wyoming—do not have at least one of these other state energy efficiency policies in place (see Appendix 1).

Revenue decoupling can help realign state energy policies with utilities' financial interests. First, revenue decoupling delinks a utility's revenues from its volumetric sales and removes the incentive to deliver larger quantities of gas.[18] Second, revenue decoupling allows a utility to recover the revenues lost from reductions in sales, which removes the disincentive to offer energy efficiency programs to customers.[19] Although revenue decoupling does not incentivize or mandate a utility to invest in energy efficiency programs, it does provide a clear opening to do so by removing a key barrier to utility efficiency offerings—the financial need to drive volumetric demand to increase revenues.[20] According to a 2008 study conducted by the American Gas Association (AGA), at least one natural gas utility implemented an energy efficiency program in all states (but one) that utilized revenue decoupling.[21] This sends a clear signal on the likely impacts of the policy.

Because U.S. industry accounts for roughly one-third of all natural gas delivered in the nation, states with energy and emissions reduction goals cannot ignore the potential impact revenue decoupling can have on industrial energy efficiency.[22] However, most PUCs have applied natural gas revenue decoupling to residential and commercial customers, but rarely to industrial customers. As of May 2010, only two states have ordered revenue decoupling for industrial customers of natural gas utilities.[23] Revenue decoupling regulations that do not apply to industrial customers may mean that states, utilities, and industry are missing a considerable opportunity to promote and achieve energy efficiency in the industrial sector.

This report will explain how revenue decoupling works, how it is instituted, and what it means for the industrial sector.

REVENUE DECOUPLING

Due to natural gas supply constraints, decoupling was first introduced in 1978 in the State of California to relieve natural gas utilities of reduced revenues (Decision 88835).[24] Since then, the number of states adopting revenue decoupling has grown. Between mid-2007 and early-2010, the number of states utilizing natural gas revenue decoupling rose from 10 to 18—an 80% increase.[25] As of January 2010, 18 states use natural gas revenue decoupling, while 4 more are considering the policy (see Appendix 2).[26] The following are state PUCs that have ordered natural gas revenue decoupling for at least one natural gas utility:

- Arkansas
- California
- Colorado
- District of Columbia
- Illinois
- Indiana
- Maryland
- Massachusetts
- Minnesota
- Nevada
- New Jersey
- New York
- North Carolina
- Oregon
- Utah
- Virginia
- Washington
- Wisconsin
- Wyoming

The following are states with PUCs considering natural gas revenue decoupling regulation for a natural gas utility:

- Kansas
- Michigan
- Nebraska
- Tennessee

States utilize decoupling for a variety of reasons. In Caliornia, where revenue decoupling has been in use for both gas and electric for more than 20 years, the California Public Utilities Commission (CPUC) views a direct relationship between decoupling and the state's significant energy-use reductions. CPUC states, "Under decoupling, California's per capita energy has remained relatively flat over the last 30 years. In perspective, energy use per capita in the rest of the country has surged by 50%."[27] Revenue decoupling is also viewed as a regulatory mechanism that helps provide financial stability to natural gas utilities, reducing the volatility in both customer bills and utility revenues, and reducing contention between regulators and natural gas utilities during rate cases.[28]

Although many states adopt revenue decoupling for a trial period with the option to terminate the policy, few states have reversed the use of revenue decoupling.[29] To date, only one state has terminated revenue decoupling for a natural gas utility. In 2007, the Public Utility Commission of Ohio (PUCO) implemented revenue decoupling for the natural gas utility, Vectren Ohio. A few years later, the policy was replaced with a straight fixed-variable (SFV) mechanism.[30]A SFV mechanism is a non-volumetric rate design that charges a flat monthly fee regardless of the volume of gas delivered. PUCO terminated the revenue decoupling policy in favor of SFV because a flat monthly fee did not require a periodic adjustment calculation, as did revenue decoupling. SFV was perceived to be a simpler mechanism with the same outcome.[31] However, critics argue that the two methods do *not* have the same outcome.[32] While revenue decoupling and SFV are both non-volumetric rate designs that delink a utility's revenues from its volume of sales, SFV is a flat monthly fee, and critics argue that it distorts a customer's price signal by removing the relationship between energy consumption and cost.[33]

Natural Gas Utilities

A natural gas utility operates under a different set of cost factors than electric utilities. The differences are important to understanding the benefits and challenges of natural gas decoupling regulation. A natural gas utility has two categories of costs—the cost of the gas commodity itself and the cost of delivering natural gas to end-users. By law, a natural gas utility is prohibited from marking up the price it charges customers for gas, and thus, the cost of natural gas is passed directly to customers without markup. In this way, a natural gas utility's revenues are separated from the cost of natural gas. Unlike an electric utility that sells electricity, a natural gas utility is not in the business of selling natural gas. Rather, natural gas utilities are in the business of procuring and distributing natural gas.

> The Purchased Gas Adjustment (PGA) allows utilities to adjust the price of gas it charges customers in parallel to the fluctuations of the natural gas commodity price. PGA is one of the oldest partial decoupling mechanisms (it has been used since World War II) and is used universally throughout the United States.
>
> Source: American Gas Association

The costs of delivering natural gas are generally fixed costs—such as maintaining gas pipelines, providing customer service, preserving safety, paying employees, and affording shareholders a reasonable return on investment.[34] These costs do not vary significantly with the volume of gas delivered.[35] Natural gas utilities charge their customers both a distribution rate and the cost of the natural gas itself, but only the portion of revenues from distribution actually provides the utility with revenues that translate into profits.

