2026 Evaluation, Measurement, and Verification Plan

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1. INTRODUCTION

Evaluation, Measurement, and Verification (EM&V) is an integral and required part of Rhode Island Energy's energy efficiency program planning process. EM&V provides independent verification of impacts to ensure that savings and benefits claimed by Rhode Island Energy through its energy efficiency programs are accurate and credible. EM&V also provides insight into market characteristics and guidance on energy efficiency program design to improve the delivery of cost-effective programs.

Rhode Island Energy's EM&V Plan continues to focus on evaluating Rhode Island projects, markets, and energy efficiency programs while leveraging as many resources as possible from evaluation studies in other jurisdictions to maximize value for ratepayers while minimizing costs. These studies are commissioned by Rhode Island Energy. They are conducted by independent evaluation firms, whose goal is to produce an accurate, complete, and transparent review of Rhode Island's energy efficiency programs and markets. The types of evaluation may include (but not limited to) the following:

- **Impact Evaluations:** Comparisons of claimed savings against actual realized savings using methods such as literature review, billing analyses, engineering methods and onsite data logging as a means of verification.
- **Process Evaluations:** Broad examinations of existing practices, such as program delivery methods, for the purpose of gathering information to draw conclusions about effectiveness of existing processes, highlight best practices, and offer suggestions for future improvements.
- **Market Assessment Studies:** Broad studies aimed at assessing changes in market conditions, such as evolving adoption rates of current energy efficiency technologies.
- **Net-to-Gross Evaluations:** Studies aimed at quantifying the rate of free-ridership and spillover associated with energy efficiency participants and non-participants.

  The free-ridership rate is the percentage of savings attributable to participants who would have installed the measures in the absence of program intervention while spillover includes the effects of two components:

  1. Participants in the program who install additional energy efficient measures outside of the program as a result of participating in the program, and
  2. Non-participants who install energy efficient measures as a result of being aware of the program

The study methodologies and savings assumptions from evaluation studies are documented in the Rhode Island Technical Reference Manual (TRM). The TRM is reviewed and updated annually to reflect changes in technology, baselines, and evaluation results.

The entire evaluation process is managed by Rhode Island Energy in consultation with the Rhode Island Energy Efficiency Resource Management Council (EERMC) and the Office of Energy Resources (OER). The

EERMC and OER follow each study closely and are involved in planning, work plan development, and review of interim work products and study results.

Rhode Island Energy's EM&V framework provides confidence among ratepayers and stakeholders that programs are effective and EM&V activities are independent and objective.

2. Evaluation Studies Applicable to 2026

2.1 Overview

Rhode Island Energy, with input from EERMC and OER, expects to complete fifteen Rhode Island-specific evaluation studies in 2025 that will be applied beginning in 2026 (see Section 2.2 below).[1] The research studies include impact evaluations, process evaluations, and market studies in the residential and commercial and industrial (C&I) sectors, as well as studies that are considered cross-cutting.

A complete list of historical research studies is provided in Section 4 along with a brief summary of the impact of those results in planning Rhode Island Energy's programs. Most of these studies are posted on the EERMC website.[2] Prior year studies that have been superseded by studies completed since the filing of the 2024 Energy Efficiency Plan have been removed from this list.

Section 5 provides detailed descriptions, findings, and recommendations of each of the Rhode Island-specific studies listed in the next section. In addition, selected research studies completed in other regions and/or other jurisdictions, most commonly Massachusetts,[3] are periodically reviewed for applicability to Rhode Island due to similarity with RI Energy's programs, either in the measures offered, or program structure or delivery. In some instances, the results of these other evaluations have been judged by Rhode Island Energy, in consultation with EERMC and OER, to be applicable to Rhode Island Energy's efficiency programs. Rhode Island Energy is adopting the results of these studies in 2026 program planning due to similarity, either in the measures offered, or program structure or delivery

2.2 Recent Rhode Island-Specific studies

The following studies have been completed since the 2025 Annual Plan filing or are expected to be completed before the end of 2025.

Commercial

- Process Evaluation of C&I New Construction Program (RI-24-CX-CINCProcess)
- Process Evaluation of C&I Custom Approach (RI-24-CX-CustProcessEval)

[1] Quantitative studies expected to be completed after approximately August 15, 2025, will not be used in program planning

[2] https://eec.ri.gov/data-and-publications/ then scroll to "Program Evaluation Studies."

[3] Prior to May 2022, Narragansett Electric Company was part of National Grid, which has affiliates in Massachusetts, and which facilitated the leveraging of evaluation studies.

