

Natural Gas Efficiency Programs Report

2018 PROGRAM YEAR

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Executive Summary

In 2019 the American Gas Association (AGA) and the Consortium for Energy Efficiency (CEE) surveyed their U.S. and Canadian members and efficiency program administrators on the status of their 2018 ratepayer-funded natural gas efficiency programs, including expenditures, savings impacts, carbon dioxide emissions reductions, and budgets for 2019. Based on survey findings for the 2018 program year:

Natural Gas Efficiency Program Funding and Impacts

- In North America (U.S. and Canada), participating utilities spent \$1.47 billion in 2018 on natural gas efficiency programs - \$1.41 billion and \$59 million in the U.S. and Canada, respectively. Participating utilities also budgeted nearly another \$1.4 billion for the 2019 program year
- Natural gas utilities in the U.S. spend \$3.8 million on energy efficiency programs every day.
- Program funding in North America increased by more than eight percent from 2016 to 2018. In the United States, program funding has grown over 77 percent since 2007 and over 20 percent since 2012.
- North American natural gas utilities saved 425 million therms or 42.5 trillion Btu, the equivalence of 2.25 million metric tons of avoided CO₂ emissions in 2018.
- Natural Gas utilities helped customers save 259 trillion Btu of energy and offset 13.7 million metric tons of carbon dioxide emissions from 2012 through 2018 in the U.S.
- Natural gas utilities spent \$365.34 million dollars on low-income efficiency programs and assisted over 214,581 low-income participants in 2018.
- Weatherization is the third most common component of natural gas efficiency programs—offered in 70 percent of low-income programs.

Natural Gas Efficiency Program Characteristics

- Natural gas utilities continue to help their customers to reduce energy usage and lower their annual energy bills by investing in successful and innovative efficiency programs, which include cash rebates and financial incentives, low-income specific programs, strategic partnerships, joint programs with other electric and gas utilities, efficiency loans, education campaigns, targeted marketing, energy audits, whole house projects, and customized retrofits of large facilities.
- Natural gas utilities fund at least 132 active natural gas utility ratepayer-funded efficiency programs in North America—125 programs in 42 states in the U.S. and seven programs in Canada.

Natural Gas Efficiency Regulatory Requirements and Cost Recovery Treatment

- Many states mandate utility investment in natural gas efficiency programs through a regulatory order or legislation. Of the total 105 utilities in the 40 states and 3 Canadian provinces that responded, 77 utilities indicated that the state in which it operates requires the funding of an efficiency program.
- The top five goals driving efficiency program funding requirements within the U.S. and Canada include energy conservation and savings, customer dollar savings or bill reduction programs, behavioral change and direct outreach programs, reduced usage for low-income customers, and value-added customer service and options programs. Seventy-five utilities in 35 states have set more than one goal, of which 12 utilities are pursuing ten or more targets.
- Thirty-seven states permit utilities to recover natural gas efficiency program costs, 27 allow them to recoup lost margins related to program implementation, and 15 approve financial incentives to reward efficiency program implementation or performance.
- Recovery of natural gas efficiency direct program costs are allowed via the following mechanisms:
 - Special tariff or rider - 22 states
 - Base rates - 11 states
 - System benefits surcharge - 8 states
 - Deferral accounts - 7 states
 - Other mechanisms - 15 states
- Natural gas efficiency programs are found in all 42 states that allow the utility to segregate margin recovery from its natural gas throughput or delivered volumes.
- Twenty-one percent of respondents (19 of 92) 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.

Natural Gas Efficiency Program Planning and Evaluation

- North American spending on evaluation, measurement and verification activities exceeded \$34 million in 2018. The 2018 expenditures increased from 2017 by about 13 percent each in North America and the U.S.
- About 1/3 of participating utilities indicated that a reduction of greenhouse gas or carbon emissions is a performance target for their efficiency program. Additionally, 31 utilities indicated that reducing greenhouse gas emissions / direct impact on avoided emissions as part of a state requirement by the program provider, 26 utilities indicated that it was due to a regulator goal, and 21 utilities indicated that the goal was a policy target in enabling legislation.

Introduction

Public awareness of the energy economy has steadily grown beyond the purview of business and policy. Economic, environmental, and energy security concerns have become increasingly important drivers of consumer decisions about energy. With this has come heightened attention to the potential for energy efficiency to moderate consumer cost increases, reduce greenhouse gas emissions, and enhance energy system reliability and resilience. For natural gas utilities, investing in energy efficiency programs presents an opportunity to achieve these objectives and benefit the communities they serve. Many natural gas utilities across North America have long-performing natural gas efficiency programs. Increasingly, natural gas utilities working in collaboration with regulators are working to create new or expanded programs that will accelerate progress towards realizing a clean energy future while building sustainable value of natural gas for their customers.

The American Gas Association Natural Gas Efficiency Programs Report - 2018 Program Year presents a review of ratepayer-funded natural gas efficiency and conservation programs in North America. The report looks retrospectively at the status of the North American natural gas efficiency market in 2018, including data on aggregated expenditures, savings impacts, carbon dioxide emissions reductions, and budgets for 2019. It also explores regulatory approaches to advancing the natural gas efficiency market.

This study portrays the extent of this rapidly growing market in the United States and Canada and identifies practices and trends in program planning, funding, administration, and Evaluation. The findings illustrate how natural gas utilities have worked with their customers to reduce their greenhouse gas emissions footprint, increase cost savings, and improve delivered energy services.

The data and findings presented in this report are based on a survey of natural gas utility members of the American Gas Association and the Consortium for Energy Efficiency.¹ The data collection effort has expanded significantly since AGA and CEE began coordinating efficiency data gathering in 2009. By joining efforts, AGA and CEE have reduced the reporting burden for respondents, eliminated duplicative efforts, and significantly enlarged the sample pool by extending the survey to more utilities in the U.S. and Canada and third-party administrators of ratepayer-funded efficiency programs.

The report is based on survey responses that are not audited nor normalized and may elicit different responses based on the unique accounting and regulatory circumstances of each company. However, multiple efforts are taken to confirm the accuracy of responses throughout the data collection and analysis timeframes

to confirm ambiguous or incomplete responses. Furthermore, this is a snapshot of a given point in time based on the information available at the time the survey was completed and may not reflect annual results.

AGA would like to thank the members of AGA and CEE in the U.S. and Canada for participating in this critical data-collection effort. It appreciates tremendously the time and effort given by all survey respondents throughout the information gathering process, including extensive clarification and data validation follow up.

1. An essential contributor to this data-gathering project is the Consortium for Energy Efficiency (CEE). CEE is an award-winning consortium of efficiency program administrators from the United States and Canada. Members work to unify program approaches across jurisdictions to increase the success of efficiency in markets. By joining forces at CEE, individual electric and gas efficiency programs are able to partner not only with each other, but also with other industries, trade associations, and government agencies. Working together, administrators leverage the effect of their ratepayer funding, exchange information on successful practices and by doing so achieve greater energy efficiency for the public good.

Methodology and Survey Sample

In 2019, the American Gas Association (AGA) and the Consortium for Energy Efficiency (CEE) surveyed their respective U.S. and Canadian members on the status, characteristics, and metrics of their 2018 ratepayer-funded natural gas efficiency and low-income weatherization programs.² Respondents include utility and non-utility, or third-party, efficiency program administrators.

In this report, the term “natural gas efficiency program” refers to a set of activities designed to promote a cost-effective and prudent approach to energy usage, including low-income single and multi-family home weatherization, indirect impact activities (such as conservation education, energy audits, and contractor certification), and direct impact activities in new and existing buildings and homes (e.g., equipment replacement and Energy Star Homes).

The sample frame consists of 132 member and nonmember organizations identified as large program administrators of AGA and CEE. The survey asked respondents to describe their natural gas efficiency programs, including program expenditures and energy savings, during the 2018 calendar year or coinciding program year for which data were available. Also, the surveys collected data on 2019 program budgets.

Not all responding parties answered every survey question. Therefore, the response sample varies by item. Because the sample pool is not normalized and varies year to year, this report does not directly compare 2018 with prior years data, except for illustrative purposes. Tables and charts generally represent a simple tally of the responses to the survey questionnaire.

Report footnotes and section introductions provide additional information regarding methodology.

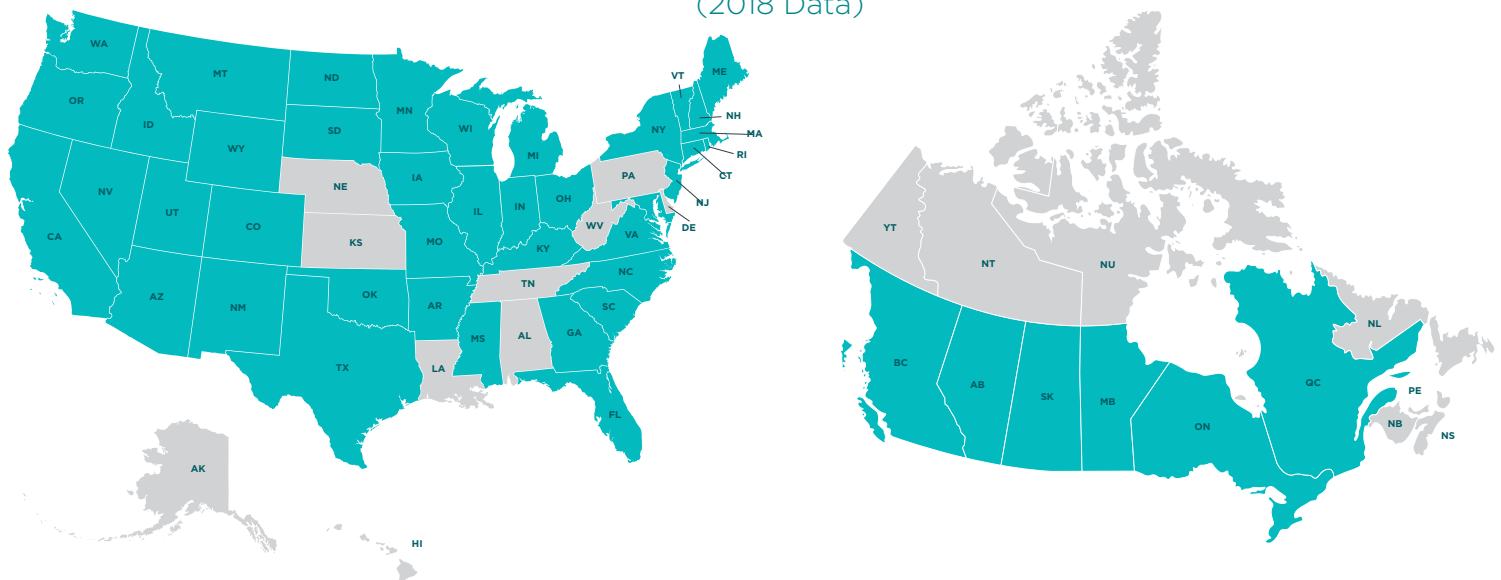
2. Because a number of low-income weatherization programs that are run by state agencies do not participate in this survey, report data tend to understate low-income program expenditures and budgets.

