

# **The Five Ws of Downstate New York**

**Characterizing the Market for Energy  
Efficiency**

**Submitted to:**

**NYSERDA**

**July 1, 2009**



**FINAL REPORT**

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# 1. INTRODUCTION

This report presents the results of the Market Characterization and Assessment (MCA) evaluation contractor team's efforts to characterize the market for energy efficiency products and services in downstate New York, specifically Bronx, Kings, New York, Queens, Richmond, and Westchester counties.<sup>1</sup> The primary objectives of the effort, which targeted both the commercial and industrial (C&I) and residential building sectors, were to: 1) provide NYSERDA staff and their program implementation contractors with specific market information they can use to identify ways to increase NYSERDA program penetration in the downstate region; and 2) enhance the findings from the recently completed process evaluation which sought to better understand downstate participation in NYSERDA's programs.

Within this context, the report sought to address the following five sets of questions:

- **Who** occupies the buildings in downstate New York? Are the buildings owner-occupied or tenant-occupied? What market infrastructure has evolved to service these buildings and which organizations within the existing infrastructure are most active and influential in the marketplace?
- **What** happens in these buildings? What activities occur in these buildings and what types of energy-using systems and equipment are employed? In addition, how much energy do the buildings consume?
- **Where** are these buildings located? Where are buildings clustered within specific market sectors and geographic regions?
- **When** were these buildings constructed and renovated? What are the typical lease turnover, building renovation, and new construction cycles?
- **Why** is this information important? What conclusions can be drawn from the answers to the first four questions? How can NYSERDA leverage existing relationships, or forge new relationships, with key market actor groups to generate increased interest in NYSERDA programs?

The remainder of this report is structured around these five sets of questions. Following this introductory chapter, which provides additional context regarding the nature of the downstate

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<sup>1</sup> In this report, the term "downstate region" is used to refer to the five counties of New York City as well as Westchester County. The term "NYC" or "New York City" refers to the five counties of Bronx, Kings, New York, Queens, and Richmond.

characterization effort as well as an overview of the research methods and data sources employed in the current study, each subsequent chapter addresses a question according to the order presented above. In so doing, the report allows relevant information to be overlaid in order to develop a more comprehensive view of the diverse factors that determine energy usage patterns within the region. In creating a clearer picture of these complex factors, NYSERDA can better position its programs to reach the stakeholders and agents who influence that energy use.

## **1.1 OVERVIEW OF THE DOWNSTATE CHARACTERIZATION EFFORT**

In late 2007, NYSERDA's process evaluation contractor team conducted interviews with a subset of NYSERDA program staff as part of a scoping study to identify program and market opportunities and barriers in the downstate region, and to outline possible studies that could shed light on those opportunities and barriers.<sup>2</sup> The scoping study identified a host of researchable issues of interest to NYSERDA staff and recommended possible studies to address these researchable issues. Of relevance to the current effort, the scoping study recommended that the MCA Team conduct detailed characterizations of the downstate region to address a series of issues including potential for NYSERDA programs in various building types and sizes; the decision-making processes customers use when contemplating capital improvement projects; and the percentage of building space that is leased or otherwise occupied by tenants other than the building owner.

Subsequent to the scoping study, the MCA Team participated in meetings with NYSERDA program and evaluation staff and the process evaluation contractor team to further discuss potential downstate research options. Primary goals of these meetings were: 1) to ensure all research items of interest to NYSERDA staff were discussed and contemplated by the final research agenda; and 2) to understand the scope of the ongoing process evaluation to identify potential coordination opportunities and avoid duplication of effort. From these meetings the following list of priority research topics was identified:<sup>3</sup>

1. Develop a comprehensive view of existing building stock in the downstate region segmented by building type, occupancy patterns, size, energy intensity, and other relevant characterization metrics.
2. Develop an understanding of the share of existing building stock in the downstate region that is leased or otherwise occupied by tenants other than the building owners and the most prevalent types of lease structures, specifically emphasizing how energy costs are included in the predominant structures.
3. Develop an understanding of the share of existing building stock in the downstate region that is master-metered vs. sub-metered and how these types of arrangements factor into decision-making processes regarding energy-using equipment. In addition, develop a better understanding of existing regulatory treatment of sub-metering issues and possible future regulatory positions.

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<sup>2</sup> Research Into Action and Nexus Market Research, *Scoping Study, Possible Studies of NYSERDA Programs in the New York City and Westchester County Area, Draft Final Report*, October 2007.

<sup>3</sup> Conversations with NYSERDA staff revolved primarily around developing a better understanding of the commercial and industrial (C&I) market sector. The research effort summarized in this report addressed both the C&I and residential market sectors but places additional emphasis on the C&I sector.

4. Develop an understanding of the energy services companies (ESCOs)<sup>4</sup> that provide electric commodity service in the downstate region in terms of the ESCOs' penetration into the market, the most active ESCOs in the market, the most common pricing structures offered by the ESCOs, and how the ESCOs bundle energy efficiency services into their electric commodity product offerings.
5. Develop an understanding of the demand response (DR) providers active in the downstate region in terms of the DR providers' penetration into the market, the most active DR providers in the market, the most common business models employed by the DR providers, and how the DR providers bundle energy efficiency services into their DR product offerings.

The research effort summarized in this report was geared toward addressing these priority research topics. It is important to note, however, that the MCA Team views the current downstate characterization effort as an iterative process, one in which future research paths are identified during the course of present research undertakings. Thus, it is anticipated that findings generated during the current study will inform future studies designed to further explore select issues. These future studies may be separate, stand-alone efforts or components of comprehensive program-specific evaluations conducted by any of NYSERDA's evaluation assistance contractors.

## 1.2 RESEARCH METHODS AND DATA SOURCES

The MCA Team examined a variety of primary and secondary data sources to conduct the downstate characterization effort described in this report. This comprehensive approach generated information regarding the five priority research topics discussed previously and was structured to support the ultimate goals of the MCA evaluation effort which are: (1) to conduct credible and transparent evaluations of the **New York Energy \$mart<sup>SM</sup>** Program portfolio and individual program offerings and (2) to provide NYSERDA program staff and managers as well as the Evaluation Advisory Group (EAG), the New York State Public Service Commission (NYPSC), Department of Public Service (DPS) staff, and other stakeholders with timely and unbiased information regarding the implementation of **New York Energy \$mart<sup>SM</sup>** program offerings. The MCA evaluation results can be used to assess progress towards meeting the NYPSC's public policy goals under which NYSERDA operates as well as the institutional goals NYSERDA has established to move markets towards improved energy efficiency. In addition, the evaluation results can be used by NYSERDA program staff and managers to adjust program offerings as needed to ensure continual improvement of the programs and generate maximum market interest and uptake of existing program offerings.

The remainder of this section describes the primary and secondary data sources and methods used by the MCA Team to conduct the downstate characterization effort.

## 1.3 SECONDARY DATA SOURCES

A variety of secondary data sources were used to characterize the downstate market eligible to participate in NYSERDA programs in terms of existing building stock. Where possible, the

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<sup>4</sup> For the purposes of this project, an ESCO is defined as "an entity eligible to sell electricity and/or natural gas to end-use customers using the transmission or distribution system of a utility." NYSERDA typically employs a broader definition of the term ESCO, which includes any "business entity that provides any or all of the following services: energy efficiency measure engineering, energy efficiency measure design, equipment installation, equipment maintenance, and financing services on a performance contracting basis."

characterization results were segmented by key parameters (*e.g.*, market sector, building type, building size, energy intensity, etc.) to identify sub-market level trends and opportunities. The data sources used to conduct the analysis were not considered in isolation; rather, they were integrated to the extent possible to present the most comprehensive results given available information. The following data sources were used to conduct the analysis:

- McGraw-Hill Construction Dodge (Dodge) databases, which provide data on existing building stock, including square footage and number of buildings by county and building type.
- MapPLUTO™ database compiled by the New York City Department of City Planning, which provides data on land use, location, building age, building value, and other metrics at the tax lot level, including a breakout of building floorspace by zoning type (commercial, residential, office, retail, garage, storage, factory, or other).
- U.S. DOE's Commercial Building Energy Consumption Survey (CBECS) and Residential Energy Consumption Survey (RECS) data, which provides data on energy-related characteristics of buildings segmented by Census Division and by Climate Zone<sup>5</sup>, including heating and cooling types, age of buildings, energy consumption, energy expenditures, and other energy-related characteristics.
- U.S. Census data, which provides data on the population of the downstate region, including population density, demographics, housing characteristics (homeownership vs. renting, vacancy rates, etc.), economic characteristics (sales, number of employees, etc. by NAICS sector), and other metrics of interest.
- Dun and Bradstreet (D&B) database, which provides data on all downstate businesses with more than 10 employees including location (county and zip code), SIC code, number of employees, volume of annual sales, business affiliation (single location or branch), square footage, and energy intensity.
- Crain's Book of Lists, which provides data on the most active market actors in the downstate region, such as property managers and architects, as well as the largest businesses by type, such as hospitals and hotels.
- Publicly available documents and records from governmental entities in New York including the NYPSC, The New York State Data Center, New York City governmental agencies, and PlaNYC 2030, among others.
- Publicly available data from relevant energy organizations in New York including the New York Independent System Operator (NYISO), Consolidated Edison (Con Edison), the New York Power Authority (NYPA), and the Energy Association of New York State, among others.
- Market research reports and other publicly available data from the Real Estate Board of New York (REBNY), the Building Owners and Managers Association (BOMA), the New York City Rent Guidelines Board (NYCRGB), top-performing property management firms, and other relevant and active market actors.

Relevant data from these disparate sources was organized, integrated, and analyzed by the MCA Team to present a comprehensive view of the downstate market. Results are presented in graphical

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<sup>5</sup> New York is located within the Mid-Atlantic Census Division and Climate Zone 3. Data in the CBECS databases are not disaggregated further than this level. Data in the RECS database are disaggregated down to the state level.

and tabular formats as well as GIS maps to identify and observe spatial and temporal trends in the data. The information gleaned from secondary data sources is presented in subsequent sections of this report.

## **1.4 PRIMARY DATA SOURCES**

The MCA Team conducted interviews with key market actor groups active in the downstate region – property management firms, ESCOs, and demand response (DR) providers – to expand the findings from the secondary data sources and further explore issues surrounding the five priority research topics discussed previously. These primary data collection efforts were administered as telephone interviews using instruments designed by the MCA Team in close collaboration with NYSERDA evaluation and program staff. The implementation effort was conducted by NYSERDA’s data collection evaluation contractor, APPRISE, and the final interview guides are presented in Appendix A.

The MCA Team researched potential sample frames to identify the most complete and cost-effective frames associated with each market actor group and worked with APPRISE staff to review the selected sample frames and identify any data gaps that needed to be resolved before samples could be developed. All samples were structured to be qualitative in nature with no pre-determined confidence/precision levels and care was taken to minimize contact with market actors who have participated in prior NYSERDA data collection efforts. In addition, where appropriate, samples were developed such that the most active actors within each market actor group were targeted by the data collection efforts.

Interviewers called market actor contacts between 9:00 am and 5:00 pm on weekdays. If the interviewer reached the contact’s voice mail, the interviewer would leave a message on first attempt. After the first attempt, the interviewer would leave a message every other day. Interviewing continued until the target number of interviews for a market actor group was achieved or the productivity of the calls diminished to the point where it was deemed not cost-effective to continue attempting to reach the non-responsive contacts.

Final interview data was checked for consistency with the interview guide and provided to the MCA Team. Table 1 summarizes the key market actor groups interviewed during the effort including sample frame, estimated population in the downstate region, and number of completed interviews. Additional details regarding each market actor group are discussed following the table.

**Table 1. Overview of Interview Efforts**

<b>Market Actor Group</b>	<b>Sample Frame</b>	<b>Estimated Population (Downstate)</b>	<b>Attempted Sample Size</b>	<b>Number of Completed Interviews</b>
Property Mgt. Firms	Crain's New York Business Book of Lists	±100	30	20
DR Providers	NYISO DR Provider List	30	Census	17
ESCOs	NYPSC Competitive Electric & Gas Marketer Sources Directory	26	Census	14

### **1.4.1 Property Management Firms**

Property management firms play an active role in the downstate market. Nearly two-thirds of existing building space in the C&I sector is managed by third-party property management firms, with the 15 largest firms accounting for approximately 90% of the total managed square footage.<sup>6</sup> In addition, rental units comprise more than two-thirds of New York City's housing stock<sup>7</sup>, and many residential building owners use third-party property management firms to manage their rental assets. The significant presence of property management firms in the downstate market represents a potential barrier to efforts to improve the energy efficiency of existing building stock in that a number of decision-makers may have roles in property management decisions that affect energy usage for any given property. On the other hand, if the largest property management firms are able to be recruited as allies in efforts to increase building efficiency levels, their influence in the marketplace as well as concentration of managed assets, would likely serve as valuable leverage points for efficiency program administrators.

The property management firm data collection effort was structured to develop a better understanding of the business models and operational decision-making criteria most prevalent among the largest property management firms in the downstate region. The effort attempted to complete interviews with contacts at each of the 30 largest property management firms active in the downstate market. The sample frame for the survey was a listing of the top twenty-five commercial property managers ranked by square footage managed in New York City attained from Crain's New York Business.<sup>8</sup> Nine other commercial property management firm names and contacts were provided by the New York Energy Consumers Council.<sup>9</sup> APPRISE interviewers made contact with all 34 firms listed as active; they contacted the named businesses by telephone, worked with gatekeepers to identify appropriate respondents, and attempted to schedule interviews with the targeted respondents.<sup>10</sup> During the five-week field period, APPRISE interviewers made contact attempts three times a week and left voice mail messages. When they were able to obtain an e-mail address, they sent an e-mail to the targeted respondent. Interviewers were able to complete 20 interviews. The final interview status for the 34 commercial property managers is shown in Table 2.

<sup>6</sup> NYSERDA, *Focus on Commercial Real Estate, Training for NYSERDA Contractors*, May, 30, 2008.

<sup>7</sup> New York City Rent Guidelines Board, *2008 Housing Supply Report*, June 3, 2008.

<sup>8</sup> Crain's New York Business, *New York's Largest Commercial Property Managers, Ranked by square footage managed in New York City*, June 30, 2008.

<sup>9</sup> Personal correspondence with David Bomke of the New York Energy Consumers Council, November, 2008.

<sup>10</sup> The term "gatekeeper" refers to executive assistants and other staff that screen incoming calls placed to decision-makers at organizations within the sample.

**Table 2. Property Manager Survey Sample Disposition**

Status	Number of Property Management Firms
Completed Interview	20
Not Active in Downstate Region/Ineligible <sup>1</sup>	1
Targeted Respondent Refused	8
Left Voicemail for Targeted Respondent	4
Left Message with Gatekeeper	1
Total	34

<sup>1</sup> Only one of the sampled property management firms was ineligible for the survey (i.e., reported that they were not active in the downstate market).

The estimated response rate for the property manager survey was 62%.<sup>11</sup> The 90% confidence interval for survey statistics was +/- 11%.

### 1.4.2 Demand Response (DR) Providers

As of September, 2008, 44 DR providers were active in New York and approximately 1,700 customers representing more than 690 MW were enrolled in a NYISO DR program.<sup>12</sup> NYSERDA staff have hypothesized that many DR providers operate in an analogous manner to the ESCOs providing energy commodity in the downstate region; that is, the DR providers may offer energy efficiency consulting and support as value-added services to their customers.

The DR provider data collection effort was structured to develop a better understanding of the business models and customer value propositions most prevalent among the DR provider community in the downstate region to identify possible market opportunities for NYSERDA. The effort attempted to complete interviews with contacts at each of the 44 active DR providers. The sample frame for the survey was a listing of DR providers active in the state that was downloaded from the NYISO website.<sup>13</sup> APPRISE interviewers made contact with all 44 providers listed as active: they contacted the named businesses by telephone, worked with gatekeepers to identify appropriate respondents, and attempted to schedule interviews with the targeted respondents. During the five-week field period, APPRISE interviewers made contact attempts three times a week and left phone messages on voice mail. When able to obtain an e-mail address, the interviewers sent an e-mail to the targeted respondent describing the data collection effort and soliciting their participation. Of the 44 DR providers in the sample, interviewers determined through preliminary screening questions that 14 providers were not currently active in the downstate region; these 14 providers were not interviewed. Thus, 30 DR providers were classified as active in the downstate

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<sup>11</sup> The response rate is computed as the number of completed interviews divided by the estimated number of cases eligible for the interview. For this survey, 20 interviews were completed out of an estimated eligible sample of 32 cases.

<sup>12</sup> NYISO, *List of Demand Response Providers and September 2008 Demand Response Registration*. Includes participants in the Emergency Demand Response Program and the Special Case Resources ICAP Program.

<sup>13</sup> Source: [http://www.nyiso.com/public/webdocs/products/demand\\_response/general\\_info/dr\\_providers.pdf](http://www.nyiso.com/public/webdocs/products/demand_response/general_info/dr_providers.pdf) (accessed September, 2008).

region and 17 interviews were completed within this active group.<sup>14</sup> The final interview status for the DR providers is displayed in **Error! Reference source not found.**

**Table 3. DR Provider Survey Sample Disposition**

Status	# of DR Providers
Completed Interview	17
Not Active in Downstate Region	14
Unusable <sup>1</sup>	2
Targeted Respondent Refused	2
Left Voicemail for Targeted Respondent	4
Left Message with Gatekeeper	5
Total	44
<sup>1</sup> Of the three unusable DR providers, two had non-working phone numbers and no current listings or websites could be located, and one was a sister company of another DR provider that was interviewed.	

The responding providers represented at least 558 MW of the total 690 MW enrolled in the NYISO DR programs (81%). The estimated response rate for the survey was 74%.<sup>15</sup> The 90% confidence interval for survey statistics is +/- 10%.

### 1.4.3 ESCOs

New York State has instituted a competitive retail energy market in which C&I and residential customers are able to choose their energy<sup>16</sup> commodity supplier from a pool of Energy Service Companies (ESCOs) that have been deemed eligible to participate in the New York market by the NYPSC and certified by the utilities in whose territories the ESCOs operate. Since inception, New York has witnessed steady growth in the competitive retail marketplace. As of January 2008, more than 70 ESCOs were competing statewide to provide energy supply to customers and more than 15% of eligible customer accounts representing nearly 43% of eligible retail load were receiving electric commodity from an ESCO instead of their distribution utility provider.<sup>17</sup> Similar trends are present in the downstate region where more than 15% of eligible Con Edison customer accounts representing approximately 46% of eligible retail load are receiving electric commodity from one of the 33 ESCOs classified as active in the region (Table 4).<sup>18</sup>

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<sup>14</sup> DR providers are defined as active if they are currently serving or pursuing customers located in the downstate region; providers are considered inactive if they have never been active in the downstate region, if they left the downstate market, or if they do not provide DR services in the downstate region.

<sup>15</sup> The response rate is computed as the number of completed interviews divided by the *estimated* number of cases that are eligible for the interview. For this survey, 17 interviews were completed out of an *estimated* eligible sample of 23 cases for a response rate of 74%.

<sup>16</sup> Customers are able to competitively procure both electricity and natural gas from ESCO providers.

<sup>17</sup> NYPSC, *January 2008 Electric Retail Access Migration Reports*. Note that data does not include Long Island Power Authority, small regulated utilities, or those municipalities or other entities that are supplied power through long-term contracts with the New York Power Authority.

<sup>18</sup> Ibid.

**Table 4. Con Edison - January 2008 Electric Migration**

	Total		Non-Residential Large Time of Use Rates		Non-Residential Small & Street Lighting Rates		Residential	
	Customer Accounts	Load (MWh)	Customer Accounts	Load (MWh)	Customer Accounts	Load (MWh)	Customer Accounts	Load (MWh)
Customer & Load Migration	498,387	1,703,887	566	665,129	96,496	858,949	401,328	179,809
Total Eligible	3,184,734	3,703,035	649	711,036	477,865	1,820,220	2,706,220	1,171,779
% Migration	15.6%	46.0%	87.2%	93.5%	20.2%	47.2%	14.8%	15.3%

Source: NYPSC, *January 2008 Electric Retail Access Migration Reports*.

The NYPSC has sought the development of robust retail competition for a multitude of reasons, one of which is the hope that consumer choice will encourage ESCOs to provide additional value-added services as they compete to win customer accounts. These services, which include options such as innovative pricing arrangements, heating system and appliance maintenance, and energy efficiency and energy management consulting and support, are typically bundled with energy commodity to present customers with a more comprehensive value proposition.

The ESCO data collection effort was structured to learn more about ESCO activity in the downstate region, particularly as it pertains to the provision of energy efficiency and energy management services. The effort attempted to complete interviews with contacts at each of the 33 ESCOs considered active in the downstate region. The sample frame was downloaded from the NYPSC's Competitive Electric and Gas Marketer Sources Directory for the Con Edison service territory<sup>19</sup>, which represents ESCOs that have met Public Service Commission and utility requirements to provide service in New York. APPRISE interviewers made contact with all 33 firms listed as active; they contacted the named businesses by telephone, worked with gatekeepers to identify appropriate respondents, and attempted to schedule interviews with the targeted respondents. During the five-week field period, APPRISE interviewers made contact attempts three times a week and left phone messages on voice mail. When they were able to obtain an e-mail address, they sent an e-mail to the targeted respondent. Interviewers were able to conduct 14 interviews with ESCOs that are active in the downstate region and establish that seven of the ESCOs were not currently active in the region. The final interview status for the 33 ESCOs is displayed in Table 5.

<sup>19</sup><http://www3.dps.state.ny.us/e/esco6.nsf/Web4?SearchView&SearchOrder=4&Query=%5BServesType%5D=Electric+NonResidential+AND+%5BTerritory%5D=1002>.

**Table 5. ESCO Survey Sample Disposition**

Status	# of ESCOs
Completed Interview	14
Not Active in Downstate Region	7
Targeted Respondent Refused	2
Left Voicemail for Targeted Respondent	7
Left Message with Gatekeeper	3
Total	33

The estimated response rate for the ESCO survey was 64%.<sup>20</sup> The 90% confidence interval for survey statistics is +/- 13%.

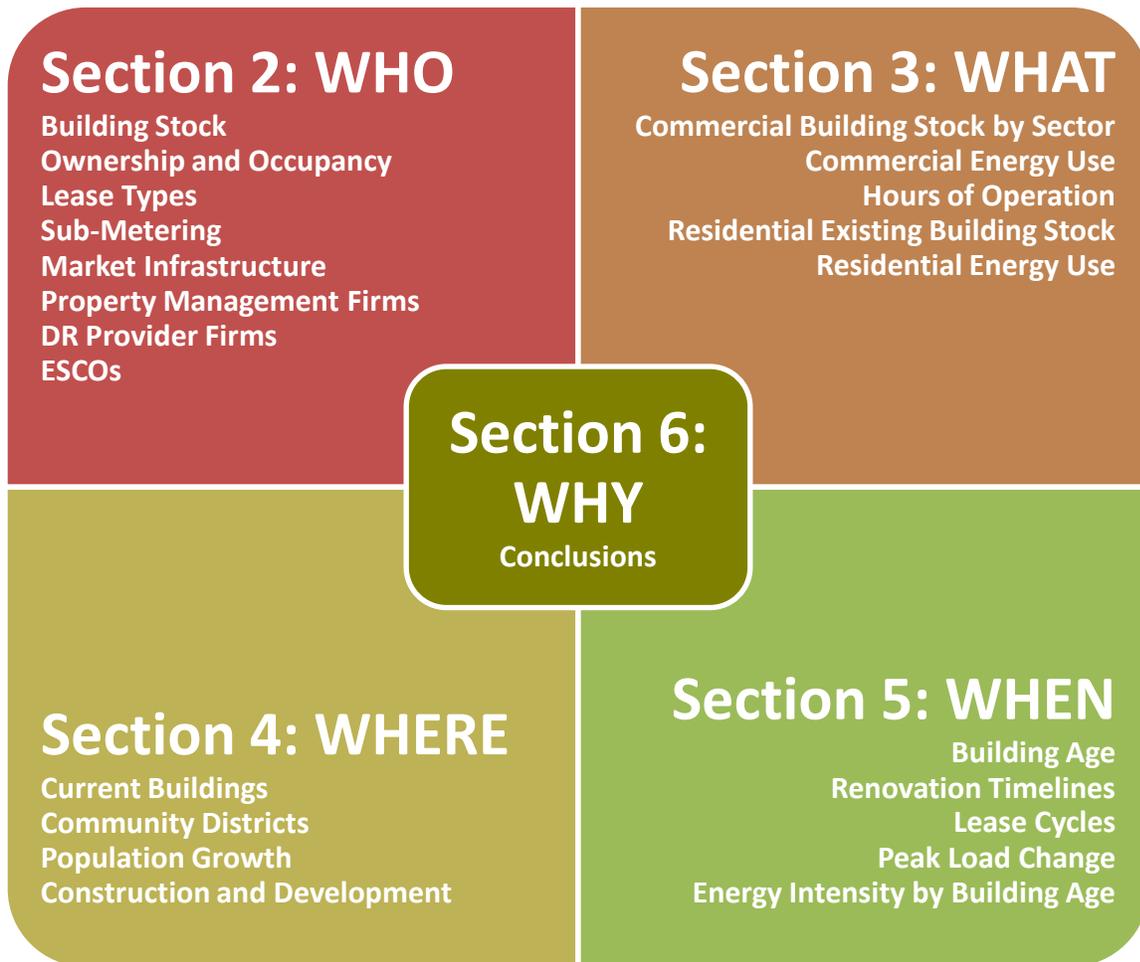
## 1.5 ORGANIZATION OF THE REPORT

Figure 1 presents a visual overview of the remainder of the report. The four major sections discussing the results of the market characterization and assessment research (*Who, What, Where, and When*) all feed into the final section *Why*, which presents the conclusions of the report.

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<sup>20</sup> The response rate is computed as the number of completed interviews divided by the estimated number of cases that are eligible for the interview. For this survey, 14 interviews were completed out of an estimated eligible sample of 22 cases.

**Figure 1. Contents of the Report**



## 2. WHO

### Major Sectors, Building Ownership, Key Market Actors

How can the existing  
building stock be defined? Page 13

Who owns and occupies  
the buildings? Page 19

What types of leases are  
typically used in downstate  
New York? Page 24

How is energy use metered and  
paid for in downstate New  
York buildings? Page 27

What market  
infrastructure services  
these buildings? Page 28

This section of the report describes the downstate market in terms of building occupancy patterns and market support services. In particular, the section seeks to address the following questions:

- Who occupies the buildings in downstate New York – are the buildings owner-occupied or tenant-occupied?
- What market infrastructure has evolved to service these buildings and which organizations within this infrastructure are most active and influential in the marketplace?

The section begins with a high-level overview of the existing building stock in the downstate region with the market segmented along several dimensions including county, major market sector, building area, and number of buildings. Next, building ownership and occupancy patterns are examined at the market level as well as at the C&I and residential sector levels followed by a review of typical lease structures and sub-metering arrangements. The section concludes with a generalized representation of the relationships between key market actor groups in the downstate region.

## 2.1 BUILDING STOCK

This section presents an overview of the existing building stock in the downstate region. Table 6 shows the downstate building stock in terms of building area disaggregated by downstate county and major sector.

**Table 6. Total Building Area by Major Sector and Downstate County (1000s of square feet)**

Major Sector	Downstate County						Total Downstate Region (% of Total)
	Bronx	Kings	New York	Queens	Richmond	Westchester	
Residential	428,263	891,963	544,306	792,751	221,513	380,988	3,259,784 (56%)
Commercial	157,757	315,198	713,239	261,603	80,464	177,186	1,705,447 (30%)
Industrial	12,659	44,128	2,706	39,756	2,317	25,611	127,178 (2%)
Mixed	79,071	133,312	403,956	59,688	4,976	-	681,004 (12%)
Unknown	-	425	2,706	43	15	-	3,189 (<1%)
<b>Total, All Sectors (% of Total)</b>	<b>677,750 (12%)</b>	<b>1,385,027 (24%)</b>	<b>1,666,913 (29%)</b>	<b>1,153,842 (20%)</b>	<b>309,285 (5%)</b>	<b>583,785 (10%)</b>	<b>5,776,602 (100%)</b>

Sources: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.

As can be seen in Figure 2, more than 5.7 billion square feet of building area exists in the downstate region. The majority (73%) of the existing building area is located in three counties: New York County (29%), Kings County (24%), and Queens County (20%). Region-wide, more than half (56%) of the existing building area, approximately 3.3 billion square feet, is classified as residential building space. The percentage of residential building area is generally consistent across counties –

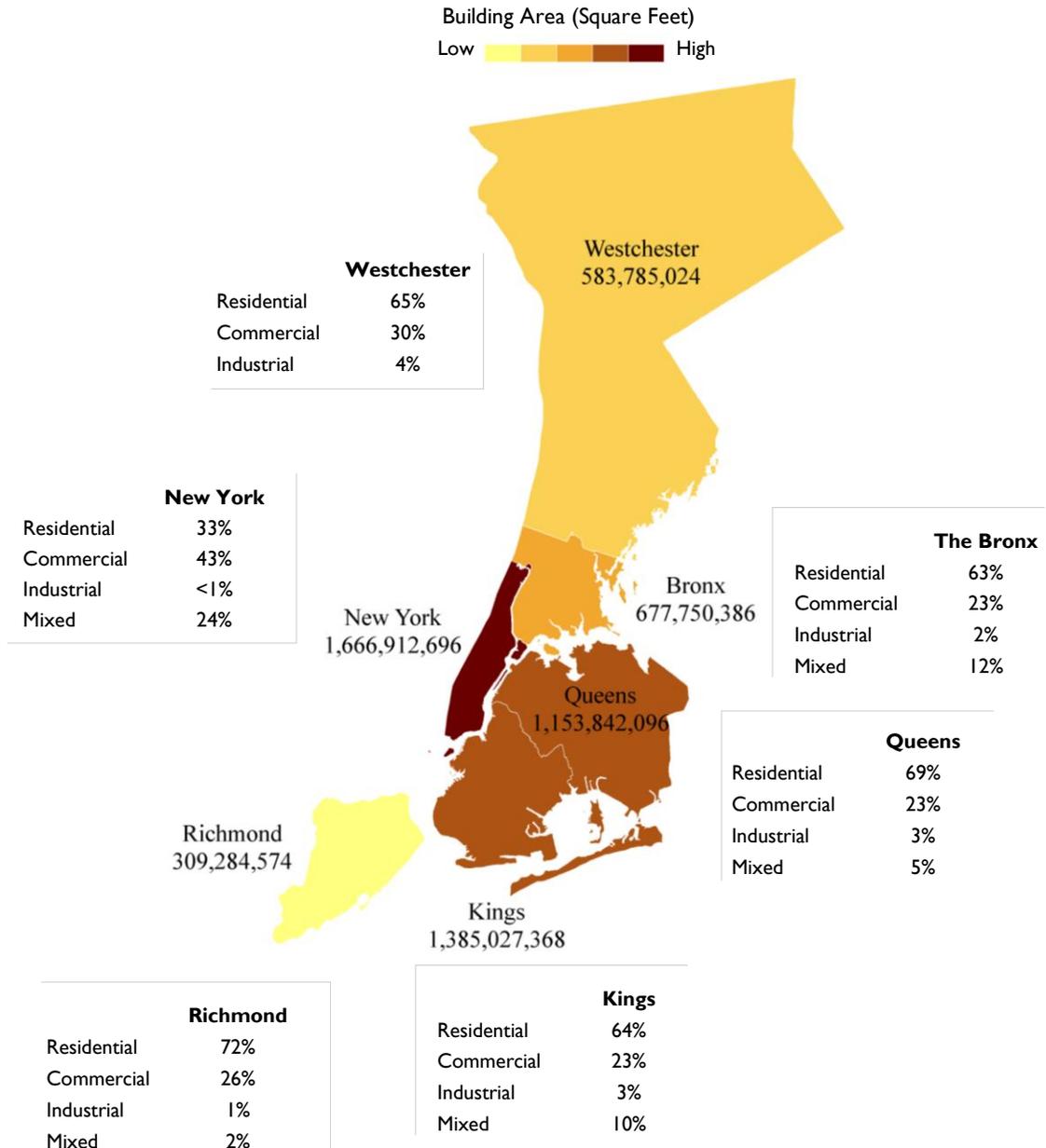
approximately two-thirds of total building area per county – with the exception of New York County in which only 33% of total building area is classified as residential space.<sup>21</sup> Correspondingly, nearly one-third (30%) of the existing building area in the downstate region, approximately 1.7 billion square feet, is classified as commercial building space. Again, the percentage of commercial building area is generally consistent across counties – approximately one-quarter of total building area per county – with the exception of New York County in which 43% of total building area is classified as commercial space. Given the volume of building area in New York County, this equates to nearly half (42%) of the total commercial space in the downstate region.

A limited amount of building area in the downstate region, approximately 120 million square feet or 2% of total building area, is classified as industrial space.

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<sup>21</sup> Note that buildings classified as “mixed-use” in the Pluto database cannot be further disaggregated into the residential, commercial, or industrial sectors.

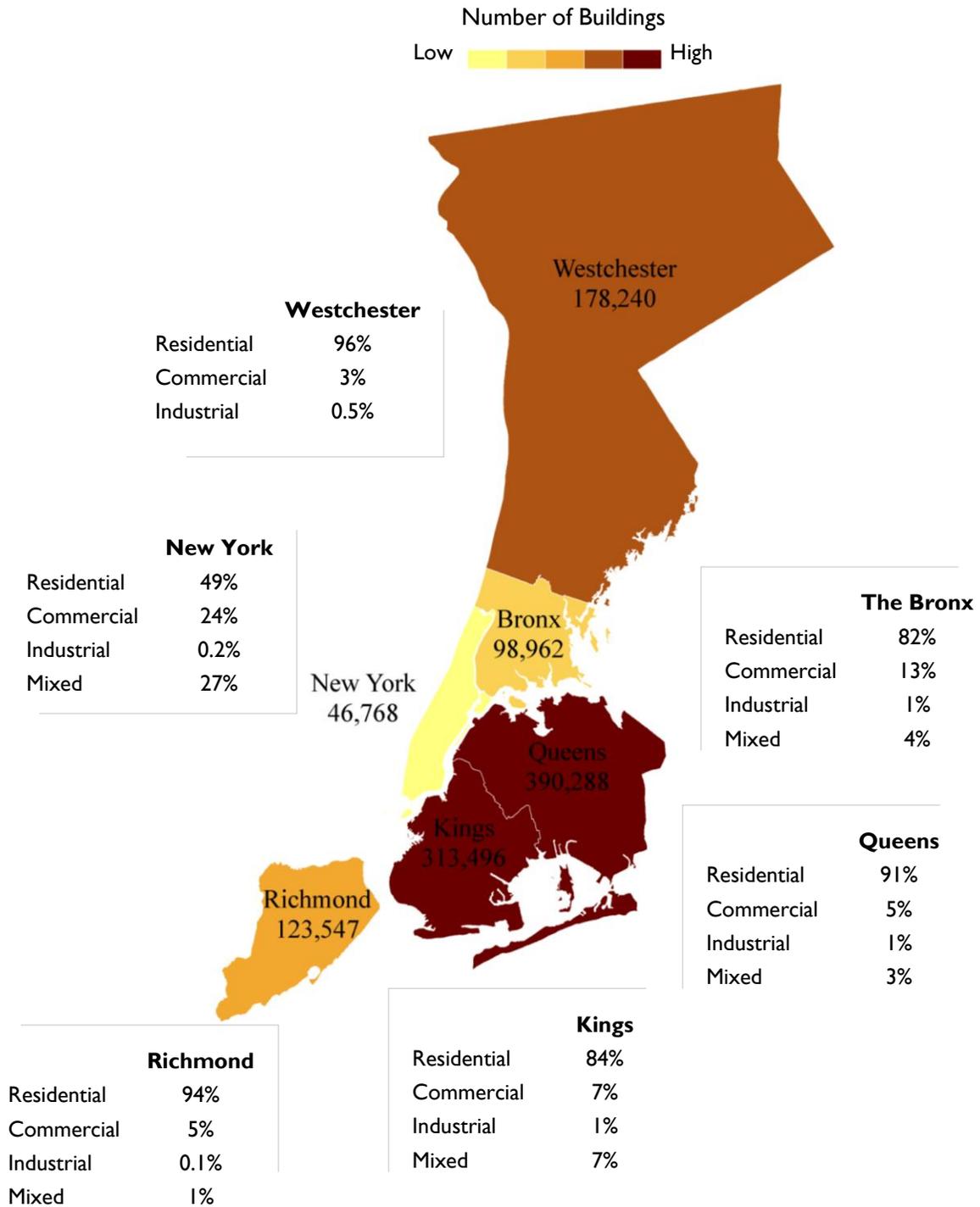
**Figure 2. Building Area by County and Major Sector**



Sources: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.

When the existing building stock is considered in terms of number of buildings, some interesting trends emerge (Figure 3). First, the vast majority of buildings in the downstate region, slightly more than one million buildings or 88% of the total number of buildings, are classified as residential buildings. Similar to building area, the percentage of residential buildings per county is large and generally consistent across counties with the exception of New York County, in which residential buildings account for slightly less than half (49%) of the total number of buildings. Another interesting observation is the relatively small number of buildings in New York County relative to other counties in the downstate region – New York County accounts for only 4% of the total number of buildings in the downstate region. When considered in concert with the fact that 29% of total building area in the downstate region is located in New York County, it becomes apparent that the average building size in New York County is substantially larger than in other counties. As shown in Table 7, this is true across market sectors.

**Figure 3. Number of Buildings by County and Major Sector**



Sources: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.

**Table 7. Average Building Size by County and Major Sector**

Average Building Size (ft <sup>2</sup> )	Bronx	Kings	New York	Queens	Richmond	Westchester	Downstate Region
Residential	5,295	3,383	23,793	2,227	1,912	2,222	2,849
Commercial	12,004	13,539	63,113	12,690	13,852	29,986	19,092
Industrial	15,590	12,473	23,734	17,019	13,017	30,427	12,992
Mixed	19,178	5,787	32,379	5,218	2,917	NA	12,902

*Source: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.*

These results have several implications:

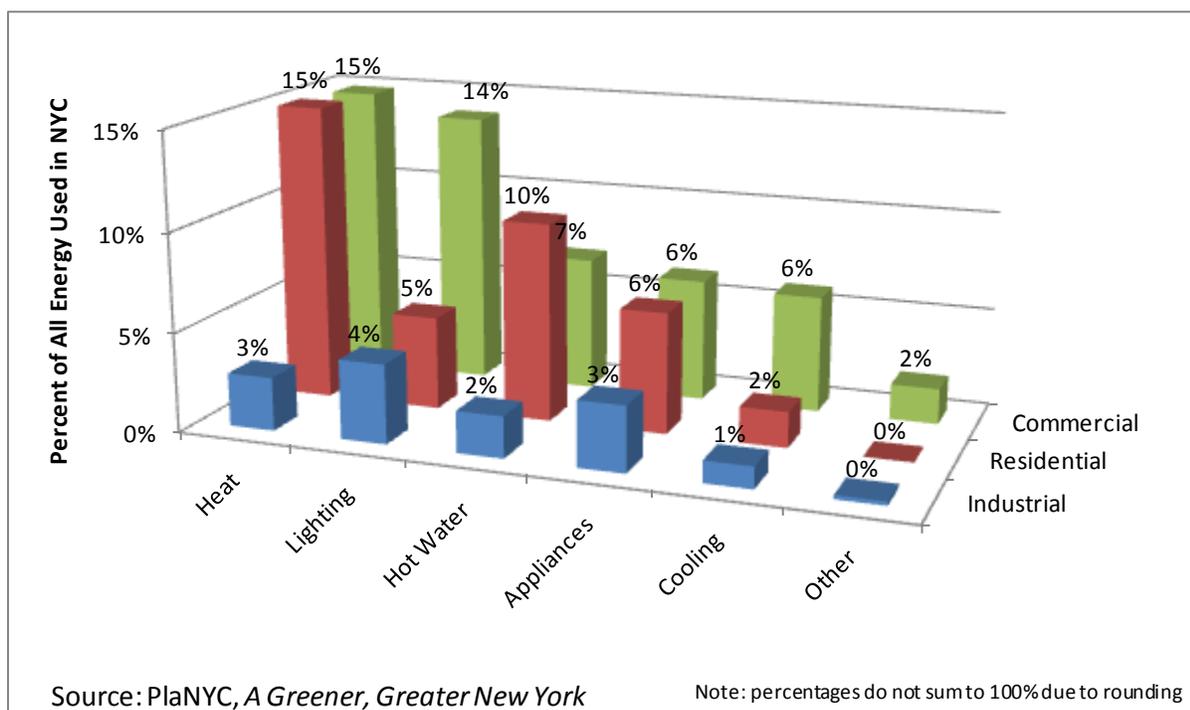
- First, the downstate region is not entirely homogenous; rather, it should be further disaggregated into at least two sub-regions – New York County and the remainder of the downstate region.
- Second, substantial opportunities likely exist in the residential market sector in the downstate region, in terms both of single-family homes and larger multi-family buildings.
- Third, opportunities in the industrial market sector appear more limited; however, if the industrial buildings are energy intensive, there may still be significant potential for energy savings.