- C&I New Construction Baseline Study (RI-22-CX-Codes)
- Market Characterization and Impact Evaluation of C&I Lighting Controls (RI-24-CE-Lighting)
- Impact Evaluation of PY2023 Custom Gas Installations (RI-24-CG-CustGasPY23)
- Impact Evaluation of PY2023 Custom Electric Installations (RI-24-CE-CustElecPY23)
- C&I Industry Standard Practice Research (RI-25-CX-ISPResearch)
- C&I Lighting Impact Evaluation (RI-25-CE-CommLighting)

Residential and Income-Eligible

- Residential Market Research - Moderate Income Study (RI-24-RX-MarketResearch)
- Income Eligible Single Family Impact Evaluation (RI-24-RX-IncEligible)
- Multifamily Custom Measure Impact Evaluation (RI-24-XX-MultiFamCustom)
- Residential Market Research (RI-25-RX-MarketResearch)
- Residential Products Impact and Market Effects Evaluation (RI-25-RE-Products)
- EnergyWise & Income-Eligible Multifamily Impact Evaluation -Prescriptive-focus (RI-25-RX-MultiFam)
- Residential & Income-Eligible QA/QC Process Evaluation (RI-25-RX-QAQCProc)

Cross-cutting

- None at this time

2.3 Recent Studies Adopted from Other Jurisdiction

Residential

- Massachusetts and Connecticut Heat Pump Metering Study

3. 2026 Planned Evaluation Studies

3.1 Overview

This section describes planned studies that focus on areas of interest to Rhode Island Energy's energy efficiency programs and build on the deep history of evaluation studies commissioned by Rhode Island Energy over numerous years. To optimize the use of evaluation resources, where programs are similar in program delivery and the population served with those offered in Massachusetts, Rhode Island Energy will consider avenues to participate in Massachusetts studies.[4]

[4] Despite no longer being part of National Grid, Rhode Island Energy plans to stay abreast of Massachusetts evaluation activities that may be beneficial and applicable in Rhode Island and follow through as appropriate.

3.2 Summary

Table 2 lists evaluation studies that Rhode Island Energy plans to conduct in 2026 to inform the 2027 Annual Plan and future planning cycles. Barring changes to the 2027 Annual Plan schedule, studies that will be incorporated into the Annual Plan must be completed by August 2026. The proposed budget for evaluation study expenditures in 2026 is approximately $2.6 million ($2.0 million for electric and $0.6 million for gas), including staffing costs. The proposed budget for EM&V comprises approximately 2.6% of the total portfolio budget in 2026.

Study labeling codes take the general form shown in Table 1. For example, RI-17-CG-CustGas refers to the Custom Gas Evaluation Study that started in 2017 in the commercial sector for gas, while RI-18-RX-IESF refers to the evaluation study started in 2018 of the income eligible single-family program for electric and gas.

Table 1. Study Labeling Code Format

[State]	–	[Year Study Conducted]	–	[Sector]	[Fuel]	–	[Keyword]
RI		22 23 24		R = residential C = commercial X = cross sector	E = electric G = gas X = electric & gas		

Table 2. Planned Evaluation Studies in 2026[5]

	(a)	(b)	(c)	(d)	(e)
	Sector	**Study Code**	**Type**	**Affected Programs**	**Study Name**
1	C&I	RI-25-CE-CustElecPY24 RI-26-CE-CustElecPY25	Impact	C&I Elec	Impact Evaluation of Custom Electric Installations (continuing & starting)
2	C&I	RI-25-CX-ISPResearch	Impact	C&I	Commercial and Industrial Industry Standard Practice Research (continuing)
3	C&I	RI-26-CE-CINonLtgPresc	Impact	Large C&I Electric	Large C&I Electric Non-Lighting Prescriptive Impact Evaluation
4	C&I	RI-26-XX-CodeComp	Impact	All	Code Compliance Initiative
5	C&I	RI-26-CX-SBSImpact	Impact	Small C&I Electric & Gas	Small Business Services Program

[5] NOTE: Table 2 contain a list of possible studies for 2026 that are very preliminary and have not been fully vetted yet. Budget constraints and other considerations will likely reduce the number and/or scope of studies listed here that make it into the final 2026 EM&V Plan.

					Non-lighting Impact Evaluation
6	C&I	RI-26-CG-GasPrescImpact	Impact	Large C&I Gas	Large Commercial Gas Prescriptive Impact Evaluation
7	C&I	RI-26-CG-CustGasPY24/25	Impact	Large C&I Gas	Impact Evaluation of PY2024/2025 Custom Gas Installations (Starting)
8	Residential	RI-25-RX-RMSS	Market	Residential	Residential Mechanical Systems Study
9	Residential	RI-26-RE-AppRecycImpact	Impact	Appliance Recycling	Residential Appliance Recycling Impact Evaluation
10	Cross Cutting	R_-26-XX-MeasResearch	Market	All	Measure Research
11	Cross-Cutting	RI-26-XX-CodeComp	Impact	All	Code Compliance Initiative

The evaluation pathway for pilots, demonstrations, and assessments is based on each effort's scale, budget, scope, and the availability of external data. Rhode Island Energy's EM&V team will provide guidance beginning at the Plan stage for all pilots, demonstrations, and assessments to ensure design and data collection are suitable to allow for effective evaluation. In cases where an independent evaluation is appropriate, the EM&V team will run the evaluation. For guidelines on the stakeholder review process and which pilots, demonstrations, and assessments will receive an independent evaluation, please see Attachment 7. The evaluation will follow the same established evaluation framework used in evaluations of established programs. This includes management of the independent evaluation vendor by Rhode Island Energy's EM&V team in consultation with the EERMC and OER. See Attachment 7 for further details on pilots, demonstrations, and assessments.