How Revenue Decoupling Works

Traditional Rate Case

To understand how revenue decoupling works for natural gas utilities, it is useful to consider how a traditional rate case determines the price utilities can sell a unit of natural gas for. To determine a utility's rate, a regulatory body—typically a PUC—determines the utility's authorized level of revenue by establishing the expenses a utility must recover for its distribution service and operating costs, as well as a reasonable return on equity for shareholders. Gas costs are excluded from the authorized revenue calculation because they are passed on directly to customers. By dividing the authorized revenue by the expected volume of natural gas distribution, the regulatory body determines a rate—or price per unit of delivery—at which the utility is authorized to sell natural gas distribution.

Authorized Revenues / Expected Units of Distribution Sold = ***Allowed Rate or Price per Unit of Delivery***

To determine the price for customers, the per-unit price of the natural gas commodity is added to the price per unit of delivery.

Allowed Price per Unit of Distribution + Price per Unit of Natural Gas = ***Price per Unit a Customer Pays***

If a natural gas utility's actual distribution revenues are larger than assumed during the rate case, the utility can exceed the amount of its authorized revenues. For example, if the winter following a rate case is unusually cold, customers will use more gas and the utility can experience larger sales than were forecasted. On the other hand, if the utility's customers implemented significant energy efficiency measures, the utility may receive less than the authorized level of revenues. With a traditional rate case, these discrepancies can be accounted for in the next rate case only in so far as the last period's actual sales inform the new rate case's forecasts. The utility, however, does not make up for the difference between expected and actual revenues in the previous rate period. The gains and losses are under the bridge and unrecoverable for both the utility and the customer. In general, traditional rate cases that promote volumetric rate design facilitate inequity—either the utility or the customer loses—and encourage inefficiency because the utility's only recourse is to file for new rate cases more often.[36]

California's Decoupling PLUS

California, considered the birth-place of revenue decoupling, has paved the way for the next generation of revenue decoupling. As of 2007, California implemented "Decoupling Plus," which serves to address some of the limitations of revenue decoupling. In the effort to achieve ambitious state emissions-reductions goals by 2010, Decoupling Plus does three things:

First, the policy creates new incentives and penalties that encourage utilities to reduce energy usage.

Second, where the original revenue decoupling only removed the disincentive to sell less gas, Decoupling Plus goes a step further by providing performance rewards for utilities with successful energy programs.

Last, revenue decoupling can produce a conflict between societal and shareholder interests in the sense that it provides resource benefits and bill savings for consumers, but may not benefit shareholders in the long run (Sedano, 2009). California's Decoupling Plus was designed to align long-term shareholder and customer financial interests with energy efficiency.

Source: California Public Utilities Commission, Decoupling Plus brochure.

Revenue Decoupling and Traditional Rate Cases

Revenue decoupling does not change the fundamental process of the rate case, rather it allows for a "true-up" mechanism that adjusts for discrepancies between the authorized revenues of a rate case and actual revenues. When the actual per-unit distribution sales are lower than the rate case had forecasted, the utility administers a surcharge on its customers' bills to reconcile the difference between its authorized and actual revenues. On the other hand, when the per-unit sales are higher than expected, the utility issues a credit to customers.

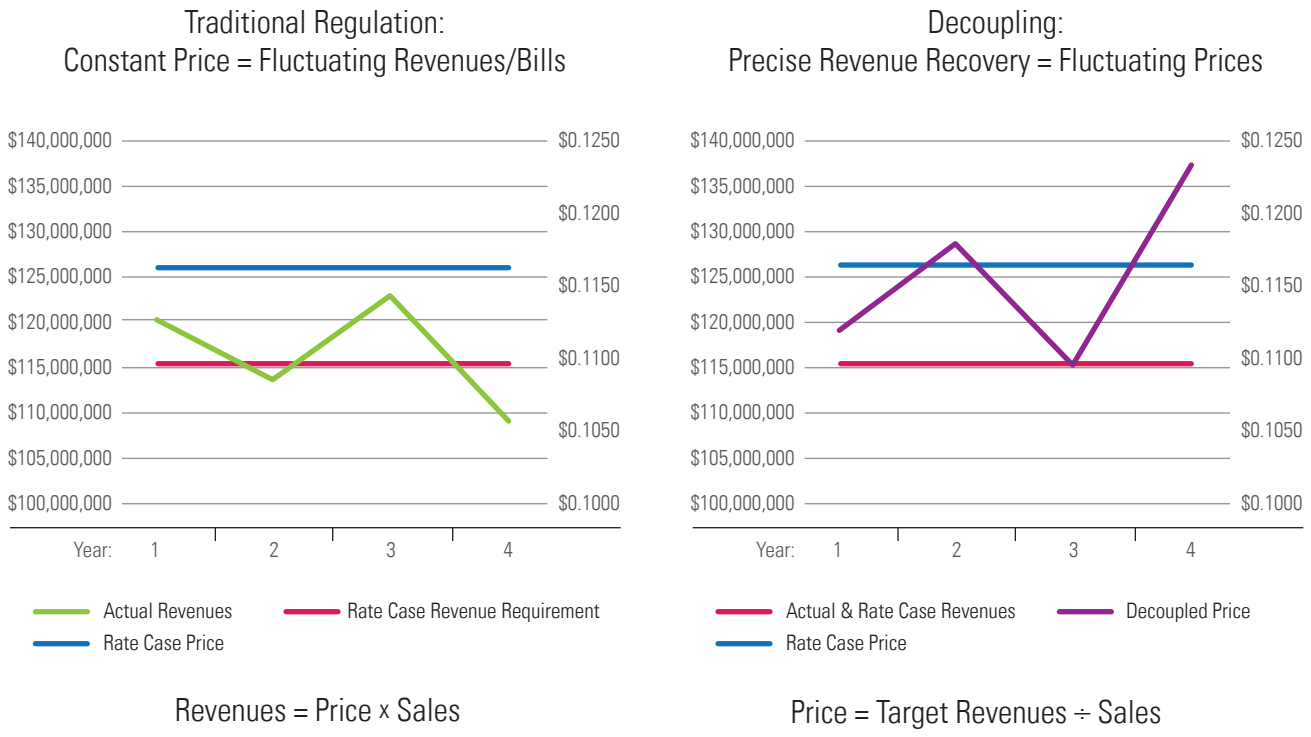
Although revenue decoupling can appear complex and peculiar, it is a relatively simple amendment to traditional rate design.[37] There are two primary concepts to keep in mind. First, a traditional rate case uses a forecast of sales to set a rate whereas revenue decoupling uses actual sales to set a rate. Because actual sales can only be known after-the-fact, revenue decoupling calculates an adjustment at a later date. Second, as described in Exhibit 1 below, a traditional rate case allows revenues to fluctuate around a fixed-rate price, whereas revenue decoupling allows a rate price to fluctuate around a fixed level of revenues.[38]

