

Commercial Real Estate Tenant Initiative

Baseline Market Evaluation

Final Report

Prepared for:

New York State Energy Research and Development Authority

ALBANY, NY

Carley Murray

Project Manager, NYSERDA

Prepared by:

Opinion Dynamics Corporation

Waltham, MA

Jake Millette

Principal Consultant, Opinion Dynamics

Brendon Donoghue

Consultant, Opinion Dynamics

Antje Flanders

Vice President, Opinion Dynamics

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Acronyms and Abbreviations

AAPOR	American Association for Public Opinion Research
A&E	Architecture and engineer
CRE	Commercial real estate
DPS	New York State Department of Public Service
SF	Square feet
NYSERDA	New York State Energy Research and Development Authority
EE	Energy efficiency
Q	Quarter
H	Half
ESCO	Energy service company
SIC	Standard industry classification
NAICS	North American industry classification system

Executive Summary

NYSERDA contracted with Opinion Dynamics (hereafter referred to as the “Market Evaluation Team”) to conduct market research to support its Commercial Real Estate (CRE) Tenant Initiative. This report presents the methodology and results of the initial (2017) market study. The results of this study will be utilized to set baseline metrics; subsequent studies will re-evaluate the same metrics to assess progress of the initiative over time.

NYSERDA’s CRE Tenant strategy and supporting marketplace offerings are designed to pursue and drive demand for energy efficiency with these goals:

- Build capacity, capability, and interest of architects and engineers to design and deliver energy efficient, higher performing space in the commercial office market.
- Encourage building owners and managers to offer highly efficient office space as a value added upsell during lease negotiations.
- Stimulate investment in energy efficiency in commercial tenant space at the time of lease negotiation or turnover.

The CRE Tenant Initiative offers several cost share opportunities and tools for conducting energy analysis as well as a “package development” process for tenant office spaces, consisting of an energy analysis, a list of recommended energy efficiency measures, and a detailed financial analysis. NYSERDA intends this intervention to drive energy efficiency efforts during the commercial tenant lease and build-out process, or during office renovation, by demonstrating to tenants a cost-effective approach to developing an energy efficient, high-performance office space. The initiative also aims to demonstrate to building owners and managers, brokers, and architects and engineering firms a cost-effective and replicable approach to delivering those spaces.

NYSERDA has developed a set of performance metrics, some of which it has committed to report to the New York State Department of Public Service (DPS) on an annual basis, to measure performance of the CRE Tenant Initiative. The goal of this evaluation is to develop baseline measurements for the initiative to measure key market-level indicators, while periodic follow-up research will monitor changes over time. The information provided by this study and subsequent follow-up studies will inform program design and operation, provide credible quantification of outcomes and market impacts due to the program, and support program evolution and exit decisions.

Table 1 presents the key metrics addressed in the 2017 baseline evaluation as well as the recommended values for each metric, organized by broad research topic. Additional evaluation questions, also covered in this report, are listed later in Table 4.

Table 1. Summary of Key Metrics from 2017 Evaluation

Indicator	2017 Result
Class A Office Space Turnover	
Total turnover of New York State Class A office space (annual)	21.8 million sqft
Total turnover rate of New York State Class A office space (annual)	6.1%
Awareness of Value of Energy Efficiency, Energy Modeling, and Energy Packages	
Percent of real estate brokers aware of the value of incorporating energy efficiency into leasing process	High awareness of EE, but little discussion with tenants*
Percent of A&E firms aware of the value of incorporating energy efficiency into tenant space design	77% of A&E firms
Percent of Class A building stock integrating above code energy efficiency approaches	20% of Class A building stock
Percent of projects for which A&E firms recommend above code energy efficient options	52% of projects
Tenant-Specific Energy Efficiency Packages	
Percent of tenant spaces completed without NYSERDA funding	<5% of tenant spaces
Percent of A&E firms that include in-depth energy models in their standard practice	46% of A&E firms
Number of participating tenant spaces and buildings	4**
Number of case studies developed	0**
Building-Specific Energy Efficiency Packages	
Package development costs of building-specific package per SF	\$0.05 - \$6.00/sqft*
Percent of CRE building owners and managers offering building-specific packages	<10% of owners/managers
Percent of Class A building stock integrating building-specific packages	<5% of Class A building stock
Modeling and Package Development Training	
Percent of A&E firms trained to better incorporate energy efficiency options into tenant space designs	54% of A&E firms

Indicator	2017 Result
Percent of real estate broker firms trained on energy efficiency space design and including energy in leasing dialogues with tenant	<5% of brokers
Energy Efficiency in the Leasing Process	
Percentage of real estate brokers incorporate energy efficiency into leasing dialogue	<10% of brokers
Percentage of projects with energy efficiency discussions occurring before buildout	If discussed at all, typically before buildout*

* Insufficient data to provide a quantitative result

** As of May 2017

While this study was designed to provide a quantitative baseline for the metrics listed in the table above, the Market Evaluation Team presents some results as qualitative findings due to several challenges and scope adjustments (discussed in Section 0). In other cases, metrics are based on indicators with small sample sizes and should be used with caution. To support these indicators, the Team provides additional qualitative content and comparisons to findings from research with the other market actors targeted by this study in the body of this report.

NYSERDA has committed to report select performance metrics to the DPS on an annual basis. These performance metrics are a combination of program data and results from this study. For convenience, Table 2 provides a summary of these performance metrics from the 2017 evaluation. Note that many of the researched metrics also appear above in Table 1.

Table 2. Summary of Performance Metrics from 2017 Evaluation

Indicators	2017 Result	
Activities/Outputs	Number of tenant spaces participating in the modeling and energy efficiency package offer	Program data
	Number of buildings participating in the modeling and energy efficiency package offer	Program data
	Square footage of participating tenant spaces in the modeling and energy efficiency package offer	Program data
	Percent of energy saved above code (for participating tenants)	Program data
	Partner engagement: Number of CRE building owners/managers and managers that offer building-specific packages	Program data

Indicators		2017 Result
	Number of case studies developed	0*
	Partner engagement: Number of brokers and A&E firms trained	Program data
	Partner engagement: Number of Brokers and A&E Firms that include in-depth energy models and package development in their standard practice	46% of A&E firms
	Direct Cumulative Annual Energy Savings MWH in participant buildings/spaces	Program data
	Direct Cumulative Annual Energy Savings MMBTU in participating buildings/spaces	Program data
Outcomes	Package development: costs of building-specific package per square foot (SF)	\$0.05 - \$6.00/sqft
	Market Engagement: Number of Brokers and A&E Firms that include in-depth energy models and package development in their standard practice	46% of A&E firms
	Percent of the total addressable square footage in NYS that is covered by a building-specific package	<5% of Class A building stock
	Tenant Spaces completed by the market without NYSERDA funding	<5% of tenant spaces
	Percentage of Real Estate Broker firms trained on energy efficient space design and including energy in leasing dialogues with tenant	<5% of brokers
	Percentage of Architecture and Engineering firms trained to better incorporate energy efficiency options into tenant space designs and providing packages as standard practice	54% of A&E firms

* As of May 2017

Introduction

Initiative Background

NYSERDA's Commercial Real Estate (CRE) tenant strategy and supporting marketplace offerings are designed to pursue and drive demand for energy efficiency with the following goals:

- Build capacity, capability, and interest of architects and engineers to design and deliver energy efficient, higher performing space in the commercial office market.
- Encourage building owners and managers to offer highly efficient office space as a value added upsell during lease negotiations.
- Stimulate investment in energy efficiency in commercial tenant space at the time of lease negotiation or turnover.

The CRE Tenant Initiative offers several cost share opportunities and tools for conducting energy analysis as well as a “package development” process for tenant office spaces, consisting of an energy analysis, a list of recommended energy efficiency measures, and a detailed financial analysis. NYSERDA intends this intervention to drive energy efficiency efforts during the commercial tenant lease and build-out process, or during office renovation, by demonstrating to tenants a cost-effective approach to developing an energy efficient, high-performance office space. The initiative also aims to demonstrate to building owners and managers, brokers, and architects and engineering firms a cost-effective and replicable approach to delivering those spaces.

Purpose of this Research

The overall objective of the CRE Tenant Initiative evaluation is to develop a baseline of market conditions and track progress towards the goals of the initiative. As such, research is intended to be conducted over a five-year period. The data collection and analyses of these metrics will contribute to testing the following hypotheses:

- If a tenant is presented with a custom modeled package demonstrating the potential energy savings, incremental project cost, and return on investment, then they will be motivated to choose an energy efficient space design and change behaviors and office culture.
- If new tenants are presented with building-specific packages, then they will not need to model their space and will also choose an energy efficient space design and change behaviors and office culture.

- If data, case studies, and testimonials from key market actors are developed, then peers will have more confidence in the packages and savings and will replicate energy efficient space design and change behaviors and office culture without NYSERDA cost share.

NYSERDA has developed a set of performance metrics, some of which it has committed to report to the New York State Department of Public Service (DPS) on an annual basis, to measure performance of the CRE Tenant Initiative. The goal of this evaluation is to develop baseline measurements for key market-level indicators, while periodic follow-up research will monitor changes over time. The information provided by this study and subsequent follow-up studies will inform program design and operation, provide credible quantification of outcomes and market impacts due to the program, and support program evolution and exit decisions.

