# Appendix F

# Commercial & Industrial Custom, Refrigeration, and Compressed Air Measures

**F-2:** ***2021 Custom, Refrigeration, and Compressed Air Potential Study*****,**
**Applied Energy Group**

# MEMORANDUM

To: Efficiency Maine Trust

From: Applied Energy Group

Date: August 11, 2021

Re: 2021 Custom, Refrigeration, and Compressed Air Potential Study

## Purpose

This memorandum details the methodology, analysis, and results of the program potential analysis performed by Applied Energy Group (AEG), in preparation for Efficiency Maine Trust's (EMT) Triennial Plan V filing for programs that will be implemented from July 2022 through June 2025 (FY2023-FY2025). This analysis intends to provide reasonable savings and budget estimates for EMT's Commercial and Industrial (C&I) Custom Program and the C&I Prescriptive Initiatives' compressed air and refrigeration offerings. AEG completed a similar version of this analysis as part of EMT's Triennial Plan IV.

The objectives of the Custom, Refrigeration, and Compressed Air Potential Study are as follows:

1. Characterize the potential market for each program/program subset;
2. Formulate a base case scenario informed by historical program achievements;
3. Estimate future program performance, including savings and incentive budget levels for electric, natural gas, and unregulated fuel types.

This analysis relies largely on a methodological approach consistent with the one employed in the Triennial Plan IV analysis, but introduces Maine's new analysis of the cannabis cultivation sector as well as large electricity users taking service at the transmission and sub-transmission (T&ST) level.

The following sections of this memorandum detail the steps taken to achieve the analysis objectives, present and interpret the analysis results, and provide program savings and incentive budget estimates, by fuel type, through the Triennial Plan V program cycle.

## Analysis Methodology

### 1. Market Characterization

The market characterization step used 2017 customer billing data and historical program participation data to assess current market conditions and to analyze historic program participation, savings, and budget trends. AEG used the billing data provided by EMT from investor-owned electric and gas utilities in Maine, initially used in the Triennial Plan IV analysis, to determine the number of customers and total energy consumption in each market segment.[1] The segmentation scheme used to structure the analysis is presented in the table below:

*Table 1. Program Analysis Segmentation Scheme*

| Dimension | Variable | Description |
|---|---|---|
| 1 | Program | C&I Custom (including Distributed Generation and Cannabis); C&I Prescriptive (compressed air and refrigeration measures only) |
| 2 | Sector | Commercial or Industrial |
| 3 | Segment | Commercial: Grocery, School, Marine, College, Health, Commercial Miscellaneous Industrial: Paper, Wood Products, Fabricated, Food & Beverage, Public Works, Transportation Equipment, Chemicals Plastics & Rubber, Computer & Electronics, Industrial Miscellaneous, Cannabis |
| 4 | Projects | Specific projects incentivized through one of the two EMT programs listed above. A single customer may complete multiple projects. |
| 5 | End Uses | End uses associated with the measures included in the programs above, including: Compressed Air, Refrigeration, Envelope, Process, HVAC, Lighting, Motors, Water Heating, Miscellaneous, and Cannabis-specific HVAC and Lighting applications. |
| 6 | Measures | Measure types included in completed projects, according to EMT's program database. |
| 7 | Installed Measure Quantity | Quantity of a single measure type installed in a project. For example, a lighting upgrade is considered one measure type within a project, but 1,000 LED bulbs may have been installed as part of the project. |

### 2. Establish Base Case Scenario for Program Performance

AEG developed a base case scenario for the initial modeling assumptions for the savings and budget analysis. AEG reviewed the historic performance by program and by market segment from FY2015-2020 to provide insight on participation trends, both in terms of projects and measures installed. This step involved developing a singular database of all participant-level program tracking data, classifying participants by each of the defined analysis segments, categorizing measures into standardized measure types, and mapping prescriptive measures to the EMT C&I Technical Reference Manual

[1] Investor-owned utilities include Central Maine Power, Emera Maine (now Versant Power), Summit Natural Gas of Maine, Bangor Natural Gas, Unitil Natural Gas, and Maine Natural Gas.

(TRM).[2] The comprehensive database served as the basis for participation trends, measure saturations, and incentive levels by market segment from FY2015 through FY2020.

### 3. Estimate Future Program Performance

To estimate future program savings and budgets, each program was first deconstructed at the measure level into average measure units by market segment. For the prescriptive offerings, the average measure characterizations were developed based on the EMT TRM, with inputs adjusted to reflect the attributes of each market segment. The program tracking database served as the basis for these adjustments to more accurately characterize measure attributes that vary across segments, e.g., average measure unit horsepower or facility operating hours. C&I Custom Program measure inputs were based on historic project characteristics disaggregated by market segment and were aligned with EMT TRM guidance, including measure lifetime and net-to-gross adjustments.

