



Memo to:
Massachusetts Program Administrators (PA)
Massachusetts Energy Efficiency Advisory Council (EEAC)

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MA22C07-E-CELECTRIF – report memo

1 INTRODUCTION

Electrification plays an important role in the strategy to reduce emissions in Massachusetts. The Custom Electrification track of the Custom program's offering for commercial and industrial (C&I) facilities was created by the Massachusetts Program Administrators (PAs) to support this emission reduction strategy. Although the Custom Electrification program offering is new and not many projects have been installed to date, the PAs expect it to expand in the future.

Because of the specific features of the Custom Electrification track, the PAs, under the guidance of the Massachusetts Energy Efficiency Advisory Council (EEAC), hired DNV to conduct research to support the growth of the offering and provide input for impact factors that will be applicable to the PY2024 plan year. The research consisted of desk reviews of eleven C&I custom electrification projects initiated¹ in PY2022 and PY2023 (by April 30, 2023). The study objectives were as follows:

1. Provide stakeholders with supporting details for developing realization rates to be used when reporting PY2024 results.
2. Provide feedback to PAs on the savings estimation approach based on the projects being reviewed.
3. Gather supporting details for generating methods that will be used to evaluate the program.

Custom electrification projects are defined for this study as projects that replace a fossil fuel with electric energy and are not prescriptive. Custom electrification projects are tracked separately from other custom projects, and each project is identified with an applicable electrification BCR ID.

¹ In this case, "initiated" means the project has been entered into the tracking systems backed up by a study and ex-ante savings estimate, even if preliminary.



2 METHODOLOGY AND APPROACH

This section presents details on the criteria DNV used to screen projects for this research and the desk review method DNV used to assess the evaluated projects.

2.1 Projects population

PAs use measure identification codes to identify projects processed through the Custom Electrification track. These projects are reported either as part of the Custom Gas program and identified using a BCR ID starting with “GC” or reported as part of the Custom Electric program and identified using a BCR ID starting with “EC.” Table 2-1 presents the measures offered through the Custom Electrification track, including the BCR measure ID assigned to each.

Table 2-1. Custom Electrification track – inventory of measures

Core Initiative	Measure	BCR Measure ID
C1a - C&I New Buildings & Major Renovations	Custom – Electrification	EC1a069*
C2a - C&I Existing Building Retrofit	Custom – Electrification HVAC (weatherized)	EC2a115
C2a - C&I Existing Building Retrofit	Custom – Electrification HVAC (weatherization unverified)	EC2a166
C2a - C&I Existing Building Retrofit	Custom – Electrification Process	EC2a167
C2a - C&I Existing Building Retrofit	Custom – Electrification Water Heating	EC2a168
C1a - C&I New Buildings & Major Renovations	Custom – Electrification	GC1a047*
C2a - C&I Existing Building Retrofit	Custom HVAC (Electrification, Verified Wx)	GC2a075
C2a - C&I Existing Building Retrofit	Custom HVAC (Electrification, Unverified Wx)	GC2a077
C2a - C&I Existing Building Retrofit	Custom – Process (Electrification)	GC2a078
C2a - C&I Existing Building Retrofit	Custom – Water Heating (Electrification)	GC2a079

(*) – PAs use CDA Path 1 realization rate (RR) to report savings for measures mapped to those two BCR codes.

The PAs provided an inventory of projects classified through the Custom Electrification track between January 1, 2022, and April 30, 2023. Based on the list provided by each PA, DNV determined that twelve projects comprised the scope of this study. Upon further review, DNV determined that two such projects were canceled, and the other ten are in progress and have not been completed or paid at the time of writing this memo. Table 2-2 presents the inventory of projects processed through the Custom Electrification track.

Table 2-2. Custom Electrification track – inventory of projects

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13500904	GC2a078	Replace 20 existing steam heated presses with 20 electric presses	106,410	-514,391
13720617	EC2a167	M1: Replace DHW propane heater with an electric tankless unit	360*	-4,588
13720617	EC2a166	M2: Replace failed process area electric dehumidifier and operating propane heating with WSHP	1,249*	-6,597
13720617	EC2a166	M3: Break room ASHP	N.D.	3,333
13733795	GC2a077	Install five VRF and eight ASHPs - total cooling capacity of 191.31 ton	38,443	-393,650
13953009**	GC2a078	Replace gas-fired chiller with an electric unit	49,915	-633,062
13699528	GC2a077	Install four ASHPs with a total cooling capacity of 104.64 ton to replace failing heating and cooling systems	14,151	-149,905

