

Commercial Baseline Study

Customer Decision Making
Market Assessment

Final Report

This report was prepared by Opinion Dynamics 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.

PREPARED FOR:

NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY
Albany, New York

TRACEY DESIMONE
Project Manager

PATRICIA GONZALES
Senior Project Manager

PREPARED BY:

OPINION DYNAMICS
Waltham, Massachusetts

JAKE MILLETTE
Principal Consultant

PAUL WASMUND
Principal Consultant

TYLER SELLNER
Associate Consultant

ANTJE FLANDERS
Vice President

NYSERDA Contract 43672

Table of Contents

1	Introduction	2
2	Market Characterization and Assessment Results	4
2.1	Characteristics of Typical Decision-Making Processes	4
2.1.1	Characteristics of Decision Makers	4
2.1.2	Context for Energy Efficiency Upgrades	5
2.2	Financial Planning and Funding Sources	6
2.2.1	Characteristics of Capital Investment Plans	6
2.2.2	Investment Criteria Driving Improvement Decisions	7
2.2.3	Typical Funding Sources for Energy-Related Improvements	9
2.3	Lease Structures	10
2.4	Barriers to Implementing Energy Efficient Equipment	12
2.5	Energy Efficiency Awareness and Interest	14
2.5.1	Sources of Information	14
2.5.2	Awareness of and Interest in Energy Efficiency Programs	15
2.6	Past and Anticipated Capital Investments	16
2.6.1	Past Investments	16
2.6.2	Anticipated Investments	19
2.6.3	Motivations for Energy Efficiency Investments	21
3	Findings and Recommendations	24
3.1	Joint Decision Making	24
3.2	Split Incentives Remain a Barrier for Tenant-Occupied Buildings	24
3.3	Energy Upgrades Must Pass Strict Investment Criteria	25
3.4	Financing Energy Efficiency Projects Remains a Barrier	25
4	Methods	27
4.1	Secondary Research and Data Review	29
4.2	Decision Maker In-Depth Interviews	29
4.3	Commercial Real Estate On-Line Survey	30
4.3.1	Survey Sampling	30
4.3.2	Survey Weighting	33

Table of Figures and Tables

Figure 1	Stakeholders Involved in Energy-Related Decisions ¹ (Multiple Response)	4
Figure 2	Timing of Projects That Reduce Energy Consumption	5
Figure 3	Presence of Capital Investment Planning	6
Figure 4	Frequency of Capital Investment Planning	6
Figure 5	Common Elements of Capital Investment Plans	7
Figure 6	Importance of Various Financial Criteria When Evaluating Major Energy-Related Investments	8
Figure 7	Importance of Various Financial Criteria When Evaluating Minor Energy-Related Investments	9
Figure 8	Typical Funding Sources (Multiple Response)	10
Figure 9	Share of Owners/Property Managers and Tenants with Various Lease Structures	11
Figure 10	Comparison of Lease Structure of Tenants with and without Energy Efficiency Investments in the Past 5 Years	12
Figure 11	Barriers to Making Energy Efficiency Improvements (Owners/Property Managers)	13
Figure 12	Barriers to Making Energy Efficiency Improvements (Tenants)	14
Figure 13	Knowledge of Ways to Save Energy at Facility	15
Figure 14	Interest in Participating in an Energy Efficiency Program	16
Figure 15	Percentage of Capital Spending on Energy Efficiency Improvements in Past 5 Years	17
Figure 16	Energy-Related Capital Investments in the Past 5 Years (Multiple Response)	18
Figure 17	Past Improvements That Lowered Energy Consumption	19
Figure 18	Planned Energy-Related Capital Investments (Multiple Response)	20
Figure 19	Number of Future Improvements That Will Lower Energy Consumption	21
Figure 20	Priority of Energy Efficiency in Improvements that Led to Reduction in Energy Consumption	22
Figure 21	Importance of Various Factors When Considering Energy Efficiency Improvements (Owners/Property Managers)	23
Figure 22	Importance of Various Factors When Considering Energy Efficiency Improvements (Tenants)	24
Table 1	Key Research Objectives by Category	2
Table 2	Key Research Objectives	29
Table 3	Job Categories of Interviewees	31
Table 4	Population of New York State Businesses by Stakeholder and Region	33
Table 5	Population of New York State Businesses by Stakeholder and Region	33
Table 6	Summary of Survey Respondents	34
Table 7	Survey Weights by Region, Segment, and Stakeholder	35



SECTION 1

Introduction

1 Introduction

This report presents the comprehensive findings from the Customer Decision Making (CDM) market assessment. The CDM market assessment is one of four assessments conducted by Opinion Dynamics (the “Market Evaluation Team”) as part of NYSERDA’s Commercial Statewide Baseline Study. The goal of the CDM market assessment was to (1) explore the decision-making process for investing in energy-using and energy-saving equipment in New York State’s commercial real estate (CRE) sector and (2) help NYSERDA and other New York State stakeholders gain a better understanding of

customer purchasing behavior - including their funding and financing strategies, their capital investment criteria and planning strategies, their awareness and knowledge of energy efficient options, and the drivers of and barriers to energy efficiency faced by New York State businesses.

To do so, the Market Evaluation Team worked with NYSERDA to develop ten key research objectives and related metrics for this study. The Team grouped the ten research objectives into five categories, listed in Table 1 below.

Table 1 | Key Research Objectives by Category

Category	Research Objectives
Characteristics of Typical Decision-Making Processes	<ul style="list-style-type: none">• Characteristics of decision makers• Context for energy efficiency upgrades
Financial Planning and Funding Sources	<ul style="list-style-type: none">• Characteristics of capital investment plans• Common investment criteria for energy-related improvements• Common funding and financing strategies for energy-related improvements• Deviation of the actual decision-making process from the standard process
Lease Structures	<ul style="list-style-type: none">• The effect of split incentives on investment decisions
Barriers to Adoption of Energy Efficiency Improvements	<ul style="list-style-type: none">• Barriers to adoption of energy efficiency improvements
Energy Efficiency Awareness and Interest	<ul style="list-style-type: none">• Awareness, familiarity, and interest in energy efficiency options• Awareness of and interest in energy efficiency programs
Past and Anticipated Capital Investments	<ul style="list-style-type: none">• Past and anticipated capital investments and inclusion of energy efficiency options• Motivations for energy efficient investments

The findings from this research are presented in Section 2. The Market Evaluation Team developed these results based on 20 in-depth interviews with building owners and property managers and a quantitative online survey with 198 New York State building owners/property managers and 56 tenants.



SECTION 2

Market Characterization
and Assessment Results

2 Market Characterization and Assessment Results

2.1 Characteristics of Typical Decision-Making Processes

2.1.1 Characteristics of Decision Makers

Building owners and property managers are the key decision makers when it comes to energy-related improvements to their facilities. In buildings that do not have rented or leased space, building owners/property managers are the primary decision makers, with minimal outside input from parties such as contractors, architects, and brokers. In buildings with rented or leased space, owners and property managers are still key decision makers, but tenants are also commonly involved (see Figure 1).

The number of stakeholders involved in decision making is generally correlated to the size of the organization and the scale of the project: At smaller organizations, few players are involved in decision making, mostly limited to the ownership or executive team. At larger organizations, there is a greater web of influencers, such as operations or sustainability teams, who may develop plans for energy efficiency improvements, and escalate these plans to ownership for final approval.

Figure 1 | Stakeholders Involved in Energy-Related Decisions¹ (Multiple Response)

	Owner-Occupied Space (n = 150) Percentage of Respondents	Rented/Leased Space (Owner/Manager n = 48, Tenant n = 56) Percentage of Respondents	
		Tenants	Owners/ Property Managers
Building owner or property manager	92%	66%	81%
Tenant	N/A	61%	43%
Contractor	17%	2%	2%
Architect	6%	1%	4%
Real estate broker	3%	-	-
Other	2%	-	4%

¹ The “Owner-Occupied Space” figure includes responses for buildings that do not have any tenants. The “Rented/Leased Space” figure includes responses for buildings that have rented or leased space.

2.1.2 Context for Energy Efficiency Upgrades

Most owners/property managers implement projects that reduce energy-consumption during periodic reviews of building systems and their costs. The majority of these

owners/managers review their systems annually (54%) or more than once a year (36%). Tenants typically undertake energy efficiency projects when equipment breaks.

Figure 2 | Timing of Projects That Reduce Energy Consumption

	Owners/Property Managers	Tenants
During periodic reviews of the building systems and their costs	66% (n = 125)	N/A
Anytime energy using equipment breaks	42% (n = 158)	64% (n = 22)
During the tenant build-out process	33% (n = 36)	44% (n = 22)
When the building is first purchased	40% (n = 125)	N/A
Prior to selling the building	5% (n = 125)	N/A
Other	2% (n = 158)	32% (n = 22)

Other common triggers for building owners and property managers include:

- **EQUIPMENT LIFECYCLE:** Equipment failure for major systems (e.g., heating or refrigeration) can have a catastrophic effect on the day-to-day operations for a building and replacement can take several months to plan and implement. As such, building owners and property managers proactively replace certain types of equipment as it nears the end of its expected useful life.
- **RENOVATIONS:** Some building owners and property managers reported making energy efficiency upgrades during planned renovations. Renovations are typically made for cosmetic or repositioning efforts to attract tenants and increase rental revenues.
- **BUILDING PURCHASES:** Organizations that purchase new properties consider the state of the building and its equipment and the upgrades they will

need to make (e.g., cosmetics, safety, and operating efficiency), in tandem with the expected lease rate, the anticipated hold period, and the ability to manage the asset in a financially efficient manner. Once a building is purchased, improvements are prioritized and incorporated into capital plans.

