



2018 Energy Efficiency Program Annual Report

June 28, 2019

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Introduction

New Mexico Gas Company (“NMGC”) submits this annual report on the Energy Efficiency Programs for Program Year 2018. This will be NMGC’s tenth annual report and will cover the time period April 1, 2018 through March 31, 2019. Also submitted is the final report prepared by the independent evaluator, Evergreen Economics, Inc. (“Evergreen”), entitled “Evaluation of the 2018 New Mexico Gas Company Energy Efficiency Programs, (“M&V Report”), which was completed on June 19, 2019.

NMGC filed its 2017 and 2018 Program Plan, New Mexico Public Regulation Commission (“NMPRC” or “Commission”) Case No. 16-00100-UT, on August 29, 2016. The Program Plan was approved by the NMPRC on February 15, 2017 and the 2018 Program Year became available to customers on April 1, 2018. This report covers all costs incurred in the implementation of the programs and all customer participation in the programs from April 1, 2018 through March 31, 2019.

The following programs and offerings are included in this annual report:

- (1) Water Heating - tankless water heaters, condensing tank water heaters, showerheads, faucet aerators and pipe wrap measures.
- (2) Space Heating - furnaces, boilers, insulation and smart thermostat measures.
- (3) ThermSmart New Homes – provides incentives to home builders to build high performance homes through several methodologies including high efficiency furnaces, boilers and water heaters, tightening of envelope and ductwork, location of equipment, and increased insulation values.
- (4) Income Qualified - multiple natural gas saving measures for individual low-income residences.
- (5) Multi-Family - multiple natural gas saving measures for both low-income and market-rate multi-family facilities.
- (6) Efficient Buildings - multiple natural gas saving measures for commercial and school facilities including direct install, prescriptive and custom.

This report begins with an executive summary that presents a high-level assessment of program performance from April 1, 2018 through March 31, 2019. This is followed by a summary of the findings of the M&V Report and the impacts on the future of the programs. This report also includes specific program information as required in the NMPRC Energy Efficiency Rule (17.7.2 NMAC) (“Rule”) that went into effect on January 1, 2015 (2015 Rule), as well as additional program information.

Executive Summary

This is the tenth annual report on NMGC’s Energy Efficiency Program (“Program”), and it presents the detailed results of six programs for Program Year 2018 (NMPRC Case No. 16-00100-UT).

The following table shows the total number of customer participants, savings and program costs for Program Year 2018. The savings for each program are net savings as derived from the final conclusions in the M&V Report reached by Evergreen’s evaluation of NMGC’s 2018 Program Year. Program Year 2018 was approved by the NMPRC on February 15, 2017 and became available to customers on April 1, 2018. Program Year 2018 ended March 31, 2019.

Program Savings and UCT Results per M&V					
Program	Annual Savings Savings Per Unit (Therms)	Total Number of Rebates Processed (April 1, 2017 to March 31, 2018)**	Total Annual NET Savings (Therms)*	Lifetime NET Savings (Therms)*	Total Program Costs
Water Heating	.95 - 45	4135	100,687	952,687	\$496,256
Space Heating	30 - 102	1381	63,907	1,297,707	\$595,730
ThermSmart New Homes	377.72 avg.	782	232,775	5,819,369	\$1,085,597
Income Qualified	332.47 avg.	478	136,638	2,399,127	\$1,211,285
Multi-Family*	43.3 - 1182	2272	269,161	3,110,101	\$986,824
Efficient Buildings**	579 - 56542	178	652,266	9,327,237	\$1,610,911
Portfolio Costs	N/A	N/A	N/A	N/A	\$91,436
Total			1,455,434	22,906,228	\$6,078,039
<i>*Net savings adjusted for free-ridership and derived from M&V Report</i>					
<i>**Multi-Family are the number of units and Efficient Buildings participation are projects associated with those programs</i>					

Except where otherwise noted, the following table indicates NMGC costs for its energy efficiency portfolio from April 1, 2018 through March 31, 2019 and allocated to Program Year 2018.

Program Year 2018	Total Actual Costs
Administration (Internal and External)	\$ 2,541,009
Promotion/Marketing	\$ 52,140
Measurement and Verification	\$ 111,534
Rebates	\$ 3,281,919
Portfolio Costs	\$ 91,436
Total	\$ 6,078,039
*Program Year 2018 - NMPRC Case No. 16-00100-UT	

Administration

The figures in this category include both internal and external administration of the programs. Internal administration is the labor and administrative costs the NMGC Energy Efficiency Department staff expended on energy efficiency programs in research, development and oversight of the program plan, as well as NMPRC compliance reporting and ongoing interface with NMGC's program administrators and M&V activity. External administration are the costs associated with third-party program administration of NMGC's programs. Administering the Water Heating, Space Heating and ThermSmart New Homes programs is ICF International ("ICF"). Administering the Income Qualified program is New Mexico Mortgage Finance Authority ("MFA") for the EnergySmart program and EnergyWorks for the Native American project. Administering the Multi-Family program is ICAST and administering the Efficient Buildings program is CLEAResult. All five third-party program administrators are under contract with NMGC. Third-party administration costs include labor and other direct expenses related to program implementation planning, program marketing and website materials development and management, outreach and marketing of the programs to eligible participants, energy efficiency opportunity identification and assessment, energy engineering and energy savings validation, some direct installation of high efficiency faucet aerators and low flow pre-rinse spray valves, rebate processing and quality control inspections. Review of rebate applications and qualifying of customers by ICF, MFA, EnergyWorks, ICAST and CLEAResult for their respective programs is also included. To the extent that these contracts require the third-parties to conduct promotional activities acceptable to NMGC, those promotional costs are considered third-party administrative costs.