Natural Gas Utilities' Incentives with Revenue Decoupling

Revenue decoupling alters a natural gas utility's incentives in important ways. First, a utility is motivated during a rate case to inflate its reasonable expenses and/or reduce its expected volume of distribution sales in order to put upward pressure on the rate it is authorized to charge.[39] On the other hand, when revenue decoupling is implemented a utility has less incentive to fight for particular assumptions because it will either be reimbursed or be required to issue a refund for any discrepancies.[40] Therefore, revenue decoupling tends to reduce the adversarial quality between a utility and its regulators during a rate case, and the rate cases—which are quite lengthy—can be potentially shorter and less expensive for both the utility and PUC.[41]

Second, revenue decoupling removes the incentive to distribute larger quantities of natural gas.[42] Natural gas utilities simply pass along the cost of gas to the customer based on their consumption. However, a traditional rate case artificially embeds a volumetric incentive to distribute more gas by setting the price a utility can charge for distribution on the volume of natural gas that passes

Exhibit 1: *Fluctuations in Traditional Rate Cases versus Revenue Decoupling*



Source: Shirley, W., & Lazar, J. "The Regulatory Assistance Project." *Decoupling Workshop, Arizona Corporation Commission.* (2010, April)

through the pipeline. In a traditional rate design, the utility is incentivized to distribute as much gas as possible in order to increase revenues.[43] Revenue decoupling removes this incentive because at the end of each month, or year, the utility is guaranteed its authorized revenues even if it sells fewer units of gas than expected. Moreover, if the utility sells more than was forecasted per customer, there is no real benefit because the utility issues a customer credit for the difference.

A common misconception with revenue decoupling is that it reduces a natural gas utility's incentive to make sound business choices because it is guaranteed earnings or profits.[44] It is important to understand the difference between a utility's authorized revenues and its actual profits.[45] Authorized revenues are determined by a regulator to reflect the reasonable fixed costs a utility must recover to stay in business and maintain service and safety. In contrast, the profit a utility earns is based on the difference between its actual revenues and actual costs.

The only way a utility can earn a profit is by keeping its actual revenues higher than actual costs. When revenue decoupling is implemented, it does not guarantee the utility a set level of earnings or profits.[46] Revenue decoupling only guarantees a utility it's authorized revenues, which is ultimately a proxy for a reasonable portion of the utility's fixed costs.

How States Implement Revenue Decoupling

There is considerable nuance in the extent, design, and implementation of decoupling regulation. Each state and utility implements decoupling differently in terms of what types of changes in revenues are considered, how the adjustments are calculated, when the calculations are made, how energy bills explain credits and surcharges, whether there are limits on the size of an adjustment, and so on. However, some decoupling regulation characteristics are widespread. A 2009 study examined the revenue decoupling used by 28 natural gas utilities in 17 states. The study found the following features to be the most common, used by at least two-thirds of the natural gas utilities studied:[47]

- Both surcharges and credits are issued [rather than only surcharges]
- Adjustments are calculated and issued separately for different customer classes
- Adjustments are based on changes between actual and authorized revenues on a revenue-per-customer basis, which allows a utility to add customers without penalty
- While most states have an unusual weather adjustment, weather tends to be calculated as a separate adjustment mechanism
- Adjustments are calculated annually
- Surcharges and credits are shown as a separate tariff page on a customer's bill

Two features are also used by more than one-third of the utilities studied:[48]

- The decoupling mechanism is based on a test period or pilot phase and can be terminated or reassessed after a number of years
- Adjustments are capped by a dollar amount or percentage rate of change

