

**Fitchburg Gas and Electric Lighting Company d/b/a Unitil
2019-2021 Energy Efficiency Term Report
PART TWO - NARRATIVE**

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1. CORE INITIATIVE VARIANCES & COST-EFFECTIVENESS

A. Residential Programs

The actual 2019-2021 benefit-cost ratio for the Residential sector is 1.92.

(1) RESIDENTIAL NEW BUILDINGS

The Residential New Buildings program was cost-effective for the term with a benefit-cost ratio of 4.20.

a. Residential New Homes & Renovations

Significant Variances¹ - The variances for this initiative are as follows:

Actual expenditures were 38 percent greater than budgeted. The reason for this variance was higher than planned Participant Incentives in 2019-2021. Total Participant Incentives were higher than planned in 2019 and 2020 by 13 percent and 22 percent respectively, whereas in 2021 the Company expended twice as much on participant incentives than planned largely driven by a new, 70-unit high-rise construction project with Variable Refrigerant Flow (VRF) and Energy Recovery Ventilation (ERV) systems, along with high efficiency lighting. In addition, this core initiative contributed to the energy efficiency construction of 67 new single-family homes in the territory. Together, this new construction activity in 2021 accounted for nearly half of the total incentivized during the term. Program Planning and Administration spending was also significantly higher than planned for this core initiative, both as a result of an underestimation of PP&A costs during planning, as well as due to increased activity.

In anticipation of the higher than planned demand, the Company requested and received approval from the Energy Efficiency Advisory Council (“EEAC”) on May 27, 2021 for a mid-term modification in the Residential New Home and Renovations Program in order to continue serving customers and capture all cost-effective energy efficiency for the remainder of the term. Higher program spending through the term resulted in greater than planned lifetime savings (279 percent variance compared to term plan) and total preliminary benefits (44 percent variance compared to term plan).

¹ Significant variances are defined in the D.P.U. 11-120-B Term Report Template as three-year core initiative variances between: (1) planned and actual core initiative budget of 10 percent or greater; (2) planned and preliminary core initiative total lifetime savings showing a decrease of 10 percent or greater; (3) planned and preliminary core initiative total resource benefits showing a decrease of 10 percent or greater; and (4) preliminary and evaluated core initiative total benefits of 10 percent or greater.

Evaluated total benefits were 23 percent less than preliminary total benefits. The decrease in claimable benefits is due to a reduction in attributable energy savings as a result of the 2019 Residential New Construction Baseline and Code Compliance Study (2019 Plan-Year Report D.P.U. 20-50 Appendix 4D, Study 19-27). The evaluation study updated the User Defined Reference Home (“UDRH”), last updated in 2016, based on current common installation practices for non-participating homes. The study found that program homes are significantly more efficient than non-program homes, but the difference between the two is decreasing.

Cost-Effectiveness - The Residential New Homes & Renovations core initiative was cost-effective for the term with a benefit-cost ratio of 4.20.

(2) RESIDENTIAL EXISTING BUILDINGS

The Residential Existing Buildings program was cost-effective for the term with a benefit-cost ratio of 2.01.

a. Residential Coordinated Delivery

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 25 percent lower than budgeted. The primary reason for this variance was lower spending on Participant Incentives, which was only 73 percent of plan, and STAT, which was only 49 percent of plan. Demand for weatherization services was weaker than anticipated in each of the three years of the term, but was particularly impacted in 2020 as a result of the COVID-19 pandemic.

While spending in this core initiative was lower than planned, the number of participating customers remained high due to several multi-family projects that reached a significant number of renters with high efficiency lighting, refrigerators and other electricity-saving measures. Lifetime electric savings was strong due to these electric measures, however, weatherization services and associated fossil fuel savings were significantly lower than planned, particularly related to propane usage, in which the core initiative only achieved 22 percent of planned savings.

Preliminary total resource benefits were 15 percent less than planned. The primary driver of this variance was the reduced fossil fuel savings due to fewer weatherization jobs as described above.

Cost-Effectiveness - The Residential Coordinated Delivery core initiative was cost-effective for the term with a benefit-cost ratio of 2.62.

b. Residential Conservation Services

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 134 percent greater than budgeted. The primary reason for the variance was an error in how the budget was developed for the Residential Conservation Services (“RCS”) core initiative, resulting in an under-allocation of planned STAT costs to RCS and an overallocation of planned STAT costs to Residential Coordinated Delivery (“RCD”) STAT for the 2019-2021 term.