The EM&V team will follow Rhode Island Energy's standard procurement policy that cuts across programs to achieve the lowest cost procurement of required external services while enabling Rhode Island Energy to minimize administrative costs, deliver on program commitments, and meet time-sensitive regulatory deadlines. Rhode Island Energy's standard procurement policy is supported and enforced by a stand-alone internal procurement function. Contract characteristics below certain thresholds are eligible for sole sourcing while contract characteristics above thresholds require competitive procurement - unless it can be demonstrated to the procurement organization that securing multiple bids is not possible or practical.

Final reports along with graphical executive summaries will be made publicly available upon completion of the evaluation studies. All complete graphical executive summaries will be provided as a handout at EERMC meetings and posted on the EERMC website.[6]

NOTE: Sections 3.3 and 3.4 contain a list of possible studies for 2026 that are very preliminary and have not been fully vetted yet. Budget constraints and other considerations will likely reduce the number and/or scope of studies listed here that make it into the final 2026 EM&V Plan.

3.3 Commercial and Industrial Planned Studies

RI-25-CE-CustElecPY24 – Impact Evaluation of PY2024 Custom Electric Installations (continuing)

RI-26-CE-CustElecPY25 – Impact Evaluation of PY2025 Custom Electric Installations (starting)

The objective of this impact evaluation is to provide verification of electric energy savings estimates for a sample of non-lighting custom electric projects through site-specific inspection, metering, and analysis. The results of this study will be used to determine the realization rates for custom electric energy efficiency offerings based on installations from 2024. This will continue 'rolling' evaluation efforts, where each year will evaluate roughly 1/3 of the number of sites needed for a full sample and results will be combined with results from the previous two years, which will keep the realization rates updated yearly. This study began in summer 2025 and will continue into 2026 at which time a new cohort from 2025 will be studied.

RI-25-CX-ISPResearch - Commercial and Industrial Industry Standard Practice Research (continuing)

The objective of this study is to better understand what the baseline or industry standard practice (ISP) is for certain technologies. There are a few potential areas of investigation: One area is air compressors, where many projects use load/no load as the baseline, but VFD (variable frequency drive) compressors are ever more common and could be standard practice. We will be studying compressor ISP jointly with Massachusetts. The second potential area is a cannabis grow facility ISP study, particularly with regards to horticulture lighting. This is an emerging area in the state with great potential for efficiency. However, since it is emerging, there are varying views about what baseline practices are. These questions could be resolved with an ISP study. Other areas under consideration are variable frequency drives and changes related to adoption of the IECC 2024 building code. Rhode Island Energy will determine the specific area(s) for investigation in 2025.

RI-26-CE-CINonLtgPresc – Large C&I Electric Non-Lighting Prescriptive Impact Evaluation

Non-lighting prescriptive measures have not been studied since 2016, so an impact evaluation to verify the savings achieved and to update measure savings parameters and/or the realization rates may be warranted.

[6] https://EERMC.ri.gov/data-and-publications/ scroll down to Program Evaluation Studies

RI-26-CX-SBSImpact – Small Business Services Program Non-Lighting Impact Evaluation

Rhode Island Energy is still assessing the need for and interest in this study to assess the savings parameters and/or realization rates for the non-lighting custom and prescriptive measures in the Small Business Services Program.

RI-26-CG-CIGasImpact – Large Commercial Gas Prescriptive Impact Evaluation

Rhode Island Energy is still assessing the need for and interest in this study to assess the savings parameters and/or realization rates for the Large Commercial Gas prescriptive measures, both retrofit and new construction.

RI-26-CG-CustGasPY24/25 - Impact Evaluation of PY2024/2025 Custom Gas Installations (Starting)

The objective of this impact evaluation is to provide verification of natural gas energy savings estimates for a sample of custom gas projects through site-specific inspection, metering, and analysis. The results of this study will be used to determine the realization rates for custom gas energy efficiency offerings based on installations from 2024 and 2025. For the first time we are skipping the stand-alone evaluation of the PY2024 participants and will instead evaluate two years of participants for program years 2024 and 2025. These results will then be combined with the PY2023 analysis completed in 2025. This study will begin in summer 2026 and will continue into 2027. After that, the next cohort for gas will not begin until 2028 for the 2026 and 2027 program years.

3.4 Residential and Income-Eligible Planned Studies

RI-25-RX-RMSS – Residential Mechanical Systems Study (continuing)

This study began in 2025 but will be finalized in 2026. The study will provide Rhode Island Energy (RI Energy) with an updated characterization of the heating, cooling, and water heating equipment (mechanical systems) in the state's housing stock. In addition, this study aims to assess the home types and characteristics of electrically heated homes and provide RI Energy with tools to identify and target such homes for energy efficient upgrades.

RI-26-RE-AppRecycImpact – Residential Appliance Recycling Impact Evaluation

Rhode Island Energy is still assessing the need for and interest in this study to assess the savings parameters and/or realization rates for the Appliance Recycling Program.

3.5 Cross-sector or Other Planned Studies

RI-26-XX-CodeComp - Code Compliance Initiative

The last Code Compliance Study was conducted in 2017, so an updated study of compliance and possible savings is warranted, for both C&I and Residential.

