Natural Gas Efficiency
Programs Report

Natural Gas Efficiency Program Planning and Evaluation

2019 PROGRAM YEAR

Authored by:
Sapna Gheewala

April 2022

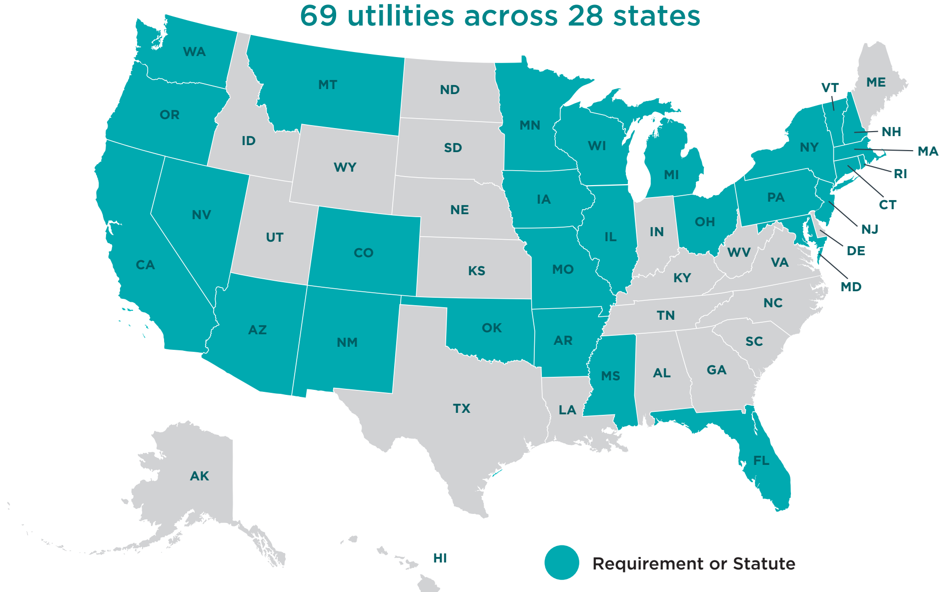
Natural Gas Efficiency Regulatory Requirements and Cost Recovery Treatment

There are a number of regulatory and legislative requirements that govern natural gas efficiency programs in the United States. Types of requirements include state potential studies, efficiency program spending requirements, recovery of direct program costs, lost margin recovery, financial incentives for well-performing programs, carbon offset programs, and fuel switching to natural gas. For this report, data was provided for 97 U.S. programs, although not all respondents answered all questions.

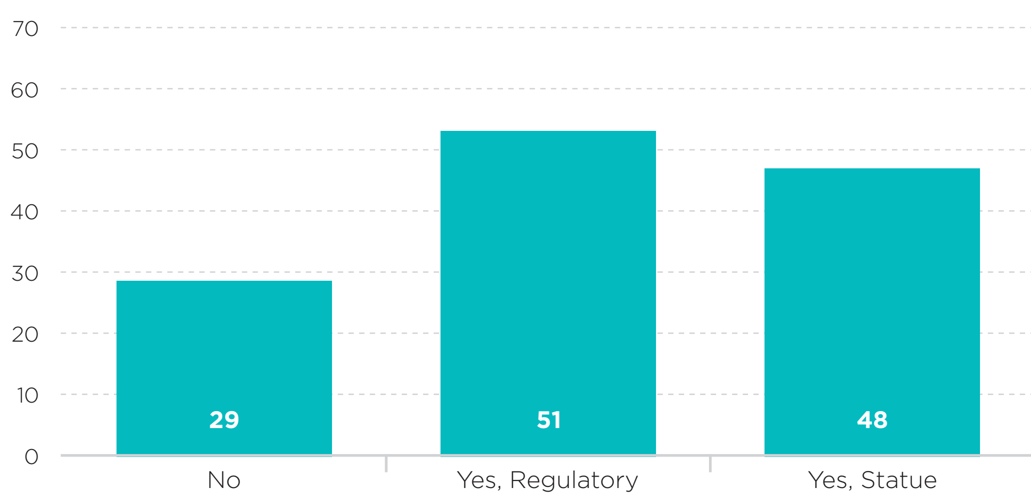
Natural Gas Efficiency Program Requirements and Policy Goals

Many states mandate utility investment in natural gas efficiency programs through a regulatory order, or legislation and utilities may be counted twice if they indicated both. Of the total 97 utilities in the 28 states and 4 Canadian provinces that participated, 69 indicated that the state in which it operates requires the funding of an efficiency program. Fifty-one respondents indicated a requirement via regulatory order, 48 utilities through a legislative bill, and 30 respondents indicated both regulation and legislation all in the same range as 2018 respondents.