This report presents the methodology and results of the initial (2017) market study. The results of this study will be utilized to set baseline metrics; subsequent studies will re-evaluate the same metrics to assess progress of the initiative over time.¹

Evaluation Scope

To address NYSERDA's research objectives, Opinion Dynamics is conducting four types of research activities over the study period (2017-2022):

- A&E firm interviews
- CRE broker interviews
- CRE tenant survey
- Building owner/manager research

Schedule of Research Activities

This study is the first of several planned studies to assess progress of the initiative over time. Table 3 outlines the timing of primary research activities that the Market Evaluation Team currently plans to conduct throughout each year of this evaluation. The follow-up research planned for 2019, 2020, and 2022 is contingent on approval by the NYSERDA Project Manager. NYSERDA plans to redesign the initiative in early 2019, and the Market Evaluation Team will work with NYSERDA to adjust the content and timing of the planned research activities, as necessary, to reflect changes to the initiative.

If approved, the Market Evaluation Team will conduct a full refresh of this study in 2019 and 2022 to track changes in all metrics over time. Additionally (if approved), a limited number of building owner and

¹ Follow-up research is contingent on approval by the NYSERDA Project Manager.

manager interviews will be conducted in 2020 to understand changes in the market between the major updates.²

Table 3. Primary Research Activities by Year

Data Collection Activity	2017	2018	2019	2020	2021	2022
Building Owner Interviews	✓		✓	✓		✓
Real Estate Broker Interviews	✓		✓			✓
Tenant Survey	✓		✓			✓
A&E Firm Interviews	✓		✓			✓

The Market Evaluation Team also plans to meet with NYSERDA program staff before each annual research effort to understand the implementation of and participation in the initiative and to revise the research, as needed, to reflect any changes.

2017 Study Challenges and Scope Adjustments

In 2017, the CRE Tenant Initiative faced a number of challenges that required adjustments to the project scope while the study was underway. Summarized below are the challenges and the scope adjustments made to overcome these challenges to indicate where this report differs from the study work plan.

- **Challenge:** Commercial real estate brokers, architecture and engineering (A&E) firms, and commercial building owners and managers are known to be very difficult populations to reach for interviews. Despite lengthy outreach periods and attempting to reach the contacts in the Team’s sample over the phone and via email, the number of completed interviews for these groups was much lower than originally planned.
 - **Resolution:** The Market Evaluation Team communicated with NYSERDA throughout the project the difficulties of completing the planned number of interviews. In the case of building owners/managers and A&E firms, the Team extended the timeline of the data collection to allow for the maximum possible number of completes. The number of expected interviews were also reduced to account for the realities of the data collection. Over several months of attempting to contact commercial real estate brokers, the Team found that this group was especially unresponsive. As a result, the approach for

² Note that the study’s work plan originally included a limited number of interviews with building owners and managers in 2018, but the NYSERDA chose to not conduct this research due to planned changes in the initiative.

contacting this group changed, from attempting to interview individual brokerage firms about their individual experiences to interviewing leaders of relevant broker associations (e.g., Commercial Broker Association, New York Association of Realtors, the Commercial Real Estate Development Association (NAIOP), and the Real Estate Board of New York) to gather a broader, market-level view of the metrics.

- **Challenge:** NYSERDA is conducting a number of concurrent studies in the commercial sector, several of which are being led by Opinion Dynamics. In many cases, Opinion Dynamics was able to leverage these other efforts, such as the use of a sample of cooperative building owners derived from the Customer Decision Making market assessment. However, in other cases, the Market Evaluation Team needed to contact the same individuals or firms for multiple studies, which could reduce response rates.
 - **Resolution:** In coordination with a separate NYSERDA study of energy service companies (ESCOs) being conducted by Opinion Dynamics for the Statewide Commercial Baseline Study, 230 firms were removed from the A&E firm sample frame. This allowed the Team to contact A&E firms for that separate effort without overly burdening firms by contacting them twice for two different studies in the same time period. Because questions related to A&E firms in this study are asked of multiple sources, it was decided that the reduction in the sample of firms to contact for this study was warranted in order to maximize the quality of results across the two studies.

Methodology

Evaluation Objectives

Overall Objectives

NYSERDA has developed a set of metrics, some of which it has committed to report to the DPS on an annual basis, to measure the performance of the CRE Tenant Initiative. This initial 2017 evaluation helps NYSERDA develop baseline measurements for the initiative to measure key market-level indicators, while periodic follow up research, if approved, will monitor changes over time. The information provided by this study and subsequent follow-up studies will inform program design and operation, provide credible quantification of outcomes and market impacts due to the program, and support program evolution and exit decisions.

Detailed Research Questions

The table below lists the detailed research questions covered in this evaluation, as well as the data sources used for each question.

Table 4. Evaluation Questions and Indicators

Evaluation Question	Indicator	Source
Class A Office Space Turnover		
What is the volume of Class A office space turnover annually?	Total absorption of New York State Class A office space (square feet)	Secondary data analysis
What is the rate of Class A office space turnover annually?	Total absorption rate of New York State Class A office space	Secondary data analysis
Awareness of Value of Energy Efficiency, Energy Modeling, and Energy Packages		
What is real estate broker awareness of the value of incorporating EE options into the leasing process?	Percent of real estate brokers aware of the value of incorporating energy efficiency into leasing process	Survey of brokers, building owners/managers, tenants
What is A&E firm awareness of the value of incorporating EE options into tenant space designs?	Percent of A&E firms aware of the value of incorporating energy efficiency into tenant space design	Survey of A&E firms, building owners/managers and tenants
What percent of Class A office space building stock has integrated above code EE approaches currently?	Percent of building stock integrating above code energy efficiency approaches	Survey of A&E firms, building owners/managers and tenants. Secondary data analysis

Evaluation Question	Indicator	Source
What are A&E practices to incorporate above code EE into tenant space designs?	Percent of projects for which A&E firms recommend above code energy efficient options	Survey of A&E firms
Tenant-Specific Energy Efficiency Packages		
What is the square footage of participating tenant spaces participating in the modeling and energy efficiency package offer?	Percent of tenant spaces completed without NYSERDA funding	Program data
What are A&E practices to incorporate above code EE into tenant space designs?	Percent of A&E firms that include in-depth energy models and package development in their standard practice	Survey of A&E firms
What is the number and percentage of real estate broker firms trained on energy efficient space design and include energy in leasing dialogues with tenant?	Percent of broker firms trained on energy efficient space design and include energy in leasing dialogues with tenant	Survey of brokers
How many tenant spaces and buildings are participating in the modeling and energy efficiency package offer?	Number of participating tenant spaces and buildings	Program data
How many case studies have been developed?	Number of case studies developed	Program data
Building-Specific Energy Efficiency Packages		
What is the current package development cost of a building-specific package per SF?	Package development costs of building-specific package per SF	Survey of A&E firms
What is the number of CRE building owners and managers offering building-specific packages?	Number of CRE building owners and managers offering building-specific packages	Survey of brokers, A&E firms, building owners/managers and tenants. Secondary data analysis. Interviews with building owners/managers as part of CDM market assessment
Percent of the total addressable square footage in NYS that is covered by a building-specific package	Percent of Class A building stock integrating building-specific packages	Program data, analysis of secondary data
Modeling and Package Development Training		
What number and percentage of brokers and A&E firms have been trained in modeling and energy-efficiency packages?	Percent of A&E firms trained to better incorporate energy efficiency options into tenant space designs and providing packages as standard practice	Surveys of brokers, A&E firms, program data
	Percent of real estate broker firms trained on energy efficiency space design and including energy in leasing dialogues with tenant	Surveys of brokers and tenants

Evaluation Question	Indicator	Source
Energy Efficiency in the Leasing Process		
What are real estate broker practices to incorporate EE options into the leasing process?	Percent of real estate brokers incorporate energy efficiency into leasing dialogue	Surveys of brokers, building owners/managers, tenants
At what point in the leasing process is EE discussed?	Percent of projects with energy efficiency discussions occurring before buildout	Surveys of brokers, A&E firms, building owners/managers, tenants

2017 Research Activities

The Market Evaluation Team conducted several research activities in 2017 and early 2018 to develop baseline measurements for key market-level indicators. This section summarizes those activities.

Secondary Data Analysis

To better understand the commercial real estate market in New York State and to quantify the volume and turnover of Class A office space in the state, a variety of secondary data sources were analyzed (see Table 5). These sources provide snapshots of the office commercial real estate market in New York State (or its regions) for different periods. The reports contain information on historical and forecasted economic and market indicators, such as the inventory of office space, vacancy rates, leasing activity, and average rents.