RI-26-XX-MeasResearch – Measure Research

Rhode Island Energy is still assessing the need for and interest in this study. Secondary research would be conducted to find out what other utilities are doing with regard to several possible C&I and/or residential topics. For example, what C&I lighting will look like in 2027 and how we can reach that market; what other states/program administrators (PAs) are doing instead of lighting, both electrification and non-electrification; what C&I and residential measures (both gas and electric) are available and which can be ramped up most effectively; what is the best delivery mechanism; and what are the barriers that implementation faces. Primary research with PAs or program vendors may be conducted.

4. Historic Evaluation Studies

This section contains a list of all historic studies still being used by Rhode Island Energy as the basis of claimed savings in the 2024 Program Plan and in the Technical Reference Manual. An at-a-glance summary in *Table 3* shows the studies by program, followed by the more detailed *Table 4* summarizing the relevant studies. These studies are available through the EEC, the PUC, and Rhode Island Energy.

Table 3. Historic Evaluation Studies

	(a)	(b)	(c)	(d)	(e)	(f)
	Sector/Program	Impact	Market	Process	Policy	For 2025 studies, year of prior study
1	**Residential**					
2	**EnergyWise Multifamily**			2020		
3	*Custom*	2024				
4	*Prescriptive*	2025				2020
5	**EnergyWise Single Family**	2020		2020		
6	*Weatherization*	2023				
7	**Home Energy Reports**	2020		2017		
8	**Residential Consumer Products**		2025			2018
9	*Appliance Recycling*	2021				
10	*Non-Recycling and Refrigeration*	2025				2019
11	**Residential HVAC**					
12	*Heat Pumps*	2025	2024			2016
13	**Residential New Construction**	2023				
14	*Code Compliance*	2017				

15	**Income Eligible**					
16	**Income Eligible Multifamily**			2020		
17	*Custom*	2024				
18	*Prescriptive*	2025				2020
19	**Income Eligible Single Family**	2024				
20	**Commercial & Industrial**					
21	**Large C&I New Construction**			2024		
22	*Code Compliance*	2017				
23	*Baseline*		2024			
24	**Large C&I Retrofit**					
25	*Commissioning*			2025		None
26	**Large C&I Custom**			2024		
27	*C&I Custom Electric*	2025				2024
28	*C&I Custom Gas*	2024				2023
29	*C&I Custom CDA*	2018				
30	**Large C&I ISP**	2025				2023
31	**Large C&I Prescriptive**					
32	*C&I Lighting Controls*	2025	2025			None
33	*C&I Lighting*	2025	2022			2021
34	*C&I Heat Pump*		2025			2020
35	*C&I Other*	2023				
36	**Small Business Direct Install**			2023		
37	*Electric*	2020				
38	*Gas*	2019				
39	**C&I Multifamily**					
40	*Custom*	2024				
41	*Prescriptive*	2025				2020
42	**Cross Cutting/Other**					
43	*Avoided Cost*				2024	
44	*C&I Free Ridership/Spillover*		2024			
45	*Economic Impacts*	2023				
46	*Gas Peak Demand*	2021				
47	*Measure Life*	2024				
48	*Non-Participant*		2022			
49	*Piggybacking*			2020		
50	*Potential Study*		2020			
51	*RASS*		2025			2018

52	*Resi & Income Eligible QA/QC*			2025		None
53	*Resi Participation*		2022			
54	*TMY3 to TMYx*	2025				None
55	*Workforce Analysis*		2023			

Table 4. Completed Evaluation Studies Applicable in 2025

	2024		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
1	Cadeo, Comprehensive Measure Life Review II, September 2024	The study reviewed prescriptive measure life assumptions and ensured they aligned with recent research, Rhode Island evaluation studies, and industry best practices. The study also recommended measure life updates when appropriate.	All
2	Illume, Electric Resistance Heat Characterization Study (Draft)	The study identified the needs of homeowners and landlords with electric resistance heat and ways to overcome barriers heat pump adoption	Res
3	DNV, Rhode Island Swarm Thermostats – Technology Evaluation Pilot. March, 2024	The evaluation calculated the impacts of installing the Swarm Logic control technology at four sites equipped with HVAC units controlled by Wi-Fi thermostats.	C&I
4	Synapse Energy Economics, Avoided Energy Supply Components in New England 2024 Report. February, 2024	The study developed new estimates of avoided costs associated with energy efficiency measures for program administrators throughout New England States. Rhode Island used the avoided costs of energy, capacity, natural gas, fuel oil, environmental costs and demand reduction induced price effects resulting from this study for 2025 program planning.	All
5	Tetra Tech, 2022 Commercial and Industrial Programs Free-Ridership and Spillover Study, January 2024	The study updated free-ridership and spillover rates for the C&I program.	C&I
6	DNV, Impact Evaluation of PY2022 Custom Gas Installations, August 2024	The study updated realization rates for custom electric projects, as part of a rolling effort that incorporated results from PY2020, PY2021, and PY2022.	C&I
7	DNV, Impact Evaluation of PY2022 Custom Electric Installations, August 2024	The study updated realization rates for custom gas projects, as part of a rolling effort that incorporated results from PY2020, PY2021, and PY2022.	C&I