These implications will be further explored in the remainder of this report.

## 2.2 ENERGY USE BY BROAD SECTOR

Figure 4 displays the energy use by broad sector (residential, commercial, or industrial) and end use in New York City (excluding Westchester County) as a percentage of the city’s total energy use. Commercial heating and residential heating each account for 15% of total energy usage in New York City. Commercial lighting accounts for nearly as much (14%). The next most significant end use is water heating applications which account for 10% of total energy usage in the residential sector and 7% of total energy usage in the commercial sector.

**Figure 4. Energy Use by Broad Sector and End Use in New York City (excluding Westchester County)**



## 2.3 BUILDING OWNERSHIP AND OCCUPANCY

The downstate region is characterized by a mosaic of building ownership patterns. Table 8 simplifies these types of ownership into public and private. The vast majority of buildings (98%) are privately owned, however, this trend is not consistent across building types. In general, private ownership in the C&I sector tends to be less than in the residential sector, reflecting the greater prevalence of government ownership (city, state, and federal) within the C&I sector. In addition, as shown in Table 9, government owned buildings within the downstate region are, on average, nearly twice as large as privately-owned buildings, which implies that there is a large potential for economy of scale energy savings within the public building sector.

It should be noted that the vast majority of city and state government owned buildings in the downstate region receive electricity from the New York Power Authority (NYPA).<sup>22</sup> These buildings, which represent more than 11,000 unique accounts and have a 2007 peak demand of approximately 2,000 MW<sup>23</sup>, are ineligible to participate in NYSERDA's program offerings given that NYPA customers do not pay the electric distribution System Benefits Charge. However, these buildings are able to participate in NYPA's Energy Services Programs, which provide energy-efficiency improvements, with no up-front costs, to public schools and other government facilities. According to the NYPA website, the Power Authority has undertaken more than 1,500 energy-efficiency projects in approximately 2,300 public buildings across the state; these projects have

<sup>22</sup> NYPA does not serve Federal government facilities in New York City.

<sup>23</sup> Personal communication, Jim Yates, NYPA, October 18, 2008.

reduced demand by more than 190 MW and lowered the electric bills of state and municipal governments by more than \$93 million a year.<sup>24</sup>

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<sup>24</sup> <http://www.nypa.gov/services/esprograms.htm>

**Table 8. Building Ownership**

<b>% of Total Number of Buildings</b>	<b>Public Ownership<sup>1</sup></b>	<b>Private Ownership<sup>2</sup></b>
<b>Commercial and Industrial Sectors</b>	16%	84%
Asylums and Homes	48%	52%
Churches, Synagogues, Etc.	63%	37%
Education	68%	32%
Garage / Gas Station	2%	98%
Government	71%	29%
Hospitals and Health	38%	62%
Hotels	8%	92%
Manufacturing	3%	97%
Office	6%	94%
Other Commercial	16%	84%
Other Industrial	3%	97%
Outdoor Recreation	80%	20%
Public Assembly and Cultural	46%	54%
Stores	1%	99%
Theatres	19%	81%
Transportation	75%	25%
Utilities	29%	71%
Vacant	11%	89%
Warehouse	3%	97%
<b>Residential Sectors</b>	1%	99%
One Family	0%	100%
Two Family	0%	100%
Multi Family	2%	98%
<b>Mixed Commercial and Residential</b>	<b>2%</b>	<b>98%</b>
<b>TOTAL</b>	<b>2%</b>	<b>98%</b>

Source: MapPLUTO™, NYC Department of City Planning. Includes the five NYC counties, but not Westchester County.

<sup>1</sup> "Public Ownership" as defined for the purposes of this report includes the following MapPLUTO™ ownership types: "City Ownership," "Mixed City & Private Ownership," "Other- Public Authority, State or Federal Ownership", and "Mixed (excludes property with a C, M, O, or P ownership code) Fully tax exempt property that could be owned by the city, state, or federal government; a public authority; or a private institution)."

<sup>2</sup> "Private Ownership" as defined for the purposes of this report includes the following MapPLUTO™ — ownership types: "Private Ownership- Either the tax lot has started an "in rem" action or it was once city owned" and "Unknown (usually Private Ownership)." Note that "in rem" in this context is defined as legal action taken toward property, often where ownership may be disputed.

As shown in Table 9, approximately half of the existing commercial building stock in the Middle Atlantic Census Division region is occupied by the building owners.<sup>25</sup> This is true in terms of both number of buildings (50%) and volume of building area (43%). More than one-third of the existing commercial building stock is tenant-occupied, although this percentage varies by building type. For example, previous research conducted by NYSERDA<sup>26</sup> has found that 61% of commercial office space in Manhattan is managed by third-party property management firms, which implies that non-owner occupancy levels within the office sub-market are likely greater than those found for the commercial sector as a whole.

**Table 9. Commercial Buildings and Square Footage by Ownership and Occupancy, Middle Atlantic Census Division**

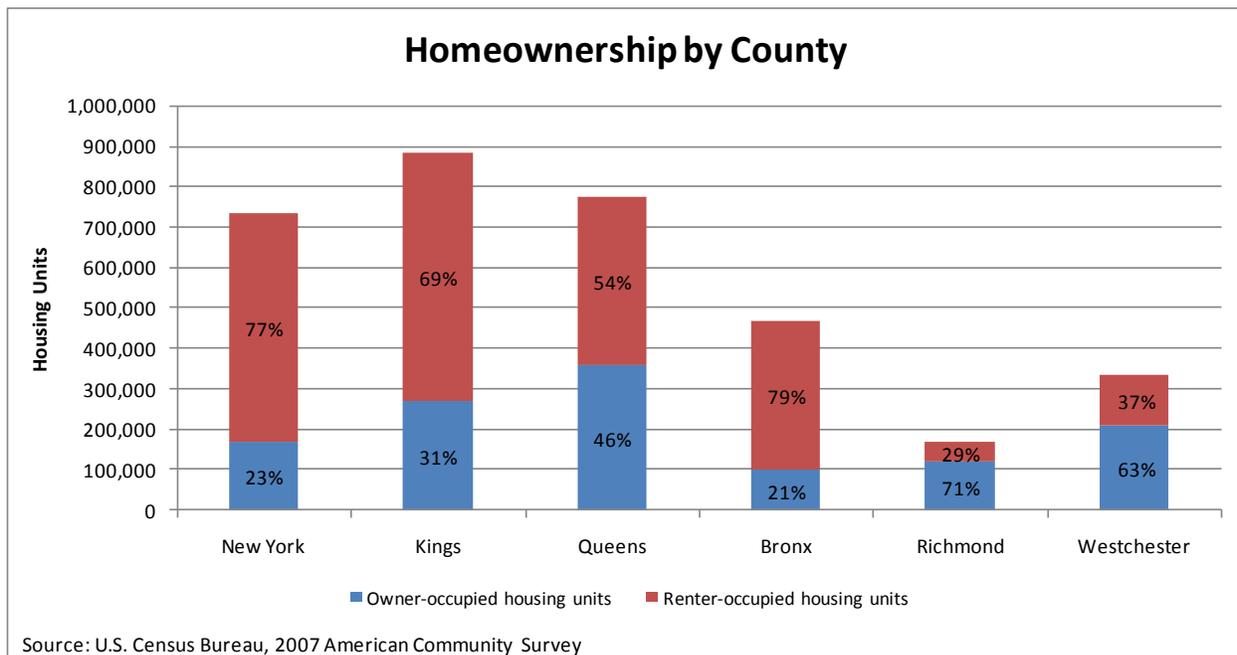
	<b>% of Commercial Buildings</b>	<b>% of Commercial Square Footage</b>	<b>Average Building Size</b>
<b>Government Owned</b>	<b>10%</b>	<b>18%</b>	<b>35,980</b>
Local Government	6%	14%	42,500
State Government	3%	4%	22,706
Federal Government <sup>1</sup>	0%	1%	N/A
<b>Nongovernment Owned</b>	<b>90%</b>	<b>82%</b>	<b>18,339</b>
Owner Occupied	50%	43%	17,549
Non-owner Occupied (tenant-occupied)	37%	36%	19,530
Unoccupied <sup>1</sup>	3%	3%	N/A
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>20,164</b>
<i>Source: 2003 Commercial Buildings Energy Consumption Survey (CBECS)</i>			
<sup>1</sup> CBECS noted that sample sizes for these subdivisions were extremely small and thus the confidence in these numbers is lower and average building size was not calculated.			

<sup>25</sup> Note that the Middle Atlantic region includes all of New York, New Jersey, and Pennsylvania. CBECS data is not further disaggregated for this metric.

<sup>26</sup> NYSERDA, *FOCUS on Commercial Real Estate, Training for NYSERDA Contractors*, May, 2008.

As shown in Figure 5, most residents of the downstate region do not own the homes in which they live. Overall, the downstate region has approximately 3.4 million housing units with 37% owner-occupied (the national homeownership rate is approximately 67%).<sup>27</sup> Homeownership rates vary significantly by county, with the majority of housing units in Richmond (71%) and Westchester (63%) counties occupied by homeowners, compared to less than one-quarter of the housing units in New York (23%) and Bronx (21%) counties.

**Figure 5. Residential Housing Unit Ownership**



The large percentage of non-owner occupied building stock in both the C&I and residential market sectors in the downstate region has several implications for energy consumption, conservation, and efficiency that may be attributed to the building space. In leased spaces, the split incentive problem<sup>28</sup> often creates a barrier to investment in energy efficiency measures, even where a strong program presence with significant incentives exists. In a non-owner occupied building, the decision-making process regarding energy use is often driven largely by financial and other business concerns: alternatively, energy use is not considered at all, but rather the costs associated with energy use are passed directly through to the tenant. Additionally, the small percentage of owner-occupied buildings in the downstate region implies that either real estate is expensive relative to income (personal or business), or there are other socio-economic reasons for why agents prefer to rent rather than own. These reasons, which may include uncertainty about the future or disinterest in the responsibilities of ownership, would likely also influence an agent’s behavior toward investments in energy efficiency and conservation.

<sup>27</sup> U.S. Census Bureau, 2007 American Community Survey

<sup>28</sup> Also known as the principal-agent problem, the issue arises when a tenant pays the operating costs for a space while the landlord/owner pays the capital costs for the building and its energy-consuming equipment. The owner often seeks to minimize capital costs and maximize rental revenues resulting in limited incentive to invest more upfront capital in measures that would improve efficiency if the tenant is paying for the energy consumed.

## 2.4 LEASE TYPES IN DOWNSTATE NEW YORK

Although great in absolute supply, the rental market in downstate New York is known for its low vacancy rates, both in the commercial and residential markets. Consequently, lease agreements between landlords and tenants are often complex. The particular leasing arrangement between landlord and tenant may often significantly affect the energy costs incurred by either party, and depending on who pays and how, investment in energy efficiency may be accordingly hindered or fostered. It is critical to understand the commercial and residential rental environment and corresponding lease agreements in downstate New York to design energy efficiency programs that are aligned with the interests of each party to increase the rate of energy efficiency investments in the future.

This section will address commercial and residential leasing in downstate New York, including the types of leases and their prevalence within each sector.

### 2.4.1 Commercial Leases

Commercial space in downstate New York varies greatly in how it is used, who owns it, who occupies it, and who manages it. Although the majority of commercial space is concentrated in the hands of relatively few owners, often several different stakeholders are involved in the operation of one building, including landlord, tenant(s), building managers, operating engineers, and investment firms.

Correspondingly, commercial leases in downstate New York can greatly vary in type. Energy costs, which are categorized as operational costs, may be passed through directly to the tenant, or included in the rent as a fixed cost that escalates over time, according to the schedule arranged in the lease. While the commercial lease is a contract often written uniquely for a given space, there are three general types of commercial leases commonly used in downstate New York.

*The Gross Lease.* In a gross lease arrangement, the tenant pays a fixed rent, in which all related property operating costs are included. The landlord pays all expenses, including taxes, insurance, and property maintenance from the fixed rent.<sup>29</sup> Energy costs are generally considered an operating expense, and are included in the rent of the gross lease, unless the unit is directly metered, in which case the tenant may be directly billed by the utility for its energy use. This type of lease may include one or more escalation clauses to cover increasing expenses over time; variations to the gross lease will result in a modified gross lease. An example of a modified gross lease is one in which the landlord passes on energy charges to each tenant based on that tenant's electricity use as measured by individual sub-meters.

*The Triple Net Lease.* This type of lease is also known as the "Net Net Net" (NNN) lease. With this lease, the tenant pays all or a percentage of the taxes and insurance associated with the leased space, and additionally pays a portion of the operating and maintenance expenses, including energy costs, associated with both the common areas of the building and the leased space itself. Depending on the age and condition of the building, this type of lease may favor the landlord if it results in higher costs to the tenant due to higher operating and maintenance costs.<sup>30</sup> If all of the operating

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<sup>29</sup> Kimmons, James and Lahle, Wolfe. *Lease Types* from <http://realestate.about.com>.

<sup>30</sup> Ibid.

and maintenance costs are passed through to the tenant, there is no direct incentive for the owner to invest in energy efficiency upgrades to the building.

*The Modified Net Lease.* The modified net lease is a hybrid of the gross and triple net leases in which the landlord and tenant each pay an agreed-upon percentage of the operating and maintenance expenses. The tenant pays all taxes and insurance costs associated with the property, and the utility costs are negotiated.<sup>31</sup> This can be a very flexible type of lease, and a wide variety of leasing arrangements are possible within it. Where energy and maintenance costs are shared, there is significant opportunity for landlord-tenant coordinated investment in energy efficiency.

Commercial space in downstate New York is generally characterized by large, multi-tenant occupied buildings. The most common type of commercial lease used in downstate New York is the modified gross lease with terms lasting on average fifteen years.<sup>32</sup> Although including electricity in operating expenses is a common practice outside of downstate New York, it is not common within the region. Tenants there are generally sub-metered, direct-metered, or pay an “electric rent” in addition to their fixed rent.<sup>33</sup> Energy costs for the common area of large, multi-tenant buildings may be shared differently among large and small tenants. For large tenants, these costs are set upon a negotiated base-year cost, which is then adjusted over time according to the lease agreement, whereas for small tenants these costs are often fixed and then escalate over fixed intervals of time.<sup>34</sup>

The triple net lease is primarily used for large single-tenant occupied buildings; it is rarely used in multi-tenant buildings.

## 2.4.2 Residential Leases

The 2005 average vacancy rate for rental housing in NYC was 3.1%, according to the US Census for New York City Housing, compared to the US average vacancy rate of 9.8%. Another atypical feature of the residential housing market in NYC is the predominance of rental units over owner-occupied housing, as shown in Figure 6. This under-supplied and anomalous rental market favors the landlord over the tenant, much like the commercial market, which is likewise reflected in local rents.

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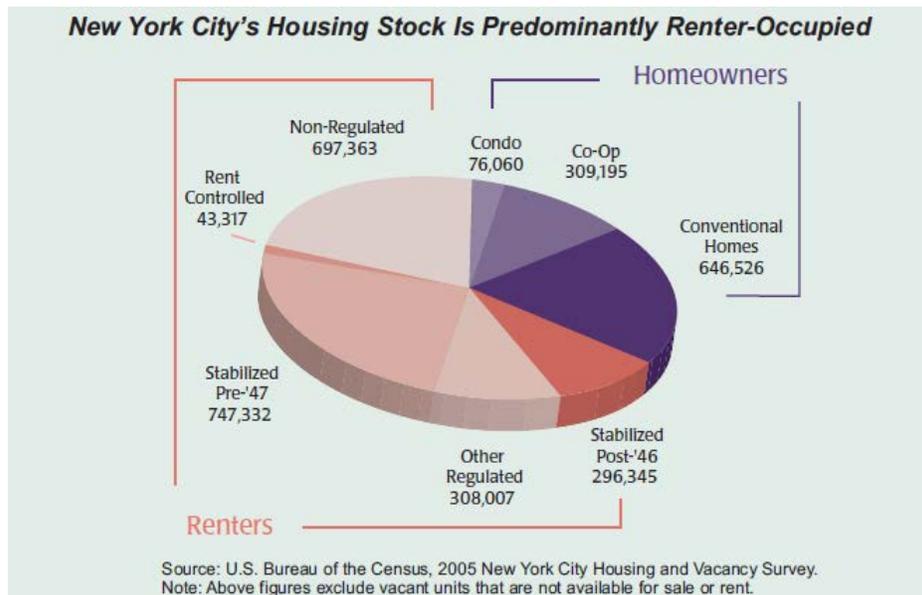
<sup>31</sup> Ibid.

<sup>32</sup> Neil, Sean. HR&A. Personal correspondence on 10/14/08.

<sup>33</sup> An electric rent is an energy charge per square foot of leased space that is added to the base rent. Senn, Mark A. *Commercial Real Estate Leases*.

<sup>34</sup> Neil, Sean. HR&A. Personal correspondence on 10/14/08.

**Figure 6. Occupancy of Residential Units in New York City**



Source: New York City Rent Guidelines Board. 2008 Housing Supply Report. June 2008. Note that Westchester County is not included in this figure.

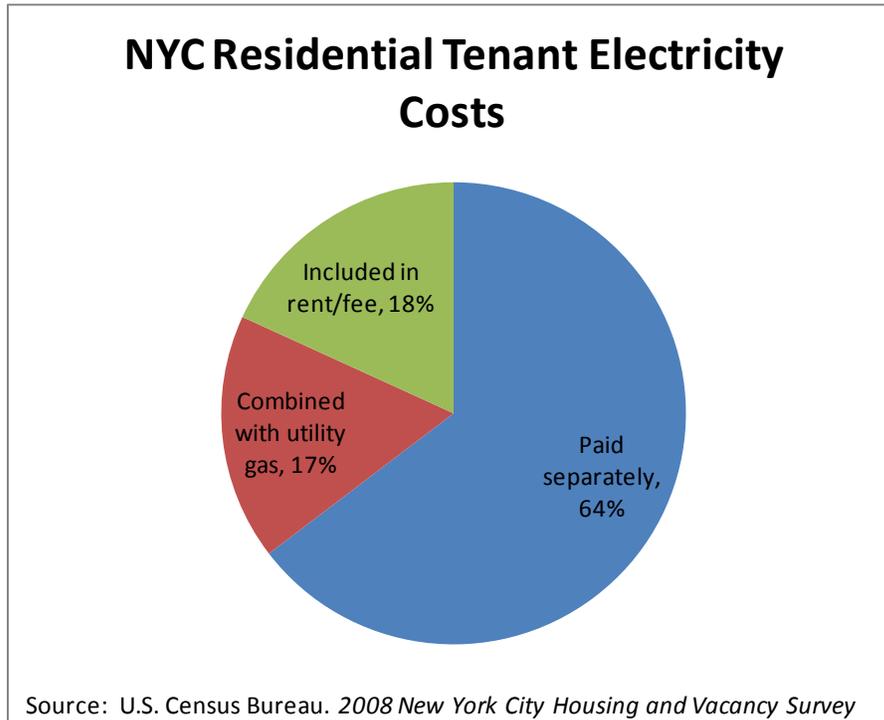
The types of residential leases prevalent in New York City tend to be more straightforward (and shorter in length) than commercial varieties, although they can depend on the type of building (*e.g.*, pre-war buildings)<sup>35</sup> and the conditions under which it is rented (*i.e.*, rent controlled or stabilized)<sup>36</sup>. The fixed rent either does or does not contain variable energy costs such as heat, gas, or electricity. If energy costs are included in the rent, the cost to the tenant cannot vary from month to month and energy costs are rolled into the fixed monthly rent; if the building is direct-metered, then each tenant pays directly for their own electricity and/or gas consumption (see section *Sub-metering* for more detailed information on this topic).<sup>37</sup> Figure 7 shows the breakdown of who pays the electricity and gas costs in the residential market, on average.

<sup>35</sup> Rent stabilization laws changed in 1947 and different rules apply to buildings built before and after 1947 (the division is commonly referred to as “pre-war” and “post-war”).

<sup>36</sup> Charles Rutenberg Realty. *Typical New York Lease Types*. Nd.

<sup>37</sup> Many NYC residential leases include hot water (and sometimes heat) in the monthly rent; this was confirmed by a basic search of apartment listings on <http://newyork.craigslist.org/> as well as one authors' personal experiences looking for apartments in New York City.

**Figure 7. Party Responsible for Tenant Electricity Costs in New York City**



According to the U.S. Census Bureau, 30% of residential leases are one year in length, 24% are two years in length, and only 2% of all residential leases are longer than two years—the remaining 44% of rental situations are either a lease less than one year or between one and two years or no specified time period at all.<sup>38</sup>

## 2.5 SUB-METERING

Sub-metering is the practice of measuring and billing each unit's electricity consumption within a multi-unit building. Sub-metering electricity in New York City has been available to all residential buildings since 1979 when NYPSC reinstated the practice. Bulk master-metered buildings receive one utility bill for the entire building, with no breakdown of consumption or costs by individual units.<sup>39</sup> There is also direct-metering, in which each unit within a multi-unit building is separately metered and receives separate bills. Converting a bulk master-metered multi-unit building to a sub-metered building is a means to directly allocate electricity costs among each unit in the building and potentially reduce corresponding energy use and costs as tenants are more directly exposed to their consumption decisions. Studies from both NYSERDA and Con Edison have shown that when a building makes the transition from bulk master-metering to sub-metering, the majority of units realize savings in both energy and costs.<sup>40</sup>

While NYSERDA and Con Edison offered sub-metering incentive programs in the past (*e.g.*, NYSERDA's Multifamily Performance Program), there is no current program that *solely* incentivizes

<sup>38</sup> US Census Bureau. 2008 New York City Housing and Vacancy Survey.

<sup>39</sup> A sub-metered building receives one utility bill, but the costs are itemized for each unit.

<sup>40</sup> Hirschfeld, Herbert. SubmeterOnline, [www.submeteronline.com](http://www.submeteronline.com)

sub-metering in New York City.<sup>41</sup> Regulations on sub-metering are different for the commercial and residential sectors. While commercial buildings can choose to sub-meter without regulatory oversight or petition, a multi-unit residential building must submit an application to the NYPSC and await approval before transitioning from bulk master-metering to sub-metering.

### 2.5.1 Commercial Sub-Metering

While it has been inferred that most large commercial tenants in New York City are sub-metered, the data to confirm this is either not available or does not exist.<sup>42</sup> Given the predominance of the modified gross lease in the commercial sector, in which energy costs are directly passed through to the tenant, there needs to be a mechanism in place with which to allocate these costs amongst multiple tenants. Direct-metering, master-metering with sub-metering, or bulk master-metering with imprecise cost allocation amongst the tenants are the three mechanisms available to pass energy costs on to the tenant: the first two options are clearly the most transparent. The fair and transparent allocation of energy costs, combined with the Con Edison Commercial and Industrial Redistribution SC 4 tariff, may provide insight into the presumed prevalence of sub-metering in the commercial sector.<sup>43</sup> The built environment in New York City produces the vast majority of its greenhouse gas (GHG) emissions, both directly (heating) and indirectly (electricity use), and it is estimated that by 2030, 85% of the city's energy usage and GHG emissions will come from buildings that currently exist.<sup>44</sup> In an era of rising energy costs, concern over climate change, and specific, city-wide goals of reducing GHG emissions, the measurement and reduction of electricity use is imperative: sub-metering is a proven means to do both. Not only does the practice put in place the necessary infrastructure to monitor electricity consumption and thereby provide opportunities to conserve, it can also foster other energy-efficient and conservation practices such as time differentiated pricing, efficient appliance upgrades, and demand response strategies.

### 2.5.2 Residential Sub-Metering

The Con Edison rate classes for sub-metered residential buildings—Multiple Dwellings SC 8 and SC 12—offer a lower tariff than the rate used for bulk master- or direct-metered customers. The SC 1 and SC 7 rates, which are applied only to bulk master- or direct-metered residential customers (or religious institutions), are slightly higher than SC 8 and SC 12. Although direct-metered customers must pay for what they use—as opposed to tenants who have their energy charges included in the monthly rent—sub-metering can, in principle, save these customers money on their electric bill as a result of the switch from the higher SC1 or SC7 rate to the lower SC8 or SC12 rate. This is assuming the tenant's energy use does not increase as a result of the lower cost. For tenants whose energy costs are included in their monthly rent, the savings that may result from a conversion to sub-metering (from bulk master-metering only) could be two-fold: first, from the fair allocation of paying for only what is used (rather than subsidizing another tenant's high usage), and second, from knowing how much energy is used and, subsequently, reducing that usage.

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<sup>41</sup> NYSERDA's Multifamily Performance Program incentivizes sub-metering through the special advanced measure incentive for advanced metering, although the incentive must be inclusive of a 20% energy reduction in the building's total energy use and therefore cannot be awarded without the implementation of other measures. Michael Colgrove, Director of Energy Programs, New York City, NYSERDA. Personal Correspondence on 11/18/08.

<sup>42</sup> Neill, Sean. HR&A Advisors, Inc. Personal Correspondence on 10/14/08.

<sup>43</sup> The SC 4 energy charge is lower per kilowatt hour than the SC 9 (General-Large) energy charge per kilowatt hour. These two rate classes apply to much of the commercial sector. Consolidated Edison.

<sup>44</sup> Bloomberg, Michael. *PlaNYC: A Greener, Greater New York*. The City of New York.

Table 10 shows the incidence of residential sub-metering in the Con Edison service territory. Given that there are under 3,000 master-meter accounts in Con Edison’s service territory (of which only 181 are sub-metered accounts), and tens of thousands of multi-unit residential buildings within that same area, many of which are classified under the SC 1 or SC 7 tariffs, one may conclude that sub-metering is much less common than bulk master-metering in the residential sector.

**Table 10. Sub-Metering in Con Edison Service Territory**

Rate Class	Total Accounts	Sub-Metering Accounts	Sub-Metering Penetration Rate (%)
	2,267	174	8%
	474	7	1%

There are several possible reasons for the relative dearth of sub-metering in New York City’s residential sector. These reasons may include, but are not limited to, the following: the higher upfront cost of installing individual sub-meters<sup>45</sup>, the NYPSC application conditions and process<sup>46</sup>, the vocal opposition of tenants who believe that their energy costs will increase as a result of sub-metering, a lack of trust on the part of the tenant that the landlord will accurately bill the tenant for his electricity use, general landlord/tenant inertia toward pursuing energy efficiency opportunities, and, perhaps most importantly, the fact that the landlords have no formal recourse to discontinue the tenants’ electricity service or evict them altogether due to non-payment.<sup>47</sup> Multi-unit residential buildings which are occupied primarily or entirely by owners rather than renters face many of the same challenges; additionally, the condominium or co-op building’s governing documents will likely need to be changed, which typically requires approval by two-thirds or three-quarters of the owners.<sup>48</sup>

## 2.6 MARKET INFRASTRUCTURE

A diverse and complex market infrastructure has evolved to service the downstate region. The infrastructure is characterized by numerous market actors engaging with specific aspects of building construction and operations, with each actor having separate and distinct business models that are not necessarily aligned with those of other actors. The commercial relationships between these multiple market actors are complicated and the sector is characterized by fragmentation within sections of the value chain as well as non-integration among sections.<sup>49</sup> The complexity of interactions across the relevant market actor groups, which often includes isolated decision-making and ineffective coordination, has strong ramifications in terms of building energy performance.

<sup>45</sup> The cost to install sub-meters in an apartment is estimated to be \$200 to \$500 per meter and is typically paid for by the apartment building, not the occupant. Romano, Jay. “Parceling Out Power to the People.” *The New York Times*. May 4, 2008. <http://www.nytimes.com/2008/05/04/realestate/04home.html?partner=rssnyt&emc=rss>.

<sup>46</sup> In addition to NYPSC approval, if there are rent-regulated tenants in the building, the request to sub-meter must also be approved by the State Division of Housing and Community Renewal. <http://www.nytimes.com/2008/05/04/realestate/04home.html?partner=rssnyt&emc=rss>.

<sup>47</sup> Michael Colgrove, Director of Energy Programs, New York City, NYSERDA. November, 2008.

<sup>48</sup> Romano, Jay. “Parceling Out Power to the People.” *The New York Times*. May 4, 2008.

<http://www.nytimes.com/2008/05/04/realestate/04home.html?partner=rssnyt&emc=rss>.

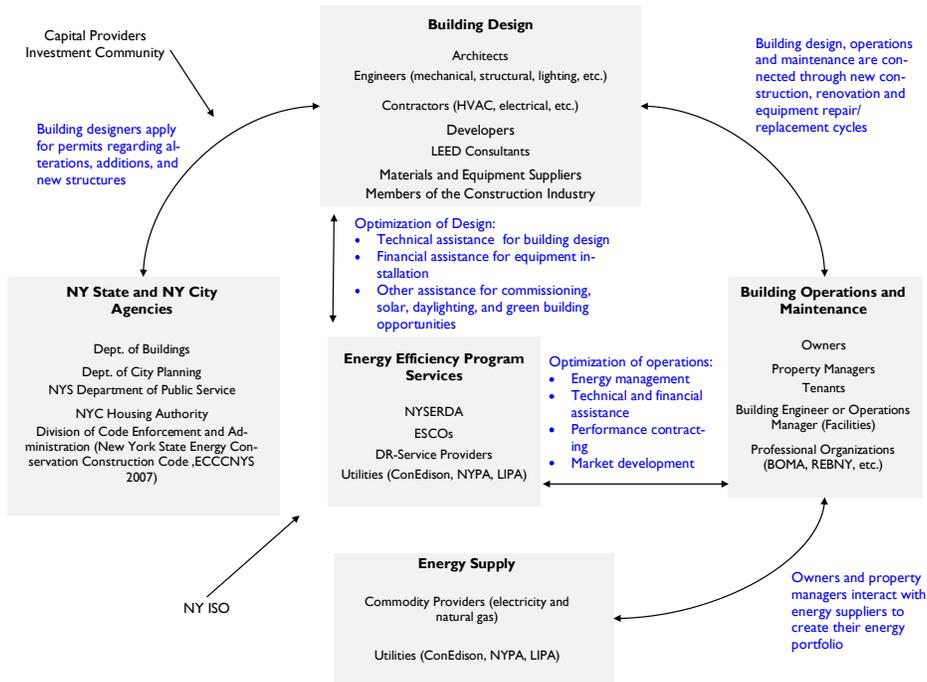
<sup>49</sup> World Business Council for Sustainable Development, *Energy Efficiency in Buildings, Business Realities and Opportunities*, October 2007.

Figure 8 presents a simplified representation of the downstate market infrastructure as it relates to building construction and operations. Figure 8 is not intended to be comprehensive or overly detailed; rather, it is intended to present an overview of the relationships between key market actor groups in the downstate region identifying the largest and most active organizations within several key market actor groups. As Figure 8 illustrates, decisions regarding building energy performance often involve multiple market actors with different business interests. This can complicate building-level decision-making regarding energy performance in that even if the various market actors agree that energy efficiency is a good thing, each actor's interests may not be aligned. Given this situation, it becomes critically important to know and understand who the major players are in each market actor group, their business drivers, their decision-making hierarchies, and, finally, what points of influence or leverage an energy efficiency program administrator might have with each market actor group.<sup>50</sup> Over the years, NYSERDA has initiated and cultivated relationships with many of the largest and most active market actors within the downstate region; indeed, many of the specific market actors listed in Figure 8 have participated in NYSERDA program offerings, either for their own benefit or on behalf of one or more of their clients. Going forward, NYSERDA can leverage its existing relationships with market actors active in the downstate region and develop new relationships with other influential actors to increase its presence in and penetration into the downstate market. This is especially true given that many organizations active in the downstate region have announced energy initiatives with goals complementary to those promoted by NYSERDA as well as the confluence of factors currently stimulating market actors to seek out information on energy efficiency and green building options, including a growing desire within the marketplace to be "green" or pursue LEED certification, rising energy costs, and rising raw materials and construction costs, among others.

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<sup>50</sup> Turnbull, Peter and J. Reed, *The Commercial Building Market Structure: An Act with Five Players*, 2008 ACEEE Summer Study on Energy Efficiency in Buildings.

**Figure 8. Market Actors in Downstate NY**



NY Downstate Largest Market Actors			
<p><b>Architects</b></p> <ol style="list-style-type: none"> <li>Perkins Eastman</li> <li>Kohn Pedersen Fox Associates</li> <li>Gensler Architecture, Design &amp; Planning</li> <li>HOK</li> <li>Ismael Leyva Architects</li> <li>Skidmore Owings &amp; Merrill</li> <li>Cooper Robertson &amp; Partners</li> <li>Mancini Duffy</li> <li>Polshek Partnership Architects</li> <li>Centra/Ruddy Inc., HLW, Stephen B. Jacobs Group—tie</li> </ol> <p>(Ranked by number of architects. New York area includes New York City and Nassau, Suffolk and Westchester counties in New York, and Bergen, Essex, Hudson and Union counties in New Jersey.)</p>	<p><b>Engineers</b></p> <ol style="list-style-type: none"> <li>Jaros Baum &amp; Bolles</li> <li>Cosentini Associates</li> <li>Severud Associates</li> <li>DeSimone Consulting Engineers</li> <li>Robert Silman Associates PC</li> <li>Cantor Seinuk Group</li> <li>Langan Eng. and Env. Services PC</li> <li>Leslie E Robertson Assocs Consulting Str Engr</li> <li>AKF Engineers</li> <li>Flack + Kurtz Inc</li> </ol> <p>(Ranked by total value of projects. Includes structural, mechanical, electrical, civil and no specialty engineers. Includes apartments, commercial and industrial buildings. The timeframe is Q12006 to Q42007. Includes the six downstate counties: The Bronx, New York, Richmond, Kings, Queens, and Westchester)</p>	<p><b>Owners</b></p> <p><b>Commercial/Industrial</b></p> <ol style="list-style-type: none"> <li>NYC— School Construction Authority</li> <li>New York State Dormitory Authority</li> <li>Alexanders of Rego Park II Inc/c/o Vornado Devel</li> <li>New York City Transit Authority</li> <li>NYC Economic Development Corp</li> </ol> <p><b>Apartments</b></p> <ol style="list-style-type: none"> <li>Muss Development Corp.</li> <li>NYC Housing Preservation &amp; Development</li> <li>Forest City Ratner Co.</li> <li>NYU Downtown Hospital</li> <li>Pace University</li> </ol> <p>(Ranked by total value of projects. Includes owners. Results split by commercial/ industrial and residential. The timeframe is Q1 2006 to Q42007. Includes the six downstate counties: The Bronx, New York, Richmond, Kings, Queens, and Westchester)</p>	<p><b>Commercial Property Managers</b></p> <ol style="list-style-type: none"> <li>Cushman &amp; Wakefield Inc</li> <li>CB Richard Ellis</li> <li>Jones Lang LaSalle Americas Inc</li> <li>Newmark Knight Frank</li> <li>SL Green Realty Corp.</li> <li>Trishman Speyer Properties</li> <li>Grubb &amp; Ellis</li> <li>Brookfield Properties Corp.</li> <li>GVA Williams</li> <li>Vornado Realty Trust</li> </ol> <p>(Ranked by square footage managed in NY City. NY City includes the five counties: The Bronx, New York, Richmond, Kings and Queens.)</p>

Sources: Crain's Book of Lists; McGraw Hill Construction. Players Database.

## 2.7 PROPERTY MANAGEMENT FIRMS

The preceding section discussed the market infrastructure that has evolved to support the downstate region's existing building stock. One of the most influential market actors in this infrastructure (as it relates to the energy performance of existing buildings) is the property manager. As discussed in the Introduction, Summit Blue conducted interviews with 20 commercial property management firms active in the downstate New York region.<sup>51</sup> One potential barrier to the implementation of energy efficiency programs in the downstate region is the misalignment of incentives for the installation of energy efficiency measures in large commercial buildings.<sup>52</sup> The extent of the misalignment is dependent on a number of factors.

- Owner / Tenant Buildings – Barriers to installation of energy efficiency measures tend to be lowest for owner-occupied buildings; building owners can directly assess the energy costs for various energy-using systems and make decisions regarding investments in higher efficiency equipment to reduce energy costs. However, the downstate region is characterized by many large, non-owner occupied, multi-tenant buildings in which existing contractual relationships may present barriers to investment in energy efficiency.
- Lease Arrangements – When whole building energy efficiency systems and measures (*e.g.*, HVAC system upgrades, energy management systems, etc.) are installed in leased buildings, energy consumption for the entire building is reduced. However, existing lease arrangements dictate the extent to which those benefits accrue to building owners and/or building occupants. For buildings with gross leases, landlords are responsible for payment of most utilities and therefore accrue the long-term benefits of energy efficiency improvements. However, for other lease arrangements, individual tenants pay some or all of the utility costs, and thereby may obtain some level of benefit from any building-level energy efficiency investments made by the landlord.<sup>53</sup>
- Metering – When tenants are directly metered for electricity by the utility company, they accrue the benefits from any electric energy efficiency improvements they install in the space that they occupy (*e.g.*, lighting, office equipment). If the building is master-metered with sub-meters assigned to individual tenant spaces, tenants also can accrue benefits from electric energy efficiency improvements they install in the space they occupy. However, if the building is master-metered without sub-metering, it is difficult for tenants to directly realize benefits from electric energy efficiency measures they install.

The goal of the commercial building property manager survey was to furnish NYSERDA staff with a better understanding of the downstate building market, including the extent to which existing lease arrangements and metering may present barriers to different kinds of energy efficiency improvements and the role that commercial building property managers can play in helping to overcome those barriers. Specific information objectives included the following topic areas:

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<sup>51</sup> This respondent group was particularly difficult to reach; the interviewers were only able to conduct 20 interviews out of a sample frame of 30, indicating that this is a particularly busy and active group of market actors.

<sup>52</sup> As noted in later sections of this report, the property managers surveyed for this effort manage buildings in the commercial, industrial, and multi-family residential sectors. However, the property management firms are most active in the commercial sector, so the results are likely most relevant to the commercial sector.

<sup>53</sup> The level of benefit depends on how the upgrade costs are managed by the landlord, a situation that is discussed further in subsequent sections of this report.

- **Downstate Market Structure** – Make use of the knowledge base of commercial building property managers to help characterize the downstate commercial building market. Develop information to help NYSERDA staff better understand property manager building portfolios, the types of leasing arrangements used, the types of electric metering used, and other trends in the marketplace.
- **Energy Considerations** – Learn about the approaches used by property managers to provide energy efficiency and green building products and services to their clients, the extent to which these products and services are of interest to their clients, and the extent to which these offerings have strengthened the property managers’ relative market positions.<sup>54</sup>
- **Partnerships with NYSERDA** – Measure property manager awareness of NYSERDA programs and the willingness of the property managers to work with NYSERDA to achieve broader market uptake of relevant program offerings.