Table 5. Secondary Sources of New York State Commercial Real Estate Information

Source	Report	Period
ABS Partners	Manhattan Office Market Report	Q3 2016 (3 rd quarter of 2016)
Building Owners and Managers Association	Where America Goes to Work (2016)	2016
CBRE Group	Marketview Office	Long Island Q3-17, Westchester Q2-17, Albany H2-16 (2 nd half of 2016), Buffalo Q4-16
Colliers	US Research Report Office Market Outlook	Q3 2016
Cushman & Wakefield	Marketbeat	Manhattan Q4-16, Long Island Q4-16, Westchester Q4-16, Buffalo Q2-17, Rochester Q4-16, Syracuse Q4-16
Jones Lang La Salle	Office Statistics/ Office Insight	New York Q4-16, Long Island Q4-16, Westchester Q2-17
Office of the New York State Comptroller	New York City's Office Market (2017)	February 2017

Source	Report	Period
Savills-Studley	New York City Office Sector	Q3 2016

Tenant Survey

Background and Sampling Plan

The Market Evaluation Team fielded a computer-assisted telephone survey with commercial real estate tenants. While the program and evaluation focus on Class A office spaces, NYSERDA also expressed interest in gathering information on other class types. The Team created a sample using a combination of data from the InfoGroup and CoStar databases. Because the Team only sought to survey tenants and not owner-occupied spaces, 955 buildings from the CoStar data that were flagged as tenants were randomly selected. InfoGroup data was then used to match business information and contact information to the sites sampled from CoStar. To create a sample frame that was sufficiently large enough to meet the targeted number of completed interviews, this list was supplemented with 4,045 random businesses in the office segment from the InfoGroup dataset for a total of 5,000 sample points.³

Because of the differences between the commercial real estate market in New York City, the Hudson Valley region/Long Island, and upstate New York, the sample was stratified to ensure sufficient representation of the regions. Quotas were set for survey completes in each region approximately proportional to the population of office buildings in New York State, with a minimum of 20 in each region. Table 6 shows the quotas set for each region.

Table 6. Planned Survey Completes by Geographic Region

Region	Planned Completes
NYC	24
Hudson Valley/ Long Island	24
Upstate	20
Total	68

The definition of the Hudson Valley/Long Island region includes Orange, Rockland, Sullivan, Ulster, Dutchess, Putnam, Westchester, Suffolk, and Nassau counties. This approximately aligns with the service

³ After creating the sample frame of 5,000 tenants, the team removed some tenants from the frame due to invalid contact information. The final sample frame included 4,967 businesses.

territories of ConEd (excluding New York City), Orange & Rockland, and PSEG Long Island. Upstate New York is defined as the rest of the state, excluding New York City.⁴

Survey Outcomes & Dispositions

The Market Evaluation Team fielded the telephone survey between August 21 and September 6, 2017. The response rate was 4% and the cooperation rate was 19%, as shown in Table 7.⁵ Appendix A describes how the response rate and cooperation rate are calculated.

Table 7. CRE Tenant Telephone Survey Dispositions

Disposition	Category	Count/Rate
Complete interview	I	69
Eligible incomplete interview	N	6
Survey-ineligible business (e.g., do not lease space or not office/mixed use)	X1	104
Not an eligible business (e.g., disconnected phone, residential phone number, computer tone, wrong number)	X2	434
Business with undetermined survey eligibility (e.g., mid-interview terminate, refusal, language problems)	U1	1,314
Undetermined if eligible business (e.g., no answer, busy signal, blocked number, unused sample)	U2	3,040
Estimated proportion of cases of unknown survey eligibility that are eligible	e1	42%
Estimated proportion of cases of unknown business eligibility that are eligible	e2	77%
Cooperation Rate	RR3	19%
Response Rate	COOP3	4%

The sample was designed to be proportional to the regional distribution of the New York State population of office buildings. Table 8 shows the regional distribution of the population compared to the survey responses.

⁴ Please note that this definition differs slightly from the Commercial Baseline Study, which includes Westchester County with New York City. The Baseline Study also includes Central Hudson in the Hudson Valley region, while this report groups that in the Upstate region.

⁵ Using AAPOR Response Rate 3 (RR3) and Cooperation Rate 3 (COOP3), respectively.

Table 8. Distribution of Office Segment Population and Sample by Geographic Region

Region	New York State Population	Tenant Survey Respondents (n=69)
NYC	40%	35%
Hudson Valley/ Long Island	32%	36%
Upstate	28%	29%

Source: InfoGroup data and Tenant Survey

Architecture and Engineering Firm Survey

Background and Sampling Plan

NYSERDA provided the Market Evaluation Team with a list of A&E firms collated by the CRE Tenant Initiative program staff consisting of 1,291 records. After cleaning the data to remove duplicate contacts, contacts without phone numbers, and similar issues, the final population was 889 contacts at 494 unique firms.

In the original scope of work, NYSERDA estimated the population of A&E firms in New York State to be 5,673. Based on that assumption, the Team had planned to survey 68 firms to meet $\pm 10\%$ precision at 90% confidence. Given the smaller than expected size of the population and the historically hard-to-reach nature of A&E firms, the sampling approach was adjusted from a stratified random sample to a census attempt, meaning that the Market Evaluation Team would attempt to contact all firms in the sample frame. The Team also used experienced professional staff to conduct these interviews, rather than fielding the survey through the Opinion Dynamics telephone call center.

Survey Outcomes and Dispositions

The survey was fielded between August 16, 2017 and December 4, 2017. The initial sample frame consisted of 494 unique businesses,⁶ but 230 firms were removed from the sample frame in coordination with a separate NYSERDA study of ESCOs being conducted at the same time by Opinion Dynamics as part of the Statewide Commercial Baseline Study. During fielding, 145 sample points were identified as invalid (e.g., not qualified for the study, wrong number, bad contact information, or disconnected phone)

⁶ The Market Evaluation Team considered each architect and engineering firm as a unique sample point. However, for many firms, the InfoGroup data included contact information for multiple contacts at each firm.

either through attempted calling or secondary research.⁷ A total of 13 interviews were completed of the 119 remaining valid sample points, resulting in an effective response rate of 11%.

Table 9. Dispositions of A&E Firm Interviews

	Count
Total Sample Points	494
<i>Removed for ESCO Study</i>	- 230
Sample Points After ESCO Study Coordination	264
<i>Invalid Sample Points</i>	- 145
Total Valid Sample Points	119
Completed Interviews	13
Voicemail	48
No answer	29
Email correspondence	12
Not available	11
Gatekeeper or unspecified callback	5
Callback appointment	1

Real Estate Broker In-Depth Interviews

Background and Sampling Plan

NYSERDA estimates that there are approximately 450 commercial real estate brokers in New York State. Due to extremely low response rates, the original approach of contacting individual broker firms (described in Appendix B) was not feasible. The Market Evaluation Team therefore worked with NYSERDA to develop an alternate approach of capturing the viewpoints of commercial real estate brokers.

In the alternate approach, representatives of commercial real estate broker associations in New York were interviewed to provide a market-level view on the baseline metrics studied in this evaluation. The Team identified 11 commercial real estate broker associations with a presence in New York State and attempted to interview as many contacts associated with these associations as possible (i.e., a census attempt). When

⁷ The Market Evaluation team identified invalid businesses based on the 889 contacts in the sample. For many firms, the InfoGroup data included contact information for multiple contacts. Depending on the disposition, some businesses were ruled invalid after speaking to one contact (e.g., if the firm only served the residential market) but in most cases attempts were made to contact all contacts at each business.

possible, the Team attempted to contact multiple people at many of the 11 associations, provided that each contact worked at a different firm.

Interview Outcomes and Dispositions

Seven interviews were completed with representatives from commercial real estate broker associations operating in New York State. While six of the interviews were with representatives of the same association (Commercial & Industrial Real Estate Brokers or CIREB), they represented views of brokers from different firms and in different regions from the state. Overall, interviewees included five firms focused on upstate New York, one firm focused on New York City, and one firm focused on the Hudson Valley region.

Note that because the alternate approach chosen by NYSERDA was to collect market-level views from broker association representatives, the information collected in the interviews was qualitative in nature. Respondents provided their view of their association's membership and the market overall instead of specific data points from individual firms.

Building Owner and Manager In-Depth Interviews

Background and Sampling Plan

The Market Evaluation Team conducted in-depth interviews with building owners and property managers of Class A office space. Given the small population size (an estimated 100-150 firms) and the difficulty of completing interviews with this group, the Team attempted to contact all firms (census attempt) and complete as many interviews as possible, with a target of 40 completed interviews.

The sample for this research effort heavily leveraged the building owner and property manager sample developed for the Commercial Baseline Study Customer Decision Making (CDM) Market Assessment. That sample was based on four components: (1) InfoGroup database to gather company and contact information; (2) CoStar data to gather building information (e.g., owner or tenant occupied); (3) secondary research (e.g., contacts pulled from BOMA and other relevant associations); and (4) contacts from past research in the commercial real estate sector conducted by Opinion Dynamics. The total sample consisted of 820 contacts at 395 unique firms.

The targeted firms were contacted between March and November 2017 as part of the CDM Market Assessment. The length of the CDM survey prohibited combining the two research efforts because too many additional questions were required to address the research objectives of this study. As a result, these firms were contacted first as part of the CDM Market Assessment and then again later in the year for this

effort. During the CDM interview, completed with 20 building owners and property managers, the respondents were asked if they were willing to take part in a follow-up interview. These 20 previously-interviewed building owners and property managers were the target population for the CRE building owner and manager in-depth interviews.