States that Require Utilities to Fund Energy Efficiency Programs
69 utilities across 28 states



State Requirement for Utilities to Fund Efficiency Programs
97 total respondents[1] (2019 Data)



1. Many states mandate utility investment in natural gas efficiency programs through a regulatory order or legislation and utilities may be counted twice if they indicated both.

Various goals drive efficiency program funding requirements within the U.S. and Canada. Utilities that answered "Yes" above filled out specific policy and regulatory goals, which have been aggregated in the table below. Utilities were also asked to indicate which goals were program-specific goals. These goals may overlap for utilities but should be considered independent goals for each category in the table.

The top five goals of the 2019 survey include energy conservation and savings, customer dollar savings or bill reduction programs, behavioral change and direct outreach programs, reduced usage and cost burden for low-income customers, and value-added customer service and options programs. Seventy-five utilities in 34 states have set more than one goal, of which 29 utilities are pursuing 10 or more targets.

Additional policy goals and program breakdown data are provided in the table below:

Policy Goals Governing Efficiency Program Implementation in 2019
Number of Programs by Goal/Target
97 Participating Utilities[2]

Target / Path	Program Provider	Policy Target In Enabling Legislation	Regulator Goal
Promote Energy Conservation / Direct Impact On Energy Savings	64	36	49
Customer Dollar Savings / Reduce Customer Bills	58	24	40
Behavioral Change	53	17	42
Value Added Customer Service And Options	53	5	21
Reduce Low Income Customers' Energy Usage And Cost Burden	52	28	46
Improve Safety And Comfort Benefits To Low Income Customers	47	11	30
Market Transformation	45	12	30
Minimize Customer Bill Payment Arrears And Utility's Uncollectible Balances	37	9	35
Reduce Natural Gas Supply and Infrastructure Costs	33	18	33
Reduce Green House Gas Emissions / Direct Impact On Avoided Emissions	30	20	25
Economic Development And Job Creation	30	18	31
Meet State (EERS) Or Renewable Portfolio Standards Targets	17	20	28
Reduce Peak/Off-Peak Electric Generation And Electric Infrastructure Costs	16	15	26
Meet Electric Demand Side Management Program Targets	13	14	19
Encourage The Use Of Combined Heat And Power	12	7	13

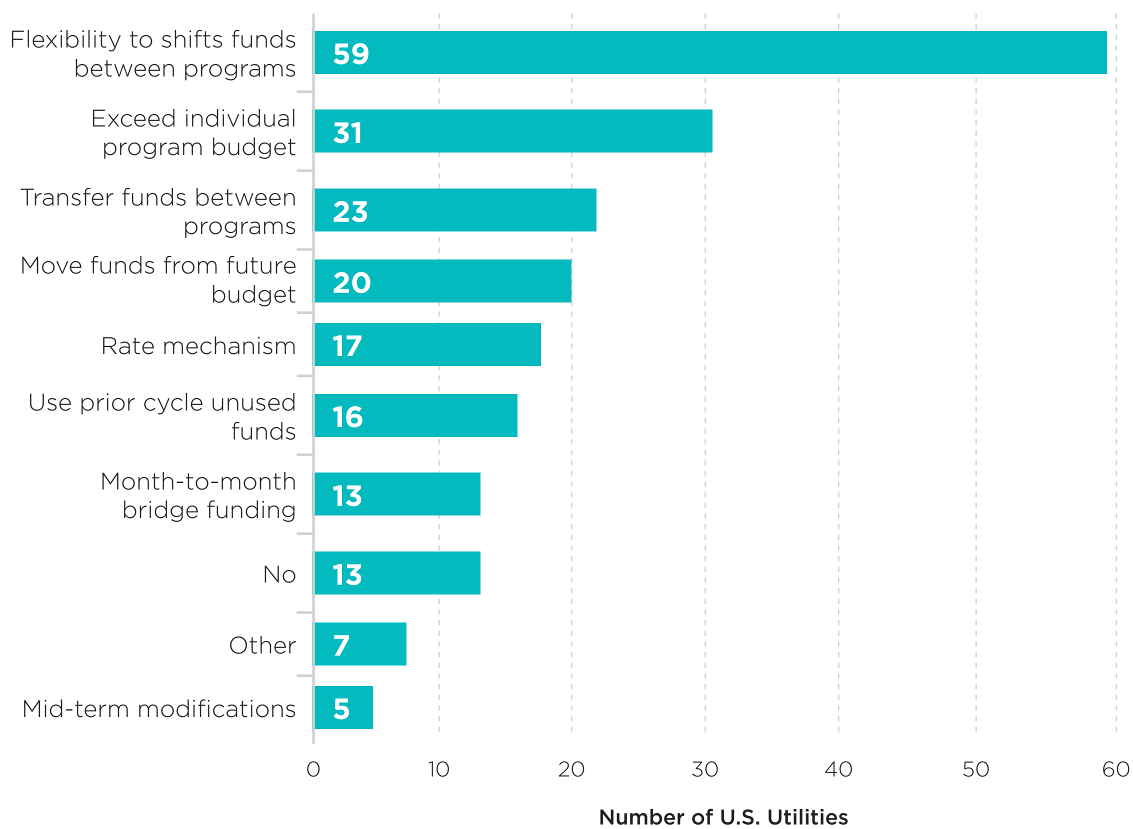
2. Utility efficiency goals are governed by program, policy and/or regulatory paths and may be counted multiple times if they indicated various targets.

