

NYSERDA Commercial Tenant Impact Evaluation (2016–January 2021)

Final Report

Prepared for:

New York State Research and Development Authority

Albany, NY

Dana Nilsson
Senior Project Manager, NYSERDA

Prepared by:

DNV

New York, NY

Maura Nippert
Principal Engineer

NYSERDA Record of Revision

Document Title
NYSERDA Commercial Tenant Impact Evaluation July 2022

Revision Date	Description of Changes	Revision on Page(s)
July 2022	Original Issue	Original Issue

Notice

This report was prepared by DNV in the course of performing work contracted for and sponsored by the New York State Energy Research and Development Authority (hereafter “NYSERDA”). The opinions expressed in this report do not necessarily reflect those of NYSERDA or the State of New York, and reference to any specific product, service, process, or method does not constitute an implied or expressed recommendation or endorsement of it. Further, NYSERDA, the State of New York, and the contractor make no warranties or representations, expressed or implied, as to the fitness for particular purpose or merchantability of any product, apparatus, or service, or the usefulness, completeness, or accuracy of any processes, methods, or other information contained, described, disclosed, or referred to in this report. NYSERDA, the State of New York, and the contractor make no representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned rights and will assume no liability for any loss, injury, or damage resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this report.

NYSERDA makes every effort to provide accurate information about copyright owners and related matters in the reports we publish. Contractors are responsible for determining and satisfying copyright or other use restrictions regarding the content of reports that they write, in compliance with NYSERDA’s policies and federal law. If you are the copyright owner and believe a NYSERDA report has not properly attributed your work to you or has used it without permission, please email print@nyserda.ny.gov.

Information contained in this document, such as web page addresses, are current at the time of publication.

Table of Contents

NYSERDA Record of Revision	i
Notice	ii
1 Executive Summary.....	1
2 Introduction	3
2.1 Program Description.....	4
2.1.1 Participation Tracks.....	4
2.2 Summary of Evaluation Objectives and Methods	6
3 Results and Recommendations.....	7
3.1 Results	7
3.1.1 Measure Adoption Rate Review and Summary	7
3.1.2 Analysis Results and Observations.....	9
3.2 Recommendations	18
4 Methods	20
4.1 Data Collection	20
4.1.1 On-Site M&V Visits.....	21
4.1.2 Billing Analysis	21
4.1.3 Desk Reviews	22
4.2 Calculating MAR Adjustment Factor and SRR	22
4.2.1 Expanding MAR to the Population	23
4.3 Program Satisfaction and Barriers to Measure Installation	24
4.3.1 Barriers to Energy Efficiency Measure Installation.....	24
4.3.2 Satisfaction with the Energy Efficiency Measure Installations	25
Appendix A: MAR Survey Instrument	27
Appendix B: Advance Letter.....	37

List of Figures

Figure 3-1. Self-reported energy (kWh) measure adoption curves by program offering	7
Figure 3-2. Impact evaluation and MAR survey response coverage of program population.....	8
Figure 3-3. Distribution of tenant space-level savings as a percent of baseline consumption (kWh savings/kWh consumption per sq. ft)	15
Figure 3-4. Distribution of tenant space-level realization rate impacts of savings discrepancies .	18
Figure 4-1. Evaluation methods for CRE tenants by measure complexity.....	21
Figure 4-2. Satisfaction with energy efficiency measures.....	26

List of Tables

Table 2-1. Evaluation objectives and main research questions 6

Table 3-1. Impact evaluation and MAR survey response coverage of program population 9

Table 3-2. MAR adjustment factor results: Overall and by program track 10

Table 3-3. Savings realization rate by evaluation method/rigor..... 11

Table 3-4. Savings realization rate: Overall and by program track..... 12

Table 3-5. Gross kWh savings derived from tracked savings, MAR adjustment factor, and SRR 12

Table 3-6. Gross positive MMBtu savings derived from tracked savings, MAR adjustment factor, and SRR..... 13

Table 3-7. Gross positive MMBtu savings by fuel type..... 13

Table 3-8. Gross negative MMBtu savings derived from tracked savings, MAR adjustment factor, and SRR..... 14

Table 3-9. Gross negative MMBtu savings by fuel type..... 14

Table 3-10. Gross total MMBtu savings derived from tracked savings, MAR adjustment factor, and SRR..... 15

Table 3-11. Discrepancy definitions..... 16

Table 3-12. On-site verification savings discrepancies 17

Table 3-13. Program recommendations from impact evaluation 19

Table 4-1. Barriers to energy efficiency measure installation 24

1 Executive Summary

This report presents the results of the Commercial Tenant Program impact evaluation, including the verified gross savings realization rate (VGS RR), self-reported measure adoption rate (MAR) adjustment factor, and savings discrepancy analysis. The evaluation sample universe covers Commercial Tenant Program participants from the program's inception in 2016 through January 2021. The impact evaluation was carried out¹ using the results of two consecutive Commercial Tenant Program Measure Adoption Rate (MAR) Surveys,² through which respondents were asked whether they had installed the energy-saving measures recommended after program-sponsored audits. For the measures that respondents had reported installed, the impact evaluation conducted on-site measurement and verification (M&V), billing analysis, and deemed savings “desk reviews” to calculate measure savings.

This evaluation yielded the following primary findings:

1. The evaluated estimate of the overall MAR for program kWh savings is 54% and for program MMBtu (all fuels) savings is 26%. This is the “peak” of the cumulative MAR for which the evaluation collected sufficient data to reliably estimate MAR and is the value recommended for NYSERDA use in estimating impacts.
2. The evaluation discovered inaccuracies in some tenants' responses to the MAR Survey, with on-site M&V finding that some of the measures that tenants reported installed were either not installed or were installed at lower numbers than the reported total. The on-site M&V also found that additional spaces had been completed after basic or generic audits. This necessitated a correction factor, or MAR adjustment factor, of 76%.
3. In general, program savings estimates were found to be reasonable estimates of savings. For installed measures in the Commercial Tenant Program. This evaluation finds a VGS RR of 96% and 88% for program kWh and MMBtu (natural gas, heating oil, and LPG (propane)) savings, respectively. The first-year gross savings of 29,391,377 kWh, installed in 51,013,659 square feet of audited space, equates to 0.58 kWh per sq ft. When applied using MMBtu gross savings of 20,202 MMBtu, this equates to 396 Btu per sq ft.
4. For a subset of impact evaluated tenant spaces for which baseline energy consumption was available, verified gross savings as a percent of standard baseline tenant space

¹ This CRE impact evaluation was conducted in several phases, immediately after the conclusion of the first MAR Survey in January 2020. The evaluation was paused in early March 2020 due to the widespread effects of the COVID-19 pandemic. Data collection recommenced in August and ran through October 2020. A second phase of data collection ran from April 2021 through February 2022.

² The MAR Survey was conducted in two phases, from August through December 2019 for savings installed from program inception in 2016 through April 30, 2019, and again from April through July 2021 for savings installed through January 2021.

- electric consumption was found to be 4.8%. Baseline energy consumption was available for tenant spaces representing 3,851,882 kWh, or 25% of estimated savings for recommended measures.
5. In aggregate, the evaluation found that the program is moderately increasing MMBtu on-site fuel usage due to HVAC interactive effects (net increase of 1,640 MMBtu), primarily with lighting upgrades. As a tenant space-focused program, there are limited opportunities to save MMBtu as the major MMBtu-using end uses (heating and water heating) tend to be central systems outside of tenant space control.

In this evaluation, verified gross savings (annualized first-year energy savings) are the product of program tracked savings coupled with the MAR adjustment factor and the VGS RR. Electric savings identified through the evaluation represent a verified gross savings of 29,391,377 kWh. These savings represent 39% of estimated savings for recommended measures.

Estimates of program savings (gross, tracked) were provided by program contractors/energy auditors who provided energy-saving measure recommendations. Adjustments to program savings resulting in the VGS RR were found to be predominantly due to program contractor audits overestimating energy use density, which resulted in some overestimates of savings. As evidenced by the 96% VGS RR, there were relatively few significant adjustments, with most adjustments resulting in very modest changes. Overall, the evaluation found the energy savings estimates from the program to be reasonable.

2 Introduction

This report presents the results of the Commercial Tenant Program Impact Evaluation and Self-Reported Measure Adoption Rate (MAR) Survey. The impact evaluation provides a verified gross savings realization rate (VGS RR), MAR adjustment factor, and savings discrepancy analysis. The impact evaluation was carried out using the results of the Commercial Tenant Program Measure Adoption Rate (MAR) Survey, in which respondents were asked whether they had installed the recommended energy-saving measures after program-sponsored audits. For the measures that respondents had reported installed, the impact evaluation conducted on-site measurement and verification (M&V), billing analysis, and deemed savings “desk reviews” to calculate measure savings.

