



# **2017 Energy Efficiency Program Annual Report**

**June 29, 2018**

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## ***Introduction***

New Mexico Gas Company (“NMGC”) submits this annual report on the Energy Efficiency Programs for Program Year 2017. This will be NMGC’s ninth annual report and will cover the time period April 1, 2017 through March 31, 2018. Also submitted is the final report prepared by the independent evaluator, Evergreen Economics, Inc. (“Evergreen”), entitled “Evaluation of the 2017 New Mexico Gas Company Energy Efficiency Programs, (“M&V Report”), which was completed on June 22, 2018.

NMGC filed its 2017 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 2017 Program Year became available to customers on April 1, 2017. This report covers all costs incurred in the implementation of the programs and all customer participation in the programs from April 1, 2017 through March 31, 2018.

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, 2017 through March 31, 2018. 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 ninth annual report on NMGC’s Energy Efficiency Program (“Program”), and it presents the detailed results of six programs for Program Year 2017 (NMPRC Case No. 16-00100-UT).

The following table shows the total number of customer participants, savings and program costs for Program Year 2017. 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 2017 Program Year. Program Year 2017 was approved by the NMPRC on February 15, 2017 and became available to customers on April 1, 2017. Program Year 2017 ended March 31, 2018.

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	5699	149,687	1,340,180	\$544,884
Space Heating	30 - 102	1386	78,784	1,573,875	\$645,461
ThermSmart New Homes	377.72 avg.	566	177,982	4,449,560	\$1,005,252
Income Qualified	332.47 avg.	467	150,736	2,110,304	\$1,387,922
Multi-Family*	43.3 - 1182	2113	149,665	1,661,827	\$762,899
Efficient Buildings**	579 - 56542	230	445,961	6,361,612	\$1,405,825
Portfolio Costs	N/A	N/A	N/A	N/A	\$92,073
<b>Total</b>			<b>1,152,815</b>	<b>17,497,358</b>	<b>\$5,844,317</b>
<i>*Net savings adjusted for free-ridership and derived from M&amp;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, 2017 through March 31, 2018 and allocated to Program Year 2017.

Program Year 2017	Total Actual Costs
Administration (Internal and External)	\$ 2,416,732
Promotion/Marketing	\$ 68,120
Measurement and Verification	\$ 126,921
Incentives/Rebates	\$ 3,140,470
Portfolio Costs	\$ 92,073
<b>Total</b>	<b>\$ 5,844,317</b>
<i>* Program Year 2017 - NMPRC Case No. 16-00100-UT</i>	

### ***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"). Administering the Multi-Family program is ICAST and administering the Efficient Buildings program is CLEAResult. All four 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, 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 ADM from April 1, 2017 through September 30, 2017, for performing final M&V activities for Program Year 2016 and their annual independent program evaluation report for Program Year 2016, completed June 2017. Also included in the costs are invoices received and paid through March 31, 2018, from the new M&V evaluator, Evergreen Economics, for their continued evaluation of NMGC's 2017 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 2017, the NMPRC selected Evergreen to provide an M&V Report on four specific programs and an overall evaluation on all six of the energy efficiency programs offered by NMGC and approved under NMPRC Case No. 16-00100-UT. The four specific programs were the ThermSmart New Homes program, the Income Qualified program, the Multi-Family program and the Efficient Buildings program.

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 1.73.
- 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, 2017, when the 2017 Program Year began, NMGC was charging eligible sales service and transportation customers the approved Rider rate of \$0.0087/therm (Advice Notice No. 49), for recovery of program costs. The rate remained in effect from April 1, 2017 through July 31, 2017. On June 26, 2017 NMGC submitted Advice Notice No. 67, 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 \$0.0146/therm for Rider 15 was approved and went in to effect with the first billing cycle of August 2017. Total cost recoveries through Rider 15 from April 1, 2017 to March 31, 2018 were \$6,159,958.24. Rider 15 continues at the current rate of \$0.0146 as of this filing.