Interview Outcomes and Dispositions

The Market Evaluation Team re-contacted the 20 interviewed large building owners and property managers in New York State starting in November 2017. Five follow-up interviews were completed. Note that some questions from this evaluation were also asked as part of the CDM interviews. In those cases, the Team reported the results from the 20 CDM building owner/manager interviews.

Results

This section provides the results of the 2017 baseline research. The Market Evaluation Team has organized the section by the following broad research topics:

- Class A Office Space Turnover
- Awareness of Value of Energy Efficiency, Energy Modeling, and Energy Packages
- Tenant-Specific Energy Efficiency Packages
- Building-Specific Energy Efficiency Packages
- Modeling and Package Development Training
- Energy Efficiency in the Leasing Process

With the exception of Class A Office Space Turnover, all the research topics listed above are presented in the same tabular format. To address each indicator, various market actors were asked related questions. Each table summarizes these questions as well as the responses, by market actor (italicized rows). A final metric that best describes the market baseline was then selected, shown in the highlighted rows. In most cases, the final metric is based on the question asked of the market actor to which the metric most directly applied. For example, if the metric was to quantify the share of real estate brokers that performed a certain action, then the final metric was based on the question asking brokers about that action. This was based on the assumption that their response would be more accurate than the perception of another party, which can be used to provide confirmation and context. Note that in some cases, related, but not directly comparable questions were asked of the different groups and show the results for these related questions for context.

Class A Office Space Turnover

NYSERDA seeks to quantify the annual Class A office space turnover in New York State to understand the potential market for the CRE Tenant Initiative. To estimate the turnover of Class A space in New York State, The Market Evaluation Team first determined the total market size (in square feet) and then the share that is Class A. These values were estimated by reviewing recent market reports issued by commercial real estate firms and organizations.⁸ In some cases, the estimates in the different sources

⁸ The tables in this section show the major real estate markets in New York State grouped by geographic regions. Please note that the markets' assigned regions do not perfectly align with the regions defined for this study, but they do provide an indication of the relative sizes of the markets in the three regions

varied considerably, due to timing and methodological differences. Where multiple equally reliable estimates were available, the Team took the average value to develop the estimated value, shown in the “Average Value” column. Table 10 shows the estimated total office space area in New York State by market and overall.

Table 10. Estimated Total Office Space Area in New York State, by Region (Square Feet)

Market	Average Value	ABS Partners Q3 2016	Avison Young Q4 2016	CBRE 2016-2017	Colliers Q3 2016	Cushman & Wakefield Q4 2016	Jones Lang Lasalle 2016-2017	Savillis Studley Q3 2016	State Comptroller
Upstate									
Capital Region – Albany	29,359,315	--	--	29,359,315 (H2 2016)	--	--	--	--	--
Greater Buffalo	17,373,236	--	--	12,711,873 (Q4 2016)	--	22,034,598	--	--	--
Greater Rochester	14,069,668	--	--	--	--	14,069,668	--	--	--
Syracuse	16,070,253	--	--	--	--	16,070,253	--	--	--
Hudson Valley and Long Island									
Long Island	44,741,646	--	--	41,531,675 (Q3 2017)	61,343,672	34,108,095	41,983,140 (Q4 2016)	--	--
Westchester	29,543,617	--	--	27,993,304 (Q2 2017)	--	28,903,251	31,734,296 (Q2 2017)	--	--
Downstate									
New York City	462,235,741	439,192,543	445,805,012	--	506,126,142	396,941,587	449,805,012 (Q4 2016)	447,712,000	550,000,000
New York State	613,393,475								

Where possible, information was also gathered from the sources on the share of Class A office space. This information is summarized in Table 11. This table also includes a column showing the average square footage of Class A office space in each market and the weighted average for the state overall.

Table 11. Share of Office Space in New York State That is Class A

Market	Average Value	CBRE 2016-2017	Colliers Q3 2016	Cushman & Wakefield Q4 2016	Jones Lang Lasalle 2016-2017	State Comptroller
Upstate						
Capital Region – Albany	No estimate	--	--	--	--	--
Greater Buffalo	25%	25% (Q4 2016)	--	25%	--	--
Greater Rochester	44%	--	--	44%	--	--
Syracuse	36%	--	--	36%	--	--
Hudson Valley and Long Island						
Long Island	47%	46% (Q3 2017)	--	49%	45% (Q4 2016)	--
Westchester	75%	--	--	76%	73% (Q2 2017)	--
Downstate						
New York City	64%	--	64%		62% (Q4 2016)	66%
New York State (weighted average)	58%					

NYSERDA sought to understand the turnover of Class A commercial real estate in New York State. Turnover can be calculated in terms of **total absorption** (also referred to as “leasing activity”), the total new leased square footage in a given period, and **net absorption**, the total new leased square footage less the total square footage of tenants that no longer occupy their previous spaces. For example, if a market had 100,000 square feet of new leases in 2017 and 80,000 square feet of tenants leaving, then total absorption would be 100,000 square feet and net absorption would be 20,000 square feet. Assuming a total market of 1,000,000 square feet, this would equal a total absorption rate of 10% and a net absorption rate of 2%.

Commercial real estate companies more commonly track net absorption than total absorption. While net absorption is a useful indicator for market demand, a market can experience an overall net negative

absorption rate but still have large amounts of newly leased space which can be targeted by the CRE Tenant Initiative. To best understand potential build out opportunities in a market, total absorption is a better indicator.

Table 12 shows the annual leasing activity (i.e., total absorption) in 2016 and 2017 for New York markets. Average leasing rates range from 3.1% for the Syracuse market to 6.4% for New York City. Overall, the Team estimated an annual leasing rate of 6.1% for New York State or 37.6 million square feet. Using the estimate of 58% of all office space in New York State is Class A, an annual leasing activity was estimated to be 21.8 million square feet for Class A space.

Table 12. Annual Leasing Activity (All Office Space)

Market	Average Leasing Activity		Estimates by Source		
	Rate	Square Footage	Avison Young Q4 2016	CBRE Q3 2017	Cushman & Wakefield Q4 2016
Upstate					
Capital Region – Albany	No estimate	No estimate	--	--	--
Greater Buffalo	4.7%	1,046,314	--	--	1,046,314
Greater Rochester	No estimate	No estimate	--	--	--
Syracuse	3.1%	498,613	--	--	498,613
Hudson Valley and Long Island					
Long Island	3.8%	1,478,166	--	1,880,000	1,076,331
Westchester	5.2%	1,503,359	--	--	1,503,359
Downstate					
New York City	6.4%	26,964,255	27,623,496	--	26,305,013
New York State	6.1%	37,573,628			

Note: Annual leasing activity was extrapolated from mid-year reports if full-year leasing activity was not available.

As shown in Table 13, the net absorption rate varies by market and ranges from -1.3% in the Westchester market to 2.9% in the Buffalo area. Demand for commercial real estate in the overall New York State market was essentially flat in 2016 and 2017, with a net absorption rate of 0.1%. The net absorption rate for Class A office space was not available for all markets, but was very similar to the overall rate for most markets where there was data available.

Table 13. Annual Net Absorption Rate (All Office Space)

Market	Average Net Absorption		Estimates by Source			
	Rate	Square Footage	Avison Young Q4 2016	CBRE 2016-2017	Cushman & Wakefield 2016	Jones Lang Lasalle 2016-2017
Upstate						
Capital Region – Albany	0.7%	204,604	--	0.7% (Q4 2016)	--	--
Greater Buffalo	2.9%	507,023	--	2.7% (Q4 2016)	3.2% (Q2 2016)	--
Greater Rochester	No estimate	No estimate	--	--	--	--
Syracuse	-0.9%	-147,600	--	--	-0.9% (Q4 2016)	
Hudson Valley and Long Island						
Long Island	2.0%	888,505	--	0.5% (Q2 & Q3 2017)	2.4% (Q4 2016)	3.0%
Westchester	-1.3%	-391,608	--	--	-0.9% (Q4 2016)	-1.7%
Downstate						
New York City	-0.1%	-679,533	-0.7%	--	0.7% (Q4 2016)	-0.3%
New York State	0.1%	381,392				

Note: Annual absorption was extrapolated from mid-year reports if full-year leasing activity was not available.

Awareness of Value of Energy Efficiency, Energy Modeling, and Energy Packages

NYSERDA hypothesizes that the development of data, case studies, and testimonials from key market actors will result in their peer market actors having more confidence in custom packages and savings. The peers will then replicate energy efficient space design and change behaviors and office culture without NYSERDA's cost share. However, in order to test this hypothesis, NYSERDA must first understand market actors' baseline awareness of the value of energy efficiency, energy modeling, and energy packages.

NYSERDA developed the following indicators related to market actor awareness of the value of energy efficiency, energy modeling, and energy packages:

- The share of real estate brokers aware of the value of incorporating energy efficiency into the leasing process
- The share of A&E firms aware of the value of incorporating energy efficiency into tenant space design
- The share of building stock integrating above code energy efficiency approaches
- The share of projects for which A&E firms recommend above code energy efficient options

According to representatives from commercial real estate broker associations, brokers are generally aware of the value of energy efficiency, but are rarely trained on the topic nor incorporate it into the leasing process. Nevertheless, brokers seem to be aware that there is an unaddressed value in energy efficiency. Brokers who are highly motivated and in competitive areas of the state seek out information about energy efficiency to help sell space to tenants. From this perspective, if location and rental price are equal, ancillary considerations such as energy efficiency can become a value adding feature.