The evaluation sample universe covers Commercial Tenant Program participants from the program’s inception in 2016 through January 2021. Data collection for the Commercial Tenant Program MAR Survey and Impact Evaluation occurred over a few distinct timeframes. The first round of data collection activities (Round 1) was conducted from August through December 2019 for customers who participated in the Commercial Tenant Program MAR Survey from program inception in 2016 through April 30, 2019. The first round of impact data collection occurred from August through October 2020. The impact evaluation data collection was paused in early March 2020 due to the widespread effects of the COVID-19 pandemic and resumed in late August 2020 with COVID-19 safety precautions in place.³ A second round of MAR data collection activities (Round 2) was conducted in April through July 2021, to capture new program participants through January 2021 and additional measure installations from prior survey respondents. While response rates for primary data collection activities were affected due to the COVID-19 pandemic, the study team utilized best practices to ensure highest possible rigor and observed all

³ In February 2020, the world began facing the COVID-19 pandemic. This pandemic has had and will have profound impacts on the world in general and NYS specifically. In March 2020, non-essential businesses in NYS (and elsewhere) made dramatic shifts in how they do their business including requiring employees to work from home or ceasing operations altogether. The Governor closed schools and universities, and hospitals and clinics increased their capacity.

In the months following March 2020, NYS has worked hard to contain the spread of COVID-19. Quarantine mandates, mask requirements, social distancing directives, and vaccine distribution have helped reduce the number of positive cases and have prevented unnecessary deaths in NYS. In July 2020, all regions of NYS reached phase four of re-opening. Schools and universities have re-opened, with the understanding that students, faculty, and staff follow certain safety guidelines. As of May 19, 2021, NYS has lifted most capacity restrictions on businesses, venues, and gatherings.

safety mandates established by NYS and NYSERDA. Impact evaluation of these tenant spaces launched in July 2021 and concluded in February 2022.

2.1 Program Description

NYSERDA's Commercial Tenant Program supports commercial office tenants, commercial landlords (building owners and managers), and architecture/engineering firms in improving interior office and leased spaces through thoughtful design, proactive maintenance and operations, and actionable plans to reduce energy consumption in existing buildings. The program is designed to demonstrate to tenants a cost-effective approach to energy-efficient high-performance office space while supporting building owners with a cost-effective and replicable approach to delivering those spaces. At any point in the lease cycle, the program defrays the cost of identifying energy saving opportunities and helps plan the implementation of energy efficiency measures in leased office spaces. The program covers up to 100% of the consultant's eligible professional service fees.

Through PON 3308: CRE Tenant Program,⁴ NYSERDA encouraged building owners, managers, and tenants to work together to achieve energy efficiency in commercial buildings by providing energy modeling and services via cost-share. This initiative tested the ability to standardize energy efficiency packages for tenant spaces within commercial buildings.

Since its inception in 2016, the PON has been modified three times: in 2017, 2018, and April 2019 (updated name to Commercial Tenant). The impact evaluation covers projects completed from program inception through January 2021 and incorporates the final program design in place at the completion of the evaluation.

2.1.1 Participation Tracks

For the projects that occurred within the impact evaluation timeframe, the Commercial Tenant program offered two participation tracks based on the existing conditions of the office space and the tenants' goals. Within each track, different energy efficiency packages were offered as described below (per 2018 revisions to PON 3308, Clean Energy Fund Investment Plan Commercial Chapter).

High-Performance Track: Offering participants the option of developing an energy efficiency package for their office space, the high-performance track consists of a detailed energy analysis

⁴ <https://www.nyserd.ny.gov/All-Programs/Programs/Commercial-Tenant-Program>

or energy model, a list of recommended energy efficiency and optimization measures, and a detailed financial analysis. This package presents various options or combinations of measures, taking into consideration their interactive effects, incremental cost impacts, and energy savings over the length of the lease. The track is intended for participants interested in “above code” solutions that will drive best practices in the industry.

Funding: NYSERDA provides up to 50% of the costs to generate the energy efficiency package, capped at \$50,000 per energy efficiency study. If a tenant or landlord installs recommended measures from the package, NYSERDA will reimburse energy consultants for the remaining technical assistance costs if installation criteria are met. Measure adoption for high-performance track projects must occur within two years of the purchase order issuance date.

Basic Track (100% cost share capped at \$5,000 per assessment per office space): This track is best suited for tenants who are interested in gaining a general understanding about their energy efficiency status and identifying ways to improve their energy and environmental performance. The approach consists of a basic energy efficiency assessment to identify energy saving opportunities, benchmarking, goal setting, and other relevant activities to help the tenant plan for next steps in their energy efficiency improvement process. This track is appropriate for tenants who may not have much time remaining on their lease, tenants occupying a small- to medium-sized office space, or tenants who wish to take a more incremental approach to implementing energy efficiency measures in their office space.

2.2 Summary of Evaluation Objectives and Methods

The evaluation objectives and main research questions for this study are outlined in Table 2-1.

Table 2-1. Evaluation objectives and main research questions

Objective	Evaluation Question(s)	Data Source(s) & Analytic Method(s)
Participant self-reported program and individual measure adoption rate (MAR)	Which measures have been adopted that have resulted from program activities (e.g., modeling, energy efficiency package, energy audit)?	Survey of participating building owners, managers, and tenants by evaluation contractor, program data
	What is the number of building owners and managers offering building-specific packages?	
	How many tenant spaces and buildings are participating?	
	What is the square footage of participating tenant spaces?	
Participant self-reported energy savings	What are the direct energy savings attributable to program activities and associated with the participant self-reported measure adoption?	
Evaluated verified gross energy impacts	What is the annualized first year evaluated gross energy savings based on electric (kWh) and fuel savings (MMBtu) at the customer site?	On-site or remote M&V using on-site logging, custom engineering assessments, and/or billing analysis of a representative sample
	VGS RR	
Precision	The sample designs are expected to meet a target of 10% precision level for program verified gross energy savings at 90% confidence	N/A

The evaluation sample universe covers Commercial Tenant Program participants from the program’s inception in 2016 through January 2021. Evaluation M&V methods for each project were identified based on the estimated energy savings of projects. Large (100,000+ kWh installed) and medium (10,000–100,000 kWh) savings projects were recruited for on-site M&V (high rigor), while projects with less than 10,000 kWh in estimated energy savings were evaluated using deemed savings through engineer desk reviews (low rigor). Billing analysis (medium rigor) was originally planned for medium-savings projects, but for most associated tenant space billing data was ultimately not available or not useful due to master-metering at a building, rather than at tenant space level. As a result, medium-savings projects were recruited for on-site M&V.

3 Results and Recommendations

3.1 Results

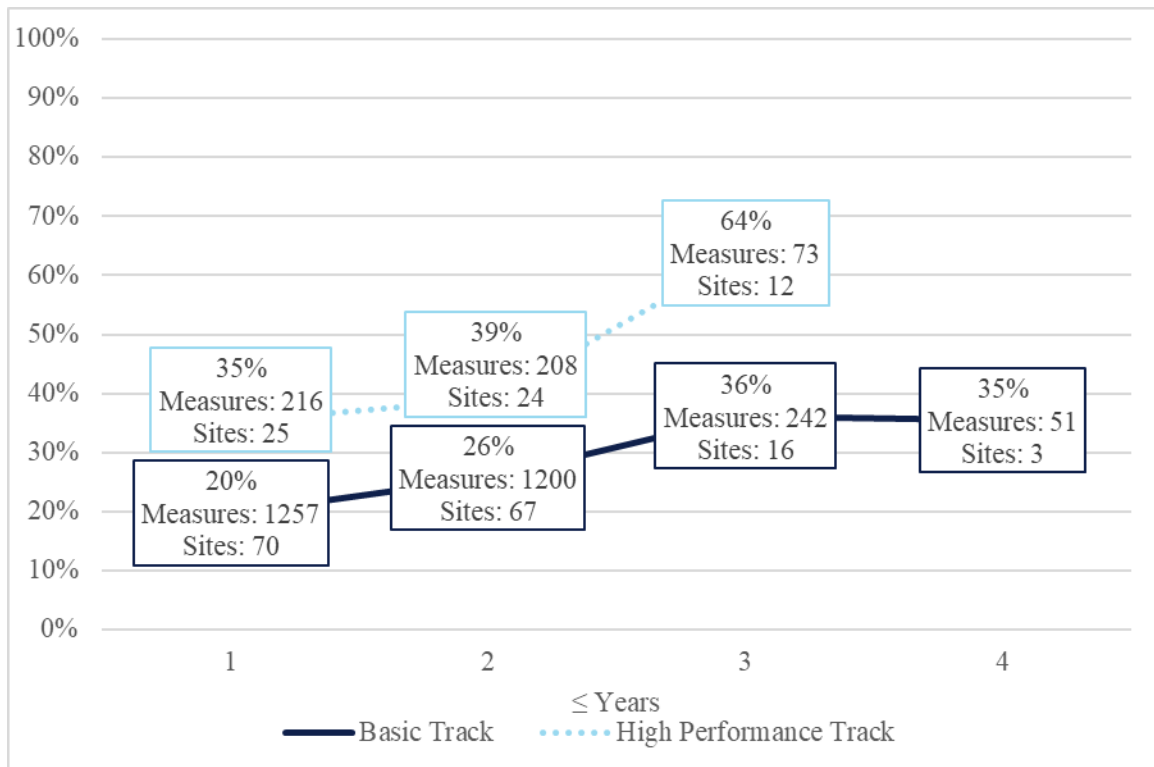
This section details the quantitative results and observations of the data collection and analysis activities. Overall, the study found the savings estimates from the program to be reasonable.