## **Tariff Reconciliation**

The beginning balance in the Energy Efficiency account at April 1, 2017 was an over-collection of \$770,231.29. Expenses for the period April 1, 2017, through March 31, 2018 totaled \$6,146,451.44. Actual carrying charges of \$68,951.66 charged to NMGC for the same period increases the net expense to \$6,215,403.10. Collections for the period totaled \$6,159,958.24, resulting in a net under-collection of \$55,444.86 for the 2017 Program Year. Collections included \$402,627.41 for Incentives. Including the beginning balance of an over-collection of \$770,231.29 at April 1, 2017, the total net over-collection at March 31, 2018 was \$312,159.02. Expenses associated with the 2017 Program Year were \$5,844,316.80 of the \$6,146,451.44 actually reported during the period. The difference of \$302,134.64 is mostly attributed to invoices received after March 31, 2017 but allocated to the 2016 Program Year.

Based on the above and the NMPRC's approval of NMGC's 2018 Program Year budget of \$6,397,982 (Case No. 16-00100-UT), NMGC has calculated that \$0.0130 per therm is the amount needed to recover costs through the 2018 Program Year.

## **Regulatory Proceedings**

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

NMGC received the Measurement and Verification ("M&V") report for its 2016 Program Year from ADM Associates, Inc. ("ADM") on June 13, 2017 and submitted both the M&V and NMGC's 2016 Program Year Annual Report to the NMPRC on June 26, 2017. Both reports were posted to the NMGC website.

On June 26, 2017, NMGC also submitted Advice Notice No. 67, 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 increased from the current rate of \$0.0087/therm to \$0.0146/therm. The new approved Rider 15 fee was effective as of the first billing cycle in August 2017.

On January 25, 2017, the NMPRC issued a Notice of Proposed Rulemaking ("NOPR") in the matter of amending the Energy Efficiency Rule 17.7.2 NMAC (Case No. 17-00010-UT). The amendment was to address annual filings by each utility to a proposed multi-year filing of their applications with specific dates for each utility to apply. The public comment hearing was held on March 31, 2017, with Chairman Sandy Jones presiding. After the hearing, it was ordered that supplemental comments would be filed by the Joint Movants on or before April 28, 2017, with the record scheduled to be closed May 6, 2017. A Final Order changing the filing dates for each utility's application was approved by the Commission on June 21, 2017.

Also, on June 21, 2017, the Commission ordered a new NOPR (Case No. 17-00136-UT) to revise Sections 8, 12, & 14 of the Energy Efficiency Rule ("Rule"), 17.7.2 NMAC 1978. Initial comments were due August 11, 2017, and responses to comments were due no later than August 21, 2017. On September 13, 2017, revised language was approved allowing utilities the ability and flexibility to modify its energy efficiency programs between Rule plan applications if the modifications do not exceed ten percent (10%) of the commission authorized funding.

On March 13, 2018 NMGC submitted an Application for Expedited Variance from Final Order Adopting Recommended Decision for modifications to its 2017 Energy Efficiency Plan (Case No. 16-00100-UT). NMGC requested the modification to add a supplemental administrator for its Income Qualified program to offer the same services and measures to Native American

communities. The modification resulted in a \$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 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 adjust the Energy Efficiency Fee to \$0.0130 per therm as of the first billing cycle for August 2018.

## ***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 2017 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.

### **2017 M&V Report**

The 2017 program year evaluation consists of an analysis of four specific programs and an overall 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 1.73 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 2017 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**