Utilities often employ mechanisms to prevent intra-year program funding disruptions. Seventy-three respondents had at least one mechanism in place. Most utilities, 59 participants, had the flexibility to shift funds between programs, while 31 participants were allowed to exceed individual program budgets, provided the portfolio as a whole is cost-effective. Two utilities had all eight mechanisms in place to prevent intra-year program funding disruptions, while 19 utilities had four or more mechanisms in place.

A subset of 17 participating utilities experienced program funding disruptions part-way through their program year. Even though some utilities had mechanisms built in to prevent program funding disruptions, interruptions may still occur depending on the severity or type of disruptions, which were metrics that were not collected in this survey. However, implementing mechanisms built in to prevent program funding disruptions can decrease the negative impact that disruptions may have on your program.

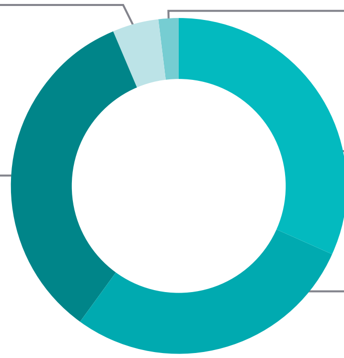
The other category included mechanisms such as a 5-25 percent variance and rebate flexibility with portfolio cost-effectiveness.

Built in Mechanisms to Prevent Intra-Year Program Funding Disruptions in the U.S.
73 Utilities in 2019



When asked "on what basis is your funding approved by your regulator or appropriate legal authority," 24 utilities from 17 states in the U.S have their funding approved annually, 31 utilities from 18 states have their funding approved every three years, and 28 participants from 14 states indicated "other" which includes an approval cycle of 4-5 year or sector-specific approval.

Regulator or Legal Authority Cycle of Efficiency Funding Approval
(2019 Data)



Rate Structures and Regulatory Treatment Aligned with Utility and Energy Efficiency Goals

An investor-owned utility has an intricate accounting and rate-setting methodology to recover its costs. Many resources explain utility accounting and rate design in depth.[3] For this report, a simplified, brief description is provided as background for relaying the policies that have been progressively adapted to protect utilities from losses associated with energy conservation practices and to incentivize them to invest in energy efficiency programs.

When setting rates, an investor-owned utility negotiates with its regulator (public utility/service commission) what it is permitted to charge its customers to be able to continue to meet its obligation to serve its customer base. These rates are calculated to match the revenue requirement of the utility, allowing it:

1. to recover its incurred costs—both variable and fixed,
2. to pay the interest cost on its capital debts, and
3. to earn a return for shareholders on investments.

The profit margin is approved by the regulator, who sets the rate of return (or percentage) the utility may earn on its equity (a return on equity or ROE).

In traditional rate designs, a portion of fixed costs is recovered via a volumetric charge or a price per therm. With this rate structure — because energy consumption varies while infrastructure costs remain fixed in the short term — the utility is at risk of under-recovering its fixed costs should customers reduce their gas consumption. In the long-term, it is thought that reductions in usage should eventually result in reduced natural gas supply capacity requirements and thus decreased capital costs, thereby eventually reducing costs for customers. Also, decreased energy usage that results from successful efficiency program implementation can negatively impact the utility's revenues, furthering the potential disincentive for utilities to promote efficient energy use.

With growing interest in energy conservation and demand-side management, policymakers have increasingly approved mechanisms that allow utilities to recover the direct costs and the margin losses associated with implementing energy efficiency programs. Policymakers have also approved financial rewards to shareholders for investments in energy efficiency programs — quantifying the value of these demand-side programs and treating them similarly to supply-side resource investments (e.g., distribution infrastructure, transportation capacity, underground storage, etc.).