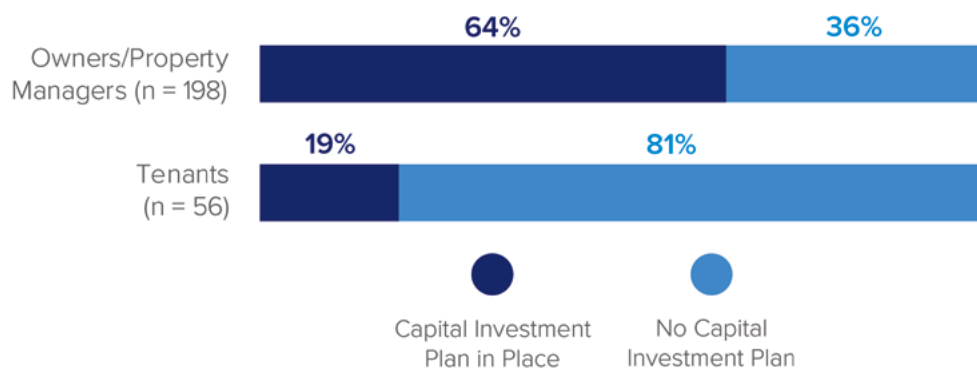
Notably, 65% of surveyed building owners/property managers reported that they consider energy efficiency during the tenant build-out process and encourage tenants to consider efficiency as well. Similarly, 53% of surveyed tenants who built out their space said they were encouraged to consider energy efficiency as part of that process. Depending on the negotiated lease, some organizations build out space for their new tenants themselves while others leave the build-out management to the tenants. Frequent upgrades made during the build-out process include lighting equipment, lighting controls, and tenant aesthetic preferences.

2.2 Financial Planning and Funding Sources

2.2.1 Characteristics of Capital Investment Plans

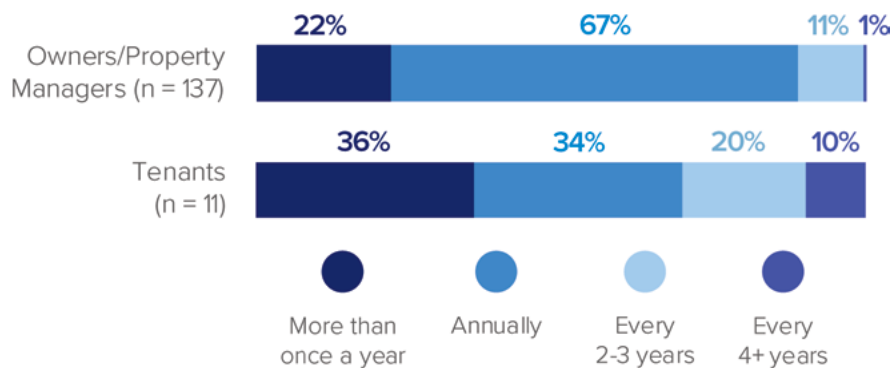
Capital investment plans are prevalent among owners/property managers (64%), but less common for tenants (19%) (see Figure 3).

Figure 3 | Presence of Capital Investment Planning



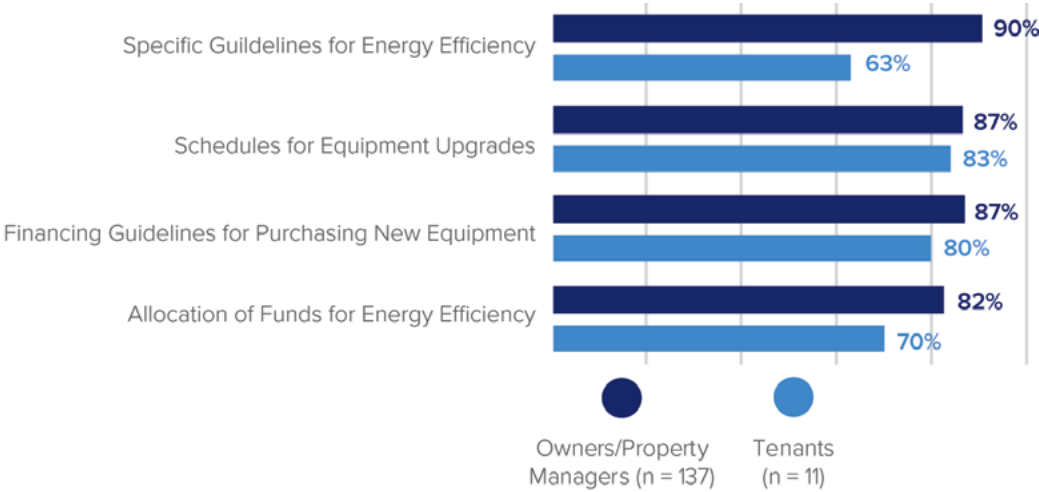
Most owners/property managers with capital investment plans update their plans on an annual basis. Equal shares of tenants with plans update them annually or more than annually (see Figure 4).

Figure 4 | Frequency of Capital Investment Planning



Capital investment plans have many common elements, as shown in Figure 5. Tenants with capital investment plans are less likely than owners/managers to have specific guidelines for energy efficiency or allocate funds for energy efficiency projects.

Figure 5 | Common Elements of Capital Investment Plans



Many organizations that lack capital investments plans make renovations on an ad-hoc or as-needed basis. Others utilize external parties, such as contractors or engineers, to identify and plan renovations. In some cases, maintaining a capital investment plan is not necessary for tenants as capital investments are handled by the building owner or property manager. Some tenants also consult with the building owner or property manager to plan necessary upgrades.

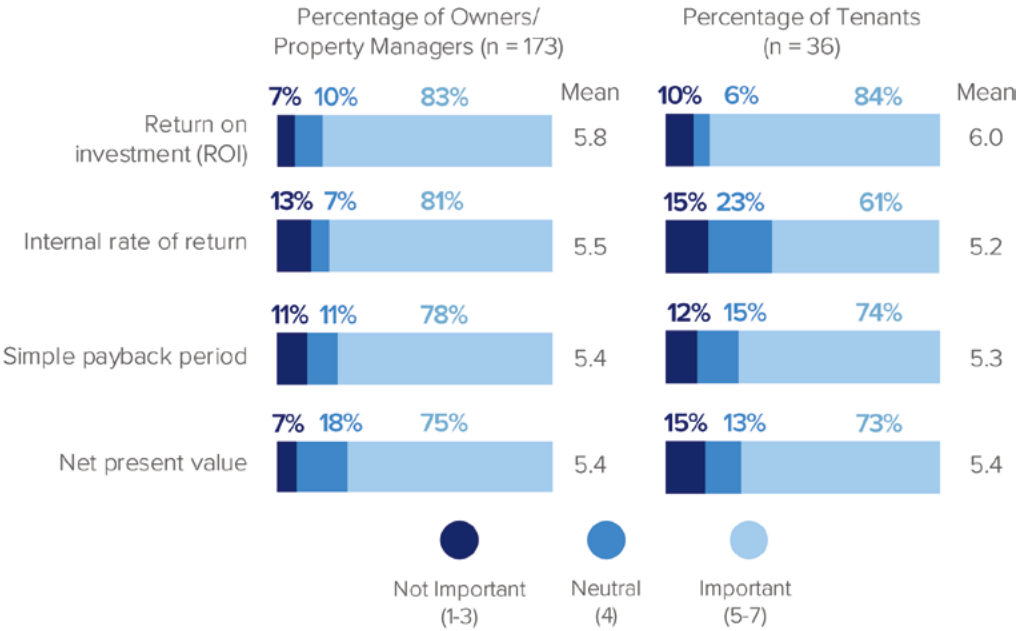


2.2.2 Investment Criteria Driving Improvement Decisions

Return on investment (ROI), simple payback period, internal rate of return (IRR), and net present value (NPV) are all common financial criteria used in the CRE sector to evaluate the viability of major energy-related investments. Each of these criteria was considered important (a rating of 5,

6, or 7 on a scale of 1 to 7, where 1 means “not important” and 7 means “extremely important”) by a majority of building owners/managers and tenants who reported capital investments in the past five years.² Both groups most often consider ROI important (see Figure 6).

Figure 6 | Importance of Various Financial Criteria When Evaluating Major Energy-Related Investments



Not surprisingly, fewer building owners/managers and tenants view financial criteria as important when evaluating minor investments, with ROI still the most common metric (see Figure 7). Across both types of investments, tenants less often rely on IRR compared to other metrics.