- Reported savings for commercial water heaters and cooking appliances were calculated using average values instead of project-specific values (e.g., operating hours, building type). The accuracy of the savings claimed for these measures would be improved if project-specific information shown in the project documentation was used to determine project-specific input values. While average values may be used for ease of implementation, the verified savings will be calculated based on all documented site-specific values. The use of average values is acceptable when site-specific information is not known. For the projects reviewed, the use of site-specific values resulted in verified savings estimates roughly 10 percent lower than the reported savings.
  - **Recommendation 1:** Use project-specific input values for commercial water heater and cooking appliance measures when substantiated by project documentation collected by the program.
  - **NMGC Response:** Food Service kitchen equipment deemed savings were based on previously approved-by-ADM work papers in March 2015. CLEAResult has updated these workpapers for the 2018 program year and has submitted these to Evergreen. It appears the evaluator is using the Energy Star website to calculate savings for individual models. CLEAResult uses specific building types and operating hours for deemed savings but averages out sub-categories for final savings. E.g. the category 'Casual Dining' for standard fryers has three sub-categories of 3pm-11pm, 11am-11pm and 24 hr. The therm savings associated with these sub-categories is averaged for the category of Casual Dining. This approach makes data entry and submission by customers easier. The differences on a per project basis generally average out as they appear to have done in these year's review. CLEAResult will use the New Mexico Total Resource Manuel ("TRM") for space and water heating deemed values.
- Weather-stripping measure savings listed on the incentive application differed from those contained in the associated workpaper, and the reported savings for weather-stripping measures differed from those calculated using either the application or workpaper values.
  - **Recommendation 2:** Review program materials and savings databases to ensure that savings for weather-stripping measures are being calculated consistently and accurately.
  - **NMGC Response:** The workpapers CLEAResult submitted to Evergreen match final savings in the evaluation report. The submitted savings from CLEAResult's final report derived from CLEAResult's data tracking system consistently showed 2-4% higher savings than the evaluator deemed. Further investigation in CLEAResult's data tracking system shows slight variations in the per foot

deemed therm savings for weather-stripping. These figures will be updated with the deemed figures in the CLEARResult workpapers submitted to the evaluator.

- NMGC estimated savings for installations of boiler control measures in school projects by applying a common savings percentage to each school's estimated pre-retrofit boiler gas usage. The savings percentage was derived by taking an average of the savings calculated by International Performance Measurement and Verification Product ("IPMVP") Option C analyses performed for schools participating in a pilot of this measure, which included elementary schools, middle schools, and high schools. The program implementer, CLEARResult, indicated that it plans to use a single savings percentage to estimate savings for all future projects installing this measure. Determining an average value across different school types and applying this value to all school types introduces the potential for significant variance due to differing characteristics between school types, such as daily operating hours, annual operating schedule (e.g., varying summer usage), and climate zone.
  - **Recommendation 3:** Perform an Option C analysis for each school installing this measure in order to produce site-specific savings estimates. Based on discussions with the implementer, the evaluation team understands the need to balance the analysis rigor and the speed at which rebates are processed. However, note that future evaluation of this measure will be based on site-specific billing analyses, and so variations from the average savings percentage will be reflected in the verified savings values and program realization rates.
  - **NMGC Response:** CLEARResult has communicated to the evaluator that a more rigorous analysis is needed for this measure that accounts for different building types, operating hours and annual schedule. The evaluator has expressed understanding that some projects scheduled for close in early program year of 2018 will be grandfathered in with the current average savings analysis. These projects will be noted in the M&V report and Evergreen has communicated that they will take that into consideration for the 2018 program year evaluation. An option C analysis will be used on projects going forward where there is sufficient data within the program year. CLEARResult will pay rebates for these projects at 60% upfront to insure the participant a speedy rebate process and 40% after an Option C is performed. CLEARResult will work with Evergreen in developing a deemed savings model that can be approved for certain building types. Ongoing collaboration between CLEARResult and Evergreen will be necessary to complete an approved savings model and calculator.
- The net impacts for the Efficient Buildings program were found to be lower than usual for Program Year 2017("PY2017") due to one large custom project with a low Net To Gross ("NTG") ratio that greatly affected the total weighted average for the program. This appears to be an isolated issue, and the evaluation team does not believe that the NTG ratio found for PY2017 is indicative of what the net impacts will be in future years.

- **Recommendation 4:** NMGC should continue to use the existing *ex ante* NTG ratios in place for the Efficient Buildings program for planning purposes.
- **NMGC Response:** NMGC will continue to use existing *ex ante* NTG ratios currently in place for the Efficient Buildings program.