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13966580	GC2a077	Install 60-ton heat pump chiller with electric boiler for supplement heat instead of a gas-fired boiler	59,066	-236,466
MA21P00902505	GC2a077	Replace central utility plant with distributed heating and cooling equipment	54,581	-40,299
MA22P01369793	GC2a077	Install heat recovery heat pump (HRHP) to generate hot water	34,260	-171,262
MA22P01424518**	GC2a077	Replace two 130-ton RTUs equipped with HW coils with two 130 air source HPs equipped with supplemental gas heat	15,732	-89,725
1478153	EC1a069	Install two ASHPs - total cooling capacity of 6 ton	153*	16,226

(*) = The replaced fuel is propane.
 N.D. = No data
 (**) = The project was canceled after this study started.

To achieve the objective of the study, DNV reviewed available documentation provided for the projects presented in Table 2-2.

2.2 Desk reviews

The PAs provided available documentation in December 2022 and provided updated documentation in June 2023. Through desk reviews of available project documentation, evaluators performed the following tasks:

- Reviewed project information such as project description, project baseline, and savings calculations.
- Assessed if current classification as custom electrification is appropriate.
- Reviewed the applicant’s savings calculations to assess the proposed and baseline consumption.
- Identified potential differences between ex-ante and ex-post results if projects would be selected for an ex-post evaluation.
- Classified the potential differences as either:
 - **Discrepancies common to all traditional custom projects** – such discrepancies include differences in operation or efficiency that are often unforeseen during the application stage.
 - **Discrepancies specific to electrification projects** – these discrepancies primarily include differences in baseline treatment or eligibility because of fuel switching.
- Compared the predicted impacts to pre-existing billed consumption.
- Assessed potential benefits from conducting ex-ante and/or ex-post M&V.

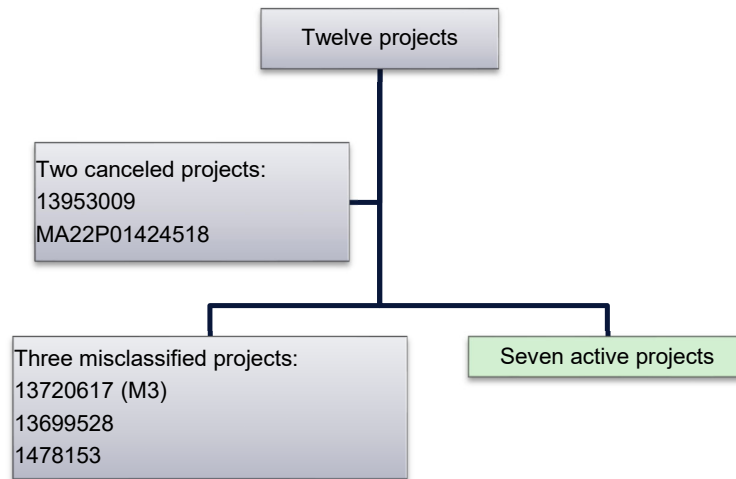
3 FINDINGS AND RECOMMENDATIONS

This section presents the findings and recommendations resulted from reviewing the projects included in this research.

3.1 Findings

Between the start of this research and the time DNV generated this memo, two projects processed through the Custom Electrification track of the Custom program offerings were canceled. DNV assessed the remaining ten active projects and determined that three of them should be processed through the Electrification track of the Prescriptive program offerings. Figure 3-1 presents the disposition of the twelve projects initially selected for research. Specific findings for each of the twelve projects included in this research are provided in APPENDIX A.

Figure 3-1. Projects population and their status



Evaluators did not include the results of the three projects that meet the criteria of the Prescriptive track of the Electrification program because the PAs will ensure that only projects that do not meet the Prescriptive track criteria will be included in the Custom Electrification program.

To forecast the realization rate for the program, evaluators included the results of the seven active Custom Electrification projects.

3.1.1 Realization rate

DNV used the available information and the ex-ante impacts of the seven active projects to calculate a realization rate (RR) to be applied by PAs to Custom Electrification projects when reporting PY2024 programs. Due to the small number of projects, stakeholders decided to use one statewide RR to forecast results for Custom Electrification projects in PY2024.

After carefully reviewing the projects' documentation, DNV determined that, if an ex-post impact evaluation were to be conducted, potential differences between ex-ante and ex-post results would likely have arisen due to discrepancies common to traditional custom projects. No such discrepancies would have been specific to electrification projects. Table 3-1 presents a summary of discrepancies identified during the desk reviews of the seven active projects part of this research.