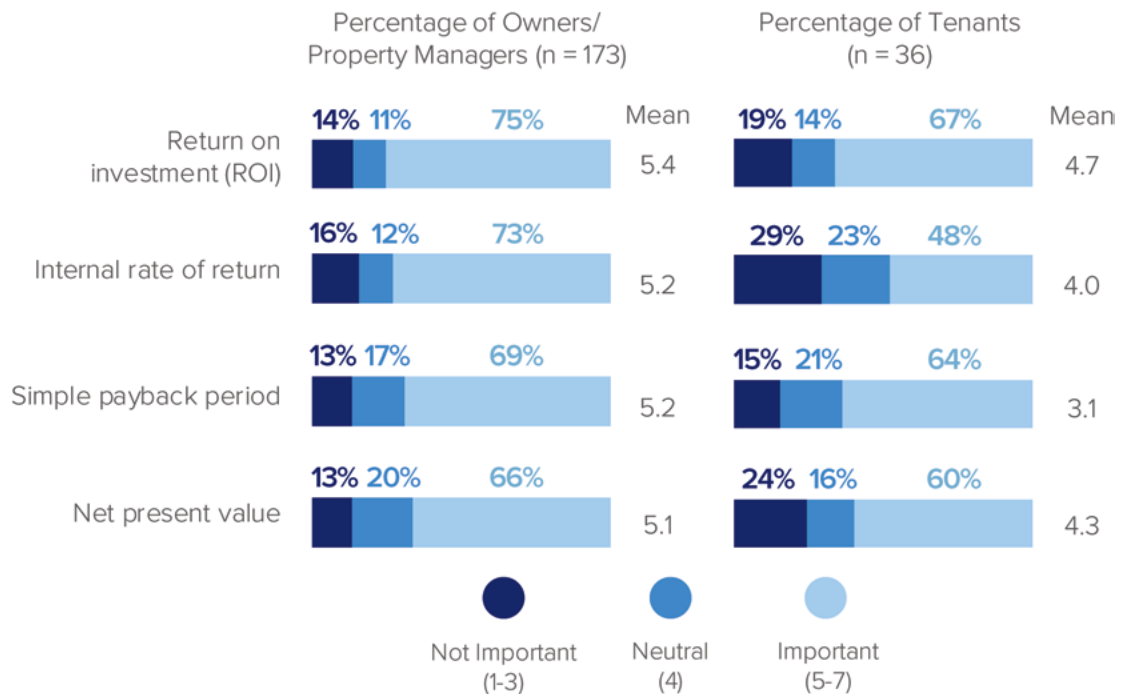
Major vs. Minor Investments

MAJOR INVESTMENTS are defined as investments for which additional resources are spent in the planning process, e.g., investments requiring a more rigorous corporate approval process or a benefit-cost study.

MINOR INVESTMENTS are defined as investments where the equipment costs less or less time is spent planning the purchase compared to “major” investments.

² 87% of surveyed owners/property managers and 66% of surveyed tenants reported making capital investments to one or more of their energy-using systems in the past five years. See also Section 2.6.

Figure 7 | Importance of Various Financial Criteria When Evaluating Minor Energy-Related Investments



Other financial criteria considered when evaluating major and minor investments are the cost effectiveness (or benefit/cost ratio) of the investment as well as the availability of funding sources such as incentives, rebates, grants, or tax credits.

Respondents who had capital investments in the past five years and who identified ROI as an important financial criterion for evaluating energy-related improvements also reported the following:

- Average reported ROI requirement: 51% for owners/property managers and 63% for tenants.
- Not knowledgeable about their organization’s ROI requirement for major projects: 20% of owners/property managers and 24% of tenants.

- Company sometimes deviates from their stated ROI requirement: 40% of owners/property managers and 33% of tenants.
 - Most organizations deviate on an as-needed basis, including in emergency situations or to meet regulations (43% of owners/property managers, 55% of tenants).
 - Other reasons for deviation include when additional benefits are at play like improved conditions or improved sustainability (13% of owners/property managers, 16% of tenants), or when a project is larger than normal and may require a longer payback (7% of owners/property managers and 12% of tenants).

Respondents who had capital investments in the past five years and for whom simple payback period is an important financial criterion for evaluating energy-related improvements also reported the following:

- Organization’s required payback period is less than 2 years: 75% of owners/property managers and 76% of tenants.
- Company sometimes deviates from their payback thresholds: 67% of owners/

property managers and 79% of tenants.

- 34% of surveyed owners/property managers and 40% of surveyed tenants reported their organizations only deviate for large projects, acknowledging that larger, more expensive projects may take longer to payback.
- Other sources of deviation include on an as-needed basis (e.g., equipment breaks) or when other benefits are involved such as improved comfort or aesthetics.

2.2.3 Typical Funding Sources for Energy-Related Improvements

Internal funding is the most common funding source used by both building owners/property managers (57%) and tenants (46%) to fund major energy-related improvements in the past five years (see Figure 8). Other common funding sources include lines of credit and company credit cards. Notably, while both groups use a variety of funding sources, the share of building owners/property managers using each source was higher in almost all cases,

suggesting that owners and property managers have more options available for funding energy-related improvements than tenants.

Building owners/managers and tenants employ the same three funding sources for *minor* improvements as for *major* improvements. However, markedly smaller shares of respondents reported using other sources of funding for minor improvements.

Figure 8 | Typical Funding Sources (Multiple Response)

	Percentage of Respondents			
	Major Energy-Related Improvements		Minor Energy-Related Improvements	
	Owners/Property Managers (n = 173)	Tenants (n = 36)	Owners/Property Managers (n = 173)	Tenants (n = 36)
Internal sources	61%	55%	62%	65%
Line of credit	45%	43%	34%	38%
Company credit card	30%	33%	24%	38%
Secured loan	31%	28%	18%	2%
Equipment financing or leasing	29%	17%	15%	9%
Contractor/ESCO financing	23%	23%	14%	2%
Utility incentive	20%	5%	12%	3%
Unsecured loan from bank	16%	7%	8%	2%
Utility on-bill financing	11%	10%	7%	2%
PACE financing	7%	N/A	4%	5%

2.3 Lease Structures

Gross leases and triple net leases are the most prevalent lease structures in New York's CRE market (see Figure 9). Green leases are rarely used in New York's CRE market. According to surveyed tenants and building owners that have leased/rented space:

- Just 5% of owners/property managers and 1% of tenants have a green lease.
- Only 16% of tenants not under a green lease have a provision in their lease that

allows for owners and tenants to share the costs and benefits related to energy efficiency improvements (a green provision).³

- The majority of tenants with a green provision in their lease (80%) operate under a triple net lease structure; the remaining 20% operate under a gross lease.

Figure 9 | Share of Owners/Property Managers and Tenants with Various Lease Structures*

	Owners/Property Managers (n = 71)	Tenants (n = 56)
Gross lease	40%	37%
Triple net lease	32%	48%
Prorated lease	23%	12%
Green lease	5%	1%
Other	4%	2%

* Owner/manager responses include those with buildings that have rented or leased space (multiple response).

COMMON LEASE STRUCTURES

GROSS LEASE: The tenant pays a fixed monthly rent covering all expenses, including utilities.

TRIPLE NET LEASE: The tenant is separately metered and pays the energy bill directly to the utility company.

PRORATED LEASE: The tenant pays a share of the utilities based on the percentage of the building they occupy.

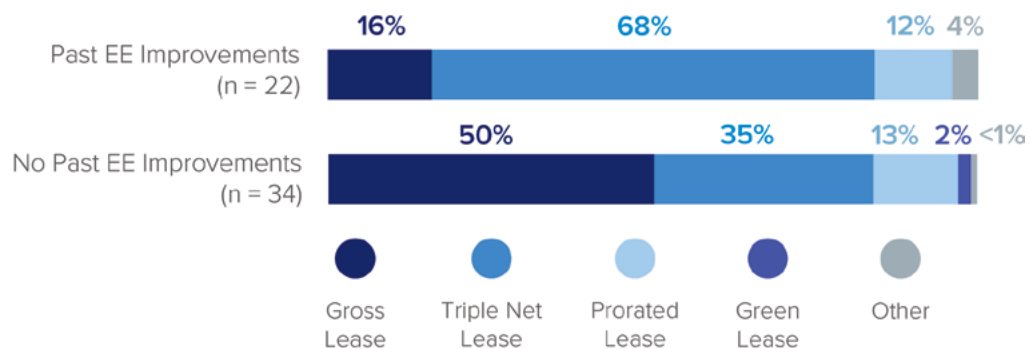
GREEN LEASE: Allows owners and tenants to share the costs and benefits of energy efficiency upgrades.

³ 52% of surveyed tenants reported they do not have a green provision and 32% said they did not know

A comparison of lease structures of building owners/managers who have made energy efficiency improvements over the past five years with those who have not shows similar shares of gross and triple net leases for both groups. However, among tenants, those who have made energy efficiency improvements over the past five years are more likely to have a net triple lease and less likely to have a gross lease, compared to tenants who have not made energy efficiency improvements over

the past five years (see Figure 10). This difference suggests that a triple net lease might at least partially address a tenant’s “split incentive” barrier.⁴ Under a triple net lease, the benefits of reducing energy-related costs fall to the tenant, while most cost savings under a gross lease stay with the owner/property manager. As such, tenants with a triple net lease might be more motivated to make energy efficiency improvements than tenants with other types of leases.