Natural Gas Efficiency Program Characteristics

According to the 2018 program year data, there are at least 132 active natural gas utility ratepayer-funded efficiency programs in North America—125 programs in 42 states in the U.S. and seven programs in Canada.^{3,4} See below for a map highlighting the active natural gas energy efficiency programs in 2018.

Of the 125 U.S. programs, 12 of the programs included statewide program funds such as Efficiency Maine, Energy Trust of Oregon, Illinois Department of Commerce and Economic Opportunity, New Jersey Clean Energy Program, New York State Energy Research and Development Authority (NYSERDA), Public Interest Energy Research (PIER) program in California, and Wisconsin Focus on Energy.

**Active Ratepayer-Funded Natural Gas Efficiency Programs
in Canada and United States
(2018 Data)**



3. Additional state data available in the 2018 Appendix A - Natural Gas Efficiency Program Expenditures by Budgets by State.

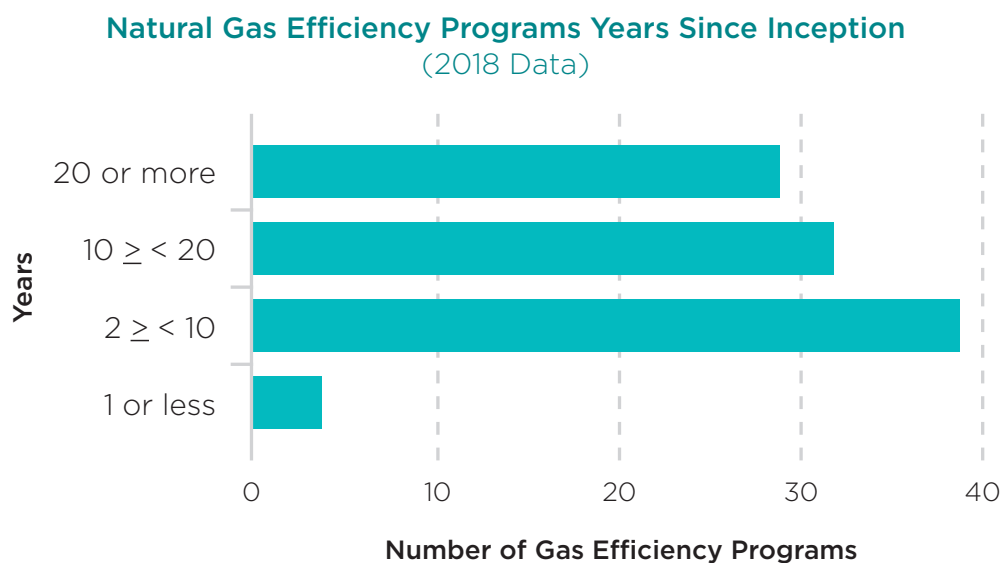
4. In this report, North America refers to the United States and Canada.

Program Structure and Administration

From this point forward, this report describes the responses of a subset of ratepayer-funded natural gas efficiency programs for which the survey data was obtained. **The number of respondents for a particular question is included in the text and tables provided.**

While many natural gas efficiency programs have been in place for years, the breadth and depth of programs continue to grow. Programs range from the newly launched to mature programs that span 20 years or more. Fifty-nine percent of programs have been in place ten years or longer, and just under half of those have operated for at least 20 years. The other 41 percent were implemented within the last ten years. The median program age was nine years. Four percent of programs were launched in 2017 and 2018.

Natural Gas Efficiency Programs Since Inception (2018 Data)	
103 Programs	
Years in Service	Number of Programs
1 or less	4
2 \geq < 10	39
10 \geq < 20	32
20 or more	29v



Customer Segments and Participants

Participant counts were obtained for 105 natural gas efficiency programs in 2018. Some programs track or report participation rates or the number of enrollments. In cases where respondents do not actively monitor participants, some respondents provided estimates. Other programs track the number of paid rebates or grants instead of participating customers. Still, others differ on whether to count online audits, behavioral conservation program reports, home savings evaluations, or students participating in school-based education programs. The numbers in the table below reflect these discrepancies, and thus participant figures should be considered as very rough estimates.

Respondents were asked to identify all customer segments in their efficiency programs. Ninety-two percent (97 of 105) have residential efficiency programs, 87 percent have commercial, 74 percent have low income, 47 percent have multi-family programs, and 14 percent have separate industrial programs. Although only 11 percent of programs include all five customer segments (12 of 105), 32 percent (34 of 105) of programs included three customer segments, and 29 percent (30 of 105) included four customer segments. Additionally, about 10 percent (10 of 105) of programs included only one customer segment, of which eight were centered around low income. Moreover, 90 percent of the programs included two or more customer segments.

During 2018, enrollments in natural gas efficiency programs reached more than 5.8 million residential customers, over 200 thousand low-income customers, about 102 thousand multi-family customers, over 66 thousand commercial customers, and 72 thousand separate industrial program customers. In a few cases, programs had low to no participation in 2018 due to late program implementation and the ensuing ramp-up period. The table below shows participant counts for the most recent survey in 2018 and the previous year's numbers for comparison in 2017.

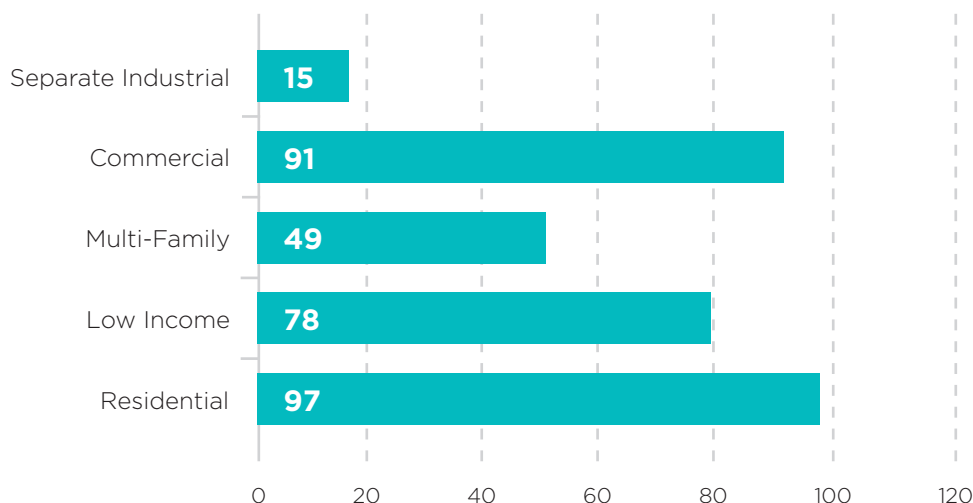
Program Participants by Customer Segment					
	Residential	Low Income	Multi-Family	Commercial	Separate Industrial
2018 Programs	97	78	49	91	15
2018 Participants	5,866,874	214,581	102,251	66,263	72,869
2017 Programs	86	71	41	83	13
2017 Participants	4,833,324	270,332	113,695	69,914	70,841

According to reported counts, the number of programs offered for each customer segment increased from 2017 to 2018; additionally, the number of participants increased in residential and industrial participation by 21 percent and 3 percent, respectively.

Participants per program vary widely during the 2018 program year. The median number of participants for residential programs was 10,588, ranging from as few as 70 to as many as 615,000 customers. In low-income programs, the median was 640 participants, with a range of nine to just over 99,000. Additionally, multi-family programs ranged from nine to 47,000 accounts, with a median of 1,900 participants. Commercial programs had from one to 10,000 accounts, with a median of 10,000 participants. Separate industrial programs enrolled from three to 72,500 participants, with a median of 44 participants.

2018 Efficiency Programs by Customer Segment

105 Utility Participants



Energy Efficiency Program Activities and Components

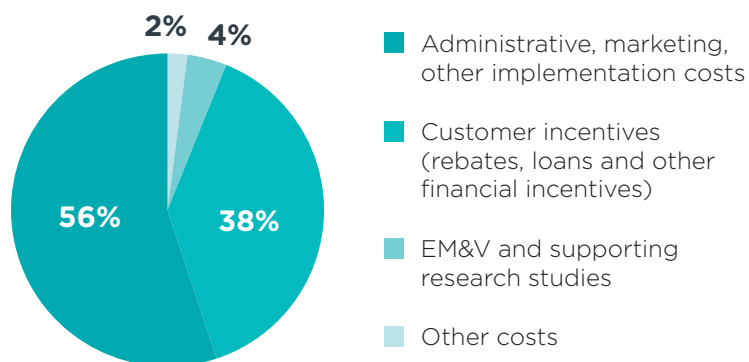
Survey participants were asked to provide a breakout of their 2018 expenditures into four activities, including:

1. Administrative, marketing, other implementation costs
2. Customer incentives (rebates, loans, and other financial incentives)
3. Evaluation, measurement, and verification (EM&V) and supporting research studies⁵
4. Other costs

Where data were not available by specific activity (such as EM&V), a slight percentage of respondents reported overall spending amounts in the “Other” category. Other costs include but are not limited to equipment, utility oversight, database utilization, education and awareness, performance incentive for sales, technical and training costs, industry dues, and ally incentives.

Participants indicated that a majority, 56 percent, of energy efficiency expenditures were allocated to customer incentives such as rebates, loans, and other financial incentives. Moreover, the survey results indicate utilities spent about 38 percent of their budgets on administration, marketing, and other implementation costs in 2018.

2018 Natural Gas Efficiency Program Expenditures by Activity in North America⁶



5. Evaluation, Measurement and Verification (EM&V) is the collection of methods and processes used to assess the performance of energy efficiency activities so that planned results can be achieved with greater certainty and future activities can be more effective. according to the U.S. Department of Energy. https://www.energy.gov/sites/prod/files/2014/05/f16/what_is_emv.pdf

6. Additional data available in the 2018 Appendix D - Natural Gas Efficiency Program Expenditures by Activity and Region.