Decoupling Pros and Cons

Exhibit 2: *Advantages and Disadvantages of Revenue Decoupling*

	Benefits of Revenue Decoupling	Disadvantages of Revenue Decoupling
Customers and Utilities:	• Reduces volatility in a utility's revenue and customers' bills.[49] • Provides more equity between customers and the utility because decoupling is based on actual revenues rather than estimates. Decoupling helps remove the zero sum game between a customer and a utility.[50] • Significant energy conservation has the potential to cause a gradual decline in gas commodity prices as overall demand is reduced.[51]	• Customers may not understand how decoupling serves their long-term interests because they may experience extra surcharges in the short term. • Delays in surcharges and credits on customer bills may dilute a customer's perceived risk reduction to fluctuating energy bills. • Some perceive volatility in utility revenues as being in the rate payer's best interest—in other words, rate payers should benefit when weather is mild or they adopt energy conservation measures.[52]
Regulators and Utilities:	• May reduce controversy in utility rate cases because assumptions in rate cases are later reviewed and adjusted.[53] • May reduce the frequency, length, and cost of rate cases.	• Regulators must conduct a true-up calculation to adjust for discrepancies between estimated and actual authorized revenues, which can be a complex process.
States and Utilities:	• Removes incentive for utilities to discourage public policies that promote energy efficiency and green house gas reductions.[54] • Causes state and utility resources to be more efficient because they are not working against each other to reduce and increase energy use, respectively.[55]	• Although revenue decoupling allows utilities to recover lost revenues from declining sales in a particular year, the utility does not recover marginal loses in future years.
Energy Efficiency:	• Removes utilities' incentives to increase volumetric sales.[56] • Utilities are in a good position to reach customers with energy efficient opportunities and education; thus removing the barriers for utility energy efficiency programs helps achieve energy reductions.	• Revenue decoupling removes the incentive to encourage energy consumption, but it does not in itself provide an incentive to invest in energy conservation programs.[57]
Stakeholders:	• As per capita natural gas use continues to decline, investors are beginning to perceive states and utilities with innovative rate designs that align energy efficiency and company profits as better investments.[58]	• Revenue decoupling could shift the risk between utility shareholders and ratepayers.[59] • Revenue decoupling removes the penalty for energy conservation in the short term, but it does not improve a shareholders return on equity in the long run.

COMPLEMENTS TO REVENUE DECOUPLING

The link between revenue decoupling and natural gas utility efficiency programs continues to interest states that are aiming to reduce energy consumption or mitigate GHG emissions. However, as previously stated, revenue decoupling removes the disincentive for natural gas utilities to implement energy efficiency programs, but does not directly incentivize them to do so, nor does it provide financing to invest in such programs. Therefore, it is worth noting the two other complementary mechanisms that states often employ alongside revenue decoupling to both fund and incentivize utility energy efficiency programs.

The two primary means used to motivate utilities to implement energy efficiency programs are requiring them to and providing a source of funding for the programs. In fact, all 74 natural gas energy efficiency programs that responded to the AGA survey operate in states where natural gas utilities are legally mandated to fund energy efficiency programs.[60] In parallel, states also provide utilities a means of recovering energy efficiency program costs. In 35 states, natural gas utilities' energy efficiency program costs can be recovered from rate payers through added charges to base rates or a special energy efficiency surcharge on their energy bills.[61]

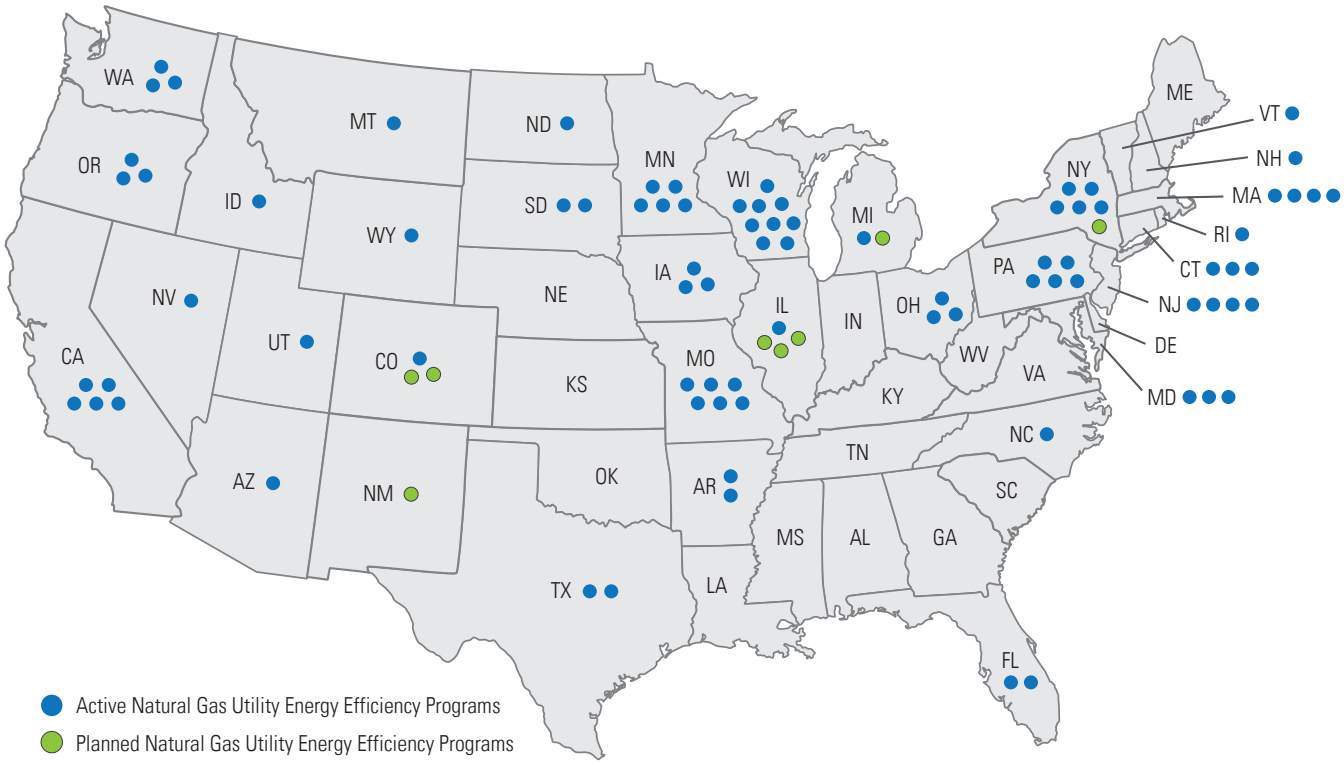
There is also an increasing trend among states to not only remove the disincentive for utilities to promote energy efficiency and mandate funding for doing so, but to also provide attractive performance incentives for utilities that achieve defined and measurable goals. As of 2008, 11 states employee such incentives.[62]