Figure 10 | Comparison of Lease Structure of Tenants with and without Energy Efficiency Investments in the Past 5 Years



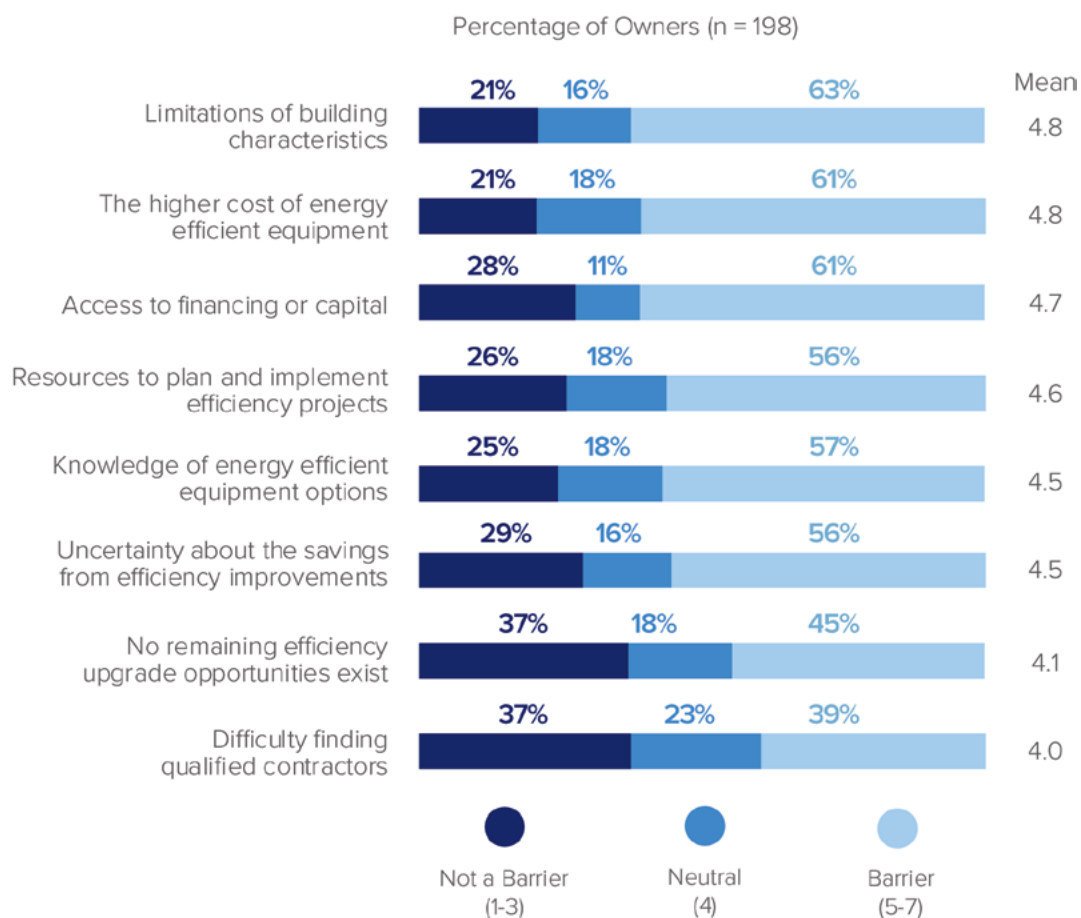
⁴ A “split incentive” barrier exists when the benefits of an energy efficiency improvement (in this case, the utility bill savings) are not sufficiently realized by the party paying the cost.

2.4 Barriers to Implementing Energy Efficient Equipment

The top three barriers to implementing energy efficiency upgrades for building owners/property managers are building characteristics, the higher cost of energy efficient equipment, and access to financing/capital.

More than 60% of surveyed owners/managers identified these as a barrier⁵ (see Figure 11).

Figure 11 | Barriers to Making Energy Efficiency Improvements (Owners/Property Managers)



Although access to financing/capital is a common barrier, only 27% of surveyed owners/managers reported ever having to reduce the efficiency level of an energy-related project due to access to funding. Decision makers also noted that incentives from NYSERDA and other New

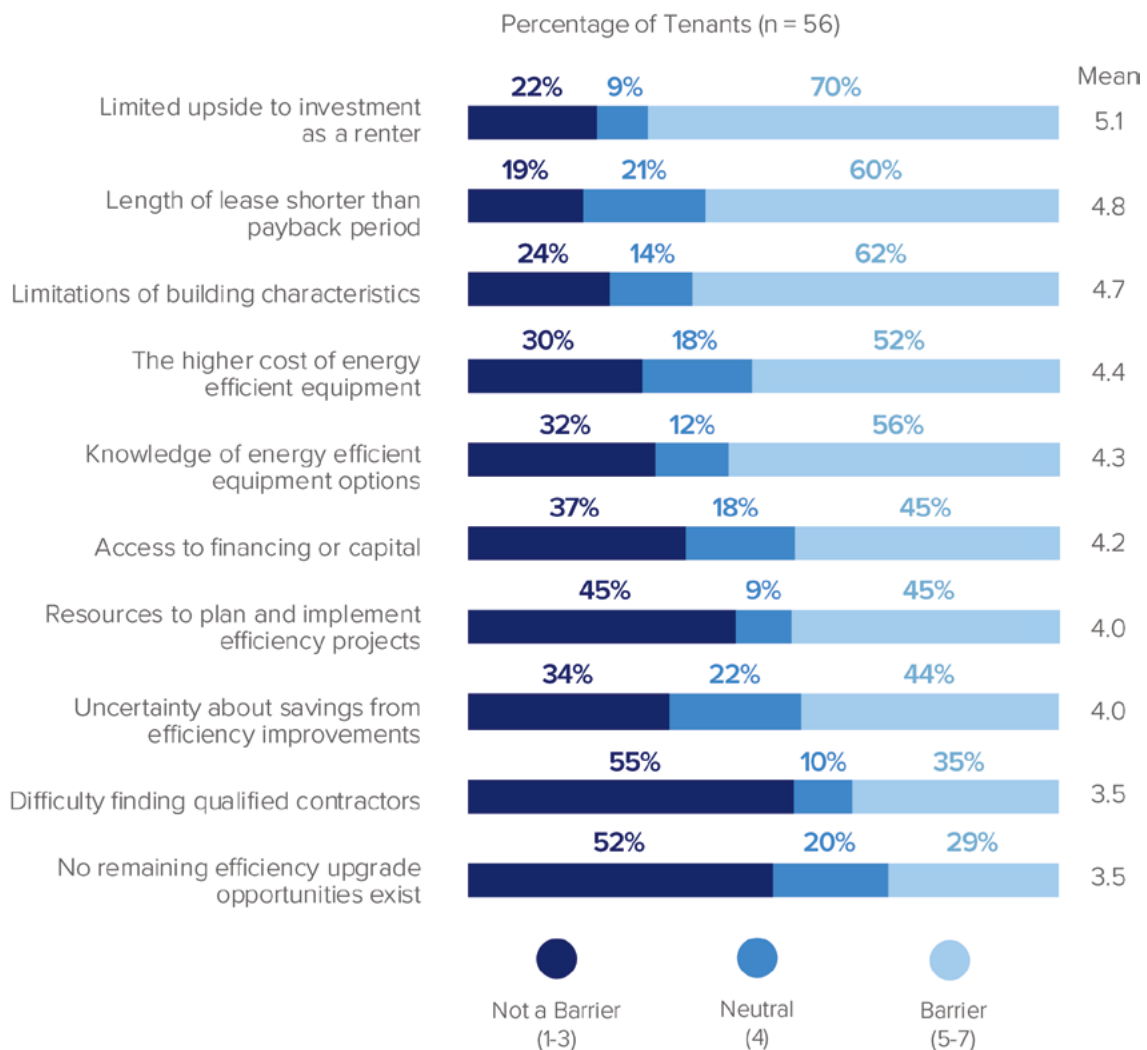
York program administrators are helpful in funding energy efficiency projects. However, incentives do not always fully address funding-related barriers and do not always bring capital projects within their payback period requirements.

⁵ A rating of 5, 6, or 7 on a scale of 1 to 7, where 1 means "not a barrier" and 7 means "very large barrier."

Not surprisingly, two of the top three barriers for tenants are related to their status as a renter (see Figure 12). Even if lease structures such as triple net or green leases allow tenants to realize the savings of energy efficiency improvements, such investments only make financial sense if the

tenant can expect to occupy the building for the duration of the payback period (or longer). As suggested by tenant responses, uncertainties associated with not owning the building they occupy therefore remains a strong barrier to making energy efficiency improvements.