Promotion/Marketing

This cost category contains all promotional costs expended on the Program including brochures, direct mail costs, newspaper, radio, television, media design and production expended by NMGC and all other promotional or marketing costs not included in third party contracts.

Measurement and Verification

The measurement and verification costs include final invoices received from Evergreen Economics from April 1, 2018 for performing final M&V activities for Program Year 2017 and their annual independent program evaluation report for Program Year 2017, completed June 2018. Also included in the costs are invoices received and paid through March 31, 2019, from Evergreen for their continued evaluation of NMGC's 2018 Program Year.

Rebates

The rebate cost category includes all rebates paid directly to participating customers or for measures and services provided under the Income Qualified, Multi-Family and Efficient Buildings programs. Labor and materials necessary for some direct-install measures are included in this category.

Portfolio Costs

This cost category includes all costs related to the energy efficiency portfolio but not directly associated to an individual program such as legal expenses, training, research and development, and general education activities.

The Rule requires that an independent evaluator conduct measurement and verification assessments of all energy efficiency programs.

For Program Year 2018, the NMPRC selected Evergreen to provide an M&V Report on all six of the energy efficiency programs offered by NMGC and approved under NMPRC Case No. 16-00100-UT.

The M&V Report contains important findings and recommendations. A more complete summary of these findings and recommendations along with NMGC's comments is provided in the next section. These findings include the following:

- The overall Utility Cost Test ("UCT") for all six programs was 2.24.
- All individual programs passed the UCT.
- Program recommendations that have either already been implemented or will be implemented in the next filing.

Tariff Collections

As of April 1, 2018, when the 2018 Program Year began, NMGC was charging eligible sales service and transportation customers the approved Rider rate of \$0.0146/therm (Advice Notice No. 67), for recovery of program costs. The rate remained in effect from April 1, 2018 through July 31, 2018. On June 29, 2018 NMGC submitted Advice Notice No. 72, updating the rate charged by Rate No. 1-15 - Rate Rider No. 15 Energy Efficiency Rider ("Rider 15") in alignment with the annual reconciliation. This Advice Notice was accompanied by supporting testimony and exhibits which included the annual Rider 15 reconciliation report pursuant to 17.7.2.13C NMAC, requiring reconciliation of collections from the prior year, along with proposals to make up under or over-collections. The new rate of \$0.0130/therm for Rider 15 was approved with an effective date of August 1, 2018. Total cost recoveries through Rider 15 from April 1, 2018 to March 31, 2019 were \$7,074,750.16. Rider 15 continues at the current rate of \$0.0130 as of this filing

Tariff Reconciliation

The beginning balance in the Energy Efficiency account at April 1, 2018 was an over-collection of \$312,159.02. Expenses for the period April 1, 2018, through March 31, 2019 totaled \$6,155,441.07. Actual carrying charges of \$63,646.21 charged to NMGC for the same period increases the net expense to \$6,219,087.28. Collections for the period totaled \$7,074,750.16, resulting in a net over-collection of \$855,662.88 for the 2018 Program Year. Collections included \$477,127.09 for Incentives. Including the beginning balance of an over-collection of \$312,159.02 at April 1, 2018, the total net over-collection at March 31, 2019 was \$690,694.81. Expenses associated with the 2018 Program Year were \$6,078,038.69 of the \$6,155,441.07 actually reported during the period. The difference of \$77,402.38 is mostly attributed to invoices received after March 31, 2018 but allocated to the 2017 Program Year.

Based on the above and the NMPRC's approval of NMGC's 2019 Program Year budget of \$6,397,982 (Case No. 16-00100-UT), NMGC has calculated that \$0.0116 per therm is the amount needed to recover costs through the 2019 Program Year.

Regulatory Proceedings

On February 15, 2017, the Commission unanimously approved NMGC's 2017 and 2018 Program Plan (NMPRC Case No. 16-00100-UT) and the 2018 Plan became available to NMGC's customers on April 1, 2018.

On March 13, 2018 NMGC submitted an Application for Expedited Variance from Final Order Adopting Recommended Decision for modifications to its 2017 and 2018 Energy Efficiency Plan (Case No. 16-00100-UT). NMGC requested the modification to add a supplemental administrator for its Income Qualified program in 2018 to offer the same services and measures to Native American communities. The modification resulted in an \$80,000 increase to NMGC's Income Qualified program budget which increases the Company's total program energy efficiency budget from \$5,899,422 to \$5,979,422. The Commission approved the request on March 28, 2018.

NMGC's 2017 Program Plan ended on March 31, 2017, and the 2018 Program Plan went into effect on April 1, 2018 in accordance with NMPRC Case No. 16-00100-UT.

NMGC received the final M&V Report for its 2017 Program Year from Evergreen Economics Inc., on June 22, 2018 and submitted both the M&V and NMGC's 2017 Program Year Annual Reports to the NMPRC on June 29, 2018.

Also, on June 29, 2018, NMGC submitted a report on the rate charged by Rate No. 1-15 - Rate Rider No. 15 Energy Efficiency Rider ("Rider 15"). The Rider 15 reconciliation report is pursuant to 17.7.2.13C NMAC, requiring reconciliation of collections from the prior year, along with proposals to make up under or over-collections. NMGC filed Advice Notice No. 72 to reduce the Energy Efficiency Fee to \$0.0130 per therm as of the first billing cycle for August 2018. It went into effect by operation of law on July 26, 2018.