3. For a thorough explanation of utility rate-design policies that support utility commitments to efficiency programs, see *Aligning Utility Incentives with Investment in Energy Efficiency,* A Resource of the National Action Plan for Energy Efficiency, and Aligning Utility Business Models with Energy Efficiency

Recovery of Energy Efficiency Costs

Energy efficiency program costs are divided into two categories in this survey: direct costs and margin costs. Direct costs may be recovered in three ways: Through base rates, trackers (e.g., tariff riders, bill surcharges), or deferral accounts. Margin losses (and gains) are adjusted and recovered in one of two ways: Deferred and recovered via base rates (e.g., revenue decoupling, straight fixed variable rates, and rate stabilization) and/or via margin trackers (e.g., lost revenue adjustment mechanisms or LRAMs). These mechanisms are discussed in more detail in the following sections.

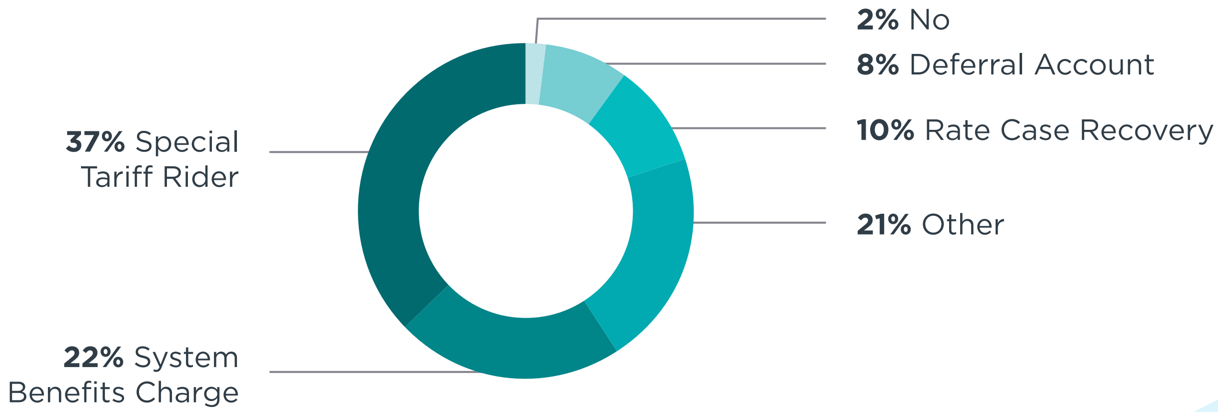
Direct Program Cost Recovery

Direct cost recovery generally allows utilities to pass through efficiency costs to customers in one of three ways:

1. Program costs are treated as expenses that are embedded in base rates in a general rate case.
2. Efficiency program costs are recovered via a separate tariff rider or a surcharge on customer bills (also known as system benefits charge), and the surcharge amount may be adjusted periodically to correct for over or under-recovery of efficiency costs.
3. Program expenditures accrue and are tracked in a balancing account for amortization and later recovery from customers over a period of time.

According to survey respondents, special tariffs or efficiency riders are currently the most common method for recovering program costs, which is consistent with previous years of this survey since 2011. Other methods used by utilities include conservation adjustment mechanisms, annual true-up and collection rate adjustments, and local distribution adjustment charges.

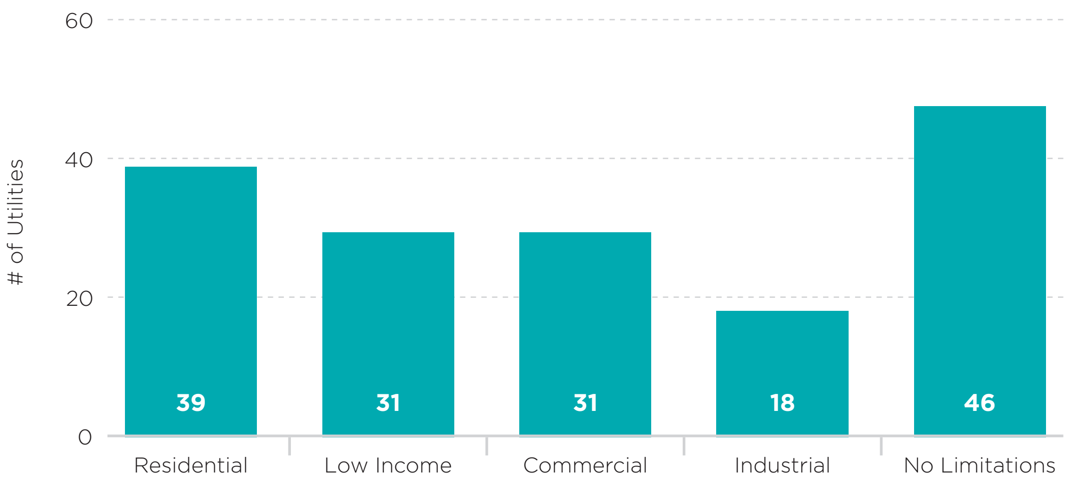
Regulator-Approved Gas Efficiency Direct Program Cost Recovery Mechanisms
89 Participants (2019 Data)



For some utility recovery of energy efficiency programs, costs apply only to specific rate classes within their programs. Out of the 89 respondents, 46 respondents didn't have any limitations. According to 39 respondents, residential programs had the highest applicability for the recovery of energy efficiency program costs. Commercial and low-income programs with 31 responses, respectively, were second most utilized. Industrial programs had 18 utility respondents that could recover energy efficiency program costs through the mechanisms mentioned above.