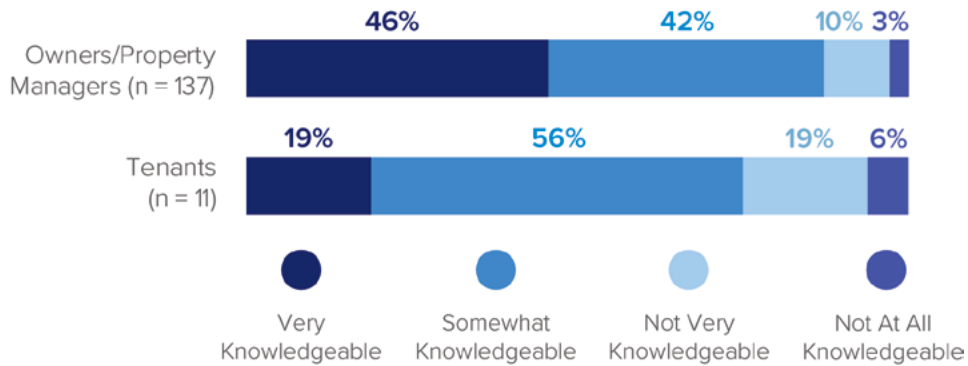
Figure 12 | Barriers to Making Energy Efficiency Improvements (Tenants)



2.5 Energy Efficiency Awareness and Interest

Most CRE building owners/property managers (88%) and tenants (75%) believe they are knowledgeable about ways to save energy at their facility (see Figure 13). More building owners/property managers (46%) than tenants (19%) consider themselves “very knowledgeable.”

Figure 13 | Knowledge of Ways to Save Energy at Facility*



* Totals may not sum to 100% due to independent rounding.

2.5.1 Sources of Information

Almost two-thirds (63%) of surveyed owners/property managers reported using benchmarking to understand their facility’s energy use. Most owners/property managers who participated in the in-depth interviews also described using energy tracking and benchmarking tools as their standard strategy for identifying potential energy improvements. However, specific strategies for tracking energy use and identifying energy efficiency opportunities vary by building size. Building owners and property managers representing smaller

facilities described using basic tools, such as Excel spreadsheets, to track their facilities’ energy bills. Interviewees representing larger footprints, reported using more sophisticated tools including paid services, EMS, or proprietary software to monitor real-time building performance. In addition, interviewees described a mix of working with third party consultants, completing energy assessments, and talking with industry peers to obtain recommendations for operational improvements and equipment replacements.

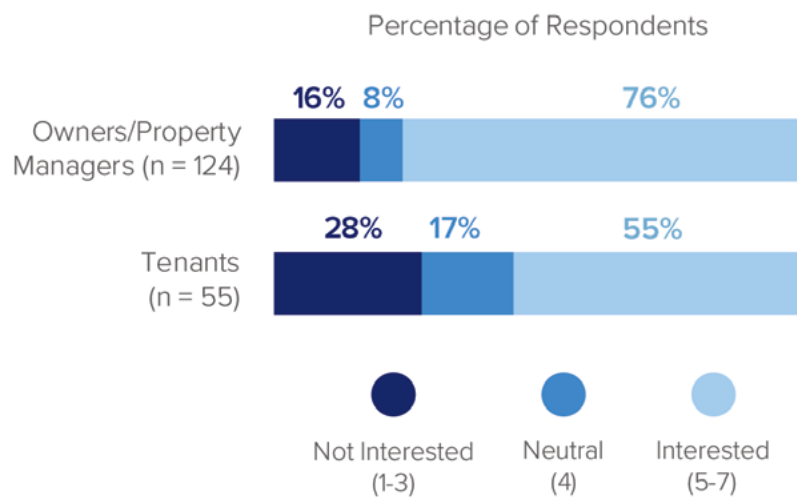
2.5.2 Awareness of and Interest in Energy Efficiency Programs

Many building owners/property managers (68%) and tenants (43%) are aware of NYSERDA and utility-funded energy efficiency programs. Participation in these programs is much more common among owners/property managers (54% of those aware) than tenants (3% of those aware). In many cases, those who are unaware of energy efficiency programs also have lower

levels of knowledge about ways to save energy at their facility.

Most surveyed owners/property managers and tenants who have not previously participated in an energy efficiency program expressed interest in participating in one of these programs in the future (see Figure 14).

Figure 14 | Interest in Participating in an Energy Efficiency Program



Respondent Feedback

“We’re constantly evaluating our buildings for their utility performance. We target buildings where maybe they have a high ENERGY STAR score or maybe they have a higher cost-per-square-foot of utilities, or as is often the case, both...We implemented capital projects, and we’re seeing results manifest themselves in the form of the ENERGYSTAR score going up and the cost per square foot going down.”

Job Function: Sustainability
Region: New York City
Size: 20 Million Sqft



2.6 Past and Anticipated Capital Investments

Understanding past and planned future investments – including the role of energy efficiency and the motivators for increasing

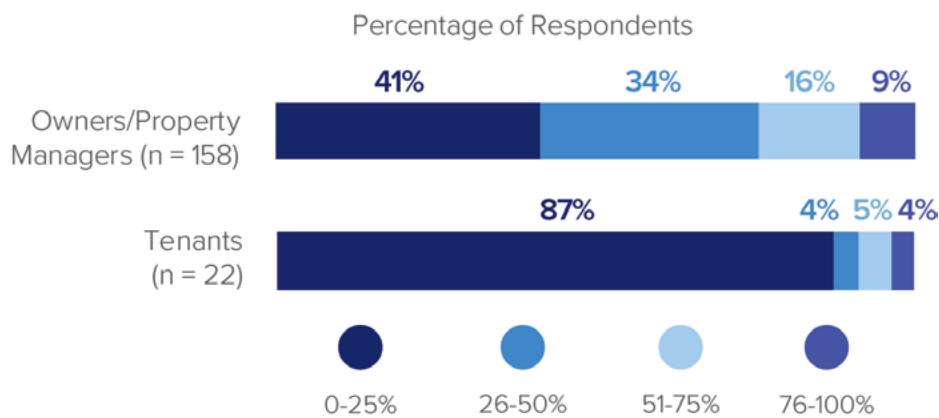
efficiency – is key to promoting more energy efficient practices in the CRE sector.

2.6.1 Past Investments

Over the past five years, 87% of surveyed owners/property managers and 66% of surveyed tenants have made capital investments to one or more of their energy-using systems. Not surprisingly, investments that reduce energy usage are more common among building owners/property managers (80%) than tenants (44%). In addition, building owners/property managers also tend to allocate a greater

portion of capital funds to energy efficiency investments (see Figure 15). Most surveyed tenants (87%) reported that energy efficiency upgrades accounted for 25% or less of their capital spending over the past five years, while 25% of owners/property managers reported earmarking over half their spending funds for these types of upgrades over that period.

Figure 15 | Percentage of Capital Spending on Energy Efficiency Improvements in Past 5 Years



The most common capital investments during the past five years were for lighting upgrades, reported by 64% of surveyed building owners/managers and 45% of surveyed tenants (see Figure 16). Owners/property managers also frequently invested in a variety of HVAC upgrades. Across all end-uses, owners/property managers

are more likely to have made capital investments than tenants. Almost one-third of surveyed tenants (29%) reported having made no capital investments during the past five years, reflecting the fact that tenants often are not responsible for energy-related capital investments.

Figure 16 | Energy-Related Capital Investments in the Past 5 Years (Multiple Response)*

Percentage of Respondents

	Owners/Property Managers (n = 198)	Tenants (n = 56)
Lighting	64%	45%
Space cooling	46%	20%
Ventilation	41%	10%
Space heating	40%	19%
Refrigeration	29%	20%
Building envelope	28%	19%
None	9%	29%

* In addition to the responses shown in the graph, 1% of tenants and 2% of owners/property managers reported “other” energy-related investments and 5% of tenants and 4% of owners/property managers did not know.

Respondent Feedback

“...Because of the nature of our business, and...the size of the business and the nature of the properties that we own, we are not that sophisticated...I look at the utility bills myself and I have enough of a handle and if I saw any major abolition in cost or something like that, I would pick up on it.”

Job Function: Owner
 Region: Upstate
 Size: <100K Sqft

Most energy-related capital improvements over the past five years have resulted in reductions in energy usage (see Figure 17):

- For all end-uses, more than half of owners/property managers and tenants reported that all or most of their improvements reduced energy consumption.
- For all end-uses, except for space cooling, a higher share of owners/property managers than of tenants reported that all or most of their investments reduced energy consumption.
 - For owners/property managers, this share ranges from 77% for space cooling to 85% for refrigeration.
 - For tenants, this share ranges from 56% for ventilation to 100% for space cooling.⁶

Figure 17 | Past Improvements That Lowered Energy Consumption

	Percentage of Respondents	
	Owners/Property Managers	Tenants
Lighting	83% (n = 124)	60% (n = 38)
Space cooling	77% (n = 94)	100% (n = 12)
Ventilation	79% (n = 89)	56% (n = 7)
Space heating	81% (n = 82)	68% (n = 26)
Refrigeration	85% (n = 53)	75% (n = 8)
Building envelope	79% (n = 59)	68% (n = 7)

Respondent Feedback

“In the past we’ve had people come in and look at...some of our office buildings. This is a number of years ago when we used the old type of T12 bulbs and that sort of thing. So we haven’t had an analysis probably at least in five years, if not longer.”