*AEG collaborated with the C&I Custom Program team to gain additional insight into the expected future performance of the custom programs.*

AEG incorporated segment-specific project counts and average measure saturations developed from the program database into the base model. Project counts and measure saturations were then adjusted for each analysis year to account for expected future trends based on past program performance and insight from the EMT program team. Total savings and incentives by fuel and customer type (T&ST and non-T&ST participants) were then estimated for the program cycle, and the portfolio was screened for cost-effectiveness at the measure, segment, and program levels. These estimated savings, budget, cost-effectiveness, and participation estimates are detailed in the following section of this memorandum.

### 4. Cost-effectiveness Analysis

AEG performed the primary benefit cost test (PBCT) prescribed by EMT to assess the measures and programs for cost-effectiveness. The PBCT represents the combination of the effects of a program on both participating and non-participating customers. PBCT benefits include the lifetime avoided energy costs and avoided capacity costs, taking into account the value of avoided carbon, and the costs include the participant and utility administrative costs associated with the program. PBCT avoided costs are sourced from the 2021 Avoided-Energy-Supply-Component Study (AESC 2021), which provides avoided cost estimates associated with energy efficiency measures for program administrators throughout New England to support their internal decision-making and regulatory filings.[3] The PBCT benefit-cost accounting is shown in the table below:

[2] All references to the "EMT TRM" refer specifically to Efficiency Maine Trust's *Commercial/Industrial and Multifamily Technical Reference Manual*, Version 2020.1.

[3] *Avoided Energy Supply Components in New England: 2021 Report*, Synapse Energy Economics, Inc., May 2021.

*Table 2. Primary Benefit Cost Test Accounting*

| Component | Benefit-Cost Accounting | Source |
|---|---|---|
| Wholesale Electricity, Natural Gas, Propane, Heating Oil, Kerosene, Wood, Carbon, and Water Costs | BENEFIT | AESC 2021 |
| Demand Reduction Induced Price Effects (DRIPE) | BENEFIT | AESC 2021 |
| Generation Capacity, Transmission & Distribution | BENEFIT | AESC 2021 |
| Operations & Maintenance, Incremental Measure Costs | COST | EMT Commercial TRM v2020.1, EMT Program Tracking Database |
| Non-Incentive Program Expenditures[4] | COST | n/a |

# Analysis Results

## Program Budgets and PBCT Results Summary

The table below provides a high-level summary of the total incentive budgets and three-year combined benefit cost ratios (BCRs) for each of the programs analyzed. Detailed program-level results are presented in the following sections.

*Table 3. Total Program Incentive Budget and BCR Summary*

| Program | 2023 | 2024 | 2025 |
|---|---|---|---|
| Prescriptive Compressed Air | | | |
| T&ST Electric Incentive Costs | $9,582 | $9,582 | $9,582 |
| Non-T&ST Electric Incentive Costs | $659,833 | $710,709 | $715,879 |
| BCR | 9.62 | 9.93 | 10.20 |
| Prescriptive Refrigeration | | | |
| T&ST Electric Incentive Costs | $0 | $0 | $0 |
| Non-T&ST Electric Incentive Costs | $25,159 | $23,844 | $23,844 |
| BCR | 5.51 | 5.79 | 5.95 |
| C&I Custom Program | | | |
| T&ST Electric Incentive Costs | $43,628 | $43,628 | $43,628 |
| Non-T&ST Electric Incentive Costs | $3,933,944 | $3,862,270 | $3,790,579 |
| Natural Gas Incentive Costs | $577,400 | $577,400 | $577,400 |
| Unregulated Fuel Incentive Costs | $51,743 | $51,743 | $51,743 |
| BCR | 3.67 | 3.76 | 3.86 |

[4] AEG's analysis did not include an estimation of non-incentive program expenditures.

## Program Details

This section provides additional details on each of the programs included in the analysis. Each program includes a description of the program, a discussion of trends, and recommendations for EMT's Triennial Plan V filing.