Taken together, the actual STAT costs for the two core initiatives were 10.3 percent higher than the budgeted amount. This variance was due in part to the removal of the cap on weatherization services for customers late last term, which also drove the associated STAT costs higher than in the 2016-2018 term. In addition, additional unanticipated costs related to personal protective equipment and training were incurred in program years 2020 and 2021.

c. Residential Retail

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 110 percent greater than budgeted. The reason for this variance was significantly greater demand for electric heat pumps than was planned and an unanticipated increase in such demand year-over-year over the course of the term. This, in turn, drove higher expenditures on Participant Incentives and STAT.

When preparing the 2019-2021 Plan in the summer and fall of 2018, the Company did not have the benefit of a historical trend analysis to inform estimates of demand for fuel-switching measures. In addition, the high percentage of the Company’s electric customers using relatively inexpensive natural gas, and the high up-front expense of fully or partially displacing fossil fuel equipment with heat pumps, led the Company to anticipate and plan for only modest demand for both non fuel-switching as well as full and partial fossil fuel displacement heat pump measures.

The following table shows the number of heat pumps planned for and actually realized in the Retail program in each year of the plan as well as the total Participant Incentives associated with those measures.

	2019		2020		2021		Total	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Fuel-Switching Heat Pumps	0	30	0	65	0	100	0	195
Non-Fuel-Switching Heat Pumps	106	108	106	55	106	64	318	227
Fuel-Switching Heat Pump Participant Incentives	\$0	\$84,998	\$0	\$173,285	\$0	\$266,942	\$0	\$525,225
Non-Fuel-Switching Heat Pump Participant Incentives	\$24,880	\$30,861	\$24,880	\$21,608	\$24,880	\$41,513	\$74,640	\$93,981

Over the term, the Company rebated 195 measures in the “fuel-switching” sub-offering of the Residential Retail core initiative, none of which were planned for. This resulted in more than \$525,000 in unplanned participant incentives, equivalent to nearly half of the total variance in spending over the term. Costs associated with this core initiative for both PP&A and STAT budget categories were also higher than planned. While some of this increase was due to the unanticipated activity related to heat pumps and other electrification measures, some of the PP&A variance was due to planning estimates that underestimated the internal labor costs in this budget category.

Preliminary lifetime electricity savings were 53 percent less than planned. This variance is due to the inclusion of negative kWh savings associated with fuel switching heat pumps in the calculation. Lifetime electricity savings *not including fuel switching* is displayed on the Savings tab of the Data Tables in the far-right columns, V and W. As shown in that table, this core initiative achieved 29 percent *more* lifetime kWh savings than planned when fuel switching measures are removed from consideration. Actual delivered fuels savings, largely resulting from unplanned-for fuel switching, was 30 *times* the modest amount the Company planned for.

Evaluated total benefits were 24 percent less than preliminary total benefits. This variance was caused by updated impact factor reductions on heat pump systems. In this case, the Energy Optimization Fuel Displacement Impact and Process Study (MA20R24-B-EOEVAL) found a reduction in the fossil fuel savings attributable to PAs due to customers operating the heat pumps for fewer hours during the winter months than assumed during planning.

Cost-Effectiveness - The Residential Retail core initiative was cost-effective for the term with a benefit-cost ratio of 1.74.

d. Residential Behavior

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 21 percent greater than budgeted. The primary reason for this variance was the cessation of the Company's natural gas Residential Behavior core initiative during the term, which resulted in a shift in the fixed costs associated with the contract onto the electric core initiative. That said, the 21 percent increase in costs compared to plan was offset by savings and benefits that were substantially greater than planned (80 percent and 94 percent respectively).

Cost-Effectiveness - The Residential Behavior core initiative was cost-effective for the term with a benefit-cost ratio of 2.79.

e. Residential Active Demand Reduction

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 31 percent less than budgeted. The primary reason for this variance was a slower roll-out of this new initiative than anticipated due to initial challenges engaging with the vendor. During the first year of the term, the Company enrolled only 45 participants out of a plan of 170. The number of participants doubled by the summer of 2020 to 91 participants, and in 2021 the number of participants increased by 36 percent to 124. While the lower spending in this core initiative was driven by lower spending on Participant Incentives and STAT, the effort to increase participation and recruit participants led to higher spending than planned in the PP&A and Marketing and Advertising budget categories.