Job Function: Principal
Region: Downstate
Size: 1-10 Million Sqft

⁶ Note that sample sizes for some of the tenant responses are small.

2.6.2 Anticipated Investments

Close to three-quarters (73%) of surveyed building owners/property managers, but only 38% of surveyed tenants, reported planning to make energy-related capital investments over the next few years. Lighting and various HVAC upgrades remain a focus for future energy-related capital investments among both groups

(see Figure 18). Notably, 26% of surveyed owners/property managers and 62% of surveyed tenants reported not planning any capital investments in the next few years or not knowing what their plans are. Most of these respondents do not have a capital investment plan.

Figure 18 | **Planned Energy-Related Capital Investments (Multiple Response)***

Percentage of Respondents

	Owners/Property Managers (n = 198)	Tenants (n = 56)
Lighting	40%	18%
Space cooling	27%	12%
Space heating	27%	5%
Refrigeration	23%	5%
Ventilation	22%	17%
Building envelope	21%	6%
None	16%	35%
Don't know	11%	27%

* In addition to the responses shown in the graph, 1% of tenants and 2% of owners/property managers reported "other" energy-related investments.

Respondent Feedback

"Most of our capital projects are evaluated for how likely they are to increase the leasing potential at the buildings. And I think for our capital projects they're evaluated for how likely they are to reduce operating expenses for our buildings."

Job Function: Owner

Compared to investments over the past five years, fewer owners/property managers expect all or most of their improvements in the next few years to reduce energy usage: By enduse, this share ranges from 46% for ventilation to 68% for building

envelope (see Figure 19). Tenant responses show more variation, but sample sizes for these questions were very small since few surveyed tenants currently plan to make these types of improvements.

Figure 19 | Number of Future Improvements That Will Lower Energy Consumption

	Percentage of Respondents	
	Owners/Property Managers	Tenants
Lighting	56% (n = 80)	82% (n = 10)
Space cooling	52% (n = 59)	35% (n = 8)
Space heating	54% (n = 60)	62% (n = 3)
Refrigeration	58% (n = 41)	31% (n = 3)
Ventilation	46% (n = 49)	82% (n = 6)
Building envelope	68% (n = 46)	69% (n = 4)

Respondent Feedback

“It is about the bottom line and cost savings, value add for the property. And of course the environment and doing the right thing is also a driving component.”

Job Function: Owner
Region: Upstate

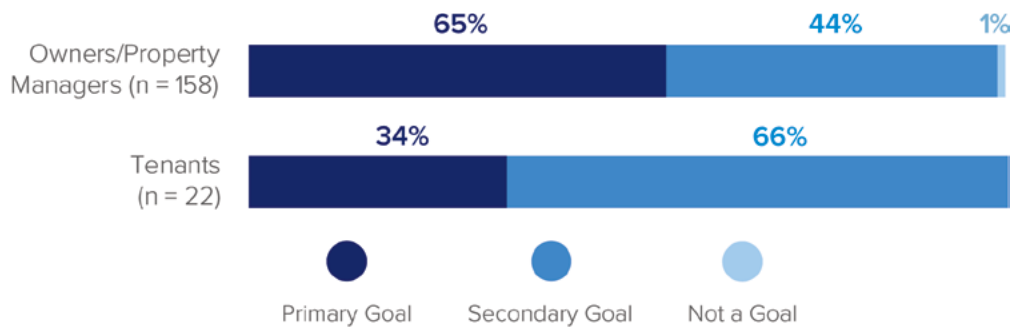


2.6.3 Motivations for Energy Efficiency Investments

Energy efficiency is a key driver of building upgrades in the CRE sector. Fifty-five percent of the surveyed building owners/property managers who, in the past five years, completed building improvements that have led to a reduction in energy

consumption reported that energy efficiency is usually the primary goal of these improvements. Among surveyed tenants, 34% identified energy efficiency as a primary goal (see Figure 20).

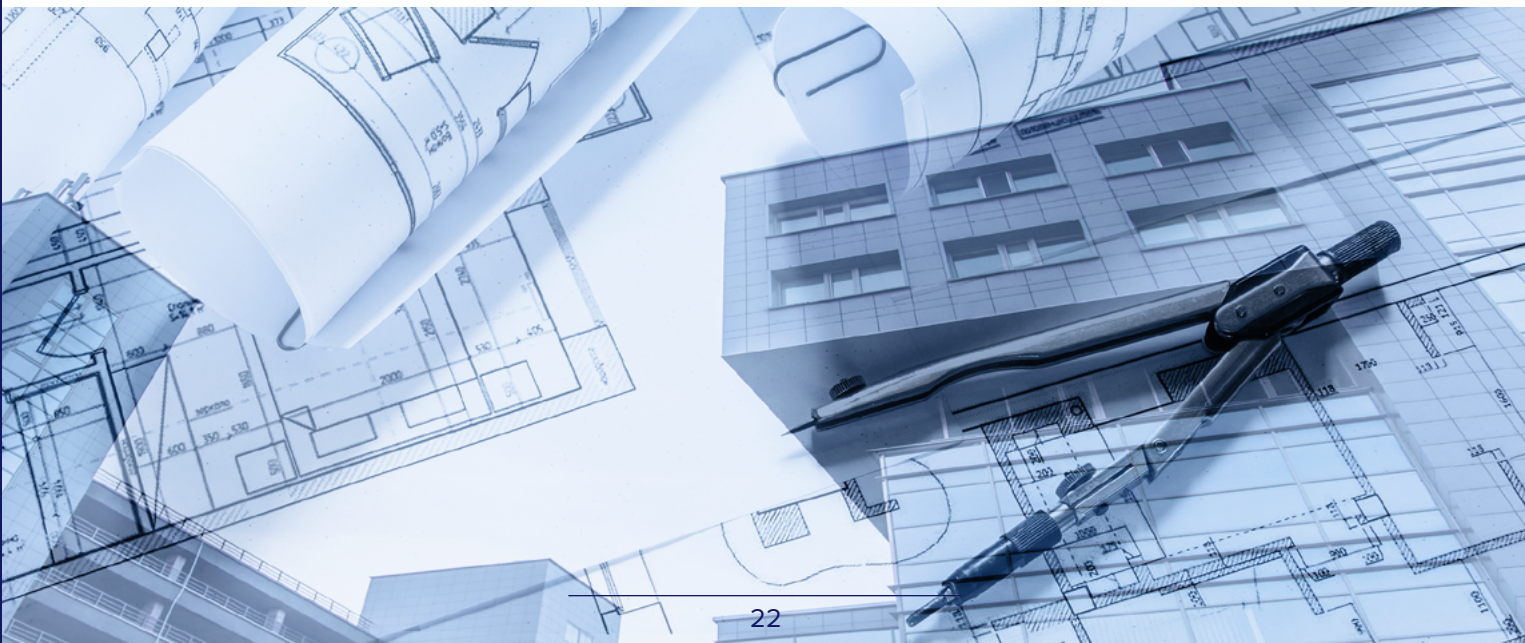
Figure 20 | Priority of Energy Efficiency in Improvements that Led to Reduction in Energy Consumption



Respondent Feedback

“We’re doing everything we can to become as efficient as possible, and to be known as a brand, if you will, that we’re a landlord that is very energy efficient.”

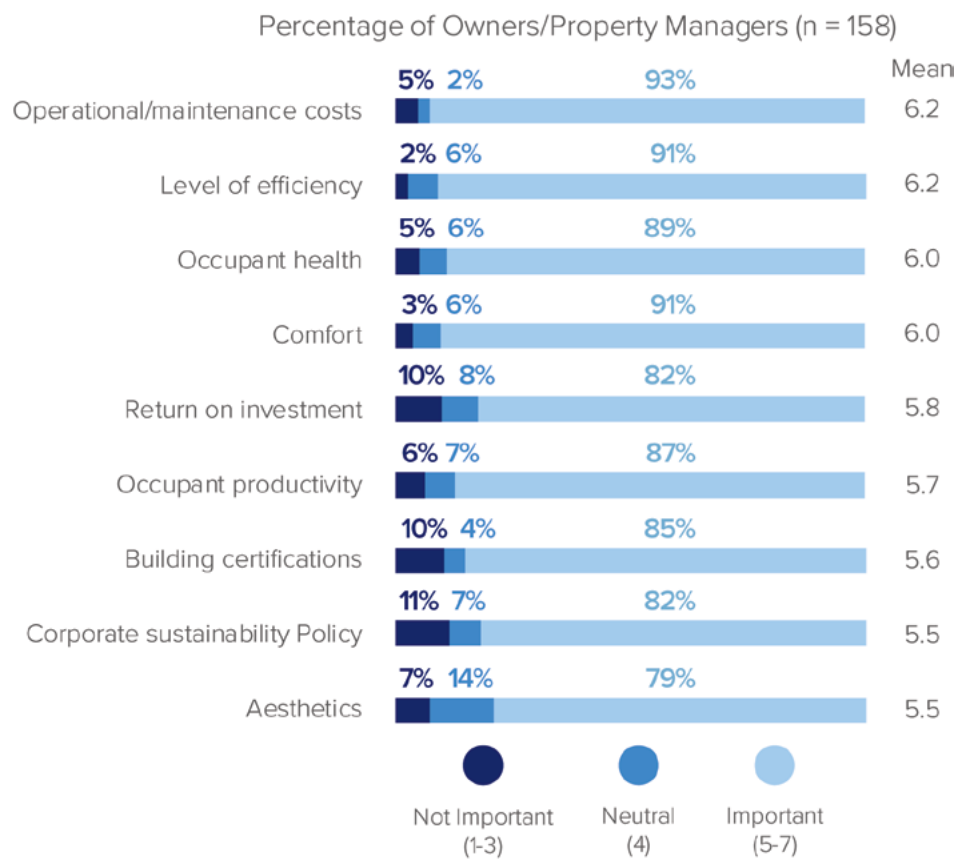
Job Function:
National Initiatives
Region: New York City



A range of factors is important to owners/property managers and tenants when considering energy efficiency improvements. Of factors asked about in the survey, both groups gave the highest importance ratings to operations/maintenance costs, the level of efficiency of their building, and occupant health (see Figure 21 and Figure

22). Comfort, productivity, and return on investment are also important considerations for both groups. In separately conducted in-depth interviews, several building owners/property managers mentioned compliance with state and city codes as an additional key motivating factor.