### Prescriptive Compressed Air

#### Program Description

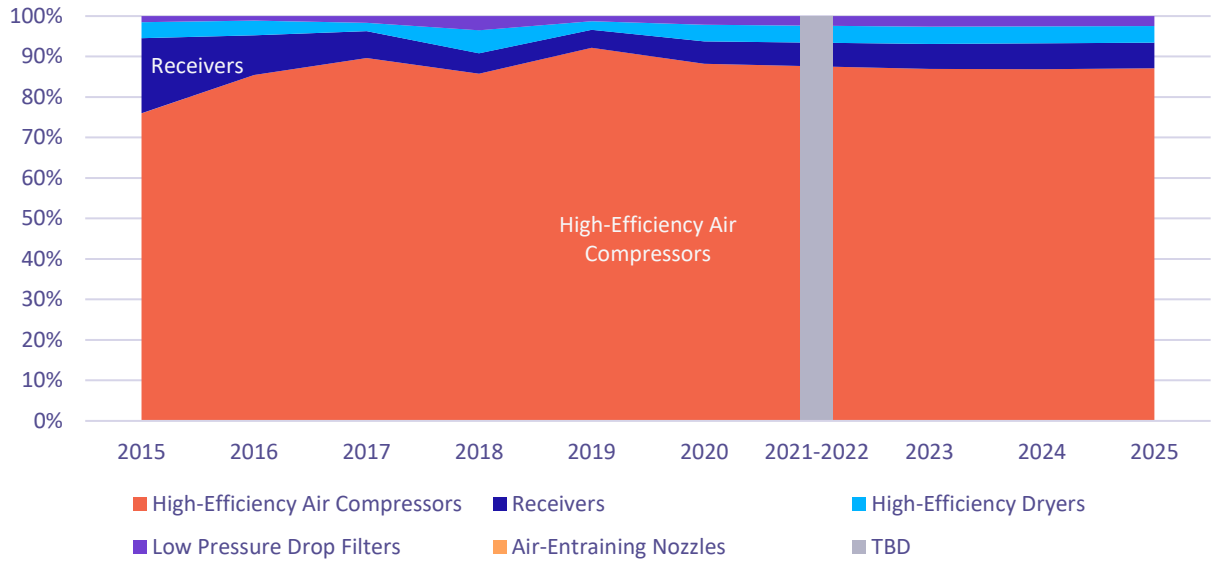
The Prescriptive Compressed Air offerings are included within the Commercial and Industrial Prescriptive Initiatives (CIP), which offer fixed incentives for a predefined list of common efficiency measures. Key offerings within the Compressed Air end use include High-Efficiency Air Compressors and Dryers, Receivers, Low Pressure Drop Filters, and Air-Entraining Nozzles. These measures apply to both new construction and retrofit project types.

#### Program Trends

Based on the trend analysis, Prescriptive Compressed Air participation is expected to remain relatively consistent, with project counts gradually increasing through the Triennial Plan V cycle. Note, however, that the analysis conservatively assumes fewer large projects given the unique characteristics and unknown timing of such projects. As such, AEG calibrated the model with fewer average measures per project, resulting in slightly lower savings per project than recent program years.

The chart below illustrates the composition of total electric savings by measure type from FY2015 through FY2025.

*Figure 1. Percent of Total Prescriptive Compressed Air Savings by Measure Type*

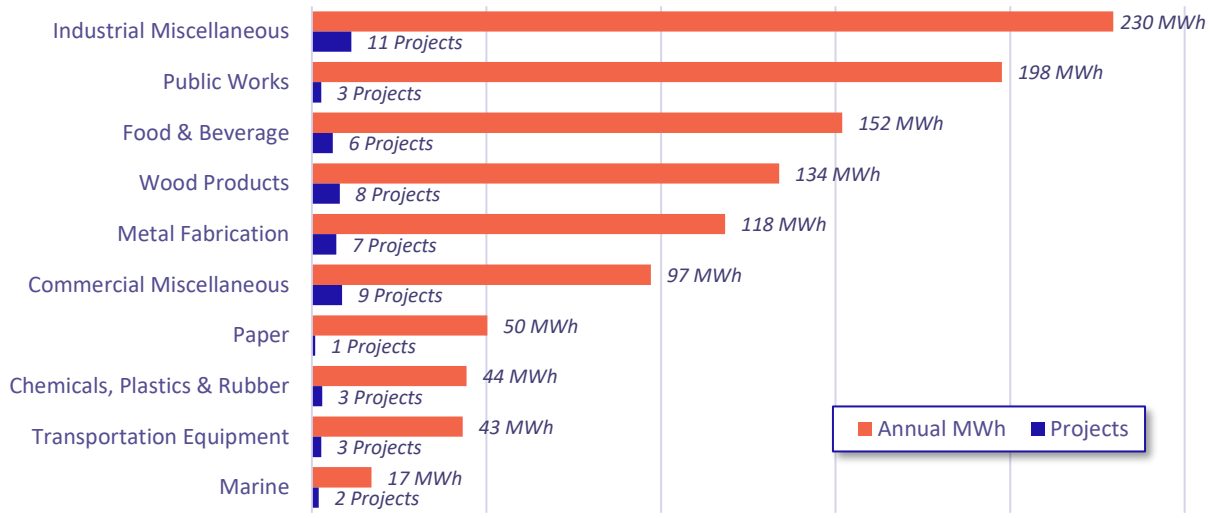



Note that High-Efficiency Air Compressors have historically accounted for at least 75 percent of total program saving since FY2015, with Receivers accounting for between approximately 5 and 20 percent of total savings to date. Based on historical participation, this trend is expected to continue through

the Triennial Plan V cycle, with High Efficiency Dryers and Low Pressure Drop Filters accounting for the remainder of total program savings.