Table 3-1. Custom Electrification active projects – discrepancies

App Id	Discrepancy
13500904	Load: Implementers assumed 2021 production as typical. During the ex-post evaluation, the typical production could be different.
13720617	Load: Implementers' DHW consumption was likely overestimated. During the ex-post evaluation, typical DHW consumption will likely be reduced.
13720617	Load: Implementers' operating hours are likely overestimated. During the ex-post evaluation, the operating hours will likely be reduced.
13733795	Baseline: Implementers' savings use a blended retrofit and lost opportunity baseline (built in the deemed savings). During the ex-post, the measure will be classified as a lost opportunity with an ISP baseline. Methodology: Implementers' savings are calculated using deemed values. During the ex-post evaluation, the savings will be calculated using temperature-based consumption models for the baseline and installed systems. Load: Implementers' savings are calculated using deemed values. During the ex-post evaluation, the operating profile of the units will likely be different.
13966580	Load: Implementers modeled the DHW load using a proprietary software. During the ex-post evaluation, billed consumption will be available and the DHW load will likely be different.
MA21P00902505	Load: Implementers modeled the load using site-specific details. During the ex-post evaluation, billed and metered consumption will be available and the electric load will likely be different.
MA22P01369793	Load: Implementers modeled the load using site-specific details. During the ex-post evaluation, billed and metered consumption will be available and the electric load will likely be different.

Because an ex-post impact evaluation of Custom Electrification projects is likely to result in the same site-specific discrepancies as the ones identified through an impact evaluation of traditional Custom Gas or Custom Electric projects, DNV used the results of the most recent impact evaluations of Custom Gas and Custom Electric programs to calculate the Custom Electrification RR. DNV synthesized the gas and electric RRs based on the respective gas and electric contributions to the overall absolute site Btu impacts² of all seven active Custom Electrification projects. Table 3-2 presents the seven active projects and their gas and electric impacts' contribution to the overall Btu energy impact.

² Site Btu impacts do not include losses associated with electricity generation, transmission, or distribution.



Table 3-2. Custom Electrification active projects – energy impacts

App Id	BCR Measure ID	Gas Impact (therms)	Electric Impact (kWh)	Gas Impact (MMBtu)	Electric Impact (MMBtu)
13500904	GC2a078	106,410	-514,391	10,638.46	-1,755.17
13720617	EC2a167	360	-4,588	35,991.40	-15,654.90
13720617	EC2a166	1,249	-6,597	124,870.15	-22,509.89
13733795	GC2a077	38,443	-393,650	3,843.39	-1,343.19
13966580	GC2a077	59,066	-236,466	5,905.19	-806.86
MA21P00902505	GC2a077	54,581	-40,299	5,456.80	-137.50
MA22P01369793	GC2a077	34,260	-171,262	3,425.18	-584.37
Total Btu Impacts				29,429.86	-4,665.26
Contribution to Total Btu Impacts (Absolute Values)				86%	14%

Evaluators converted therms to Btu using the following formula: 1 therm = 99,976.1 Btu
 Evaluators converted kWh to Btu using the following formula: 1 kWh = 3412.14 Btu

To accurately evaluate the savings the ex-ante values the Program calculated, the evaluators would require site-specific data that would be gathered using M&V. Because the projects included in this study are not installed and because all potential differences between the ex-ante and ex-post Custom Electrification projects savings are similar to the differences identified through both the Custom Gas and Custom Electric Programs impact evaluations, evaluators determined that using the most recent results of the impact evaluations of Custom Gas and Custom Electric Programs to forecast results for Custom Electrification projects.

To calculate the RR, DNV used the information presented in Table 3-3.

Table 3-3. Custom Electrification RR – inputs

Variable	Value	Notes
MA22C11-G-CUSTGAS	79%	Statewide three-year pooled RR
MA22C02-E-CUSTELEC	83.4%	Statewide non-lighting three-year pooled RR
Custom Electrification – gas contribution to the total impacts	86%	As presented in Table 3-2
Custom Electrification – electric contribution to the total impacts	14%	As presented in Table 3-2

To calculate the RR to forecast results for Custom Electrification projects installed in PY2024, DNV used the following formula:

$$RR (\%) = RR_{MA22C11-G-CUSTGAS} \times 86\% + RR_{MA22C02-E-CUSTELEC} \times 14\% = 79.6\%$$

3.1.2 Assessment of implementers' savings estimation methods

DNV reviewed the available savings calculations for the seven active projects and determined the following:

- The savings estimates for application 137733795 were calculated using deemed values.
- The savings for two projects processed through application 13720617 were calculated using loads that are likely overestimated.
- The savings for the five remaining active applications were calculated using site-specific custom models that incorporated site-specific details at the time of the implementation.