Commercial building property managers are in a unique position to impact the marketplace for several reasons. First, most property management firms manage a portfolio of buildings comprised of large volumes of building space. The firms surveyed for this effort manage over 300 million square feet of commercial building space across numerous buildings in the downstate region. In addition, previous research has shown that many property management firms have direct and long-standing relationships with high-level decision-makers at building owner and tenant organizations, as well as other relevant market actor groups (*i.e.*, trade organizations that address specific aspects of building operations).<sup>55</sup> Taken in combination, these factors imply that benefits can be achieved if NYSERDA can establish and nurture strategic relationships with these firms. For buildings within a property manager’s portfolio that are direct-metered or sub-metered, NYSERDA could leverage the property managers’ relationships with tenants to furnish information on relevant NYSERDA program offerings for efficiency upgrades within tenant spaces. In addition, given that many property management firms manage large portfolios of buildings owned by different entities, NYSERDA could also leverage those relationships to efficiently engage a diverse group of individual building owners to discuss the benefits of system-level efficiency improvements. Moreover, since property managers have direct information on energy costs and energy systems for each building, they could work with NYSERDA to identify those buildings that are best suited to take advantage of NYSERDA’s whole building program offerings.

### 2.7.1 Market Structure

The first objective of the survey was to confirm that the property management firms were active in the downstate region, characterize the firms’ building portfolios, and gather information regarding the downstate property management market. The intelligence gathered from the responding property management firms will help NYSERDA staff better understand the market for commercial leased properties in the downstate region.

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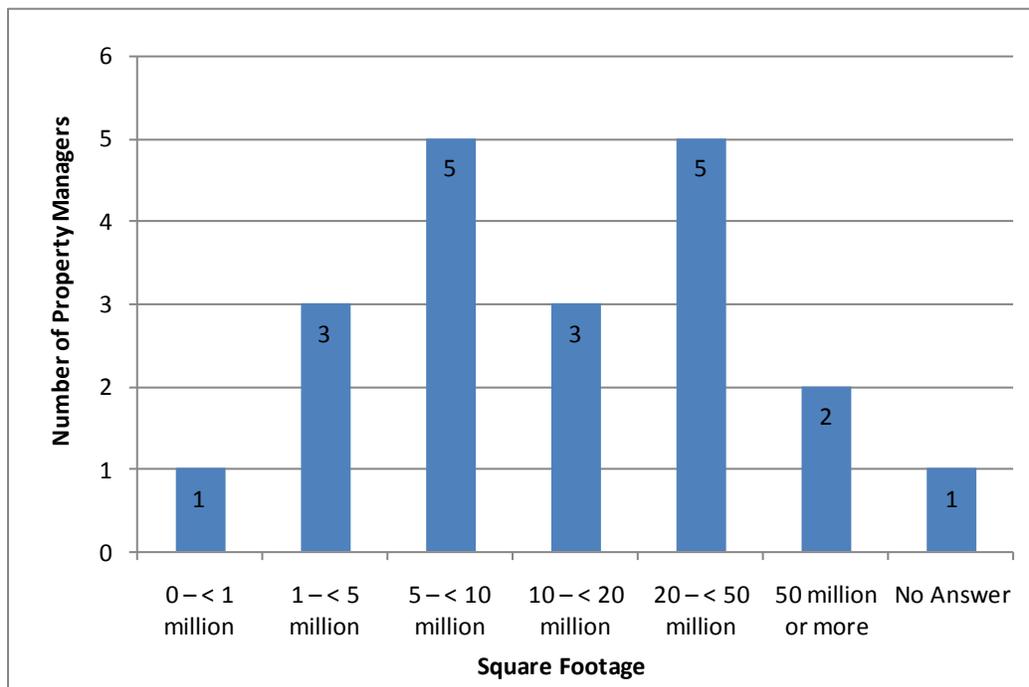
<sup>54</sup> Throughout this report, the term “client” refers to the building owner and tenant organizations that enter into contractual relationships with property management firms. It is important for NYSERDA to distinguish the property management firms’ relationships among these different groups when considering targeted marketing of program opportunities.

<sup>55</sup> For a recent example, see Turnbull, Peter and John Reed, “*The Commercial Building Market Structure: An Act with Five Players*”, 2008 ACEEE Summer Study on Energy Efficiency in Buildings.

Responses to the survey demonstrate that there is considerable consistency across the responding property management firms in terms of their operational characteristics. Key findings include:

- **Time in the Market** – All of the property management firms have been in the business for ten years or more, with the exception of one respondent that has been in the business for eight years. Half of the firms have been in the market for more than 25 years. This is in contrast to the findings of the demand response provider and ESCO survey efforts, which found that most firms have been in the downstate market for 10 years or less.
- **Square Feet Under Management** – Responding firms manage varying amounts of space in the downstate region; the smallest responding firm manages about 1 million square feet while the largest responding firm manages more than 72 million square feet (Figure 9).

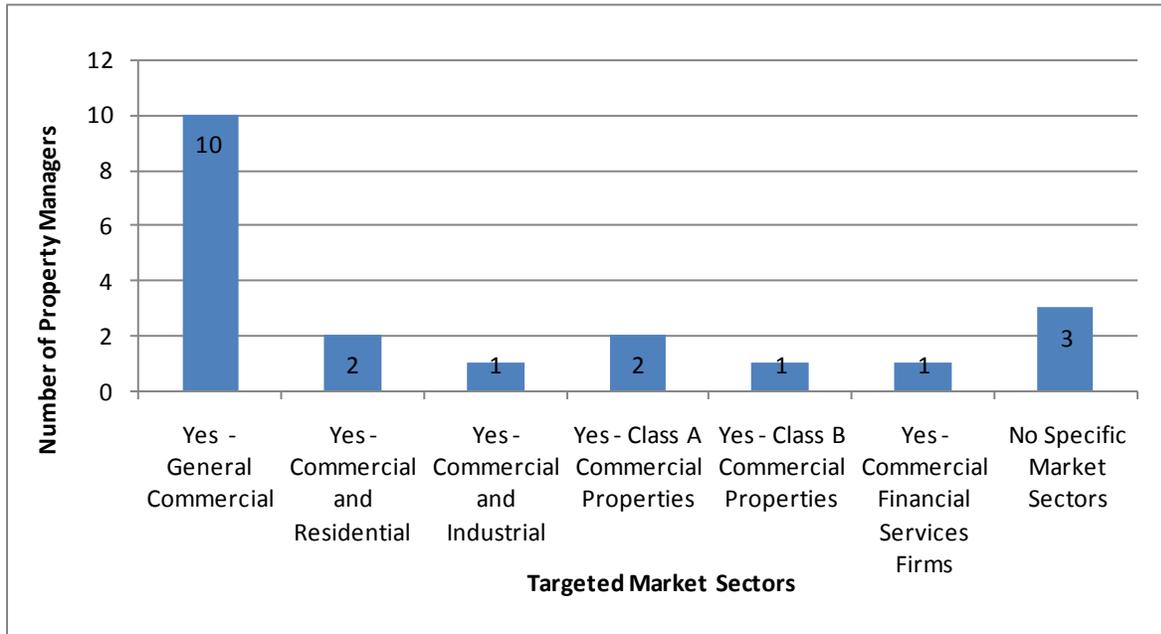
**Figure 9. Square Footage Managed by Property Managers in Downstate Region**



Source: MCA survey of property managers (n=20).

- **Market Sectors** – All of the responding property management firms reported that they focus on commercial buildings, mainly high rise office buildings. Four of the firms have retail space in their portfolio. Four of the firms also manage residential properties, primarily multi-family residential buildings, with residential space accounting for 5% to 20% of their business. Figure 10 summarizes the targeted market sectors of the responding firms.

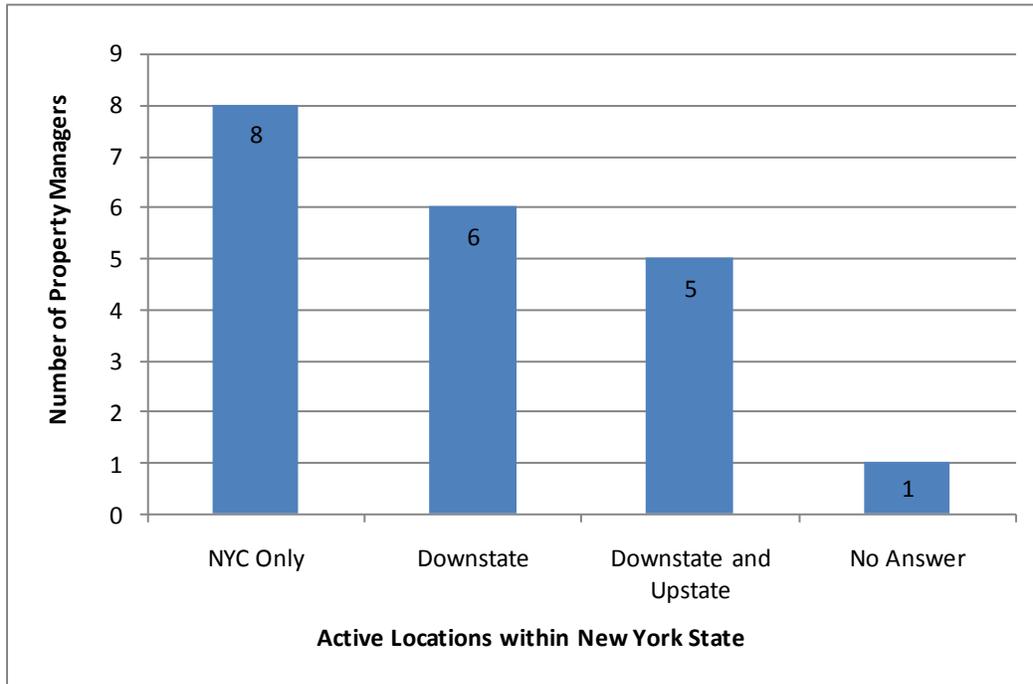
**Figure 10. Property Managers' Targeted Market Sectors**



Source: MCA survey of property managers (n=20).

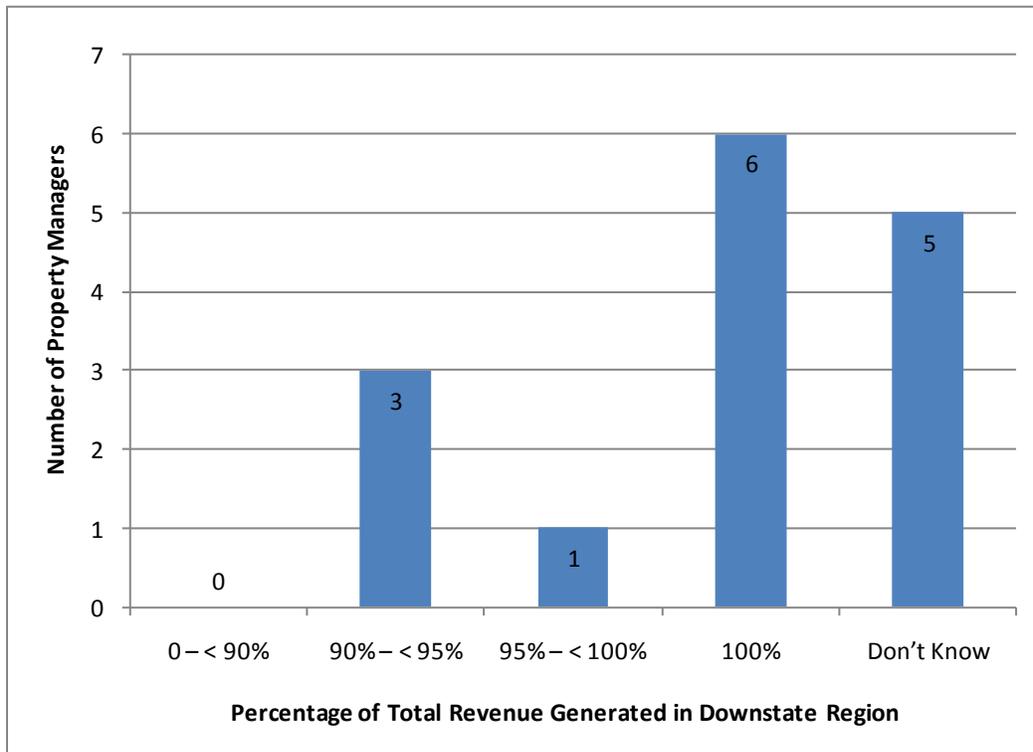
- **Geographic Scope and Focus** – Most of the property managers restrict their business to the downstate region, with many working in New York City only (Figure 11). Even those that work throughout the state reported that over 90% of their revenue is generated in the downstate region (Figure 12). Note that five respondents were unable to provide a response to this question.

**Figure 11. Property Managers' Active Locations within New York State**



Source: MCA survey of property managers (n=20).

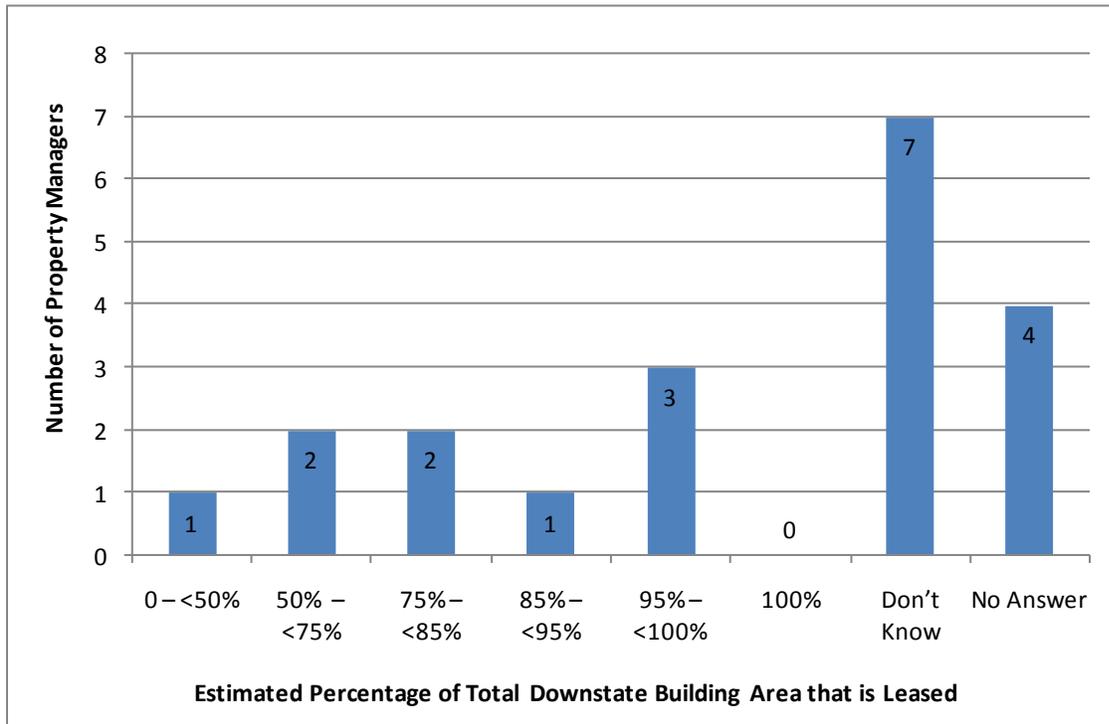
**Figure 12. Percentage of Property Managers' Total Revenue Generated in Downstate Region**



Source: MCA survey of property managers (n=20).

Survey respondents were asked to estimate what percent of all downstate commercial buildings (not just buildings managed by that respondent) are owner-occupied versus leased. Only half of the respondents answered the question, and estimates ranged from 60% owner-occupied to only 5% owner-occupied. Most respondents who furnished estimates thought that two-thirds or more of the space is leased (Figure 13).

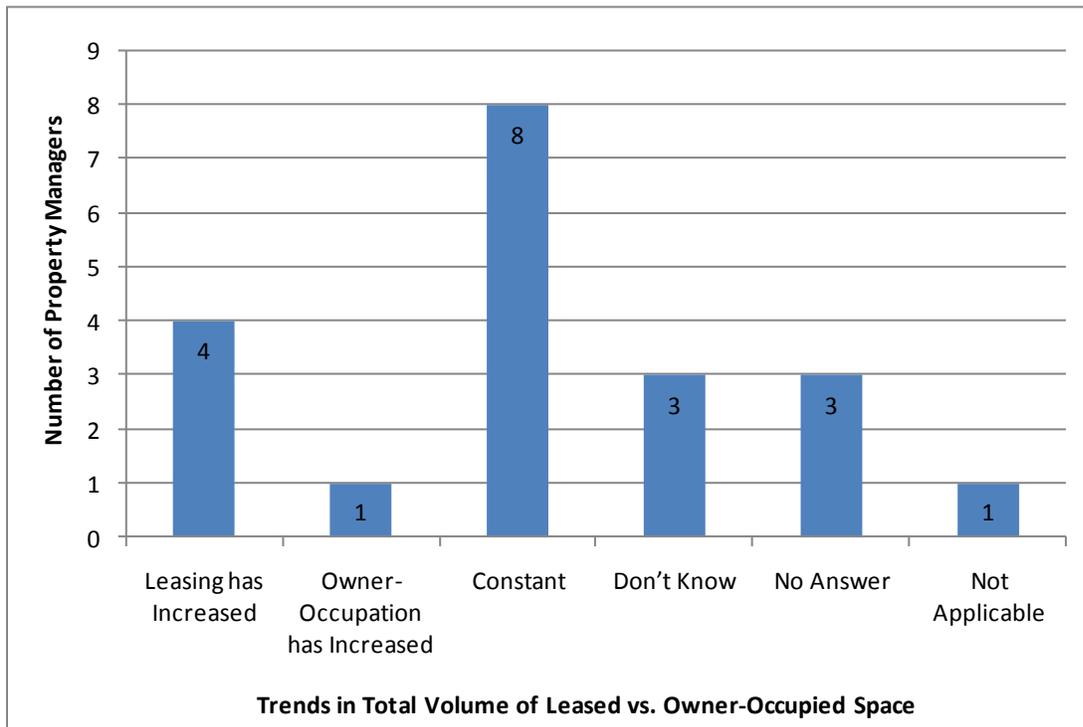
**Figure 13. Estimated Percentage of Total Downstate Building Area that is Leased as Perceived by Property Managers**



Source: MCA survey of property managers (n=20).

Respondents were also asked to estimate the percent of the properties they manage that are owner-occupied versus leased; all reported that over 90% of the space they manage is leased. While most respondents reported that the percent of space that is owner-occupied has remained consistent over time, a few reported that some building owners were moving their back-office operations out of the downstate region and leasing the space that was previously occupied by those operations (Figure 14).

**Figure 14. Trends in Total Volume of Leased vs. Owner-Occupied Space as Perceived by Property Managers**

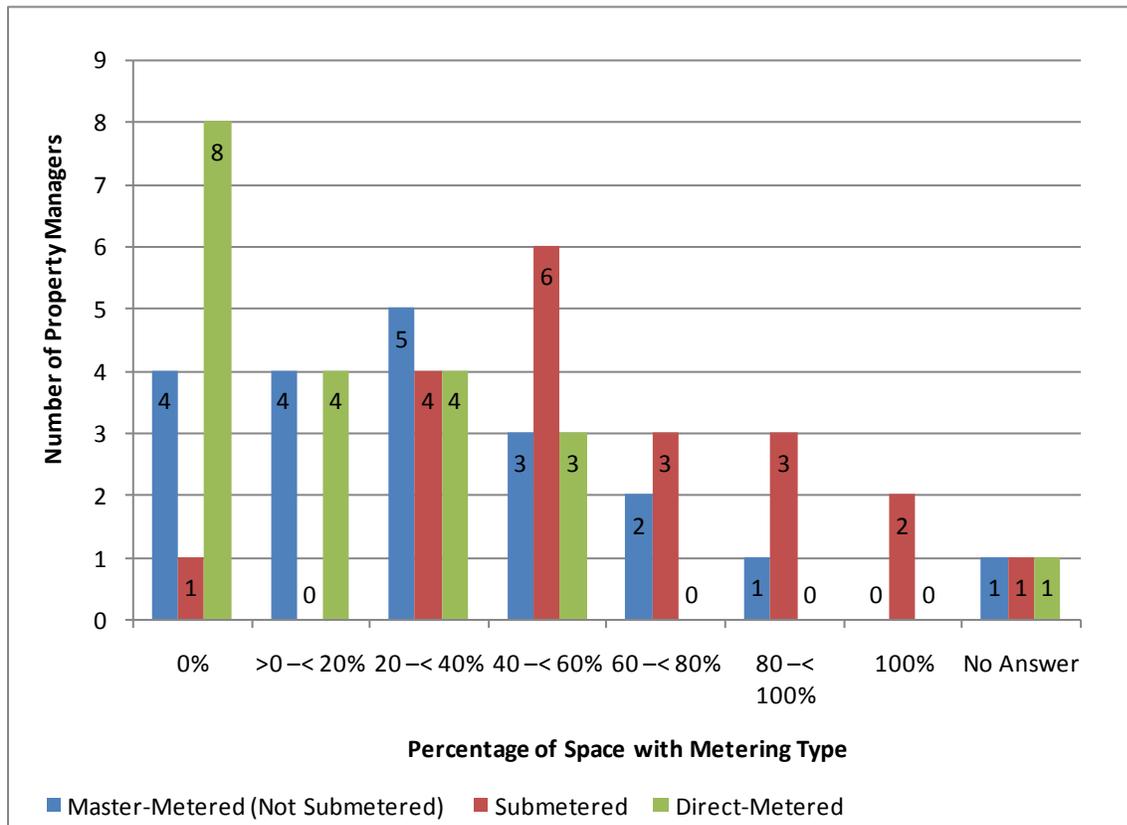


Source: MCA survey of property managers (n=20).

Respondents also furnished information regarding the type of electric metering used for the buildings they manage:

- **Direct-metering** – More than half of the survey respondents (60%) reported that some of the buildings they manage have direct-metering for individual tenants, with estimates ranging from 5% of their managed buildings to more than 50% of their managed buildings (Figure 15). One respondent suggested that most new buildings are direct-metered.
- **Sub-metering** – All but one of the survey respondents reported that at least some of the buildings they manage allocate electric costs through sub-metering (Figure 15). About one-third of the respondents said that 75% or more of their buildings have sub-metering, with two of the respondents reporting that all of their buildings have sub-metering. The percent of sub-metered space ranged from 20% to 100%. Many respondents reported that the use of sub-metering in the downstate market is on the rise as tenants increasingly seek more control over their electric commodity costs.
- **Master-metering** – For those buildings that are master-metered without sub-meters, electricity costs are usually allocated in one of two ways. Tenants with electric inclusion clauses built into their lease agreements pay a fixed amount per leased square foot for electricity. Under survey agreements, the tenant’s space is surveyed to assess their expected usage of electricity and assigned an associated electricity cost. Most property managers reported that at least some of the buildings they manage are master-metered with estimates ranging from about 5% of their managed buildings to more than 70% of their managed buildings (Figure 15).

**Figure 15. Percentage of Property Managers' Managed Space with Direct-metering, Sub-metering, or Master-metering**



Source: MCA survey of property managers (n=20).

Respondents also reported on the types of leases they typically use. However, their responses were difficult to interpret.<sup>56</sup> Standard lease types include gross leases (all costs included in fixed base rent) and net leases (tenants pay base rent plus a share of property taxes, common area expenses, and their own utility costs); however, these general lease types are often modified, with the division of expenses between the landlords and tenants up for negotiation.<sup>57</sup> However, some respondents reported that their firms modify the standard lease types to ones in which utility costs are sub-metered or tenants pay for utilities based on a survey or on their square footage. One survey respondent directly addressed the issue with the following response:

*“In New York City, a gross lease means that the rent quoted includes the tenant's share of operating expenses and real estate taxes. Generally after the first lease year or “Base Year,” tenants also pay as additional rent their pro rata share of increases in operating expenses and real estate taxes above the Base Year amount. In addition, they pay for their share of electricity used. This is generally done by sub-meter, particularly for larger tenants and full floor tenants or by another method such as Electric Rent Inclusion which means a*

<sup>56</sup> This is not unusual as numerous prior studies have shown that real estate managers typically deal with a diversity of lease structures each with a different balance of operational and maintenance responsibilities between landlord and tenant.

<sup>57</sup> Lank, Edith. *Modern Real Estate Practice in New York*. 8<sup>th</sup> Edition.

*fixed dollar amount per square foot which can be adjusted by increases in electrical rates or by survey of electricity used by the tenant.”*

This suggests that many buildings have lease arrangements for which incentives for energy efficiency investments are aligned relatively well. For example, since many of the buildings in existing property manager portfolios have direct-metering or sub-metering for electricity, tenants in leased spaces can directly participate in NYSERDA programs and realize benefits from energy efficiency improvements they install in their occupied spaces. In addition, it appears that building owners have the ability through gross lease arrangements to charge tenants for the costs of energy efficiency improvements to building systems (*i.e.*, HVAC, hot water, or building shell measures) and also give tenants the benefits of reduced energy costs resulting from those system improvements. If such lease arrangements are indeed common for most commercial tenants in the downstate region, NYSERDA staff could work effectively with property managers to leverage their relationships with building owners and tenant organizations to increase the reach of NYSERDA energy efficiency programs. However, most of the survey respondents indicated that they had not thought about this issue and that the subject of energy efficiency improvements is not directly addressed in their lease structure.<sup>58</sup>

## 2.7.2 Energy Considerations

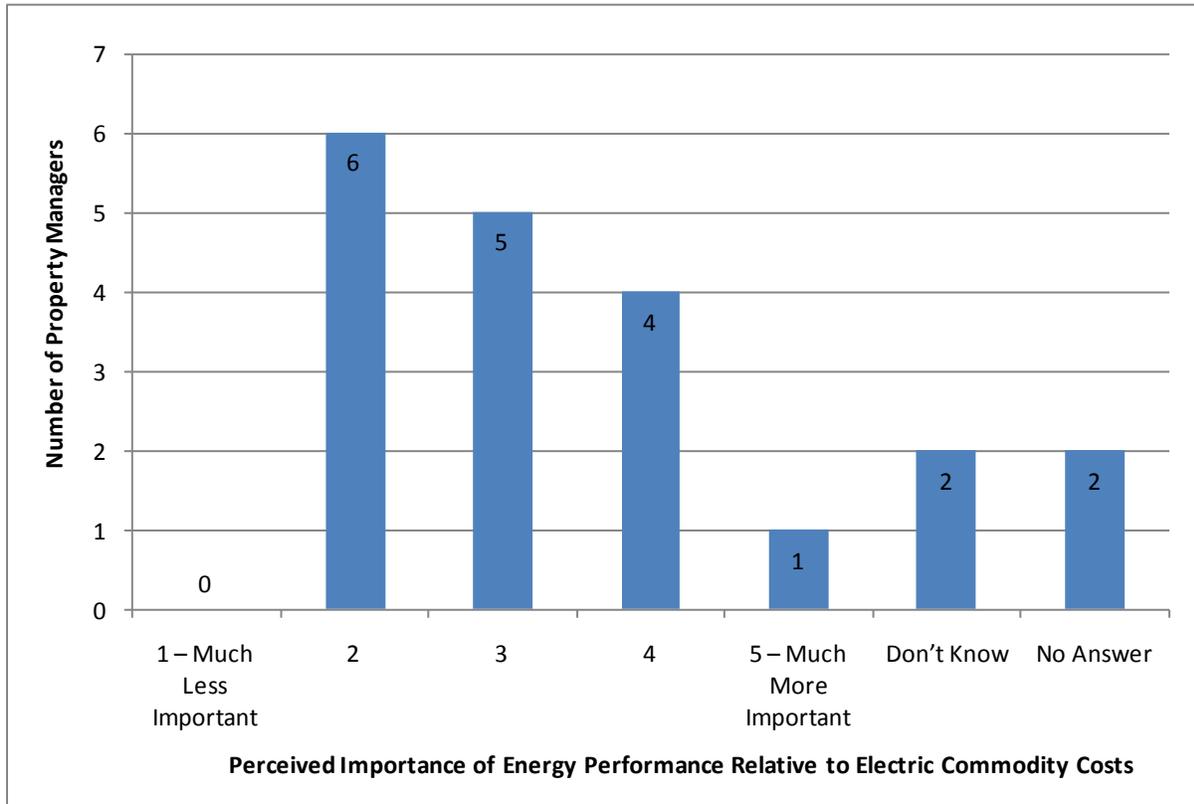
Another objective of the survey was to explore the role of energy efficiency in the property management business, including the interest of clients in energy efficiency and green building, the extent to which property managers are providing energy efficiency and green building products and services, and the performance of these products and services from a business perspective. In general, survey respondents reported that their clients have a growing interest in energy efficiency and green building services, a trend that presents a market opportunity for NYSERDA.

- **Importance of Energy Performance Compared to Commodity Costs** – Respondents were nearly evenly split regarding their perceptions of the importance of energy performance considerations relative to electric commodity costs to their clients. About one-third of the respondents reported that their clients were more concerned with electric commodity costs, about one-third suggested that energy performance and commodity costs were equally important, and about one-third reported that their clients were more or much more concerned about energy performance (Figure 16).

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<sup>58</sup> In response to the question “Has your company negotiated any leases to directly address the shared investment in energy efficiency,” 14 of the 20 respondents said “No.” Five of the survey respondents indicated that they had either discussed the issue or had done some energy efficiency projects in collaboration with tenants. One survey respondent expressed a more sophisticated understanding of the issues, noted that “rent inclusion” is not a good system for encouraging energy efficiency, but also noted that the typical gross lease used in the downstate region could accommodate aligning incentives for energy efficiency.

**Figure 16. Perceived Importance of Energy Performance to Property Managers' Clientele**



Source: MCA survey of property managers (n=20).

- Change Over Time** – The majority of respondents (70%) reported that market interest in energy performance and green building has been increasing over time, with many respondents specifically mentioning client interest in obtaining “LEED certification.” Other respondents suggested that increased electric commodity costs have led clients to be more concerned about energy performance.
- Property Manager Actions** – Eleven respondents reported that their firms actively pursue energy efficiency and/or green building initiatives; five respondents reported being supportive of tenants who wish to pursue such initiatives; and four respondents reported that they do not get involved in energy efficiency or green building initiatives. Example initiatives taken by the property manager firms include:

  - LEED Certification** – Seven respondents reported that their firm either actively participates in the LEED program, or supports the efforts of tenants to obtain LEED certification. One respondent reported that he received his LEED certification a few weeks ago.
  - ENERGY STAR® Certification** – Four respondents reported that their firm either actively participates in the ENERGY STAR Program, or supports efforts of their tenants to get ENERGY STAR certification.
  - Other Energy-Related Initiatives** – Nine respondents reported that their firm actively works to reduce energy costs in their building portfolios. Actions include: “benchmarking buildings for all utilities,” “distributing newsletters to tenants about

program opportunities and energy saving tips,” “maintaining a menu of energy performance enhancements that are regularly evaluated as conditions and technologies evolve,” and “replacing fixtures in spaces when tenants move out.”

Almost all of the survey respondents reported that, for whatever initiatives they are taking, the primary motivator is to have a high-performing, low-cost building that is operating efficiently. In addition, some respondents said that tenants wanted to be in a “green” building or to reduce their carbon footprint. However, respondents always mentioned these items in conjunction with keeping energy costs low.

As part of the survey, respondents were asked whether they provide energy efficiency and green building products and services. Almost all of the property manager firms reported that they furnish such services; however, there was a fair amount of diversity in terms of the types of services offered.

- **Building Level Services** – Many firms (10) furnish building-level services such as improving the energy efficiency of buildings or ensuring that green products (*e.g.*, green cleaning products) are used in the building.
- **Energy Consulting to Tenants** – Several firms (4) provide direct energy consulting to tenants including consulting on tenant energy use and installing energy efficient improvements in tenant space. Among the four firms that reported furnishing direct services to clients, one reported that this is done mainly as a service to their clients and that it is a break-even proposition. Two reported that such services are meeting profit targets, and one reported that these services are delivered to “enhance their reputation as a leader in the market.”
- **Limited Services** – Two firms reported that they only furnish energy efficiency information or references to clients and do not directly provide any efficiency services. Four firms do not provide services or information on energy efficiency to their clients.

Thirteen of the 20 respondents reported that they refer clients who request information on energy efficiency and green building opportunities to qualified third-party providers.

- **Referral Type** - Of those 13 firms, four reported that they mainly refer clients to NYSERDA, while the other nine reported referrals to NYSERDA as well as other organizations, including energy consultants. The firms refer clients to NYSERDA to help clients obtain incentives to improve project cost-effectiveness. Several respondents also noted that NYSERDA staff are professional and responsive.
- **Property Manager Role** - Of the firms that refer clients to NYSERDA, six reported that they work directly with NYSERDA when their clients ask for their assistance. Of the firms that report referring clients to NYSERDA and others, seven noted that they are either actively increasing their role in providing energy efficiency and green building services, or are considering whether or not to increase their role. Six respondents reported that they will continue to outsource this function.

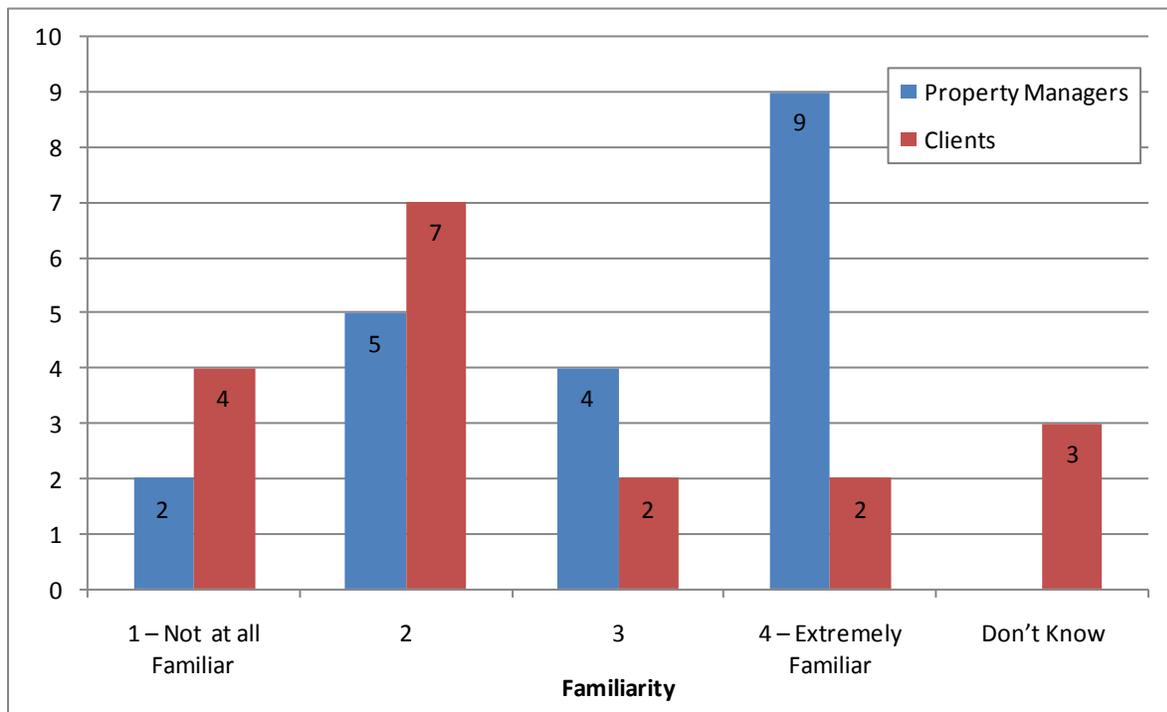
### 2.7.3 Partnering with NYSERDA

The final objective of the survey sought to examine property manager awareness of NYSERDA, their perceptions of their clients’ awareness of NYSERDA, and their willingness to work with NYSERDA

to initiate or expand provision of energy efficiency services to their clients. This objective was intended to provide NYSERDA staff with insights on the potential for working with commercial building property managers on marketing energy efficiency products and services in the downstate region.

Property managers reported being quite familiar with NYSERDA; on average, respondents rated their familiarity with NYSERDA as 3.0 on a 4-point scale where 4 means “Very Familiar.” Nine firms reported that they were extremely familiar with NYSERDA and just two reported that they were not at all familiar with NYSERDA (Figure 17). In addition, most respondents (15 of 20) reported that they had worked with NYSERDA in the past either directly or on behalf of one of their clients. However, most respondents rated their clients’ familiarity with NYSERDA to be lower, a 2.1 on the same 4-point scale.<sup>59</sup>

**Figure 17. Property Manager and Perceived Client Familiarity with NYSERDA**

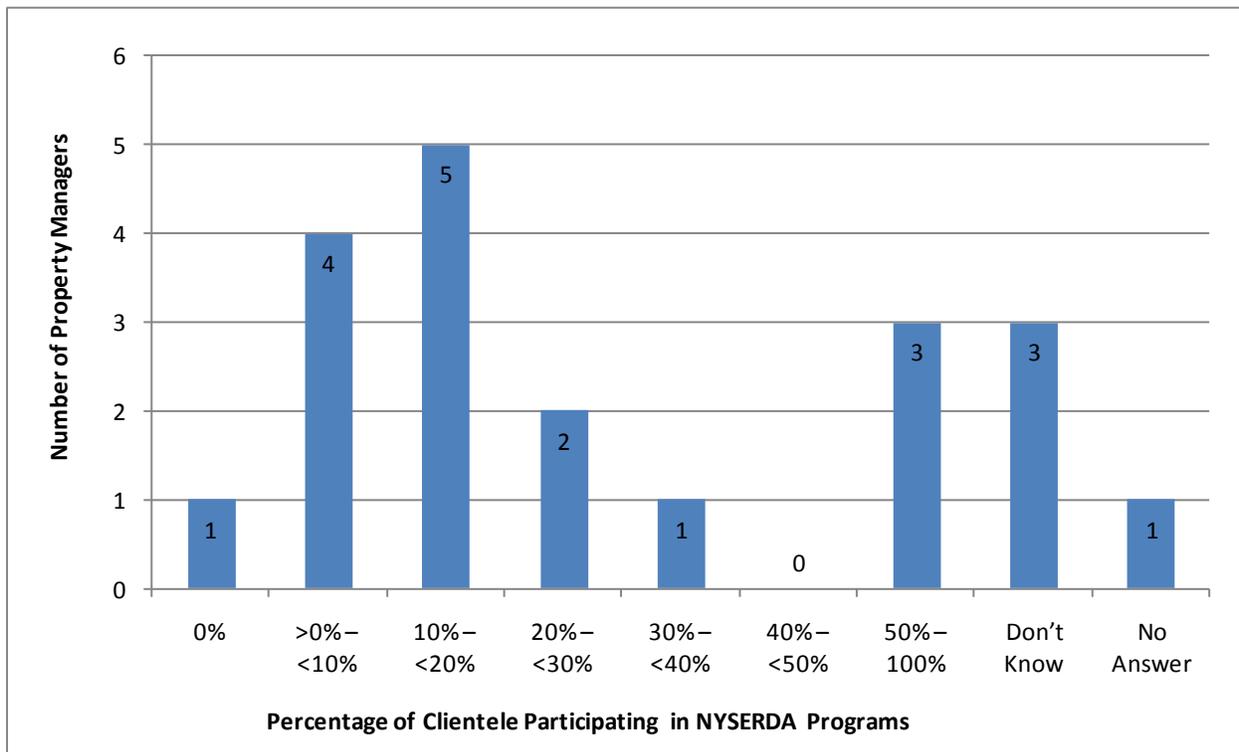


Source: MCA survey of property managers (n=20).

Respondents suggested that their clients were not as familiar with NYSERDA, but that some clients have participated in NYSERDA programs. Three respondents reported that 50% or more of their clients have participated in NYSERDA programs. Eleven respondents reported that at least some of their clients had participated, with three reporting less than 10%, five reporting from 10% to less than 20%, and three reporting from 20% to less than 50%. Figure 18 summarizes the share of respondents’ clients that are participating in NYSERDA programs.