The chart below demonstrates the average annual Prescriptive Compressed Air Program savings and projects by market segment.

*Figure 2. Prescriptive Compressed Air Average Savings and Projects by Segment*




The Industrial Miscellaneous and Public Works segments are expected to account for largest share of savings compared to the remaining market segments. Note however, that the Industrial Miscellaneous segment is expected to complete nearly four times the number of projects than the Public Works segment, indicating a significant difference in the project characteristics between the segments given similar levels of saving contributions. Overall, the Public Works segment is expected to yield higher savings per measure installed than the Industrial Miscellaneous segment across all measure types.

### Recommendations for Triennial Plan V

Total estimated Triennial Plan V project counts, savings and incentives by fuel type, and program level cost-effectiveness results for the Prescriptive Compressed Air Program are provided in the table below. For reference, the results are compared to historic program performance as sourced from the comprehensive program tracking database. Overall, the Prescriptive Compressed Air offering is expected to be highly cost-effective, with an average BCR between 9.62 and 10.20 through the plan cycle, excluding non-incentive program expenditures from the analysis.

*Table 4. Prescriptive Compressed Air Summary*

| | Actual | | | | | | Projected | | |
|---|---|---|---|---|---|---|---|---|---|
| Metric | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2023 | 2024 | 2025 |
| Total Projects | 49 | 5 | 29 | 46 | 78 | 53 | 50 | 53 | 54 |
| MWh Savings | 1,116 | 57 | 669 | 1,009 | 2,425 | 1,005 | 1,001 | 1,114 | 1,134 |
| T&ST Electric Incentive Costs | $0 | $0 | $0 | $13,200 | $44,000 | $20,000 | $9,582 | $9,582 | $9,582 |
| Non-T&ST Electric Incentive Costs | $822,260 | $75,250 | $354,010 | $724,350 | $860,560 | $592,415 | $659,833 | $710,709 | $715,879 |
| BCR | | | | | | | 9.62 | 9.93 | 10.20 |

## Prescriptive Refrigeration

### Program Description

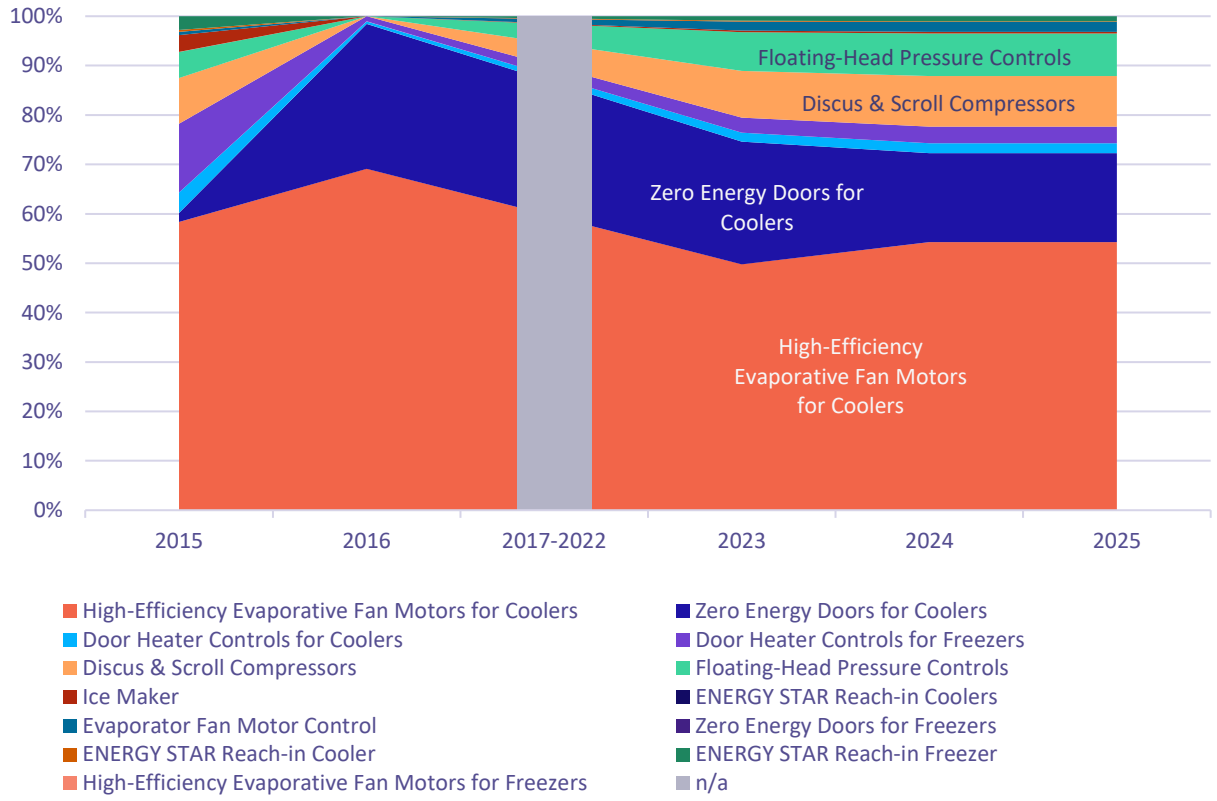
Like Prescriptive Compressed Air, the Prescriptive Refrigeration offerings are included within the larger C&I Prescriptive Initiatives. Key offerings within the Refrigeration end use include Evaporator Fan Motor Controls, Door Heater Controls, Zero Energy Doors, High-Efficiency Evaporative Fan Motors, Floating-Head Pressure Controls, Discus & Scroll Compressors, and ENERGY STAR-rated Coolers, Freezers, and Ice Makers. These measures apply to retrofit and/or new construction project types.