INDUSTRIAL IMPACTS

Industrial Energy Efficiency and Natural Gas Utilities

The U.S. industrial sector constitutes a large share of the U.S. economy. In 2008, industry was responsible for generating $2.1 trillion and accounted for 15% of total gross domestic product.[63] Not surprisingly,

Exhibit 3: *Map of U.S. States with Natural Gas Energy Efficiency Programs*



Source: American Gas Association, Natural Gas Utilities Energy Efficiency Programs: 2008 Program Year, Policy Analysis Group. (2009, December)

Exhibit 4: *U.S. Natural Gas Energy Efficiency Program Impacts by Customer Class**

Sector	Programs' Estimated Expenditures (Million Dollars)	Programs' Estimated Energy Savings (Trillion BTU)	Number of Programs by Customer Class	Participating Customers
Residential	$185.9 (33%)	9.45 (33%)	74 Programs (99%)	1,145,664 (93%)
Low Income	$168.3 (30%)	0.96 (3%)	---	---
Commercial and Industrial	$157.3 (28%)	15.27 (53%)	50 Programs (67%)	90,618 (7%)
Other**	$53.4 (9%)	3.29 (11%)	---	---
Total	**$564.9 M**	**28.97 Trillion BTU**	**74 Programs**	**1,236,282**

*The results of the survey are estimates, given that not all responders used identical methods for data tracking. For example, some respondents included multi-family programs with C&I program savings and a very small number could not provide data by customer class and thus reported overall savings in the other category. Additionally, responses were given for the last program year, which was not always uniform.

** Other includes, for example, program administration costs.

Source: American Gas Association, Natural Gas Utilities Energy Efficiency Programs: 2008 Program Year, Policy Analysis Group. (December 2009)

industry consumes nearly 30% of all direct natural gas in the United States[64] and produces roughly 1,670 million metric tons of carbon dioxide (CO2) emissions annually.[65] However, for more than three decades industrial energy consumption has remained relatively flat—even as production doubled. In effect, industrial energy intensity has declined 50% since the early 1970s, highlighting both the achievements and opportunities for industrial energy efficiency.[66] Nonetheless, there is growing pressure to further reduce energy consumption and GHG emissions. Due to its large share of energy consumption, the industrial sector can play an important role in achieving state energy goals. To this end, natural gas utilities are in an ideal position to work with both states and industry to achieve energy savings.

In 2009, AGA published the results of a survey that examined their natural gas utility members' energy efficiency programs.[67] The study found that there were 81 natural gas utilities in program year 2008 that had both implemented and administered an energy efficiency program in the United States.[68]

Of the 75 natural gas utilities with energy efficiency programs (41 investor-owned natural gas distributors and 34 investor-owned gas and electric) that responded to the survey in full, 99% provided energy efficiency incentives for residential customers, 67% provided commercial and small industrial initiatives, and 1 program provided measures to commercial and industrial customers (C&I) only.[69] Survey results indicated that more utilities offered residential programs than industrial programs, they spent more on residential customers, and their residential customers participated far more often. However, the report also found that the energy efficiency programs for C&I customers accounted for nearly 53% of total energy savings—compared with only 33% savings from residential customers.[70] Dollar for dollar, investments made in industrial and commercial energy efficiency captured energy-saving opportunities more effectively than investments for residential customers. AGA's study suggests that natural gas utilities successfully helped C&I customers save 15.27 trillion British thermal units (Btu), and that they offered industrial customers meaningful solutions for reducing energy consumption and saving energy costs.[71] Additionally, the energy savings from C&I customers reduced CO2 emissions by an estimated 1.6 million tons, indicating that natural gas utilities' energy efficiency programs are in a good position to help states achieve emissions-reductions goals. [72]

AGA's study also found a strong link between natural gas revenue decoupling and the implementation of energy efficiency programs by natural gas utilities. In the 2009 study, AGA reported, "It is interesting to note that natural gas efficiency programs are implemented in all states (but one) that allow decoupling of natural gas utility rates."[73]