<sup>59</sup> Three respondents did not know how familiar their clients were with NYSERDA.

**Figure 18. Percentage of Property Managers' Clientele Participating in NYSERDA Programs**



- **Change in Program Participation** – Eight respondents indicated that the percentage of clients participating in NYSERDA programs had increased over the last three years, a result that is consistent with the respondents’ perceptions that many of their clients have a growing interest in energy efficiency and green building services.

The property managers identified a number of barriers preventing their clients from pursuing energy efficiency and green building opportunities.

- **Lack of Awareness** – Seven respondents mentioned a general lack of awareness of NYSERDA programs. Some respondents perceived that NYSERDA programs were good opportunities for their clients, but that the clients were not aware of the potential benefits of program participation. Some respondents noted that it is possible for their larger clients to gain awareness and take advantage of these programs, but that their smaller clients simply do not have the staff time to investigate such opportunities. These respondents did not appear to be aware of the fact that certain NYSERDA programs target both small and large businesses to investigate energy efficiency options and alternatives.
- **First Cost / Economy** – Eight respondents mentioned perceived high first costs associated with energy efficiency and green building upgrades as a barrier, particularly given the current economic climate. These respondents did not appear to be aware of the ways in which NYSERDA program incentives can help address first cost concerns.
- **Complexity of NYSERDA Programs** – Four respondents specifically mentioned the complexity of NYSERDA programs, including the amount of effort needed to complete the paperwork and the amount of time needed to complete the project. For example, one

respondent noted that tenants would not want to “wait an extra month for an inspector to come out and look at the job.”

- **Financial Disincentives** – Three respondents discussed issues related to financial disincentives associated with investment in energy efficiency and green building options. One respondent said that “rent-inclusion electric has the incentives in the wrong place” and another noted that “if the space isn’t sub-metered, the tenant can’t get the benefit.”

These responses suggest that many of the perceived barriers to further investment in energy efficiency and green building options can be overcome through targeted education and outreach to key market actor groups as well as with existing NYSERDA programs that raise awareness and help customers to identify energy efficiency opportunities.

Fifteen respondents indicated that their firm would be interested in working with NYSERDA to expand the provision of energy efficiency and green building services to their clients with two additional respondents stating that they would be willing to work with NYSERDA “to some extent.” These firms offered a number of suggestions regarding how to structure the collaboration.

- **Education** – Seven respondents suggested that NYSERDA conduct more educational sessions and make more information available about existing programs. Some respondents indicated that they would be willing to be a conduit for this type of information while others suggested that they and their clients would be interested in attending seminars and programs on current and future program opportunities.
- **Direct Outreach** – Five respondents stated they would prefer direct contact from NYSERDA staff regarding current and future program opportunities. One respondent said that NYSERDA should “meet with me and my staff on a regular basis to review program offerings, maybe monthly or once a quarter.” Another respondent said that NYSERDA should “increase the amount of communication they have with us” and that “maybe they could have an annual presentation on their programs.”
- **Other Suggestions** – Other respondents suggested that NYSERDA increase the number of staff in the NYC office, continue to work to simplify programs, and add new incentives to reduce payback periods.

It is clear that many of the commercial building property managers are interested in being active partners with NYSERDA to reach out to their clients, including both building owners and tenant organizations. This represents a market opportunity for NYSERDA given the amount of space these firms manage in the downstate region, the relationships these firms likely have with high-level decision-makers at building owner and tenant organizations, as well as other relevant market actor groups (*i.e.*, trade organizations that address specific aspects of building operations) active in the downstate region, and the firms’ access to information regarding energy costs and energy systems for their respective building portfolios.

A few of the survey respondents had final comments for NYSERDA that were focused on key issues. The comments exemplify a strong level of interest in NYSERDA programs but in several cases also reveal a lack of knowledge about current program offerings.

- *“There needs to be more transparency. The ESCO world is confusing and clients don’t trust consultants. I would even recommend that NYSERDA pay 100% of consultants’ fee for energy audits. Many times tenants cannot justify spending the money on the consultants and then on*

*the work itself. It would be hard to say “no” to recommended improvements if the consultants’ fees were already paid.”*

- *“I will replace a steam chiller ... with a modular electric chiller which is much more efficient ... NYSERDA cannot help out because I am changing from one form of energy to another form ... efficiency is efficiency, it should not depend on the form of energy used.”*
- *“Probably our single most significant energy management strategy is empowering each member of a property’s operating staff as an energy manager. There is no single energy manager at any one site. The entire operating staff fulfills that role since they are the ones most directly involved with the building systems that consume the largest amounts of energy.”*

## 2.8 DEMAND RESPONSE PROVIDERS

As of June 2008, 44 demand response (DR) providers were active in New York state and approximately 1,700 customers representing more than 690 MW were enrolled in a NYISO DR program.<sup>60</sup> NYSERDA staff have hypothesized that many DR providers offer energy efficiency consulting and support as value-added services to their customers. By developing a better understanding of the business models and customer value propositions in the DR provider community, NYSERDA may be able to identify additional market opportunities and increase program penetration in the downstate region.

The goal of the DR Survey is to furnish NYSERDA staff with a better understanding of the downstate market for DR services. Specific information objectives included the following topic areas:

- **DR Market Structure** – Develop information to help NYSERDA staff better understand DR business models and customer characteristics.
- **Value-Added Services** – Assess the extent to which DR providers are offering value-added services, including energy efficiency and energy management services, to strengthen their market position.
- **Marketing** – Learn about the approaches used by DR providers to market their services and the extent to which energy-efficient product and service offerings are part of that marketing strategy.
- **Awareness of NYSERDA** – Measure DR providers’ awareness of NYSERDA programs and the willingness of DR providers to work with NYSERDA to increase their customers’ knowledge of relevant program offerings.

The DR survey instrument was prepared by Summit Blue. APPRISE contacted and screened DR providers and conducted 30-minute interviews with DR staff.

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<sup>60</sup> Sources: [http://www.nyiso.com/public/webdocs/products/demand\\_response/general\\_info/dr\\_providers.pdf](http://www.nyiso.com/public/webdocs/products/demand_response/general_info/dr_providers.pdf) (accessed September 2008) and NYISO *May 2008 DR Registration*. This includes participants in the Emergency DR Program and the Special Case Resources ICAP Program. Note that the available data do not provide detail regarding the percentage of total enrolled load that pays System Benefits Charge (SBC) funds and is therefore eligible to participate in NYSERDA programs. If NYSERDA opts to develop strategic relationships with DR providers, a first order of business would be determining whether or not the providers’ customers pay SBC funds.

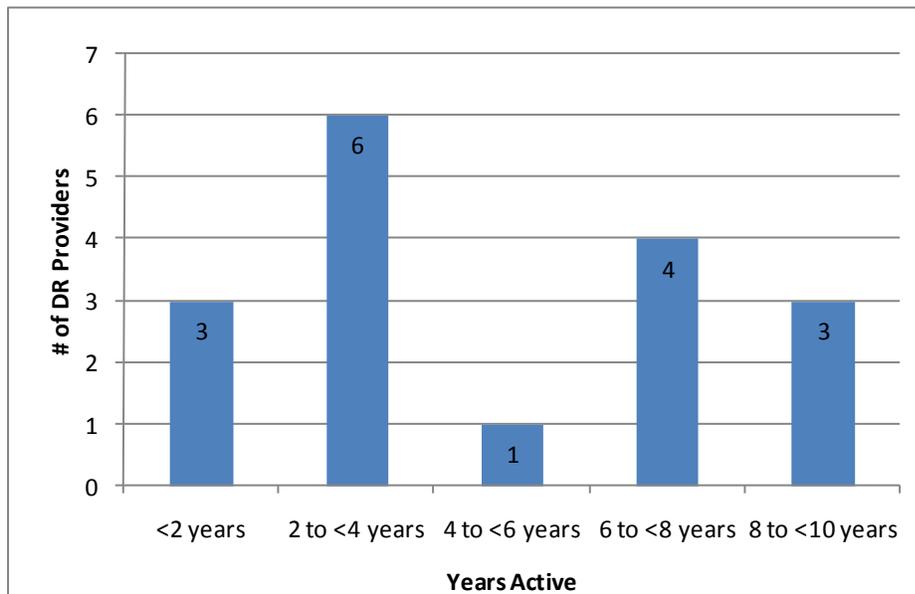
## 2.8.1 DR Market Structure

One objective of this survey effort was to provide background information on DR providers active in the downstate region and characterize the customers they serve. This objective was intended to help NYSEERDA staff better understand the business models of DR providers active in the downstate region.

The responses to the survey demonstrate that the DR market structure is quite diverse. Key findings include:

- **Time in the Market** – The active providers were well-distributed with respect to time in market, indicating that new providers continue to enter the marketplace on a regular basis. Nine of the 17 active providers (53%) have been in the market less than four years (Figure 19). Three of the active providers (18%) have been in the market eight years or more. The average length of time DR providers have been active in the downstate market is 4.4 years.

**Figure 19. DR Providers' Years Active in the Downstate Region**



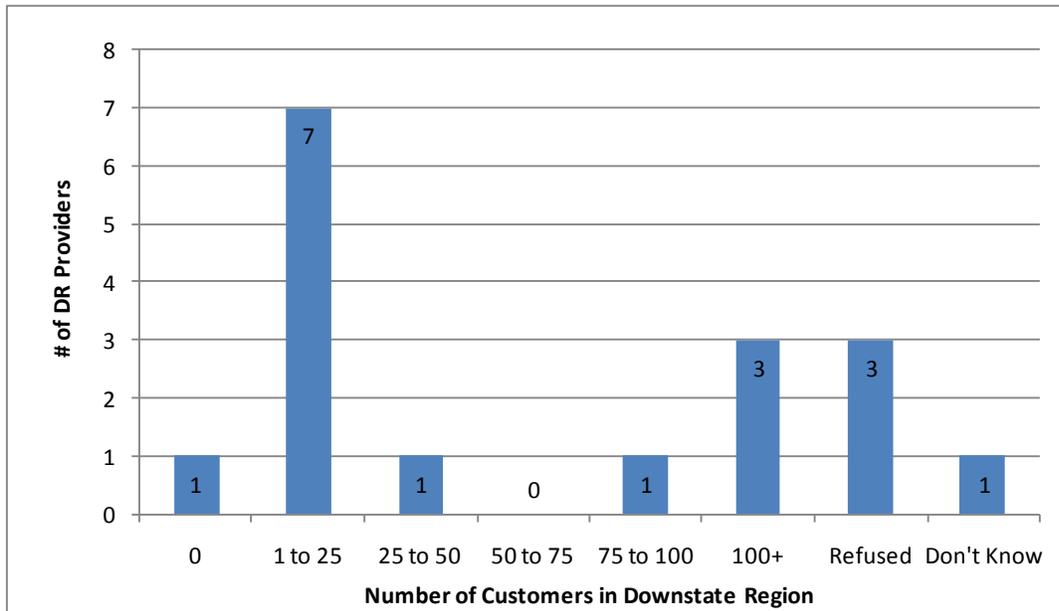
Source: MCA survey of demand response providers (n=17).

- **Number and Types of Customers** –Active providers had a wide range of customers and enrolled load. In terms of number of customers (displayed in Figure 20), the DR providers served between two and 700 customers; the average provider serves 98 customers. In terms of load served, the two largest providers responding to the survey account for about half of the 690 MW enrolled in the NYISO DR programs (Figure 21). Six providers serve between 10 MW and 60 MW. It is important to note that the number of customers varies widely for this group. One provider has approximately 200 customers and 30 MW of enrolled load while a second provider has 12 customers and 60 MW of enrolled load. Four

providers have less than 5 MW of enrolled load and 10 or fewer customers. See Figure 22 for a scatter plot of the DR providers by number of customers and enrolled load.<sup>61</sup>

Most of the DR providers focus on the commercial and industrial (C&I) market sector: twelve of the 17 respondents to this question (71%) reported that their company serves C&I customers only and three respondents noted that their companies serve only commercial customers. Two of the DR providers serve residential accounts; one serves residential customers exclusively, while the other serves both commercial and residential customers.

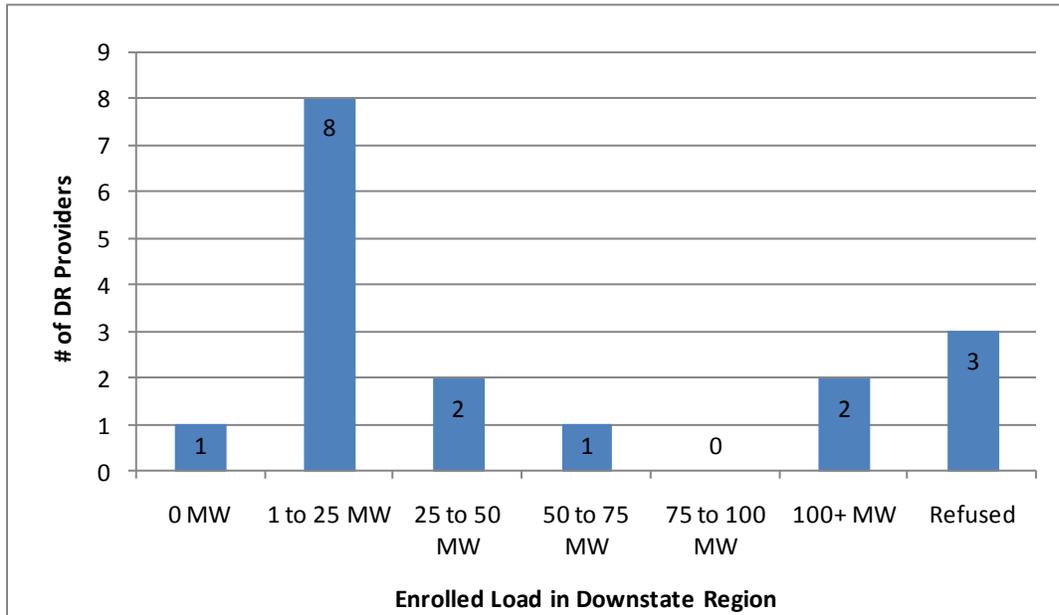
**Figure 20. Number of Customers Served by DR Providers in Downstate Region**



Source: MCA survey of demand response providers (n=17).

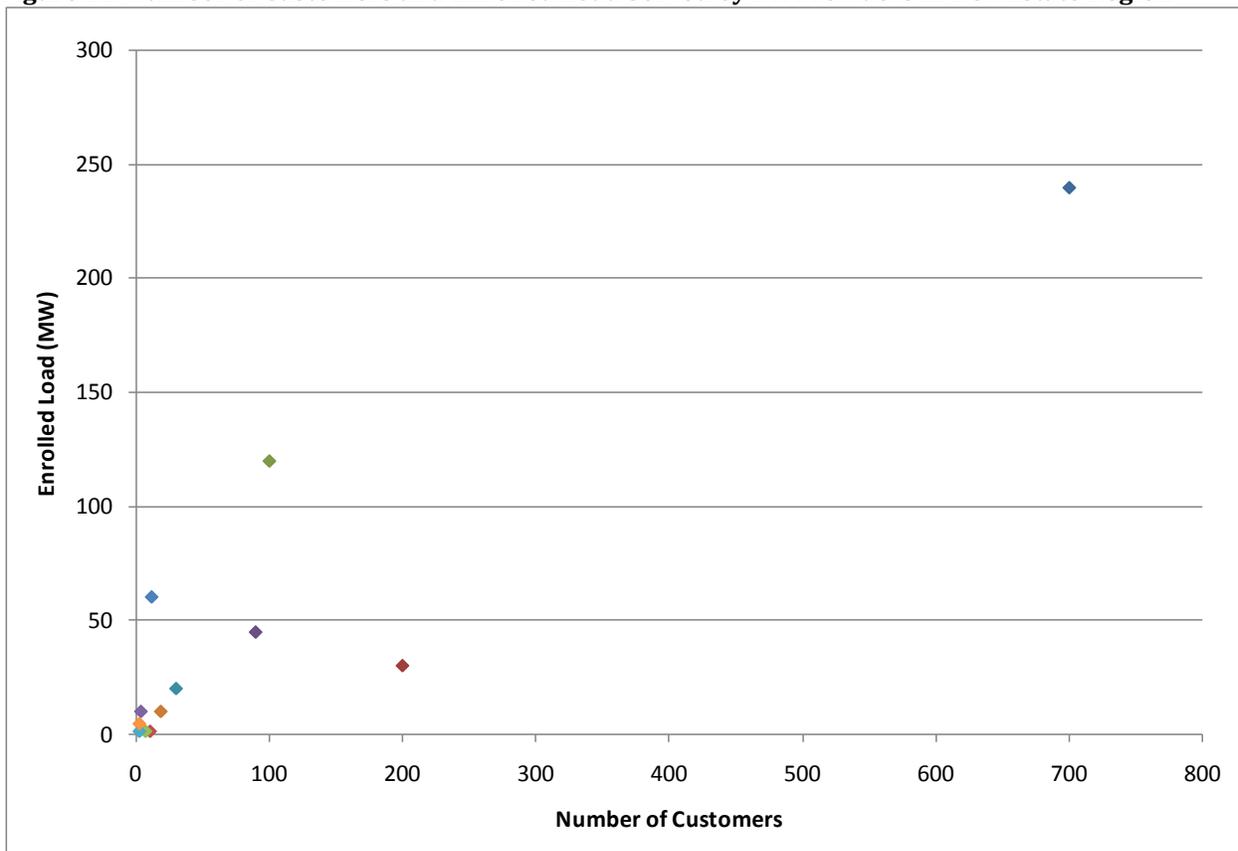
<sup>61</sup> Five respondents were unwilling to report the number of customers or enrolled load.

**Figure 21. Enrolled Load Served by DR Providers in Downstate Region**



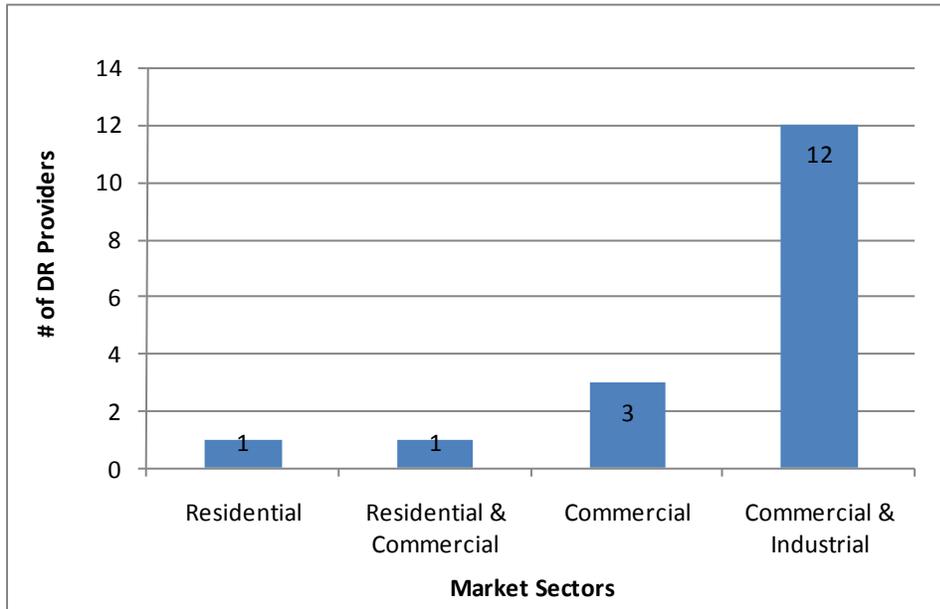
Source: MCA survey of demand response providers (n=17).

**Figure 22. Number of Customers and Enrolled Load Served by DR Providers in Downstate Region**



Source: MCA survey of demand response providers (n=12).

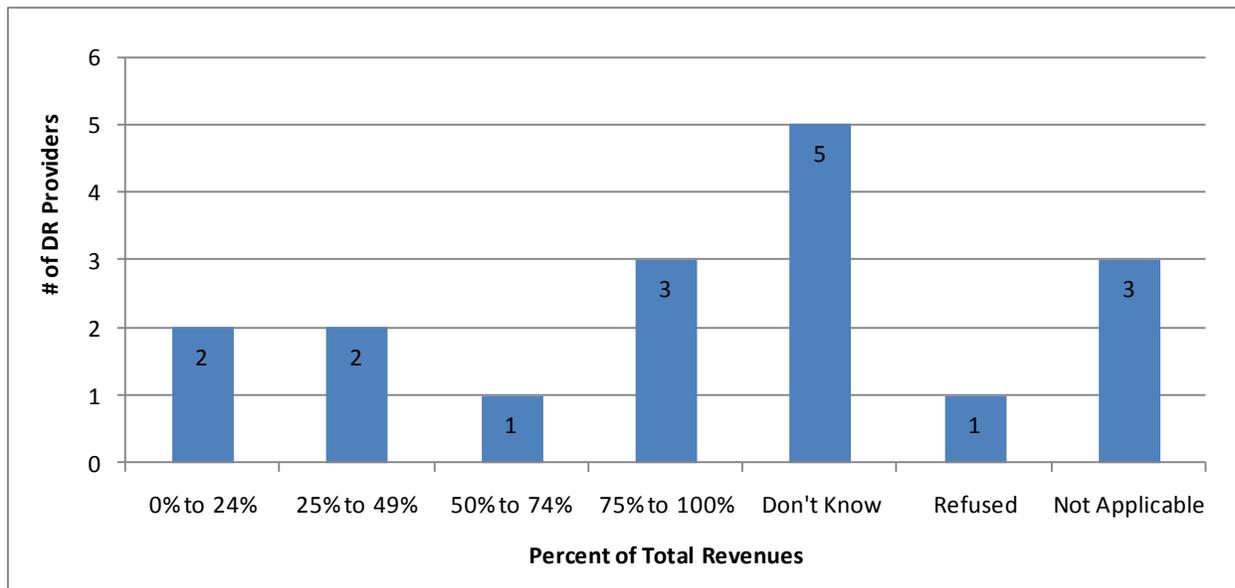
**Figure 5. Market Sectors Served by DR Providers in Downstate Region**



Source: MCA survey of demand response providers (n=17).

- **Geographic Scope** – Most (82%) of the responding DR providers work throughout the state; only four reported that their activity was restricted to the downstate region. The implication for NYSEDA is that partnerships with these DR providers could potentially create opportunities in both the downstate and upstate regions. In addition, partnerships with these providers may help NYSEDA better understand how decision-making regarding energy-related investments may differ on a geographic basis.
- **Revenue Generated in Downstate Region** – Many respondents have not focused on the geographic distribution of their customers. When asked to estimate the percentage of total revenues generated in the downstate region (as opposed to upstate or in another state), only eight respondents were able to provide an estimate. For those who responded to the question, one DR provider has as little as 5% of its revenues in the downstate region, while three reported that between 75% and 100% of their customer load is located downstate (Figure 23).

**Figure 23. Percent of DR Providers' Total Revenue Generated in Downstate Region**



Source: MCA survey of demand response providers (n=17).

Taken in aggregate, these results imply that no single business model is used by DR providers in the downstate region. Given the relatively varied nature of DR operations in the region (*e.g.*, differences in terms of activity levels, customer size, services provided, etc.), NYSERDA staff will need to understand the differences among the providers and develop outreach strategies and messages tailored to their different business positions. Given the relatively small population of DR providers active in the downstate region, this level of attention is doable and, if successful, likely to produce substantive impacts given the number of customers and amount of load served by the active DR providers.

## 2.8.2 Value Added Services

Another objective of this study was to assess respondents' provision of value-added services to their customers and, if applicable, to describe how those services are used as part of DR providers' overall marketing strategies. Respondents were also asked to discuss the appeal to customers of energy efficiency products and services. This objective was intended to assist NYSERDA staff in better understanding the nature of the DR business and the potential role that energy efficiency can play for DR providers in developing a successful business model.

The results indicate that some DR providers do not offer value-added services, some offer commodity-specific services, and still others use energy efficiency as part of a comprehensive business strategy. Key findings include:

- **DR Only Providers** – Three of the 17 respondents (18%) reported that they do not offer any value-added services to their customers. These providers perceive that they compete most effectively by providing DR services to customers and remain committed to that core function. Comments included:
  - *We are focused on Demand Response, but will partner with other companies who have expertise that we do not.*

- **DR and Commodity Services Providers** – Seven of the 17 respondents (41%) reported that, in addition to DR, they offer their customers value-added services that are directly related to the electric commodity, including hedging, “green power” options, different pricing and payment options, and monthly reports on energy usage and savings. Comments included:
  - *We furnish energy procurement services. We offer them professional consulting services where we assist customers in identifying the right type of energy contract for their business.*
  - *We offer different pricing options, caps, and collars. We offer green energy, dual fuel options, carbon offsets, and green energy certifications.*
- **Comprehensive Services Providers** – Seven of the 17 respondents (41%) reported that they offer their customers a wide range of value-added services, including energy efficiency products and services. In some cases, this involves direct provision of energy efficiency products and services. In others, it involves project consulting and management and NYSERDA contracting. Comments included:
  - *We offer energy audits, performance contracts, metering, and general contracting.*
  - *We provide all facets of service to the energy industry; from HVAC to lighting.*

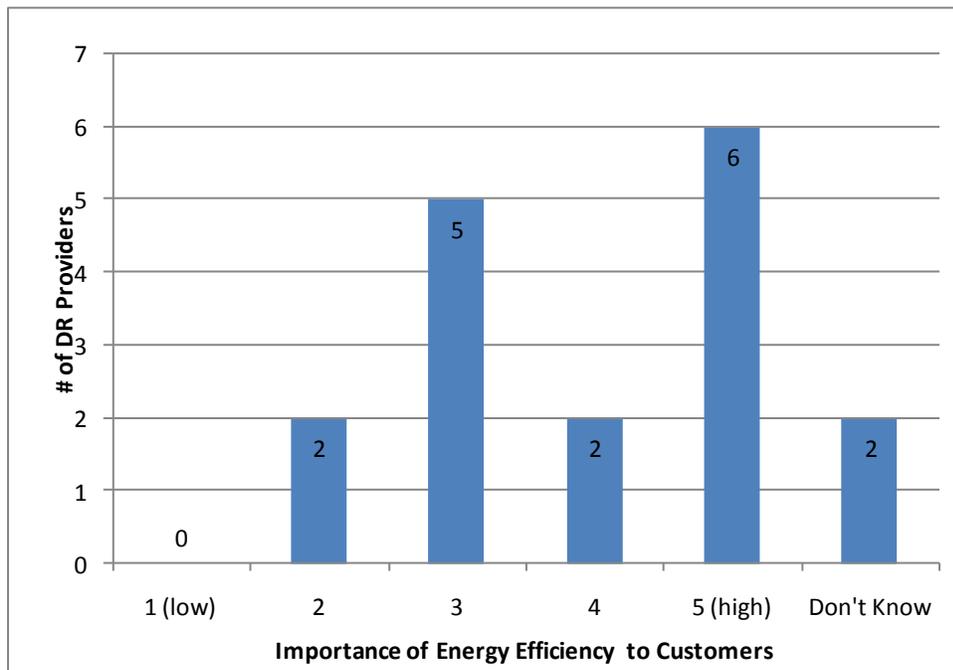
A number of the respondents noted that one of the primary DR services they offer is metering and tracking demand and energy consumption. Such information is valuable to make decisions regarding energy efficiency projects. Partnerships between NYSERDA and DR providers may be able to leverage such information where it is not already being shared.<sup>62</sup>

DR providers that furnish energy efficiency services report that they follow different business models. For some, the purpose of providing such services is to distinguish themselves from competitors that do not offer the same. These providers do not directly measure the profitability of energy efficiency services; rather they consider the fact that they offer customers information on energy efficiency as one of the reasons they are profitable. For others, the provision of energy efficiency services is either their primary business or a component of a comprehensive package of energy services they offer to customers. All of the providers consulting on or directly implementing energy efficiency reported that their business was meeting its profit objectives. This is unsurprising given that most DR providers believe that energy efficiency is at least somewhat important to their customers; eight of the 17 respondents rated the importance as a 4 or 5 on a 5-point scale where “5” means “high” (Figure 24).

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<sup>62</sup> Information would need to be formatted to maintain all existing confidentiality agreements.

**Figure 24. Perceived Importance of Energy Efficiency to DR Providers' Customers**



Source: MCA survey of demand response providers (n=17).

### 2.8.3 DR Marketing

A third objective of the study was to assess respondent marketing procedures, including targeted markets, marketing techniques used, and the extent to which energy efficiency products and services were part of marketing activities. This objective was intended to provide NYSERDA staff with a better understanding of how DR providers are making use of energy efficiency in their marketing strategies.

One important finding from the study is that there are different types of providers furnishing DR services. DR was the primary focus for ten of the 17 survey respondents. However, among the other seven survey respondents, some said that DR is a secondary activity (two said that it was a supplement to their energy efficiency work), while others sell comprehensive energy solutions which include DR as well as other services such as energy efficiency, green pricing, or other energy-related services.

Findings with respect to marketing DR include:

- **Targeting** – Most DR providers that work in the downstate region target commercial and industrial customers. Some also work with large multi-family residential buildings. In all cases, the providers are focused on those establishments that have a significant amount of load that can be efficiently addressed with DR tools.
- **Commercial and Industrial Sector Marketing** – Responding companies appeared to fall into one of two categories with respect to marketing their services. Nine of the 17 respondents (53%) described a multi-faceted marketing approach that relies on direct marketing by account executives, but also involves more broad-based marketing including

Internet ads, direct mail, cold calling, and attendance at trade shows and conferences. Eight of the 17 respondents (47%) indicated that their business depended exclusively on word-of-mouth referrals or that their primary source of business resulted from following up on existing relationships with customers.

- **Partnerships** – About 60% of the DR providers reported using partnerships to sell their products and services. Most of the DR partnerships are with other energy consulting companies. For those providers that use partners, it appears that they are involved in more complex projects where partners with complementary skills are needed to furnish the client with a comprehensive energy solution.

## 2.8.4 Marketing Energy Efficiency

The survey found that approximately half of the respondent DR providers (nine out of 17) are currently marketing energy efficiency products and services to their customers, but that the approaches used are quite diverse. Among these providers, there appear to be at least three different approaches to promoting energy efficiency to their customers.

- **Primary Focus on Demand Response** – Some providers reported that they consider their main business to be DR, but they take advantage of energy efficiency opportunities whenever they find them and are able to attain customer buy-in. Comments included:
  - *We produce reports for the cost-benefits of customers, i.e. research customers' needs. We promote lighting and building management systems.*
  - *We use Demand Response as the starting point and include energy efficiency as part of a larger energy solution. We include energy audits and energy efficiency in our demand response proposals as a way to curtail consumption.*
- **Comprehensive Focus** – Some providers reported that they sell all possible services directly to the consumer, including DR, electric commodity (including green commodity options), and energy efficiency services. These providers are already actively engaged in furnishing comprehensive energy services to their clients, including energy efficiency. Comments included:
  - *We have done everything from build chiller plants to build wind farms. We are a market-based company that finds opportunities to make money.*
- **Primary Focus on Energy Efficiency** – Some providers report that their primary business is energy efficiency, but that they furnish DR services to customers when they are appropriate. Comments included:
  - *Energy efficiency is our core business; demand response work is secondary.*

NYSERDA staff can expect to find that about half of the DR providers are not actively involved with energy efficiency at this time. Some limit their focus to DR, while others refer their customers to energy efficiency programs, but do not lead them through the application and implementation process. These providers represent a significant opportunity for NYSERDA. If NYSERDA can work with these providers to develop a better understanding of the benefits of providing a broader suite

of energy management services to their customers, NYSERDA would be well positioned to capture some portion of the associated energy efficiency potential.

For those providers already actively supplying energy efficiency services, an active partnership with NYSERDA may be appropriate. It may be useful, for example, for NYSERDA to meet regularly with these providers to discuss new program offerings and initiatives. Doing so would generate a variety of benefits to NYSERDA including obtaining valuable intelligence directly from market actors and leveraging the providers' existing relationships to increase adoption of new program offerings, among others.

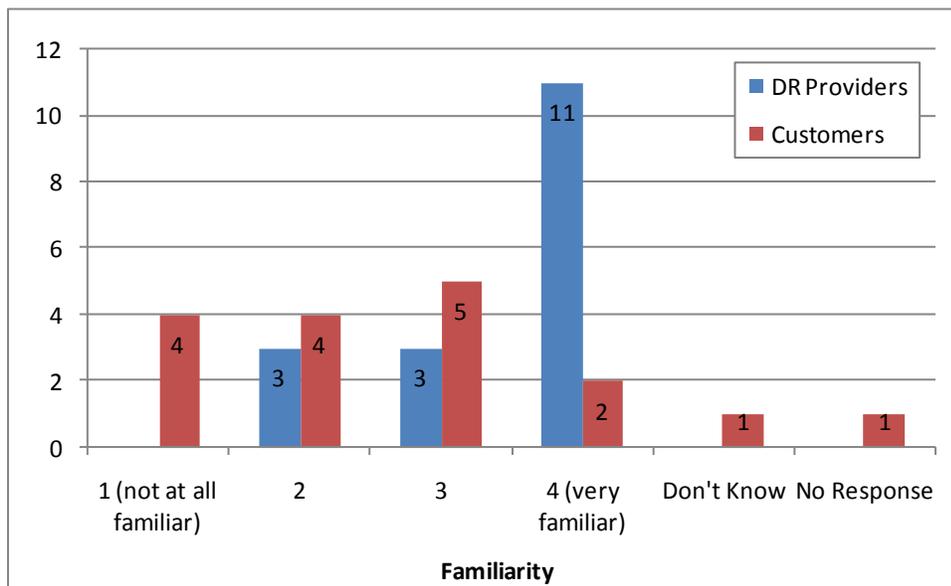
### 2.8.5 Partnering with NYSERDA

The last objective of the study assessed respondent awareness of NYSERDA, perceptions of customers' awareness of NYSERDA, and willingness to work with NYSERDA to initiate or expand energy efficiency services to their customers. This objective was intended to provide NYSERDA staff with insights on the potential for working with DR providers on marketing energy efficiency products and services.

**Familiarity with NYSERDA.** Most DR providers reported that they were very familiar with NYSERDA. However, survey respondents perceived that fewer of their customers were familiar with NYSERDA. Key findings include:

- **DR Provider Familiarity** – On average, survey respondents rated their familiarity with NYSERDA as 3.5 on a 4-point scale where 4 means “Very Familiar.” Nearly two-thirds of DR providers (11 out of 17) rated their familiarity as a 4 (Figure 25).
- **Perceived Customer Familiarity** – DR providers do not believe that their customers are as familiar with NYSERDA. On average, survey respondents rated their customers' familiarity with NYSERDA to be 2.3 on the same 4-point scale. Just two respondents indicated that their customers were “very familiar” with NYSERDA (Figure 25).

Figure 25. DR Provider and Perceived Customer Familiarity with NYSERDA



Source: MCA survey of demand response providers (n=17).

- **Previous NYSERDA Participation.** Twelve of the 17 survey respondents (71%) indicated that some of their customers had previously participated in NYSERDA programs; however, only a handful of these respondents were able to name specific NYSERDA programs. This finding, which is consistent with prior research conducted by NYSERDA, implies that the respondents, and possibly their broader companies, are not well-versed in current NYSERDA program offerings and may not be prepared to provide their customers with specific recommendations regarding programs that would meet their energy efficiency needs.

**Willingness to Partner with NYSERDA.** As discussed below, results indicate that most DR providers would be willing to work with NYSERDA to initiate or expand the provision of energy efficiency products and services to their customers with those DR providers that are already active in providing comprehensive value-added services expressing the greatest enthusiasm for the partnerships. Key findings include:

- **DR Only Providers** – Two of the three respondents who reported that they do not offer any value-added services indicated that they would be willing to work with NYSERDA to provide information to their customers. These respondents were enthusiastic. One respondent said that NYSERDA is welcome to contact them to discuss opportunities. The other respondent noted that his company may be willing to work with NYSERDA to furnish information to their customers, stating *“First, define what they want me to do for them. At that point, I’d be happy to talk.”*
- **DR and Commodity Services Providers** – Six out of seven respondents who reported that they offer their customers additional value-added services indicated that they would be willing to work with NYSERDA to provide information regarding existing energy efficiency opportunities to their customers. These DR providers would be more likely to take initiative in reaching out to their customers. One respondent said, *“NYSERDA could provide us with marketing such as promotional brochures and other marketing materials that we could use in direct mail campaigns. Also, it would be a good idea to have a teaming arrangement with NYSERDA for hosting seminars and webinars.”*
- **Comprehensive Services Providers** – All seven respondents who reported that they offer their customers comprehensive value-added energy services indicated that they would be willing to work with NYSERDA to provide information to their customers. These DR providers could be expected to be proactive in working with customers to enroll in NYSERDA programs. One respondent suggested, *“NYSERDA should do more marketing to companies. They should also implement a task force dedicated to developing new programs. This task force should include prospective program participants whose participation NYSERDA should compensate.”*

Most DR providers active in the downstate region reported a willingness to assist NYSERDA staff in identifying customers who might be interested in NYSERDA energy efficiency programs, with those DR providers that deliver comprehensive services to their customers being most likely to develop into successful customer recruiting channels. Cultivating strategic relationships with these DR providers would provide NYSERDA with a new point of entry into the downstate market and broaden its existing set of trade allies.

## 2.9 ENERGY SERVICE COMPANIES (ESCOs)

New York State has instituted a competitive retail market in which customers are able to choose their energy commodity supplier from a pool of Energy Service Companies (ESCOs).<sup>63</sup> As of January 2008, the New York State Department of Public Service (DPS) identified 33 ESCOs as active in the downstate region serving more than 16% of eligible customer accounts and nearly 46% of eligible retail load within the region.<sup>64</sup> One reason DPS sought to develop retail competition was to encourage ESCOs to provide value-added customer services as they compete to win customer accounts.

Summit Blue conducted a survey of 14 ESCOs active in the downstate New York region. The goal of the ESCO survey is to furnish NYSERDA staff with a better understanding of the downstate ESCO market. Specific information objectives included the following topic areas:

- **ESCO Market Structure** – Develop information to help NYSERDA staff better understand ESCO business models and customer characteristics.
- **Value-Added Services** – Assess the extent to which ESCOs are offering value-added services, including energy efficiency and energy management services, to strengthen their market position.
- **Marketing** – Learn about the approaches used by ESCOs to market their services and the extent to which energy efficiency product and service offerings are part of that marketing strategy.
- **Awareness of NYSERDA** – Measure ESCO awareness of NYSERDA programs and the willingness of ESCOs to work with NYSERDA to increase their customers' knowledge of relevant program offerings.

The ESCO survey instrument was prepared by Summit Blue. APPRISE contacted and screened ESCOs and conducted 30-minute interviews with ESCO managers.

### 2.9.1 ESCO Market Structure

One study objective was to confirm that the ESCOs were active in the downstate market and gather background information on the ESCOs and the customers they serve. This objective was intended to help NYSERDA staff better understand the variety of ESCO business models and whether certain market segments are served by certain types of ESCOs.