Figure 21 | Importance of Various Factors When Considering Energy Efficiency Improvements (Owners/Property Managers)

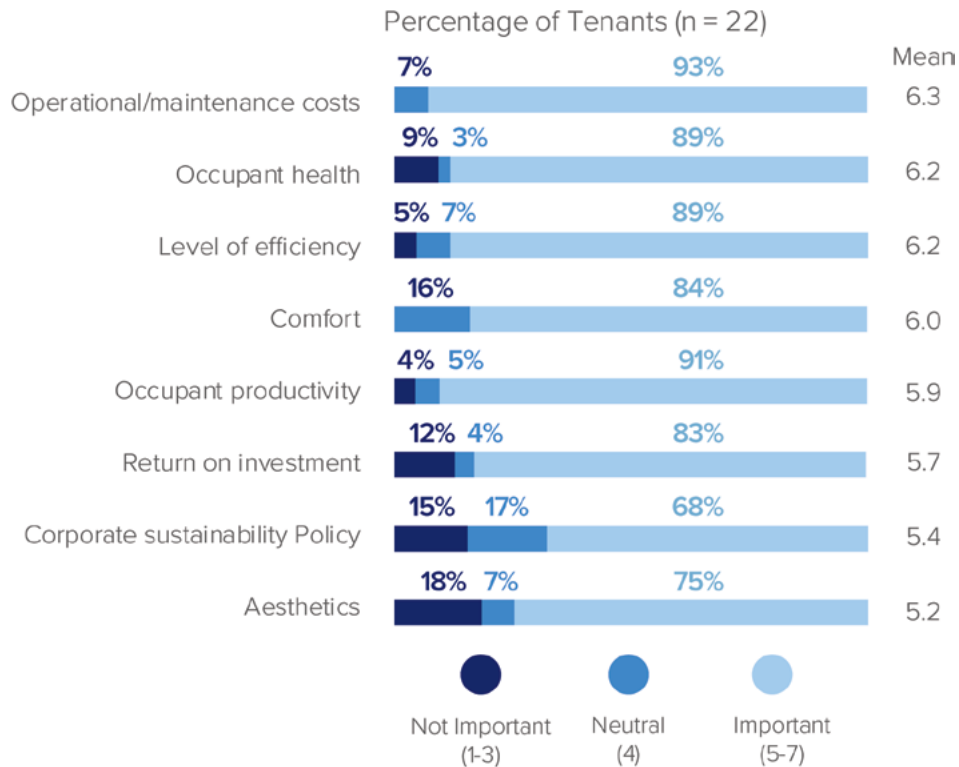


Respondent Feedback

“I mean the tenant needs to meet the code, the code is fairly strict in New York, but we make sure that they are meeting the code.”

Job Function: Sustainability
Region: New York City

Figure 22 | Importance of Various Factors When Considering Energy Efficiency Improvements (Tenants)



A majority of building owners/property managers with rented/leased space consider appealing to new tenants (83%) and tenant operational costs (79%) important when making investments that reduce energy consumption.

While tenants who have made energy-saving improvements consider energy efficiency important, this may not be the case for the tenant population at large. Most building owners/property managers who took part in the in-depth interviews noted that they do not regularly use energy efficiency as a topic for engaging current or future tenants. They find that most tenants are not interested, and they only bring up the topic if the tenant expresses interest. They explained that those tenants who tend to be more interested in energy efficiency are generally larger corporate organizations with either a need to monitor

operating expenses or a corporate philosophy towards sustainability. Still, these types of tenants are the exception rather than the rule.

Those who currently use or are considering using energy efficiency as a topic for engaging tenants describe strategies including:

- Redeveloping properties with an eye towards energy efficiency and sustainability in anticipation that it will become more of a tenant interest.
- Encouraging tenants to compare operating expenses in their space against competitors' space.
- Working to obtain green certifications such as LEED and ENERGY STAR® labels for their buildings.



SECTION 3

Findings and
Recommendations

3 Findings and Recommendations

3.1 Joint Decision Making

Building owners and property managers are the key decision makers when it comes to energy-related improvements to their facilities. In buildings that do not have rented or leased space, building owners/property managers are the primary decision makers, with minimal outside input from parties such as contractors, architects, and brokers. In buildings with rented or leased space, owners and property managers are still key decision makers, but tenants are also commonly involved (see Figure 1).

The number of stakeholders involved in decision making is generally correlated to the size of the organization and the scale of the project: At smaller organizations, few players are involved in decision making, mostly limited to the ownership or executive team. At larger organizations, there is a greater web of influencers, such as operations or sustainability teams, who may develop plans for energy efficiency improvements, and escalate these plans to ownership for final approval.

3.2 Split Incentives Remain a Barrier for Tenant-Occupied Buildings

Building owners/property managers noted that tenants have a lot of control over how they use their space and the types of upgrades they make. Sixty-one percent of tenants and 43% building owners/managers reported that tenants are involved in making energy-related decisions. However, two key barriers to energy efficiency, reported by tenants, are related to their status as a renter: limited upside to investment as a renter (70%) and length of lease shorter than payback period (60%). Even if lease structures such as triple net or green leases allow tenants to realize the savings of energy efficiency improvements, such investments only make financial sense if the tenant can expect to occupy the building for the duration of the payback period (or longer). Uncertainty associated with not owning the building they occupy therefore

remains a strong barrier to energy efficiency for tenants.

The split incentive barrier can also affect building owners/property managers with triple net leases if they pay for a building-level capital investment but the tenant accrues the benefits of lower utility bills for their space. While some of uncertainties will always exist for tenants, the issue of split incentives can be mitigated by the incorporation of green provisions or green leases that allow for both parties to share the costs and benefits related to energy efficiency improvements. Additionally, creating a transparent structure for funding common area or building-level improvements can help all parties plan for these costs as well as the benefits.

3.3 Energy Upgrades Must Pass Strict Investment Criteria

Decision makers utilize a range of investment criteria when making decisions about upgrading their buildings. While return on investment (ROI) remains the most commonly used criterion, decision makers also cited several other means of evaluating energy-related upgrades in terms of their financial viability. On average, building owners and property managers responding to the survey said that energy-related investments needed to meet at least a 50% ROI. In terms of simple payback period, more than 75% of respondents noted that projects must meet a payback

period of less than two years. Decision makers did note that, in some instances, they would deviate from these norms. However, these strict evaluation criteria present a barrier for completing projects with deeper savings opportunities that will have longer payback periods. Implementers or contractors may seek to frame potential energy-related upgrades in terms of several different investment criteria in order to “speak the language” of different decision makers. At the very least, they should frame investments in terms of ROI, the most commonly cited investment criteria.

3.4 Financing Energy Efficiency Projects Remains a Barrier

Internal sources are the dominant funding source for energy-related investments among owners/property managers and tenants. Lines of credit and company credit cards are the next most popular sources. Utilization of PACE financing, and utility on-bill financing remains minimal. While external funding, such as utility incentives, may help make some energy efficiency projects move forward, they do not address larger funding shortfalls, particularly for

larger projects. Access to financing or capital was cited as a barrier to making energy efficiency improvements by 61% of building owners/property managers and 45% of tenants. When discussing energy efficiency improvements, implementers or contractors may consider presenting financing options in case the decision maker is unaware of certain favorable options available to them.



SECTION 4

Methods

4 Methods

To explore the research topics of this market assessment, the Market Evaluation Team conducted the following research activities: (1) secondary research and data review, (2) in-depth interviews with CRE decision makers, and (3) an on-line survey with owners/property managers and tenants in the CRE sector.

Table 2 summarizes the research questions for this assessment and which primary research activities were used to address them. Secondary research and data review was used to develop a baseline understanding of the CRE sector and to inform the primary research activities.