The savings calculations for application 137733795 could be improved through site-specific modeling of baseline and installed consumption values. The loads included in the savings calculations for the projects processed through application 13720617 could be improved using more accurate site-specific information.

3.1.3 Supporting details for generating evaluation methods

During the desk review, DNV determined that Custom Electrification projects feature similar discrepancies as standard custom projects. Custom electrification energy models are based on site-specific details (e.g., load, baseline, and proposed efficiency) and use similar algorithms as standard custom projects. The data collection required to gather site-specific operating details is not different from the data collection methods used to gather site-specific details for standard custom projects. Therefore, based on the limited count of Custom Electrification projects currently available for review, DNV recommends similar evaluation methods as with standard custom projects.

3.2 Recommendations

This section presents DNV's recommendations based on the findings presented in Section 3.1.

Recommendation 1: All PAs should use a **79.6%** RR when Forecasting results of Custom Electrification projects installed in PY2024. Given the small sample size of seven projects reviewed through this study, all stakeholders agreed to use a single statewide RR for this group of measures until there are enough projects to support PA-specific RRs.

Recommendation 2: It is recommended that savings estimates for Custom Electrification projects are calculated using custom models that reflect site-specific operating conditions.

Recommendation 3: It is recommended that all PAs process, through the prescriptive program offering, all projects that meet that program offering's criteria. In addition, the Custom Electrification RR should only be applied to true Custom Electrification projects since it does not represent impacts resulting from the use of deemed savings estimates.

3.3 Considerations

Consideration 1: As the population of Custom Electrification projects is still small, to determine if the current approach for calculating the RR is still appropriate, continue to conduct desk reviews of active projects in batches of ten.

APPENDIX A. PROJECT-SPECIFIC FINDINGS

This Appendix presents specific results for all twelve projects included in this research. Table A-1 to Table A-12 present the summary of each project included in this research.

Table A-1. Application 13500904 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13500904	GC2a078	Replace 20 existing steam heated presses with 20 electric presses	106,410	-514,391

- **Project files:**
 - Facility type: manufacturing
 - Description: replace 20 existing steam heated presses with 20 electric presses; steam is being supplied by two 125 hp dual fuel boilers (gas when OAT>25°F and #2 oil when OAT <25°F)
 - Measure event type: retrofit
 - Measure impacts: 106,410 therms/year and -514,391 kWh/year (as presented in the savings calculations file and project's BCR)
 - Existing annual gas consumption (average of 2019 and 2021): 118,233 therms
 - Electric press energy consumption is based on metered data and normalized to 2022 production
- **Ex-ante assessment:**
 - Measure event type and baseline: retrofit with a dual baseline. First baseline is defined by pre-existing conditions.
 - Correctly classified as custom electrification
 - Assuming 2022 production is typical, evaluated gas and electric energy impacts are the same as the values provided in the project files; 100% RR for gas and for electric

Table A-2. Application 13720617 M1 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13720617	EC2a167	M1: Replace DHW propane heater with an electric tankless unit	360 (propane)	-4,588

- **Project files:**
 - Facility type: wastewater treatment plant
 - Description: replace existing DHW 40-gallon propane heater with an electric tankless DHW heater; baseline is pre-existing conditions
 - The application includes two other measures: lighting upgrades and propane-fueled heating system replacement with water source heat pumps another custom electrification measure
 - Measure event type: retrofit
 - Measure impacts: 360 therms/year (propane) and -4,588 kWh/year (as presented in the TA study report and project's BCR)
 - Propane deliveries in 2021: 5,830 therms

- DHW propane consumption: 30 therms/month (no details to support this value)
- DHW load: 15,660 MBtuh/year or 29,000 gallons/year or 79 gallons/day
- DHW electric consumption: 15,660 MBtuh/year × 3,413 = 4,588 kWh/year