Of the 43 respondents that can recover their costs, 19 respondents were able to apply cost recovery methods for all four rate classes, 5 respondents were able to apply the mechanisms to 3 rate categories, and 12 respondents were able to apply recovery methods to two rate classes. There were only 2 respondents that mentioned they have efficiency program costs that do not qualify for recovery, including staff labor, administration costs, lost revenues, or some special contracts that do not participate in the efficiency surcharge.[4]

Recovery of Energy Efficiency Program Costs by Rate Class
89 participants (2019 Data)



4. Read about more details from our full analysis in 2018

Lost Margin Recovery

Recovery of margin losses and revenue shortfalls due to efficiency program implementation are increasingly allowed in more states, thereby removing the disincentive to invest in natural gas efficiency programs due to falling revenues. Fifty-seven of the 96 respondents' programs (in 36 states and three Canadian provinces) have authorized a mechanism for recovering lost margins correlating to efficiency implementation. Thirty-nine respondents reported, on the other hand, that they are not allowed to recover the revenue losses resulting from implementing efficiency programs. Methods for recovering efficiency-related lost margins vary.

Non-volumetric rate structures form one method of recovering lost margins. With such rate designs, utilities may collect revenues from customers independent of therm usage. Here margin recovery is not applied on a per-therm basis but approximates a per-customer basis. These mechanisms include revenue decoupling, straight fixed variable (or SFV) rates, and rate stabilized mechanisms.

Lost revenue adjustment mechanism or LRAM is the other method of recovering lost margins. It requires the utility to identify unrecovered margins associated with efficiency programming, track them over a time period, and recover them after the fact. In this case, revenues continue to be recovered on a therm usage basis; however, rates are adjusted to correct for under- or over-recovery of margins. This type of margin true-up also generically referred to as a conservation adjustment mechanism.

Of the 54 responding utilities that are allowed to recover lost margins in the U.S. and Canada, 28 utilities have a non-volumetric rate design, 15 utilities use a lost revenue adjustment mechanism (LRAM), and 11 use another method to recover lost margins including balancing account methodology and a decoupling mechanism from throughput, fixed and volumetric rider, and costs recovered via surcharge on customer bills, or their margin adjustments are capped or limited to a certain percentage of revenues.

Revenue decoupling mechanisms have different names, such as conservation enabling tariff, conservation incentive program, conservation margin tracker, conservation rider, and so on. Decoupling breaks the link between utility revenues or profits and gas throughput (or delivered volumes). It may be applied to total revenues or on a revenue-per-customer basis. When the recovered revenue varies from the allowed recovery amount, it is trued up via periodic rate adjustments to adjust the under or over-recovery. Revenue variances specific to efficiency may be tracked in a separate balancing or adjustment account and applied to the next rate adjustment. Decoupling takes on different forms:

1. full revenue decoupling,
2. partial revenue decoupling where only a portion of losses are recovered, and
3. revenue decoupling with certain restrictions (see below).

In some cases, the margin shortfall or surplus, specific to efficiency investments, is allowed to accrue in a deferral account, treated as a regulatory asset, and the recovery is amortized over a period of time, generally applied to the class of customers benefiting from efficiency savings. Sometimes utilities may charge an annual interest rate on the unamortized balances, thus recovering the carrying cost on the deferred margins.

Partial revenue decoupling limits margin recovery to a specific percentage of revenues or must be equal to the achieved natural gas cost saving. Revenue decoupling with restrictions may involve caps on the authorized ROE or other limits on regulated earnings.

A revenue stabilization mechanism (also known as rate stabilization) is another form of non-volumetric rates, where utility revenues are de-linked from the amount of gas throughput. Rate stabilization combines lost margin recovery and recovery of operating costs within one mechanism. Here rates are adjusted periodically to adjust for variances in returns from the regulator-authorized return on equity (ROE) and utility cost variances since the last rate adjustment.