3.1.1 Measure Adoption Rate Review and Summary

The evaluated estimate of the overall MAR for the program is 54.4%. This is the “peak” of the cumulative MAR for which the evaluation collected sufficient data to reliably estimate MAR and is the value recommended for NYSERDA to use in estimating impacts. This finding is based on self-reports of measure installation and estimated energy savings in program tracking data from the program’s inception in 2016 through January 31, 2021.

In June 2017, the structure of the program options shifted from a suite of programs to two options: Basic Track projects with a level 1 audit of up to \$5,000 and High-Performance Track projects with a higher incentive amount. Figure 3-1 shows the MAR for Basic Track and High-Performance Track projects, including legacy projects that were part of the former project categories.

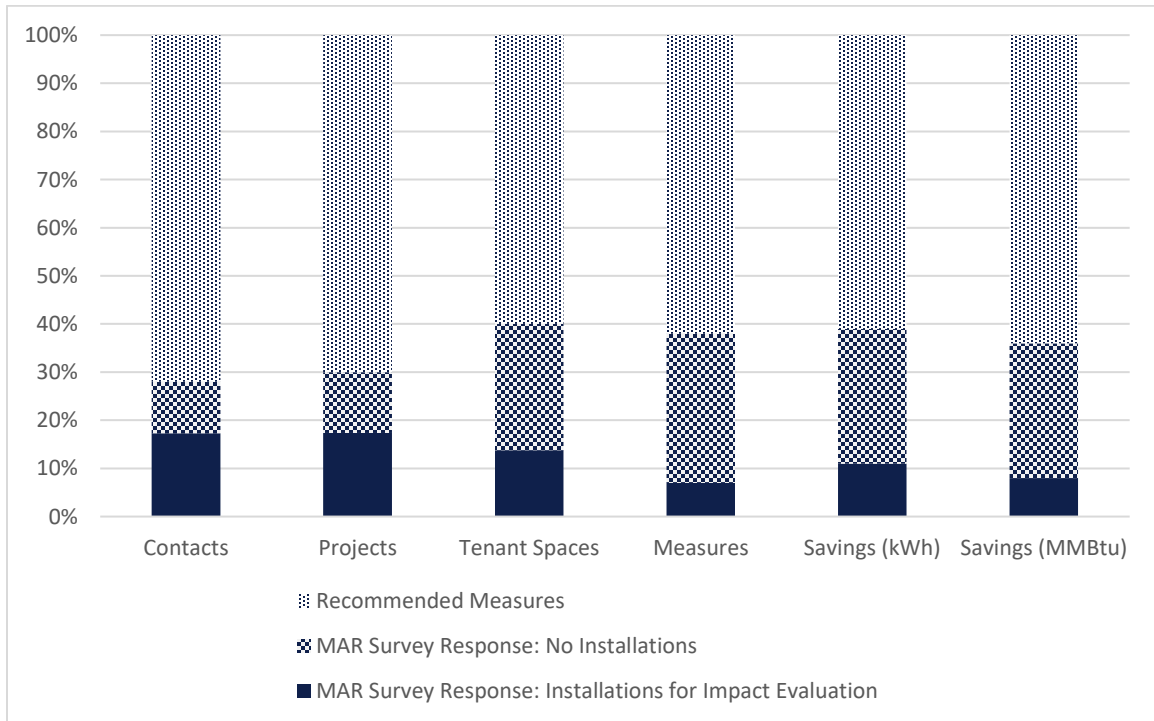
Figure 3-1. Self-reported energy (kWh) measure adoption curves by program offering



For MMBtu savings, the evaluation found an overall MAR of 26%. This reflects the MAR for MMBtu savings across all applicable fuel types⁵ and does not apply to increases in use associated with electric saving measures. MMBtu saving recommendations are less common (821 measures) than electric saving measures (3,859 measures) in the program as the primary MMBtu-using end uses (heating and water heating) are central systems and not in tenant spaces.

Program records showed recommendations for 3,955 measures at 726 tenant spaces, with 51,013,659 square feet of associated space. There was overlap, as many projects included multiple tenant spaces owned, leased, or managed by the participating tenant or landlord firm: 3,955 measures at 726 tenant spaces were a part of 380 projects with 335 contacts. Figure 3-2 shows the percentage of each grouping reached by the MAR survey and the confirmed installed measures (and associated tenant spaces, contacts, and projects, and savings) included in the impact evaluation. Table 3-1 provides the related counts and savings values per grouping.

Figure 3-2. Impact evaluation and MAR survey response coverage of program population



⁵ Applicable MMBtu fuel types include natural gas, heating oil, and LPG (Propane).

Table 3-1. Impact evaluation and MAR survey response coverage of program population

Group	Recommended Measures (Population)	MAR Survey Respondents		Self-Reported Installations for Impact Evaluation	
		Count/Value	Percent	Count/Value	Percent
Contacts	335	93	28%	58	17%
Projects	380	115	30%	66	17%
Tenant Spaces	726	291	40%	100	14%
Measures	3,955	1,488	38%	270	7%
Savings (kWh)	74,600,432	29,394,082	39%	7,853,070	11%
Savings (MMBtu)	66,167	24,018	36%	5,326	8%

While response rates for primary data collection activities were affected due to the COVID-19 pandemic, the study team utilized best practices to ensure highest possible rigor and observed all safety mandates established by NYS and NYSERDA. The MAR survey response was 28% (by contact), which equates to 39% of recommended program savings. 100% of measures reported as installed in the MAR Survey were assessed in the impact evaluation, covering 11% of recommended program savings.

3.1.2 Analysis Results and Observations

This impact evaluation followed the MAR survey and went beyond its methods, offering a unique opportunity to verify the MAR results. This section explains how this verification led to the MAR adjustment factor, provides the MAR adjustment factor, and provides the results of the VGS RR.

3.1.2.1 MAR Adjustment Factor

Through on-site verification, some projects were determined to have a different number of measures installed than the number of measures claimed in MAR survey responses. Some on-site verification visits found that tenant spaces had only installed a portion of the claimed measures, while others installed none of the measures. In a few cases, measures reported in the MAR survey as not installed were found in on-site visits to have been installed. Further, some respondents installed recommended measures at additional spaces not included in the program, resulting in verified installation rate that exceed 100% for the program participating tenant space.

The MAR adjustment factor is part of the overall realization rate for installed savings. The adjustment covers the difference between what survey respondents report via phone or web survey and what engineers find when they visit the site (or learn in a detailed phone follow-up

interview). To accommodate this discrepancy, the evaluation calculated a MAR adjustment factor for kWh saving measures of 76%. The MAR adjustment factor was 100% for many tenant spaces, but for the tenant spaces with adjustments, the results varied from zero to more than 2,000%. This wide variation resulted in worse than anticipated relative precision for the factor.