Survey respondents were also asked to identify the efficiency components they offered in each of the four customer segments. According to 105 responses, one or more efficiency activity, as seen in the table below, is offered in 101 programs to the residential single-family segment, in 92 programs to the commercial and industrial (C&I) segment, in 81 programs to the residential low-income segment, and in 68 programs to the residential multi-family segment. Based on these responses, when considering indirect impact activities, 77 percent of programs provide conservation and/or energy efficiency activities to low-income customers.

The table below also breaks down responses by customer segment and energy efficiency activity. Residential single-family efficiency programs enjoy the most comprehensive set of efficiency activities, followed by commercial/industrial, residential, low income, and residential multi-family programs.

A look at specific efficiency activities shows that of indirect impact programs, education outreach is most adopted across segments, particularly in the residential single-family and C&I segments, 84 percent, and 72 percent, respectively. Examples of such “indirect impact” activities include school education programs, brochures, and bill inserts.

Also, widely prevalent is direct impact activities in existing homes or buildings—in 87 percent of residential single-family, 78 percent of commercial/industrial, 68 percent of low income, and 58 percent of multi-family programs. These direct impact activities include equipment replacement and upgrades (e.g., appliances, doors, windows, and thermostats), building retrofits, commercial foodservice, process equipment, energy management systems, and custom process improvements.

Weatherization is the third most common component of natural gas efficiency programs—offered in 70 percent of low-income programs and 58 percent of residential single-family programs. These weatherization activities incorporate building shell insulation and air sealing of ducts and wall cracks.

2018 Utility-Implemented Gas Efficiency Program Activities by Customer Segment 105 Reporting Programs with One or More Efficiency Activity				
Energy Efficiency Activities	Residential Single-Family 101 Programs	Residential Multi-Family 68 Programs	Residential Low Income 81 Programs	Commercial & Industrial 92 Programs
Weatherization	61	45	73	N/A
Indirect Impact Programs				
Certification	32	23	27	27
Education	88	57	71	76
Online tools	68	44	52	52
Technical assessment	66	45	58	59
Training	58	37	45	54
Direct Impact Programs - Existing Buildings	91	61	71	82
Direct Impact Programs - New Construction/ Expansions	58	38	31	57
Other	6	3	2	1

While not as prevalent as existing building retrofit programs, the direct impact new home/building program was implemented in 55 percent of residential single-family and 54 percent of C&I programs. Such direct impact activities encompass energy-efficient homes, efficiency design assistance, and industrial efficiency.

Many programs also include other types of indirect impact activities, including online tools for energy usage/ savings calculators and technical assessments such as on-site energy audits, accounting for 65 percent and 63 percent, respectively of for single-family programs. These indirect impact activities accounting for 50 percent and 56 percent of C&I programs, respectively, as well. Additionally, technical assessments accounted for 55 percent of residential low-income programs.

Efficiency training and certification (of contractors, installers, and building operators) tend to lag compared to other programs. Technical training is provided in 55 percent of single-family, 51 percent of commercial/industrial, and 43 percent of low-income programs. Moreover, professional certification is offered in 30 percent of residential single-family, 26 percent of low income and commercial and industrial programs, and 22 percent of multi-family programs.

A relatively small number, 1-6 percent of respondents, as seen in the table, selected “other” energy efficiency activities, which include school efficiency education (some of which include direct install efficiency kits), natural gas safety inspections, and behavioral change programs.

Greenhouse Gas or Carbon Emissions Targets and Credits

Respondents were asked whether their state targets greenhouse gas (GHG) or carbon reduction as an explicitly and measurable goal, and 34 percent (or 33 of 97 respondents) said “yes.” When asked if there are regulator-approved mechanisms for earning credit on GHG-emissions reduction projects such as renewable energy certificates, carbon offset projects, supporting wind farms, or biogas generating plants, eight responded yes. Moreover, six earning credit in the form of program cost recovery and two respondents earning credit in the form of return on investment.

Similar regulator-approved earnings mechanisms are pending according to six other utilities. When asked whether they had sought regulatory approval for cost recovery or earnings on project investments where GHG emissions reduction is the primary goal, seven of 83 respondents indicated that they had secured regulatory approval, and eleven companies are exploring such options.



Natural Gas Efficiency Program Funding and Impacts

This section describes utility funding for natural gas efficiency programs in the U.S. and Canada and the resulting annual energy saving impacts. The program year 2018 expenditures correspond to funding by 126 utilities for programs administered either by the utility or by a third party, such as a non-profit public benefit organization or a state agency that runs a statewide program.

The natural gas efficiency program dollars discussed in this report are primarily sourced from ratepayers. Some efficiency program funds originate from other sources, such as non-ratepayer funds, including utility shareholders, for efficiency programming. Non-ratepayer efficiency funds have been excluded to the extent it was able to be separated from the aggregated figures provided from this report or included in the other section of expenditures and budgets. Survey responses indicate the scale of these non-ratepayer funds are very small compared to the ratepayer program dollars reported in this study. Given that the reporting methodology varies among respondents, expenditure, and budget data should be regarded as estimates.

Budgets for 2019 represent planned funding for 103 programs. Budget data were collected during summer and fall 2019; therefore, any budgetary changes made after this period, such

as those due to newly approved programs or funding cuts, are not reflected in this report. Some dollars reported for 2018 represent carry-over of unspent funds from 2017.

Respondents were asked to categorize their 2018 expenditures and 2019 budgets by customer class and segment. Where data were not available by a specific segment, respondents reported overall spending amounts in the “Other” category. “Other” costs include but are not limited to cross-cutting funds for portfolio-wide activities, education and awareness costs, trade ally incentives, emerging technology management, school outreach, and technical assistance. If respondents were unable to categorize spending for specific activities by the customer segment, they placed these dollar amounts under “Other,” as previously mentioned. Likewise, some respondents were not able to separate low-income program dollars from residential program funds (either overall or for specific activities, such as education and online resources) due to tracking restrictions thus, a small number of low-income program dollars were combined with residential program funds.

Natural Gas Efficiency Program Expenditures and Funding

In North America (U.S. and Canada), participating utilities spent \$1.47 billion in 2018 on natural gas efficiency programs. Surveyed utilities spent \$1.41 billion and \$59 million in the U.S. and Canada, respectively. Participating utilities also budgeted nearly another \$1.4 billion for the 2019 program with \$1.33 billion and \$73 million from U.S. and Canada, respectively, as seen in the table below. Appendix A and B present a breakdown of 2018 expenditures and 2019 budgets by state and region as well.

Natural Gas Efficiency Program Expenditures and Budgets by Customer Class ^{7,8}						
	2018 Expenditures (\$ Million) ⁹ 126 Programs			2019 Expenditures (\$ Million) ¹⁰ 103 Programs		
Customer Segment	The U.S.	Canada ¹¹	N. America	The U.S.	Canada	N. America
Residential	\$613.74	\$10.39	\$624.13	\$541.82	\$11.36	\$553.18
Low-Income	\$353.47	\$11.88	\$365.34	\$378.96	\$13.69	\$392.65
Multi-Family	\$61.17	\$0.77	\$61.94	\$53.20	\$1.80	\$55
Commercial¹²	\$274.39	\$29.99	\$304.38	\$248.84	\$37.60	\$286.43
Industrial	\$21.79	\$3.08	\$24.88	\$23.85	\$3.37	\$27.21
Other	\$87.79	\$2.88	\$90.67	\$77.01	\$5.38	\$82.38
Total¹³	\$1,412.40	\$59	\$1,471.30	\$1,323.70	\$73.20	\$1,396.90

Program funding in North America increased by more than eight percent from 2016 to 2018. In the United States, program funding has grown over 20 percent since 2012 and significantly since 2007 as well. Funding in the U.S increased by about three percent from 2017 to 2018. The figure below presents natural gas efficiency program funds from 2007 through 2018 for the United States. This comparison is intended for illustrative purposes since spending growth cannot be entirely attributed to new and expanded programs but also differences in survey samples from one year to the next.

7. Additional data available in the 2018 Appendix B - Natural Gas Efficiency Program Expenditures and Budgets by Region.

8. While most program budgets coincide with the calendar year, 16 percent do not, and thus their program year begins in one calendar year and ends during the next.

9. Twenty-two percent of 2018 funds represent unspent dollars carried over from the 2017 program year. Carryover funds are not included in 2019 budgets. Not all reported 2018 expenditures represent a full year, as a number of programs were launched after January 1, 2018.

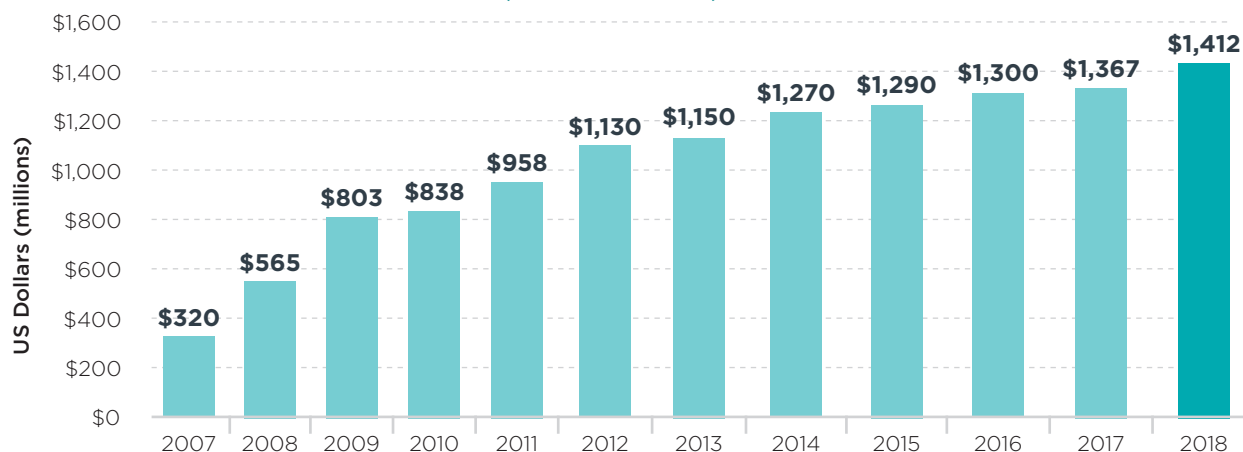
10. About 3 percent of 2019 budgets had not been approved at the time the data were submitted to AGA, or only the half of the year had been approved while the balance remained under the projected status or only had some customer segments approved.

11. All currency is reported in U.S. dollars. This report uses the 2018 Federal Reserve exchange rate of 0.772 USD = 1 CAD.

12. About 20 percent of commercial funds represent combined C&I dollars that were unable to be separated, in North America.