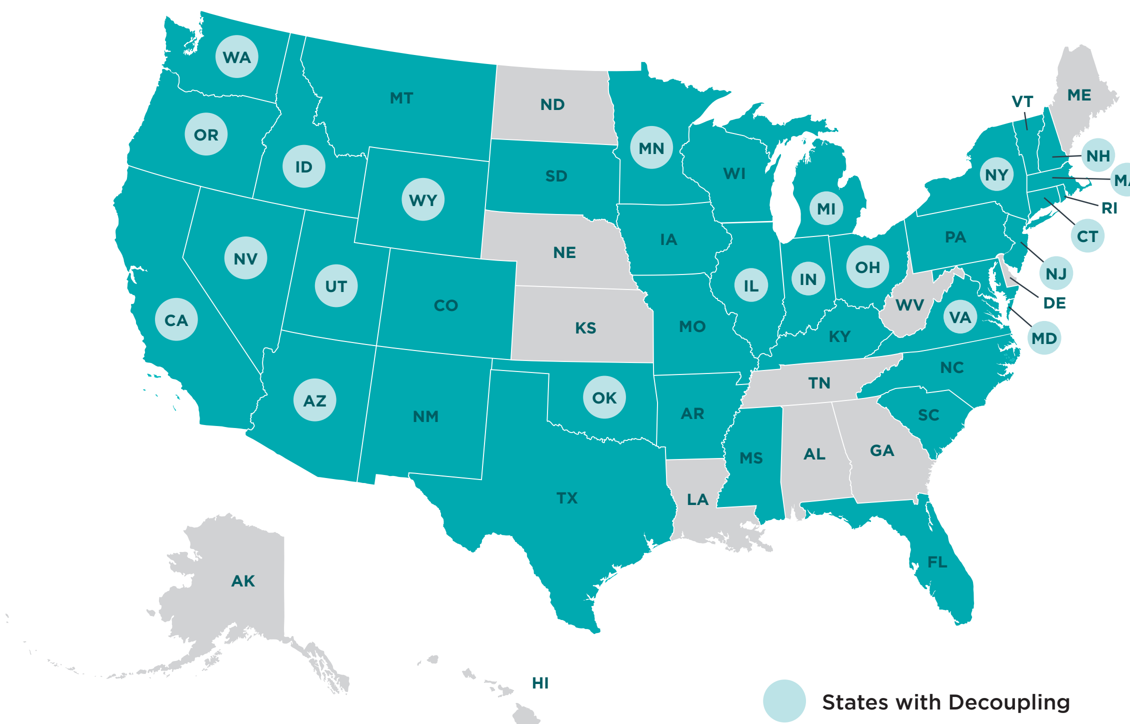
With straight fixed variable rates, there are no revenue impacts resulting from efficiency programming, because most or all fixed costs are recovered via a non-volumetric charge. The per-customer charge remains stable regardless of consumption variances (approximating a flat monthly fee).

Non-Volumetric Rate Structures in the U.S. 2019[5] 30 Natural Gas Utilities in 21 States		
Mechanism	**Number of Companies**	**Number of States**
Full Revenue Decoupling	18	12
Partial Revenue Decoupling	3	3
Revenue Decoupling with Restrictions	6	5
Non-Specified Revenue Decoupling	2	2
Straight Fixed Variable	1	1

Straight fixed, variable rate structures were not widely used by the 2019 survey participants. The rate stabilization mechanism was not used by the participants in this survey cycle.

Additionally, as seen in the figure below, in 2019, natural gas efficiency programs are found in all states that allow the utility to segregate margin recovery from its natural gas throughput or delivered volumes.[6]

States with Natural Gas Efficiency Programs (Green) and Revenue Decoupling
(2019 Data)



This represents the utilities that participated in the survey for program year 2019 only.

5. The same state may be represented in more than one category of non-volumetric mechanism.
6. For an update on revenue decoupling and other rate designs per states, see Innovative Rates, Non-Volumetric Rates, and Tracking Mechanisms, AGA Presentation Slide Deck (July 2011), http://www.aga.org/our- issues/RatesRegulatoryIssues/ratesregpolicy/Pages/febr2011-innovative-ratesNon-volumetric-ratesandtrackingmechanisms.aspx

Utility Performance-Based Incentives

Recovery of efficiency program costs and associated lost margins removes the utility's disincentive to promote energy efficiency, thereby making program implementation revenue neutral. To incentivize investor-owned utilities to commit fully to efficiency program improvements and expenditures, regulators have gradually approved more mechanisms that financially reward utilities for making energy efficiency investments. Efficiency performance-based incentives for utilities involve three mechanisms: shared savings, performance target rewards, and rate of return incentives.