### Income Qualified

- The audit report for one Income Qualified project included adjusted savings values calculated by the Weatherization Assistant software, which accounted for actual pre-retrofit gas usage as shown by customer utility bills. However, the unadjusted savings estimated by the software were claimed by the program. The adjusted savings are significantly lower than the unadjusted savings. The program implementer noted that this is because the pre-retrofit billing data shows low energy consumption since this customer was heating their home to 60°F, instead of 70°F which is assumed in the analysis. This represents a “snapback” effect, as the customer is increasing the heating output of the furnace due to the lower operating cost that results from the increased efficiency of the furnace. To account for this snapback effect, the evaluation team adjusted the savings to assume a home heated to 68°F, as this assumes the home is heated to a minimum acceptable comfortable temperature per American Society of Heating and Air-Conditioning Engineers (“ASHRAE”) guidelines. This adjustment resulted in a roughly 10 percent reduction in the savings estimated for this project.
  - **Recommendation 5:** Obtain utility bills from all audited Income Qualified projects in order to adjust the estimated savings based on actual home gas usage as appropriate. The evaluation team acknowledges that utility bills for some customers may not reflect proper heating to comfortable temperatures, in which case the adjusted savings calculated by the Weatherization Assistant software may not be appropriate.
  - **NMGC Response:** It is agreed that the adjusted savings calculated by the software may not be appropriate for some customers. Utility bills are currently being obtained and entered into the audit software. The practice of using the adjusted savings will be implemented for any client when it is shown that the thermostats are kept at 68 degrees or above for the majority of the time.
  - **Recommendation 6:** In cases in which utility bills reflect a customer heating their home to a temperature below typical comfortable conditions, savings calculations should be based on a minimally comfortable temperature of 68°F.
  - **NMGC Response:** It is the practice of the program to engage in client education at every opportunity. This includes obtaining the closest thermostat set points possible used by each client. If it is determined during the client education process that the thermostats are set below the minimally comfortable temperature of 68 for the majority of the time, then the energy audit software unadjusted savings will be used with 68 degrees for both day and night as thermostat set points. Otherwise, if the client is found to typically keep the thermostats at 68 or above, the adjusted savings calculated by the software will be used.

The program administrator, MFA, will work with the evaluation team to arrive at a fair method for the use of early retirement calculations that will not be reflected with the client's energy bill and adjusted savings. MFA comments that the adjusted savings option calculated by the Weatherization Assistance software does not account for early retirement of the furnaces. The existing efficiency of the furnace is calculated off Steady State Efficiency ("SSE") measurements and age of the furnace. The efficiency that is entered into the audit will be lower than that of the measured SSE or Annual Fuel Utilization Efficiency ("AFUE") of the existing unit. The client will not have retired the furnace at the time of the audit so the calculation does not mature until the time of replacement. The result of using this formula is the actual utility bills will be lower than the estimated energy use.

- For multiple Income Qualified projects, the furnace efficiency shown on the Weatherization Assistant software input report did not match the efficiency of the installed furnace as shown in the project documentation. The evaluation team adjusted savings based on the actual installed furnace efficiency, affecting both heating system savings and weatherization measure savings. Furnaces with lower efficiencies resulted in lower heating system savings and higher weatherization measure savings, and furnaces with higher efficiencies resulted in higher heating system savings and lower weatherization measure savings.
  - **Recommendation 7:** Adjust Income Qualified savings analyses to reflect the actual efficiencies of furnaces installed.
  - **NMGC Response:** Although the installed furnaces have been tested and are burning at >95%, all future audit entries will coincide precisely with the actual specification of all installed furnaces. The agencies have caught this and have already made the necessary corrections moving forward.
- The same savings value is used for all efficient water heater installations in the Income Qualified program and is based on the New Mexico TRM value for tankless natural gas water heaters. However, the project documents show that not all projects install tankless natural gas water heaters, and in fact show that most water heaters installed are gas storage-type water heaters. The evaluation team revised the water heater savings to reflect the TRM values corresponding to the installed equipment as shown in the project documents, resulting in decreased savings.
  - **Recommendation 8:** Claim water heater savings based on the specific water heater type installed in each project.
  - **NMGC Response:** The TRM savings for the correct water heater type will be used to determine therm savings in each project from this point forward.