Natural Gas Revenue Decoupling and the Industrial Customer

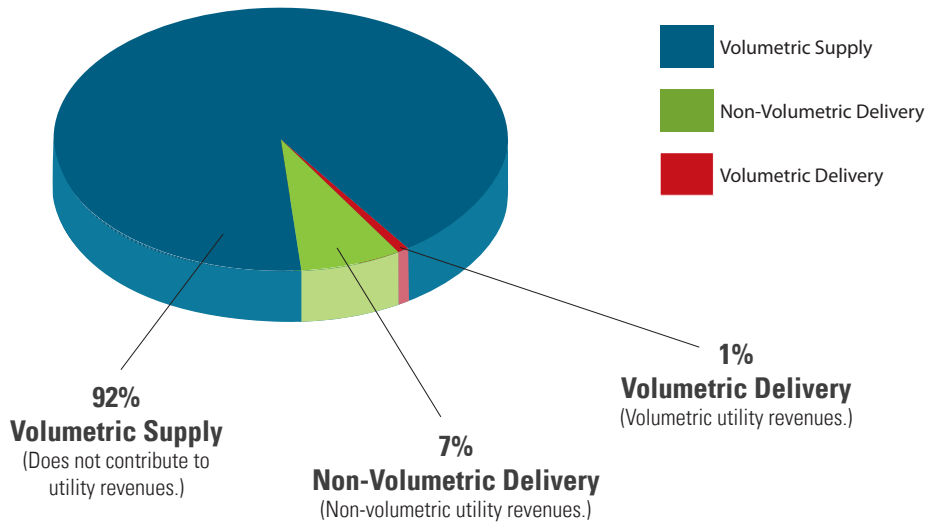
Unlike residential customers, industrial customers are not a homogenous group. C&I natural gas customers exhibit a wide spectrum of sizes—from small, medium, large, and extra large. Generally, natural gas utilities group C&I customers in a variety of classes to design rates that work well for the group's characteristics in energy consumption and demand. Large industrial natural gas customers in particular have unique characteristics that cause some analysts to describe them as "already decoupled," (in the sense that a natural gas utility's revenues are not highly dependent on the large industrial customer's volume of gas consumption and delivery).[74]

There are two primary reasons that large industrial customers are often considered "already decoupled." First, the majority of large industrial customers' total gas bill is for the cost of the gas commodity and only a small portion of the bill is for the cost of delivery. For example, as shown in Exhibit 5, a large industrial customer of Northwest Natural Gas (NWNG) in Oregon tends to pay 92% of their bill for the cost of the gas and 8% percent for delivery.[75] Since natural gas utilities do not accrue revenue for the sale of the gas commodity, only a small (delivery) portion of a large industrial customer's gas bill contributes to a utility's revenues. Thus, the volume of gas consumed by a large industrial customer is mostly decoupled from the natural gas utility's revenues.

Second, large industrial customers often have contractual agreements to pay a fixed price for some or most of the delivery portion of their gas bill. To this end, while the delivery portion of a large industrial customer's bill contributes to a utility's revenues, only a portion of the delivery charges are tied to the volume of gas delivered. For example, 7% of a NWNG large industrial customer's bill is for *non*-volumetric delivery (fixed fee contract) while only 1% of the same customer's bill is for volumetric delivery.[76] In effect, the utility's revenues are largely independent—or decoupled—from the volume of gas it delivers to a large industrial customer.

However, natural gas utilities are not homogenous either in terms of the dominant customer classes in their service area or the structure of rate designs for various customer classes. For natural gas utilities with significant industrial sectors in their service area, even the small portion of an industrial customer's volumetric delivery charges could represent a large share of a utility's total revenues. Similarly, natural gas utilities that structure their large industrial contracts with fewer fixed fee rates may also be more dependent on revenues from volumetric delivery. Natural gas utilities that operate under these circumstances are less likely to be "already decoupled" with regards to the link between revenues and volume of gas delivery for industrial customers. Thus, revenue decoupling applied to industrial customers could provide a buffer to reductions in their industrial revenues from energy efficiency or other causes. Because revenue decoupling typically works both ways, industrial customers within these service areas would not only experience the surcharges, but also the credits that are issued under a revenue decoupling scheme.

Exhibit 5: *Northwest Natural Gas: Example of Large Industrial Customer Bill*



Source: Jim Lazar, "Industry Customer Participation in Utility Energy Efficiency Programs," The Regulatory Assistance Project, (April 2010)

States with Natural Gas Revenue Decoupling Applied to Industrial Customers

As of January 2010, only 2 of the 18 states that have adopted natural gas revenue decoupling have required that the mechanism apply to industrial customers—California and Massachusetts.[77] Natural gas utilities in all other states continue to operate under an incentive to sell more natural gas distribution to the customers that consume the largest amounts. For states with mandated energy-reduction targets, there is a significant opportunity to achieve industrial energy savings by aligning natural gas utilities' financial interests with state energy goals. An examination of the revenue decoupling mechanism applied to a natural gas utility's industrial customers in Massachusetts provides an example and potentially a new precedent for how PUCs might address the unique and non-homogenous character of large and extra large natural gas customers in a revenue decoupling policy. Not surprisingly, the Massachusetts' Department of Public Utilities (MDPU) designed its revenue decoupling policy for natural gas as a direct response to the state legislature's energy goals.

Massachusetts

In 2008, the Massachusetts legislature passed the Green Communities Act—a bill that outlined a path towards reducing fossil fuel-based energy and increasing clean energy in the state.[78] Subsequently, the MDPU issued a directive stating that all electric and natural gas utilities would operate under a full revenue decoupling mechanism by the end of 2012 (DPU 07-50-A-2008).[79] Revenue decoupling was implemented by MDPU to align utility incentives with the state's energy policy set forth in the Green Communities Act.[80]

In 2009, Bay State Gas was the first natural gas utility in Massachusetts to come under full revenue decoupling regulation. It was also the first natural gas utility outside of California to have revenue decoupling regulation applied to industrial customers (DPU 09-30).[81] Two important aspects of the order applied to commercial and industrial (C&I) customers.