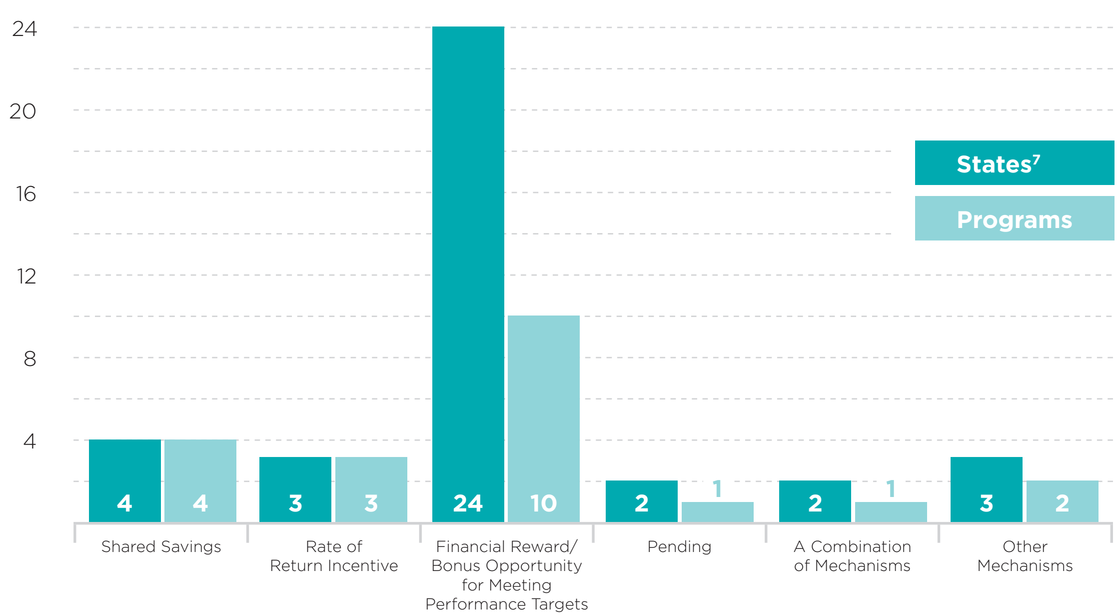
Shared savings mechanisms reward utilities either for investing in energy efficiency at pre-determined minimum spending levels or for making cost-effective efficiency investments. Financial incentives are calculated as a percentage of efficiency spending or as a percentage of the achieved net system benefits (the difference between efficiency costs and energy savings or other economic benefits). Awards are often capped at a specified dollar amount regardless of the rate applied to spend levels or net benefits. Commonly investors and ratepayers share the savings. In some cases, penalties are applied when programs fail to meet the minimum threshold.

Performance targets are often conditions for capturing earnings on efficiency investments. The pre-determined goals may be set at certain investment levels, total energy savings, the extent of cost-effective savings, or the numbers of units installed. Financial awards may be tiered according to performance thresholds: for example, for attaining at least a proportion of goals, meeting the target, or exceeding them. Also, penalties may apply if the utility falls short of the minimum requirements. Also, incentives may be capped, even if performance surpasses the maximum threshold and may involve a dead band, where incentives are suspended within this performance range.

Rate of return incentives allows earnings on natural gas efficiency expenditures either equal to the utility's authorized return on equity (ROE) or at an enhanced level—an added or bonus ROE applied to efficiency investments. Incentive structures may involve a combination of these three mechanisms, making performance targets a prerequisite to shared savings or returns on efficiency investments.

Thirty-eight natural gas efficiency programs implemented in 16 states identified as having utility performance-based incentives. When asked to identify all mechanisms that formed their incentives, they indicated having one of the following mechanisms:

Utility Financial Incentive Structures Specific to Natural Gas Efficiency Program Implementation and Performance (2019 Data)



7. The same state may be represented in more than one incentive category

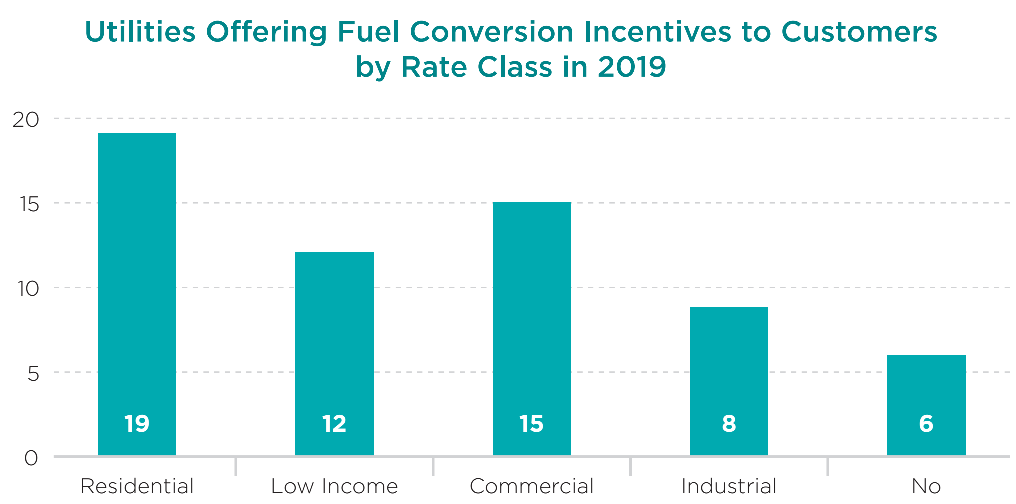
According to eight survey companies, they are eligible to share between five percent and 20 percent of ratepayer savings (the median share was 10 percent).