Cost-Effectiveness - The Residential Active Demand Reduction core initiative was cost-effective for the term with a benefit-cost ratio of 1.47.

B. Income Eligible Programs

The actual 2019-2021 benefit-cost ratio for the Income Eligible sector is 1.53.

(1) INCOME ELIGIBLE EXISTING BUILDINGS

The Income Eligible Existing Buildings program was cost-effective for the term with a benefit-cost ratio of 1.63.

a. Income Eligible Coordinated Delivery

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 18 percent greater than budgeted. The reason for this variance were higher than projected participant incentive and STAT expense, related to substantial multi-family lighting projects in both 2019 and 2020. Participant incentives in program year 2019 were 65 percent higher than planned, driven by unplanned for opportunity to retrofit lighting in common areas of multi-family buildings. While in-unit weatherization activity was severely curtailed in 2020 due to health and safety considerations due to the COVID-19 pandemic, the Company was able to continue to undertake a significant multi-family lighting retrofit as well as a number of single-family heating system replacements, ending the term year slightlying ahead of budget.

Preliminary total resource benefits were 48 percent less than planned. The unplanned for investment in multi-family lighting and refrigeration projects resulted in correspondingly higher electricity savings (178 percent above Plan) but fewer benefits than the Company had planned. The variance illustrates the difference between the planned measure mix, which focused on long-lived, fossil fuel saving weatherization measures, and the actual installed energy efficiency projects that returned short-lived electric savings.

Cost-Effectiveness - The Income Eligible Coordinated Delivery core initiative was cost-effective for the term with a benefit-cost ratio of 1.63.

C. Commercial and Industrial (“C&I”) Programs

The actual 2019-2021 benefit-cost ratio for the C&I sector is 2.87.

(1) C&I NEW BUILDINGS

The C&I New Buildings program was cost-effective for the term with a benefit-cost ratio of 4.58.

a. C&I New Buildings & Major Renovations

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 19 percent less than budgeted. The primary reason for this variance was reduced investment from C&I customers in new construction or renovation due to the economic uncertainties driven by the Covid-19 pandemic. Because the vast majority of new C&I customers in the Company's territory elect to locate near natural gas service, there is a relatively small pool of opportunity for cost effective projects in this core initiative. As a result, the Company planned for just 7.4 percent of the total sector spending to occur in the C&I New Buildings core initiative. In fact, given the underspending in the C&I sector as a whole, the Company ended the term with this core initiative spending 7.6 percent of total C&I sector expenditures, or right in line with the proportion that was planned.

Preliminary total resource benefits were 73 percent less than planned. Although the Company ended the term with a significant variance related to the achievement of total resource benefits, a major new construction project that closed in 2021 resulted in significant lifetime electric savings. In fact, while accounting for only 7.6 percent of total C&I sector spending, this core initiative achieved 16 percent of the C&I sector's total lifetime electric savings. However, during planning, this core initiative was assigned to achieve a disproportionately high percent of the sector's total resource benefits, or 23 percent. In fact, this core initiative ended the term having achieved 8 percent of the C&I sector's total resource benefits, or approximately in line with its share of expenditures. That resulted in a significant variance compared to plan.

Evaluated total benefits were 60 percent greater than preliminary benefits. This variance was the result of an increase in non-energy impacts (NEI) applied to measures in this core initiative resulting from the C&I Operation & Maintenance (O&M) and Non-O&M Study.² The primary objective of the study was to develop O&M NEI values broadly across all C&I measures and programs, and non-O&M NEI values (excluding health and safety (H&S) NEIs) with a focus on energy-efficiency measures common to small businesses programs (though application of these NEIs would not be limited to small business programs). The overall impact of these NEI values boosted evaluated benefits across all C&I programs for 2021.

Cost-Effectiveness - The C&I New Buildings & Major Renovations core initiative was cost-effective for the term with a benefit-cost ratio of 4.58.

² D.P.U. 21-120-D.P.U.21-129 Appendix J, Study 34, "C&I O&M and non-O&M NEI with Small Business Focus" (MA20X10-B-CIOMNEI).

(2) C&I EXISTING BUILDINGS

The C&I Existing Buildings program was cost-effective for the term with a benefit-cost ratio of 2.95.

a. C&I Existing Buildings Retrofit

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 26 percent less than budgeted. The reason for this variance was driven entirely by a decline in activity in program years 2020 and 2021, with actual spending in 2020 only reaching half of planned expenditures. The lower spending was most dramatic in the Participant Incentive category. The Covid-19 pandemic was a primary driver of the lower spending in both 2020 and into 2021, as both customers and vendors were reluctant to invest in retrofitting existing buildings due to the economy and were also faced significant restrictions on accessing customer sites for health and safety reasons.