13. Subcategories might not add up exactly to reported totals due to rounding.

Yearly Natural Gas Efficiency Program Investments United States (Million Dollars)¹⁴

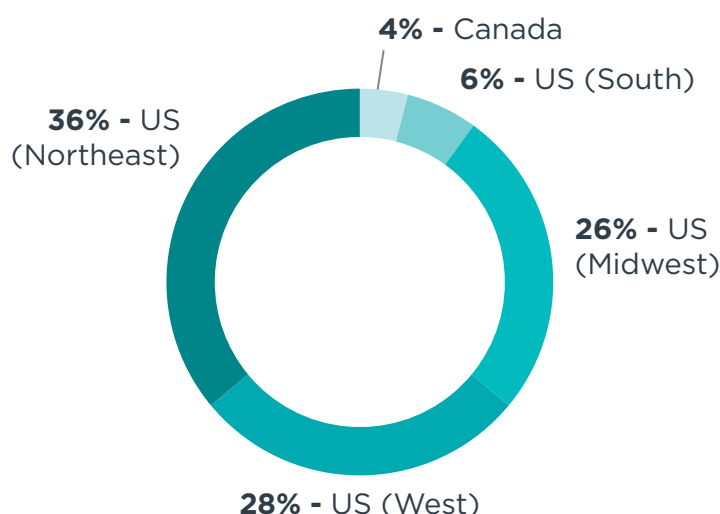


The regional breakout shows that the Northeast-US region comprised the majority, 36 percent, of all the of 2018 participant expenditures totaling \$528 million and saving over 87 million therms or 8.72 trillion Btu. Additionally, the west-US region accounted for 28 percent of expenditures at \$417 million, the Midwest-US region comprised of another 26 percent of all 2018 gas efficiency expenditures totaling over \$375 million, as seen in the next figure.

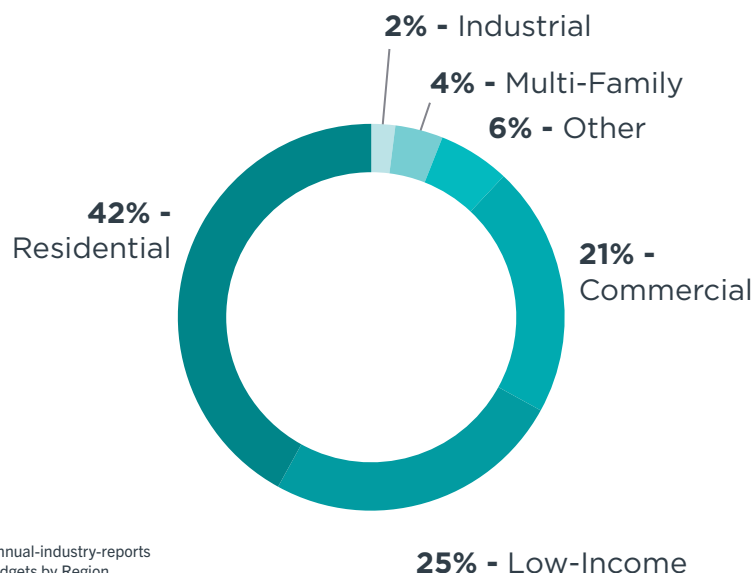
A look at 2018 natural gas efficiency program expenditures across sectors shows that North American utilities apportioned 42 percent of funding for residential programs, 25 percent for low-income, 21 percent for commercial, about 2 percent for separate industrial programs, and 6 percent for other program activities as seen in the figure to the right.

The other category includes expenditures that were not provided by the customer segment. Likewise, in this category are programs that cross-cut residential and non-residential customer segments. These include baseline studies and market research including technology and market trials and pilot programs, planning and project development, consultation and cost-effectiveness analyses, EM&V, market transformation programs, marketing including statewide marketing and special projects such as non-profit kits, non-program specific administration costs (e.g., salaries, transportation, rebate processing), information systems upgrades (including tracking systems), conservation and efficiency education (e.g., school-based, online calculators, community education pilot), efficiency and technology training, and regulatory and state oversight expenses (e.g., third-party alternative filings).

2018 Natural Gas Efficiency Program Expenditures in North America by Region



2018 Natural Gas Efficiency Program Expenditures in North America by Sector¹⁵



14. Consistent with CEE Annual Industry Reports yearly gas efficiency expenditures <https://www.cee1.org/annual-industry-reports>

15. Additional data available in the 2018 Appendix B - Natural Gas Efficiency Program Expenditures and Budgets by Region.

Likewise, the following are included under other expenses:

- Carry-over funds from prior program year
- Government partnerships
- Codes and standards
- Product development
- Emerging technologies programs
- Demand-side management coordination and integration
- Workforce education and training
- State home improvement and conservation loan subsidies
- Financing programs
- Financial audit fees
- Building operator certification programs
- Solar thermal water heating programs
- Renewable energy programs
- Agricultural programs

Natural Gas Efficiency Program Savings

Estimated 2018 natural gas savings were reported for 97 programs by customer class. Respondents were requested to report energy savings realized by gas efficiency measures during the 2018 program year. Savings includes calendar-year savings from natural gas efficiency measures already in place on the first day of the year (i.e., installed before 2018) as well as incremental savings realized from new measures implemented during the year. Some respondents were limited by how they track and report energy savings and thus did not provide annualized savings as defined above (with pre-existing measures and participation considered) but instead reported only incremental, or first-year therms savings.

Data were not available for several respondents, either because savings were not tracked or available. In some cases, estimates were provided based on prior-year data. While the majority of respondents submitted calendar year savings accumulated through 2018, some were able to report only for the most recent program year (with, for example, some program months falling in 2017 and some in 2018). Where data were not available by segment, some respondents reported overall savings in the “Other” category.

Respondents were also asked for gross impacts as well as net impacts—that is, to exclude free riders, spillover, savings due to government-mandated codes and standards, reduced usage owed to weather or business cycle fluctuations, and reduced usage because of natural operations of the marketplace (e.g., higher prices). Seventy-seven percent of respondents provided gross impacts, including a portion that reported both net and gross savings.

Many respondents report estimated savings—a set calculation of savings per measure, developed pre-installation, with built-in assumptions regarding free ridership and other specifications.

Some respondents were unable to separate low-income program savings from overall residential program savings, while others combined commercial program savings with residential impacts. Still, others included savings for multi-family programs with C&I program savings. These combined categories represent a tiny percentage of the data. Given that the reporting methodology varied among respondents, natural gas savings data should be regarded as estimates.

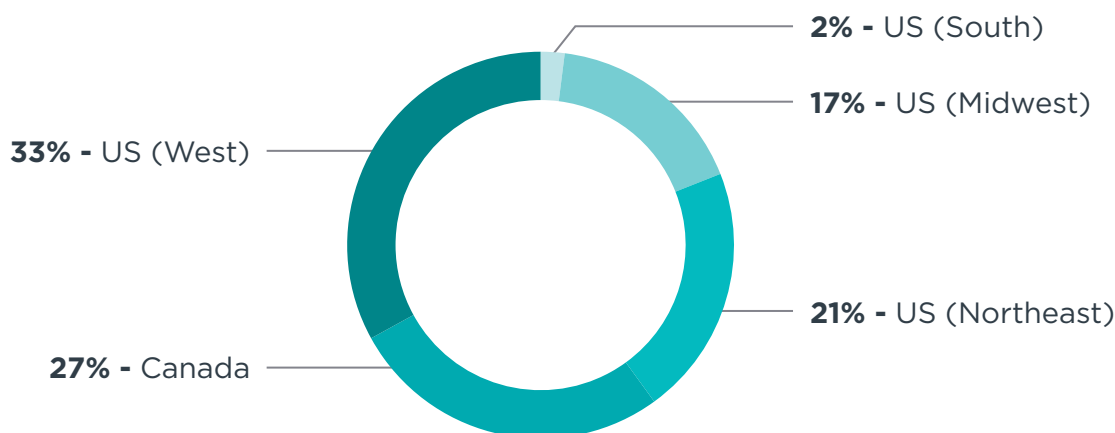
As shown in the table below, natural gas savings in North America amounted to 425 million therms or 42.5 trillion Btu, the equivalence of 2.25 million metric tons of avoided CO₂ emissions in 2018. Participating utilities in the U.S. saved 310 million Therms or 31 trillion Btu through natural gas efficiency programs, thus avoiding 1.6 million metric tons of carbon dioxide emissions (CO₂). For a breakdown of the 2018 estimated savings impacts by state and region, see Appendix E and F.

2018 Natural Gas Efficiency Program Estimated Savings Impacts by Customer Segment (Million Therms) ¹⁶ 97 Programs			
Sector	United States	Canada	N. America
Residential	97.01	2.75	99.76
Low-Income	15.69	1.40	17.08
Multi-Family	5.19	N/A	5.19
Commercial	97.69	82.39	180.08
Industrial	19.67	27.87	47.54
Other¹⁷	75.05	0.02	75.07
Total¹⁸	310.30	114.42	424.73

As utility program participation varies by region within North America, savings vary as well as seen in the next figure.¹⁹ The western region of the U.S. accounted for 28 percent of North American efficiency spending, as seen in the Program Expenditures and Funding section above. However, the western region had the majority of gross savings totaling 140.7 million therms (33 percent of all savings) seen in the next figure. The savings accounted for decreasing emissions by 745 thousand metric tons of CO₂, equivalent to keeping about 161 thousand cars off the road for a year.

Canada accounted for 4 percent of regional energy spending, as seen in the Program Expenditures and Funding section. Nonetheless, it was able to contribute about 27 percent of the total gross efficiency savings of 114.4 million therms in 2018, decreasing emissions by 606 thousand metric tons of CO₂. The difference in expenditures and savings depends on the type of programs and activities that are being implemented as different measures yield various savings depending on technology, region, weather, etc.