To understand A&E firms' awareness of the value of energy efficiency, the Market Evaluation Team asked them how often they recommend above-code energy efficient options to their clients with office space. Based on this question, awareness of the value of energy efficiency is likely fairly high with 78% of surveyed firms reporting that they recommend above-code energy efficiency options to their clients either whenever possible (54%) or approximately half the time (23%). While there may be other reasons, beyond awareness of the value, that A&E firms would not recommend above-code energy efficient options, such as limitations due to the age or characteristics of the building or the customers' stated cost

Results

preference, A&E firms aware of the benefits of energy efficiency would likely recommend efficient options in the majority of cases.

On average, A&E firms reported that they recommend above-code energy efficient design approaches in approximately half of projects. Notably, none of the respondents from the tenant survey reported discussing energy efficiency with an A&E firm. However, use of A&E firms is rare among tenants. Of the 14 surveyed tenants (20%) that made any changes to their space's energy-using equipment or systems either as part of the leasing process or since moving into their current space, only one reported having used an A&E firm as part of those changes and energy efficiency was not discussed for that project.

Eighteen percent of CRE tenants reported that their office space had at least some above-code energy efficient measures installed, representing 19% of the total square footage reported. Notably, 37% of respondents did not know if their office space had any above-code energy efficiency measures in place. Also note that tenants were asked about the presence of above-code energy efficient measures which may be different than the energy efficient design approaches targeted in this metric.

Table 14 summarizes the 2017 baseline results for the indicators related to market actor awareness of the value of energy efficiency, energy modeling, and energy packages.

Table 14. Market Awareness of the Value of Energy Efficiency, Energy Modeling, and Energy Packages

Indicator	Result	Source
Percent of real estate brokers aware of the value of incorporating energy efficiency into leasing process	High awareness of EE, but little discussion with tenants	Broker Interviews
<i>Percent of tenants that discussed energy efficiency options with commercial real estate broker (of firms using a broker)</i>	0%	Tenant Survey, Question C5 and E3 (n=18) (74% not applicable)
<i>Percent of brokers who discuss energy efficiency options with tenants as part of the leasing process</i>	Very low share*	Building Owner/Manager Interviews, Question 8 (n=4)
<i>Percent of brokers describing positive value of incorporating energy efficiency options into the leasing process</i>	High awareness of EE, but little discussion with tenants*	Broker Interviews, Question 8 (n=7)
Percent of A&E firms aware of the value of incorporating energy efficiency into tenant space design	77%	A&E Interviews
<i>Percent of A&E firms recommending above-code energy efficient options to clients with office space “roughly half the time” or “whenever possible”</i>	77%	A&E Interviews, Question EE1 (n=13)
<i>Percent of building owners/managers that worked with A&E firms that suggested incorporating above code energy efficiency measures into tenant spaces</i>	Varies greatly by firm*	Building Owner/Manager Interviews, Question 12 (n=4)
Percent of building stock (in square feet) integrating above code energy efficiency approaches	20%	A&E Interviews
<i>Percent of office space A&E firms work with that integrates above code energy efficiency designs or approaches</i>	20%	A&E Interviews, Question EE2 (n=13)
<i>Percent of tenant space with above-code energy efficient equipment</i>	19%	Tenant Survey, Questions E1 and C3 (n=33)
<i>Percent of Class A office space in New York State with above code energy efficiency measures</i>	Varies greatly by firm*	Building Owner/Manager Interviews, Question 2c (n=4)
How often (share of projects) A&E firms recommend above code energy efficient options	52%	A&E Interviews
<i>Percent of projects in which A&E firms recommend above-code energy efficient options to clients with office space (Weighted by total number of projects)</i>	52%	A&E Interviews, Question EE1 (n=11)
<i>Percent of tenants that discuss energy efficiency options with an A&E firm (of firms using an A&E firm)</i>	0%	Tenant Survey, Question E3 and AE1 (n=1) (99% not applicable)

* Insufficient data to provide a quantitative result

Tenant-Specific Energy Efficiency Packages

NYSERDA believes that if tenants are presented with custom modeled packages demonstrating energy savings, incremental project costs, and return on investment, they will be motivated to choose an energy efficient space design. To be able to test this hypothesis in the future, the Market Evaluation Team set a baseline of the number of tenant spaces and projects that incorporate energy efficiency packages.

NYSERDA developed the following indicators related to tenant-specific energy efficiency packages:

- The number of tenant spaces completed without NYSERDA funding
- The percentage of A&E firms and brokers that include in-depth energy models and package development in their standard practice
- The number of participating tenant spaces and buildings
- The number of case studies developed

A&E firms report that over one-third of the Class A square footage they served in the past year by included building-specific detailed energy and financial analyses of energy saving measures. Forty-six percent of responding A&E firms reported that they offer their clients detailed energy analysis and financial analyses of energy saving measures whenever possible (38%) or more than half the time (8%). Overall, A&E firms report that they provide their clients these analyses for 44% of served square footage and 42% of projects.

Table 15 summarizes the 2017 baseline results for the indicators related to tenant-specific energy efficiency packages.

Table 15. Tenant-Specific Energy Efficiency Package Metrics

Indicator	Result	Source
Number of tenant spaces with energy and financial analyses completed without NYSERDA funding	<5%	Combined
<i>Percent of the Class A office building stock (in terms of square footage) for which A&E firms provide building-specific detailed energy and financial analyses of energy-saving measures</i>	37%	A&E Interviews, Questions EM1 and EM2 (n=10)
<i>Percent of tenants whose building owner/manager or A&E firm offered a building-specific detailed energy analysis and financial analysis for the energy efficient equipment they were considering</i>	0%	Tenant Survey, Questions E3, B1 and AE3 (n=57) (91% not applicable)
<i>Number of tenants receiving detailed energy analyses who decided to move forward with a building-specific financial analysis</i>	0%	CDM Building Owner/Manager Interviews, Question 22 (n=20)
<i>How often building owners and managers offer building-specific detailed energy analysis or financial analysis for energy-saving measure to office space tenants (Percent reporting “whenever possible”) How often office space tenants go through with the detailed energy or financial analysis for energy-saving measures offered (Percent reporting “whenever possible”)</i>	Very rarely*	Broker Interviews, Questions 13 and 14 (n=7)
Percentage of A&E firms that include in-depth energy models in their standard practice	46%	Based on A&E Interviews
<i>How often A&E firms offer clients with detailed energy and financial analyses of energy-saving measures (Percent reporting “roughly half the time” or “whenever possible”)</i>	46%	A&E Interviews, Questions EM3 and EM4 (n=13)
<i>Percent of office building stock for which A&E firms provide detailed energy and financial analyses of energy-saving measures</i>	44%	A&E Interviews, Questions EM1 and EM2 (n=10)
Number of participating tenant spaces and buildings	4	Program data (May 2017)
Number of case studies developed	0	Program data (May 2017)

* Insufficient data to provide a quantitative result

Building-Specific Energy Efficiency Packages

NYSERDA hypothesizes that if tenants are presented with building-specific packages, then they will not need to model their space and will choose an energy efficient space design. To be able to test this hypothesis in the future, NYSERDA developed the following indicators related to building-specific energy efficiency packages:

- Package development costs of building-specific packages
- The share of CRE building owners and managers offering building-specific packages
- The share of Class A building stock integrating building-specific packages

The Market Evaluation Team asked A&E firms to estimate the cost for developing a building-specific energy analysis. Their responses varied widely, from \$0.05 to \$6.00 per square foot, with an average of \$2.48 per square foot. The wide variation may be a result of different sized projects as the average cost per square foot would likely be lower for a very large space, but analysis of responses in this period were inconclusive.

Based on the results of research of building owners, commercial real estate brokers, tenants, and A&E firms, the Team estimates that the share of building owners and managers offering building-specific energy efficiency packages is less than 10%. Building owners report that they offered tenants these packages in only a small share of leases signed in the past year and commercial real estate brokers corroborated this from their perspective. None of the surveyed tenants reported that their building owner or property manager offered a building-specific detailed energy analysis and financial analysis for the energy efficient equipment they were considering. Among the 13 respondents to the A&E survey, seven did not know how often building owners and managers offered to provide building-specific packages to their tenants. Of the six respondents who were familiar with this, they reported that 13% building owners and managers with whom they work offer these packages.

The Team estimates that less than five percent of Class A building stock integrate building-specific packages. Of the five respondents in the tenant survey who indicated that they discussed energy efficiency options with their building owner or manager, none of them reported that the building owner or manager offered a building-specific energy efficiency package. Finally, building owners and property managers stated that only a very small share of tenants decided to move forward with building-specific energy and financial analyses.

Table 16 summarizes the 2017 baseline results for the indicators related to package development costs, the share of building owners and managers offering building-specific packages, and the share of Class A building stock offering building-specific packages.