8	DNV, ISP Recommendations: Ultra Low Temperature Freezers, September 2023 (Leveraged from MA)	The study investigated industry standard practice for ultra-low temperature freezers and updated the baseline from the results.	**C&I**
9	Cadeo, Non-Residential Technical Reference Manual Review, October 2022 (Leveraged from MA)	The study performed a comprehensive review of the non-residential prescriptive measures in the MA TRM and recommended updates for key parameters.	**C&I**
10	Steam Traps and Boiler Efficiency Research Phase II, November 2022 (Leveraged from MA)	The study conducted research of steam trap projects practices and boiler plant efficiency measurements to improve project accuracy.	**C&I**
11	Guidehouse, MA Residential Building Use and Equipment Characterization – Phase 7, December 2023 (Leveraged from MA)	The study collected saturation, characterization, and usage behavior data for major appliances, HVAC equipment, and electronics in MA homes. The study updated residential load shapes based on the findings.	**Res**
12	DNV, MA Impact Shape Final, February 2024 (Leveraged from MA)	The study updated commercial loadshapes for end uses such as refrigeration, compressed air, food service, water heating, etc.	**C&I**
13	NMR Group, Residential Heat Pump NEIs Study, July 2023 (Leveraged from MA)	The study updated NEIs for heat pump related measures.	**Res**
	2023		
	(a) **Study**	(b) **Impact Descriptions**	**(c)** **Sector**
14	Cadeo & NMR, Residential New Construction and Code Compliance Study, May 2023	The study updated the User Design Reference Home baseline measure level efficiencies, observed how building practices have changed over time, and identified the level of code compliance.	Res
15	Cadeo, Comprehensive Measure Life Review, August 2023	The study reviewed prescriptive measure life assumptions and ensured they aligned with recent research, Rhode Island evaluation studies, and industry best practices. The study also recommended measure life updates when appropriate.	Cross-Cutting
16	Cadeo, EnergyWise Single Family Weatherization Impact Evaluation, August 2023	The study updated the gross energy savings for EWSF's weatherization measures, for both primary and secondary heating and cooling. The evaluation accounted for energy savings associated with natural gas, electricity and/or delivered fuels (oil, propane, and wood).	Res
17	DNV, Impact Evaluation of PY2021 Custom Gas Installations, August 2023	The study updated realization rates for custom gas projects, as part of a rolling	C&I

		effort that incorporated results from PY2019, PY2020, and PY2021.	
18	DNV, Impact Evaluation of PY2021 Custom Electric Installations, August 2023	The study updated realization rates for custom electric projects, as part of a rolling effort that incorporated results from PY2019, PY2020, and PY2021.	C&I
19	DNV, Rhode Island Commercial Food Service Equipment ISP, August 2023	The study characterized industry standard practice in RI for commercial kitchen equipment by incorporating the 2023 appliance standards and prevalence of used equipment in the marketplace.	C&I
20	Cadeo, Small Business Program Process Evaluation, August 2023	The study assessed program activities and identified opportunities for program enhancement for the small business program.	C&I
21	BW Research Partnership, Rhode Island Energy Workforce Development, August 2023	The study quantified the current energy efficiency workforce in RI, identified needs and opportunities for the future, highlighted workforce development gaps and potential solutions, and identified potential roles for RI Energy in supporting energy efficiency workforce development in RI.	Cross-Cutting
2022			
(a)	**Study**	(b) **Impact Descriptions**	(c) **Sector**
22	DNV, C&I Lighting Market Characterization and Adjusted Measure Life Study, August 2022	The study calculated adjusted measure lives for non-residential custom and prescriptive lighting measures for RI.	C&I
23	DNV, Impact Evaluation of PY2020 Custom Gas Installations, August 2022	The study updated realization rates for custom gas projects, as part of a rolling effort that incorporated results from PY2018, PY2019, and PY2020.	C&I
24	DNV, Impact Evaluation of PY2020 Custom Electric Installations, August 2022	The study updated realization rates for custom electric projects, as part of a rolling effort that incorporated results from PY2018, PY2019, and PY2020.	C&I
25	DNV, Rhode Island Cannabis Industry Standard Practice, August 2022	The study identified industry standard practices for the medical market cannabis industry with a focus on horticultural lighting, lighting controls, cultivation area HVAC, HVAC controls, and dehumidification.	Cross-Cutting
26	Cadeo, Nonparticipant Market Barriers Study, June 2022	The study characterized the customer groups not participating in Rhode Island Energy's energy efficiency programs, determined barriers to	Cross-Cutting