## Multi-Family

- Savings for measures in the Multi-Family program are generally based on the New Mexico TRM and the program’s Technical Resource Library (“TRL”); however, the TRL notes that adjustments may be made for site-specific conditions. The savings report provided for this program does not include details regarding site-specific adjustments, and multiple projects claim savings which differ from those derived using the TRM/TRL algorithms as presented. In these cases, the evaluation team reviewed the claimed savings and potential algorithm adjustments to ensure that savings claims were reasonable.
  - **Recommendation 9:** Clearly document site-specific adjustments made to savings calculations that result in savings different than those calculated using the TRM and TRL algorithms.
  - **NMGC Response:** Program administrator, ICAST, will incorporate these recommendations in reporting going forward.
- For the Multi-Family program, specific measure details were not consistently reported in the provided savings report (e.g., water heater volume for water heater wrap measures, pipe diameter for pipe insulation measures). These details are key inputs into the algorithm used to determine measure savings. In cases where sufficient detail was not provided, the evaluation team reviewed the claimed savings and potential algorithm inputs to ensure that savings claims were reasonable and within the expected range.
  - **Recommendation 10:** Consistently report all measure details necessary to calculate savings using the TRM/TRL algorithms.
  - **NMGC Response:** Program administrator, ICAST, will incorporate these recommendations in reporting going forward.

## ThermSmart New Homes

- The reported savings for some ThermSmart New Homes projects do not match those obtained when executing the submitted REM/Rate models, and no explanation was provided that would explain these discrepancies.
  - **Recommendation 11:** Ensure that reported savings match those obtained by the submitted energy models. If any adjustments are made between the model savings and the reported savings, clearly document these adjustments.
  - **NMGC Response:** If corrections to REM files were made prior to running the final Fuel Summary report, a note was made in Sightline documenting this correction. However, original REM file was not altered and remained in Sightline. Evaluator is always welcome to review ICF’s User Defined Reference Homes (“UDRH”) file for both CZ3 & CZ4.

- For performance homes in the ThermSmart New Homes program, the evaluation team computed energy use intensities (“EUI”) for baseline and as-built models and compared them to Energy Information Administration (“EIA”) Residential Energy Consumption Survey (“RECS”) data from 2009 for similar climate zones as a way to benchmark the models. For all projects, the baseline EUI was 10 to 40 percent higher than the RECS values, which may be causing energy savings claimed by the program to be overstated. The modeled electric EUI was usually within a normal range, while the gas EUI was high. It is a known issue that the REM/Rate model often over-predicts gas usage, which may be contributing to this discrepancy. While the main baseline inputs were in compliance with the energy code, there may be some assumptions that could be further defined by the program to ensure baseline model consumption is similar to real buildings. For example, the performance path of the 2009 International Energy Conservation Code (“IECC”) allows projects to model the heating/cooling setpoints at 72/75, even though the code requires that all projects install a programmable thermostat set to 68/78 heating/cooling setpoints.
  - **Recommendation 12:** Consider adding Quality Assurance/Quality Control (“QA/QC”) checks, conducting a baseline study to better understand baseline building assumptions, or creating prototype REM/Rate models that are calibrated to actual meter data to develop an adjustment factor that can be used to adjust savings. In addition, consider providing modeling requirements/guidelines (e.g., restrictions on thermostat assumptions and setbacks in the baseline) to ensure that the baseline building models are representative of real baseline homes in the area.
  - **NMGC Response:** ICF does perform QA/QC checks. A baseline study is outside of Program scope and would require additional budget dollars. Plus, the state is going to 2015 IECC soon, which will increase the baseline by 15%, so starting a baseline study for the 2019 PY might prove ineffective.
- The documentation provided for performance projects in the ThermSmart New Homes program is limited, inconsistent from project to project, and does not include information which links AHRI certificates/model numbers to actual homes.
  - **Recommendation 13:** Consider adding additional program documentation requirements such as the submission of Energy Code Compliance documentation, drawings, invoices, and/or ENERGY STAR/Home Energy Raters (“HERS”) Rating Certificates so that model inputs (e.g., conditioned area, envelope assumptions, blower door test results) can be verified.
  - **NMGC Response:** All NMGC Performance homes must provide (and have been verified) the following documentation: REM file. Air Conditioning, Heating and Refrigeration (“AHRI”) certificates for space heating and water heating appliances. In lieu of invoices, the 3<sup>rd</sup> party inspection via the HERS Rater allows independent verification of insulation levels, appliance efficiencies, etc. If a home is ENERGY STAR® certified, then an ENERGY STAR certificate is also uploaded into Sightline. Furthermore, all homes are verified to meet 2009 IECC before final Fuel Summary Report has been generated.