- **Ex-ante assessment:**

- Measure event type and baseline: retrofit with a dual baseline. First baseline is defined by pre-existing conditions
- Correctly classified as custom electrification
- DHW daily consumption for commercial facilities: 1 gallon/person according to ASHRAE
- The DHW load the applicant used to calculate savings is overestimated
- Evaluated DHW load is between 10 and 40 gallon/day or 2,000 MBtuh/year and 7,900 MBtuh/year
- Evaluated propane consumption is between 190 therms/year and 260 therms/year; between 52% and 73% RR
- Load differences are custom-like differences

Table A-3. Application 13720617 M2 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13720617	EC2a166	M2: Replace failed process area electric dehumidifier and operating propane heating with WSHP	1,249 (propane)	-6,597

- **Project files:**

- Facility type: wastewater treatment plant
- Description: replace failed process area electric dehumidifier and operating propane heating with WSHP; baseline is pre-existing for humidifier and heating and ISP for cooling
- The application includes two other measures: lighting upgrades and propane fueled DHW heater replacement with electric instantaneous heater
- Measure event type: retrofit
- Measure impacts:
 - 1,734 therms/year (propane) and 31,807 kWh/year and (as presented in the TA study report)
 - 1,250 therms/year (propane) and -6,597 kWh/year and (as presented in the project’s BCR)
- Propane deliveries in 2021: 5,830 therms
- Proposed system: 3×5 ton rated at 14.7 EER for cooling; cooling and dehumidification hours: 3,607; heating hours: 5,153
- Baseline system: heating efficiency: 80%, humidification efficiency: no data; cooling efficiency: no data

- **Ex-ante assessment:**

- Measure event type: lost opportunity with unique baseline; correctly classified as custom electrification
- Correctly classified as custom electrification

- Baseline system: ISP propane furnace for heating (per 2018 IECC) and 5 ton ISP WSHP for cooling (13 EER per 2018 IECC); ISP as defined in the 2021 MA repository
- Cooling and heating hours shown in the TA study are overestimated (eTRM shows 935 EFLH for cooling and 984 EFLH for heating)
- Absent of savings calculation details, evaluators could not quantify the impact of differences in hours
- Differences in hours are custom-like differences

Table A-4. Application 13720617 M3 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13720617	EC2a166	M3: Break room ASHP	N.D.	3,333

N.D. = No data

- **Project files:**
 - Facility type: wastewater treatment plant
 - Description: break room ASHP
 - The application BCR lists six other measures
 - Measure event type: retrofit
 - Measure impacts: 0 therms/year and 3,333 kWh/year (as presented in the project’s BCR)
 - Proposed system: no data
 - Baseline system: no data
- **Ex-ante assessment:**
 - Absent of any measure details, evaluators could not classify the measure event type
 - Incorrectly classified as custom electrification: based on the measure description, it is likely the ASHP has a capacity less than 150 ton and the measure should not be processed through the Custom track of the Electrification program

This project was incorrectly classified as custom electrification, and DNV did not include its details in the RR calculation.

Table A-5. Application 13733795 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13733795	GC2a077	Install five VRF and eight ASHPs - total cooling capacity of 191.31 ton	38,443	-393,650

- **Project files:**
 - Facility type: K-12
 - Description: install five VRF and eight ASHPs with a total cooling capacity of 191.31 ton; baseline is built-in the prescriptive deemed savings values (blended ISP and existing)
 - Measure impacts: 38,443 therms/year and 393,650 kWh/year and (as presented in the project’s BCR)
 - Savings calculations are calculated using the deemed values provided for the prescriptive measure

- **Ex-ante assessment:**

- Measure event type and baseline: lost opportunity with an ISP baseline (boilers and as defined by the 2021 MA repository)
- Provided gas is available at the site, correctly classified as custom electrification (>150 ton installed at the site)
- Absent of site details, evaluators could not quantify potential baseline and methodological differences in electric energy and gas impact
- Baseline and methodological differences are custom-like differences

Table A-6. Application 13953009 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13953009	GC2a078	Replace gas-fired chiller with an electric unit	49,915	-633,062

This project was canceled and DNV did not include its details in the RR calculation.

Table A-7. Application 13699528 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13699528	GC2a077	Install four ASHPs with a total cooling capacity of 104.64 ton to replace failing heating and cooling systems	14,151	-149,905

- **Project files:**

- Facility type: government
- Description: install four ASHPs with a total cooling capacity of 104.64 ton to replace failing heating and cooling systems and to improve the air quality in the building
- Measure event type: end of life replacement
- Baseline is 96.2% efficient boilers and three dedicated outside air (DOAS) units
- Measure impacts: 14,151 therms/year and -149,905 kWh/year and (as presented in the scoping memo and project’s BCR)
- The energy model is based on site-specific consumption

- **Ex-ante assessment:**

- Measure event type and baseline: lost opportunity with unique baseline; baseline is ISP gas-fired boilers and chillers as defined in 2021 MA baseline repository
- Measure incorrectly classified as custom electrification (<150 ton installed at the site)
- Evaluated gas savings is 16,000 therms/year (for an 85% efficient boiler); 113% RR
- Baseline differences are custom-like differences

This project was incorrectly classified as custom electrification, and DNV did not include its details in the RR calculation.