First, MDPU proposed employing the most commonly used revenue decoupling mechanism,which calculates revenues on a revenue-per-customer basis (RPC). [82] This allows a utility to experience revenue growth from the addition of new customers but not from existing customers. It was also proposed that a benchmark be set for the authorized RPC in each customer class. The benchmark could then be multiplied by the number of customers in each customer class to reconcile Bay States' authorized revenues versus actual revenues in the true-up calculation. Bay State Gas found the proposals appropriate, except for C&I customers. Bay State argued that when C&I customers transition to another rate class, they most likely move to a smaller class, and thus, "the net effect of a customer switching from a large rate class to a small rate class results in [the utility's] allowed revenues being reduced by the difference between the RPC for the large class and the RPC for the small class."[83] In order to avoid providing Bay State with a disincentive to promote conservation in C&I classes, MDPU approved the utility's request to combine all C&I customers into one class with regard to reconciling its revenues.

The second aspect of the decoupling regulation that applied to C&I customers addressed the treatment of new customers after the test year. Bay State suggested that new residential customers, as well as new small and medium commercial customers, were typically homogenous; therefore, calculating new customers in these classes with the same benchmark RPC as determined in the test year would not result in large discrepancies.[84] However, Bay State argued that this was not the case for new large and extra large C&I customers. The utility stated that under revenue decoupling regulation these new customers could be counted as equal to the average RPC for all C&I but would in fact represent much higher actual costs associated with serving them due to their size.[85] To this end, Bay State foresaw a disincentive to add new customers to these rate classes and proposed to delay adding the large and extra large C&I customers to the decoupling adjustment until the next rate case (at which time they could be included in the average RPC calculation).

The Massachusetts Department of Energy Resources (DOER) was concerned that excluding new large and extra large C&I customers would provide a disincentive for Bay State to promote energy efficiency for these classes.[86] Instead, DOER proposed that these new large C&I customers be included in the revenue decoupling immediately, but they would represent "an equivalent number of average sized C&I customers."[87] In the end,

however, MDPU ruled for excluding the new large and extra large C&I customers until the following rate case. The decision was based on estimated calculations of large revenue losses† for Bay State if the utility was ordered to include these customers from the start.[88]

MDPU made a compromise to delay applying new large and extra large C&I customers in the decoupling regulation's true-up mechanism until the following rate case, but nonetheless ordered a precedent-setting decision to include existing—and eventually new—C&I customers of all sizes in the natural gas revenue decoupling adjustments.

CONCLUSION

Of the 15 states with the largest industrial natural gas energy consumption, 6 states—California, Colorado, Illinois, Indiana, Minnesota, and Wisconsin—have adopted revenue decoupling and 2 are considering the policy.[89] Only one of these large industrial states has applied revenue decoupling to industrial customers. California, the third largest industrial consumer of natural gas in the United States, was the first and only state to do so until Massachusetts followed suit very recently. CPUC has cited revenue decoupling for both electric and natural gas utilities as a primary reason for the exceptional achievements in energy savings the state has experienced in the last three decades.[90] California's long history of natural gas revenue decoupling—in general and for industrial customers—could be of interest to other states with large industrial sectors. For all states interested in achieving larger natural gas energy savings, both California and Massachusetts provide templates to consider for natural gas revenue decoupling that applies to the largest natural gas consumers—industrial customers.

† D.P.U. 09-30 Page 97: "Thus, if the Company were to include new incremental large C&I customers in the calculations of the peak revenue decoupling adjustment, then the Company would have received an incremental amount of revenue that is approximately equal to $1,551 for a new customer, compared to the average revenue of $13,472 had that customer been excluded, or a difference of $11,921 for that one large customer. 54 Similarly, if the Company were to include new incremental extra-large C&I customers in the calculations of the peak revenue decoupling adjustment, then the Company would have received an incremental amount of revenue that is approximately equal to $1,551, compared to the average revenue of $69,701 had that customer been excluded, or a difference of $68,150 for that one large customer."

APPENDIX A

States' Industrial Natural Gas Consumption and Energy Efficiency Policies

State	Industrial Natural Gas Consumption, 2009 (MMcf)[a]	Public Benefits Funds[b]	EERS for Electric and/or Natural Gas[c]	Emission Reduction Targets[d]	Natural Gas Decoupling 2010[e]
Texas	1,184,365	YES	Electric		
Louisiana	761,347				
California	745,745	YES	E&G	YES	YES
Indiana	244,655				YES
Illinois	233,859	YES	E&G	YES	YES
Ohio	225,215	YES	Electric		
Pennsylvania	171,990	YES	Electric		
Oklahoma	166,660				
Georgia	138,035				
Alabama	130,352			YES	
Michigan	125,649	YES	E&G		PENDING
Wisconsin	118,581	YES			YES
Colorado	113,949	YES	E&G	YES	YES
Minnesota	109,165	YES	E&G	YES	YES
Kansas	108,949				PENDING
Mississippi	98,937				
Kentucky	93,036				
Tennessee	84,345				PENDING
North Carolina	82,181	YES	Electric		YES
Arkansas	77,553				YES
Nebraska	73,555				PENDING
New York	72,639	YES	Electric	YES	YES
Washington	71,330	YES	Electric	YES	YES

[a] U.S Energy Information Agency, 2009.

[b] Glatt, S. Public Benefit Funds: Increasing Renewable Energy & Industrial Energy Efficiency Opportunities, U.S. Department of Energy, 2010.