Survey responses demonstrate that the ESCO market is quite diverse. Key findings include:

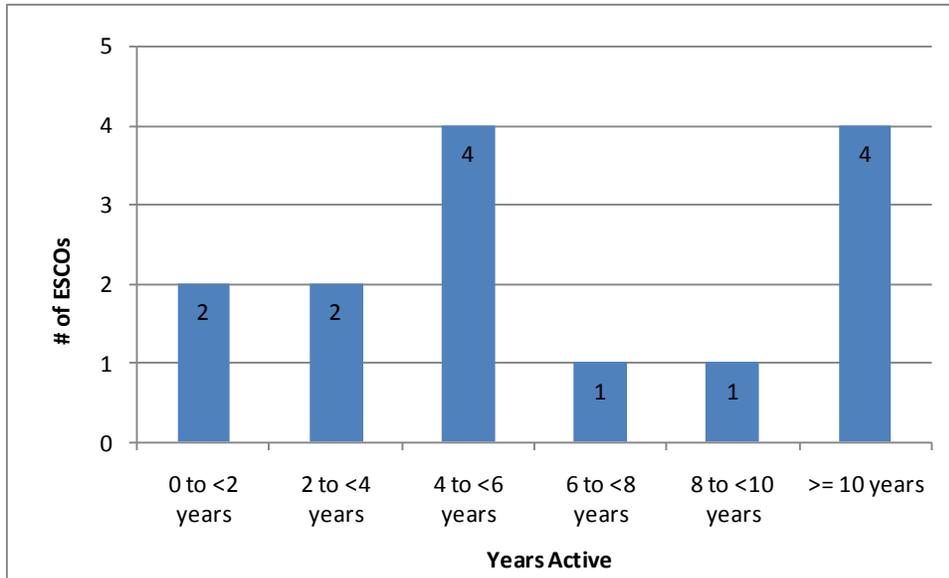
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<sup>63</sup> In most jurisdictions, the term Energy Service Company (ESCO) refers to companies that furnish a broad range of comprehensive energy services. For purposes of this report, ESCO refers to those companies that have been certified by the NYS DPS as energy commodity suppliers.

<sup>64</sup> Sources: NYPSC Competitive Electric and Gas Marketer Sources Directory, Consolidated Edison Company of New York, Inc. Services Territory (<http://www3.dps.state.ny.us/e/esco6.nsf/Web4?SearchView&SearchOrder=4&Query=%5BServesType%5D=Electric+N onResidential+AND+%5BTerritory%5D=1002>) and New York Electric Retail Migration Data for January 2008 (<http://www.dps.state.ny.us/ElectricMigrationWebReportJan08.pdf>). Note that migration data do not include Long Island Power Authority, small regulated utilities, or those municipalities or other entities who are supplied power through long term contracts with the New York Power Authority. These sources were accessed in January, 2008.

- **Time in the Market** – The responding firms vary with respect to time in the market; two have been active less than two years, while four have been active more than ten years (Figure 26).<sup>65</sup>

**Figure 26. ESCOs' Years Active in the Downstate Region**



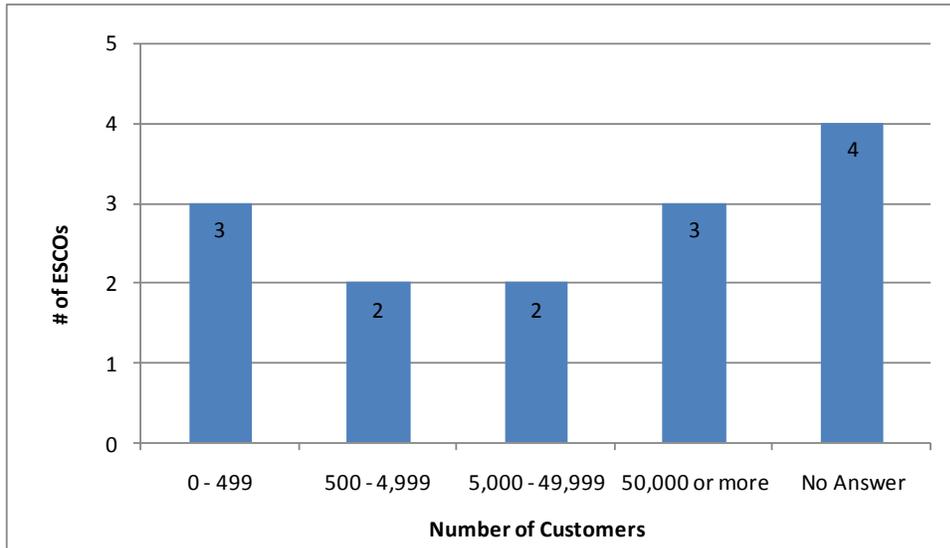
Source: MCA survey of ESCOs (n=14).

- **Number and Types of Customers** – The responding firms serve widely varying numbers of customers in the NYC Region; one ESCO serves only three customers while another serves over 200,000. Four of the responding ESCOs were unwilling to release information on the number of customers served. The ESCOs with the largest number of customers serve both residential and commercial customers. However, some of the ESCOs with the largest enrolled load focus solely on commercial and industrial customers. Six of the respondents serve commercial and residential customers only and four of the respondents serve commercial and industrial customers only.

Figure 27 categorizes the ESCOs by number of customers served and Figure 28 categorizes the ESCOs by type of customer served.

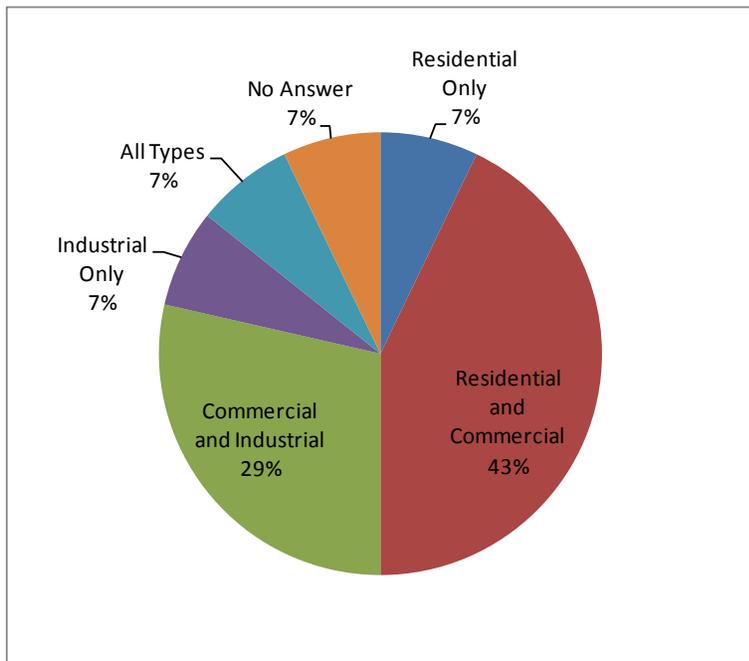
<sup>65</sup> Since it appears that there have been recent entrants to the market, NYSERDA staff should periodically update their list of ESCOs active in the downstate region and screen the new ESCOs for interest in participating with NYSERDA to market program offerings.

**Figure 27. ESCOs' Number of Customers in Downstate Region**



Source: MCA survey of ESCOs (n=14).

**Figure 28. ESCOs' Customer Types**



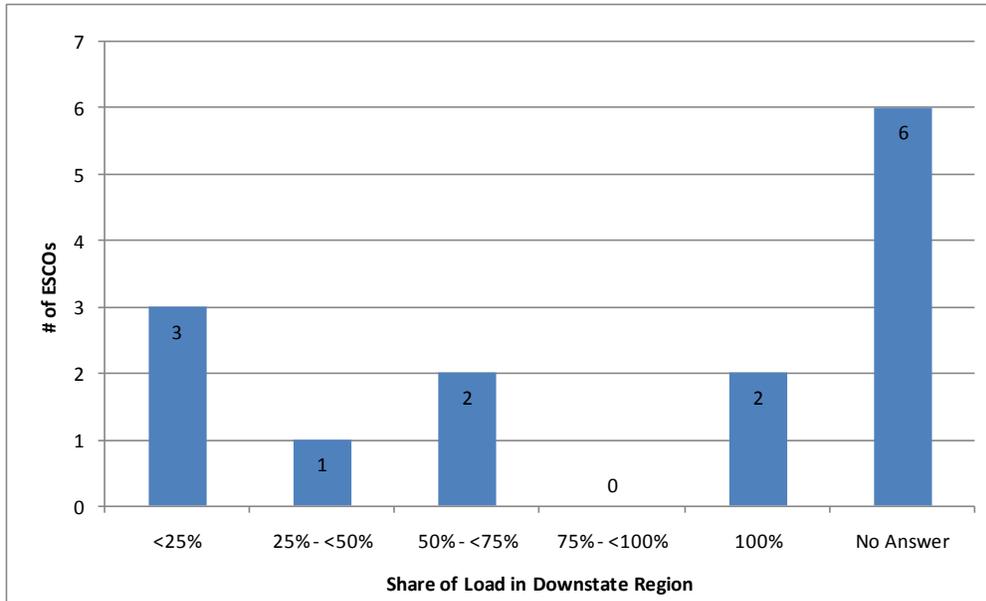
Source: MCA survey of ESCOs (n=14).

- Geographic Scope** – Most (88%) of the responding ESCOs work throughout the state; only two reported that their activity was restricted to the downstate region.<sup>66</sup> Three ESCOs report that less than 25% of their load is located in the downstate region (*i.e.*, 100% of their

<sup>66</sup> This implies that developing relationships with these ESCOs would cultivate additional market opportunities for NYSERDA throughout New York, not just in the downstate region.

load is downstate). Six respondents did not provide an answer to this question. Figure 29 summarizes the share of load in the downstate region for each ESCO.

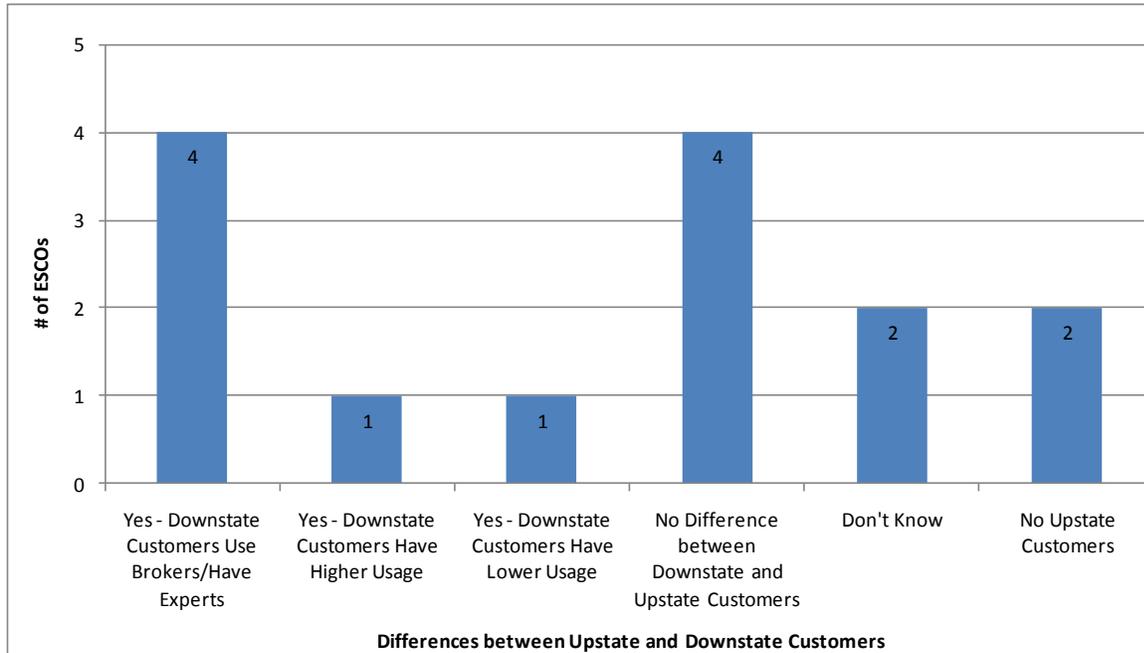
**Figure 29. ESCOs' Share of Load in Downstate Region**



Source: MCA survey of ESCOs (n=14).

- **Geographic Focus** –Many respondents have not focused on geographic differences between their customers. For those who responded to the question, one ESCO has as little as 2% of its load in the downstate region, while another ESCO reported that its entire customer load is located downstate. Six respondents observed that their downstate customers differ from their upstate customers (Figure 30); four of these respondents noted that downstate customers use brokers/experts to assist in their energy decision-making, one observed higher usage in downstate customers and one observed lower usage in downstate customers.

**Figure 30. Differences between Downstate and Upstate ESCO Customers**



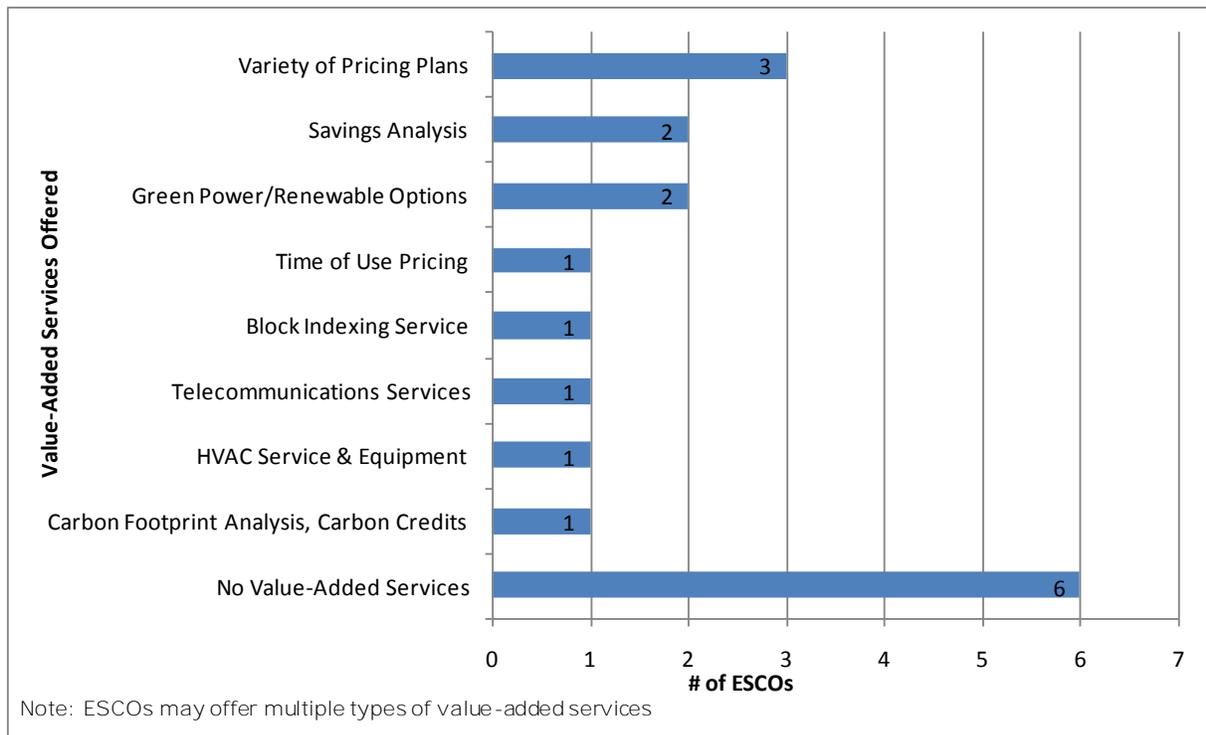
Source: MCA survey of ESCOs (n=14).

There is no single prevailing business model used by ESCOs in the downstate region. Given the relatively varied nature of ESCO operations in the downstate region, NYSERDA staff seeking to engage ESCOs in marketing energy efficient products and services should understand the differences between the ESCOs and develop multiple outreach strategies and messages tailored to the different companies. Given the relatively small population of ESCOs active in the downstate region, this level of attention is doable and, if successful, likely to produce substantive impacts given the number of customers and amount of load served by the active ESCOs.

### 2.9.2 Value Added Services

Another objective of the survey focused on whether respondents' organizations offer value-added services (including energy efficiency) to their customers and, if so, to describe how those services are used as part of their organizations' overall marketing strategies. Respondents were also asked to discuss the appeal of energy efficiency products and services to their customers. This objective was intended to assist NYSERDA staff in better understanding the nature of the ESCO business and the potential role that energy efficiency can play for ESCOs in developing a successful business model. Figure 31 summarizes the types of value-added services offered by ESCOs.

**Figure 31. Value-Added Services Offered by ESCOs**



Source: MCA survey of ESCOs (n=14).

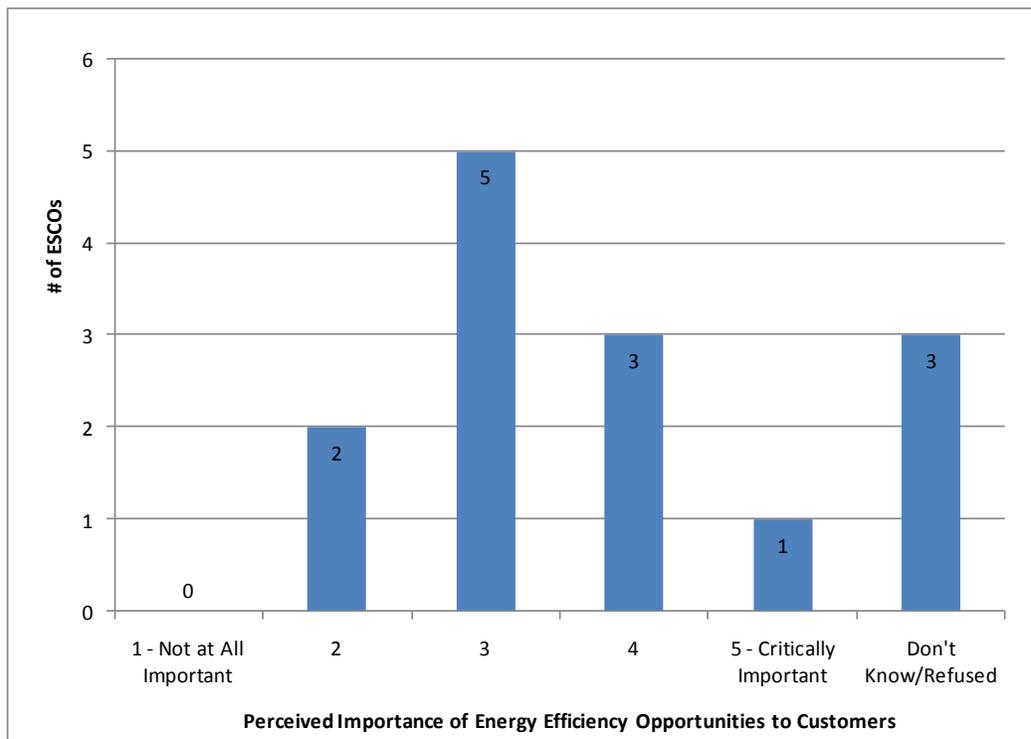
The results indicate that some ESCOs do not offer value-added services, some offer commodity-specific services, and still others use energy efficiency as part of a comprehensive business strategy. Key findings include:

- **Commodity Only** – Six of the 14 respondents reported that they do not offer any value-added services to their customers. These ESCOs perceive that they compete most effectively by mass marketing low commodity prices to customers and remain committed to that core function. For some ESCOs, this approach appears to relate to a perception that customers simply want the lowest price for the commodity. For others, prior attempts to interest clients in energy efficiency services were not successful. Comments included:
  - *We do not provide value-added services because we haven't figured out how to make money at it yet. The margins on commodity are slim.*
  - *We no longer provide value-added services because it was not profitable. We tried this two years ago. We provided information to customers about alternatives to traditional electrical devices. We had a dedicated website. What we found? No one was interested. It flopped.*
- **Commodity Services** – Four of the 14 respondents reported that they offer their customers value-added services that are directly related to the electric commodity, including “green power” options, different pricing and payment options, and monthly reports on energy usage and savings. Some of these ESCOs have websites specifically promoting energy efficiency products. Comments included:

- *We furnish renewable energy, analyze their carbon footprint, and broker carbon credits. We also consult with customers on emissions reductions.*
- *We offer a variety of pricing plans, as well as fixed or variable budget plans.*
- **Comprehensive Services** – Four of the 14 respondents reported that they offer their customers a wide range of value-added services, including energy efficiency products and services. These ESCOs work proactively with their customers to identify the most comprehensive energy solutions on a case-by-case basis. In some cases, this involves direct provision of energy efficiency products and services by in-house ESCO staff. In others, it involves referring interested customers to external, third-party providers to assist customers in reducing their energy use and associated costs.
  - *We furnish a wide range of energy efficiency services as part of a larger solution. The comprehensive solution gives us a competitive advantage. We have an in-house energy efficiency unit that has seen substantial growth.*
  - *We usually furnish lighting energy efficiency performance contracts. Customers request this service and it creates an additional source of revenue.*

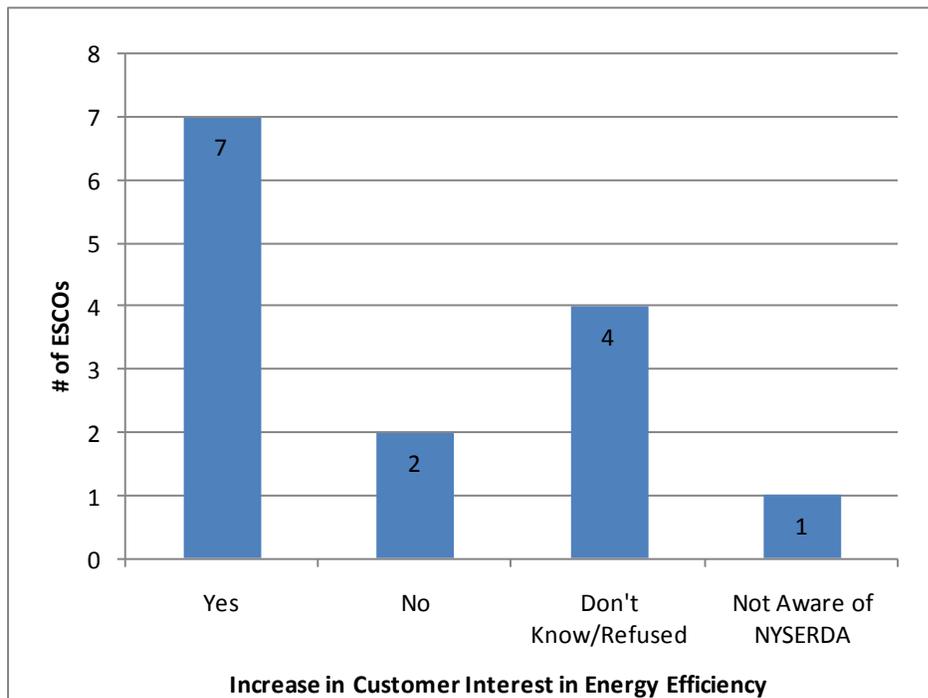
Only one ESCO perceives energy efficiency to be critically important to their customers (Figure 32); most believe it to be medium importance (3 on a scale of 1 to 5). However, most ESCOs do believe that the importance of energy efficiency is increasing in customers’ minds (Figure 36).

**Figure 32. Perceived Importance of Energy Efficiency to ESCO Customers**



Source: MCA survey of ESCOs (n=14).

**Figure 33. Increase in ESCO Customer Interest in Energy Efficiency**



Source: MCA survey of ESCOs (n=14).

NYSERDA staff will likely find that some ESCOs would be, at best, passive partners in marketing NYSERDA programs to their customers. Again, NYSERDA may be able to use these customers' sensitivity to financial considerations as leverage to introduce them to the economic benefits – both financial incentives and reduced operating costs – associated with participation in NYSERDA's energy efficiency programs. In addition, eight of the 14 respondents worked proactively with their customers on energy management issues, and four of the 14 respondents were very knowledgeable about energy efficiency services available to their customers. Establishing collaborative relationships with these 12 ESCOs will give NYSERDA access to avenues for recruiting new participants into NYSERDA's program offerings.

### 2.9.3 ESCO Marketing

A third objective of the survey was to explore respondents' marketing procedures, including the specific markets targeted, the marketing techniques used, and the extent to which energy efficiency products and services were part of that marketing activity. This objective was intended to provide NYSERDA staff with a better understanding of how ESCOs are already making use of energy efficiency in their marketing strategies.

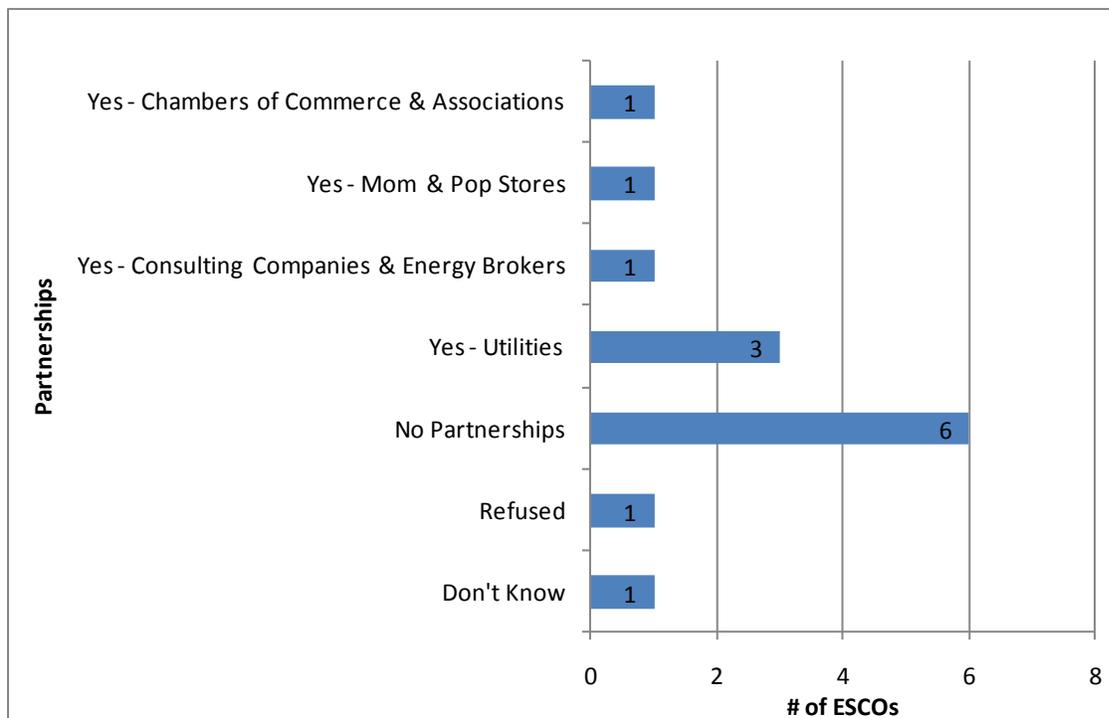
The survey finds some consistency among ESCO marketing practices. Key findings include:

- **Targeting** – About half of the ESCO respondents reported that their organization targets a specific market sector (*e.g.*, small commercial businesses, Hispanic residential customers, large commercial businesses, nonresidential customers) while the other half reported that their organizations served customers across sectors. Of those who targeted a specific

market sector, each had an individualized marketing strategy that was unique to their business.

- **Residential Sector Marketing** – ESCOs that market to the residential sector reported using mass marketing techniques, including direct mail, telemarketing, mass media, and door-to-door marketing. Some ESCOs also reported being active in home shows, using the Internet, and marketing through the local utility company.
- **Commercial Sector Marketing** – ESCOs that market to the commercial sector were more likely to report use of other types of marketing channels, including direct telephone sales, participation in public events (*e.g.*, seminars, conferences, trade shows), and marketing through websites or publications.
- **Partnerships** – About half of the ESCOs reported using partnerships to sell their products and services. The most common partnership mentioned was with utilities (Figure 34). One also reported working with consultants and energy brokers. ESCOs did report participating in the NYSEG/RG&E “Voice Your Choice” campaign that publicized the opportunity for customers to choose an alternative energy supplier.

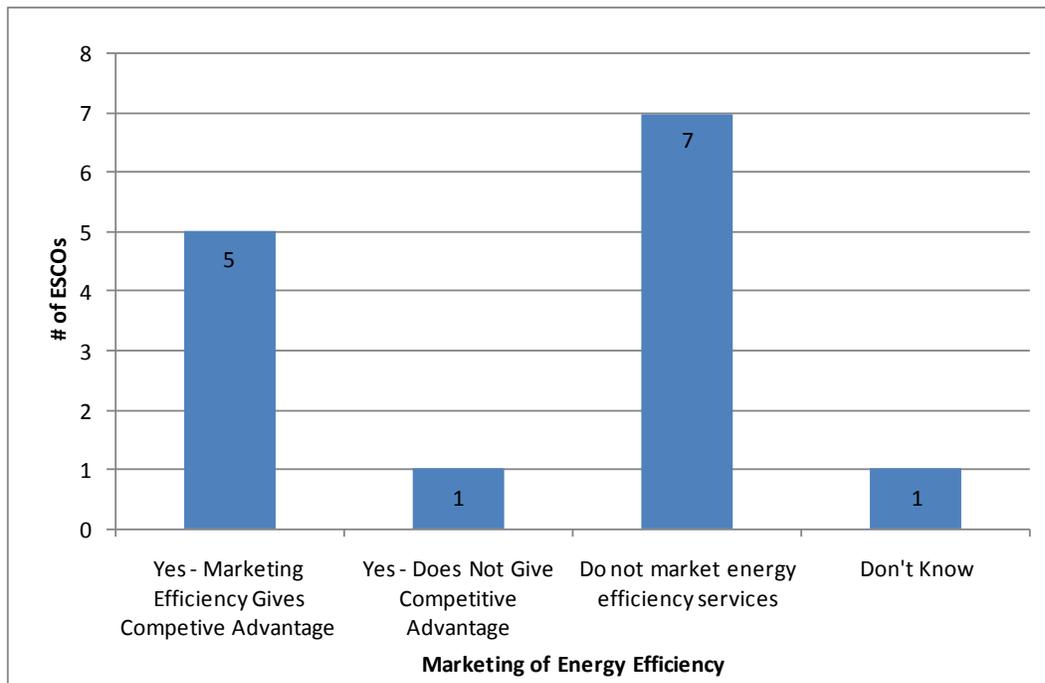
Figure 34. ESCOs’ Partnerships



Source: MCA survey of ESCOs (n=14).

The survey found that approximately half of the active ESCOs are currently marketing energy efficiency products and services to their customers, but that the approaches used are quite diverse. As shown in Figure 35, five of the surveyed ESCOs market energy efficiency and find that it gives them a competitive advantage; one markets efficiency but finds that it does *not* give them a competitive advantage; and seven ESCOs do not market energy efficiency at all.

**Figure 35. ESCO Marketing of Energy Efficiency**



Source: MCA survey of ESCOs (n=14).

Key findings related to ESCO marketing of energy efficiency products and services include:

- **Energy Efficiency Not Used as a Marketing Strategy** – For those firms who do not use energy efficiency products and services as part of their marketing strategy, respondents noted that their customers were not interested in spending money on energy efficiency; rather, they were primarily concerned with obtaining the lowest price for the electric commodity purchased. Given these customers’ sensitivity to financial considerations, it is reasonable to assume that a potential up-selling opportunity exists within this market segment, through targeted outreach and education to overcome existing market barriers.<sup>67</sup> Some of these firms attempted to market energy efficiency products and services in the past, but were not able to identify a profitable market.<sup>68</sup>
- **Energy Efficiency Used as a Marketing Strategy** – About half of the ESCOs reported that they do use energy efficiency products and services as part of their marketing strategy. Among these ESCOs, there appear to be at least three different approaches:
  - **Direct Marketing** – Some ESCOs reported that they market all possible services directly to the consumer, including electric commodity and energy efficiency services.

<sup>67</sup> Relevant market barriers likely include lack of information on energy efficiency technologies and expected financial savings, undervaluing of energy efficiency options (*i.e.*, thinking in terms of first costs rather than lifecycle costs); and competing priorities for resources and capital, among others.

<sup>68</sup> Since these ESCOs have had previous unsuccessful experiences marketing energy efficiency products and services, it may be challenging for NYSERDA program staff to engage them in new marketing efforts.

- **Corporate Marketing** – Some of the larger ESCOs reported that one division within their company markets the electric commodity while another division markets energy efficiency services.
- **Referrals** – Some of the ESCOs reported that they discuss energy efficiency options with clients to differentiate themselves from the competition. If a client expresses interest in pursuing energy-efficient equipment or services, they are referred to other external organizations and/or programs including NYSERDA.

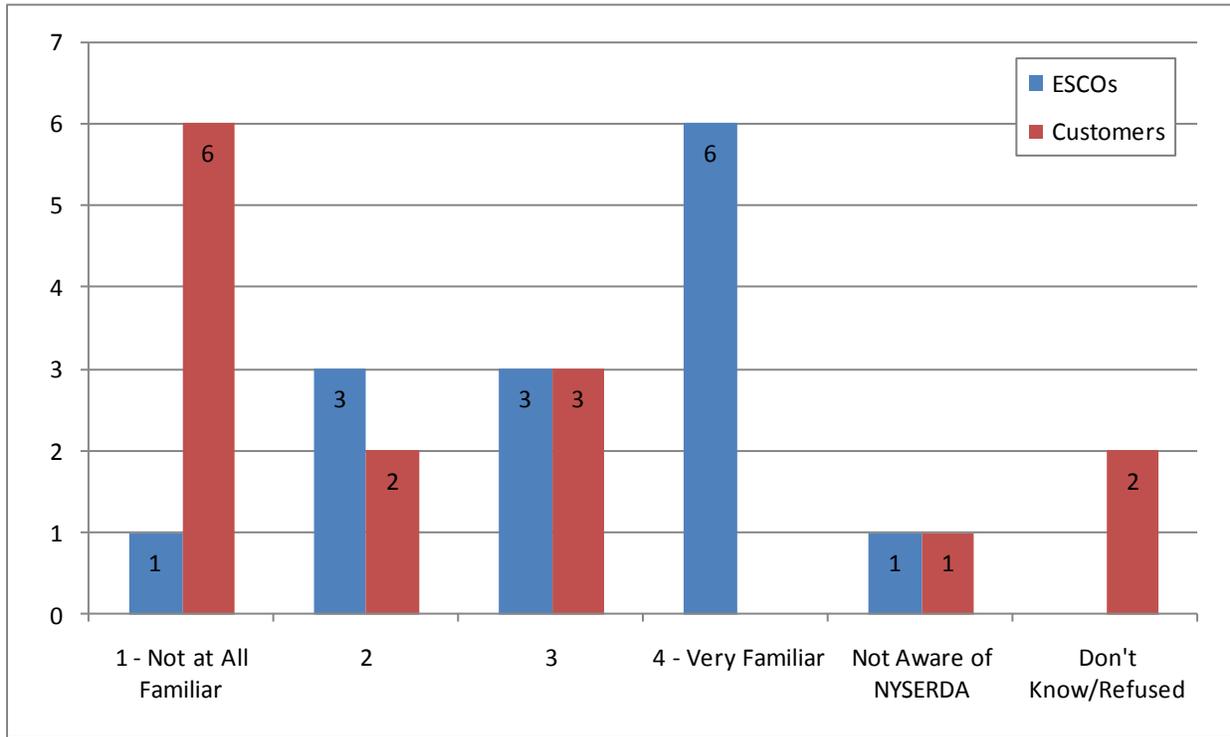
NYSERDA staff can expect to find that some ESCOs are very interested in working with them to inform their customers of energy efficiency opportunities and relevant program offerings. NYSERDA staff would be well served to initiate conversations with these ESCOs to explore potential partnering and co-branding opportunities and ensure that NYSERDA is included on the list of organizations to which the ESCOs refer customers interested in pursuing energy efficiency products and services. In addition, NYSERDA staff should reach out to those ESCOs that perceive their customers are not interested in pursuing such opportunities to explore the possibility of using targeted marketing and outreach depicting the economic benefits of energy-efficient products and services to persuade a subset of these disinterested customers to consider energy efficiency options.

#### **2.9.4 Partnering with NYSERDA**

The last objective of the study assessed respondent awareness of NYSERDA, their perceptions of their customers' awareness of NYSERDA, and their willingness to work with NYSERDA to initiate or expand provision of energy efficiency services to their customers. This section was structured to provide NYSERDA managers with insights on the potential for working with ESCOs on marketing energy efficiency products and services.

In general, ESCOs reported being much more familiar with NYSERDA than they perceive their customers to be. On average, survey respondents rated their familiarity with NYSERDA as 3.3 on a 4-point scale where 4 means "Very Familiar" as compared to an average rating of customers' familiarity with NYSERDA of 1.7 on the same 4-point scale (Figure 36).

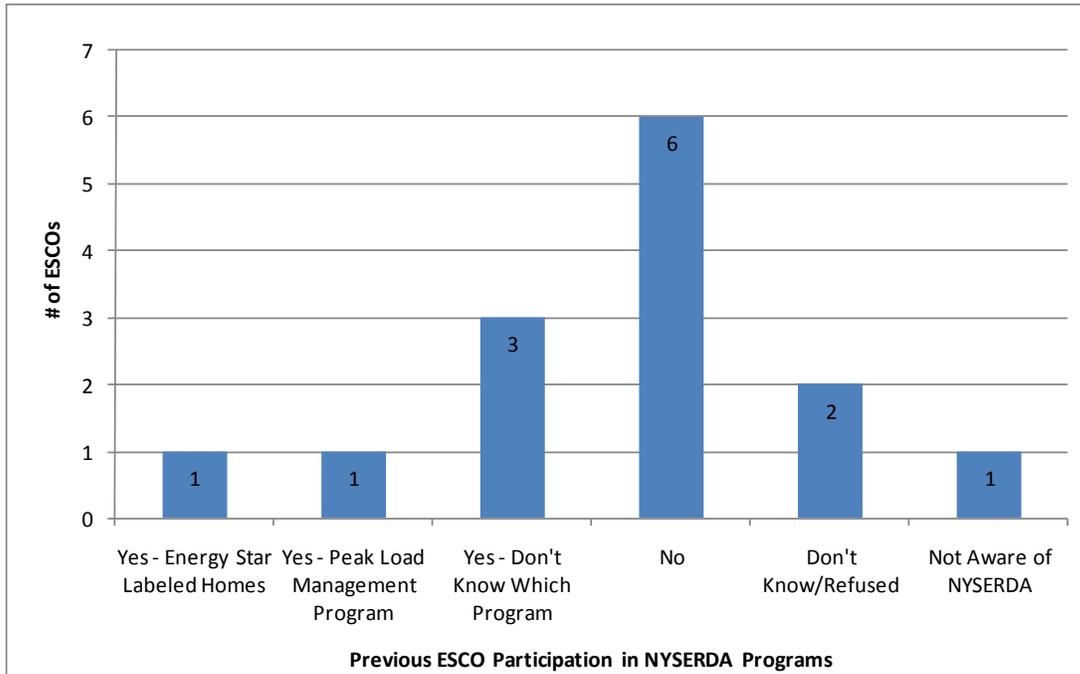
**Figure 36. ESCO Familiarity and Perceived Client Familiarity with NYSERDA**



Source: MCA survey of ESCOs (n=14).

- ESCO Participation in NYSERDA Programs** – Five ESCOs indicated that their company had previously participated in a NYSERDA program (Figure 37).