		participation, and identified opportunities to engage nonparticipants.	
27	Cadeo, Participation and Multifamily Census Study, June 2022	The study identified trends and drivers in participation and the likelihood of nonparticipants opting into a residential program in the future. The study also developed an algorithm to identify multifamily buildings suitable for RIE's multifamily programs.	Cross-Cutting
28	DNV, O&M and Non-O&M NEI Study (MA20X10-B-CIOMNEI), October 2021	This study developed O&M and non-O&M non-energy impacts (NEIs) across all C&I measures and programs.	C&I
2021			
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
29	DNV, Impact Evaluation of PY2019 Upstream Lighting Program, July 2021	This study updated prospective realization rates and impact factors for the C&I Upstream lighting program. The values reflect decreasing ISR values for Screw-in products and increasing ISRs for linear products. These will be applicable for 2022, 2023, and beyond.	C&I
30	DNV, Franchise Controls Deemed Savings Study, March 2021 (Leveraged study from MA)	This study recommended a deemed savings value of 5,344 kWh for a building automation system (BAS) measure that controls small individual food service appliances.	C&I
31	DNV, Upstream Lighting NTG, June 2021 (Leveraged study from MA)	This study updated NTG values for upstream lighting technologies and adjusted the values down significantly due to heavy free ridership.	C&I
32	DNV, Ground Source Heat Pump eTRM Measure Review, March 2021 (Leveraged study from MA)	This study recommended that GSHPs be broken out from ASHPs into their own category offering to allow the program to attribute savings, baselines, and lifetimes in a more defensible way. It also recommended the GSHP lifetime be updated to 25 years.	C&I
33	DNV, Energy Management System ISP Study, 2021 (Leveraged study from MA)	This study identified industry standard practices for energy management systems, with a particular focus on criteria for determining when an existing system should be considered failed.	C&I
34	Guidehouse, RCD Virtual Assessment Study, March 2021 (Leveraged study from MA)	This study found that in-service rates are lower for self-installed measures. Rhode Island leveraged results from this study to update the in-service rates for instant savings measures in the EnergyWise Single Family program.	Res
35	Guidehouse, Comprehensive TRM Review, April 2021 (Leveraged study from MA)	This study updated savings assumptions and effective useful lives (EUL) of several residential measures in MA. Rhode Island adopted the results from this study to update savings and EUL assumptions for several measures in the residential programs.	Res

36	NMR, Low Income Multifamily Health NEI (TXC 50), July 2021 (Leveraged study from MA)	This study produced NEI values associated with energy efficiency programs in Income Eligible, Multifamily buildings. A total of 4 health and safety NEIs were monetized as part of this study. Arthritis, Thermal Stress (cold), Home Productivity, and reduced fire risk were all found to have Annual Per unit values of $49, $1,426, $49, and $13, respectively, totaling $1536. These values are allocated to all applicable air sealing, insulation, and heating measures.	Res
37	NMR, Residential New Construction Quick Hit NEI Study (MA20X14-RNCNEI), September 2021 (Leveraged study from MA)	The study produced updated NEI values for heating related measures offered through the Residential New Construction program. The total Heating NEIs for RNC went from an Annual Per Unit value of $117 to $142.33 due to increases in thermal comfort and noise reduction related impacts.	Res
38	NMR, Residential Downstream/Upstream Products Net-to-Gross Study, June 2021 (Leveraged study from MA)	This study yielded prospective net-to-gross ratios and retrospective and prospective in-service rates for products supported by the Residential Retail or Residential Coordinated Delivery Initiatives. Rhode Island adopted the results from this study to update 2022 planning assumptions for ENERGY STAR Products program.	Res
39	NMR, Low-rise Residential New Construction Net-to-Gross Study, July 2021 (Leveraged study from MA)	This study yielded prospective and retrospective net-to-gross ratios for measures supported by the Low Rise Residential New Construction offering. Rhode Island adopted the results from this study to update 2022 planning assumptions.	Res
40	NMR, Renovations and Additions Net-to-Gross Study, July 2021 (Leveraged study from MA)	This study yielded prospective and retrospective net-to-gross ratios for measures supported by the Renovations and Additions Residential New Construction offering. Rhode Island adopted the results from this study to update 2022 planning assumptions.	Res
41	Guidehouse, Impact Analysis of Residential Wi-Fi Thermostats, September 2021 (Leveraged study from MA)	This study updated savings assumptions for programmable and Wi-Fi thermostats delivered through retail and direct install channels. Rhode Island adopted the draft results from this study to update savings for programmable and Wi-Fi thermostat measures in the residential HVAC and retrofit programs.	Res
42	Net-to-Gross Research of RCD and Select Products Measures (MA20R28)	For RI, the study applied new NTG results for the residential gas and electric HVAC programs.	Res
	2020		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
43	Cadeo, Impact and Process Evaluation of EnergyWise Single Family Program, September 2020.	This study updated gross savings, in-service rates, and net-to-gross ratios for the EnergyWise Single Family program.	Res