### Program Trends

The analysis relied primarily on the available full year tracking data from FY2015-FY2016, with partial FY2021 data offering additional insight on likely future trends. Refrigeration measures were discontinued from FY2017 through FY2020 because they were not cost-effective using the avoided cost assumptions then in effect. Under the Triennial Plan IV screening assumptions, cost-effective prescriptive refrigeration measures were identified; they were subsequently reintroduced in FY2021. Our current analysis using new avoided costs from AESC 2021 finds that these measures will continue to be cost-effective during FY2023-2025. Given the gap in offerings since FY2016, the analysis took a conservative approach in estimating future savings and budgets for the Prescriptive Refrigeration Program. Project counts, savings per project, and total savings are estimated at levels approximate to previous program years, specifically FY2016.

The chart below illustrates the composition of total electric savings by measure type from FY2015 through FY2025.

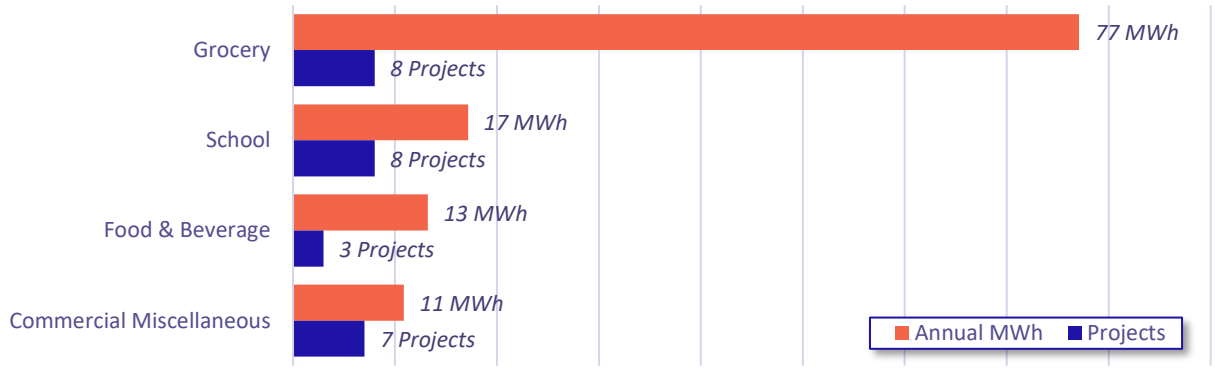
*Figure 3. Percent of Total Prescriptive Refrigeration Savings by Measure Type*




In previous program years, High-Efficiency Evaporative Fan Motors have accounted for over 50 percent of total program savings, with this trend expected to continue through the Triennial Plan V cycle. Zero Energy Doors, Discus & Scroll Compressors, Floating-Head Pressure Controls, and Door Heater Controls are also expected to account for a significant level of Refrigeration savings. Note that Zero Energy Doors savings inputs and assumptions have been updated based on a review of more current source documentation and recommendations by AEG's engineering team, including relevant TRMs and publicly available workpapers. Zero Energy Doors participation was also adjusted slightly downward through the analysis period, anticipating a growing saturation of the technology and reduced savings potential in the market.