Preliminary lifetime savings were 38 percent less than planned. The primary reason for the variance in lifetime electric savings was the significant reduction in activity that began in program year 2020 as a result of the COVID-19 pandemic, and continued, though to a lesser extent, in program year 2021. The reduction in lifetime savings was even more pronounced than the reduction in spending, however, and was the result of an increase in the cost to achieve lifetime savings in program years 2020 and 2021. That cost was nearly 60 percent higher in 2020 compared to 2019, and 48 percent higher than planned for that program year. While the enhanced rebates and other supports provided to customers to overcome barriers caused by the pandemic were more pronounced in 2020 than 2021, the cost to achieve savings remained higher in the last year of the term than planned, resulting in disappointing lifetime savings compared to plan.

Preliminary total resource benefits were 28 percent less than planned. The driver for this variance was lower participation as described above, which led to lower achievement of savings and resource benefits than planned.

Cost-Effectiveness - The C&I Existing Buildings Retrofit core initiative was cost-effective for the term with a benefit-cost ratio of 2.37.

b. C&I New & Replacement Equipment

Significant Variances - The variances for this initiative are as follows:

Actual expenditures were 12 percent less than budgeted. The reason for this variance was lower spending in all budget categories and low customer participation in downstream channels. Most activity in this core initiative was in the upstream sub-initiative, with no downstream activity during 2020 and very limited in 2021. While spending less, the core initiative was able to achieve savings at a lower cost than planned and thereby exceeding lifetime savings and total resource benefits greater than planned (13 percent and 11 percent respectively).

Cost-Effectiveness - The C&I New & Replacement Equipment core initiative was cost-effective for the term with a benefit-cost ratio of 5.40.

c. C&I Active Demand Reduction

Significant Variances - The variances for this initiative are as follows:

Actual spending was 32 percent less than budgeted. The reason for this variance was lower expenditures on Participant Incentives than planned due to lower than planned participation levels. Specifically, \$75,000 in customer incentives related to storage were not expended due to the small pool of potential customers and the lack of customer interest in this offering. Further, the fixed costs of engaging a vendor to deliver the storage offer to such a small group of customers would not have been cost-effective. As a result, the Company focused on recruiting C&I customers who were good candidates for curtailment during summer peak events. Customer enrollment and performance in the summer interruptible load offer exceeded Plan in 2019 and 2020, and the cost per kW curtailed was significantly lower than planned for this new core initiative.

Evaluated total benefits were 12 percent less than preliminary results. This variance is primarily the result of realization rates used to adjust C&I Interruptible Curtailment performance from the asymmetric-baseline methodology used for calculating customer pay-for-performance payments to the symmetric-baseline methodology the third-party evaluator recommends for claiming savings (see D.P.U. 20-50, 2019 Plan Year Report, Appendix 4D. and D.P.U. 22-119, 2019-2021 Term Report, Appendix C-4, Study 21-21d).

Cost-Effectiveness - The C&I Active Demand Reduction core initiative was cost-effective for the term with a benefit-cost ratio of 4.83.

2. LOW-INCOME COST ALLOCATION

The Green Communities Act requires that at least ten percent of electric efficiency funding and 20 percent of gas efficiency funding be spent on low-income programs. G.L. c. 25 § 19(c).

Please refer to the *Customer Sector Cost Allocation* table in the Company's Data Tables for a summary and comparison of planned budget allocation and actual expenditures by customer sector. As shown in this table, actual expenditures in the low-income sector were 15 percent of total electric funding. The Company has, therefore, met the statutory minimum requirement.

3. MINIMIZATION OF ADMINISTRATIVE COSTS

The Green Communities Act requires that energy efficiency programs minimize administrative costs to the fullest extent practicable. G.L. c. 25 § 19(b). In accordance with the GCA, the Company has sought to minimize administrative costs to the fullest extent practicable. See the attached testimony outlining the drivers of administrative costs and specific actions taken to minimize those costs.