Table 16. Building-Specific Energy Efficiency Package Metrics

Indicator	Result	Source
Package development costs of building-specific package per SF	\$0.05 - \$6.00/sqft	A&E Interviews
<i>Cost for developing a building-specific detailed energy analysis and financial analysis</i>	<i>\$0.05 - \$6.00/sqft*</i>	<i>A&E Interviews, Question CV1 (n=5)</i>
Percent of CRE building owners and managers offering building-specific packages	<10%	Combined
<i>Percent of the building owners or managers that offer a detailed energy analysis and financial analysis of energy-saving measures to their tenants</i>	<i>13%</i>	<i>A&E Interviews, Question EM6 (n=6)</i>
<i>Percent of tenants whose building owner or manager offered a building-specific detailed energy analysis and financial analysis for the energy efficient equipment they were considering</i>	<i>0%</i>	<i>Tenant Survey Question E2 and B1 (n=57)</i>
<i>Percent of tenants using building-specific energy efficiency packages consisting of detailed energy and financial analyses</i>	<i>Very small share*</i>	<i>CDM Building Owner/Manager Interviews, Question 22 (n=20)</i>
<i>How often brokers find that building owners and managers offer building-specific detailed energy analysis or financial analysis for energy-saving measure to their office space tenants</i>	<i>Very rarely*</i>	<i>Broker Interviews, Question 13 (n=7)</i>
Percent of Class A building stock (in square feet) integrating building-specific packages	<5%	Tenant Survey
<i>Percent of tenants whose building owner/manager or A&E firm offered a building-specific detailed energy analysis and financial analysis for the energy efficient equipment they were considering</i>	<i>0%</i>	<i>Tenant Survey, Questions B1 and AE3 (n=6) (91% not applicable)</i>

* Insufficient data to provide a quantitative result or single estimate

Modeling and Package Development Training

To develop a base of market actors with confidence conducting energy and financial analyses for tenant spaces and recommending energy efficient space design, NYSERDA plans to offer market actor training.

Results

To determine the need for such training, NYSERDA seeks to understand the baseline level of relevant training among market actors.

NYSERDA developed the following indicators related to modeling and package development training:

- The share of A&E firms trained to better incorporate energy efficiency options into tenant space designs and provide packages as standard practice
- The share of real estate broker firms trained on energy efficiency space design and including energy in leasing dialogues with tenants

More than half (54%) of surveyed A&E firms reported having a staff member who has received training focused on incorporating EE options into office space design. These trainings were hosted by a variety of organizations, such as U.S. Green Building Council (LEED), Urban Green Council, FlexTech, and others. Additionally, 38% of surveyed firms have a staff member who has received training focused on providing detailed energy analysis and financial analysis of energy-saving measures as a part of tenant space design. These trainings have been hosted by the Association of Energy Engineers and NYSERDA.

According to both commercial real estate brokers and building owners, a very small percentage of brokers are trained on energy efficiency space design.

Table 17 shows the results of indicators related to model and package development training.

Table 17. Modeling and Package Development Training Metrics

Indicator	Result	Source
Percentage of A&E firms trained to better incorporate energy efficiency options into tenant space designs and providing packages as standard practice	54%	A&E Interviews
<i>Percent of A&E firms trained to incorporate energy efficiency options into office space designs</i>	54%	A&E Interviews, Question EE5 (n=13)
<i>Percent of A&E firms whose staff received any training focused on providing detailed energy analysis and financial analysis of energy-saving measures as part of tenant space design</i>	38%	A&E Interviews, Question EM7 (n=13)
<i>Percent of building owners or managers whose A&E firms were trained to incorporate energy efficiency options into tenant spaces</i>	100%	Building Owner/Manager Interviews, Question 13 (n=4)
Percentage of real estate broker firms trained on energy efficiency space design	<5%	Broker Interviews
<i>Percent of building owners/managers with brokers trained on energy efficiency space design</i>	Very low percentage*	Building Owner/Manager Interviews, Question 10 (n=4)
<i>Percent of brokers trained in energy efficiency space design</i>	Very low percentage*	Broker Interviews, Question 11 (n=7)
<i>Percent of brokers receiving training that includes information about energy analyses (including modeling) and financial analyses</i>	0%	Broker Interviews, Question 12 (n=7)

* Insufficient data to provide a quantitative result

Energy Efficiency in the Leasing Process

NYSERDA also seeks to understand energy efficiency discussions in the leasing process. NYSERDA developed the following indicators related to this topic:

- The share of real estate brokers incorporating energy efficiency into the leasing dialogue
- The point in the leasing process at which energy efficiency is discussed

According to representatives from commercial real estate broker associations, it is rare for real estate brokers to incorporate energy efficiency options into the leasing process. Energy efficiency is not a primary consideration for most tenants and may only be considered after location and rent. Therefore, energy efficiency options are not a primary conversation point for brokers unless there is an obvious selling point, such as LEED certified buildings, that they know would interest their tenant. Larger

Results

organizations that are taking a full floor in a building or a large portion of the building space will have more leverage over energy negotiations and related lease provisions. Prospective tenants look at the total cost of occupancy, which may include utility costs, when comparing alternatives, but energy efficiency typically does not have a major impact on the decision.

The tenant survey suggested that energy efficiency options are rarely integrated into the leasing process. Only 7% of respondents reported that energy efficiency options were discussed during leasing. Of the five tenants who did discuss energy efficiency options during the leasing process, all of them had discussions with the building owner or manager, two had discussions with an equipment contractor, and none of them had discussions with their broker or an A&E firm. Of the five respondents in the tenant survey who had energy efficiency discussions in their leasing process, three of them reported that discussions occurred after the space was already occupied. One respondent reported that discussions occurred during the buildout of the space, and another reported that discussions occurred during the leasing negotiations.

The survey of A&E firms indicates that energy efficient upgrades are most often discussed while the office space is vacant prior to the buildout, followed by when the space is occupied. Rarely are discussions conducted during the buildout process.

Table 18 presents the results of indicators related to the leasing process.

Table 18. Leasing Process Metrics

Indicator	Result	Source
Percentage of real estate brokers incorporating energy efficiency into leasing dialogue	<10%	Broker Interviews
<i>Percent of building owners or managers with brokers who discussed energy efficiency options with tenants as part of the leasing process</i>	<i>Very low percentage*</i>	<i>Building Owner/Manager Interviews, Question 8 (n=4)</i>
<i>Frequency with which energy efficiency factors into the leasing process</i>	<i>Very low percentage*</i>	<i>Broker Interviews, Question 6 (n=5)</i>
At what point in the leasing process is energy efficiency discussed?	<i>If discussed at all, typically discussed before buildout</i>	Combined
<i>Percent of A&E firms that typically discuss energy efficiency before buildout of space</i>	<i>85%</i>	<i>A&E Interviews, Question EE4 (n=13)</i>
<i>Percent of tenants who discussed energy efficiency before buildout of space (of those who discussed energy efficiency at all)</i>	<i>20%</i>	<i>Tenant Survey, Question E4 (n=5) (7% of total reported discussing)</i>
<i>Percent of brokers firms that typically discuss before buildout of space</i>	<i>If discussed at all, typically discussed before buildout*</i>	<i>Broker Interviews, Question 9 (n=7)</i>

* Insufficient data to provide a quantitative result

Appendix A. Survey Response Rate Methodology

The survey response rate (RR) is the number of completed interviews divided by the total number of potentially eligible respondents. RR3 was calculated using the standards and formulas set forth by the American Association for Public Opinion Research (AAPOR).⁹ The formulas used to calculate RR3 are presented below. The definitions of the letters used in the formulas are shown in Table 19 below.

Equation 1. AAPOR Response Rate 3

$$RR3 = \frac{I}{(I + N + e1(U1 + e2 * U2))}$$

Where:

$$e1 = \frac{(I + N)}{(I + N + X1)}$$

$$e2 = \frac{(I + N + X1 + U1)}{(I + N + X1 + U1 + X2)}$$

The cooperation rate (CR), which is the number of completed interviews divided by the total number of eligible sample unit was also calculated. The Market Evaluation Team used AAPOR Cooperation Rate 3 (COOP3) for the survey used in this evaluation, which is calculated as:

Equation 2. AAPOR Cooperation Rate 3

$$COOP3 = \frac{I}{((I + P) + R)}$$

⁹ *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*, AAPOR, 2011.
http://www.aapor.org/AM/Template.cfm?Section=Standard_Definitions2&Template=/CM/ContentDisplay.cfm&ContentID=3156.

Table 19. Disposition Codes Used in RR3 and COOP3

Disposition	Definition
I	Complete interview
N	Eligible incomplete interview
X1	Survey-ineligible business (e.g., do not lease space or not office/mixed use)
X2	Not an eligible business (e.g., disconnected phone, residential phone number, computer tone, wrong number)
U1	Business with undetermined survey eligibility (e.g., mid-interview terminate, refusal, language problems)
U2	Undetermined if eligible business (e.g., no answer, busy signal, blocked number, unused sample)
e1	Estimated proportion of cases of unknown survey eligibility that are eligible
e2	Estimated proportion of cases of unknown business eligibility that are eligible
P	Partial Interview
R	Refusal
RR3	Cooperation Rate
COOP3	Response Rate

Appendix B. Supplemental Data Collection Methodology

This appendix provides additional detail about the methodology of the real estate broker and building owner in-depth interviews.