[c] Glatt, S., & Schwentker, B. State Energy Efficiency Resource Standards Analysis, U.S. Department of Energy, 2010.

[d] Pew Center, Decoupling in Detail, May 24, 2010, http://www.pewclimate.org/what_s_being_done/in_the_states/decoupling_detail.

[e] American Gas Association, Natural Gas Rate Round-Up: Update on Revenue Decoupling Mechanisms, April 2007. Compared to: American Gas Association, Map of States with Decoupling, January 2010. And the addition of Minnesota Public Utility Commission Docket No. G-008/GR08-1075 and Massachusetts Department of Public Utilities Order No. DPU 09-30.

APPENDIX A - CONTINUED

States' Industrial Natural Gas Consumption and Energy Efficiency Policies

State	Industrial Natural Gas Consumption, 2009 (MMcf)[a]	Public Benefits Funds[b]	EERS for Electric and/or Natural Gas[c]	Emission Reduction Targets[d]	Natural Gas Decoupling 2010[e]
Florida	65,776	YES	Pending Electric	YES	
South Carolina	64,130				
Missouri	61,449				
Oregon	57,318	YES		YES	YES
New Jersey	48,992	YES	Pending E&G	YES	YES
Massachusetts	41,849	YES	Pending E&G	YES	YES
Wyoming	37,242				YES
South Dakota	33,462				
Utah	29,749	YES	Pending E&G		YES
Montana	27,015	YES			
Maine	25,344	YES		YES	
Connecticut	24,585	YES	Electric	YES	
West Virginia	24,473				
Idaho	24,207	YES			
Maryland	23,651	YES	Electric		YES
Arizona	17,809	YES	Pending Electric		
New Mexico	17,019	YES	E&G	YES	
North Dakota	15,804				
Nevada	11,402	YES	Electric		YES
Alaska	6,640				
New Hampshire	5,139	YES		YES	
Vermont	2,894	YES	Electric	YES	
Hawaii	344		Electric	YES	
District of Columbia	Not Reported	YES			
Iowa	Not Reported	YES	E&G		
Delaware	Not Reported	YES	E&G		
Rhode Island	Not Reported	YES	E&G	YES	
Virginia	Not Reported		Electric		YES

APPENDIX B

Approved and Pending Revenue Decoupling in the United States

Approved Revenue Decoupling		
Arkansas	Center Point Energy Arkansas Western Gas Arkansas Oklahoma Gas	Docket No. 06-161-U Docket No. 06-124-U Docket No. 07-026-U
California	Pacific Gas and Electric San Diego Gas and Electric Southern California Gas Southwest Gas	Application No. 02-02-012 Application No. 02-02-012 Application No. 02-02-012 Application No. 02-02-012
Colorado	Public Service Company of Colorado	Docket No. 06-656-G
Illinois	Peoples Gas Light and Coke Company North Shore Gas Company	Docket No. 07-0242 Docket No. 07-0241
Indiana	Vectren Indiana Vectren Southern Indiana G&E Citizens Gas & Coke Utility	IURC Cause No. 42943 IURC Cause No. 42943 IURC Cause No. 42767
Massachusetts	Bay State Gas	Docket No. D.P.U. 09-30
Minnesota	Center Point Minnesota Gas	Docket No. G-008/GR08-1075
Nevada	Southwest Gas	Docket No. 09-4003
Maryland	Baltimore Gas and Electric Washington Gas	Case No. 8780 Case No. 8990
Minnesota	Center Point Minnesota	Docket No. G-008/GR08-1075
New Jersey	New Jersey Natural Gas South Jersey Gas	Docket No. GR05121020 Docket No. GR05121020
New York	Central Hudson Gas and Electric Consolidated Edison of New York National Fuel Gas Distribution National Grid Niagara Mohawk Orange & Rockland Utilities	Case No. 08-G-0888 Case No. 06-G-1332 Case No. 07-G-0141 Case No. 08-G-0609 Case No. 05-G-1494
North Carolina	Piedmont Natural Gas Public Service Co. of North Carolina	Dockets G-9, Sub. 499, G-9, Sub 461, G-44, Sub 15 Docket G-5, Sub 495
Oregon	Cascade Natural Gas NW Natural Gas	Docket UG-167 Docket UG-143
Utah	Questar Gas Co.	Docket No. 05-057-T01
Virginia	Virginia Natural Gas	PUE-2008 00060
Washington	Avista Corp. Cascade Natural Gas	Docket No. UG-060518 Docket No. UG-060256
Wyoming	Wyoming Questar Gas Co.	Docket No. 30010-94-6R-08
Wisconsin	Integrys-Wisconsin Public Service Co.	Docket No. 6690-UR-119

APPENDIX B - CONTINUED

Approved and Pending Revenue Decoupling in the United States

Pending Revenue Decoupling		
Kansas	Kansas Gas Service	Docket No. 10-KGSG-421-TAR
Michigan	Consumers Energy Michigan Gas Utilities Michigan Consolidated Gas	Case No. U-15506 Case No. U-15990 Case No. U-15985
Nebraska	SourceGas Distribution	Docket No. NG-0060
New Jersey	Pivotal Utility Holdings	Board of Public Utilities
New York	National Grid NYC National Grid Long Island	Case No. 06-G-1185 Case No. 06-G-1186
Tennessee	Chattanooga Gas	Docket No. 09-00183
Virginia	Columbia Gas	PUE-2009 00051

Source: American Gas Association, (2010, May 25) http://www.aga.org/Legislative/RatesRegulatoryIssues/ratesregpolicy/Issues/Decoupling/

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