The chart below demonstrates the average annual Prescriptive Refrigeration Program savings and projects by market segment.

*Figure 4. Prescriptive Refrigeration Average Savings and Projects by Segment*




The Grocery, School, Food & Beverage, and Commercial Miscellaneous market segments are expected to account for all savings for the Prescriptive Refrigeration Program through the Triennial Plan V cycle. Project participation is relatively consistent across the segments, with the Grocery segment expected to have the highest savings potential and measure units installed on a per project basis.

### Recommendations for Triennial Plan V

Total estimated Triennial Plan V project counts, savings and incentives by fuel type, and program level cost-effectiveness results for the Prescriptive Refrigeration Program are provided in the table below. For reference, the results are compared to historic program performance as sourced from the comprehensive program tracking database. Overall, the Prescriptive Refrigeration offering is expected to be cost-effective with a BCR ratio between 5.51 and 5.95 through the Triennial Plan V cycle, excluding non-incentive program expenditures from the benefit-cost accounting.

*Table 5. Prescriptive Refrigeration Summary*

| | Actual | | | Projected | |
|---|---|---|---|---|---|
| Metric | 2015 | 2016 | 2023 | 2024 | 2025 |
| Total Projects | 30 | 4 | 26 | 26 | 26 |
| MWh Savings | 117 | 108 | 125 | 115 | 115 |
| T&ST Electric Incentive Costs | $0 | $0 | $0 | $0 | $0 |
| Non-T&ST Electric Incentive Costs | $155,520 | $36,075 | $25,159 | $23,844 | $23,844 |
| BCR | | | 5.51 | 5.79 | 5.95 |

## C&I Custom Program

### Program Description

The C&I Custom Program incentivizes energy efficiency projects requiring complex, site-specific engineering analyses, as well as projects involving measures that are not explicitly offered through the C&I Prescriptive Initiatives channel. The C&I Custom Program is designed to facilitate investments in complex energy efficiency and distributed generation projects for Maine's largest energy users. Both new construction and retrofit projects are eligible for the program. The following section details the analysis for electric, natural gas, and thermal energy efficiency projects in the C&I Custom Program. It excludes Distributed Generation and Cannabis projects; these two project-type subcategories within the C&I Custom Program are addressed subsequently in separate sections.

### Program Trends

C&I Custom Program participation and savings are expected to be moderately lower compared to recent program years based on the trend analysis results and feedback from the EMT C&I Custom Program team. Most notably, compressed air projects are anticipated to yield lower savings per project than recent years, where a number of large projects were completed within the Food & Beverage segment. Additionally, low vendor engagement is anticipated to result in a reduction in compressed air projects in the near term.

Lighting projects are expected to be lower than recent trends suggest. The C&I Custom Program recently experienced higher than expected throughput of lighting projects that would typically be processed through C&I Prescriptive Initiatives. This throughput is not expected in future program years. Based on program team feedback, Airless Snow Gun participation was also recalibrated to account for increased market activity around this technology.

### Recommendations for Triennial Plan V

Total estimated Triennial Plan V project counts, savings and incentives by fuel type, and program level cost-effectiveness results for the C&I Custom Program are provided in the table below. For reference, the results are compared to historic program performance as sourced from the comprehensive program tracking database. Across all segment and project types, the C&I Custom Program is expected to be cost-effective with an average BCR between 4.20 and 4.33 through the Triennial Plan V cycle, with non-incentive program costs excluded from the benefit-cost accounting.

*Table 6. C&I Custom Program Summary*

| | Actual | | | | | | Projected | | |
|---|---|---|---|---|---|---|---|---|---|
| Metric | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2023 | 2024 | 2025 |
| Total Projects | 21 | 29 | 32 | 32 | 36 | 24 | 26 | 26 | 26 |
| MWh Savings | 28,101 | 20,395 | 23,815 | 7,968 | 5,793 | 7,012 | 6,713 | 6,713 | 6,713 |
| T&ST Electric Incentive Costs | $1,910,634 | $2,987,566 | $2,550,280 | $54,500 | $11,725 | $1,040,671 | $43,628 | $43,628 | $43,628 |
| Non-T&ST Electric Incentive Costs | $4,059,861 | $4,358,769 | $2,117,968 | $2,165,348 | $952,020 | $740,607 | $1,730,442 | $1,730,442 | $1,730,442 |
| MMBtu Savings (Natural Gas) | 22,496 | 64,626 | 209,082 | 4,967 | 61,766 | 34,119 | 37,628 | 37,628 | 37,628 |
| Natural Gas Incentive Costs | $237,359 | $1,399,325 | $1,988,002 | $242,540 | $1,038,389 | $485,759 | $577,400 | $577,400 | $577,400 |
| MMBtu Savings (Unregulated) | 0 | 211,883 | 45,951 | 34,999 | 19,683 | 28,387 | 4,780 | 4,780 | 4,780 |
| Unregulated Fuel Incentive Costs | $0 | $1,717,678 | $688,369 | $409,591 | $332,465 | $314,986 | $51,743 | $51,743 | $51,743 |
| BCR | | | | | | | 4.20 | 4.25 | 4.33 |