NMGC received the final M&V Report for its 2018 Program Year from Evergreen Economics Inc., on June 19, 2019 and submitted both the M&V and NMGC's 2018 Program Year Annual Reports to the NMPRC on June 28, 2019.

Also, on June 28, 2018, NMGC submitted a report on the rate charged by Rate No. 1-15 - Rate Rider No. 15 Energy Efficiency Rider ("Rider 15"). The Rider 15 reconciliation report is pursuant to 17.7.2.13C NMAC, requiring reconciliation of collections from the prior year, along with proposals to make up under or over-collections. NMGC filed Advice Notice No. 76 to reduce the Energy Efficiency Fee to \$0.0116 per therm as of the first billing cycle for August 2019.

Summary of M&V Report Findings

Background and Purpose of Independent Evaluation

The NMPRC approved Evergreen Economics, Inc. to perform independent evaluation, measurement, and verification of NMGC's Energy Efficiency Programs for Program Year's 2017, 2018, and 2019. NMGC and its program administrators worked with Evergreen to provide the data necessary to complete the 2018 M&V Report. This included providing rebate processing files, budget data by program, net and gross savings assumptions, and avoided cost information.

The primary purpose of the independent evaluation is to assess the cost effectiveness of the programs using the UCT Test. A second purpose of the evaluation is to perform a basic process evaluation of the program to determine customer satisfaction with how the programs operated. As of July 1, 2013, the cost-effectiveness measure for all utility energy efficiency programs became the UCT rather than the TRC. NMGC's 2014 Program Year was the last year that the TRC was required to determine cost-effectiveness.

2018 M&V Report

The 2018 program year evaluation consists of an analysis of all six of the offered programs (Please see Appendix B for the complete M&V Report).

Summary of Findings and NMGC Comments

Evergreen concluded that the overall portfolio UCT for the six programs was 2.24 and that each individual program also passed the UCT. NMGC believes that Evergreen has conducted a professional assessment of the six programs offered under Program Year 2018 and agree with most of their findings and recommendations. Below is a summary of their findings and recommendations along with NMGC's comments.

Efficient Buildings Program

The evaluation team found that in the program tracking data file "Evaluator Report 4-8-19.xlsx" provided by CLEAResult, for multiple projects, the description listed in the "Measure" field did not match the installed measures shown in the project documentation. These discrepancies did not impact the verified savings values; however, they may affect NMGC's internal reporting and tracking.

- **Recommendation 1:** Ensure that the tracking data accurately lists the measure names for participating projects.
- **NMGC Response:** CLEAResult has implemented procedures to more accurately account for measures and projects.

- The evaluation team adjusted the savings for six projects that installed measures related to hot water: high-efficiency water heaters, low-flow faucet aerators, low-flow showerheads, and pre-rinse spray valves. NMGC claimed savings using the deemed

savings values provided in the TRM for general commercial buildings. However, these general savings values are intended to be used for projects that do not fit into any of the other more specific building types listed in the TRM. Since the building types for these projects were documented, the evaluator used the savings values from the TRM that most closely corresponded to the specific building types. This resulted in adjustments ranging from a 25 percent decrease in savings to a 6 percent increase in savings.

- **Recommendation 2:** For hot water measures, use deemed savings values from the TRM corresponding to the specific building type in which the measures are being installed.
- **NMGC Response:** CLEAResult will utilize the recent TRM update for 2019.
- The evaluation team adjusted the savings for the six projects in the sample that installed two types of commercial kitchen equipment: gas fryers and gas ovens. The evaluation team used the savings documented in the “V3” CLEAResult workpapers for these measures, which do not match the savings reported in the tracking data. No additional calculations were available for the evaluation team’s review, so the source of these discrepancies is unknown. These adjustments ranged from a 62 percent decrease in savings to a 34 percent increase in savings.
 - **Recommendation 3:** Ensure that cooking equipment savings are being accurately claimed, consistent with documented measure workpapers.
 - **Recommendation 4:** Provide clear references to the current documents used to determine claimed savings so that savings can be traced back to the original sources.

NMGC Response: CLEAResult made programming changes to the data management system early in the 2018 program year. Changes after a few projects reflect the CLEAResult Kitchen Workpapers approved by Evergreen. The claimed savings result from averages of similar building types in the workpapers. For example, the commercial fryer measure has four deemed values for the fast food category. CLEAResult claims an average of those four categories under the Fast Food Building type.
- The evaluation team adjusted the savings for the four projects in the sample that installed weather-stripping measures. The evaluation team calculated savings by multiplying the installed linear feet listed on the application by the per-linear foot savings listed on the application. This resulted in savings that differed from the claimed savings, ranging from 44 percent lower savings to 515 percent higher savings. No additional calculations were available for the evaluation team’s review, so the source of these discrepancies is unknown.
 - **Recommendation 5:** Ensure that weather-stripping savings are being accurately claimed, consistent with application documents.