2018 Natural Gas Efficiency Program Gross Energy Savings by Regions (Million Therms)



16. Additional data available in the 2018 Appendix E - Natural Gas Efficiency Program Gross Energy Savings by Region.

17. The other category represents cross-cutting programs similar to those discussed under Program Expenditures section.

18. Subcategories might not add up exactly to reported totals due to rounding.

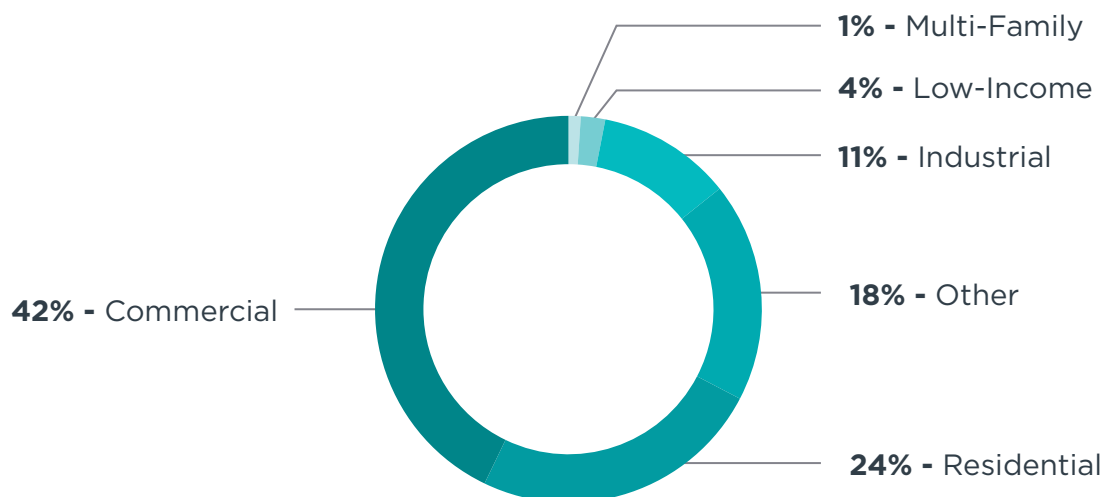
19. Additional data available in the 2018 Appendix E - Natural Gas Efficiency Program Gross Energy Savings by Region.


The Northeast spends the most on efficiency programs and saved 87.2 million therms, curbing 462 thousand metric tons of CO₂, equivalent to keeping about 99 thousand cars off the road for a year or covering the energy usage for over 53 thousand homes for a year.

Commercial programs contributed to 42 percent of energy savings in North America during 2018. Residential programs accounted for 24 percent, industrial 11 percent, and low-income activities four percent. Eighteen percent is classified as “other,” representing data not allocable by customer class and including estimated savings for education, general outreach, codes and standards, and pilot programs, as previously mentioned.

For U.S. savings, residential and commercial programs each account for about 31 percent of overall savings, low-income five percent, and industrial six percent. Twenty-four percent of U.S. natural gas savings are classified as “other.”

2018 Natural Gas Efficiency Program Gross Energy Savings in North America





Natural Gas Efficiency Program Planning and Evaluation

EM&V Expenditures and Budgets

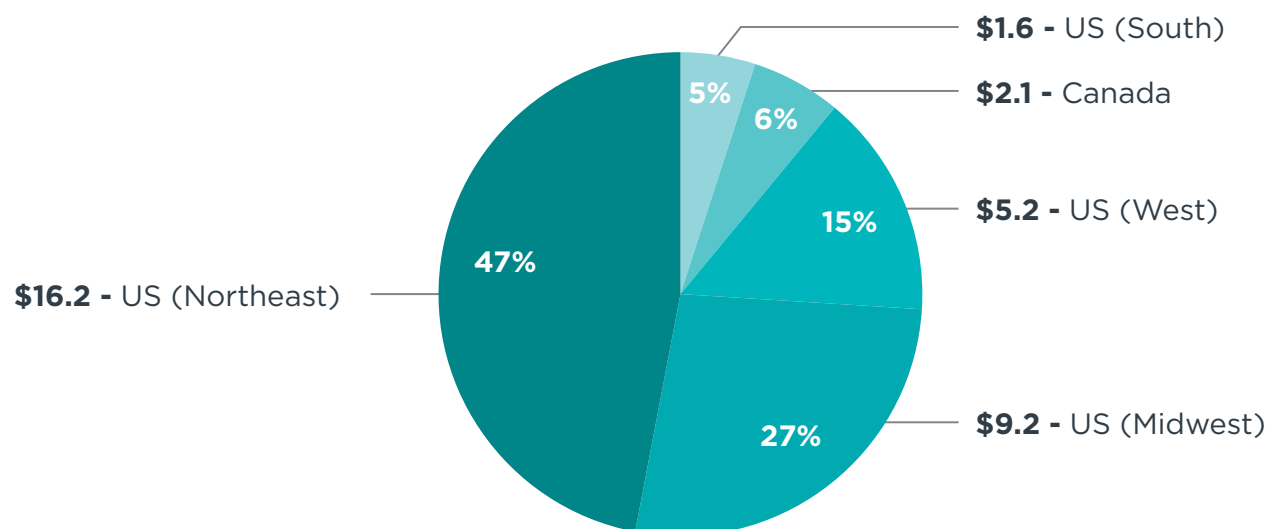
Survey respondents were asked to describe their approach to natural gas efficiency program planning, measurement, and Evaluation.

More than half of the respondents (67 percent) indicated that they have some form of Evaluation, measurement, and verification (EM&V) program. However, not all participants were able to report EM&V expenditures for one of the following reasons:

- EM&V funds form part of the administrative budget
- In-house evaluations are covered under other program expenses
- Incremental costs are not itemized
- No evaluation report is due this program year
- Contract negotiations with third-party EM&V vendors are ongoing

EM&V expenditures for the 2018 program year were collected for 84 out of 126 programs. EM&V expenditures exceeded \$34 million in North America in 2018, of which \$32 million came from the U.S., and \$2 million came from Canada. The 2018 expenditures are higher than those reported in 2017 by about 13 percent each in North America and the U.S and 6 percent higher as reported in Canada.

2018 Natural Gas Efficiency Program EM&V and Supporting Research Studies Expenditures in the United States²⁰ (Million Dollars)



Tracking Greenhouse Gas Emission and Source Energy as a Measure

Thirty-four percent of respondents (33 of 97) indicated that a reduction of greenhouse gas (GHG) or carbon emissions is a performance target for their natural gas efficiency program. Additionally, when asked about their program goals and targets, 31 utilities indicated that reducing greenhouse gas emissions / direct impact on avoided emissions as part of a state requirement by the program provider versus 26 utilities indicating that it was due to a regulator goal. Twenty-one 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 energy²¹ measurement in about two percent of programs (2 of 83), and site-only measurement in 93 percent of programs (77 of 83). Moreover, four respondents reported using both types of measurement.

20. Additional data available in the 2018 Appendix D - Natural Gas Efficiency Program Expenditures by Activity and Region.

21. 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.

Natural Gas Efficiency Regulatory Requirements and Cost Recovery Treatment

This section describes some of the 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. Data was provided for 105 U.S. programs, although not all respondents answered all questions.



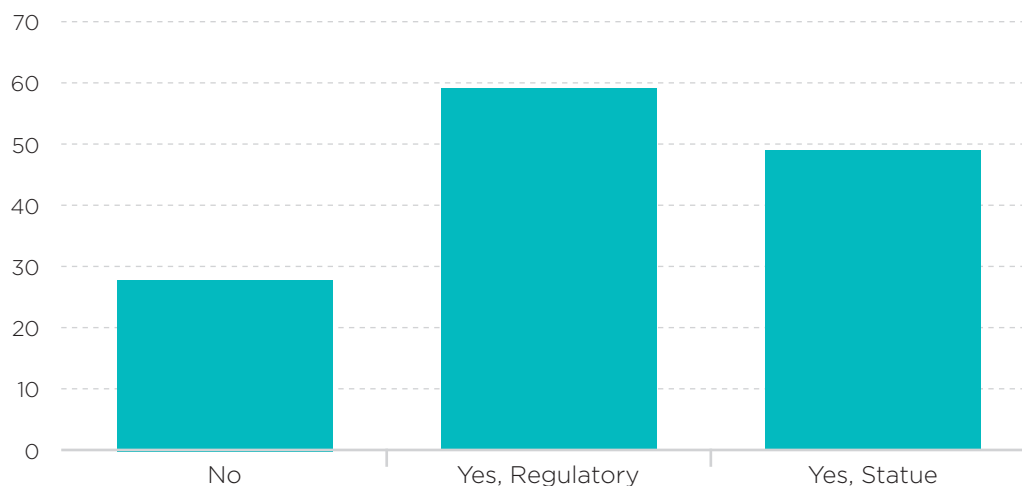
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Natural Gas Efficiency Program Requirements and Policy Goals

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 105 utilities in the 40 states and 3 Canadian provinces that responded, 77 indicated that the state in which it operates requires the funding of an efficiency program. Fifty-nine respondents indicated a requirement via regulatory order, 49 utilities through a legislative bill, and 31 respondents indicated both regulation and legislation.

State Requirement for Utilities to Fund Efficiency Programs (2018 Data)
105 total respondents²²



Various goals drive efficiency program funding requirements within the U.S. and Canada.

Utilities that answered “Yes” above filled out specific policy and regulatory goal 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 2018 survey include energy conservation and savings, customer dollar savings or bill reduction programs, behavioral change and direct outreach programs, reduced usage for low-income customers, and value-added customer service and options programs. Seventy-five utilities in 35 states have set more than one goal, of which 12 utilities are pursuing ten or more targets. Additional policy goals and program breakdown data are provided in the table below.

²² 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.

Policy Goals Governing Efficiency Program Implementation Number of Programs by Goal/Target 105 Participating Utilities²³ (2018 Data)			
Target/Path	Program Provider Goal	Policy Target in Legislation	Regulator Goal
Promote Energy Conservation/Direct Impact on Energy Savings	71	42	52
Reduce Green House Gas Emission/Direct Impact on Avoided Emissions	31	21	26
Customer Dollar Savings/Reduce Customer Bills	65	27	44
Value-Added Customer Service and Options	56	7	21
Reduce Low-Income Customers' Energy Usage and Cost Burden	56	31	44
Improve Safety and Comfort Benefits to Low-Income Customers	45	12	27
Minimize Customer Bill Payment Arrears and Utility's Uncollectible Balances	37	8	34
Behavioral Change (Via Education, Training Feedback or Direct Outreach of Customers and Others)	61	18	44
Market Transformation (Via Manufacturers, Distributors, Retailers, and Consumers of Energy-Related Products/ Services)	46	13	30
Economic Development and Job Creation (or Green Jobs)	30	19	28
Meet Electric Demand Side Management Program Targets	14	14	18
Reduce Peak/Off-Peak Electric Generation Needs and Electric Infrastructure Costs	18	18	23
Meet State Energy Efficiency Resource Standards (EERS) or Renewable Portfolio Standards Targets	18	20	31
Encourage the Use of Combined Heat and Power	14	7	13
Reduce Natural Gas Supply and Infrastructure Costs	32	18	34
Other	3	5	4

Utilities often employ mechanisms to prevent intra-year program funding disruptions. Seventy-seven respondents had at least one mechanism in place. Most utilities, 55 participants, had the flexibility to shift funds between programs, while 32 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 22 utilities had four or more mechanisms in place. Thirty utilities had one mechanism in place to avert intra-year program funding disruptions.