Original Methodology for Real Estate Broker In-Depth Interviews

As described in Section 0, the Market Evaluation Team revised the methodology for interviewing commercial real estate brokers due to extremely low response rates using our original approach. This section describes the original approach and outcomes.

Background and Sampling Plan

NYSERDA estimates that there are approximately 450 commercial real estate brokers in New York State. In the study's original approach, the Market Evaluation Team planned to contact all brokers (i.e., conduct a census attempt) to achieve a reasonable number of completed interviews. The Team planned to conduct as many interviews as possible, with a target of 50 completed interviews. Because this population is known to be very hard to reach, this research was conducted as in-depth interviews, using experienced professional staff to complete the interviews.

The following steps were used to create the sample of commercial real estate brokers:

- Using the InfoGroup database, potential commercial real estate brokers were identified based on the firms' SIC or NAICS codes. The "real estate" SIC code (653118) and "offices of real estate agents and brokers" NAICS codes (53121001 – 53121010) were used.
- The Team then removed firms from this list that appeared likely to be a non-commercial real estate broker. To do this, words related to the residential market, such as apartment, housing, and condo were flagged. The Team also researched large firms online to verify that they had a commercial offering and removed them from the list if they did not.

- 276 businesses that looked likely to operate in the commercial sector were also flagged, based on (1) being listed as a top commercial leasing firm on the CoStar website,¹⁰ (2) being listed as a commercial real estate broker on the Real Estate Board of New York (REBNY) website, or (3) having the term “commercial” in their name. The Market Evaluation Team prioritized these “likely” commercial brokers in the sample.

After implementing the above three steps, the database contained approximately 10,000 firms. The Team assumed that the vast majority of these firms likely focus on the residential market, but was unable to screen them out without conducting additional research on each firm. Using this sample frame, a sample of 500 firms was drawn, including the 276 firms identified as very likely to operate in the commercial sector and an additional 224 randomly selected firms. Of these 500, 73% had fewer than 10 employees, 21% had 10 to 49 employees, and 6% had 50 or more employees, based on InfoGroup data.

Interview Outcomes and Dispositions

The Market Evaluation Team called on the sample of 500 firms from August 11 to November 3, 2017. However, the response rate from these interviews was extremely low, with only one interview completed in this period. Potential respondents who refused to be interviewed cited their lack of time as the primary reason for not completing the interview as well as the lack of an incentive to compensate them for their time. The interviewers stressed the short length of the interview (under 10 minutes) but were still unable to convince brokers to answer the questions.

Recognizing the very low response rate, the Market Evaluation Team worked with InfoGroup to procure email addresses for as many of the firms in the sample as possible. In October and early November, multiple emails were sent to the 96 firms for which the Team had email addresses to schedule interviews, but with no success. In total, one interview was completed, and 181 commercial real estate brokerage firms were contacted, through either telephone or emails.

To capture the viewpoints of commercial real estate brokers for this evaluation, the Market Evaluation Team worked with NYSERDA to develop alternate approaches when it became clear that interviewing

¹⁰ <http://www.costar.com/News/Article/Top-Commercial-Real-Estate-Firms-and-Brokers-in-New-York-City-Win-CoStar-Power-Broker-Awards/189590>

individual brokers was not a viable approach as planned. After discussion with NYSERDA, the Team revised its approach to interview representatives of commercial real estate broker associations in New York to provide a market-level view on the baseline metrics studied in this evaluation, as described in Section 0.

Building Owner and Manager In-Depth Interviews for CDM Market Assessment

As described in Section 0, the Market Evaluation Team conducted in-depth interviews with building owners and property managers of Class A office space. The sample for this research effort was based on the building owner and property manager interviews conducted for the CDM Market Assessment, a separate study conducted under the NYSERDA Statewide Commercial Baseline Study. This section provides detail on the development of the CDM building owner and property manager sample.

Background and Sampling Plan

The CDM sample was based on four components: (1) InfoGroup database to gather company and contact information; (2) CoStar data to gather building information (e.g., owner or tenant occupied); (3) secondary research (e.g., contacts pulled from BOMA and other relevant associations); and (4) contacts from past research in the commercial real estate sector conducted by Opinion Dynamics. The total sample consisted of 820 contacts and 395 firms.

The Market Evaluation Team contacted the targeted firms between March and November 2017 as part of the CDM Market Assessment. The length of the CDM survey prohibited combining the two research efforts because too many additional questions were required to address the research objectives of this study. As a result, the Team planned to contact these firms first as part of the CDM Market Assessment and then again later in the year for this effort. During the CDM interview, completed with 20 building owners and property managers, respondents were asked if they were willing to take part in a follow-up interview.

Interview Outcomes and Dispositions

Table 20 shows the final dispositions of the CDM survey effort. Note that the sample contained 820 contacts at 395 firms, meaning the sample contained multiple contacts for many of the firms and attempts

were made to reach each contact whenever possible. The table below shows the disposition of the contact attempt closest to completion. For example, if a firm had five contacts in the sample and voicemails were left for four of the contacts and the Team an email exchange with the fifth contact, the firm would be recorded as “email correspondence” in the table because this contact attempt was likely the closest to completing the interview.

Table 20. Final Disposition of Building Owner Interviews for Customer Decision Making Study

	Count of Firms
Completed Interviews	20
Scheduled Uncompleted Interviews	5
Email Correspondence	13
Callback Appointment	5
Gatekeeper or Unspecified Callback	12
Substitute Number or Contact	19
Voicemail	94
No Answer/Busy	3
Not Qualified	109
Refusal	34
Do Not Call Back	15
Bad or Wrong Number	15
Not Called	51
Total	395

Appendix C. Indirect Impacts Methodology

Background

As part of the evaluation of the NYSERDA CRE Tenant Initiative, the Market Evaluation Team plans to assess indirect impacts from the Initiative. NYSERDA defines indirect impacts as “market effects that are expected to accrue over the longer term from follow-on market activity that results from NYSERDA’s investments.” Market effects are inclusive of clearly definable actions taken by individual customers (commercial office tenants or building owners) in New York State as well as longer-term structural market changes that result from investments.

Future studies in this evaluation will assess indirect impacts by quantifying energy savings (MWh, MMBtu) and emissions reductions (tons of CO₂e) that result in the market as a result of the CRE Tenant Initiative but are not directly incented nor quantified by it. Indirect impacts may result from one or more of the following pathways:

1. Indirect impacts can result from the replication of modeled energy efficient packages by participating market actors (A&E firms and brokers) at other spaces or buildings or with other customers that would not have occurred in the absence of the initiative.
2. In some cases, indirect impacts may also result from non-participating market actors. These firms could help customers implement energy savings actions because of the initiative but without participating. This could result from their increased awareness or understanding of energy efficiency due to program outreach, education, or communications, or through use of a tool developed by the initiative.
3. Indirect impacts can also occur at a facility that has participated in the NYSERDA CRE Tenant Initiative. This is typically referred to as participant spillover. For example, if incentives provided through the initiative directly targeted one tenant space of a facility, but a customer also makes improvements to a different space without a NYSERDA incentive, those impacts could be considered indirect.
4. In some cases, indirect impacts may also result from non-participant spillover. Non-participant spillover occurs when a customer performs an energy efficient action as a result of the initiative

but has not participated in the initiative. This could result from their increased awareness or understanding of energy efficiency due to program outreach, education, or communications.

It should be noted that indirect impacts are not additive across the various impact pathways when measured at the customer level and at the market actor level. If indirect impacts are measured at both levels, care will need to be taken to avoid double-counting.

In addition, indirect impacts are not additive across NYSERDA initiatives when multiple initiatives operate in the same market sector and try to influence the same customers and market actors. Since the degree of overlap is not currently known, the Market Evaluation Team recommends focusing on market actors in the 2019 study and more fully exploring participant and non-participant spillover in future studies if the Team finds evidence of its presence.

Table 21 shows the indirect impacts NYSERDA expects to realize from the CRE Tenant Initiative.

Table 21. Forecasted Indirect Impacts for CRE Tenant Initiative

Indirect Impact		2020	2025	2030
Energy Efficiency	MWh Cumulative Annual	61,600	220,000	411,000
	MMBtu Cumulative Annual	65,000	232,000	433,000
Renewable Energy	MWh Cumulative Annual	-	-	-
	MW	-	-	-
CO2e Emission Reduction (metric tons) Cumulative Annual		20,900	74,700	139,000

Source: Commercial Chapter for Market Development (May 20, 2016)

Underlying Theory Behind Indirect Impacts

The underlying concept behind indirect impacts is that the NYSERDA initiative creates market change that leads to further energy savings that NYSERDA does not directly claim.

The logic model for the CRE Tenant Initiative contains a number of specific outcomes associated with indirect impacts. They include the items in Table 22 below.