- **NMGC Response:** CLEAResult discovered programming errors in its data management system after results from Evergreen’s 2017 evaluation. Those issues were addressed in August 2018. There should be no issues regarding the values in the CLEAResult workpaper approved by Evergreen after that date.
- The evaluator adjusted the savings for custom project RBT-13350030, which installed high-efficiency boilers.
 - NMGC determined the claimed savings using a calculation based on Arkansas weather. The evaluator adjusted the savings using a comparison of heating degree-days between Arkansas and New Mexico to create an estimate of savings specific to New Mexico's climate.
 - Additionally, NMGC calculated the claimed savings using a post-retrofit boiler efficiency of 96 percent. The evaluator modified the calculations to use an efficiency of 98.4 percent, as shown in the AHRI certificate for the model of boiler installed.
 - These adjustments resulted in a 33 percent increase in savings for this project.
 - **Recommendation 6:** Use New Mexico weather when determining savings for weather-dependent measures installed in New Mexico.
 - **Recommendation 7:** Calculate boiler savings using efficiencies documented in AHRI certificates when available.
 - **NMGC Response:** CLEAResult will build a new calculator capable to interpolate all post efficiencies and will use at least two years of utility data to correct for historical weather differences based on a typical year weather.
- The evaluator adjusted the savings for custom project RBT-1347421, which installed boiler optimizer controls at 12 sites.
 - NMGC calculated savings for this project by first determining each site’s estimated baseline heating energy consumption using a linear regression based on pre-retrofit billing data, actual weather data, and typical meteorological year (TMY3) weather data. NMGC then applied an 11.3 percent savings factor, derived from pilot installations of this measure, to the baseline values. The evaluation team determined savings for each project by creating second-order polynomial regressions for both the pre-retrofit and post-retrofit heating energy usage, using billing data, actual weather data, and TMY3 weather data. The evaluation team’s calculations show an estimated average savings of 2.4 percent across all 12 sites, with overall savings 71 percent lower than the reported value.
 - Six of the sites show negative verified savings (i.e., increased gas consumption). One key driver of increased gas use at these sites is increased gas usage over the summer months, observed when comparing the pre-retrofit and post-retrofit billing data. Without additional information regarding these sites (e.g., if any other operational/equipment changes occurred between the pre-retrofit and post-

retrofit periods), the evaluator did not remove this gas use from the analysis of the boiler controls.

- Verified savings percentages range from positive 34 percent to negative 30 percent. Given the range of the savings magnitude across these sites, the evaluation team is not confident that enough information has been gathered to justify using a single deemed savings factor for this measure.

- **Recommendation 8:** Adjust savings estimates for boiler optimizers using post-retrofit billing data when available. Based on discussions with NMGC, the evaluation team acknowledges that this is not always possible within the timeframes needed to provide incentives for this measure.
- **Recommendation 9:** Provide explanations of any building changes or events that are unrelated to the boiler optimizer measure and that significantly impact the gas usage so that these can be accounted for in the regression analyses.
- **Recommendation 10:** Continue to refine the estimated savings factor for the boiler optimizer measure, collecting data from each installation to inform the expected savings impacts.
- **NMGC Response:** CLEAResult agrees that the current methodology is insufficient in claiming savings going forward. CLEAResult will provide initial parameters for a pilot in conjunction with the evaluator to provide more detailed approach in claiming this measure.

- The evaluator adjusted the savings for two custom projects by normalizing billing data to TMY3 weather data. Project RBT-1781517 installed parallel positioning on boilers, and project RBT-1781564 installed high-efficiency boilers. To calculate savings for each of these projects, NMGC determined the building's heating load using one year of gas billing data. The baseline and proposed gas consumption used for heating was then determined by applying the pre-retrofit and post-retrofit boiler system efficiencies to this heating load. As this approach is based on a single isolated year of gas usage, it is susceptible to being impacted by anomalous weather events. The evaluator normalized the billing data by comparing heating degree-days between the actual weather of the year of billing data and TMY3 typical weather to determine the heating load for a "typical" year. The evaluator made this weather adjustment to the disaggregated heating load and did not adjust the base load. This adjustment resulted in a 5 percent increase in savings for project RBT-1781517 and an 18 percent increase in savings for project RBT-1781564.

- **Recommendation 11:** Normalize billing data to a typical year so that estimated savings reflect expected typical conditions rather than isolated conditions from one specific year.
- **NMGC Response:** CLEAResult will build a new calculator capable to interpolate all post efficiencies and will use at least two years of utility data to correct for historical weather differences based on a typical year weather.

- The evaluator adjusted the savings for custom project RBT-1898314, which replaced failed steam traps.
 - The evaluator modified the steam discharge rate for three of the traps. NMGC labeled the traps as being used for “Process” but calculated savings using a discharge rate based on a “Tracer/Drip” application as input into the Armstrong steam trap calculator. The evaluator determined a new discharge rate by inputting the “Coil/Process” application into the Armstrong calculator. This adjustment resulted in a 6 percent reduction in savings.
 - The inlet pressure and feedwater temperature used by NMGC in the savings calculations did not exactly match the values shown in the provided project documents. Additionally, NMGC did not provide any documentation verifying the efficiency of the steam boiler associated with the steam traps. However, the values that NMGC used for these parameters appear to err on the conservative side, and so the evaluator did not adjust these values.
 - **Recommendation 12:** Ensure that steam trap discharge rates are consistent with the steam trap applications.
 - **Recommendation 13:** Verify key parameters such as inlet pressure, feedwater temperature, and boiler efficiency, and ensure that savings calculations use these verified values.
 - **NMGC Response:** CLEAResult will clearly document these values for any projects in 2019.