Table 3-2. MAR adjustment factor results: Overall and by program track

Group	MAR Adjustment Factor	±	Relative Precision	Sample Size (n)		Population Size (N)	
				Measures	Contacts	Measures	Contacts
Program Overall - kWh	76%	34%	44%	205	50	1,473	93
Program Offering - Basic Track - kWh	102%	4%	4%	145	34	1,257	70
Program Offering - High Performance Track - kWh	62%	40%	64%	60	17	216	25
Program Overall - MMBtu	100%	0%	0%	37	16	566	115
Program Offering - Basic Track - MMBtu	100%	0%	0%	15	7	407	73
Program Offering - High Performance Track - MMBtu	100%	0%	0%	22	9	159	45

3.1.2.2 Savings Realization Rate

For small projects, the evaluation savings were determined using a deemed savings approach. Larger projects were subject to on-site M&V. As Table 3-3 shows, the savings realization rate (SRR) for small projects utilizing the deemed approach was 98%. However, the 140 measures subject to this approach were much smaller in average savings than the 56 measures that received on-site M&V or the nine measures that received a billing analysis, which have SRRs of 96% and 5%, respectively. Due to the larger size of the combined 65 measures and associated projects that

received on-site M&V or a billing analysis, the overall SRR was the same as the on-site alone, at 96%.⁶

Table 3-3. Savings realization rate by evaluation method/rigor

Group	Percent kWh Savings	SRR	±	Relative Precision at 90% confidence	Sample Size (n)	
					Measures	Contacts
Overall	100%	96%	8%	9%	205	50
Billing Analysis ⁷ (IPMVP Option C: Whole Facility)	0%	5%	0%	0%	9	1
Desk Reviews	13%	98%	14%	14%	140	36
On-site M&V (IPMVP Option A: Partially Measured Retrofit Isolation)	87%	96%	9%	9%	56	16

Table 3-4 shows the same results as Table 3-3, but with different groupings. The high-performance track has a better kWh savings SRR than the basic track 102% vs. 90%, but not statistically different. Since the basic track audit is more generic in its recommendations and savings estimation approach it would be expected to have more variable realization rates.

⁶ SRRs, for subgroups and overall, are separate from and do not include the previously identified MAR adjustment rate.

⁷ Billing analysis was applied to a single tenant space covering 9 measures using five months of data following measure installation prior to effects of the Covid-19 pandemic in February 2020 and calculating mean monthly savings projected to annual savings. Using that projection the analysis shows a small positive annual savings, below one percent of program savings.

Table 3-4. Savings realization rate: Overall and by program track

Parameter (Description of strata)	SRR	±	Relative Precision	Sample Size (n)		Population Size (N)	
				Measures	Contacts	Measures	Contacts
Program Overall - kWh	96%	8%	9%	205	50	1,473	93
Program Offering - Basic Track - kWh	90%	4%	5%	145	34	1,257	70
Program Offering - High Performance Track - kWh	102%	14%	14%	60	17	216	25
Program Overall - MMBtu	88%	5%	5%	22	8	566	115
Program Offering - Basic Track - MMBtu	100%	0%	0%	11	4	407	73
Program Offering - High Performance Track - MMBtu	87%	5%	5%	11	4	159	45

3.1.2.3 Gross Savings

Table 3-5 shows each of the three factors that are used to calculate verified installed savings from the recommended savings. When combining the three factors, the program achieves 39% of recommended measure savings.

Table 3-5. Gross kWh savings derived from tracked savings, MAR adjustment factor, and SRR

Factor	Definition	Value	Subtotal (kWh)
Recommended Measures	Energy savings measures recommended by audit reports for the program population	-	74,600,432
Self-Reported MAR	Weighted MAR based on customer self-reports through survey	54%	40,284,233
MAR Adjustment Factor	Weighted adjustments to the MAR determined through impact evaluation	76%	30,616,017
Savings Realization Rate	Weighted adjustments to savings estimations (excluding MAR adjustments) as verified through the impact evaluation	96%	29,391,377
Verified installed savings	Weighted overall verified program savings factor for savings achieved by installed measures	39%	29,391,377

First-year gross electric savings calculated in this evaluation totaled 29,391,377 kWh installed in 51,013,659 square feet of audited space, and was calculated through the application of the MAR, MAR adjustment factor, and SRR, as shown in Table . This energy savings in equates to 0.58 kWh per sq ft audited.

First-year gross MMBtu savings calculated in this evaluation totaled 20,202 MMBtu, calculated through the application of the MAR, MAR adjustment factor, and SRR, as shown in Table 3-6. Table 3-7 provides the gross positive MMBtu savings by fuel type, including natural gas, fuel oil, and LPG (propane).

Table 3-6. Gross positive MMBtu savings derived from tracked savings, MAR adjustment factor, and SRR

Factor	Definition	Value	Subtotal (MMBtu)
Recommended Measures	Energy savings measures recommended by audit reports for the program population	-	91,829
Self-Reported MAR	Weighted MAR based on customer self-reports through survey	25%	22,957
MAR Adjustment Factor	Weighted adjustments to the MAR determined through impact evaluation	100%	22,957
Savings Realization Rate	Weighted adjustments to savings estimations (excluding MAR adjustments) as verified through the impact evaluation	88%	20,202
Verified installed savings	Weighted overall verified program savings factor for savings achieved by installed measures	22%	20,202

Table 3-7. Gross positive MMBtu savings by fuel type

Heating Fuel Type	Recommended Savings (MMBtu)	Verified installed savings	Subtotal (MMBtu)
Distillate Oil	6,021	22%	1,325
Natural Gas	45,306	22%	9,967
Propane	115	22%	25
Residual Oil	75	22%	17
Steam	40,313	22%	8,869

First-year gross MMBtu savings increases in usage calculated in this evaluation totaled 21,842 MMBtu. Increases in MMBtu usage correlate with kWh savings and are caused primarily through HVAC interactive effects associated with efficient lighting. This total was calculated through the application of the kWh MAR, kWh MAR adjustment factor, kWh SRR, and evaluated MMBtu usage increase per kWh saved, as shown in Table Table 3-9 shows the increases in usage by fuel type.

Table 3-8. Gross negative MMBtu savings derived from tracked savings, MAR adjustment factor, and SRR

Factor	Definition	Value	Subtotal	Unit
Recommended Measures	Energy savings measures recommended by audit reports for the program population	-	74,600,432	kWh Savings
Self-Reported MAR	Weighted MAR based on customer self-reports through survey	54%	40,284,233	kWh Savings
MAR Adjustment Factor	Weighted adjustments to the MAR determined through impact evaluation	76%	30,616,017	kWh Savings
Savings Realization Rate	Weighted adjustments to savings estimations (excluding MAR adjustments) as verified through the impact evaluation	96%	29,391,377	kWh Savings
Verified ratio of MMBtu usage increase to kWh saved	Weighted ratio of verified MMBtu usage to verified kWh savings as verified through the impact evaluation	-0.0007	-21,842	MMBtu usage increase
Verified MMBtu usage	Weighted overall verified program savings factor for usage increase associated with installed measures	-0.0002	-21,842	MMBtu usage increase

Table 3-9. Gross negative MMBtu savings by fuel type

Heating Fuel Type	Distribution of Electric Savings by Heating Fuel	Subtotal (MMBtu)
Distillate oil	4.2%	-917
Natural gas	68.1%	-14,875
Propane	0.3%	-62
Residual oil	0.0%	-3
Steam	27.3%	-5,958

Overall, the program increased MMBtu usage by 1,640 MMBtu as shown in Table 3-10. It is expected that a tenant space-focused program with significant lighting savings would have a moderate net increase in MMBtu savings due to HVAC interactive effects and the relative lack of applicable MMBtu-saving measures.

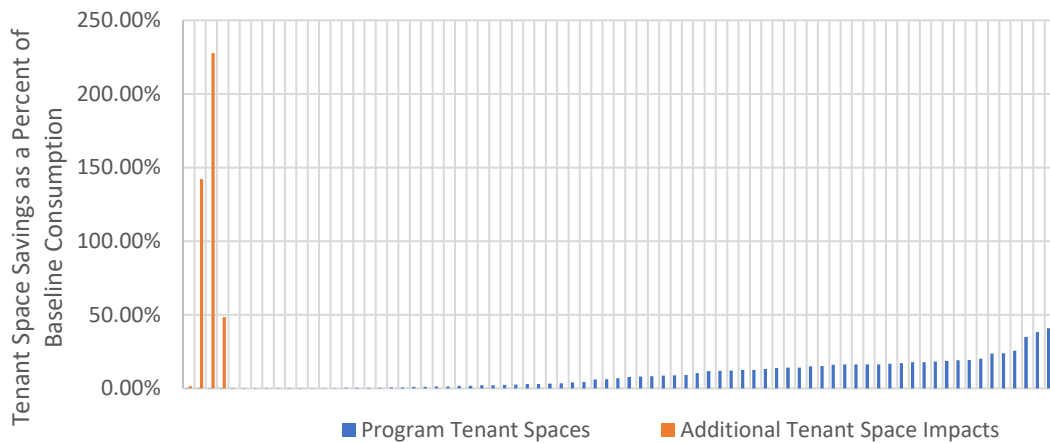
Table 3-10. Gross total MMBtu savings derived from tracked savings, MAR adjustment factor, and SRR

Factor	Definition	Subtotal (MMBtu)
Verified installed MMBtu savings	Weighted overall verified program MMBtu savings	20,202
Verified MMBtu usage (expressed in terms of savings)	Weighted overall verified program savings for usage increase (negative savings) associated with installed measures	-21,842
Verified net Program effect on MMBtu (expressed in terms of savings)	Weighted overall verified program savings factor for savings achieved by installed measures	-1,640

The Impact Evaluation Team calculated verified kWh savings as a percent of baseline consumption for the subset of tenant spaces included in the SRR where baseline consumption specific to the space was available. The analysis found in aggregate that measures installed based on recommendations from the program audits saved 4.8% of baseline consumption.