Within the financial incentive structures, rewards, or bonus, opportunities for meeting performance targets were split into three categories: Efficiency Dollar Investment, Cost-Effectiveness, and Other targets. According to the 22 utilities that provided data on their targets, eight utilities implemented energy savings targets ranging from 75 percent savings to 135 percent savings with an average minimum and maximum of 77 percent and 123 percent savings, respectively.[8] Fourteen utilities implemented cost-effectiveness targets, and eight utilities implemented efficiency dollar investment targets. Nine utilities indicated they implement other targets based on return on equity, tiered targets, yearly comparative performance, and cumulative savings targets. [9]

Fuel Switching

Utilities also reported that their regulator-approved natural gas efficiency program encourages fuel switching through financial incentives (e.g., rebates, loans, and other benefits) for customers who install natural gas equipment in new homes, convert to natural gas from other fuels, or replace old equipment with new higher-efficiency natural gas equipment.

The programs that offered fuel conversion incentives to their customers varied by rate classes. Twenty out of 25 participating utility programs offered two or more rate cases the opportunity for fuel switching incentives, of which six utilities were offering all four rate classes incentives in their program followed by seven utilities offering incentives in three rate classes, practically identical to 2018 results.



8. The same utility may be represented in more than one rewards or bonus opportunities.
9. Read about more details from our full analysis in 2018

Four utilities were offering higher rebates for converting to natural gas, and 10 participants offered the same rebate level as for upgrading a gas appliance. Nine other utilities offered other financial incentives, including covering installment costs, low-interest loans, and tiered rebates.

In this case, fuel switching can apply for electric, fuel oil, propane, or other energy sources to natural gas. Eighty-three utilities participate in these questions and **24 utilities (17 states)** offered financial switching incentives to switch from one or more of the energy sources previously mentioned while about half (13 utility programs) offered the financial switching incentive to switch from two or more of the energy sources previously mentioned. The types of equipment that were included in the fuel-switching incentives programs included a range to technologies from boilers, furnaces, water heaters, stoves/cooking ranges, dryers, HVAC, and space heating to combined heat & power. In addition to the numerous technologies that were included in the fuel-switching program, there were also conditions or limitations that programs needed to work within. The most common constraint, according to utility participants, was that installed equipment must meet minimum efficiency levels followed by fuel switching being limited to specific applications or measures. Other limitations included cost-effectiveness requirements, customer cost-sharing, and city/state fuel substitution requirements.

The 19 participants reported that they could encourage fuel switching through financial incentives, but not through their efficiency programs. When fuel switching was allowed but not through efficiency program incentives, utilities offered the financial incentive through other state-sponsored energy programs, voter-approved bonds, or other regulatory authorities.

According to 42 of the 83 participating utilities (27 states), promoting fuel switching/converting to natural gas is expressly prohibited in their states. Twelve of those respondents are prohibited by regulators, while two utilities are limited by statute and three by regulator and statute.

Tracking Greenhouse Gas Emission and Source Energy as a Measure

(Data from 92 respondents)

34%
of respondents
indicated that a reduction of greenhouse gas (GHG) or carbon emissions is a performance target for their natural gas efficiency program.

31
utilities
indicated that reducing GHG and direct impact on avoided emissions is part of a state requirement by the program provider.

26
utilities
indicated that reducing GHG is part of a regulator goal.

21
utilities
indicated that the goal was a policy target in enabling legislation.

Moreover, when asked how they calculate energy efficiency gains for specific programs or measures, respondents indicated that they use source-to-site energy[10] measurement in about two percent of programs (2 of 83), and site-only measurement in 93 percent of programs (77 of 83). Four respondents reported using both types of measurement.

10. Source energy — also known as full fuel cycle analysis — is a more accurate measurement of efficiency. Site energy analysis accounts for energy used or consumed only by the end-user at the usage site. On the other hand, a full fuel cycle analysis considers not only onsite energy consumption but also consumption and losses during the production, generation, transmission and distribution cycles. This allows for a realistic comparison of relative efficiency among different technologies, especially when comparing the efficiency of natural gas applications from source to site with that of other fuels.