- Many of the AHRI certificates submitted for ThermSmart New Homes projects were old, dating back as far as 2014. In all instances, there was no way to confirm that the AHRI certificate was linked to the equipment installed in each home. If equipment was purchased in 2014 (regardless of incentives) and not installed until 2017, this may impact free ridership assumptions for the program.
  - **Recommendation 14:** Require that incentivized equipment be purchased after the program application is submitted and completed. Requiring projects to provide invoices indicating that equipment purchase dates are within the program year will help to minimize free ridership.
  - **NMGC Response:** Once AHRI has established AFUE & Efficiency Factor/Uniform Energy Factor (“EF/UEF”) efficiencies for equipment based on model number, there is no need to get updated AHRI information regardless of date of manufacture. Having the permit date of each program home documented, as well as the date of final certification aids in minimizing free ridership.

### 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 1.73.
  - **Recommendation 15:** If there is a desire or need to calculate cost effectiveness using the TRC test by either NMGC or the NMPRC, 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 over 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.
- Efficient Buildings program participants were found to be highly satisfied with the contractor who installed their equipment and the quality of the equipment installation, among other program factors. The technical assistance received from the implementer, CLEAResult, was reported to be the most important program factor in the customer’s decision to upgrade to the efficiency level that they did. In addition, marketing and

outreach from NMGC and/or CLEAResult was the most common source of program awareness.

However, the age or condition of the old equipment was also a key factor in the decision to participate for many customers, and the majority of respondents indicated that their old equipment was not likely to last more than a year. This suggests the program is reaching customers with equipment that would need to be replaced soon anyway, which could mean that some of these participants may be partial free riders.

- **Recommendation 16:** Continue direct outreach to customers to spread awareness of the program and focus on customers with still-functioning equipment.
- **NMGC Response:** NMGC and CLEAResult will continue direct outreach and develop additional efforts with a focus on still-functioning equipment.

In summary, this is NMGC's ninth evaluation of its programs and the ninth 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 1.73. 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. Adjustments made for the 2017 Program Year included moving the Low Flow Showerhead program to a measure under the Water Heating program and creating a stand-alone Multi-Family program that serves both low-income and market rate properties. All the programs in NMGC's portfolio were successful and received high customer satisfaction remarks. It is important to note that under Program Year 2017 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 68,673,841 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 243,655 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 2017 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 2017 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 2017 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 2017 were \$5,844,317. 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 2017. The information for each program was derived from the final conclusions reached by Evergreen’s evaluation of NMGC’s 2017 Program Year and documented in the attached 2017 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	2017 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	180,190	2,522,520	\$1,367,891	1.30	\$0.54
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	
<b>Total</b>		<b>1,143,720</b>	<b>17,679,398</b>	<b>\$5,899,422</b>	<b>1.79</b>	<b>\$0.33</b>

\* 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	2017 Year Actual Participation	Actual Annual Therms Saved*	Actual Lifetime Therms Saved *	Total Program Costs	UCT	Cost per Therm Saved
Water Heating	5699	149,687	1,340,180	\$544,884	1.43	\$0.41
Space Heating	1386	78,784	1,573,875	\$645,461	1.31	\$0.41
ThermSmart New Homes	566	177,982	4,449,560	\$1,005,252	2.23	\$0.23
Income Qualified	467	150,736	2,110,304	\$1,387,922	1.05	\$0.66
Multi-Family**	2113	149,665	1,661,827	\$762,899	1.49	\$0.46
Efficient Buildings**	230	445,961	6,361,612	\$1,405,825	2.59	\$0.22
Portfolio Costs	N/A	N/A	N/A	\$92,073	N/A	
<b>Total</b>		<b>1,152,815</b>	<b>17,497,358</b>	<b>\$5,844,317</b>	<b>1.73</b>	<b>\$0.33</b>

\*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 2017 is reflected in the table below.