**Figure 37. Previous ESCO Participation in NYSERDA Programs.**

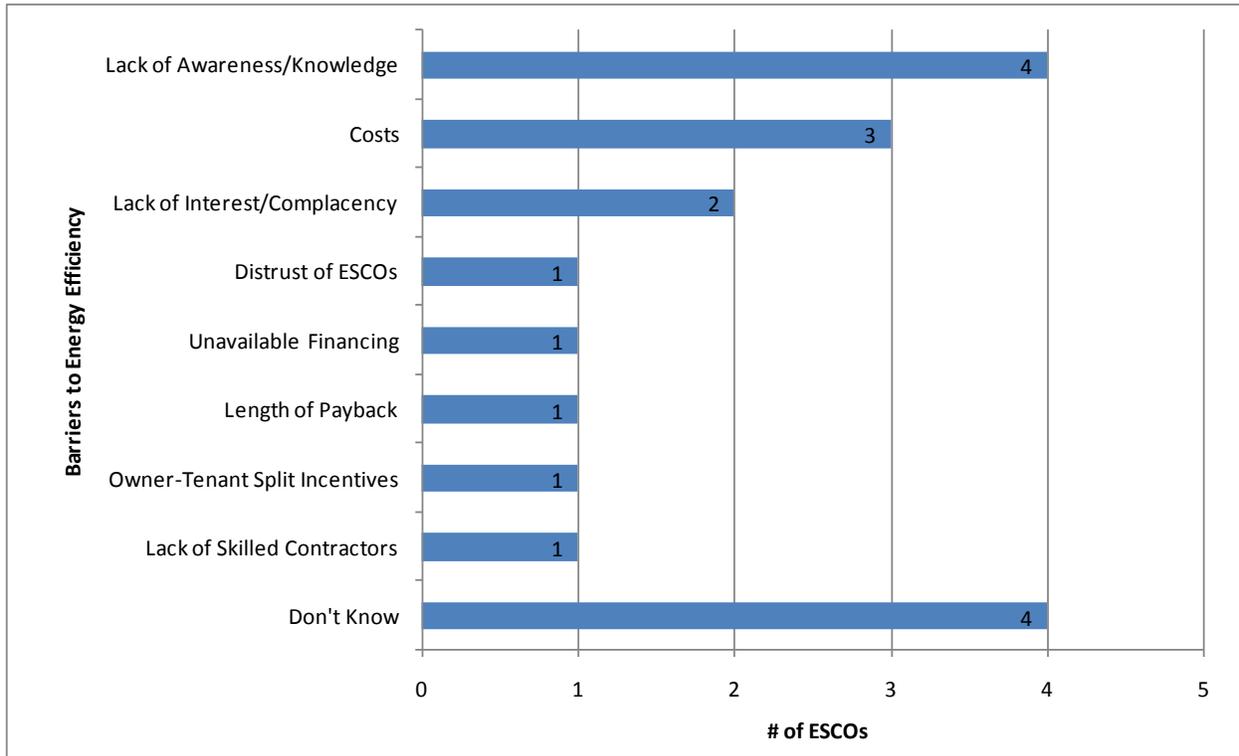


Source: MCA survey of ESCOs (n=14).

- **Customer Participation in NYSERDA Programs** – Most respondents (10 of 14) did not know whether their customers had previously participated in NYSERDA programs.
- **Program Referral** – Half of the responding ESCOs refer their customers who express an interest in energy efficiency to other organizations, including NYSERDA.

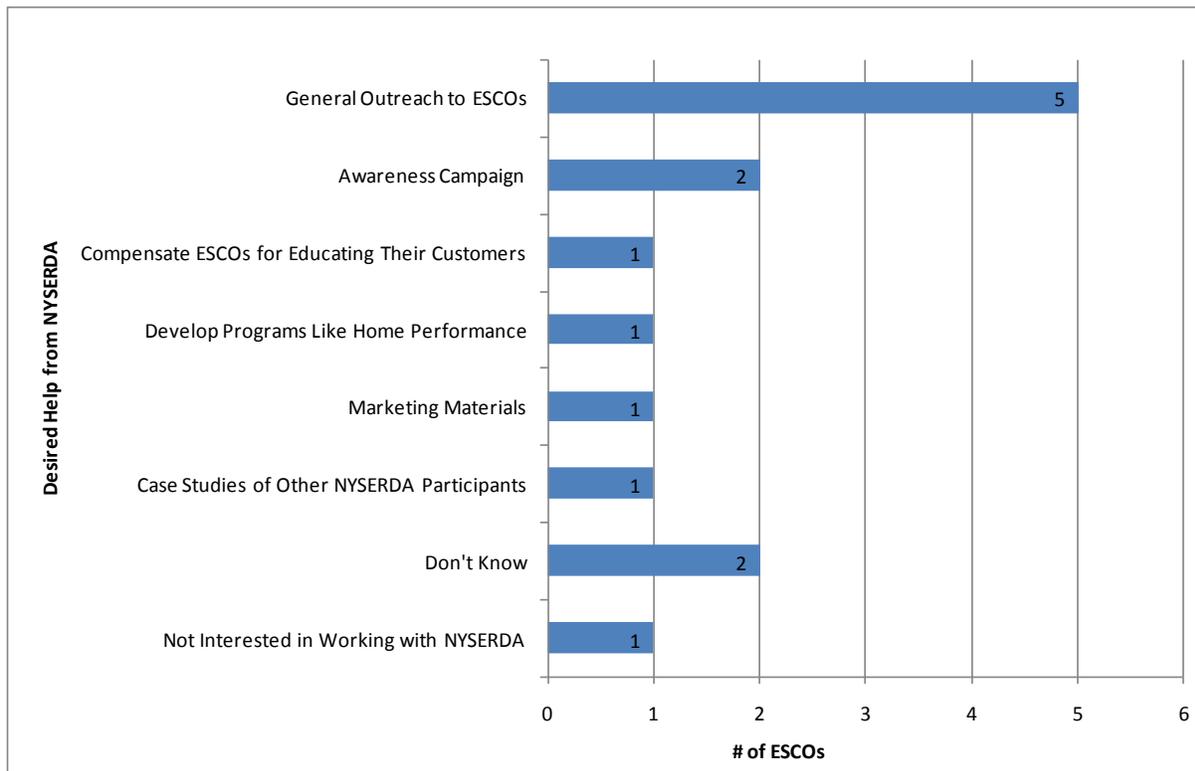
ESCOs believe that the most significant barriers to energy efficiency are a lack of awareness/knowledge and cost concerns (Figure 38). All but one ESCO indicated interest in working with NYSERDA to help address those and other barriers. Several ESCOs suggested that NYSERDA may be able to help them in marketing and increasing awareness of energy efficiency among their customers (Figure 39).

**Figure 38. ESCOs' Observed Barriers to Energy Efficiency**



Source: MCA survey of ESCOs (n=14).

**Figure 39. ESCOs' Desired Help from NYSERDA**



Source: MCA survey of ESCOs (n=14).

The results indicate that most ESCOs are willing to work with NYSERDA to initiate or expand the provision of energy efficiency products and services to their customers with those ESCOs that are already most active in providing comprehensive value-added services expressing the greatest amount of enthusiasm for the partnership. Key findings include:

- **Commodity Only ESCOs** – Five of the six respondents who reported that they do not offer any value-added services indicated that they would be willing to work with NYSERDA to provide information to their customers. However, their responses were generally unenthusiastic. Comments include:
  - *I'm not sure that we would refuse that opportunity. Maybe we'd be interested.*
  - *Sure. We're always open. Step one would be for NYSERDA to reach out to ESCOs.*
  - *Sure, why not? But, I don't know NYSERDA so I don't know how they could help me.*
- **Commodity Services ESCOs** – All four respondents who reported that they offer their customers value-added services related to the electric commodity indicated that they would be willing to work with NYSERDA to provide information to their customers. These ESCOs would be more likely to take initiative in reaching out to their customers. Comments include:
  - *NYSERDA could provide us with marketing materials that identify opportunities for us or our customers ... to distribute either through trade shows or speaking engagements.*

- **Comprehensive Services ESCOs** – All four respondents who reported that they offer their customers comprehensive value-added energy services indicated that they would be willing to work with NYSERDA to provide information to their customers. These ESCOs could be expected to be proactive in working with customers to enroll in NYSERDA programs. Comments included:
  - *NYSERDA should consider compensating ESCOs under a master contract for educating customers about their programs and for conducting audits.*
  - *We should have a meeting with NYSERDA to discuss the programs that are available.*

Most ESCOs active in the downstate region reported a willingness to assist NYSERDA staff in identifying customers who might be interested in NYSERDA energy efficiency programs, with those ESCOs that deliver comprehensive services to their customers being most likely to develop into successful customer recruiting channels. Cultivating strategic relationships with these ESCOs would provide NYSERDA with a new point of entry into the downstate market and broaden its existing set of trade allies.

# 3. WHAT

## Subsectors, Energy Intensity, Energy-Using Equipment

What types of commercial and industrial buildings are present? Page 74

How much energy do commercial buildings use? Page 79

What are the hours of operation for commercial buildings? Page 82

What types of residential buildings are present? Page 85

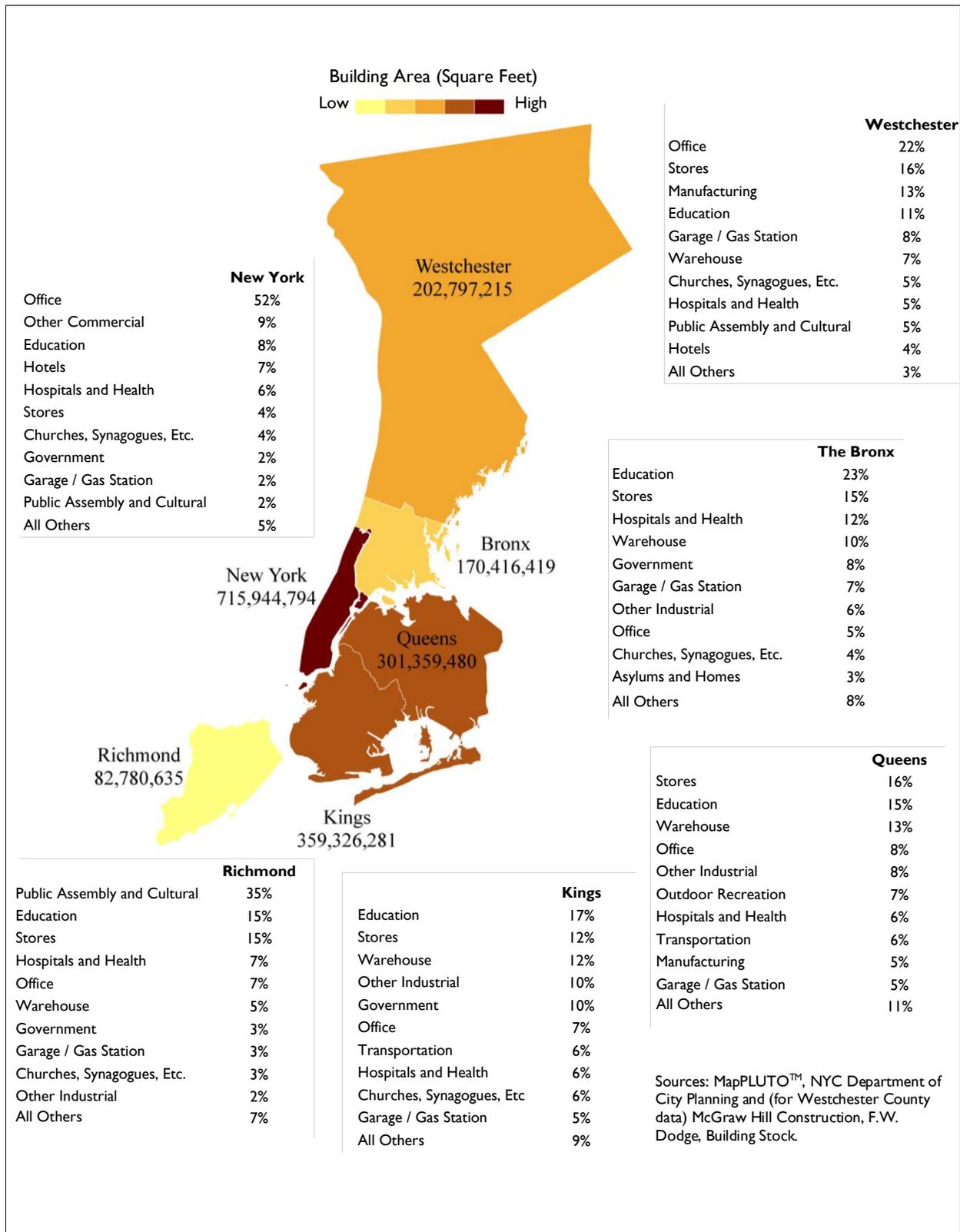
How much energy do residential buildings use? Page 89

This section disaggregates the existing building stock as described in the preceding section into subsectors, with a particular emphasis on the building characteristics that affect energy consumption.

### **3.1 COMMERCIAL BUILDING STOCK BY SECTOR**

Figure 40 and Figure 41 present the building area (square footage) and number of commercial and industrial buildings, respectively, broken out by county and subsector. The counties that account for the biggest share of the region's commercial and industrial building area are New York (39%) and Kings (20%). Offices account for the biggest share of commercial and industrial building area in New York and Westchester counties; by number of buildings, retail stores are the most common C&I building type in all counties except for the Bronx, where garages/gas stations are more common. Note that the graphics that follow do not include buildings labeled as "Unknown" or "Mixed."

**Figure 40. Commercial and Industrial Building Area by County and Sector (Building Area)**



**Figure 41. Commercial and Industrial Buildings by County and Sector (Number of Buildings)**

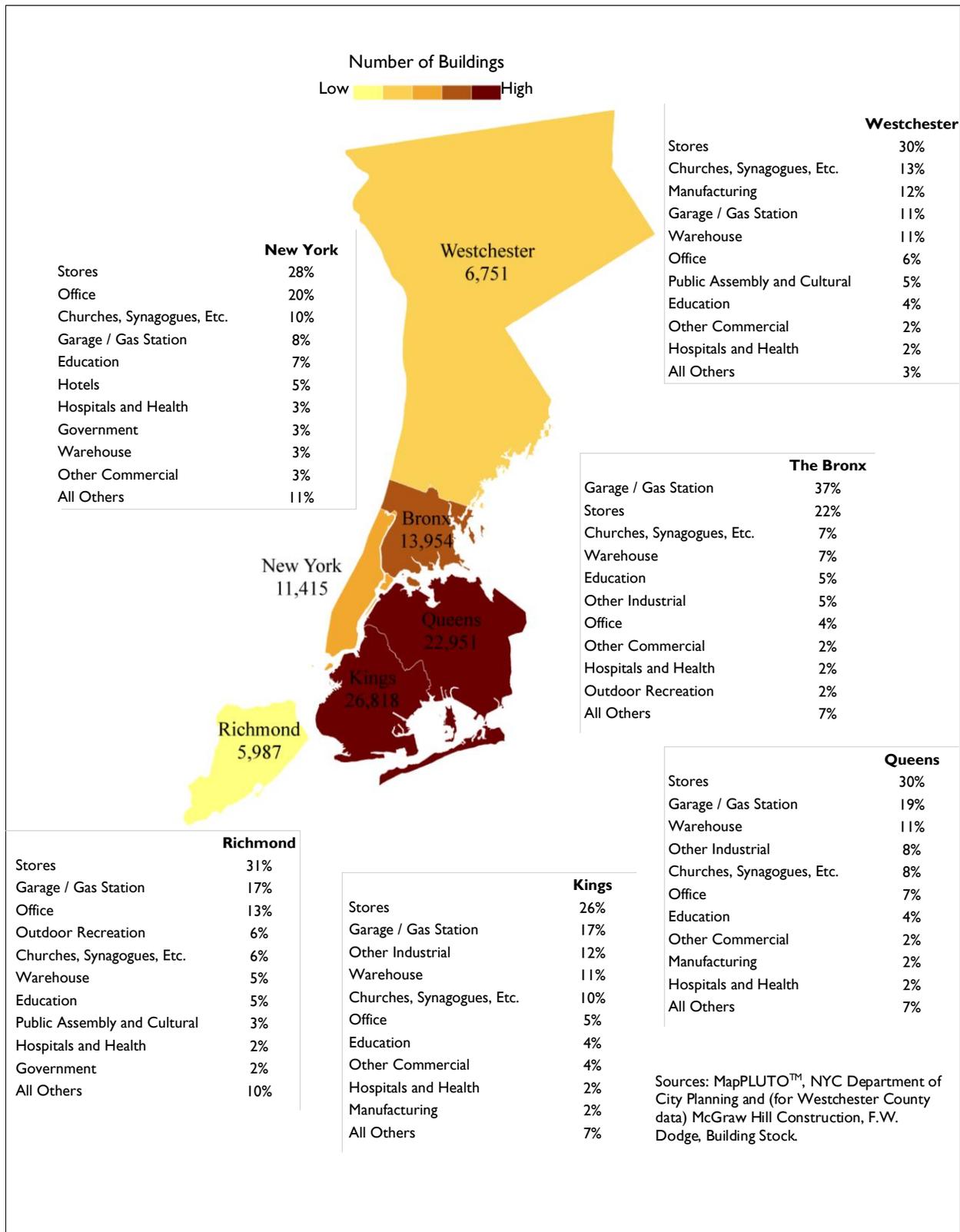


Table 11 presents the average building area (in square feet) by sector and county. Overall in the downstate region, the sectors with the largest average building sizes are transportation, hotels, and offices.<sup>69</sup> However, there is significant variation between the counties: for instance, the average office building in New York County is over 160,000 ft<sup>2</sup> whereas the average office buildings in Queens, Bronx, and Richmond counties are all under 15,000 ft<sup>2</sup>. Sectors with high average area per building may represent strong opportunities for NYSERDA to engage a relatively small number of buildings and still reach high energy savings goals.

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<sup>69</sup> The transportation sector includes terminals, bus stations, airports, airplane hangars, and other transportation-related building types.

**Table 11. Average Area per Building by Sector (Commercial and Industrial)**

<b>Average Building Size (ft<sup>2</sup>)</b>	<b>Bronx</b>	<b>Kings</b>	<b>New York</b>	<b>Queens</b>	<b>Richmond</b>	<b>Westchester</b>	<b>Downstate Region</b>
Transportation	29,410	120,008	98,093	486,796	19,938	NA	123,597
Hotels	18,250	35,951	89,923	37,180	34,595	78,179	73,436
Office	14,141	18,105	162,241	14,730	7,035	113,846	66,716
Hospitals and Health	64,776	36,895	110,457	47,769	38,606	77,724	61,282
Government	73,518	101,980	44,303	27,356	17,478	55,183	58,693
Education	58,048	53,302	68,797	55,271	37,810	87,877	58,540
Theatres	26,544	37,472	46,326	45,377	20,717	NA	43,193
Public Assembly and Cultural	12,270	12,742	54,334	9,980	186,922	27,602	37,680
Other Commercial	10,780	6,520	196,613	6,947	4,692	18,830	30,706
Manufacturing	18,345	19,866	15,686	29,557	6,135	30,427	26,182
Asylums and Homes	23,134	19,669	24,455	16,252	25,479	NA	21,265
Outdoor Recreation	11,669	11,885	8,794	61,694	2,801	NA	20,135
Warehouse	19,056	14,062	34,806	16,356	11,771	18,638	16,636
Other Industrial	14,861	11,496	25,551	13,648	16,015	NA	12,867
Churches, Synagogues, Etc.	7,857	7,875	25,534	7,556	6,990	12,630	10,943
Stores	8,109	6,319	9,828	6,841	6,591	15,931	8,009
Vacant	3,577	9,681	5,763	3,262	2,202	NA	5,530
Garage / Gas Station	2,164	3,961	17,407	3,137	2,394	21,738	4,595
Utilities	1,461	75	-	15	36	NA	206
<b>All Commercial Sectors</b>	<b>12,004</b>	<b>13,539</b>	<b>63,113</b>	<b>12,690</b>	<b>13,852</b>	<b>29,986</b>	<b>19,092</b>

Source: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.

## 3.2 COMMERCIAL BUILDING ENERGY USAGE

Figure 42 displays the average energy intensity of commercial buildings by sector in terms of electricity and natural gas use per square foot of built area. Food sales (*e.g.*, grocery stores) and food service are the most electricity intensive sectors; food service and hospitals/inpatient health care are the most natural gas intensive sectors. Note that the energy intensity is based on the average of the Middle Atlantic Census Division average and Climate Zone 3 average because the downstate New York region is located in the overlap of those two geographic divisions. Sectors with particularly high energy intensities represent opportunities for NYSERDA to develop sector-targeted programs similar to those offered through NYSERDA's Focus program initiative.

**Figure 42. Commercial Building Energy Intensity by Sector**

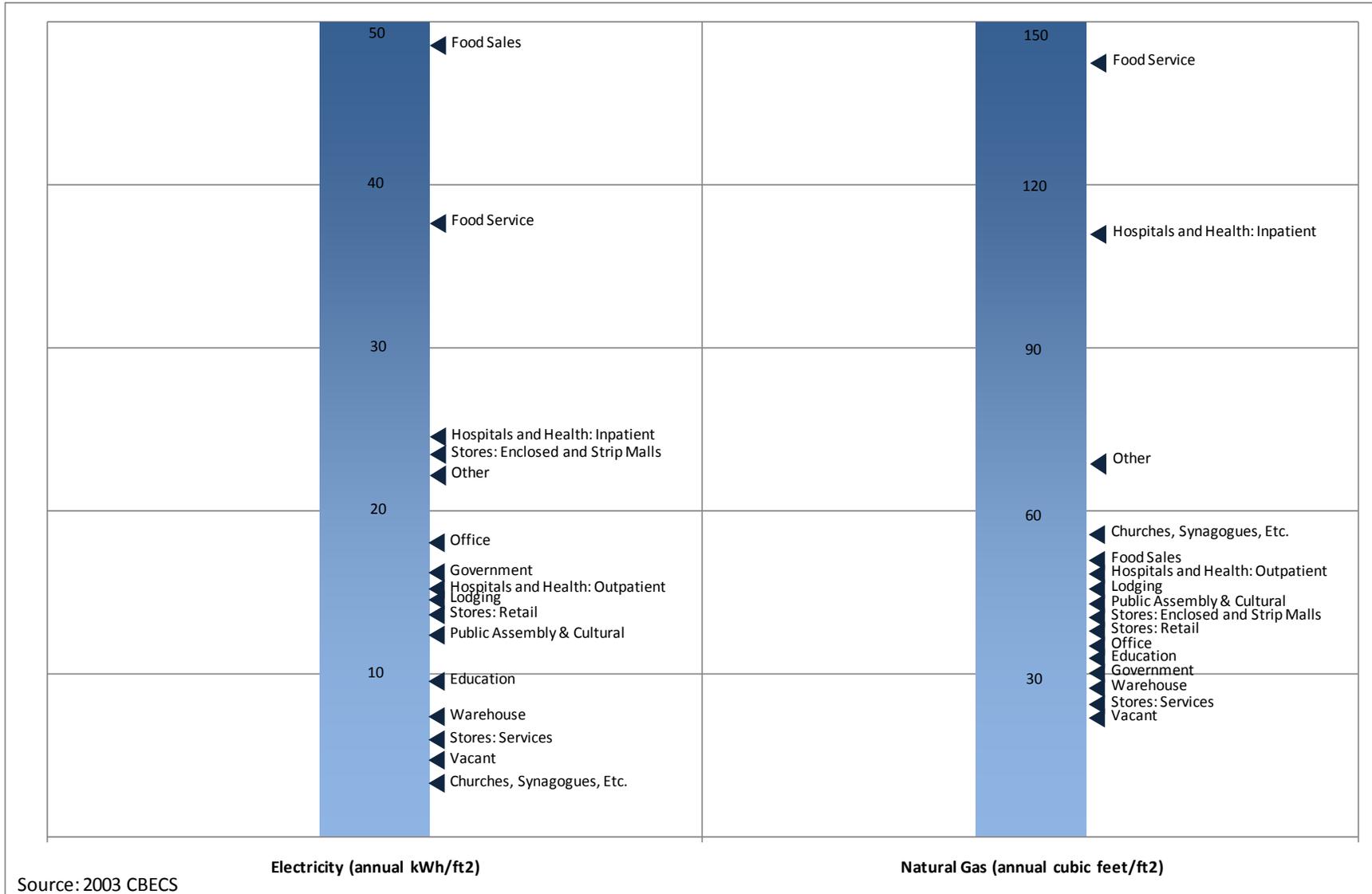
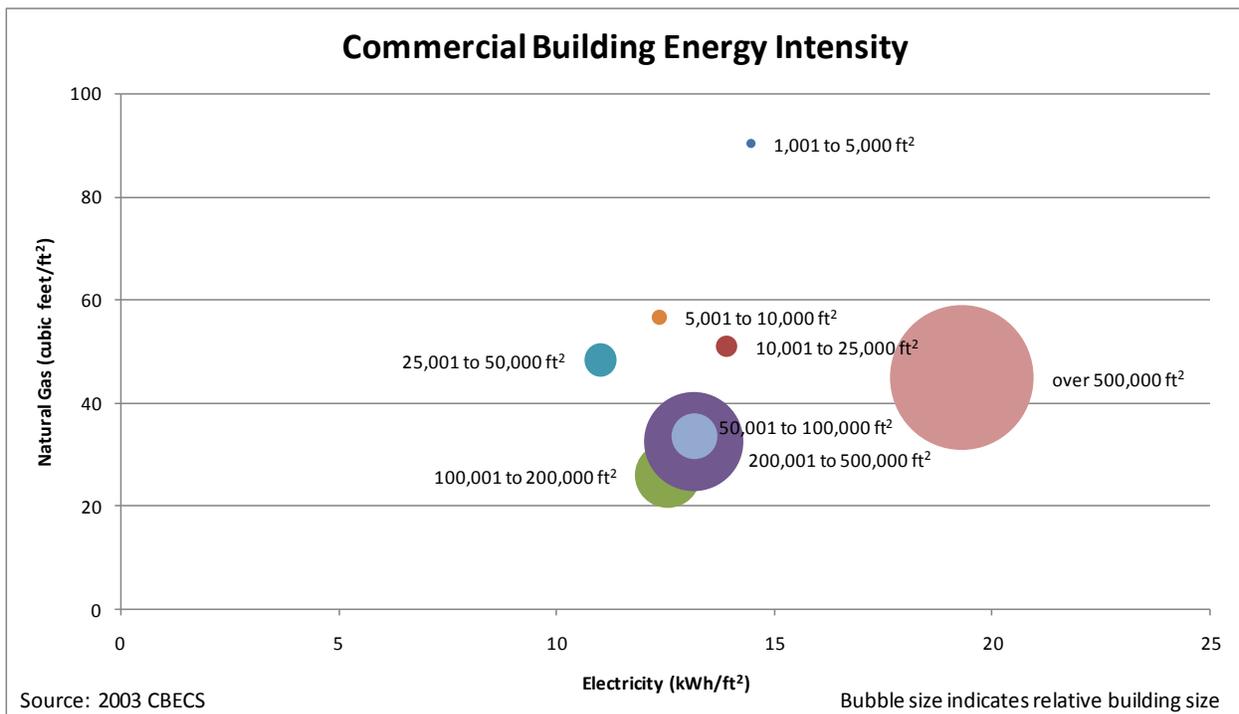


Figure 43 displays the average energy intensity per square foot by building size. The electric intensity (kWh/ft<sup>2</sup>) is displayed along the x-axis and the natural gas intensity (cubic feet per ft<sup>2</sup>) is displayed along the y-axis; thus, a data point in the upper right quadrant would have high energy intensity for both electricity and natural gas. The size of the bubble corresponds with the building size category. Note that the energy intensity is based on the average of the Middle Atlantic Census Division average and Climate Zone 3 average because the downstate New York region is located in the overlap of those two geographic divisions. It is interesting to note that both the smallest and the largest buildings have the greatest relative energy intensity (combined natural gas and electric). Therefore, energy intensity appears to be dependent on factors other than building size.

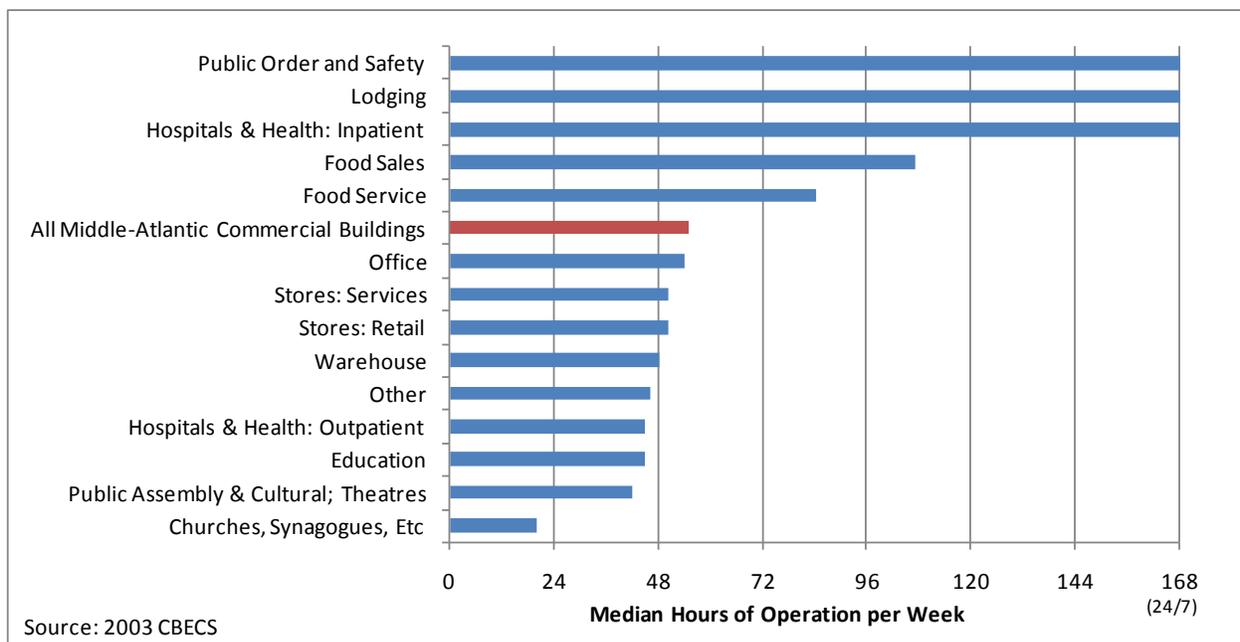
**Figure 43. Commercial Building Energy Intensity by Building Size**



### 3.3 COMMERCIAL BUILDING HOURS OF OPERATION

In the Middle Atlantic Census Division, the median weekly hours of operation for commercial buildings is 55 hours per week; the mean is 65 hours per week (Figure 44). Different commercial sectors have markedly different hours of operation, which affects energy use and potential efficiency opportunities considerably (see the previous discussion on energy intensity by sector). As shown in Figure 44, based on national CBECS data, most Public Order and Safety, Lodging, and Inpatient Hospitals & Health buildings are open continuously (168 hours per week). Education, Public Assembly & Cultural, and Churches, Synagogues, Etc. are open the fewest hours per week. Note that these values represent the median weekly hours of operations and are based on national data; CBECS does not provide regional data broken down by sector on this topic.

**Figure 44. Weekly Hours of Operation by Commercial Sector (national median)**



The following pages provide more insight into three of the biggest commercial sectors in the downstate region: hospitals and health care, offices, and retail.

# Spotlight on Hospitals & Health Care

Figure 45. Consolidation of NYC Hospitals in the Past Decade

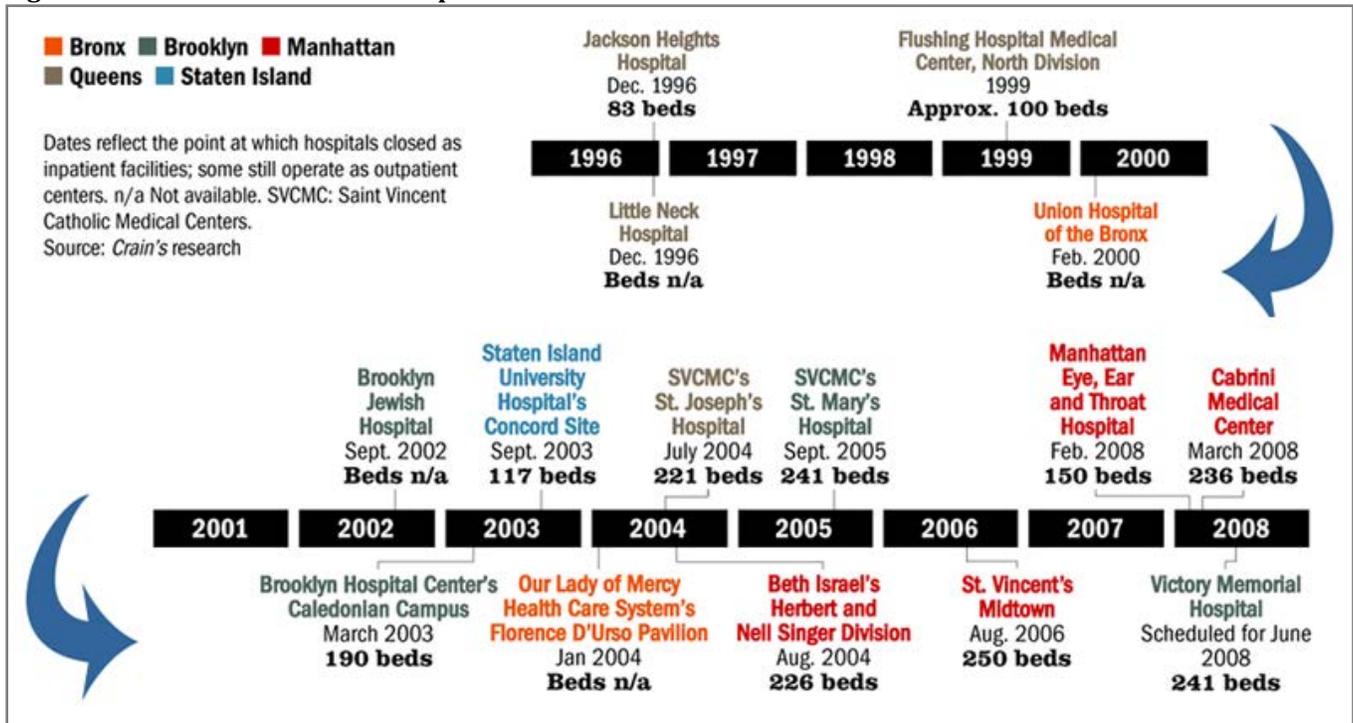
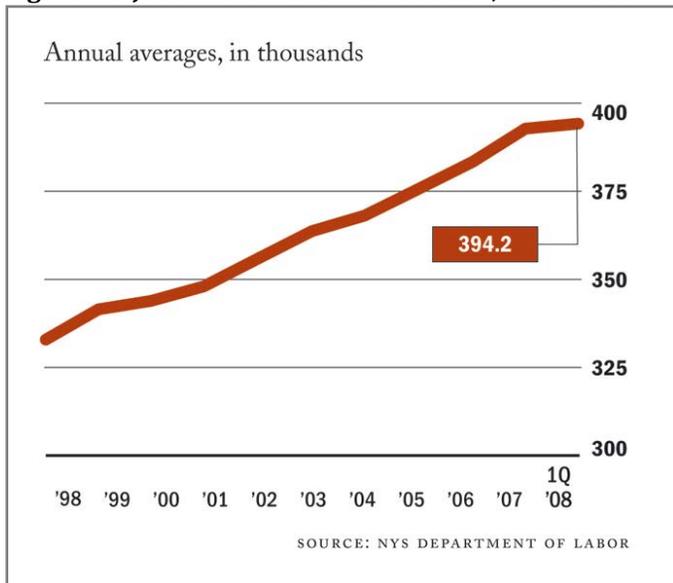


Figure 46. Jobs in the Health Care Sector, 1998-2008



Source: Crain's New York City Facts 2008

Hospitals and health care buildings represent a relatively small share of the region's built area, but those buildings tend to be large and energy-intensive. The sector is both expanding and consolidating: more jobs are created in the health care field each year, but many of the smaller hospitals are closing. The health care sector is thought to be immune from the financial downturn causing job losses in other sectors.

### QUICK FACTS

**Total Downstate Region Building Area:** 118,419,744 ft<sup>2</sup> (6% of region's total C&I building area)

**Total Downstate Region Number of Buildings:** 1,932 buildings

**Average Building Size:** 61,282 ft<sup>2</sup>

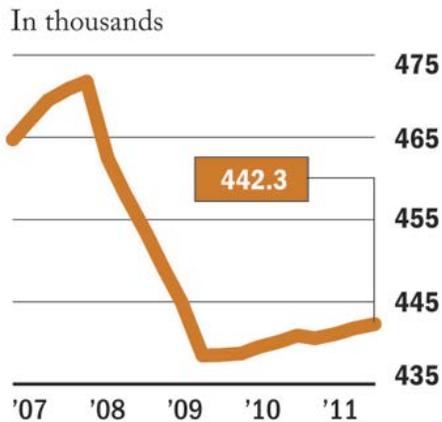
**Electricity Intensity:** 24.1 kWh/ft<sup>2</sup> (inpatient); 13.7 kWh/ft<sup>2</sup> (outpatient)

**Natural Gas Intensity:** 110 ft<sup>3</sup>/ft<sup>2</sup> (inpatient); 50.2 ft<sup>3</sup>/ft<sup>2</sup> (outpatient)

**Hours of Operation:** continuous (inpatient); ~44 hours per week (outpatient)

## Spotlight on Offices

**Figure 47. Jobs in the Financial Activities Sector, Projected 2007-2011**



Quarterly projections, seasonally adjusted. Figures include real estate employment.

SOURCE: INDEPENDENT BUDGET OFFICE

Source: Crain's New York City Facts 2008

Offices represent over one-quarter of the downstate region's C&I building area. The vast majority of this space (94%) is privately owned. Historically, the vacancy rate has been extremely low, resulting in high costs and market dynamics favoring building owners rather than tenants. However, in the recent financial crisis, vacancy rates have reached nearly 11%, driven by the closure of large financial firms (1.2 million ft<sup>2</sup> vacated) and law firms (700,000 ft<sup>2</sup> vacated). Rents have correspondingly dropped as more office space becomes available with fewer tenants interested in renting. These market conditions may make commercial real estate owners more interested in investing in energy efficiency as a competitive advantage to attract tenants, provided that they are able to receive financing for upfront costs.

### QUICK FACTS

**Total Downstate Region Building Area:** 478,564,751 ft<sup>2</sup> (26% of region's total C&I building area)

**Total Downstate Region Number of Buildings:** 7,173 buildings

**Average Building Size:** 66,716 ft<sup>2</sup> (ranges from 7,035 in Richmond County to 162,241 in New York County)

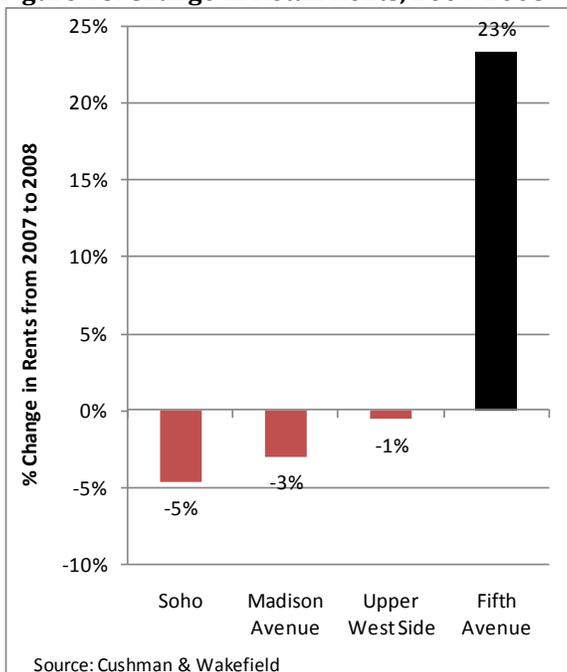
**Electricity Intensity:** 16.9 kWh/ft<sup>2</sup>

**Natural Gas Intensity:** 34.2 ft<sup>3</sup>/ft<sup>2</sup>

**Hours of Operation:** ~54 hours per week

## Spotlight on Retail

**Figure 48. Change in Retail Rents, 2007-2008**



Source: Cushman & Wakefield

There are over 24,000 retail buildings in the downstate region which account for over 10% of the region's total C&I building area. While the average building is relatively small (~8000 ft<sup>2</sup>), retail stores tend to renovate frequently (see *When* section), providing good opportunities to install energy efficiency retrofits during these periods of construction. While many retail chains are reacting to the economic downturn with nationwide store closures, most do not plan to close many stores in the downstate New York region due to a variety of factors, including the population density, heavy tourist traffic, and the branding opportunity that having a NYC location affords. However, rents are not decreasing dramatically as in the office sector (and in some areas, rents have increased), and mom-and-pop retail stores are struggling more than the big chains with the lack of credit available.