Please refer to the *Administrative Costs* table in the Company's Data Tables for a summary and comparison by core initiative of (i) planned and actual Program Planning and Administration ("PP&A") costs, and (ii) planned and actual PP&A costs as a percent of total program costs. [As shown in the table, actual PP&A spending in all sectors was 88 percent greater than budgeted, with the highest increase over plan occurring in the C&I sector in which costs were 135 percent higher than planned. The Residential and Income Eligible sectors each exceeded budgeted costs for PP&A by 57 percent. The reason for these increases, applicable to all sectors, was an under-estimation during planning of the percent of internal costs that would be dedicated to PP&A.

Actual PP&A spending on internal costs during the 2019-2021 term was just 3.6 percent higher than PP&A spending in the 2016-2018 term, but in planning for the 2019-2021 term, the Company anticipated that more internal time would be charged to the other budget categories and less to PP&A. During the term, the Company and its management staff followed the guidance and recommendations in the Navigant / Guidehouse study on "Best Practices for Minimizing Program Planning and Administrative Costs," which was published in October of 2018. Subsequently, those program managers who do not have direct sales and technical assistance contact with customers were directed to consistently book all of their time to the PP&A cost category. This contrasted with the understanding of those preparing the budget for the 2019-2021 Term, who were planning for PP&A costs to be substantially below what was charged to that budget category during the 2016-2018 term due to an unfulfilled expectation that internal billing practices would shift some time and expense to other budget categories. As a result, there was little change in the actual internal costs associated with PP&A during 2019-2021 compared with the 2016-2021 term, both in terms of actual funds expended as well as the proportion of total funds spent on PP&A, which dropped from 13.2 percent in 2016-2018 to 12.0 percent in 2019-2021. However, during planning for the 2019-2021 plan, just 6 percent of the portfolio funds were dedicated to PP&A, whereas

actual PP&A spending comprised 12 percent of portfolio expenditures, or a 96 percent increase over plan.

As shown on the PPA table in the Company's Data Tables, portfolio wide *external* PP&A costs over the term were 26 percent less than budgeted. Of those external PP&A costs, only legal services expenses were higher than planned, totaling \$15,246 more than budgeted over the term, representing a 20 percent variance. Assessments and other vendor services were 38 percent and 31 percent below plan, respectively.

4. COMPETITIVE PROCUREMENT

The Green Communities Act requires that energy efficiency programs utilize competitive procurement processes to the fullest extent practicable. G.L. c. 25 § 19(b). In accordance with the GCA, the Company has utilized competitive procurement processes to the fullest extent practicable.

Please refer to the *Competitive Procurement* table in the Company's Data Tables for a summary and comparison of planned and actual program outsourced activities by sector. As shown in the table, significant differences exist between planned and actual outsourced activities and competitively procured activities in the residential, income eligible and C&I sectors. Overall, the Company's outsourced activity costs were 18 percent higher than planned

For the residential sector, the actual three-year "cost of services" was 13 percent higher than planned. While in-house activities were 13 percent lower than planned, outsourced costs were 32 percent higher than planned. This increase in outsourced costs is a reflection of increased overall residential costs across several core-initiatives. Of those outsourced residential costs, competitively procured costs were 42 percent higher than planned, while non-competitively procured costs were 23 percent lower than planned. Included in these non-competitively procured activities were two significant assessments that were omitted from the estimates during planning but are included for the reporting of these costs, namely DOER assessments and the workforce development funds provided to the Mass Clean Energy Council.

For the income eligible sector, the actual three-year "cost of services" was 28 percent higher than planned. While in-house activities were 15 percent lower than planned, total outsourced costs were 83 percent higher than planned. Of the outsourced costs, those that were competitively procured were 38 percent lower than planned and non-competitively procured costs were 225 percent higher than planned. The reason for these variances is due to the fact that most Sales, Technical Assistance and Training ("STAT") costs within the income eligible core initiatives are non-competitively procured. Additionally, assessments that were omitted from this table during planning are included in the actual report of outsourced costs and are considered non-competitive, causing a variance compared to the plan for this table, but not a large variance compared to planning in general.

For the C&I sector, the actual three-year “cost of services” was consistent with what was budgeted, but there were significant variances in both in house and outsourced activities. In-house activities were 13 percent higher than planned while outsourced expenses were 17 percent lower than planned, reflecting the effort to manage planning activities in house. Of the outsourced activities, competitively procured services were 35 percent lower than plan, while non-competitively procured services were 232 percent higher than planned.