The distribution of the 81 tenant spaces with baseline consumption data (representing 25% of weighted sample savings) are presented in Figure 3-3. Some program audits were intentionally delivered with recommendations that could be applied across more than just the space audited. In the Figure, “Additional Tenant Space Impacts” distinguish projects for which installations were completed in spaces beyond the space audited, achieving high savings as a percent of the original program sites’ baseline consumption.

Figure 3-3. Distribution of tenant space-level savings as a percent of baseline consumption (kWh savings/kWh consumption per sq. ft)



3.1.2.4 Discrepancy Analysis

On-site verifications produced a record of savings discrepancies in addition to adjusted savings values. These discrepancies provide the reasons why there is an adjustment to the savings value, and are generalized into a standard set, identified in Table 3-11.

Table 3-11. Discrepancy definitions

Primary Discrepancy	Description
Tracking/Clerical	Tracked savings differ from the savings calculated in the ex-ante analysis files.
Ineligible measure	Measure was not eligible per the program's requirements.
Algorithm/Adherence to TRM	Tracked savings did not match the savings that were independently recreated using the TRM algorithm and tracked parameters.
Baseline	Evaluators determined a different measure baseline than that reflected in the tracking savings.
Quantity	The number of incented/installed units as determined by evaluators differed from the applicant value.
Size	The size of the installed equipment (e.g., MBH, gallons) was determined by evaluators to be different from the applicant value.
Efficiency	The efficiency of the removed or installed equipment as determined by evaluators differed from the applicant value.
Hours/Load	The installed equipment's annual operation (or heating load served) as assessed by evaluators differed from the applicant's assumption.
HVAC Interactivity	The tracked savings did not account for heating or cooling interactive effects within its savings calculations.
Other	Site-specific explanation.

While there are numerous standard sources of discrepancy, eight general sources were responsible for the savings discrepancies identified through on-site verifications as shown in Table 3-12. Of these, the most significant was the impact of corrections to measure installations, which resulted in a net impact of -38% (0% positive corrections, 38% negative). The discrepancy was largely due to measures that were reported as installed but found not to be installed (Quantity). Combined, all sources accounted for positive discrepancies of +12%, negative discrepancies of -54%, and a combined discrepancy of -41%.

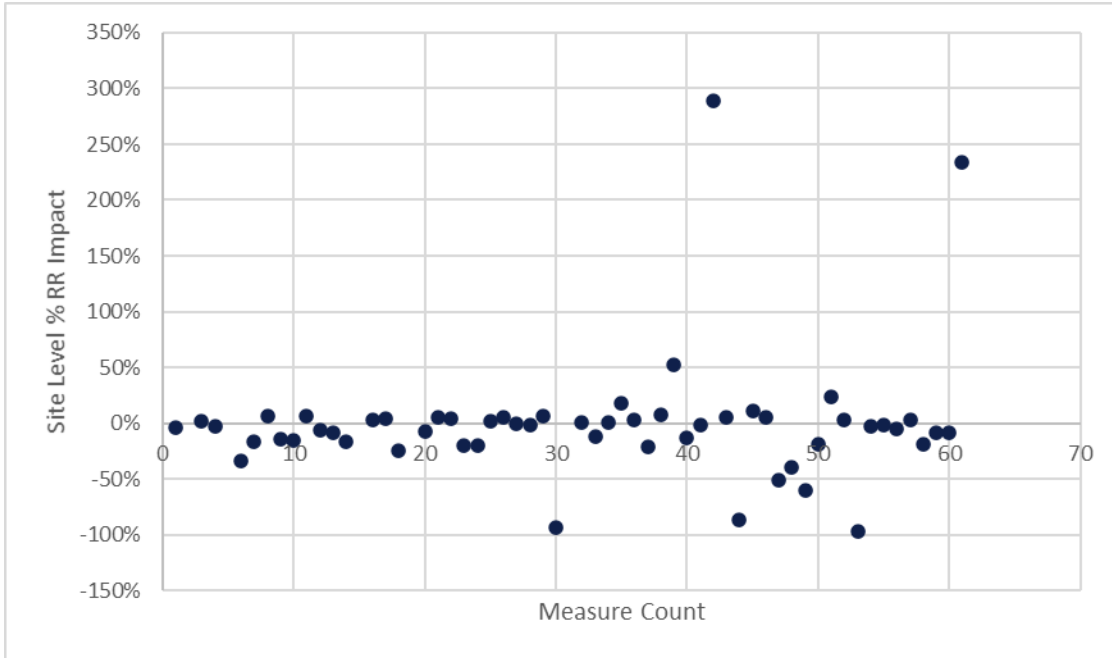
Table 3-12. On-site verification savings discrepancies

Discrepancy	Percent Savings Discrepancy – Weighted by Tracked Measure Savings		
	Positive	Negative	Combined ^a
HVAC Interactivity	3%	-1%	2%
Quantity	6%	-4%	1%
Other	0%	0%	0%
Size	0%	0%	0%
Algorithm/Adherence to TRM	0%	-1%	-1%
Ineligible measure	0%	-1%	-1%
Hours/Load	3%	-7%	-5%
Measure Installations	0%	-38%	-38%
Total	12%	-54%	-41%

^a Positive and negative impacts are calculated as the percent increase or decrease between measure-level verified savings and tracked savings. The values shown in the combined column do not always equate to the sum of positive and negative impacts due to rounding.

The distribution of site-level savings discrepancies as they impact site-level realization rates are provided in Figure 3-4. Most savings impacts are within a positive or negative impact of 50%; however, the recommended measures from a few participating tenant spaces were installed in additional spaces outside the program. Those program tenant spaces show higher realization rates that appear as outliers in the figure. Similarly, a few tenant spaces who responded to the MAR survey claiming installations were found through impact evaluation not to have installed measures. These spaces show a -100% savings realization rate, reflecting that the survey savings realization rate of 100% was reversed through further impact evaluation

Figure 3-4. Distribution of tenant space-level realization rate impacts of savings discrepancies



3.2 Recommendations

As the program savings estimates were found to be reasonable estimates of savings, recommendations coming out of this study are limited, and focus on the areas where significant revisions to savings occurred. The study also prompted recommendations for the MAR survey. Both sets of recommendations are submitted in Table 3-13.

Table 3-13. Program recommendations from impact evaluation

#	Finding	Recommendation	Program response (Accepted; Pending; Rejected")
MAR 1	MAR survey respondents claimed installations that were later verified not installed	Increase program recognition among participants: Many participants were only aware of contractor names and unaware of program participation, reducing linkage of measure installation as an impact of the program's recommendation.	Rejected. Program is closed. If NYSERDA should issue a similar program in the future, these will be considered
MAR 2	Respondents continued to identify barriers to measure installation	Ongoing tenant support: Participants reported a need to support tenants in implementing measure installation. Further study could identify opportunities for program support.	Implemented: when eligible, tenants can be referred to relevant incentive programs for implementation of measures.
SRR 1	Energy savings estimates from the program found to be reasonable	None.	N/A
SRR 2	On-site M&V identified incorrect hours and load calculations	Future focus for incoming project reviews: Careful examination of hours and load calculations.	Implemented: technical reviewers have been made aware of these issues.
		Future focus for incoming project reviews: Careful examination of submitted projects from auditors with known estimation issue histories.	Implemented: technical reviewers have been made aware, as well as the auditors.
SRR 3	Auditors are not including MMBtu effects in tenant space energy use recommendations and energy savings estimates because increases occur at the building level.	The program could estimate MMBtu usage increases with a MMBtu/kWh factor from this evaluation.	Rejected. Given the evaluation confirmed very low opportunity to effectuate MMBtu fuel savings in tenant spaces, and the likelihood that a minor amount of ancillary MMBtu usage may continue to offset any savings, NYSERDA has made a managerial decision not to report/forecast MMBtu savings for this program. The overall effect of this program on MMBtu is not material nor cost-effective to pursue with the degree of precision needed to include in reporting and forecasting of benefits.