- The evaluation team published an updated version of the New Mexico TRM that is effective for PY2019 and will be referenced in the evaluation of PY2019.
 - **Recommendation 14:** Update the Technical Assumptions as needed based on the updated version of the New Mexico TRM.
 - **NMGC Response:** The updated TRM will be used for all measures and programs in 2019.

Income Qualified

- For two projects in the sample, the evaluation team found that the savings for domestic hot water pipe insulation differed between the tracking data and the projects’ analysis reports. The evaluation team based the verified savings on the analysis reports, resulting in a 1 percent increase in savings for both projects.
 - **Recommendation 15:** Ensure consistency between savings shown in analysis reports and claimed savings as reflected in the program tracking data.
 - **NMGC Response:** Agreed. MFA will ensure that the data provide by their service providers match.

- For one project in the sample that claimed savings for the installation of a programmable thermostat, the evaluation team found that the thermostat specification sheet provided was for a non-programmable thermostat. Therefore, the evaluation team removed the programmable thermostat savings from this project, resulting in a 36 percent decrease in savings.
 - **Recommendation 16:** Confirm that incentivized thermostats meet all functionality and setup requirements in order to ensure confidence in claimed savings.
 - **NMGC Response:** Agreed.

- For one project in the sample that claimed savings for attic insulation, NMGC claimed savings that included both heating savings and cooling savings as reported by the Weatherization Assistant software. However, since this project uses natural gas for heating and electricity for cooling, only the heating savings should be claimed by NMGC. The evaluator adjusted the savings for the attic insulation to only include heating savings, resulting in a 4 percent decrease in overall project savings.
 - **Recommendation 17:** Only claim the gas portion of the savings for measures that have both gas and electric impacts.
 - **NMGC Response:** Agreed.

Multi-Family

- NMGC calculated savings for programmable thermostats using Xcel Energy's 2015-2016 demand-side management plan assumptions. These assumptions are based on applying a heating reduction percentage to baseline heating energy use for homes in Colorado. The evaluation team adjusted programmable thermostat savings based on the methodology outlined in the new version of the New Mexico TRM. This new methodology has a similar percent reduction value but applies this value to baseline heating energy use that is specifically calculated for homes in New Mexico.
 - **Recommendation 18:** Update the savings claimed for programmable thermostats to align with the methodology provided in the updated version of the New Mexico TRM.
 - **NMGC Response:** Agreed - completed.

- For the five sampled projects that installed low-flow faucet aerators, the evaluation team found that NMGC multiplied the deemed aerator savings from the TRM by the total number of aerators installed. However, the TRM states that the deemed savings values are per-housing unit, not per aerator. The evaluation team adjusted the savings

accordingly for five projects. The evaluation team made additional adjustments described in subsequent bullet points, with overall adjustments for these projects ranging from an 8 percent to a 3 percent decrease in savings.

- **Recommendation 19:** The New Mexico TRM has been updated, and low-flow faucet aerator savings are now presented on a per-aerator basis. Update program assumptions for low-flow faucet aerators accordingly to align with the updated TRM.
- **NMGC Response:** Agreed – completed.
- The evaluation team adjusted the savings for hot water measures not contained in the version of the New Mexico TRM that was effective during PY2018.
 - Six of the sampled projects installed hot water pipe insulation and/or water heater tank insulation. The version of the New Mexico TRM effective during PY2018 does not contain these measures, and so NMGC referenced the Texas TRM to calculate savings for these measures. The evaluator adjusted the input parameters used by NMGC to use values specific to New Mexico instead of values derived for Texas. The evaluator adjusted the assumed values for incoming cold water temperature, ambient air temperature, and water heater efficiency.
 - The evaluation team made additional adjustments described in other bullet points, with overall adjustments for these projects ranging from an 8 percent decrease in savings to a 7 percent increase in savings.
 - **Recommendation 20:** Calculate savings for hot water pipe insulation and water heater tank insulation using parameters specific to New Mexico installations. These measures have been added to the latest version of the New Mexico TRM, which can be referenced for key parameters.
 - **NMGC Response:** Agreed – completed.
- Key measure parameters are reported inconsistently in the Multi-Family program tracking data:
 - Of the six sampled projects that installed water heater tank insulation, NMGC did not report the tank volume for four projects. For these projects, the evaluation team assumed a volume of 40 gallons, based on the assumptions documented by the Multi-Family program.
 - Four of the sampled projects installed hot water pipe insulation. The pipe insulation quantities listed by NMGC in the program tracking data appear to alternate between linear feet of insulation and number of apartments in which insulation was installed. The evaluation team calculated savings using the linear feet of insulation when this value was explicitly listed and assumed an insulation length of three feet per apartment when the quantity appeared to represent the number of apartments, based on the assumptions documented by the Multi-Family program.

- **Recommendation 21:** Consistently report the tank volume used to calculate savings for water heater tank insulation.¹
 - **NMGC Response:** Tank volume is now consistently reported.
 - **Recommendation 22:** Consistently report the linear feet of insulation used to calculate savings for hot water pipe insulation.²
 - **NMGC Response:** Pipe wraps are now recorded per DHW tank that receives the wraps.
- The evaluation team published an updated version of the New Mexico TRM that is effective for PY2019 and will be referenced in the evaluation of PY2019.
 - **Recommendation 23:** Update the Technical Assumptions as needed based on the updated version of the New Mexico TRM.
 - **NMGC Response:** Agreed – completed.