### QUICK FACTS

**Total Downstate Region Building Area:** 192,534,212 ft<sup>2</sup> (11% of region's total C&I building area)

**Total Downstate Region Number of Buildings:** 24,041 buildings

**Average Building Size:** 8,009 ft<sup>2</sup> (ranges from 6,319 in Richmond County to 15,931 in New York County)

**Electricity Intensity:** 12.9 kWh/ft<sup>2</sup>

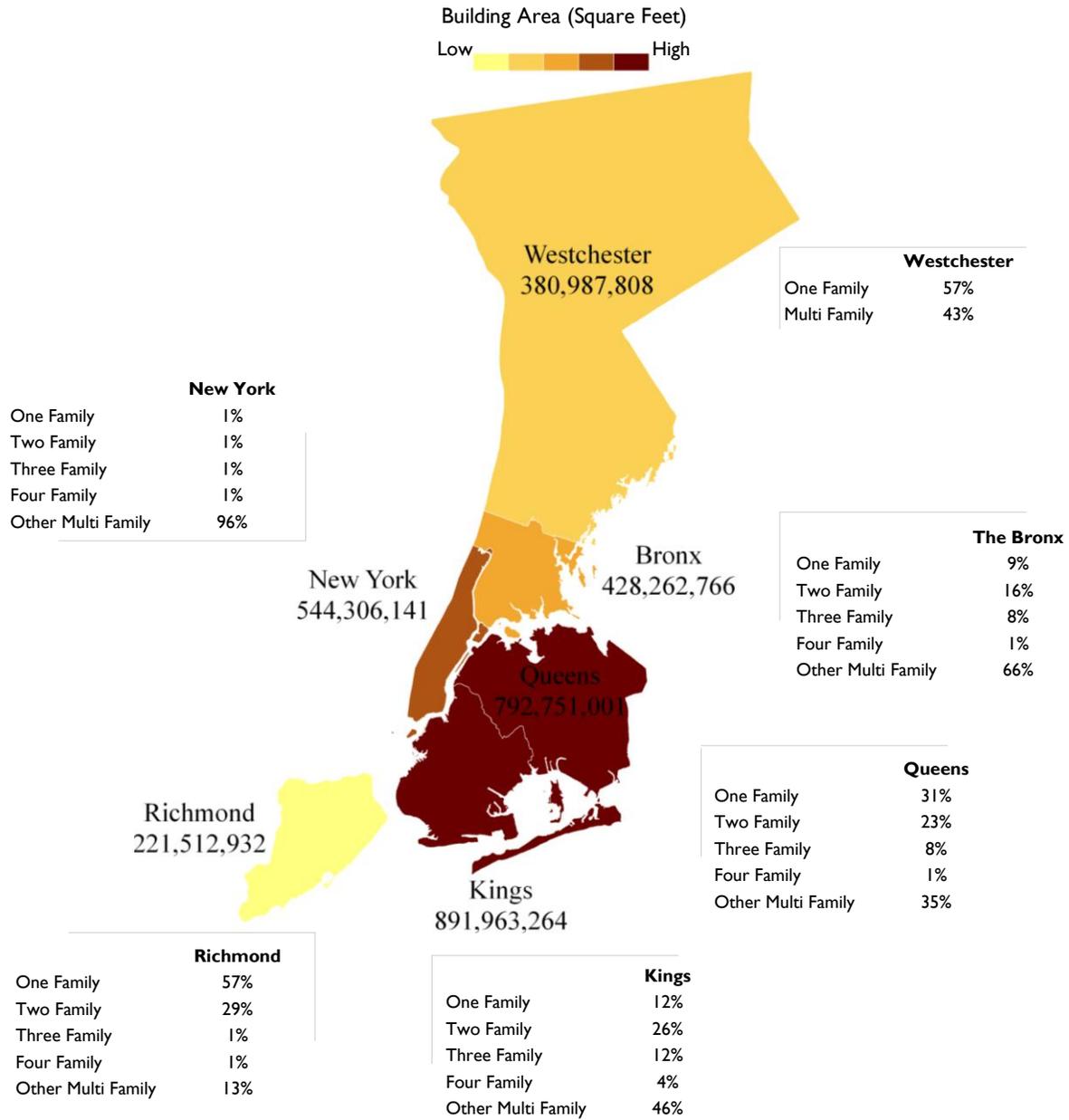
**Natural Gas Intensity:** 34.9 ft<sup>3</sup>/ft<sup>2</sup>

**Hours of Operation:** ~50 hours per week

### **3.4 RESIDENTIAL EXISTING BUILDING STOCK**

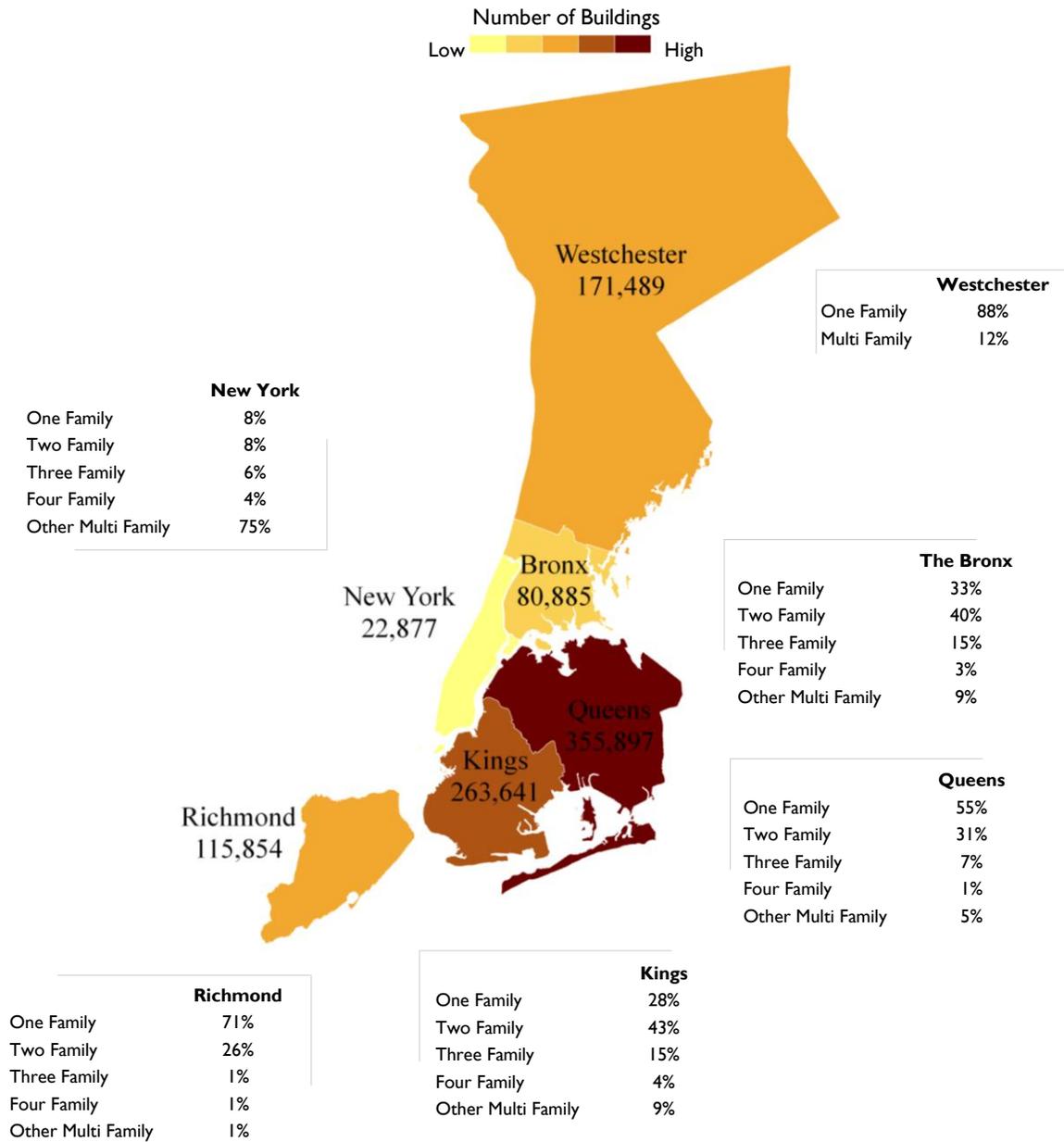
Knowing the types of residential buildings in the downstate region can help administrators tailor programs to fit the population. For example, New York County, with a high percentage of multi-family residential space, will need different program and incentive offerings relating to energy efficiency and demand response improvements, than those presented in Westchester County, with a high percentage of single family residential space. Figure 49 and Figure 50 present the square footage and number of residential buildings, respectively, broken out by county and subsector. In terms of building area, New York, Kings, and Bronx counties are more than 50% three-family, four-family and other multi-family combined, whereas Westchester, Queens, and Richmond counties tend to have more one- and two-family homes.

**Figure 49. Residential Building Area by County and Sector (Building Area)**



Sources: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.

**Figure 50. Residential Buildings by County and Sector (Number of Buildings)**



Sources: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.

Table 12 displays the average building area for residential buildings by sector and county. Not surprisingly, multifamily buildings are much larger than one- or two-family homes, but the differences between two-, three-, and four-family buildings are minimal in most counties. The average multifamily building in New York county is 30,620 ft<sup>2</sup>.

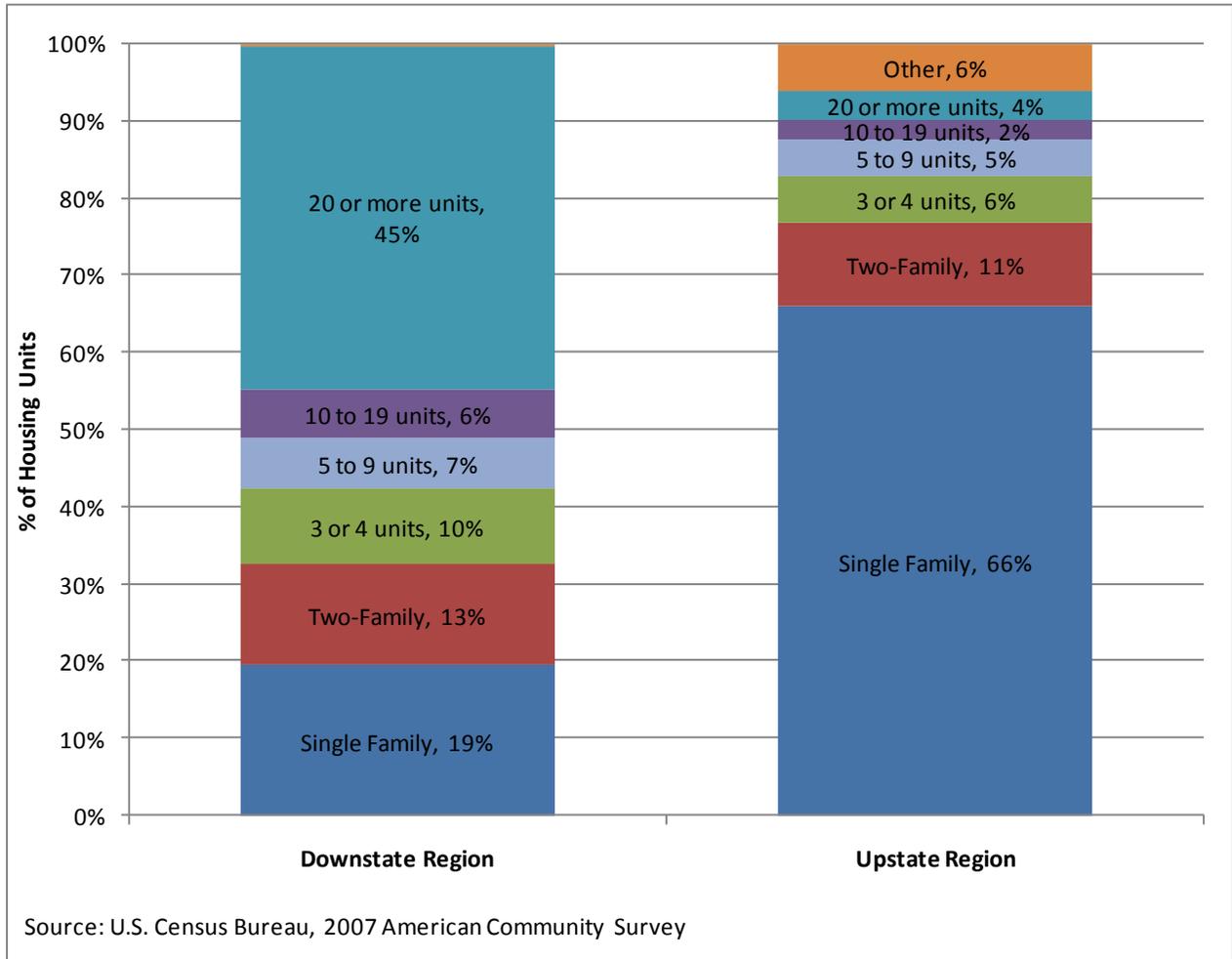
**Table 12. Average Area per Building by Sector and County (Residential)**

Average Building Size (ft <sup>2</sup> )	Bronx	Kings	New York	Queens	Richmond	Westchester	Downstate Region
One Family	1,476	1,414	4,230	1,258	1,536	1,435	1,393
Two Family	2,083	2,022	3,573	1,686	2,080	NA	1,916
Three Family	2,778	2,784	3,675	2,501	2,047	NA	2,696
Four Family	2,818	3,047	3,596	2,717	2,071	NA	2,935
Other Multi Family	37,076	16,981	30,620	16,035	19,701	8,184	19,220

*Source: MapPLUTO™, NYC Department of City Planning and (for Westchester County data) McGraw Hill Construction, F.W. Dodge, Building Stock.*

Figure 51 compares the mix of housing unit types in the downstate region to those in the upstate region of New York (*i.e.*, all New York counties excluding the six downstate counties covered in this report as well as the two Long Island counties). Upstate, two-thirds of households are in single family homes, compared to just 19% of downstate region households. Nearly half (45%) of downstate households are in large multifamily buildings (>=20 units). These differences highlight the need for NYSERDA to tailor its residential programs for downstate residents; an approach that works well in upstate New York will not be as effective in a residential market with such a dramatically different housing composition.

**Figure 51. Housing Unit Type - Downstate Region Compared to Upstate Region**



### 3.5 RESIDENTIAL ENERGY USE

In New York State, the average household uses 7,027 kWh of electricity per year; for homes using natural gas, the average household uses 67,000 cubic feet of natural gas; for homes using fuel oil, the average household uses 793 gallons per year.<sup>70</sup> However, these statistics may be lower for the downstate region, given the smaller space of an average residential unit.<sup>71</sup>

Figure 52 presents statistics on the prevalence of certain energy-using equipment in New York households. Note that these statistics are for New York State as a whole and are not specific to the downstate region<sup>72</sup>; given the dramatic difference between upstate and downstate New York in terms of building type (*i.e.*, single family vs. multifamily) and building age (see *When* section for more details), as well as differences in terms of penetration of energy efficiency programs, the statewide percentages listed in this figure may not represent the downstate region particularly

<sup>70</sup> 2005 Residential Energy Consumption Survey (RECS), U.S. Energy Information Administration.

<sup>71</sup> U.S. Census Bureau, 2007 American Community Survey.

<sup>72</sup> This is the level of disaggregation provided in the RECS dataset.

well. For example, many residents of multi-family buildings do not have clothes washers or dryers in their households. In addition, a much larger percentage of downstate residents live in multi-family buildings.

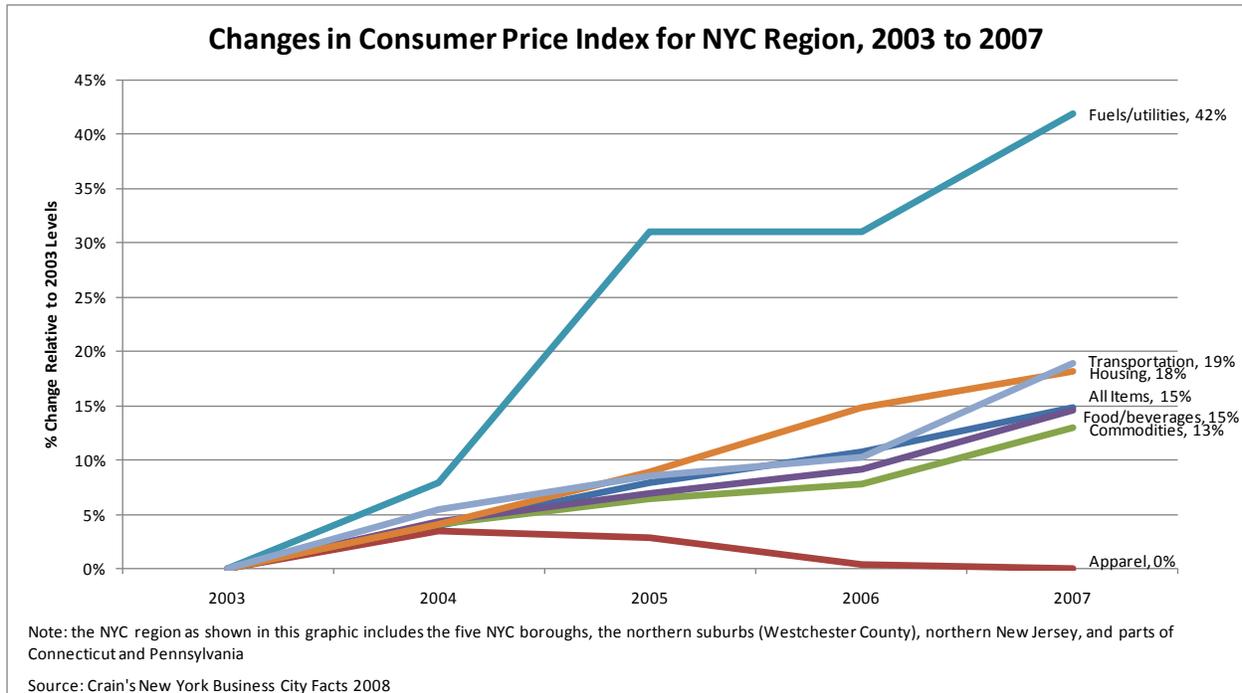
**Figure 52. Energy-Using Equipment in New York State Residences**



Source: 2005 Residential Energy Consumption Survey (RECS), U.S. Energy Information Administration. Percentages are of all New York State households.

Downstate New York residents are facing increasingly high prices on all consumer goods and services, but fuel/utilities costs are rising much faster than other consumer costs. As shown in Figure 53, the consumer price index for fuels/utilities has increased 42% from 2003 to 2007. The increase in fuel/utility costs may possibly be leveraged as a driver for increased penetration of energy-efficient technologies in the downstate region. Indeed, previous market research conducted by NYSERDA has repeatedly shown that energy price increases are top of mind concerns for customers throughout New York.

**Figure 53. Changes in Consumer Price Index for NYC Region, 2003 to 2007**



# 4. WHERE

## Regional Trends

Where are the existing buildings in downstate New York located? Page 93

Where are the New York City community districts located? Page 99

Where is population growth occurring? Page 102

Where is construction and development occurring? Page 103

This section of the report identifies and discusses the locational aspects of the downstate market. The location of current buildings and construction activity is outlined, along with areas of high population growth. A look into the regional trends can provide insight into target regions in the downstate area for NYSERDA's programs.

## **4.1 WHERE ARE THE EXISTING BUILDINGS IN DOWNSTATE NEW YORK LOCATED?**

The following maps show the locations of tax lots within the five counties of New York City (Figure 54 through Figure 58) as well as Westchester County (Figure 59).<sup>73</sup> Each lot is designated as residential, commercial, industrial, mixed residential and commercial, or outdoor recreation. On each map, some large tax lots and city regions are pointed out for reference. In all counties, residential space is spread throughout the county, whereas commercial and industrial space tends to occur in clusters, especially near the coastline. Understanding these spatial patterns can assist with program targeting efforts.

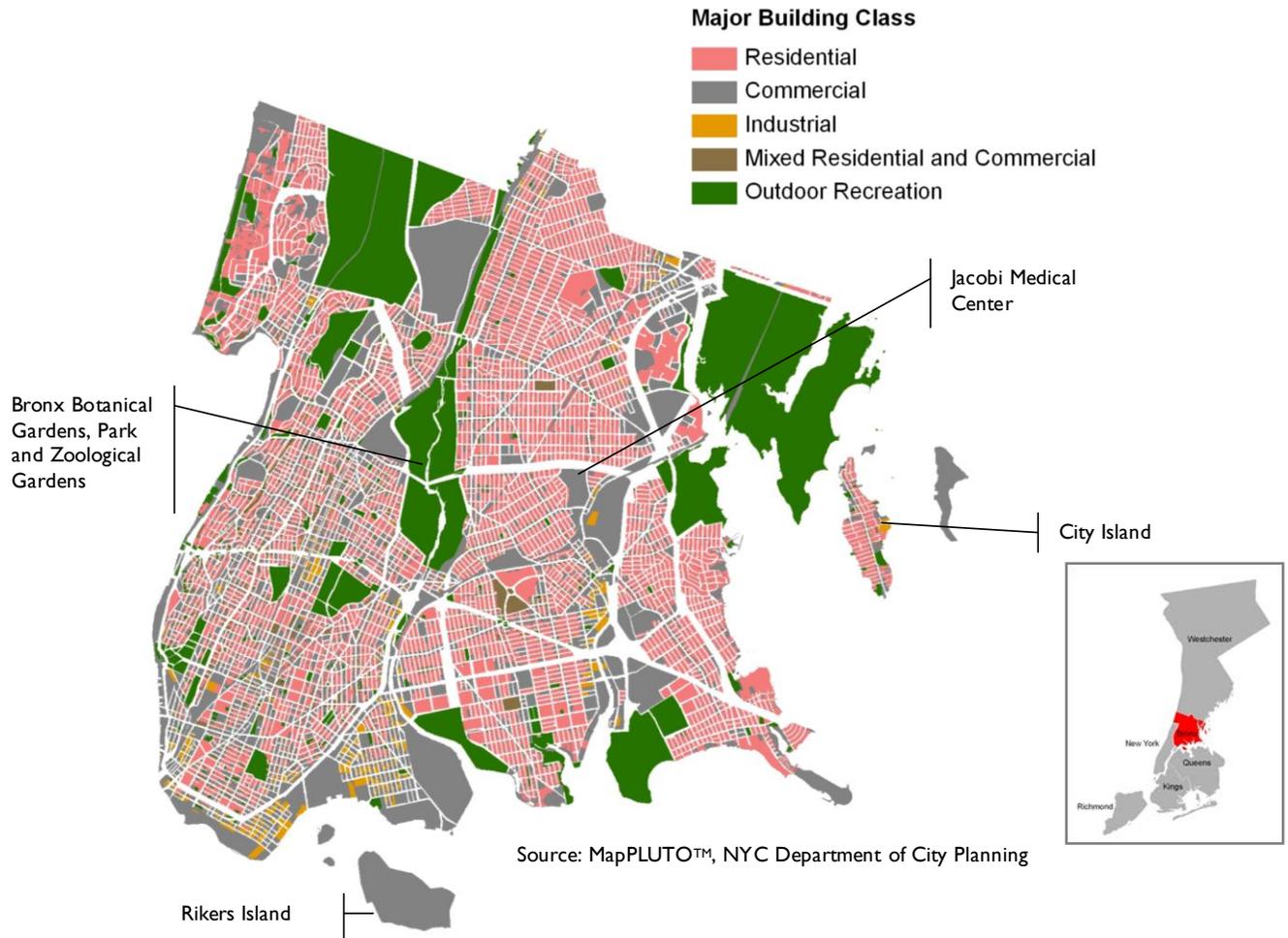
Therefore, targeting specific regions for energy efficiency and demand response programs may be better suited to the commercial and industrial sector than the residential sector.

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<sup>73</sup> As noted previously, the MapPLUTO™ database used for much of the market characterization covers only the five boroughs of New York City; thus, different data sources were used for Westchester County, and the map provided for Westchester does not have the same level of detail as those of the five NYC counties.

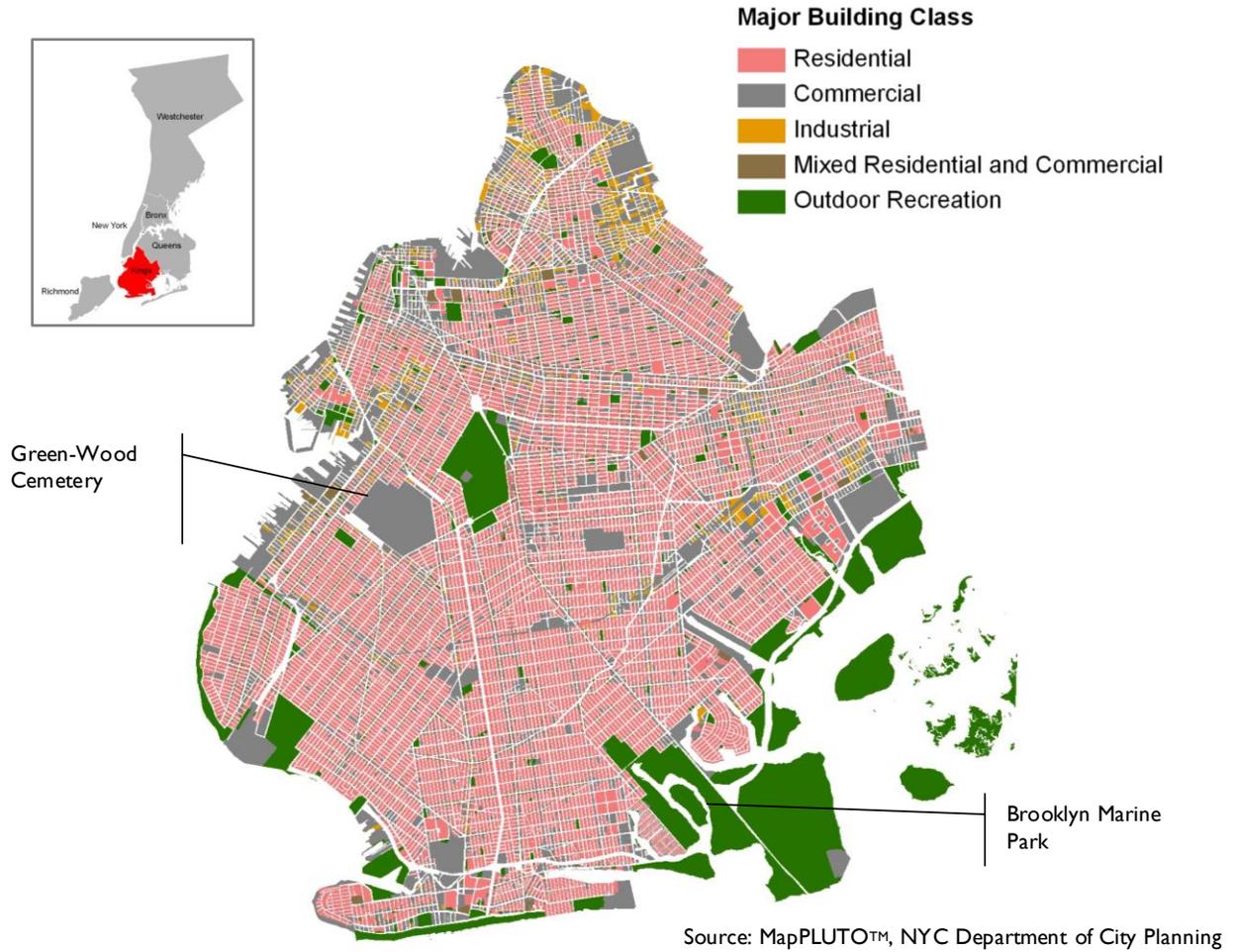
Figure 54 shows the tax lots in the Bronx. The majority of building area in the Bronx is comprised of residential space (63% of total building area), with commercial (23%), industrial (2%), and mixed (12%) space each comprising a smaller portion. The residential space is spread throughout the county. The coastlines are primarily filled with commercial and industrial lots. Pockets of industrial activity are also located throughout the county. Industrial buildings are located in the southern portion of the county, along with a small pocket in the north-eastern portion and in the south-eastern portion.

**Figure 54. The Bronx**

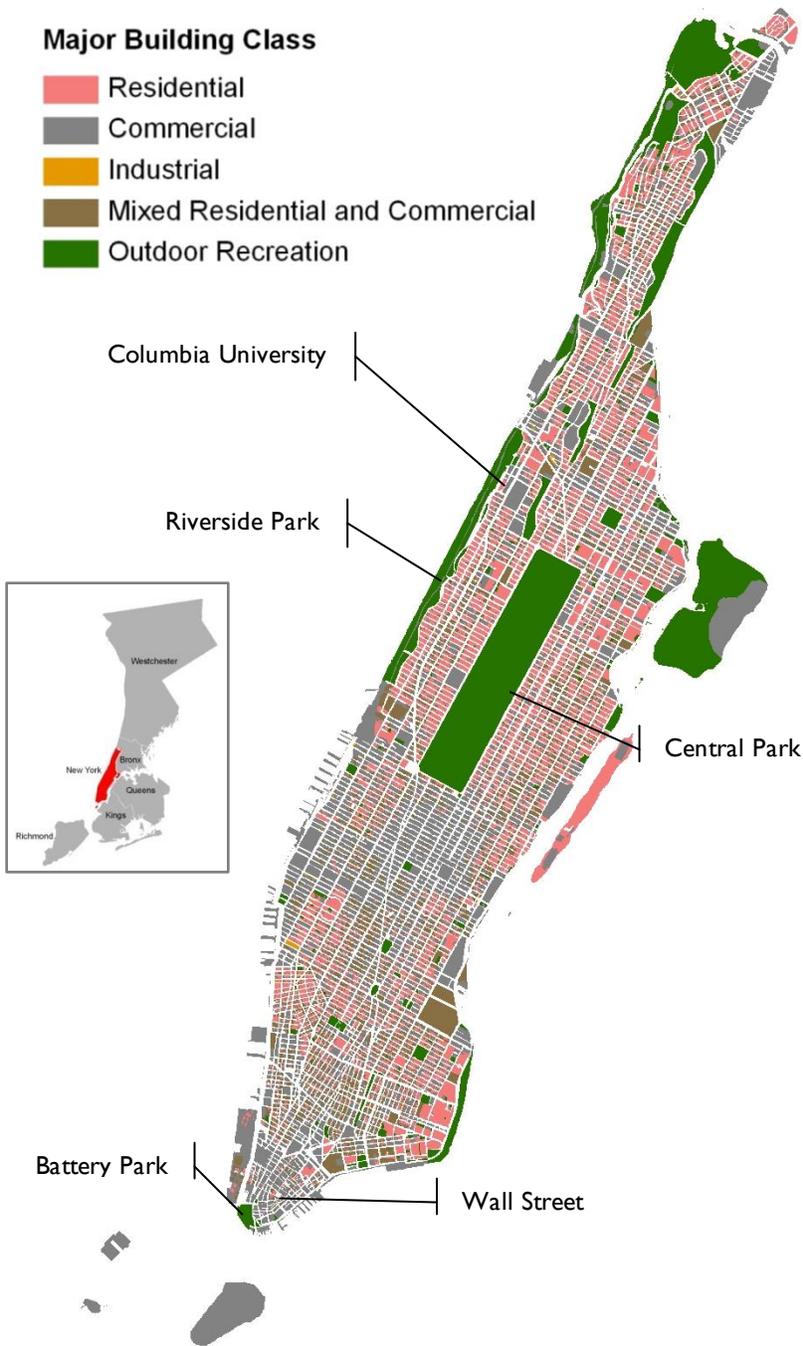


Kings County (Figure 55) contains a large amount of residential space throughout the county (64% of total building area in the county). Clusters of commercial and industrial space are located along the county’s boundaries both at the location of ports and the border with Queens.

Figure 55. Kings County



**Figure 56. New York County**

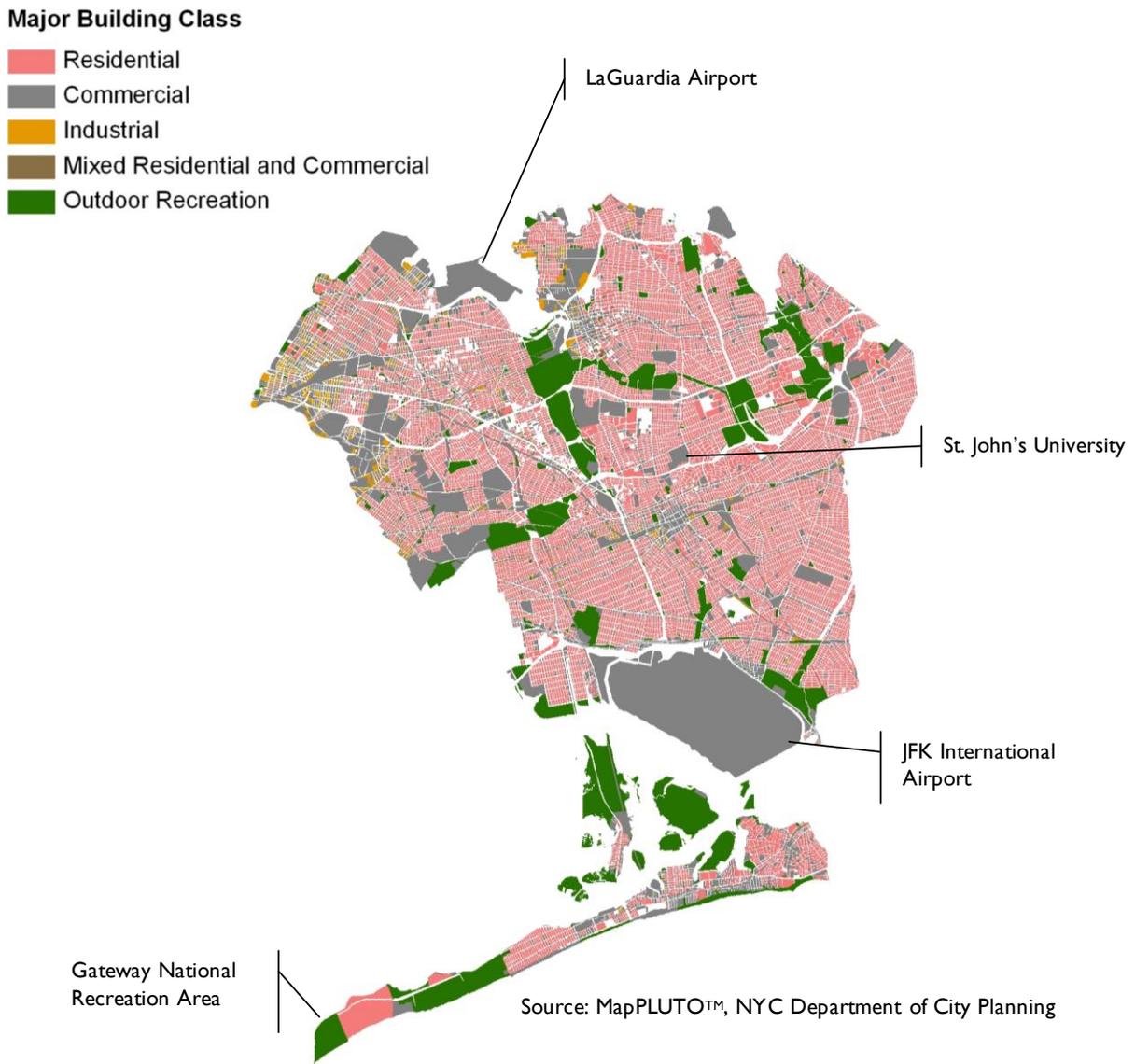


Compared to the other downstate counties, New York County has a higher percentage of building area classified as commercial space, than residential space. Many of the commercial facilities are located in the midtown and downtown areas. Residential areas are concentrated near Central Park and in the northern region of the county (see Figure 56).

Source: MapPLUTO™, NYC Department of City Planning

The map of Queens County is shown in Figure 57. Two large commercial tax lots in Queens are dedicated to transportation: JFK International Airport and LaGuardia Airport. The majority of industrial buildings are located on the northwestern edge of the county, at the border with Kings County. Residential space dominates Queens; 69% of the total building area in Queens is classified as residential, and the residential space is located throughout the county.

**Figure 57. Queens County**



The majority of building area in Richmond County is comprised of residential space (72%), which is spread throughout the county. Richmond also contains a large amount of commercial space on its western edge comprised of sanitation facilities and ports (Figure 58). A few large industrial sites are located in Richmond County, including Kinder Morgan Liquid terminals and Vanbro Corporation.

**Figure 58. Richmond County**

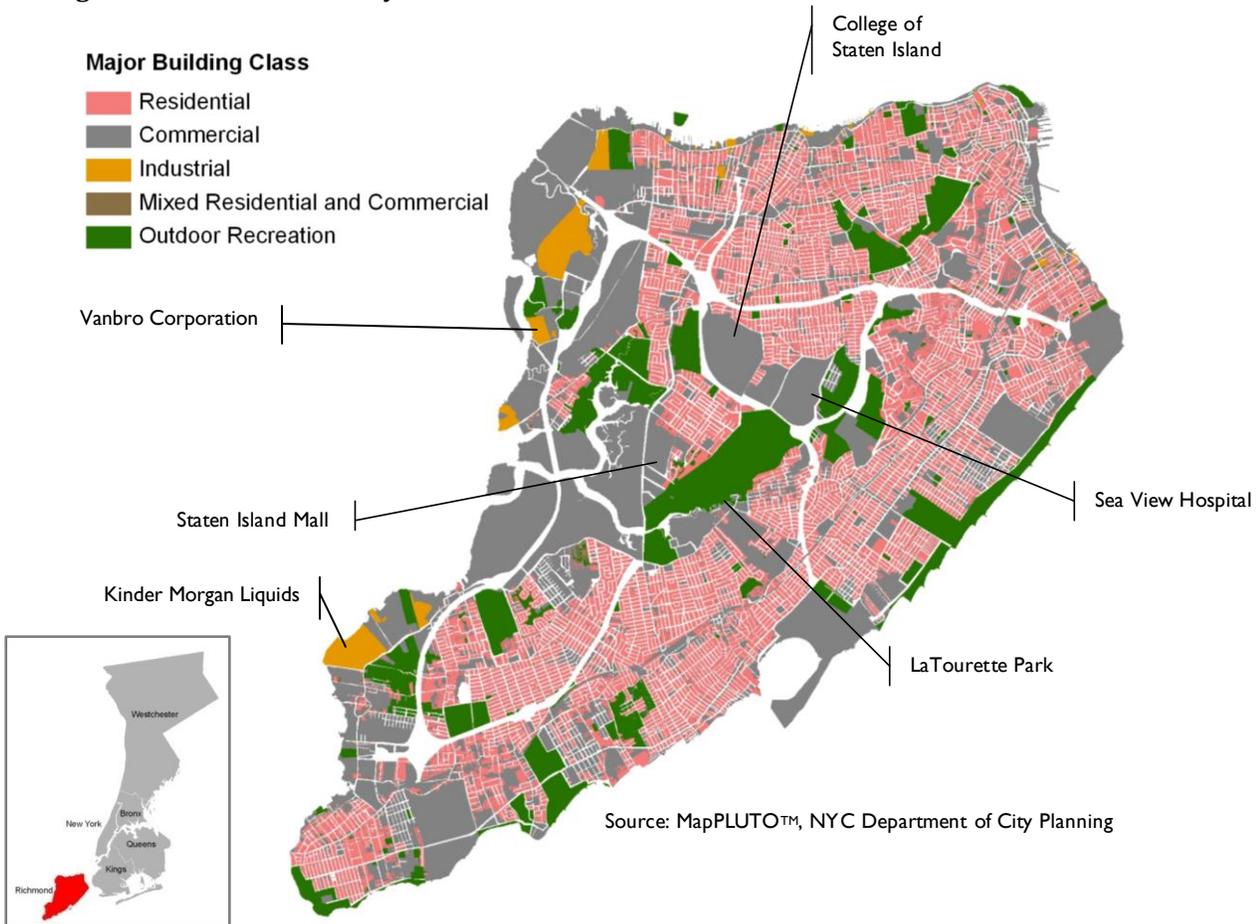


Figure 59. Westchester County

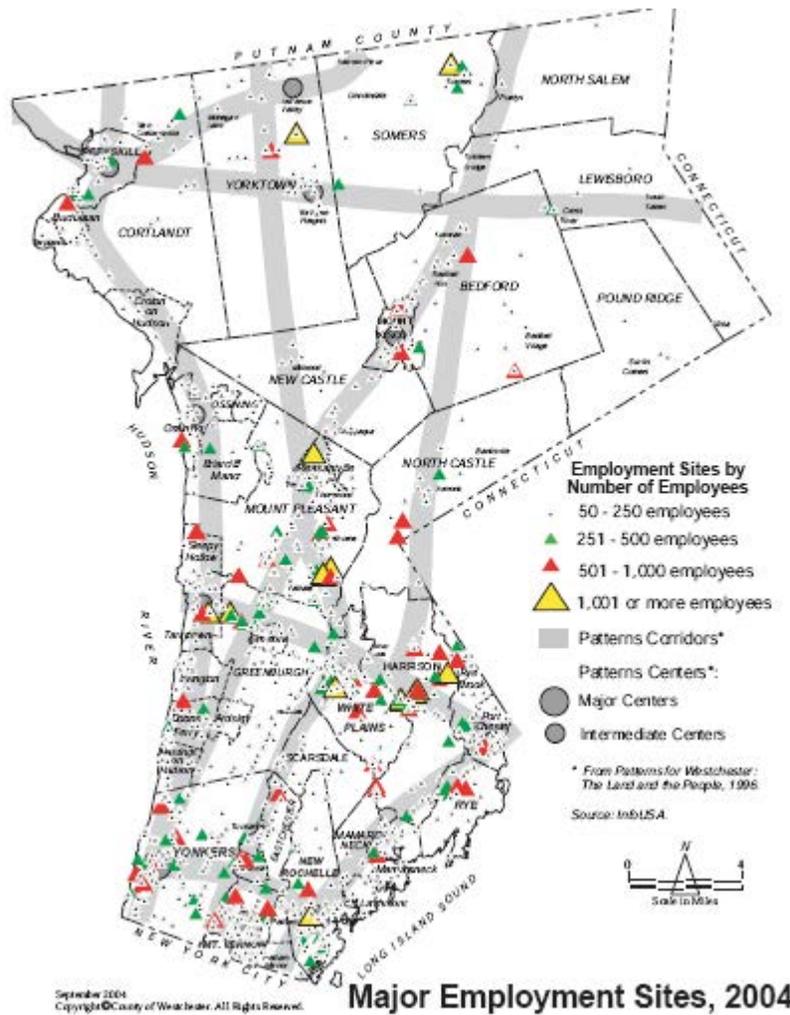


Figure 59 shows the locations of businesses in Westchester County by number of employees, with the lowest class ranging from 50-250 employees. The majority of businesses are located in the southern portion of the county, near the border with the Bronx. Residential space, which is not shown on this map, is distributed throughout the county.