4 Methods

This section summarizes the methods employed to collect and analyze data for this impact report. For a detailed summary of the methods employed for the 2019 MAR Survey, please refer to the NYSERDA CRE Tenant 2019 MAR Interim Report.⁸

4.1 Data Collection

Tenant spaces with completed projects were grouped based on size and complexity and assigned to one of three evaluation tracks—on-site M&V, billing analysis, and desk review—based on tracked kWh savings and data availability.

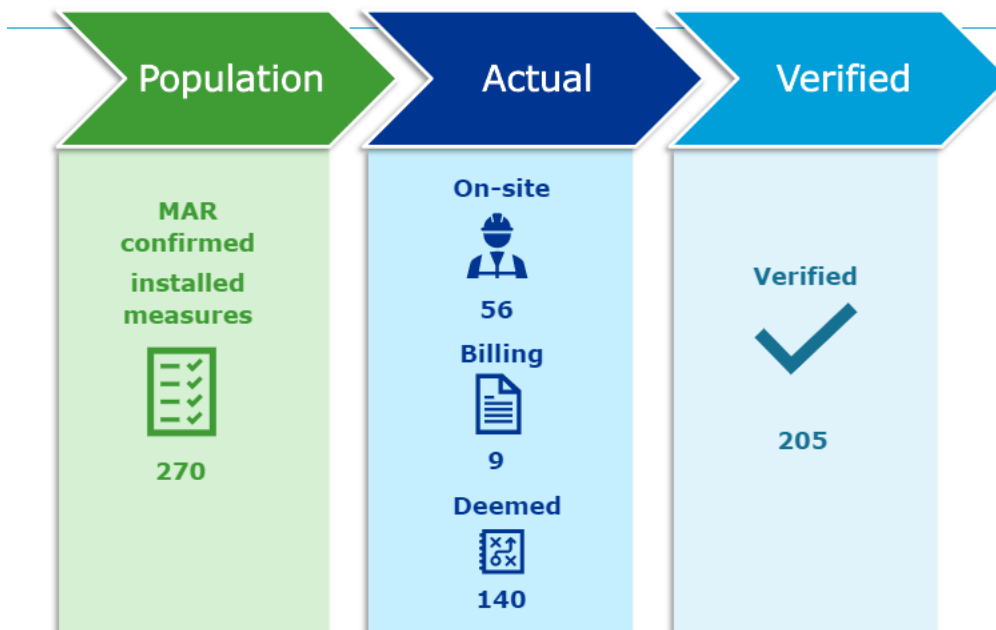
On-site M&V (IPMVP Option A, Partial Retrofit Isolation): Projects with the largest estimated savings (100,000+ kWh installed) were identified for on-site M&V, the highest-rigor approach. Projects with medium estimated savings (10,000–100,000 kWh) were moved to on-site M&V if billing data was not available or appropriate to the site.

Billing Analysis (IPMVP Option C, Whole Building): Projects with medium estimated savings (10,000–100,000 kWh) were targeted for billing analysis. Unfortunately, sufficient billing data was not available to perform this analysis for many tenant spaces, or the data came from a master meter that included non-participating tenants. As a result, the associated projects were escalated to the higher-rigor on-site M&V track, as shown in Figure 4-1.

Desk Review: Projects with the smallest estimated savings (below 10,000 kWh) were identified for desk review and calculation of deemed savings. These calculations used the results from the MAR survey and project files to confirm installation details.

⁸ <https://www.nyserdada.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/CRE-tenant-2019-MAR-interim-report.pdf>

Figure 4-1. Evaluation methods for CRE tenants by measure complexity



4.1.1 On-Site M&V Visits

On-site M&V visits were scheduled through assigned engineers who obtained permission for the visits and access to all locations where equipment was installed. Engineers conducting on-site visits adhered to safety plans for the measurement of any equipment as well as safety protocols for the ongoing COVID-19 pandemic.

On-site engineers created reports for each tenant space, identifying equipment observed, measurements, metering, and reasons for any discrepancies between verified savings and tracked savings.

4.1.2 Billing Analysis

Billing data was requested from the utilities for all impact evaluation tenant spaces in the medium savings category (10,000–100,000 kWh). This data was considered applicable only for buildings with meters at the tenant space level with at least nine months of billing data pre- and post-installation of measures. Most tenant spaces associated with medium-sized projects did not have sufficient billing data meeting these criteria, and thus were reassigned to the on-site group to ensure that the established rigor level for each project was met or exceeded.

For those tenant spaces with suitable billing data, the Impact Evaluation Team utilized standard tenant space-level billing analysis consistent with CalTRACK⁹ methods for weather-normalized pre-post analysis, following the guidelines established in the Uniform Methods Protocol.¹⁰ A model was created associating historical weather data with the provided pre-installation consumption data and reviewed for robustness and statistical significance for pre-installation data. The model was then projected forward using weather data post-installation, and potential savings were calculated by finding the difference between reported consumption and modeled consumption.

4.1.3 Desk Reviews

Desk reviews were performed by evaluation engineers who used available data to verify the savings claimed in original documentation/audits. Desk reviews were completed by applying deemed savings formulas from TRMs, using the data available for original audit recommendations, MAR survey verifications, and project documentation. From these, engineers recalculated savings based on updated values including changes to installed quantities, load assumptions, and calculations, or updating calculations for other new information. Where necessary, engineers contacted project contacts directly for additional information to correctly calculate deemed savings for projects and measures. In instances where the evaluated measure was not covered by the TRM, evaluators reviewed applicant methodologies and made changes where necessary.

4.2 Calculating MAR Adjustment Factor and SRR

The analysis calculated two key values from the data for each evaluated site: the MAR adjustment factor and the SRR.

The Impact Evaluation Team calculated the MAR adjustment factor as the ratio of verified installed savings to self-reported installed savings from the MAR survey for each measure. In each case, the magnitude of the savings was based on the proportion of recommended savings that was verified installed or self-reported as installed. No adjustments were made to recommended savings beyond the changes in scope or quantity that were found via the on-site

⁹ <https://www.caltrack.org/>

¹⁰ Uniform Methods Protocol Chapter 8, Whole-Building Retrofit with Consumption Data Analysis Evaluation Protocol. <https://www.energy.gov/eere/about-us/ump-protocols>

visit (verified) or the MAR survey (self-reported). The formula for the kWh MAR adjustment is shown below. A parallel formula was used for positive MMBtu savings.

$$MAR\ Adj. = \frac{\sum_j^V kWh_{VI_j} w_j}{\sum_j^V kWh_{SRI_j} * w_j}$$

Where:

- kWh_{VI_j} = verified installed kWh for measure j
- kWh_{SRI_j} = self-reported installed kWh for measure j
- w_j = Weighting factor from MAR Survey for measure j
- V = All self-reported installed measures identified through MAR survey

The Impact Evaluation Team calculated the SRR as the ratio of verified savings to verified installed savings from the MAR survey for each measure. Verified savings differ from verified installed measures in that they are adjusted for additional factors beyond scope or quantity (e.g., calculation approach, equipment, and operational characteristics) that were found through the impact evaluation. The formula for the kWh SRR is shown below. A parallel formula was used for positive MMBtu savings.

$$SRR = \frac{\sum_j^V kWh_{VG_j} w_j}{\sum_j^V kWh_{VI_j} * w_j}$$

Where:

- kWh_{VG_j} = verified kWh for measure j
- kWh_{VI_j} = verified installed kWh for measure j
- w_j = weighting factor from MAR Survey for measure j
- V = all verified installed measures identified through the impact evaluation

4.2.1 Expanding MAR to the Population

The expansion of results for the MAR adjustment factors and SRR was based on a census of measures that were self-reported as installed in the MAR survey. Since a census was completed, no new weights were required to expand the results to the larger population. The original weights used for MAR survey expansion were retained in the analysis.

Each weight is the number of units in the selected sample (N) divided by the number of completed units in the sample (n).

The weight w_x for each of the project, site and measure weight was calculated as

$$w_x = N_x / n_x$$

Where:

N_x = Number of selected sample units for customer X

n_x = Number of completed sample units for customer X

4.3 Program Satisfaction and Barriers to Measure Installation

4.3.1 Barriers to Energy Efficiency Measure Installation

Through consultation with the NYSERDA market evaluation staff, the Impact Evaluation Team developed questions to investigate why many of the CRE program participants had not installed or implemented the energy-efficient measures the energy consultants had recommended. The survey asked the participants, “What are some reasons why you haven't installed some/all of the energy efficiency recommendations?” Sixty-eight of the participants responded to this question. Their responses are compared with the first round of the survey with some major differences between the two data collection periods (Table).