ThermSmart New Homes

- The evaluation team checked modeled HVAC and water heating equipment against provided AHRI certificates. However, other aspects of the model (e.g., walls, windows, insulation) were not documented, and so were assumed to be consistent with the installed equipment.
 - **Recommendation 24:** Provide additional documentation of measures (e.g., post-inspection pictures, building plans, insulation specifications) in order to verify REM/Rate model inputs.
 - **NMGC Response:** ICF will provide the data necessary to verify model inputs.

Cost Effectiveness

Cost effectiveness was calculated using the UCT for each individual program, as well as for the entire portfolio of NMGC programs. The evaluation team found the following during our analysis:

- NMGC does not use the Total Resource Cost (TRC) test, and instead relies solely on the UCT to determine program and portfolio cost effectiveness.
- A 20 percent benefit adder is included in the UCT calculation for low-income projects to account for utility system economic benefits.
- The UCT revealed that all programs were cost effective (i.e., had a UCT ratio of greater than 1.00), and the NMGC portfolio overall had a UCT ratio of 2.24.

¹ After reviewing the draft evaluation report, NMGC confirmed that tank volume would be reported consistently moving forward.

² After reviewing the draft evaluation report, NMGC confirmed that pipe insulation quantities would be reported consistently moving forward.

- **Recommendation 25:** If there is a desire or need to calculate cost effectiveness using the TRC test by either NMGC or the New Mexico Public Regulation Commission, NMGC should track measure costs for all programs so that the TRC test can be used in future program years.
- **NMGC Response:** The main factor that is required to calculate the TRC is the incremental costs of the more efficient measure the standard. NMGC informally tracks these costs and could provide them if the NMPRC desires to have the TRC included in future M&V evaluations.

In summary, this is NMGC's tenth evaluation of its programs and the tenth time that M&V has concluded that its program portfolio is cost-effective. The program portfolio cost/benefit analysis was determined to have a UCT of 2.24. NMGC believes this corroborates the adjustments proposed and taken each year to enhance its portfolio and make the programs more cost-effective. NMGC is pleased that Evergreen reported that NMGC's customers overall are satisfied with NMGC's programs and find them of value and had an influence on their decisions. All the programs in NMGC's portfolio were successful and received high customer satisfaction remarks. It is important to note that under Program Year 2018 a portion of the savings under the Efficient Buildings program were through direct-install measures. These direct-install measures are low flow pre-rinse valves and faucet aerators that reduce water usage. Combined with the Water Heating and Multi-Family programs these measures accounted for more than 73,906,962 gallons of water saved annually. Based on the City of Albuquerque's previously calculated savings of 3.548 kWh per 1000 gallons pumped, these measures provide an additional 262,222 kWh savings in pumping costs. Although NMGC maintains that the reduction in water usage from low flow showerheads, faucet aerators, and low flow pre-rinse spray valves does directly affect energy usage by reducing the quantity of water pumped by the water utility or municipality, NMGC does not include these savings in calculating the UCT for its programs. Electric savings for NMGC's programs are not allowed under the UCT but the water savings will continue to be documented as non-energy benefits for future programs.

Energy Efficiency Rule Reporting Requirements

This section of the annual report follows the reporting requirements and section headings as specified in the NMPRC Energy Efficiency Rule Section 17.7.2.14.D. As previously noted, the Rule that applies to the 2018 Program Year is the 2015 Rule that went into effect January 1, 2015.

D(1) Independent Measurement and Verification Report

NMGC contracted with Evergreen to conduct the independent evaluation of its energy efficiency programs. Their report entitled "Evaluation of the 2018 New Mexico Gas Company Energy Efficiency Programs" is submitted with this report (Appendix B) and includes an analysis of the energy savings realized by all six programs.

D(2) Program Expenditures Not Included in the M&V Report

The M&V Report for Program Year 2018 contains an analysis of all six programs. Therefore, all expenditures were included in the M&V Report. The expenditures for all programs for Program

Year 2018 were \$6,078,039. These expenditures include all expenses incurred by NMGC to develop and implement the programs.

D(3) Material Variances in Program Costs

The table below provides comparisons on estimated savings and monetary costs to actual savings and costs for each program for Program Year 2018. The information for each program was derived from the final conclusions reached by Evergreen's evaluation of NMGC's 2018 Program Year and documented in the attached 2018 M&V report (see Appendix B). Avoided costs used to calculate savings can be found in Appendix A of this document.

Estimated Program Budget and UCT Results						
Program	2018 Year Estimated Participation	Estimated Annual Therms Saved*	Estimated Lifetime Therms Saved *	Total Program Budget	UCT	Cost per Therm Saved
Water Heating	300 - 3500	148,865	1,297,850	\$481,811	1.73	\$0.37
Space Heating	100 - 300	61,299	1,291,355	\$592,617	1.28	\$0.46
ThermSmart New Homes	500	213,200	5,330,000	\$987,534	2.87	\$0.19
Income Qualified	910	190,190	2,622,520	\$1,447,891	1.30	\$0.55
Multi-Family**	144 - 960	96,344	1,344,480	\$750,871	1.15	\$0.56
Efficient Buildings**	112	443,822	5,893,193	\$1,576,851	2.21	\$0.27
Portfolio Costs	N/A	N/A	N/A	\$141,847	N/A	
Total		1,153,720	17,779,398	\$5,979,422	1.79	\$0.34

* Adjusted for free ridership as derived from the M&V report and/or the NMTRM

**Efficient Buildings participation are projects associated with that program and Multi-Family are units associated with that program