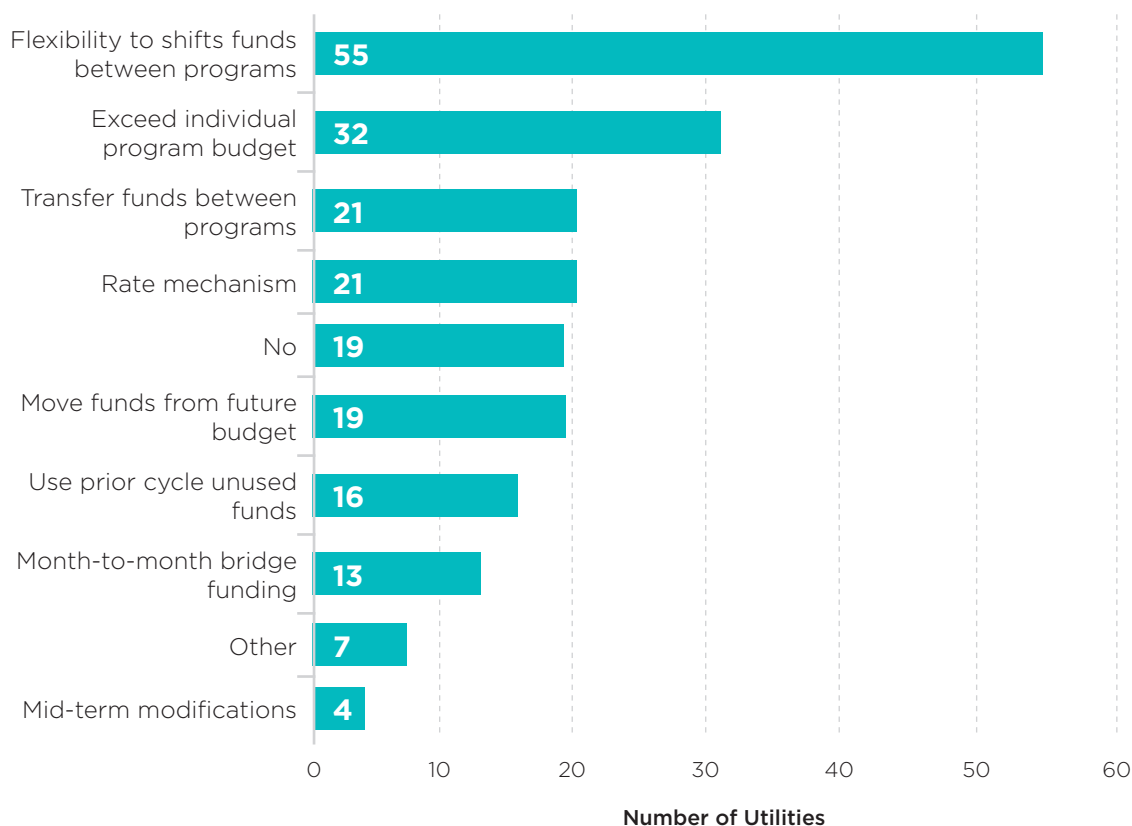
A subset of 16 participating utilities experienced program funding disruptions part-way through their program year. Even though some utilities had mechanisms built in to prevent program funding disruptions, interruptions may still occur depending on the severity or type of disruptions, which were metrics 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.

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

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

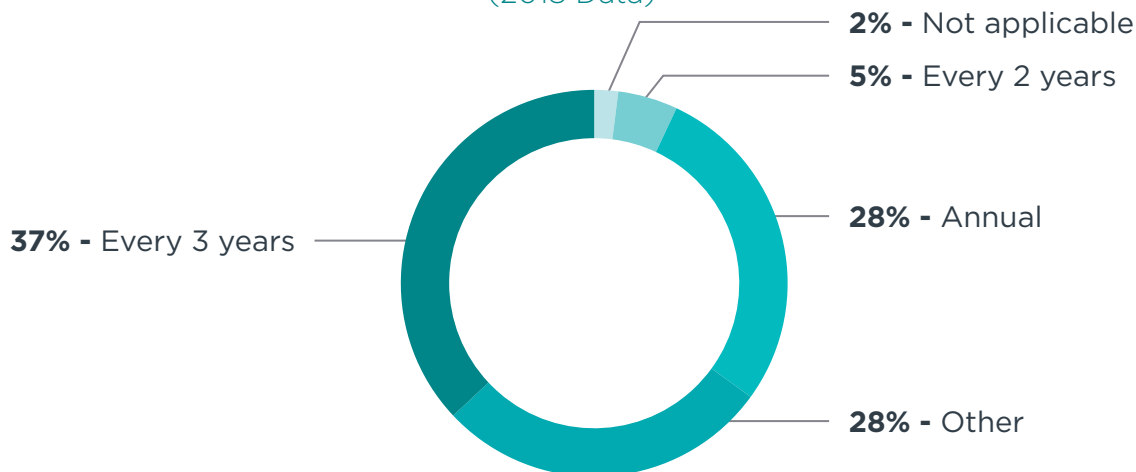
77 Utilities in 2018



When asked “on what basis is your funding approved by your regulator or appropriate legal authority,” 26 utilities from 18 states in the U.S. have their funding approved annually, 34 utilities from 22 states have their funding approved every three years, and 26 participants from 14 states indicated “other” which includes an approval cycle of 4-5 year or sector-specific approval. Only four participating utilities from 3 states mentioned that they had a funding approval cycle of every two years, as seen below.

Regulator or Legal Authority Cycle of Efficiency Funding Approval

(2018 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 depth²⁴. 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.

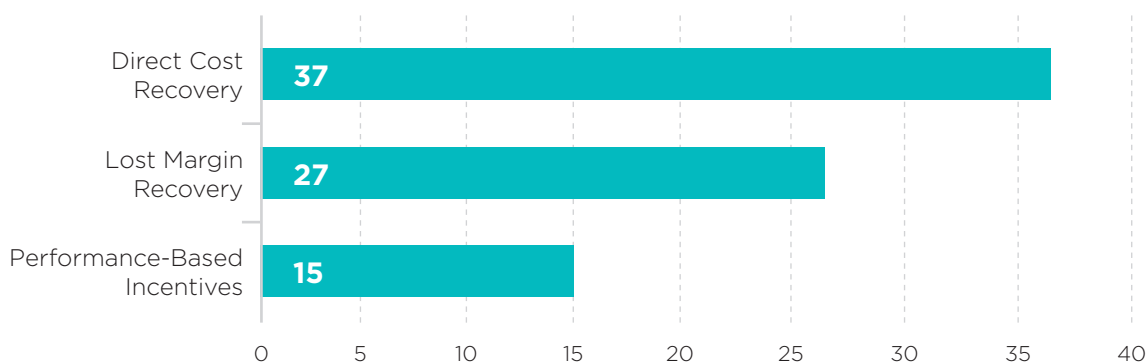
When setting rates, an investor-owned utility negotiates with its regulator (public utility/service commission) what it is permitted to charge its customers to be able to continue to meet its obligation to serve its customer base. These rates are calculated to match the revenue requirement of the utility,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

Respondents identified 37 states that allow utilities to recover the direct costs of natural gas efficiency programs, 27 states that permit recovery of lost margins due to efficiency program implementation, and 15 states that financially reward utilities for well-performing natural gas efficiency programs as seen below.

Regulatory Treatment for Gas Efficiency Program Direct Costs, Lost Revenues and Performance Incentives Number of States
(2018 Data)



²⁴For 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, <https://www.epa.gov/statelocalenergy/aligning-utility-incentives-investment-energy-efficiency> and *Aligning Utility Business Models with Energy Efficiency*, <https://www.aceee.org/toolkit/2020/02/aligning-utility-business-models-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.

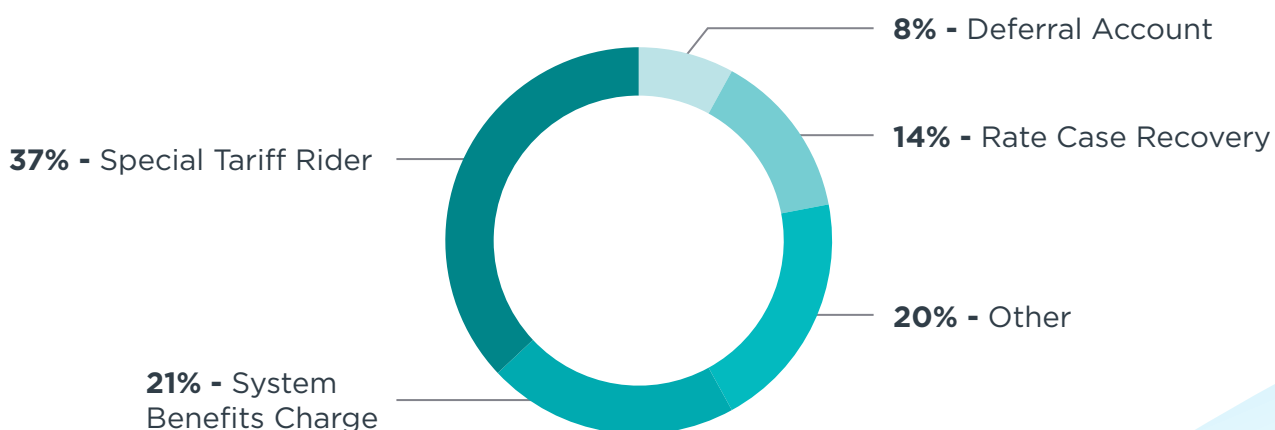
Direct Program Cost Recovery

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 (or the charge per therm) 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. Thirty-five companies in 22 states use a special efficiency or conservation tariff rider, 20 companies in eight states apply a mandated system benefits (or public goods) surcharge to customer bills, 13 utilities in 11 states embed natural gas efficiency program costs in base rates. Seven utilities in 7 states track expenditures in a balancing account for amortization and later recovery over a period of time, as seen in the figure below. Nineteen other companies in 15 states used other methods to recover program costs, of which 9 implement a combination of up to 3 recovery mechanisms. Other methods used include conservation adjustment mechanisms, annual true-up and collection rate adjustments, and local distribution adjustment charges.