Table 22. CRE Tenant Initiative Logic Model Outcomes Associated with Indirect Impacts

Timeframe	Outcomes
Near-Term Outcomes	Demonstrated replicability of tenant-specific packages to the whole building
	Demonstration of a cost- and time-effective replicable approach to energy savings above code through use of packages
	Projects using standardized office tenant energy efficiency packages are completed (in non-participating spaces)

Timeframe	Outcomes
	NYSERDA-funded models lead to unfunded, market-initiated modeling/energy efficient package activities
	Tools become incorporated into business models and leasing process
Mid- and Long-Term Outcomes	Increase in presentation of building-specific or standardized packages during leasing process
	Increase in measure adoption by tenants that are presented building-specific or standardized packages
	Energy efficiency discussion becomes part of the commercial leasing dialogue early in the process
	Brokers and A&E firms include in-depth energy models and package development in their standard practices
	Standardized packages generate tenant demand for efficient build-outs in absence of NYSEDA funding
	Tools are used to justify improvements in building systems, increased asset value, and increased rental rates

Source: Commercial Real Estate Tenant Initiative Logic Model from *CRE Tenant Market Evaluation Work Plan, April 19, 2017*.

Methodology

To assess whether the CRE Tenant Initiative has resulted in the predicted outcomes listed above, the Evaluation Team will add modules to the surveys planned to be fielded in 2019 and 2022. Because spillover and market effects are more likely to be generated by market actors, the 2019 evaluation will assess indirect impacts from the market actor perspective only. However, the customer survey will contain high-level questions to test whether customer-level indirect impacts are likely to be present. If these investigations find evidence of customer-level spillover, the 2022 study will include a more complete investigation, including questions designed to quantify customer spillover. If the 2022 study estimates indirect impacts from both market actor and customer perspectives, steps will be taken to avoid double-counting.

A challenging component of indirect impact assessment is ensuring that the impacts captured in our methodology are attributable to the CRE Tenant Initiative. The Team will include a series of questions on initiative influence to ensure that each case of indirect impacts captured can be directly connected to the initiative.

Based on this methodology, the Market Evaluation Team will work with NYSEDA to develop the questions to add to the planned surveys to assess and quantify indirect impacts as part of the 2019 and 2022 evaluations. These efforts are described in more detail below.

Market Actor Perspective

Participating Market Actors

Many of the expected outcomes of the CRE Tenant Initiative are related to the use of packages and tools. Market actors (A&E firms and brokers) are the primary users of these packages and tools. They interact with multiple tenants and building owners/managers, including non-participants, and are therefore the most likely to generate indirect impacts. Participating market actors will have projects that were completed through the initiative and are claimed as direct impacts. However, they may also use the same packages and tools outside of the program, and savings from those projects may be able to be claimed as indirect impacts.

To assess indirect impacts associated with market actors, the team plans to add questions on indirect impacts to the A&E firm and broker surveys planned to be fielded in 2019 and 2022. There are several ways that the actions of A&E firms and brokers can result in indirect impacts, such as including energy models and package development in their standard practice and incorporating energy efficiency in the leasing dialogue. If the Market Evaluation team can determine that these actions are taken as a result of their engagement with or knowledge of the NYSERDA initiative, the team can assess these actions and quantify them as indirect impacts. The surveys fielded in 2017 already included some questions that cover these concepts and the Market Evaluation Team will work with NYSERDA to add supplemental questions to quantify indirect impacts.

The Market Evaluation team will use a multi-step process to determine indirect impacts associated with market actors:

- If the respondent has participated in the initiative or has awareness of elements of the initiative, the team will then determine whether or not the market actor performed actions resulting in energy savings or CO₂e reductions that are in addition to those directly associated with the CRE Tenant Initiative (and, at a very high level, what these actions were).
- The team will determine the degree of influence that NYSERDA's initiative had on the actions taken by the market actor.
- If it is determined that the market actor took action as a result of the influence of NYSERDA's initiative, the team will ask follow-up questions to 1) determine more specifically what actions were taken and 2) characterize these actions in a manner that will allow the team to calculate resulting energy savings.

- Resulting energy savings will be determined through rigorous, defensible estimation of impacts that rely on agreed-upon frameworks for energy savings wherever possible. For example, if it is determined that participants take discrete, easily measurable actions such as installation of energy saving measures, the team will leverage the New York TRM.¹¹ Changes in operation of equipment will leverage New York-specific parameters and custom, site-specific parameters wherever possible.¹²
- Finally, the team will extrapolate the survey-based results to the population to account for market actors who did not complete the survey, adjusting for size and segment as necessary.

Non-Participating Market Actors

Market actors who do not participate in the initiative might use information from the program (e.g., from discussions with a participating A&E firm or from public information disseminated by NYSERDA) or tools developed by the program to implement projects that result in indirect impacts.

To assess indirect impacts resulting from non-participating market actors, the Market Evaluation team will add questions to the market actor surveys planned to be conducted in 2019 and 2022. The overall approach and multi-step process to assess the indirect impacts from non-participating market actors is very similar to the participating market actor perspective outlined above, with the following difference:

- For market actors who have not participated in the CRE Tenant Initiative, the team will first establish that the A&E firm or broker has any knowledge of NYSERDA, the CRE Tenant Initiative, or its components. While the respondent does not have to have a full understanding of the initiative for it to be a factor in their decisions, they must have a minimal level of awareness of NYSERDA or tools developed by the initiative to claim indirect impacts.
- If the respondent has awareness of NYSERDA or elements of the initiative, the team will then determine whether or not the market actor performed actions resulting in energy savings or CO₂e reductions that are in addition to those directly associated with the CRE Tenant Initiative (and, at a very high level, what these actions were).

¹¹ The New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs - Residential, Multi-Family, and Commercial/Industrial.

¹² When estimating CO₂e emission reduction, the Team will work with NYSERDA to ensure the use of the same assumptions and multipliers as used in other NYSERDA studies.

Customer Perspective

Participants

From the CRE Tenant participant perspective, impacts directly associated with the CRE Tenant project are claimed as direct impacts. However, impacts that might result from actions a participant takes that are not directly associated with a participating project may be able to be claimed as indirect impacts. To assess indirect impacts associated with participants, the Team plans to add questions on indirect impacts to the tenant survey and the building owner/manager interviews planned to be fielded in 2019 and 2022.¹³

For example, a participating tenant or building owner managing multiple facilities across New York State might complete an energy analysis through the NYSERDA initiative focusing on one facility. After experiencing the benefits of the initiative in the form of knowledge gained from the analysis, the participant might complete projects at other, similar facilities in the state without NYSERDA incentives.

If the Market Evaluation Team can determine that the participant's actions are taken as a result of their engagement with the NYSERDA initiative, the Team can assess these actions and quantify them as indirect impacts (i.e., participant spillover).

Similar to market actors, the Market Evaluation Team will use a multi-step process to determine indirect impacts associated with participants:

- First, the Team will determine whether or not participants took energy-saving actions that are in addition to those they might have taken as a direct result of their participation in the CRE Tenant Initiative (and, at a very high level, what these actions were). These actions could be at the same facility for which they participated in the initiative, or at another facility altogether.
- The Team will determine the degree of influence that NYSERDA's initiative had on the actions taken by the participant.
- If it is determined that participants took action as a result of the influence of NYSERDA's initiative, the Team will ask follow-up questions to 1) determine more specifically what actions were taken and 2) characterize these actions in a manner that will allow the team to calculate resulting energy savings.

¹³ The Team would increase the sample size for the tenant survey, which was originally fielded with non-participants, to ensure enough responses from participants. For the building owner/manager interviews, the Team expect to attempt a census.

- Resulting energy savings will be determined through rigorous, defensible estimation of impacts that rely on agreed-upon frameworks for energy savings wherever possible. For example, if it is determined that participants take discrete, easily measurable actions such as installation of energy saving measures, the team will leverage the New York TRM.¹⁴ Changes in operation of equipment will leverage New York-specific parameters and custom, site-specific parameters wherever possible.¹⁵
- Finally, the team will extrapolate the survey-based results to the population, to account for participants who did not complete the survey, adjusting for size and segment as necessary.

Non-Participants

Non-participating tenants and building owners/managers are, by definition, not associated with direct impacts from the NYSERDA Initiative. However, it is possible that the initiative's actions may result in non-participating customers completing relevant projects outside of the initiative through the use of case studies, tools, and other materials developed by NYSERDA or through interactions with participating tenants or building owners/managers. These projects, like projects completed as part of the Initiative, yield energy savings that can be quantified as indirect impacts, typically called non-participant spillover.

To assess indirect impacts resulting from non-participants, the Market Evaluation team plans to add questions to the tenant and building owner/manager surveys to be conducted in 2019 and 2022. The overall approach and multi-step process to assess the indirect impacts from non-participants is very similar to the participant perspective outlined above, with one exception:

- First, the team will determine if the tenant or building owner/manager has any knowledge of NYSERDA, the CRE Tenant Initiative, or its components. While the respondent does not have to have a full understanding of the initiative for it to be a factor in their decisions, they must have a minimal level of awareness of NYSERDA or tools developed through the initiative to claim indirect impacts.
- If the respondent has awareness of NYSERDA or elements of the initiative, the team will then determine whether or not the tenant or building owner/manager took CRE-related energy-saving actions and what the actions were, similar to the participant process listed above.

¹⁴ The New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs - Residential, Multi-Family, and Commercial/Industrial.

¹⁵ When estimating CO₂e emission reduction, the Team will work with NYSERDA to ensure the use of the same assumptions and multipliers as used in other NYSERDA studies.