Actual Program Budget and UCT Results						
Program	2018 Year Actual Participation	Actual Annual Therms Saved*	Actual Lifetime Therms Saved *	Total Program Costs	UCT	Cost per Therm Saved
Water Heating	4135	100,687	952,687	\$496,256	1.21	\$0.52
Space Heating	1381	63,907	1,297,707	\$595,730	1.21	\$0.46
ThermSmart New Homes	782	232,775	5,819,369	\$1,085,597	2.83	\$0.19
Income Qualified	478	136,638	2,399,127	\$1,211,285	1.36	\$0.50
Multi-Family**	2272	269,161	3,110,101	\$986,824	2.04	\$0.32
Efficient Buildings**	178	652,266	9,327,237	\$1,610,911	3.46	\$0.17
Portfolio Costs	N/A	N/A	N/A	\$91,436	N/A	
Total		1,455,434	22,906,228	\$6,078,039	2.24	\$0.27

*Net savings adjusted for free-ridership and derived from M&V Report

**Efficient Buildings participation are projects associated with that program and Multi-Family are units associated with that program

D(4) Number of Program Participants

Total number of participants for each program for Program Year 2018 is reflected in the table below.

Program	Total Number of Participants for Program Year 2018
Water Heating	4135
Space Heating	1381
ThermSmart New Homes	782
Income Qualified	478
Multi-Family*	2272
Efficient Buildings*	178
<i>*Efficient Buildings participation are projects associated with that program and Multi-Family are units associated with that program</i>	

D(5) Economic Benefits

The table below reflects the economic benefits from Program Year 2018 and are derived from the M&V Report.

Program	Cost per Therm Saved	2018 Economic Benefits*	NPV of Total Economic Benefits*
Water Heating	\$ 0.52	\$ 63,268	\$ 598,637
Space Heating	\$ 0.46	\$ 35,445	\$ 719,753
ThermSmart New Homes	\$ 0.19	\$ 122,924	\$ 3,073,109
Income Qualified	\$ 0.50	\$ 93,958	\$ 1,649,746
Multi-Family**	\$ 0.32	\$ 174,390	\$ 2,015,083
Efficient Buildings**	\$ 0.17	\$ 389,858	\$ 5,574,864
All Programs	\$ 0.27	\$ 879,843	\$ 13,631,192
<i>* Economic Benefits and NPV of Total Economic Benefits are derived from the M&V Report.</i>			

D(6) Self-Direct Programs

There were no customer applications for the self-direct program in Program Year 2018.

D(7) Other Information of Interest to the Commission

Cost Allocation and Expenses by Program

All energy efficiency expenses are tracked through a unique set of account numbers. The following table shows the allocation of costs to the various programs for Program Year 2018.

Program	Rebates	Internal Administration	External Administration	Promotion	M&V Expenses	Total Program Costs
Water Heating	\$195,896	\$43,921	\$229,160	\$8,690	\$18,589	\$496,256
Space Heating	\$289,920	\$43,921	\$234,610	\$8,690	\$18,589	\$595,730
ThermSmart New Homes	\$670,460	\$43,921	\$343,937	\$8,690	\$18,589	\$1,085,597
Income Qualified	\$1,050,142	\$43,922	\$89,942	\$8,690	\$18,589	\$1,211,285
Multi-Family*	\$737,514	\$43,922	\$178,109	\$8,690	\$18,589	\$986,824
Efficient Buildings**	\$337,987	\$131,765	\$1,113,879	\$8,690	\$18,589	\$1,610,911
Portfolio Costs	N/A	\$91,436	N/A	N/A	N/A	\$91,436
Total	\$3,281,919	\$442,808	\$2,189,637	\$52,140	\$111,534	\$6,078,039

Internal administration is the labor and administrative costs the NMGC Energy Efficiency Department staff expended on energy efficiency programs. Staff time during Program Year 2018 was spent on oversight of the existing energy efficiency programs, vetting programs and measures for potential future filings, preparing and submitting NMPRC compliance reporting, ongoing interface with NMGC's program administrators and M&V activity. As of March 31, 2019, the NMGC Energy Efficiency Department consisted of three full-time staff members.

External administration are the costs associated with third-party program administration of NMGC's programs. Administering the Water Heating, Space Heating and ThermSmart New Homes programs is ICF. Administering the Income Qualified program is MFA for the EnergySmart program and EnergyWorks for the Native American project. Administering the Multi-Family program is ICAST and administering the Efficient Buildings program is CLEAResult. All five third-party program administrators are under contract with NMGC. Third-party administration costs include labor and other direct expenses related to program implementation planning, program marketing and website materials development and management, outreach and marketing of the programs to eligible participants, energy efficiency opportunity identification and assessment, energy engineering and energy savings validation, some direct installation of high efficiency faucet aerators and low flow pre-rinse spray valves, rebate processing and quality control inspections. Review of rebate applications and qualifying of customers by ICF, MFA, EnergyWorks, ICAST and CLEAResult for their respective programs is also included. To the extent that these contracts require the third-parties to conduct promotional activities acceptable to NMGC, those promotional costs are considered third-party administrative costs.

Promotional expenses for 2018 were used primarily for raising awareness on all programs through brochures and advertising campaigns and were allocated equally among the energy efficiency programs except those costs specific to individual programs. (Please see the Promotional Activities section below for more details on specific promotional activities).