Table 4-1. Barriers to energy efficiency measure installation

Barriers to Implementation	2019 Survey		2021 Survey	
	Non-Installers (n=9)	Partial Installers (n=8)	Non-Installers (n=45)	Partial Installers (n=23)
We plan to do them eventually, but other projects had a higher priority	22%	38%	11%	22%
We don't have the available budget to pay for them	33%	38%	20%	13%
We can't convince company/ building management/tenant to do the projects	33%	38%	9%	13%
We've been too busy with other company activities	33%	38%	17%	9%
They are too expensive	0%	75%	14%	0%
The payback is too long/ROI too low	11%	25%	6%	0%
Not enough energy savings to justify project	11%	0%	9%	0%
Other barriers	56%	14%	63%	61%

Note: The total percentages exceed 100% because multiple responses were allowed.

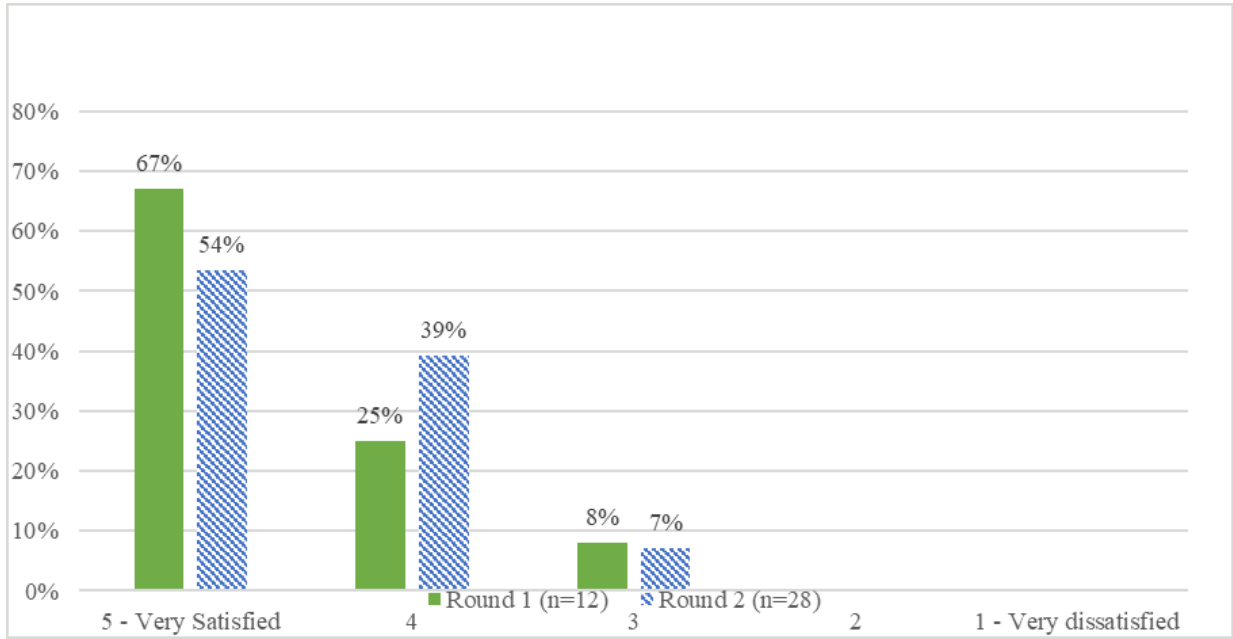
In the most recent 2021 round across pre-coded responses, respondents identified fewer barriers than in the previous round. However, additional analysis still shows some barriers identified by both non-installers and partial installers in 2021, especially “other” barriers (63% and 61%, respectively). The two most common “other” reasons reported were property managers stating

installation was the tenant's responsibility and the ongoing impacts from the COVID-19 pandemic, which caused financial strain and resulted in a decline in building occupancy. The most noticeable difference would be the reduction in respondents selecting "they [the measures] are too expensive" from the pre-coded options (75% in 2019 to 0% in 2021). Conversely, fewer respondents reported not having an available budget to pay for the measures (36% on average in 2019; 17% on average in 2021). As mentioned in Section 2, data collection occurred between April and June 2021, when property managers and tenants were still experiencing ongoing impacts of the COVID-19 pandemic and many respondents identified the pandemic as a major cause of changes in building operations. Therefore, additional study may be needed to identify persistent changes in the commercial tenant market and barriers to energy efficiency measure installation.

4.3.2 Satisfaction with the Energy Efficiency Measure Installations

The program participants were generally satisfied with the installed energy efficiency measures. For the second round of the survey, 28 participants who reported installing at least some of the recommended energy efficiency measures were asked how satisfied they were these improvements. The survey gave them a five-point satisfaction scale, where 5 indicated "very satisfied" and 1 indicated "very dissatisfied." The average satisfaction score was 4.5, a slight decrease from 4.6 in the first round. Figure 4-2 shows that a little over half of respondents were "very satisfied" with the installed measures. Despite the slight decrease in satisfaction levels between the two rounds, respondents were still generally satisfied with the installed measures. This round, respondents were asked about their satisfaction with the auditor/consultant as well as the overall program. Respondents were satisfied with both elements, reporting an average score of 4.6 (n=21) for the auditor/consultant and 4.5 (n=42) for the program overall.

Figure 4-2. Satisfaction with energy efficiency measures



Appendix A: MAR Survey Instrument

SII According to our records, your company recently participated in the New York State Energy Research and Development Authority (NYSERDA’s) Commercial Tenant Program which helps identify energy efficiency opportunities for Commercial customers in New York. This brief survey asks about your company’s participation in that program.

In filling out this web survey, please use the form's NEXT and BACK buttons until the survey is completed. By clicking the SAVE button, you will be able to return to the survey if you are unable to complete it in your first attempt. If you have questions before you get started or problems while completing this survey, contact Chris Hoffman at Christopher.Hoffman@dnv.com or (608)259-9152 x70200.

End of Block: Intro Block

Start of Block: Block 1

I1 On $\{e://Field/date\}$ you received an assessment of the opportunities for energy efficiency in your company’s location at $\{e://Field/site_street\}$, $\{e://Field/site_city\}$. Are you familiar with that study completed by $\{e://Field/consultant\}$? ($\{e://Field/ContactID\}$)

Yes (1)

No (2)

Don't know (3)

Refused (4)

Skip To: End of Block If On $\{e://Field/date\}$ you received an assessment of the opportunities for energy efficiency in yo... = Yes

I2, Do you know anyone else in your building/office space who might be familiar with this energy study?

Yes (1)

No (2)

Don't know (3)

I2A Please provide the name, and phone number and email (if you have them) of the person you think would be familiar with this energy study:

Name (1) _____

Phone Number (2) _____

Email (3) _____

I3 Thanks for the information. If you are interested in learning more about the NYSERDA Commercial Tenant program, please click on the following link.

<https://www.nysERDA.ny.gov/All-Programs/Programs/Commercial-Tenant-Program>

Skip To: End of Survey If Thanks for the information. If you are interested in learning more about the NYSERDA Commercial T... Is Displayed

End of Block: Block 1

Start of Block: Block 2

R1 The following is the list of energy efficiency actions that the energy consultant recommended for your building or office space. Please check the ones that have been installed and the percentage of the recommendation installed (example: consultant recommended installing LED lighting but 5 of 10 light bulbs have been installed – 50% installed) then select the month and year it was installed if applicable.

Installation						Month Installed (if 0% installed or not sure, click Not Applicable)	Year Installed (if 0% installed or not sure, click Not Applicable)
0% Installed (1)	1-25% Installed (2)	26-50% Installed (3)	51-75% Installed (4)	76-99% Installed (5)	100% Installed (6)		
						▼ January (1 ... Not Applicable (13))	▼ 2017 (1 ... Not Applicable (6))
						▼ January (1 ... Not Applicable (13))	▼ 2017 (1 ... Not Applicable (6))
						▼ January (1 ... Not Applicable (13))	▼ 2017 (1 ... Not Applicable (6))
						▼ January (1 ... Not Applicable (13))	▼ 2017 (1 ... Not Applicable (6))
						▼ January (1 ... Not Applicable (13))	▼ 2017 (1 ... Not Applicable (6))

Installation						Month Installed (if 0% installed or not sure, click Not Applicable)	Year Installed (if 0% installed or not sure, click Not Applicable)
0% Installed (1)	1-25% Installed (2)	26-50% Installed (3)	51-75% Installed (4)	76-99% Installed (5)	100% Installed (6)		
						Applicable (13)	Applicable (6)
						▼ January (1 ... Not Applicable (13)	▼ 2017 (1 ... Not Applicable (6)
						▼ January (1 ... Not Applicable (13)	▼ 2017 (1 ... Not Applicable (6)
						▼ January (1 ... Not Applicable (13)	▼ 2017 (1 ... Not Applicable (6)

R2 Site Inspections: Later this year, contractors working for NYSERDA’s Commercial Tenant Program will be conducting additional outreach and/or requesting a brief site visit to buildings or office spaces that installed the recommended energy efficiency measures. Our engineers will comply with CDC and NYSERDA recommended guidelines [1][2] during any site visits. Would you be the person to contact to coordinate this visit?