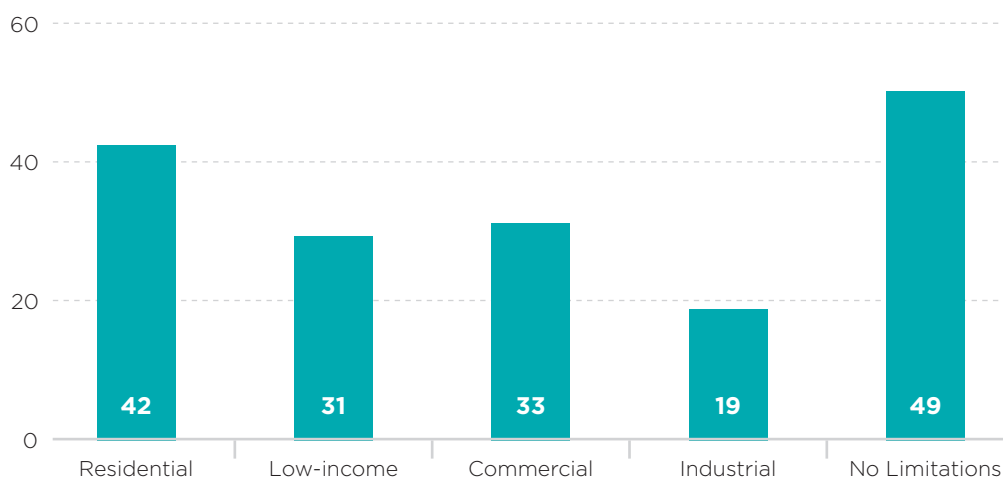
Regulator-Approved Gas Efficiency Direct Program Cost Recovery Mechanisms 97 Programs (2018 Data)



For some utility recovery of energy efficiency programs, costs apply only to specific rate classes within their programs. Out of the 97 respondents, 49 respondents didn't have any limitations; however, this was not the case for the other 48 utilities. According to 42 respondents, residential programs had the highest applicability for the recovery of energy efficiency program costs. Commercial and low-income programs with 33 responses and 31 responses, respectively, were second and third most utilized. Industrial programs had 19 utility respondents that could recover energy efficiency program costs through the mechanisms mentioned above.

Of the 42 respondents that can recover their costs, 18 respondents were able to apply cost recovery methods for all four rate classes, six respondents were able to apply the mechanisms to 3 rate categories, and 11 respondents were able to apply recovery methods to two rate classes. There were only five 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.

Recovery of Energy Efficiency Program Costs by Rate Class
97 Respondents (2018 Data)



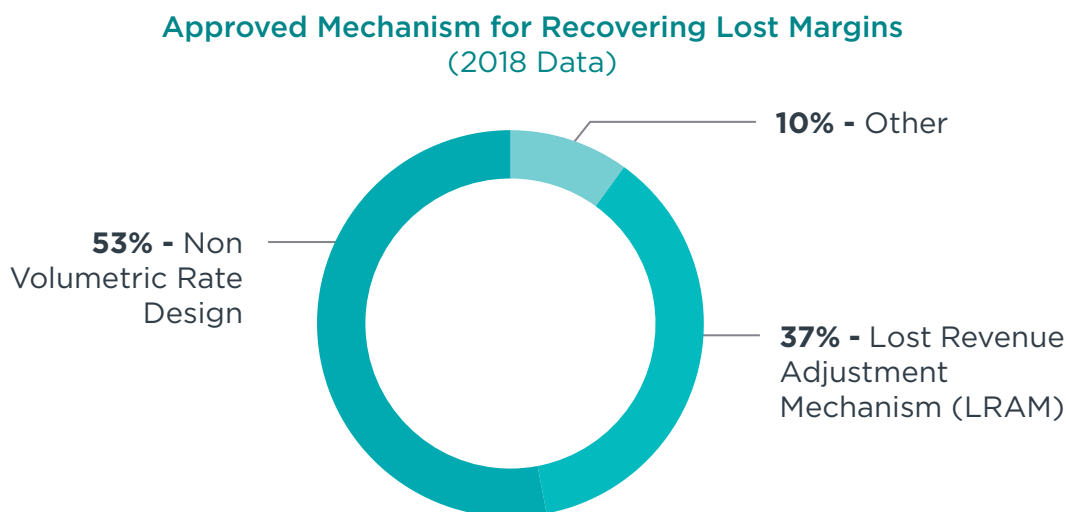
Lost Margin Recovery

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 3 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.

As shown in the figure below, of the fifty-seven responding utilities that are allowed to recover lost margins in the U.S. and Canada, 31 utilities have a non-volumetric rate design, 22 utilities use a lost revenue adjustment mechanism (LRAM), and six use another method to recover lost margins. Of the 22 utilities that have a LRAM or margin tracker, four indicated that they are decoupled, and others indicated 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.

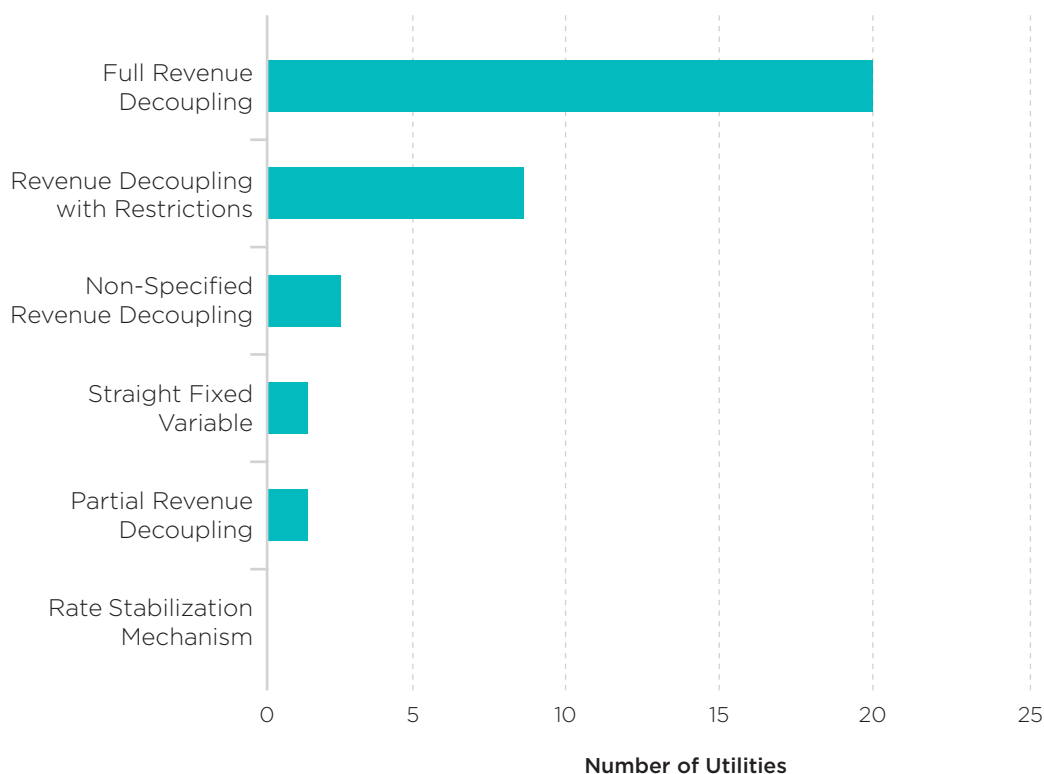
Partial revenue decoupling limits margin recovery to a specific percentage of revenues or must be equal to the achieved natural gas cost saving. Revenue decoupling with restrictions may involve caps on the authorized ROE or other limits on regulated earnings.

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 2018

33 Natural Gas Utilities (19 States)

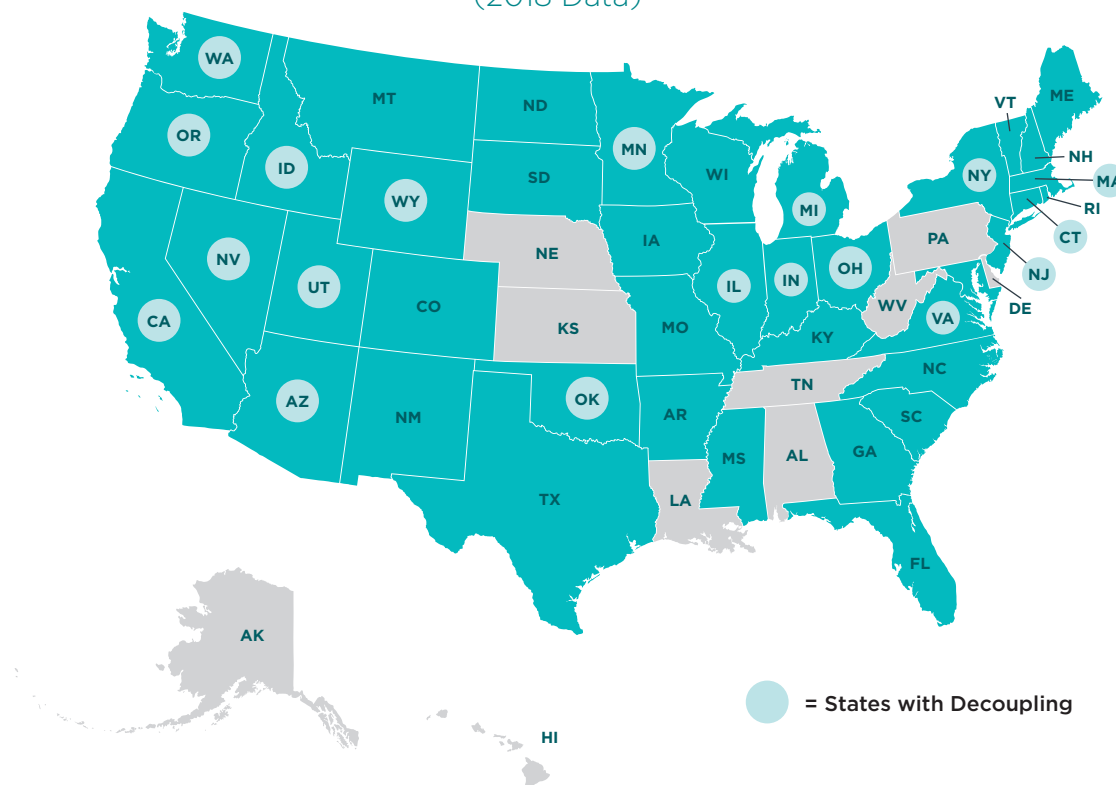


Of the 33 utilities in the 19 states that have non-volumetric rate design, 20 (in 13 states) have full revenue decoupling, nine (in eight states) have revenue decoupling with restrictions, and two (in two states) have a non-specified type of revenue decoupling as seen above in the figure above and below in the table. Partial revenue decoupling and straight fixed, variable rate structures were not widely used by the 2018 survey participants. The rate stabilization mechanism was not used by the participants in this survey cycle.