## C&I Custom Distributed Generation

### Program Description

The following section details the analysis for Distributed Generation project types within the C&I Custom Program as described in the section above. Distributed Generation projects are designed to reduce electric energy consumption or distribution system load during peak demand periods from grid-connected customers. This program is applicable to retrofit project types.

### Program Trends

Distributed Generation project throughput is expected to moderately increase in the Triennial Plan V cycle, consisting of Biogas/Anaerobic Digester and Back-Pressure Steam Turbine project types. This is driven largely by recent technological advancements and enhanced local vendor capacity in the micro-steam turbine generator space. Note that for consistency, a single Biogas/Anaerobic Digester project is forecasted through the three-year period, resulting in fractional project counts each year. Two Back-Pressure Steam Turbine projects are estimated for each program year. Based on C&I Custom Program team feedback and the cost-ineffectiveness of historic Natural Gas CHP projects, no future participation is expected for these project types.

Detailed cost-effectiveness results by project type are summarized in the table below. Note that both Biogas/Anaerobic Digester and Back-Pressure Steam Turbine project types are cost-effective as

modeled. The combined BCR is between 3.56 and 3.78 for all projects through the plan cycle, excluding program non-incentive costs from the analysis.

*Table 7. C&I Custom Distributed Generation BCR Detail*

| Component | Benefit-Cost Accounting | Biogas/Anaerobic Digester | Back-Pressure Steam Turbine |
|---|---|---|---|
| Wholesale Electricity | BENEFIT | $3,105,221 | $13,156,066 |
| Wholesale Natural Gas | BENEFIT | $0 | $0 |
| Wholesale Unregulated | BENEFIT | $0 | $9,722,230 |
| Retail Costs | n/a | $5,122,099 | $28,803,986 |
| DRIPE | BENEFIT | $96,773 | $410,003 |
| Generation Capacity | BENEFIT | $323,142 | $1,301,866 |
| Transmission & Distribution | BENEFIT | $2,447,198 | $9,859,207 |
| Non-Energy Benefits | n/a | $0 | $0 |
| Operations & Maintenance | COST | $0 | $0 |
| Incremental Measure Cost | COST | $3,427,094 | $7,589,114 |
| Incentives | n/a | $795,617 | $3,370,837 |
| Non-Incentive Program Expenditures | COST | $0 | $0 |
| **BCR** | | **1.74** | **4.54** |

## Recommendations for Triennial Plan V

Total estimated Triennial Plan V project counts, savings and incentives by fuel type, and program level cost-effectiveness results for the C&I Custom Program's Distributed Generation offering are provided in the table below. For context, the results are compared to historic program participation as sourced from the comprehensive program tracking database.

*Table 8. C&I Custom Distributed Generation Summary*

| | Actual | | | | | | Projected | | |
|---|---|---|---|---|---|---|---|---|---|
| Metric | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2023 | 2024 | 2025 |
| Total Projects | 1 | 3 | 2 | 3 | 1 | 2 | 2.33 | 2.33 | 2.33 |
| MWh Savings | 0 | 7,388 | 1,685 | 4,454 | 546 | 2,575 | 5,255 | 5,255 | 5,255 |
| T&ST Electric Incentive Costs | $0 | $0 | $0 | $436,694 | $0 | $0 | $0 | $0 | $0 |
| Non-T&ST Electric Incentive Costs | $917,265 | $1,215,074 | $489,861 | $632,864 | $149,800 | $1,060,000 | $1,388,818 | $1,388,818 | $1,388,818 |
| MMBtu Savings (Natural Gas) | 0 | 0 | 0 | -22,976 | -3,410 | -1,681 | 0 | 0 | 0 |
| Natural Gas Incentive Costs | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| MMBtu Savings (Unregulated) | 0 | 0 | 0 | 10,473 | 0 | 0 | 10,058 | 10,058 | 10,058 |
| Unregulated Fuel Incentive Costs | $0 | $0 | $0 | $189,563 | $0 | $0 | $0 | $0 | $0 |
| BCR | | | | | | | 3.56 | 3.67 | 3.78 |

## C&I Custom Cannabis

### Program Description

The following section details the analysis for Cannabis projects within the C&I Custom Program, as described in the C&I Custom Program section above. For the purpose of this analysis, Cannabis project types are treated separately from other project types, given the newly granted program eligibility by EMT for licensed cannabis cultivation facilities operating in Maine.[5] However, the Cannabis program structure is consistent with the C&I Custom Program energy efficiency offerings and is applicable to both new construction and retrofit projects. Key end uses considered in this analysis include Lighting and HVAC, which may include both cooling and dehumidification measure types with electricity savings.