44	Cadeo, Impact and Process Evaluation of EnergyWise Multi Family Program, September 2020.	This study updated gross savings, realization rates, in-service rates, and net-to-gross ratios for the EnergyWise Multi Family program.	Res
45	Cadeo, Impact and Process Evaluation of Income Eligible Multi Family Program, September 2020.	This study updated gross savings, realization rates and in-service rates for the Income-Eligible Multi Family program.	Res
46	Cadeo, Impact Evaluation of Home Energy Reports Program 2017-2019, September 2020.	This study updated realization rates for the Home Energy Reports program.	Res
47	DNV GL, Impact Evaluation of 2017 Small Business Electric Installations, March 2020.	The study updated electric non-lighting impact factors for the Small Business initiative. RI leveraged the MA study of this initiative.	C&I
48	DNV GL, C&I Measure Life Study, March 2020.	This study informed Effective Useful Lives and Remaining Useful Lives for key C&I energy efficiency measures, updating the commercial boiler EUL. RI leveraged the MA study of this initiative.	C&I
49	The Brattle Group, The Road to 100% Renewable Energy by 2030 in Rhode Island, December 2020.	This study provided a high-level economic analysis of the key factors that will guide RI to meet 100% of the state's electricity demand by 2030 through renewable generation and efficiency. The study updated economic impact multipliers to quantify the benefits of future EE programs in the Rhode Island economy.	All
	2019		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
50	NMR, RLPNC 17-3 Advanced Power Strip Metering Study (Revised). March 2019. (Leveraged study from MA)	This study yielded recommended gross electric savings and realization rates from advanced power strips offered through the Home Energy Services and upstream programs. Rhode Island adopted the result from this study to inform savings for Tier 1 and Tier 2 advanced power strips offered through its Retail Products program.	Res
51	Navigant, Wi-Fi Thermostat Impact Evaluation Secondary Research Study. September 2018. (Leveraged study from MA)	This study recommended annual savings values of 31 therms for combustion heating, 97 kWh for electric resistance heating, and 64 kWh for central air conditioning for Wi-Fi thermostats. Rhode Island adopted these results to update savings assumptions for Wi-Fi thermostats in HVAC and residential retrofit programs.	Res
	2018		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
52	Energy & Resource Solutions, Two-Tier Steam Trap Savings Study, April 2018.	This MA study recommends a two-tier approach for prescriptive steam traps. It calculates deemed savings to be 8.4 MMBtu/yr. for system operating	C&I

		pressure ≤15 psig, and 35.6 MMBtu/yr. for system operating pressure is >15 psig.	
53	DNV GL, Impact Evaluation of PY 2015 Rhode Island Commercial and Industrial Upstream Lighting Initiative. September 2018.	The study updated impact factors for the Upstream Lighting initiative. The RI study leveraged the MA study of the same initiative.	C&I
54	DNV GL, Rhode Island Commercial & Industrial Impact Evaluation of 2013-2015 Custom Comprehensive Design Approach. October 2018.	The study updated the realization rate for the CDA initiative. The RI study leveraged the MA study of the same initiative.	C&I
55	DNV GL, Impact Evaluation of PY2016 RI C&I Small Business Initiative: Phase I. June 2019.	The study updated impact factors for the Small Business initiative. The RI study leveraged the MA study of the same initiative.	C&I
56	DNV GL, Prescriptive C&I Loadshapes of Savings. March 2018.	This MA study pooled known sources of 8,760 savings loadshapes in an interactive tool to estimate general prescriptive measure loadshapes over customizable time periods.	C&I
57	NMR, Rhode Island Residential Appliance Saturation Survey. October 2018	This study developed an inventory of residential end-uses, including appliances, consumer electronics, heating and cooling equipment, thermostats, water heating, and building characteristics. Findings from this study will be used to inform program planning and support future potential studies in Rhode Island.	Res
58	Cadeo, Rhode Island Impact Evaluation of Income Eligible Services Single Family Program, August 2018	This study produced deemed savings values and realization rates for electric and gas participants using billing and engineering analysis. Rhode Island Energy adopted the deemed savings values in the 2019 program plan.	Res
59	Navigant, MA Residential Electric Loadshape and Baseline Study (Heating and Cooling Season report). July 2018. (Leveraged study from MA)	This study collected saturation, penetration, and usage behavior data for all major electric and gas appliances in Massachusetts. Rhode Island adopted the end use load shapes determined by this study.	Res
60	NMR/DNV GL, TXC29 Market-Rate Rental Property NEI Study (Phase 1), March 2018	This study identified and analyzed NEIs associated with market-rate multifamily properties.	Res
	2017		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
61	ICF, 2017 Rhode Island Residential Code Savings Analysis	This study found that the average Rhode Island home could attain annual electric savings of 3,690 kWh and gas savings of 10 MMBtu if it fully complied with the state's building energy code.	Res
62	NMR, 2017 Rhode Island Code Compliance Enhancement Initiative Attribution and Savings Study	The study found residential and commercial attribution factors of 23% and 46%, respectively, which were used along with study results on average savings as well as construction activity projections to calculate the CCEI's projected savings from 2018-2020.	C&I

63	DNV-GL, Gas Boiler Market Characterization Study Phase II: Final Report, March 2017	This study updated C&I condensing boiler savings estimates.	C&I
64	DNV-GL, MA45 Prescriptive Programmable Thermostats, March 2017	This study updated programmable thermostat deemed gas savings for C&I programs.	C&I
	2016		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
65	DNV-GL, Impact Evaluation of 2014 RI Prescriptive Compressed Air Installations Final Report, July 2016	This study yielded an energy realization rate for prescriptive compressed air compressors, dryers, and EE accessories.	C&I
66	DNV-GL, Impact Evaluation of 2012 National Grid-Rhode Island Prescriptive Chiller Program Final Report, July 2016	This study yielded an energy realization rate for prescriptive chillers.	C&I
67	Cadmus Group; Large Commercial and Industrial On-Bill Repayment Program Evaluation, September, 2016	National Grid commissioned this study to evaluate the financing component of the large commercial and industrial (LCI) energy efficiency program. Cadmus evaluated the program design, performance, and sustainability; the overall market for the program; and the program's penetration of that market to date.	C&I
68	DNV GL, Stage 2 Results—Commercial and Industrial New Construction Non-Energy Impacts Study—Final Report, prepared for the Massachusetts Program Administrators, March 2016	The purpose of this study was to quantify the dollar value of participant NEIs for C&I NC projects completed in 2013, and to estimate gross NEIs per unit of energy savings resulting from NC electric and gas measures separately.	C&I
	2014		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
69	DNV GL, 2014, Impact Evaluation of National Grid Rhode Island C&I Prescriptive Gas Pre-Rinse Spray Valve Measure	The evaluation examined the gas and water savings associated with the installation of reduced-flow pre-rinse spray valves. The results are based on site measurements from MA and RI facilities. The final gross gas and water savings are 11.4 MMBtu and 6,410 gallons per spray valve respectively.	C&I
	2012		
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
70	TetraTech, Final Report – Commercial and Industrial Non-Energy Impacts Study, (prepared for Massachusetts Program Administrators), June 29, 2012	This report provides a comprehensive set of statistically reliable non-energy impact (NEI) estimates across the range of C&I prescriptive and custom retrofit programs offered by the MA electric and gas Program Administrators (PAs). The analytical	C&I