Non-Volumetric Rate Structures in the U.S. 2018 ²⁵ 33 Natural Gas Utilities in 19 States		
Mechanism	Number of Companies	Number of States
Full Revenue Decoupling	20	13
Partial Revenue Decoupling	1	1
Revenue Decoupling with Restrictions	9	8
Non-Specified Revenue Decoupling	2	2
Straight Fixed Variable	1	1

Additionally, as seen in the figure below, in 2018, 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.²⁶

States with Natural Gas Efficiency Programs (Green) and Revenue Decoupling (2018 Data)



25. The same state may be represented in more than one category of non-volumetric mechanism.

26. 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.

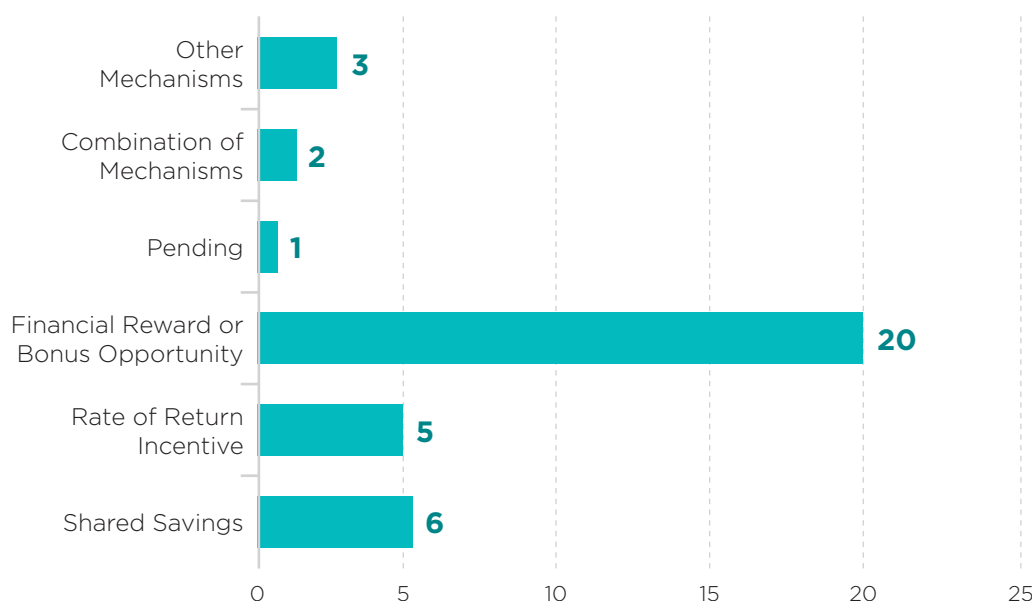
Thirty-seven natural gas efficiency programs implemented in 15 states identified as having utility performance-based incentives. When asked to identify all mechanisms that formed their incentives, they indicated having one of the following mechanisms: five companies (in five states) have a shared saving mechanism, four (in four states) have a rate of return (ROR) mechanism, and 20 companies (in 10 states) have a bonus opportunity for meeting performance targets. Two have more than one incentive mechanism, and seven have other mechanisms. The table below shows the various arrangements as reported by companies.

Utility Financial Incentive Structure Specific to Natural Gas Efficiency Program Implementation and Performance (2018 Data)		
Financial Incentive Mechanisms	Programs	States ²⁷
Shared Savings	6	5
Rate of Return Incentive	5	5
Financial Reward or Bonus Opportunity for Meeting Performance Targets	20	10
Pending	1	1
A Combination of Mechanisms	2	1
Other Mechanisms	3	1

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

Utility Financial Incentive Structures Specific to Natural Gas Efficiency Program Implementation and Performance

Number of Utilities in 2018



According to seven survey companies, they are eligible to share between 5 percent and 15 percent of ratepayer savings (the median share was 12 percent). Of the five companies that have a rate of return incentive, three earn a rate of return on efficiency investments equal to the authorized Return on Equity (ROE), and one earns a rate greater than the authorized ROE.

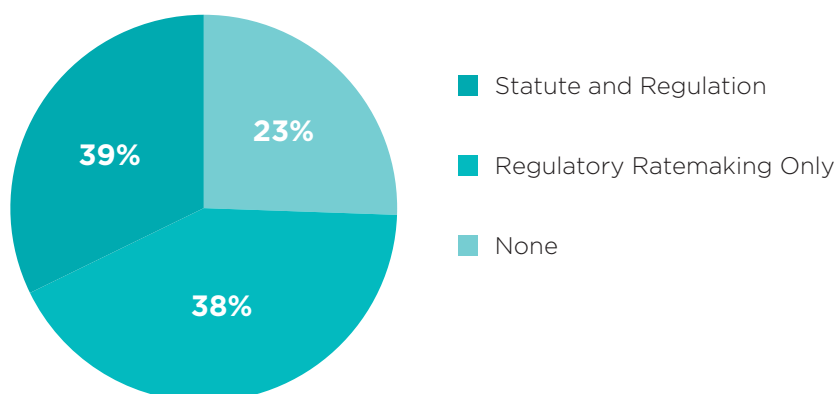
Within the financial incentive structures, rewards, or bonus opportunities for meeting performance targets were split into three categories: Efficiency Dollar Investment, Cost-Effectiveness, and Other targets. According to the 29 utilities that provided data on their targets, 38 percent (18 utilities) implemented energy savings targets ranging from 65 percent savings to 135 percent savings with an average minimum and maximum of 48 percent and 77 percent savings, respectively.²⁸ Thirty-three percent (16 utilities) implemented cost-effectiveness targets, and 10 percent (5 utilities) implemented efficiency dollar investment targets. About 19 percent (9 utilities) indicated they implement other targets based on return on equity, tiered targets, yearly comparative performance, and cumulative savings targets.

The rewards mechanisms that were employed include the percent of net economic benefits, percent of program savings, and percent of program investment. According to 24 surveyed companies, 37 percent base their rewards mechanism on the percent of net economic benefits ranging from 10 to 50 percentage. Moreover, 34 percent of respondents combined used the percent of program savings, and percent of program investment rewards mechanisms. Twenty-nine percent of the respondents indicated other rewards mechanisms were used, including but not limited to mixed methods of the top three mechanisms above, prorating based on actual over/underspend of budget, percent of the budget on a sliding scale, tiered rewards, and by percent of shared savings reached.

When asked what authority their regulator-approved utility performance incentive mechanism originated from, 17 utilities of 44 respondents (13 states) indicated it was by regulatory rate-making. In comparison, another 17 utilities indicated it was by statute and regulation. Ten of the 44 utility respondents indicated that none of the above two authorities were involved.

28. The same utility may be represented in more than one rewards or bonus opportunities.

Regulatory Authority Supporting Utility Performance Incentive Mechanism in the U.S. in 2018

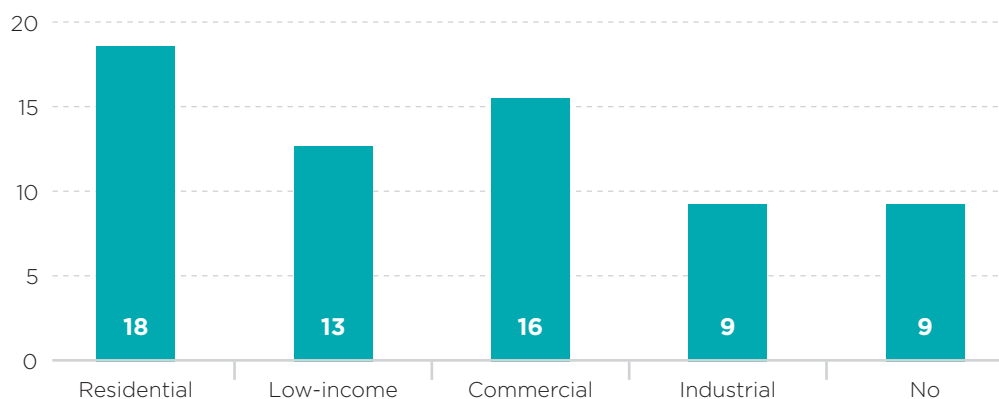


Fuel Switching

Twenty-one percent of respondents (19 of 92) 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, with 18 utilities offering residential program incentives, and 16 utilities offering commercial incentives. Thirteen utility participants offered fuel conversion incentives for the low-income rate class, and nine utility participants offered industrial customers the incentive as well. Sixteen utility programs offered two or more rate cases the opportunity for fuel switching incentives, of which seven utilities were offering all four rate classes incentives in their program followed by four utilities offering three rate classes the incentive and five utility participants offering two customer classes the fuel conversion incentive.

Utilities Offering Fuel Conversion Incentives to Customers by Rate Class in 2018



Five utilities were offering higher rebates for converting to natural gas, and 13 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. Eleven utility programs offered the financial switching incentive to switch from 2 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 other 23 percent of participants (21 of 92) 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 13 of 52 utilities (10 states), promoting fuel switching/converting to natural gas is expressly prohibited in their states. Nine of those respondents are prohibited by regulators, while two utilities are limited by statute and two by regulator and statute.

Conclusion

Overall, in 2019 the members survey results indicate that natural gas utilities continue to help their customers to reduce energy usage, lower their annual energy bills, and reduce greenhouse gas emissions by investing in successful and innovative efficiency programs, which include cash rebates and financial incentives, low-income specific programs, strategic partnerships, joint programs with other electric and gas utilities, efficiency loans, education campaigns, targeted marketing, energy audits, and more.

In 2018, natural gas utilities funded 132 natural gas efficiency programs, 125 in 42 states and seven in Canada. The utility efficiency program investments remain consistent with near \$1.3-1.4 billion dollars per year.

Offset over
13.5
million metric
tons of CO₂
emissions

With these significant investments, natural gas utilities helped their customers save 259 trillion Btus of energy and offset over 13.5 million metric tons of carbon dioxide emissions from 2012 to 2018, equivalent to removing 2.9 million cars off the road for a year.

Offsetting
2.25
million metric
tons of
avoided CO₂
emissions

U.S. customers saved 425 million Therms or 42.5 trillion Btu through natural gas efficiency programs, offsetting 2.25 million metric tons of avoided CO₂ emissions in 2018 alone. The investments in energy efficiency have been and continue to be an important program for natural gas utilities and their customers.

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