M&V expenses for the 2018 Program Year include final invoices received from Evergreen Economics from April 1, 2018 for performing final M&V activities for Program Year 2017 and their annual independent program evaluation report for Program Year 2017, completed June 2018. Also included in the costs are invoices received and paid through March 31, 2019, from Evergreen for their continued evaluation of NMGC’s 2018 Program Year.

Portfolio costs includes all costs related to the energy efficiency portfolio but not directly associated to an individual program such as legal, training, research and development, and general education activities.

Non-Energy Benefits

The following table shows the CO₂ emission reductions associated with the portfolio of programs. The annual and lifetime avoided emissions are determined by multiplying the emissions rates times the annual and lifetime therms saved by the portfolio of programs.³ In addition, three of NMGC’s energy efficiency measures contribute directly to water savings. The Efficient Buildings program direct-install measures of low flow pre-rinse valves and faucet aerators combined with the Water Heating and Multi-Family measures account for more than 73,906,962 gallons of water saved annually. The expected lifetime for those measures is 10 years as determined by New Mexico’s Technical Resource Manual.

2018 Program Year			
Emission Impact	Annual Avoided Gas Emissions Rate (lbs/therm)*	Annual Avoided Gas Emissions Rate (Metric tons)	Lifetime Avoided Emissions (Metric tons)
CO ₂	117	85,143	1,340,014
Water Impact		Annual Water Saved (gallons)	Lifetime Water Saved (gallons)
Water Savings		73,906,962	739,069,620

* The avoided CO₂ emissions rate for gas combustion was taken from U.S. Department of Energy - Energy Information Administration’s Annual Energy Outlook 2018.

Promotional Activities

Most promotional and marketing activities for NMGC's programs are the responsibility of the third-party administrators to work with builders, contractors, distributors, manufacturers, architects and other trade allies to educate and make them aware of NMGC's programs. Outreach directly to NMGC's customers is a joint effort with shared budgets. For NMGC's 2018 Program, activities included the following:

Mass Media Communications

NMGC began its promotional effort after receiving the Final Order in NMPRC Case No. 16-00100-UT approving the 2018 Program Year. Promotional efforts and program information for Program Year 2018 began in April 2018 updating rebate applications, promoting the continuation of existing programs and marketing the new programs. A brochure that outlines all of the approved programs continued to be distributed throughout the state at NMGC offices and were offered at various events throughout the year including, but not limited to, the Albuquerque Home & Garden Show, the Albuquerque Home & Lifestyle Show, the New Mexico Municipal League Annual Conference and the Albuquerque Home & Remodeling Show. Radio ads informing and promoting NMGC's energy efficiency programs to the public ran for two weeks in the spring and again in the fall along with internet banner ads and social media.

Targeted Communications

In conjunction with ICF and CLEAResult, NMGC held meetings throughout the state with contractors, vendors, and suppliers to inform them of the programs and began signing them up as participating contractors in April 2018. Additional contractors were added throughout the 2018 Program Year and all participating contractors were kept in communications regarding the 2018 Program Year and to solicit continued participation. To participate, contractors are required to have a license and insurance and understand the program criteria. They are then listed on NMGC's website including the areas they serve. NMGC also ran social media campaigns and bill messages promoting its programs and the Home Energy Analyzer that helps homeowners determine the most effective measures to make their home more energy efficient.

NMGC understands the value of promotion and education of its energy efficiency programs and the importance of expanding the outreach. The Energy Efficiency staff has continued to communicate with NMGC offices throughout the state to better educate NMGC employees about its energy efficiency programs. The intent is to have more employees understand the background of the energy efficiency programs and be able to transfer that knowledge to customers in their region of the state.

Appendix A – NMGC Avoided Costs

Natural Gas Avoided Costs

The following tables provide the avoided energy costs (in real terms) used in the UCT model for Program Year 2018.

Year	NMGC Projected Avoided Cost (per MMBtu)	Per Therm
2015	\$ 5.20	\$ 0.52
2016	\$ 5.11	\$ 0.51
2017	\$ 5.60	\$ 0.56
2018	\$ 6.00	\$ 0.60
2019	\$ 6.36	\$ 0.64
2020	\$ 6.56	\$ 0.66
2021	\$ 6.64	\$ 0.66
2022	\$ 6.58	\$ 0.66
2023	\$ 6.57	\$ 0.66
2024	\$ 6.66	\$ 0.67
2025	\$ 6.93	\$ 0.69
2026	\$ 7.12	\$ 0.71
2027	\$ 7.13	\$ 0.71
2028	\$ 7.19	\$ 0.72
2029	\$ 7.23	\$ 0.72
2030	\$ 7.21	\$ 0.72
2031	\$ 7.18	\$ 0.72
2032	\$ 7.18	\$ 0.72
2033	\$ 7.16	\$ 0.72
2034	\$ 7.16	\$ 0.72
2035	\$ 7.20	\$ 0.72
2036	\$ 7.26	\$ 0.73
2037	\$ 7.29	\$ 0.73
2038	\$ 7.29	\$ 0.73
2039	\$ 7.32	\$ 0.73
2040	\$ 7.34	\$ 0.73
2041	\$ 7.33	\$ 0.73
2042	\$ 7.37	\$ 0.74
2043	\$ 7.45	\$ 0.75
2044	\$ 7.55	\$ 0.76
2045	\$ 7.65	\$ 0.77
2046	\$ 7.73	\$ 0.77
2047	\$ 7.82	\$ 0.78

Appendix B – Evergreen M&V Report