While this is a significant variance, the Company included in the calculation just \$67,701 in non-competitively procured services, which omitted certain assessments, both known and unknown at the time of planning. Specifically costs for DOER, the consultants to the EEAC, and the MassCEC workforce development costs were not included in the plan figure, but are included in the reported expenses. Additionally, support for evaluation activities was provided by a third-party vendor whose services were not competitively procured, but which was collectively contracted with other small PAs as a means of supplementing limited staff for these activities. While the Company believes that there is adequate justification for not competitively procuring these services given the unique skills and relatively small expenditures associated with this vendor, a competitive request for proposals will be issued in the near term due to the expectation of sustained need for this support going forward.

While the majority of the Company’s procurements were conducted via a competitive procurement process, there are some exceptions when the Company opts to not undertake a competitive procurement process. These non-competitively procured services occurred in one of seven circumstances: (1) proprietary; (2) non-responsive bids; (3) continuation; (4) technical services and exclusive capability; (5) unique skills and exclusive capability; (6) regulated; and (7) minimum cost threshold. Each scenario is further described below.

Occasionally, the Company will solicit bids, but will not receive any responsible bids from the requested bidders. In these circumstances, the Company will try to do another bid if possible. If not possible, however, then then the Company will select a vendor that is most qualified to perform the services.

The continuation of work by the same vendor may be needed to complete an existing project when additional work, items, or services are required, but they were not known to be needed when the original order was placed to complete an existing project. While the original order may have been competitively procured, because this continuation of work is technically a different contract, it is considered a sole-sourced contract by the Company.

A procurement may be for technical service in connection with the assembly, installation, or servicing of equipment of a highly technical or specialized nature and there is the only qualified source. Prior to executing these procurements, the Company will conduct a reasonable inquiry to verify that only one vendor is qualified and no other potential vendors are known.

Related to the technical service exception, a procurement may be for a specialized service and only one vendor has that unique skill and capability. Prior to executing these procurements, the Company will conduct a reasonable inquire to verify that only one vendor qualified and no other potential vendors are known.

The Company has certain contractual obligations with entities due to regulatory mandates. Because the selection of these entities is out of the Company's control, the Company cannot conduct a competitive procurement process for them. This category of costs can contribute to a significant amount of non-competitive costs for the Company. For example, the GCA states "The low-income residential demand-side management and education programs shall be implemented through the low-income weatherization and fuel assistance program network and shall be coordinated with all electric and gas distribution companies in the commonwealth with the objective of standardizing implementation." The Low-Income Energy Affordability Network (LEAN) was established among the other agencies of the low-income and fuel assistance program network to provide the services required for implementing the coordination requirements of the statute. This network is primarily made up of small Community Action Agencies that provide Energy Efficiency Services (as well as other assistance services) within specific geographic areas. Given that the Company does not have control over this contractor network, these costs are classified as non-competitively procured. Additionally, in 2021, "An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy" was enacted which required the Company to provide funding to the Massachusetts Clean Energy Center for workforce development programs. Given these costs were mandated by the new legislation, they are categorized as non-competitively procured.

Finally, the Company may procure services at a cost below a certain threshold that would justify the use of a competitive procurement process. Contractors where the total costs are below \$50,000 are selected using sound business judgment and do not go through a competitive procurement process.

5. BENEFIT-COST RATIO SCREENING TOOL

Please see [Appendix A](#) for the Benefit-Cost Ratio Screening Tool in Microsoft Excel format.

6. STATEWIDE TECHNICAL REFERENCE MANUAL/LIBRARY

The Technical Reference Manual ("TRM") documents how the energy efficiency Program Administrators consistently, reliably, and transparently calculate savings resulting from the installation of prescriptive energy efficiency measures. The TRM provides methods, formulas, and default assumptions for estimating energy, peak demand, and other resource impacts from energy efficiency measures. The Technical Reference Manual – 2021 Report Version is available at [Appendix B](#). Please see Appendix 3 to the Company's 2019 Plan-Year Report in D.P.U. 20-50 for the Technical Reference Manual – 2019 Report Version, and Appendix 3 to the Company's

2020 Plan-Year Report in D.P.U. 21-70 for the Technical Reference Manual – 2020 Report Version.

The electronic version, the eTRM, is available at:
<https://www.masssavedata.com/Public/TechnicalReferenceLibrary>.