### Projected Market Trends

The C&I Custom Cannabis analysis relied on Adult Use Marijuana Program licensing data from the Maine Office of Marijuana Policy and recent EMT cannabis application data to inform future savings, budgets, and projects for the Cannabis segment. First, total monthly and cumulative issued Adult Use licenses were analyzed by tier, defined by square feet of plant canopy as demonstrated in the table below.

*Table 9. Maine Adult Use Cultivation Facility Licenses Issued per Month*

| Tier | 30-Sep-20 | 31-Oct-20 | 30-Nov-20 | 31-Dec-20 | 31-Jan-21 | 28-Feb-21 | Average / Month |
|---|---|---|---|---|---|---|---|
| Tier 1 (<500 ft$^2$) | - | - | - | - | - | - | - |
| Tier 2 (<2,000 ft$^2$) | 3 | 2 | - | - | 2 | - | 1 |
| Tier 3 (<7,000 ft$^2$) | 3 | 1 | 2 | 1 | 3 | - | 2 |
| Tier 4 (<20,000 ft$^2$) | - | 1 | - | - | 1 | 1 | 1 |
| Total Licenses | 6 | 4 | 2 | 1 | 6 | 1 | 3 |
| Cumulative Licenses | 6 | 10 | 12 | 13 | 19 | 20 | n/a |

Next, incremental annual Adult Use licenses were projected for 2023-2025 based on the average issued licenses per month, further disaggregated by facility vintage. The estimated cumulative total cultivation licenses each year resulting from this analysis are shown in the table below.

[5] See Efficiency Maine Trust Board of Trustees Meeting Minutes, October 7, 2020.

*Table 10. Projected Maine Adult Use Cultivation Facility Licenses, 2023-2025*

| Tier | Vintage | 2023 | 2024 | 2025 |
|---|---|---|---|---|
| Tier 1 (<500 ft²) | Existing | - | - | - |
| Tier 2 (<2,000 ft²) | Existing | 32 | 46 | 60 |
| Tier 3 (<7,000 ft²) | Existing | 45 | 65 | 85 |
| Tier 4 (<20,000 ft²) | Existing | 14 | 20 | 26 |
| Tier 1 (<500 ft²) | New | - | - | - |
| Tier 2 (<2,000 ft²) | New | 14 | 14 | 14 |
| Tier 3 (<7,000 ft²) | New | 20 | 20 | 20 |
| Tier 4 (<20,000 ft²) | New | 6 | 6 | 6 |
| **Total** | **Existing** | **90** | **130** | **170** |
| **Total** | **New** | **40** | **40** | **40** |
| **Total** | **Total** | **130** | **170** | **210** |

The above analysis on total estimated cultivation licenses suggests that approximately 30% of Adult Use facilities will participate in the C&I Custom Cannabis Program, assuming an average of 21 total projects each year. Project counts are estimated to normalize after 2025, assuming an initial period of high uptake by newly licensed facilities. Based on recent application data, it is expected that the majority of the initial projects will consist of New Construction Lighting, shifting to a greater share of retrofit-type projects as the cultivation market saturation increases over time. HVAC projects are expected to account for a smaller share of projects and total savings at a lower cost-effectiveness ratio than lighting project types.

### Recommendations for Triennial Plan V

Total estimated Triennial Plan V project counts, savings, incentives, and program level cost-effectiveness results by end use are provided in the table below for the new C&I Custom Cannabis offering. Overall, the program is expected to be cost-effective with an average BCR between 2.06 and 2.16 through the Triennial V Plan cycle.

*Table 11. C&I Custom Cannabis Summary*

| Metric | End Use | 2023 | 2024 | 2025 |
|---|---|---|---|---|
| Projects | Lighting | 21 | 19 | 17 |
| | HVAC – Electric | 2 | 2 | 2 |
| MWh Savings | Lighting | 2,848 | 2,577 | 2,306 |
| | HVAC – Electric | 235 | 235 | 235 |
| Incentive Costs | Lighting | $752,655 | $680,981 | $609,290 |
| | HVAC – Electric | $62,029 | $62,029 | $62,029 |
| BCR | Lighting | 2.23 | 2.31 | 2.38 |
| | HVAC – Electric | 1.01 | 1.05 | 1.08 |
| | **Total** | **2.06** | **2.11** | **2.16** |