		methods used allow this report's findings to be applicable to RI.	
2011			
	(a) **Study**	(b) **Impact Descriptions**	(c) **Sector**
71	KEMA, Inc., C&I Unitary HVAC Loadshape Project Final Report, Prepared for the Regional Evaluation, Measurement, and Verification Forum, June 2011	This study produced updated diversity and equivalent full load hours for unitary HVAC measures using end use metering.	C&I
72	NMR/TetraTech, MA Special and Cross Sectors Studies Area, Residential and Low-Income NEI Evaluation, August 2011	This study quantified NEIs that apply to residential and low-income programs.	Res

5. 2025 Evaluation Study Findings

5.1 Rhode Island-Specific Studies

RI-23-CX-FRSO – 2022 Commercial and Industrial Programs Free-Ridership and Spillover Study

Type of Study: Impact Evaluation
Conducted by: Tetra Tech
Date Evaluation Conducted: January 2024

Evaluation Objective and High-Level Findings:
The primary objective of this study was to quantify the net impacts of Rhode Island Energy's 2022 commercial and industrial electric and natural gas upstream and downstream energy efficiency programs. The study conducted surveys with a sample of 2022 program participants, market actors, and distributors within the gas and electric commercial and industrial programs to determine the free-rider and spillover participants.

The following table presents the results of the study:

Table 5. C&I Free-Ridership and Spillover Results Summary

	(a)	(b)	(c)	(d)	(e)
	Program Type and Delivery	**Free-Ridership**	**Participant Spillover**	**Non-Participant Spillover**	**Net to Gross Ratio**
1	Large C&I Upstream Prescriptive Measures	32.9%	7.7%	0.0%	74.8%
2	Large C&I Downstream Prescriptive Measures	17.4%	4.3%	2.6%	89.6%
3	Large C&I Custom Measures	18.6%	7.5%	0.0%	88.9%
4	Small Business	19.9%	1.5%	1.0%	82.5%
5	**Overall**	**24.4%**	**4.7%**	**0.7%**	**81.0%**

Programs to which the Results of the Study Apply:
The results of this study are applicable to the C&I programs.

Evaluation Recommendations included in the Study:
The study recommends adopting the NTG ratios in Table X for the electric and gas C&I programs.

Explain Whether or Not Rhode Island Energy (RIE) Decided to Adopt Recommendations from the Study:
RI Energy is adopting recommendations from this study.

Savings Impact: The adoption of the NTG ratios from the study will impact the net savings for the C&I programs.

5.2 Massachusetts Study Summaries

MA23C02-B-ISPREPOS – ISP Recommendations: Ultra-Low Temperature Freezers
Type of Study: Impact
Evaluation Conducted by: DNV
Date Evaluation Conducted: September 2023

Evaluation Objective and High-Level Findings:
The primary objective of this study was to investigate the industry standard practice for the purchase of ultra-low temperature freezers. The ISP study found that the Energy Star ratings assumed a freezer operating at -75°C whereas the most common freezer operating temperature if -80°C. Thus, the savings should be adjusted to account for the most common freezer operating temperature.

Programs to which the Results of the Study Apply:
The results of this study are applicable to the Large C&I New Construction Ultra Low Temperature Freezer measure.

Evaluation Recommendations included in the Study:
The ISP study recommends updating the savings for the ultra-low temperature freezer measure based on the different freezer temperatures that are the basis for the ISP and Energy Star performance. The ISP study also recommends that the minimum performance threshold for the ultra-low temperature freezer measure to follow the new Energy Star threshold once it is finalized in 2024. Once that is updated, it is recommended to update the ISP baseline performance to the current Energy Star threshold of 0.55 kWh/day/ft^3.

Explain Whether or Not Rhode Island Energy (RI Energy) Decided to Adopt Recommendations from the Study:
RI Energy is adopting the savings update for the Ultra Low Temperature Freezer measure. RI Energy will continue to review the updated Energy Star standard once it is finalized and update the savings accordingly.[7]

Savings Impact:
The measure savings for the Ultra Low Temperature Freezer will decrease by approximately 10%.

[7] ENERGY STAR Version 2.0 Laboratory Grade Refrigerators and Freezers Draft 2 Specification