Program	Total Number of Participants for Program Year 2017
Water Heating	5699
Space Heating	1386
ThermSmart New Homes	566
Income Qualified	467
Multi-Family*	2113
Efficient Buildings*	230
<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 2017 and are derived from the M&V Report.

Program	Cost per Therm Saved	2017 Economic Benefits*	NPV of Total Economic Benefits*
Water Heating	\$ 0.41	\$ 87,621	\$ 778,520
Space Heating	\$ 0.41	\$ 46,117	\$ 847,757
ThermSmart New Homes	\$ 0.23	\$ 104,185	\$ 2,238,989
Income Qualified	\$ 0.66	\$ 105,883	\$ 1,457,361
Multi-Family**	\$ 0.46	\$ 101,410	\$ 1,133,905
Efficient Buildings**	\$ 0.22	\$ 261,051	\$ 3,635,721
<b>All Programs</b>	<b>\$ 0.33</b>	<b>\$ 706,267</b>	<b>\$ 10,092,253</b>
<i>* Economic Benefits and NPV of Total Economic Benefits are derived from the M&amp;V Report.</i>			

#### D(6) Self-Direct Programs

There were no customer applications for the self-direct program in Program Year 2017.

## 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 2017.

Program	Rebates	Internal Administration	External Administration	Promotion	M&V Expenses	Total Program Costs
Water Heating	\$193,622	\$56,682	\$262,073	\$11,353	\$21,154	\$544,884
Space Heating	\$321,692	\$56,682	\$234,580	\$11,353	\$21,154	\$645,461
ThermSmart New Homes	\$603,956	\$56,682	\$312,107	\$11,353	\$21,154	\$1,005,252
Income Qualified	\$1,168,860	\$56,682	\$129,873	\$11,353	\$21,154	\$1,387,922
Multi-Family*	\$533,590	\$56,681	\$140,122	\$11,353	\$21,154	\$762,899
Efficient Buildings**	\$318,750	\$56,681	\$997,887	\$11,353	\$21,154	\$1,405,825
Portfolio Costs	N/A	\$92,073	N/A	N/A	N/A	\$92,073
Total	\$3,140,470	\$432,163	\$2,076,642	\$68,120	\$126,921	\$5,844,317

Internal administration is the labor and administrative costs the NMGC Energy Efficiency Department staff expended on energy efficiency programs. Staff time during Program Year 2017 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, 2018, 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. Administering the Multi-Family program is ICAST and administering the Efficient Buildings program is CLEAResult. All four 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, 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 2017 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 2017 Program Year include final invoices received from ADM from April 1, 2017 through September 30, 2017, for performing final M&V activities for Program Year 2016 and their annual independent program evaluation report for Program Year 2016, completed June 2017. Also included in the costs are invoices received and paid through March 31, 2018, from the new M&V evaluator, Evergreen Economics, for their continued evaluation of NMGC’s 2017 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 CO<sub>2</sub> 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.<sup>1</sup> 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 68,673,841 gallons of water saved annually. The expected lifetime for those measures is 10 years as determined by New Mexico’s Technical Resource Manual.

<b>2017 Program Year</b>			
<b>Emission Impact</b>	<b>Annual Avoided Gas Emissions Rate (lbs/therm)*</b>	<b>Annual Avoided Gas Emissions Rate (Metric tons)</b>	<b>Lifetime Avoided Emissions (Metric tons)</b>
CO <sub>2</sub>	117	67,440	1,023,595
<b>Water Impact</b>		<b>Annual Water Saved (gallons)</b>	<b>Lifetime Water Saved (gallons)</b>
Water Savings		68,673,841	686,738,410

\* The avoided CO<sub>2</sub> emissions rate for gas combustion was taken from U.S. Department of Energy - Energy Information Administration’s Annual Energy Outlook 2017.

## **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 2017 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 2017 Program Year. Promotional efforts and program information for Program Year 2017 began in April 2017 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 2017. Additional contractors were added throughout the 2017 Program Year and all participating contractors were kept in communications regarding the 2017 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 home owners 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 2017.

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***