Table 2 | Key Research Objectives

Objective	Research Questions	In-Depth Interviews	On-Line Survey
Characteristics of Typical Decision-Making Processes			
Characteristics of typical decision-making processes	<ul style="list-style-type: none"> • Characteristics of typical decision-making processes 	●	●
Financial Planning and Funding Sources			
Characteristics of capital investment plans	<ul style="list-style-type: none"> • What share of customers with a capital investment plan? • What are common traits of capital investment plans (e.g., average timeframe, frequency, inclusion of energy efficiency improvements)? 		●
Common investment criteria for energy-related improvements	<ul style="list-style-type: none"> • What share of businesses using various investment criteria (e.g., payback period, NPV, ROI) for energy-related improvements? • How do businesses evaluate potential energy-related improvements (including co-benefits)? • How do energy efficiency improvements factor into maximizing the value of buildings' sales or rentals? Are other co-benefits considered? 		●
Common funding and financing strategies for energy-related improvements	<ul style="list-style-type: none"> • What are the typical funding and financing strategies for energy-related improvements? • Do businesses have sufficient access to capital? • What types of businesses typically have access to capital/financing? 		●
Deviation of the actual decision-making process from the standard process	<ul style="list-style-type: none"> • When put into practice, does decision-making process deviate from the customers' "standard" process? • In what ways does the process deviate in practice? • Why does the process deviate? 		●
Lease Structures			
The effect of split incentives on investment decisions	<ul style="list-style-type: none"> • How are costs and benefits divided between tenants and the building owner in different type of lease structures? • What share of customers with green lease provisions in place? • How does this issue affect investment decisions? 		●

Objective	Research Questions	In-Depth Interviews	On-Line Survey
Barriers to Adoption of Energy Efficiency Improvements			
Barriers to adoption of energy efficiency improvements	<ul style="list-style-type: none"> What are the barriers preventing the adoption of more energy efficient improvements or greater efficiency of installed equipment? 	●	●
Energy Efficiency Awareness and Interest			
Awareness, familiarity, and interest in energy efficiency options	<ul style="list-style-type: none"> What is the general awareness of and familiarity with energy efficient options among commercial customers? What is the level of interest in energy efficiency? How do businesses identify potential energy efficiency improvements? What sources of information do they use (e.g., energy tracking systems)? 	●	●
Awareness of and interest in energy efficiency programs	<ul style="list-style-type: none"> What is the level of awareness of and interest in energy efficiency programs? What is the level of participation in these programs? 		●
Past and Anticipated Capital Investments			
Past and anticipated capital investments and inclusion of energy efficiency options	<ul style="list-style-type: none"> What type of energy-related capital investments have businesses made in the last few years or plan to make in the next few years (i.e., what end uses)? Is the newly installed equipment energy efficient?/What is the likelihood that the new equipment will be energy efficient? What was/is driving the investment decision? 		●

The following subsections provide additional detail about the research activities. used for this market assessment.

4.1 Secondary Research and Data Review

The Market Evaluation Team reviewed a wide range of materials to better understand the New York State CRE market, inform the data collection instruments, and provide context around the results. The materials reviewed included CRE market reports from

large real estate firms such as CBRE Group, Cushman and Wakefield, and Jones Lang La Salle, past evaluations, and various studies and white papers about aspects of the CRE market (e.g., lease types and building classes).

4.2 Decision Maker In-Depth Interviews

The Market Evaluation Team conducted in-depth interviews with 20 CRE building owners and property managers. The purpose of these interviews was to understand the intricacies of decision-making processes in the CRE market. These responses were used to inform the development of the CRE Survey and to provide context to the topics covered in this report.

The Market Evaluation Team developed the interview sample frame from a variety

of sources, including relevant industry groups (e.g., the Building Owners and Managers Association, BOMA), the InfoGroup database of New York State businesses, recommendations from the NYSERDA Market Team, and secondary research. Within organizations, the Team targeted individuals who were likely to be involved in energy decisions for their organization, including those with “energy,” “sustainability,” and “property management” in their titles. The table below summarizes the job functions of interview respondents.

Table 3 | Job Categories of Interviewees

Job Function	Number of Respondents
Sustainability	6
Partner/Principle/Owner	4
Construction/Operations	3
Engineering	2
Property Management	2
National Initiatives	1
Not specified	2
Total	20

4.3 Commercial Real Estate On-Line Survey

The Market Evaluation Team completed a quantitative survey with 198 building owners/property managers and 56 tenants. The Team used the results of the in-depth interviews, along with secondary

research, to inform the design of the survey instrument. The survey collected information to develop the quantitative metrics related to decision-making processes and criteria in the CRE market.

4.3.1 Survey Sampling

The Team distributed the survey to a sample of building owners/property managers and tenants of CRE space throughout New York State. The sample was stratified by region and by business segment, as follows:

Regional Stratification⁷

- **Downstate:** all five boroughs of New York City
- **Long Island/Hudson Valley:** Long Island and the Hudson Valley, including Westchester County
- **Upstate:** all other counties in the state

Business Segment Stratification

- **Office:** Office buildings
- **Retail:** Retail and grocery/convenience
- **Other:** Food service, health services, and lodging/hospitality

The Team used a combination InfoGroup and CoStar data to develop the sample for the CRE online survey. InfoGroup data was used to identify businesses in each CRE segment, and CoStar data was used to identify contact information for owners/property managers or tenants at these facilities. Table 4 shows the final sample frame, by stratum.

⁷ These regions align with those of the Commercial Baseline Study, except for Westchester County, which this market assessment includes in the Long Island/Hudson Valley region whereas the Commercial Baseline Study grouped it with New York City into the "Downstate" region.

Table 4 | Population of New York State Businesses by Stakeholder and Region

Segment/Stakeholder	Region			All Regions
	Downstate	Long Island/ Hudson Valley	Upstate	
Owners/Managers				
Office	34,539	23,575	20,829	78,943
Retail	27,127	21,144	18,934	67,205
Other	35,613	26,372	27,268	89,253
<i>Total</i>	<i>97,279</i>	<i>71,091</i>	<i>67,031</i>	<i>235,401</i>
Energy Efficiency Awareness and Interest				
Office	38,657	19,989	14,305	72,951
Retail	26,217	15,567	11,499	53,283
Other	31,699	17,645	14,969	64,313
<i>Total</i>	<i>96,573</i>	<i>53,201</i>	<i>40,773</i>	<i>190,547</i>
Total				425,948

Source: InfoGroup and CoStar data

The Market Evaluation team developed quota, by stakeholder and region (see Table 5).

Table 5 | Population of New York State Businesses by Stakeholder and Region

Stakeholder	Region	Quota
Owners/Managers	Long Island/Hudson Valley	50
	Downstate	69
	Upstate	47
Tenant	Long Island/Hudson Valley	37
	Downstate	68
	Upstate	29
Total		300

To meet the quota, the Market Evaluation Team fielded the web survey twice. In the first fielding, the Team sent the survey to a sample of 8,693 contacts at 8,423 unique businesses in the CRE market. The number of owners/property managers and tenants from each region and segment included in this sample were in proportion to their share in the population provided in Table 4. The Team fielded the survey from April 26 to May 18, 2018. Each contact in our sample received an initial email invitation and multiple reminder emails. After this fielding period, a total of 34 respondents completed the survey, resulting in a response rate of 0.4%.

Due to the low response rate of the initial survey effort, the Team decided to use an online research panel to field the survey. The research panel was sent invitations to take the survey from August 17 to September 24, 2018, resulting in 220 completes and a 5.8% response rate.

In total, 198 owners/property managers and 56 tenants responded to the survey (see Table 6). Note that while most results are presented for owners and property managers combined, a few survey questions were asked of building owners only. For those questions, the results in this report indicate that only owners provided responses.

Table 6 | Summary of Survey Respondents

Segment/Stakeholder	Region			All Regions
	Downstate	Long Island/ Hudson Valley	Upstate	
Owners/Managers				
Office	49	28	17	94
Retail	25	12	12	49
Other	33	13	9	55
<i>Total</i>	<i>107</i>	<i>53</i>	<i>38</i>	<i>198</i>
Tenants				
Office	11	6	7	24
Retail	7	4	5	16
Other	12	1	3	16
<i>Total</i>	<i>30</i>	<i>11</i>	<i>15</i>	<i>56</i>
Total				254

4.3.2 Survey Weighting

To ensure that the survey results are representative of the CRE market in New York State, the Team weighted the results by region and business segment. The Team developed the survey weights by dividing the share of each stratum in the population by the share of survey respondents in the corresponding stratum. For, example, the

weight for building owners/managers of office space in the Downstate region was calculated by dividing the stratum's share in the owner population (i.e., 34,539 / 235,401 = 14.7%) by the stratum's share among survey respondents (i.e., 49 / 198 = 24.7%). The resulting weight for this stratum is 0.59 (i.e., 14.7% / 24.7%; see Table 7).

Table 7 | Survey Weights by Region, Segment, and Stakeholder

Segment/Stakeholder	Region		
	Downstate	Long Island/ Hudson Valley	Upstate
Owners/Managers			
Office	0.59	0.71	1.03
Retail	0.91	1.48	1.33
Other	0.91	1.71	2.55
Tenants			
Office	1.03	0.98	0.60
Retail	1.10	1.14	0.68
Other	0.78	5.19	1.47