Table A-8. Application 13966580 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
13966580	GC2a077	Install 60-ton heat pump chiller and electric boiler for supplement heat instead of a gas-fired boiler	59,066	-236,466

- **Project files:**
 - Facility type: manufacturing
 - Description: install 60-ton heat pump chiller and electric boiler for supplement heat instead of a gas-fired boiler
 - Measure event type: new construction
 - Baseline: 85% efficient gas boiler
 - Measure impacts: 59,066 therms/year and -236,466 kWh/year and 59,066 therms/year (as presented in the savings calculations and project’s BCR)
- **Ex-ante assessment:**
 - Measure event type and baseline: lost opportunity with an ISP baseline (as defined by the 2021 MA repository)
 - Correctly classified as custom electrification
 - Load modeled using a proprietary software (TRACE). Absent actual load, evaluators could not quantify impact of load differences in electric energy and gas impacts
 - Load differences are custom-like differences

Table A-9. Application MA21P00902505 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
MA21P00902505	GC2a077	Replace central utility plant with distributed heating and cooling equipment	54,581	-40,299

- **Project files:**
 - Facility type: manufacturing
 - Description: replace central utility plant (two steam boilers and one absorption chiller) with distributed heating and cooling equipment
 - Measure event type: retrofit
 - Baseline: 29 lbs/ton efficient gas chiller
 - Measure impacts: 54,581 therms/year and -40,299 kWh/year (as presented in the Tracksys adjustments file provided by the PA)
 - The energy model was generated using site-specific assumptions and outside air conditions
- **Ex-ante assessment:**
 - Measure event type and baseline: retrofit with pre-existing conditions as baseline
 - Measure correctly classified as custom electrification



- Potential electric load differences are custom-like differences

Table A-10. Application MA22P01369793 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
MA22P01369793	GC2a077	Install heat recovery heat pump (HRHP) to generate hot water	34,260	-171,262

- **Project files:**
 - Facility type: dormitory and music center
 - Description: heat recovery heat pump (HRHP) to generate hot water
 - Measure event type: retrofit
 - Baseline: 87.7% efficient gas boiler
 - Measure impacts: 34,260 therms/year and -171,262 kWh/year (as presented in the savings calculations and project's BCR)
 - The energy model is calibrated to billed consumption
- **Ex-ante assessment:**
 - Measure event type and baseline: add-on with pre-existing conditions as baseline
 - Measure correctly classified as custom electrification
 - Potential electric load differences are custom-like differences

Table A-11. Application MA22P01424518 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
MA22P01424518	GC2a077	Replace two 130-ton RTUs equipped with HW coils with two 130 air source HPs equipped with supplemental gas heat	15,732	-89,725

This project was canceled and DNV did not include its details in the RR calculation.

Table A-12. Application 1478153 – project-specific results

App Id	BCR Measure ID	Description	Gas Impact (therms)	Electric Impact (kWh)
1478153	EC1a069	Install two ASHPs – total cooling capacity of 6 ton	153 (propane)	16,226

- **Project files:**
 - Facility type: manufacturing – major renovation
 - Description: install two ASHPs with a total cooling capacity of 12 ton
 - Measure event type: major renovation
 - Baseline is 96.2% efficient boilers and three dedicated outside air (DOAS) units
 - Measure impacts: 153 therms/year (propane) and -16,226 kWh/year (as presented in the incentive application and project's TA study)
 - The savings are calculated using deemed values.



- **Ex-ante assessment:**

- Measure incorrectly classified as custom electrification (<150 ton installed at the site)
- Measure event type and baseline: lost opportunity with ISP baseline. If propane infrastructure is not present on site, the baseline is ISP ASHPs as defined in 2021 MA baseline repository
- Absent of site details, evaluators could not quantify potential baseline and methodological differences in electric energy and gas impacts
- Baseline and methodological differences are custom-like differences

This project was incorrectly classified as custom electrification, and DNV did not include its details in the RR calculation.