7. STATEWIDE EVALUATION STUDIES

A. Previously Submitted Evaluation Studies Incorporated by Reference

Under the guidance and direction of the Evaluation Management Committee, 131 evaluation studies were completed during the 2019-2021 term. The majority of these studies were previously submitted to the Department in D.P.U. 20-50 (*2019 Energy Efficiency Plan-Year Report*), D.P.U. 21-70 (*2020 Energy Efficiency Plan-Year Report*) and D.P.U. 21-120 through D.P.U. 21-129 (*2022-2024 Electric & Gas Three-Year Energy Efficiency Plan*). Previously submitted studies are incorporated in the instant docket by reference. Please refer to the table in Appendix C-1 for a complete list of these studies. The table provides the name of each study, the applicable fuel, the location of the study in each report/plan, and the primary EM&V contractor conducting the study. All completed studies are also available on the Massachusetts Energy Efficiency Advisory Council’s website at: <http://ma-eeac.org/studies/>.

B. Annual Summary for Year Three (2021)

Please see Appendix C-2 for a list of evaluation studies that were completed after the Program Administrators filed their 2022-2024 Three-Year Plan and are included in this Term Report. Summaries of these evaluations are included at [Appendix C-3](#) and full copies are available at [Appendix C-4](#). Additionally, all currently completed studies are available on the Council’s website at: <http://ma-eeac.org/studies/>.

C. Summary of the Studies with the Most Significant Effects

The Massachusetts PAs completed 32 evaluation studies in 2021 and early 2022, which are included with the 2019-2021 Term Report (D.P.U. 18-110 – D.P.U. 18-119). Appendix C-5 highlights five 2021 studies with the most significant results regarding PA baseline assumptions, energy savings, non-energy impacts (“NEIs”), and future program design:

1. C&I Custom Gas and Electric Impact Evaluations (2019-2021 Term Report, Appendix D, Study 21-11 and 21-12).
2. Non-Residential New Construction Market Characterization Study (2022-2024 Three-Year Plan, Appendix J, Study 9).
3. Residential Building Equipment Use and Characterization Study (2019-2021 Term Report, Appendix D, Study 21-1).

4. Energy Optimization Fuel Displacement Study (2022-2024 Three-Year Plan, Appendix J, Study 6).
5. C&I Operation & Maintenance (“O&M”) and Non-O&M NEI Study (2022-2024 Three-Year Plan, November 1, 2021, Appendix J, Study 34).

D. Evaluation Studies Recommendations Table

Appendix C-6 provides a table summarizing all evaluation study recommendations and, if applicable, whether the Program Administrators (or the Program Administrator for PA-specific recommendations) have implemented the recommendation to date.

8. THREE-YEAR COSTS

E. Invoice Summary Table

Please refer to Appendix D for an invoice summary table for each core initiative, sorted by budget category. The Company will continue to maintain all invoices associated with the implementation of its energy efficiency programs.

The invoice summary table is a summary of the record of how invoices were initially paid, whereas the Company’s total expenditures accounts for QA/QC, additional manual adjustments, and journal entries made subsequently. Additionally, the table represents vendor invoices only. It does not include costs that are not paid via an invoice to a vendor, such as internal labor costs, internal expenses, or direct incentive payments to participants, or loans repaid by participants as part of multi-year financing opportunities in certain core initiatives. Therefore, the totals in this table will not match the totals in the Term Report Data Tables.

F. Sponsorships and Subscriptions

Please refer to Appendix E for a list of all organizations or items the Company sponsored or subscribed to during the term. The list includes the following: (a) name of the sponsored organization or item, (b) description of organization or item, (c) cost category; (d) annual funding, (e) purpose of the item, (f) whether the organization is a lobbyist, and (g) an analysis describing why the expense was reasonable, prudently incurred, and how it provided a direct benefit to Massachusetts’ ratepayers. Appendix G also provides, where applicable, supporting documentation to justify the purpose and benefit. For any sponsored organization that is a registered lobbyist, Appendix E also provides a commitment from the organization not to use program funds for lobbying activities.

9. PERFORMANCE INCENTIVE MODELS

Please refer to [Appendix F](#) for the Performance Incentive calculation tables for calculations of performance incentives based on 2019-2021 achievement. Please refer to [Appendix G](#) for an illustrative report showing a calculation of the value component using net benefits.

10. RENTER, INCOME, AND LANGUAGE DATA

Please refer to [Appendix H](#) for additional data related to renters, income level, and language.

11. INVESTIGATIONS REPORT

Please refer to [Appendix I](#) for a report in response to the Department's Memorandum dated July 12, 2022.