[1] <https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html>

[2] <https://www.nyserdera.ny.gov/ny/COVID-19-Response/Contractor-and-Construction-Guidance>

Yes (1)

No (2)

Display This Question:

If Site Inspections: Later this year, contractors working for NYSERDA’s Commercial Tenant Program wi... = No

R2A Who do you recommend we contact? Please provide a name, email and/or telephone number:

Name (1) _____

Phone Number (2) _____

Email (3) _____

R3 Billing Release Form: NYSERDA would like to measure the energy savings associated with customers who made energy efficiency improvements at their building or in their office space resulting from participation in the Commercial Tenant Program. This energy savings analysis will be done with utility billing data. Would you be the person at your company who can provide account information and permission (e.g., sign a billing release form)? Note, a follow up email will be issued to the appropriate person to complete the billing release form.

Yes (1)

No (2)

Display This Question:

If Billing Release Form: NYSERDA would like to measure the energy savings associated with customers... = No

R3A Who do you recommend we contact? Please provide a name, email and/or telephone number:

Name (1) _____

Phone Number (2) _____

Email (3) _____

R4 What is your best estimate of the square footage of your building or office space at $\{e://Field/site_street\}$, $\{e://Field/site_city\}$?

1,000 square feet or less (Example: 2 times the size of a two-car garage) (1)

1,001 to 5,000 square feet (Example: fast food restaurant) (2)

5,001 to 10,000 square feet (Example: sit-down style chain restaurant) (3)

- 10,001 to 25,000 square feet (Example: high school gym) (4)
- 25,001 to 50,000 square feet (Example: supermarket) (5)
- 50,001 to 100,000 square feet (Example: home improvement store) (6)
- 100,001 to 200,000 square feet (Example: 3 level department store) (7)
- 200,001 to 500,000 square feet (Example: professional sports arena) (8)
- 500,001 to 1 million square feet (Example: convention center) (9)
- Over 1 million square feet (Example: skyscraper) (10)
- Don't know (11)

R5 Since installing the recommended measures, has your location at $\{e://Field/site_street\}$, $\{e://Field/site_city\}$ had any business- or product-related changes that would affect your energy use. For example, addition or subtraction of a shift, space expansion, or adding a product line?

Yes (Please specify) (1) _____

No (2)

Display This Question:

If The following is the list of energy efficiency actions that the energy consultant recommended for.....: Installation = 100% Installed

R6 What were your company’s reasons for taking these recommended energy efficiency actions? (select all that apply)

$\{R1\%231/ChoiceGroup/SelectedChoicesForAnswer/6\}$

We received a rebate/incentive for the projects (1)

The energy consultant showed us the projects were cost-effective, had a good payback/ROI (2)

The NYSERDA program/staff showed us the projects were cost-effective, had a good payback/ROI (3)

The projects aligned with our corporate sustainability policies (4)

There were other benefits to the projects besides energy savings such as better lighting or improved indoor air quality (5)

Other reasons (please describe) (6) _____

Don't know/Not sure (7)

Display This Question:

If The following is the list of energy efficiency actions that the energy consultant recommended for.....: Installation = 1-25% Installed

Or The following is the list of energy efficiency actions that the energy consultant recommended for.....: Installation = 26-50% Installed

Or The following is the list of energy efficiency actions that the energy consultant recommended for.....: Installation = 51-75% Installed

Or The following is the list of energy efficiency actions that the energy consultant recommended for.....: Installation = 76-99% Installed

R7 The following is a list of energy efficiency actions that the energy consultant recommended but you have not yet fully installed. What are some reasons why you have not yet fully installed them? (select all that apply)

{R1%231/ChoiceGroup/SelectedChoicesForAnswer/2}

{R1%231/ChoiceGroup/SelectedChoicesForAnswer/3}

{R1%231/ChoiceGroup/SelectedChoicesForAnswer/4}

{R1%231/ChoiceGroup/SelectedChoicesForAnswer/5}

They are too expensive (1)

We don't have the available budget to pay for them (2)

We've been too busy with other company activities (3)

We don't know where to find a qualified contractor (4)

The payback period on the project is too long and/or ROI is too low (5)

We don't think the energy savings from the project will be enough to make it worthwhile (6)

We can't convince company, building management, or other decision maker to do the projects (7)

We plan to do them eventually, but other projects had a higher priority (8)

We don't remember some of the energy-efficient actions that the consultant (9)

Other reasons (please describe) (10) _____

Don't know/Not sure (11)

Display This Question:

If The following is the list of energy efficiency actions that the energy consultant recommended for... : Installation = 0% Installed

R8 What are some reasons why you haven't yet taken any of the energy efficiency actions that the energy consultant recommended? (select all that apply)

[\\${R1%231/ChoiceGroup/SelectedChoicesForAnswer/1}](#)

They are too expensive (1)

We don't have the available budget to pay for them (2)

We've been too busy with other company activities (3)

We don't know where to find a qualified contractor (4)

The payback period on the project is too long and/or ROI is too low (5)

We don't think the energy savings from the project will be enough to make it worthwhile (6)

We can't convince company, building management, or other decision maker to do the projects (7)

We plan to do them eventually, but other projects had a higher priority (8)

Other reasons (please describe) (9) _____

Your information is incorrect, we have taken some of these energy efficiency actions (10)

Don't know/Not sure (11)

Display This Question:

If The following is the list of energy efficiency actions that the energy consultant recommended for... : Installation = 0% Installed

Or The following is the list of energy efficiency actions that the energy consultant recommended for... : Installation = 1-25% Installed

Or The following is the list of energy efficiency actions that the energy consultant recommended for... : Installation = 26-50% Installed

Or The following is the list of energy efficiency actions that the energy consultant recommended for... : Installation = 51-75% Installed

Or The following is the list of energy efficiency actions that the energy consultant recommended for... : Installation = 76-99% Installed

R9A Is installation of these measures included in future capital budgets or otherwise planned?

Yes (Please list when you plan to install these measures) (1)

No (2)

S1Alt What was your level of satisfaction with:

	1 Not Satisfied at all (1)	2 (2)	3 Neutral (3)	4 (4)	5 Completely Satisfied (5)	I don't know / Not applicable (6)	Why do you say that? (1)
Energy Auditor/Consultant (1)							
Recommended Measures (2)							
Installed Measures (3)							
Overall Program (4)							

Q28 As a thank you for your participation in the survey, you may choose to be entered into a drawing for a \$100 Amazon e-gift card. If selected as the winning respondent you will be notified by email. If you would like to be included in the drawing, please enter the email address that you would like us to use for delivery*.

Q29 *By agreeing to receive the Amazon gift card, you agree that DNV may share your email address with Amazon. Amazon’s use, control, and/or processing of your email address (and any other personal information they may require for you to receive or activate an Amazon gift card) will be governed by Amazon’s Privacy Policy. --- Amazon Privacy Policy

F1 Thanks for taking the time to tell us about your participation in this program. Your feedback will help NYSERDA develop a better program in the future.

End of Block: Block 2

Appendix B: Advance Letter

Dear <First_name> <Last_name>,

According to our records, your company, <Company_name>, received energy efficiency studies (or reports) sponsored by the New York Energy Resource Development Authority (NYSERDA) [Commercial Tenant Program](#). This program helps commercial tenants and owners identify energy efficiency opportunities.

NYSERDA is currently evaluating the effectiveness of this program and requests participants like you to complete a brief online survey to identify whether any of the recommended energy saving improvements have been implemented. The survey relates to studies conducted by <Consultant>.

Please visit the survey link: <hyperlink> for <address> (audit date: <audit_date>)

An independent engineering firm, DNV, is conducting this survey on behalf of NYSEDA. The information collected in this survey will be used to determine the impact of and improve the program. We appreciate your willingness to complete these brief surveys.

Should you have questions about the survey, please respond to

Christopher.Hoffman@DNV.com

Thank you for your participation,

Dana Nilsson

NYSERDA

17 Columbia Circle | Albany, NY 12203-6399

nyseda.ny.gov

follow : friend : connect with NYSEDA