Note that MapPLUTO™ data is not available for Westchester County; therefore, this map of building locations does not include a breakout of residential, commercial, industrial, mixed residential and commercial, and outdoor recreation.

Source: Westchester County Department of Planning. "Databook Westchester County." November 2005.

## 4.2 WHERE ARE THE NEW YORK CITY COMMUNITY DISTRICTS LOCATED?

Not only is New York City split into five counties or boroughs, but there are also 59 community districts within the five counties. Working with the community districts and understanding their specific building distributions and service infrastructures, while linking these districts with high growth/construction areas (see *Where is the population growth occurring?* and *Where is the construction and development occurring?* sections) may provide one avenue for NYSERDA to reach possible program participants.

The community districts were established in 1975. Each district is served by a Community Board, which is comprised of up to fifty voting members. The members are appointed each year for two-year terms by the relevant borough president and City Council members.

The community boards are intended to act as advocates for the local residents and the community, but each board's efficacy depends upon the budget, local communication with its community residents, and local involvement. The City Charter designates that each Community Board shall have a role in land use planning and local budget priorities.

The boards, however, do not have any administrative or enforcement rights, and may only present requests on behalf of their community district to a City Agency, City Council, or other government body.

As Figure 60 shows, there are 18 Community Districts in Kings County, 14 in Queens, 12 in New York County, 12 in the Bronx, and 3 in Richmond County. Each of these community districts is comprised of individual neighborhoods, with some districts comprising more than one distinct neighborhood.

Figure 60. New York City Community Districts



Source: New York City. Department of City Planning. "Community Districts." Available at <http://www.nyc.gov/html/dcp/html/lucds/cdstart.shtml>.

The box below (Figure 61) shows an example of the land use detail for Manhattan's Community District 2, which is located in the Lower West Side. Complete details for each of the 59 Community Districts are available on the New York City website.<sup>74</sup>

Figure 61. Example of Data Available for Community Districts: Land Use for Manhattan's Community District 2

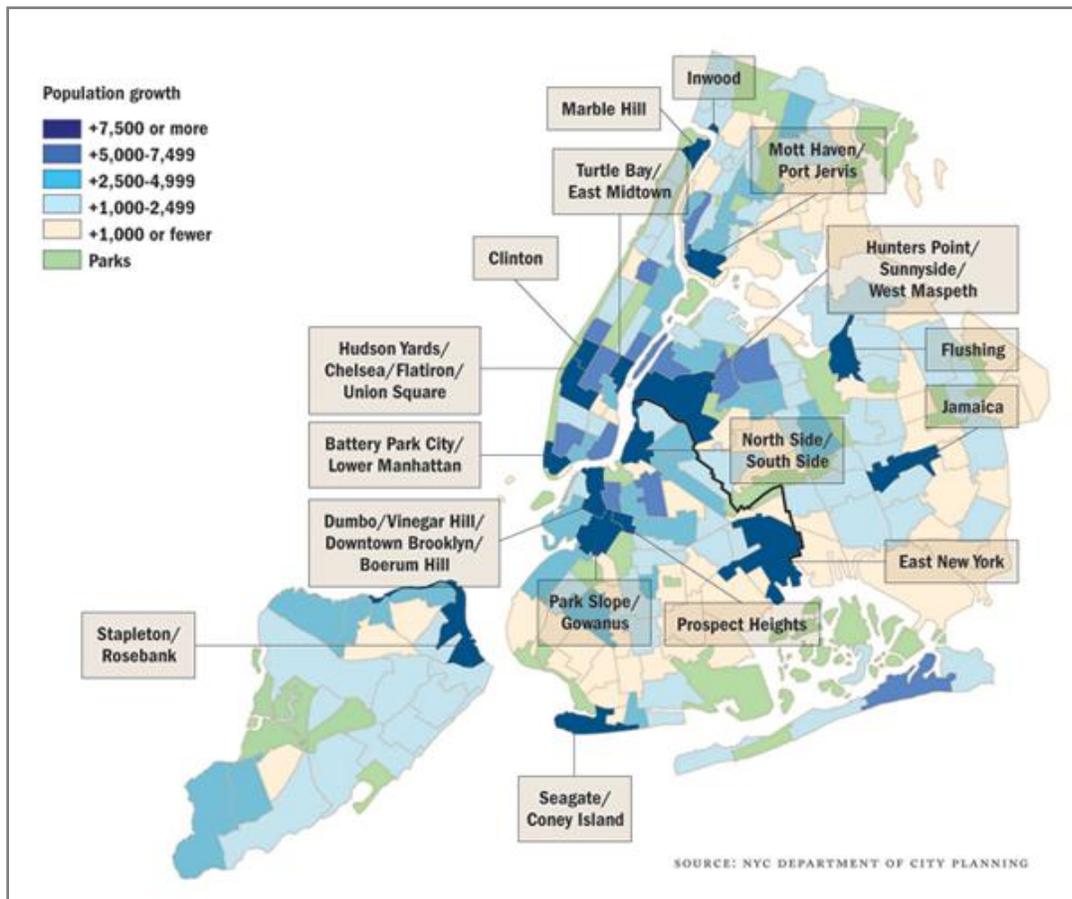
	Lots	Lot Area	
		Sq. Ft.(000)	%
1- 2 Family Residential	459	717.3	2.6
Multi-Family Residential	1,518	6,427.7	23.5
Mixed Resid. / Commercial	1,429	4,873.3	17.9
Commercial / Office	670	4,057.0	14.9
Industrial	306	2,018.3	7.4
Transportation / Utility	54	4,608.4	16.9
Institutions	177	1,956.7	7.2
Open Space / Recreation	26	711.5	2.6
Parking Facilities	81	572.4	2.1
Vacant Land	54	1,266.7	4.6
Miscellaneous	40	95.7	0.4
<b>Total</b>	<b>4,814</b>	<b>27,305.1</b>	<b>100.0</b>

<sup>74</sup> <http://www.nyc.gov/html/dcp/html/lucds/cdstart.shtml>

### 4.3 WHERE IS POPULATION GROWTH OCCURRING?

Population growth is occurring in clusters throughout the downstate region, with at least one major cluster of growth in each New York City county (see Figure 62). These specific areas of growth could be targeted for energy efficiency programs. Each area experiencing dramatic growth is simultaneously experiencing significant new housing development or refurbishment, and/or commercial development. Targeting energy efficiency to areas that are experiencing a significant change in the building stock while that construction is underway would save both time and money by obviating future retrofit projects and could significantly reduce future commercial and residential energy expenditures.<sup>75</sup> Construction costs are notoriously high in New York City, and if energy efficiency upgrades can be integrated into neighborhood development cycles, numerous benefits can be achieved including lower lifetime energy costs and avoidance of future permitting bureaucracy and other related construction costs. Areas of high population growth include, but are not limited to, Battery Park City/Lower Manhattan, Mott Haven/Port Jervis in the Bronx, Stapleton/Rosebank in Richmond, Prospect Heights in Kings, and Jamaica in Queens.

Figure 62. Population Growth in New York City



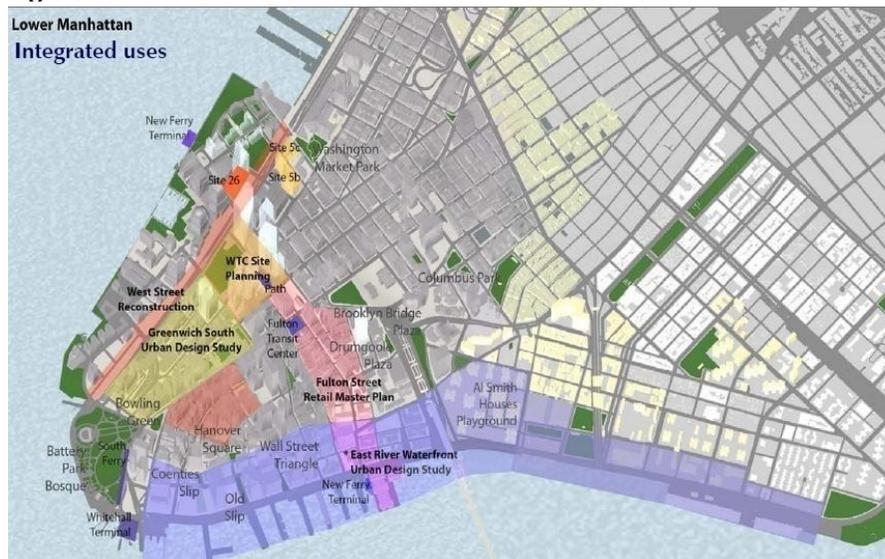
Source: Crain's New York Business. City Facts 2008. <http://www.craainsnewyork.com>.

<sup>75</sup> Future carbon reduction and high-energy cost scenarios, including PlaNYC 2030, the Regional Greenhouse Gas Initiative, and a federal carbon regime all indicate that significant investment in improved energy efficiency for the building stock will be necessary.

## 4.4 WHERE IS THE CONSTRUCTION AND DEVELOPMENT OCCURRING?

The New York City Department of City Planning has outlined major core goals in its *Agency Strategic Plan*.<sup>76</sup> Three of these core goals are to restore and enhance lower Manhattan (see Figure 63), implement the Hudson Yards Master Plan (see Figure 64), and strengthen regional business districts (see Figure 65). Achieving each of the goals requires major construction and development in the New York City region. NYSERDA's programs could aid the organizations involved with these city plans to increase the energy efficiency of the office and housing space detailed in the plans.

**Figure 63. Lower Manhattan Restoration and Enhancement Plan**



Development work in lower Manhattan (New York County) includes the following projects:

- The World Trade Center Site
- Fulton Street Retail Master Plan
- Greenwich South Urban Design Study
- West Street Reconstruction
- East River Waterfront Urban Design Study

Source: New York City Department of City Planning. "Agency Strategic Plan."  
<http://www.nyc.gov/html/dcp/html/about/strategy.shtml>

<sup>76</sup> New York City Department of City Planning. "Agency Strategic Plan."  
<http://www.nyc.gov/html/dcp/html/about/strategy.shtml>

**Figure 64. The Hudson Yards Master Plan**



The Hudson Yards Master Plan includes the creation of 24 million square feet of office space, more than 13,000 housing units and more than 20 acres of public open space.

Source: New York City Department of City Planning. "Agency Strategic Plan."  
<http://www.nyc.gov/html/dcp/html/about/strategy.shtml>

New development and construction has the potential to increase the power demand in New York City. The New York City Building Congress outlines major construction projects and their estimated power requirements by county in their *Electricity Outlook*.<sup>77</sup> A large majority of the additional demand will be located in Manhattan, with about 200 MW of power needed for the Hudson Yards development alone.

In addition to the power needed for future construction projects, the steady growth in electricity demand coupled with the limits of existing supply increases the power needs of the region significantly. The downstate region is already supply-constrained: it is a load pocket and experiences congestion in electrical transmission. Given that the city is in a load pocket and requires an enormous amount of reliable electricity, there is a mandate from the New York State Reliability Council and the New York Independent System Operator that 80% of the power needs of New York City must be generated from within the five boroughs.<sup>78</sup> It is difficult to site a power plant in the downstate region due to the lapse of Article X<sup>79</sup> and fundamental NIMBY concerns, and it is likewise difficult for Con Edison (the local distribution utility) to keep pace with grid upgrades that would accommodate the load growth predicted by the NYC Building Congress and other stakeholders. In this circumstance, energy efficiency as an alternative resource to supply-side options would likely prove cost-effective.

<sup>77</sup> The New York City Building Congress. "Electricity Outlook: Powering New York City's Economic Future, Part 2." Available at <http://www.buildingcongress.com/code/research-analysis.htm>.

<sup>78</sup> New York City Energy Policy Task Force. *New York City Energy Policy: An Electricity Resource Roadmap*. January 2004.

<sup>79</sup> Article X was a law that granted the New York State Board on Electric Generation Siting and the Environment the ability to determine where new power plants could be sited and allowed the fast-tracking of new generation projects. The law expired at the end of 2002; however, state legislators are working to create new legislation that would have similar effects. <http://www.bizjournals.com/albany/stories/2009/03/23/daily20.html>.

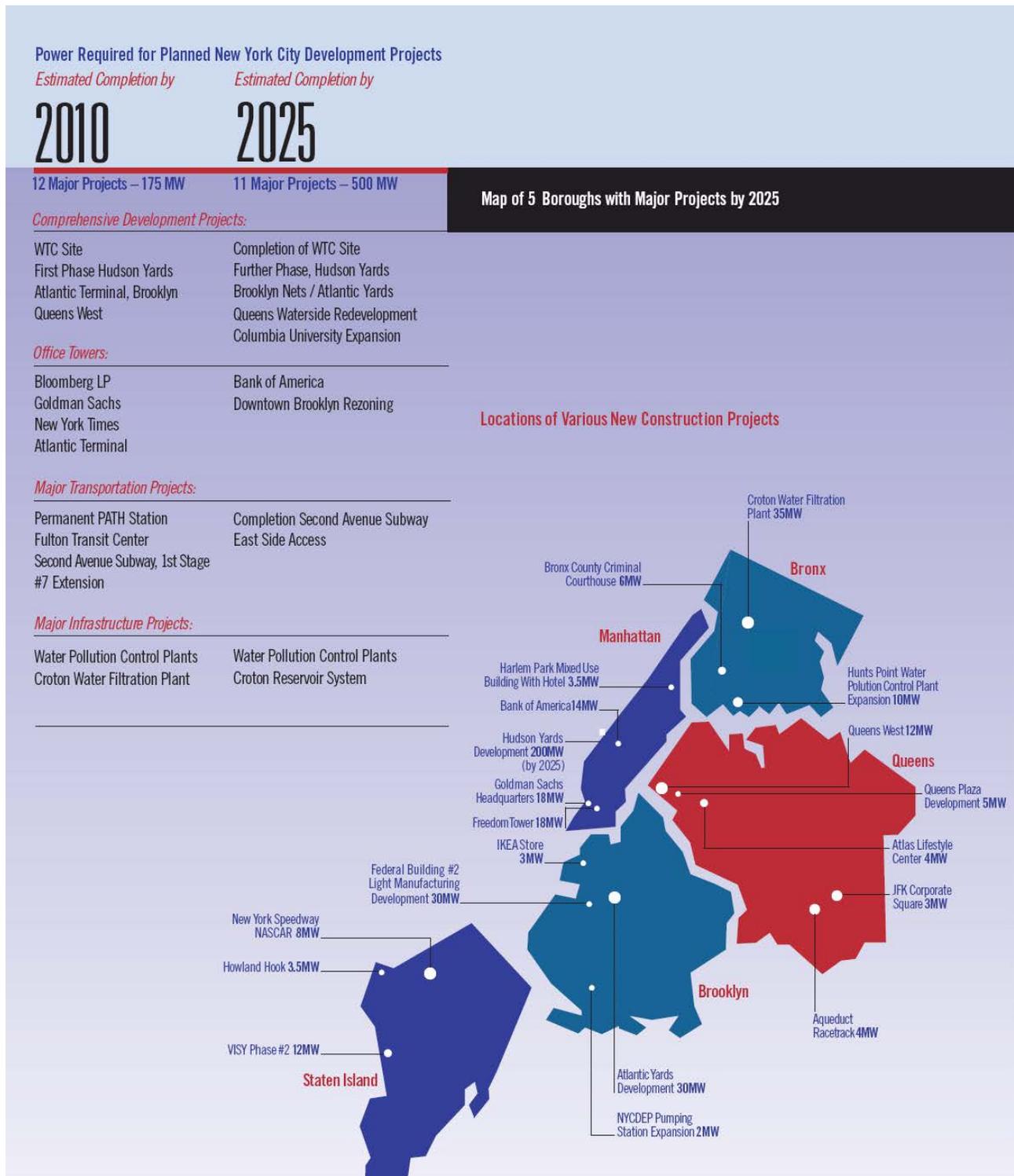
**Figure 65. Regional Business Districts**



Regional business districts of focus include Long Island City and Jamaica (in Queens), downtown Brooklyn (in Kings), the Bronx Center/HUB (in the Bronx), and 125<sup>th</sup> Street Corridor (in New York).

Figure 66 details the load growth due to each planned New York City Development project, as predicted by the NYC Building Congress. A total of 675 MW of additional power will be required by 2025, from a total of 23 major planned projects. Given the expected population (residential) growth in the downstate region, and the load growth resulting from the existing population, the region will require power in amounts greater than that needed primarily for commercial and institutional development.

**Figure 66. Power Required for Planned New York City Development Projects**



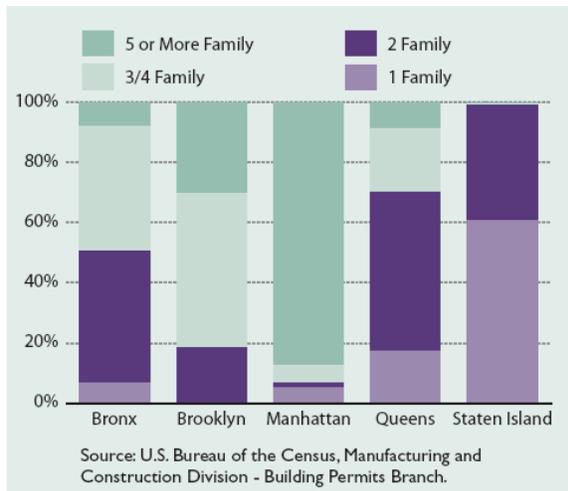
Source: The New York City Building Congress. "Electricity Outlook: Powering New York City's Economic Future, Part 2." Available at <http://www.buildingcongress.com/code/research-analysis.htm>

In addition to commercial development, residential construction also provides opportunities for NYSERDA's programs to provide assistance to homeowners, multifamily building owners, and

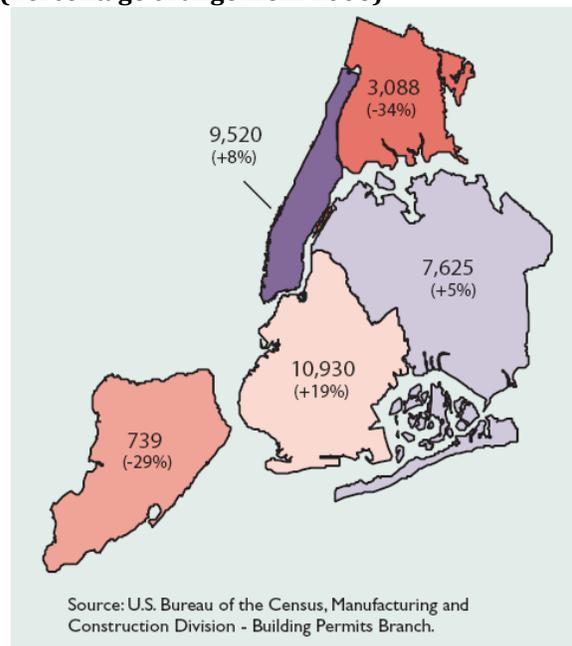
tenants interested in energy efficiency. Residential building permits in 2007 varied greatly by type and magnitude for each New York City county (see Figure 67). Over 80% of the Manhattan (New York County) permits were for '5 or More Family' building, while over half of the permits in Staten Island (Richmond County) were for '1 Family' units. Also, a large percentage of residential permits in Queens and the Bronx were for '2 Family' units. These trends are consistent with the current make-up of the residential building population in each county (see the *Who* section).

By magnitude, the largest number of permits was issued in Kings County in 2007, for 10,930 new residential housing units (see Figure 68). Kings County also showed the greatest percentage change from 2006. Also of note is the Bronx, with the largest decrease in residential permits from 2006 to 2007 (-34%). Again, NYSERDA could leverage these trends in an effort to better target program offerings.

**Figure 67. Residential Permits by Building Type in 2007**



**Figure 68. Residential Permits Issued in 2007 (Percentage change from 2006)**



Source: New York City Rent Guidelines Board. "2008 Housing Supply Report." June 2008.

Construction costs also have a locational aspect associated with them. The New York Building Congress and New York Building Foundation<sup>80</sup> have outlined some issues with construction costs in New York City:

- Construction costs in New York City are much higher than in other locations in the U.S.
- Local regulations and government policies affect the cost of construction.
- Construction in crowded areas with street congestion and high-rise buildings can create added logistical issues.
- Workforce shortages can also increase construction costs.

<sup>80</sup> The New York Building Congress and New York Building Foundation. "New York's Rising Construction Costs: Issues and Solutions."

These issues also have ramifications in terms of system-level energy efficiency projects and represent a barrier to be considered when designing and marketing efficiency programs in the downstate region.

# 5. WHEN

## New Construction and Renovation Cycles

When were downstate  
buildings constructed? Page 110

When were downstate  
buildings renovated? Page 115

When did current renters  
begin their leases? Page 117

When and by how much will  
the peak load change in NYC? Page 118

How does building age affect  
energy intensity? Page 119

The “When” section of the report outlines the age of the buildings in the downstate region, renovation cycles, and renter cycles. Having an understanding of the age of the buildings in the study region provides program administrators with a better understanding of the type of buildings in their program area and the best energy efficiency options for those buildings. In addition, the renovation of a building provides a great opportunity for energy efficiency improvements. Ensuring that building owners are aware of NYSERDA’s programs during the renovation process could increase the uptake of energy efficiency in the downstate region.

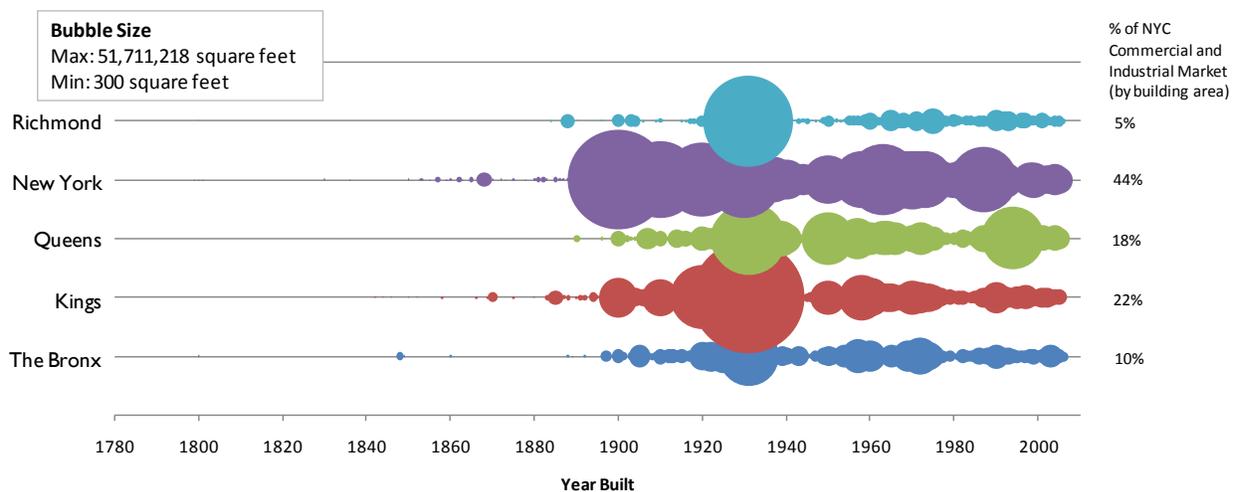
## 5.1 WHEN WERE THE BUILDINGS CONSTRUCTED?

Building construction in the downstate region is divided into a historical view and a current and future view. The historical view provides an overview of the construction activity that has already occurred, where the current and future view provides some forecasts of construction activity.

### A Historical View

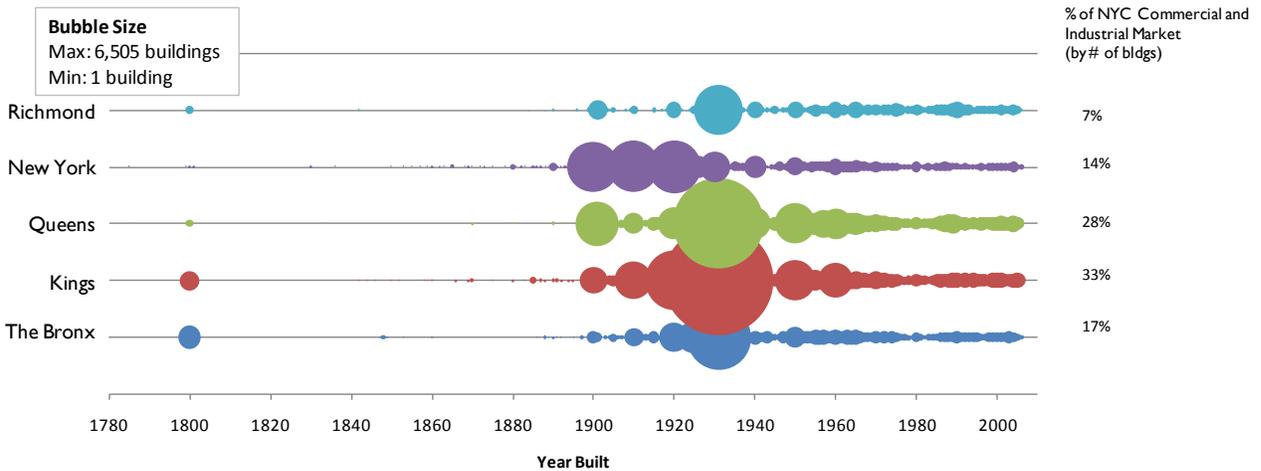
Nearly 40% of the New York City commercial and industrial building area was constructed during the 1920-1945 timeframe. About one-fifth of the building area in New York County was constructed before 1920. Figure 69 shows the new construction in the commercial and industrial sectors. Each dot represents the magnitude of construction by building area. A large dot represents a large number of square feet built that year; a small dot represents a small number of square feet built. Figure 70 also shows the new construction in the commercial and industrial sectors; however, each dot represents the magnitude of construction by number of buildings. Both figures show that the majority of buildings in Richmond, Queens, Kings, and the Bronx are between 60 and 80 years old and the majority of buildings in New York are between 60 and 100 years old. Given the age of the C&I building stock in New York City, numerous energy efficiency retrofit opportunities likely exist.

**Figure 69. Timeline of New Construction in the Commercial and Industrial Sectors, by Building Area (1780-2006)**



Source: MapPLUTO™. Only includes the five counties that make up New York City: The Bronx, Queens, Kings, New York and Richmond.

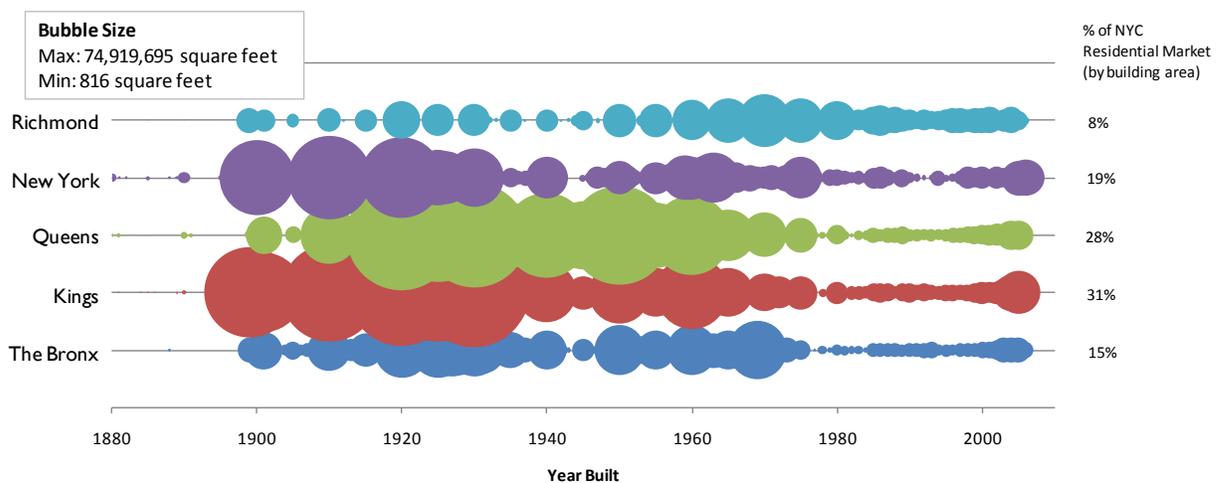
**Figure 70. Timeline of New Construction in the Commercial and Industrial Sectors, by Number of Buildings (1780-2006)**



Source: MapPLUTO™. Only includes the five counties that make up New York City: The Bronx, Queens, Kings, New York and Richmond.

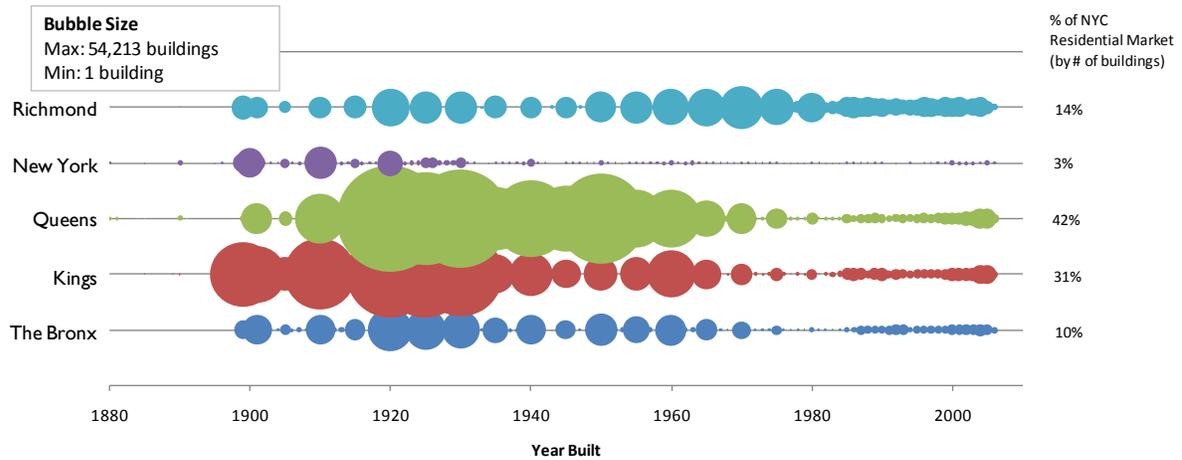
As with the commercial and industrial building area, the majority of the residential building area was constructed during the 1920-1945 timeframe, except for the building area in Richmond County, the majority of which was constructed between 1970 and 1990. A little over one-fifth of the building area in New York County and Kings County was constructed before 1920. Figure 71 shows the new construction in the residential sector. Each dot represents the magnitude of construction by building area. A large dot represents a large number of square feet built that year; a small dot represents a small number of square feet built. Figure 72 also shows the new construction in the residential sector; however, each dot represents the magnitude of construction by number of buildings. Again, given that the majority of residential construction occurred before 1980, numerous opportunities for energy efficiency retrofits likely exist.

**Figure 71. Timeline of New Construction in the Residential Sector, by Building Area (1880-2006)**



Source: MapPLUTO™. Only includes the five counties that make up New York City: The Bronx, Queens, Kings, New York and Richmond

**Figure 72. Timeline of New Construction in the Residential Sector, by Number of Buildings (1880-2006)**



Source: MapPLUTO™. Only includes the five counties that make up New York City: The Bronx, Queens, Kings, New York and Richmond

Figure 73 shows the number of new housing permits issued between 1988 and 2007 in New York City. New housing permits have been on the rise since 1994, though there was a historical decline in permits between 1989 and 1992. In 2007, 31,902 permits were issued for new housing units. Overall, though new housing permits appear to be on the rise in recent years, the number of permits issued in 2008 (as of November) decreased 48% compared to 2007.<sup>81</sup> The financial crisis is making it difficult for developers to receive financing and potential homebuyers to afford mortgage payments. Energy efficiency may be an important option for many who have submitted new housing permits given concerns about the broader economy as well as rising energy prices.

**Figure 73. New Housing Permits in New York City (1988-2007)**



Source: New York City Rent Guidelines Board. "2008 Housing Supply Report." June 2008.

The trend for residential construction in New York City has also trended upward between 1998 and 2007, as shown in Figure 74. Note that the number of residential units constructed is slightly lower

<sup>81</sup> U.S. Census Bureau data, as reported by Crain's New York Business. <http://www.crainnewyork.com/apps/pbcs.dll/article?AID=/20090102/FREE/901029983>.

than the number of housing permits. This upward trend is a combination of significant increases in construction in New York and Kings counties, a slight increase in the Bronx, and decreases in Queens and Richmond counties.

**Figure 74. New Residential Units Constructed in New York City (1998-2007)**



Data are based on the number of final certificates of occupancy issued by the NYC Department of Buildings or equivalent action by the Empire State Development Corp. or the NYS Dormitory Authority.

SOURCE: NYC RENT GUIDELINES BOARD

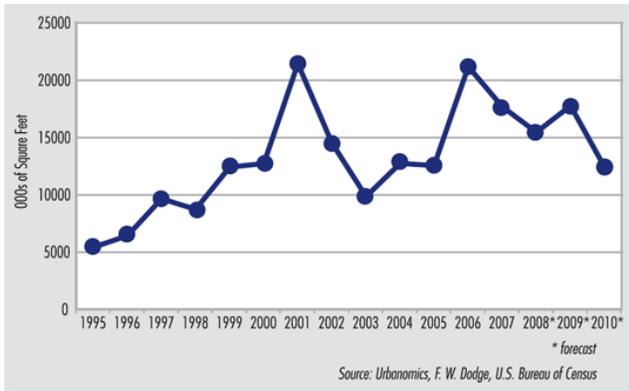
Source: Crain's New York Business. City Facts 2008. Available at <http://www.craigslist.com/apps/pbcs.dll/article?AID=/20080706/FREE/740488465/1130/cityfacts2008&cityfacts=1>.

In summary, the majority of the downstate building stock is between 60 and 90 years old, but construction has been on the rise in the NYC region in the past decade. Opportunities to install energy-efficient equipment could be considerable at the early stages of building construction cycles. The next section provides a closer look at current and future trends.

### **A Current and Future View**

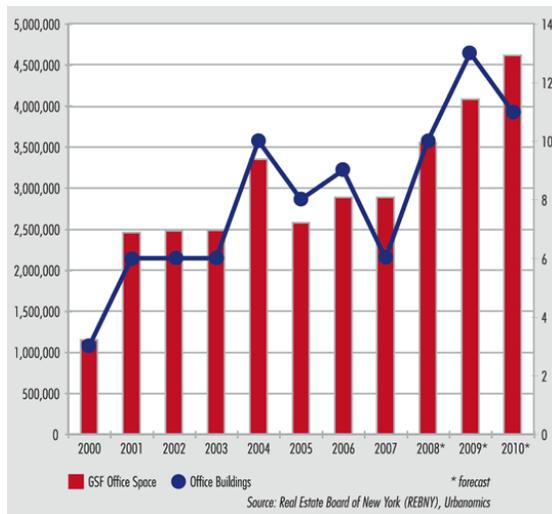
The New York Building Congress forecasts overall construction spending to reach \$93 billion in the five New York City counties in the next three years. This spending comprises construction costs in the government, business and institution sectors. Of note to NYSERDA is that government projects comprise the largest portion of the construction activity. Due to the Bloomberg administration, rezoning in New York City may also spur construction and development. Figure 75 and Figure 76 show that the New York Building Congress is forecasting a decline in overall nonresidential and residential construction activity, while Figure 77 shows a increase in construction activity in the office building sector.

**Figure 75. Nonresidential Construction (1995-2010)**



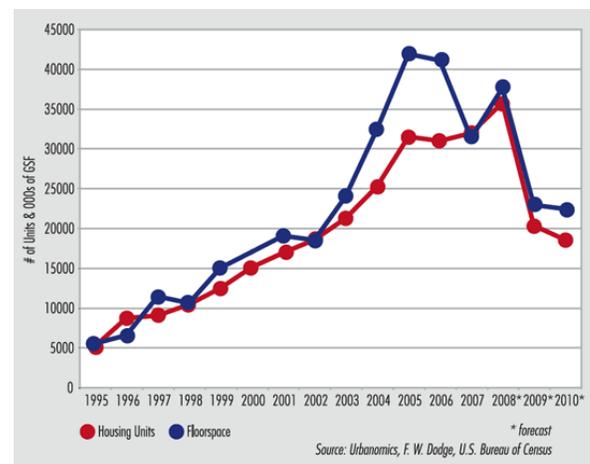
Nonresidential construction followed an upward trend from 1995 through 2001, and then began declining. An increase in construction also occurred between 2003 and 2006. The New York Building Congress forecasts an overall decline in nonresidential construction from 2006 to 2010.

**Figure 77. Office Building Construction (2000-2010)**



In terms of gross square feet of office space, office building construction is forecasted to continue its upward trend and increase in the next three years.

**Figure 76. Residential Construction (1995-2010)**



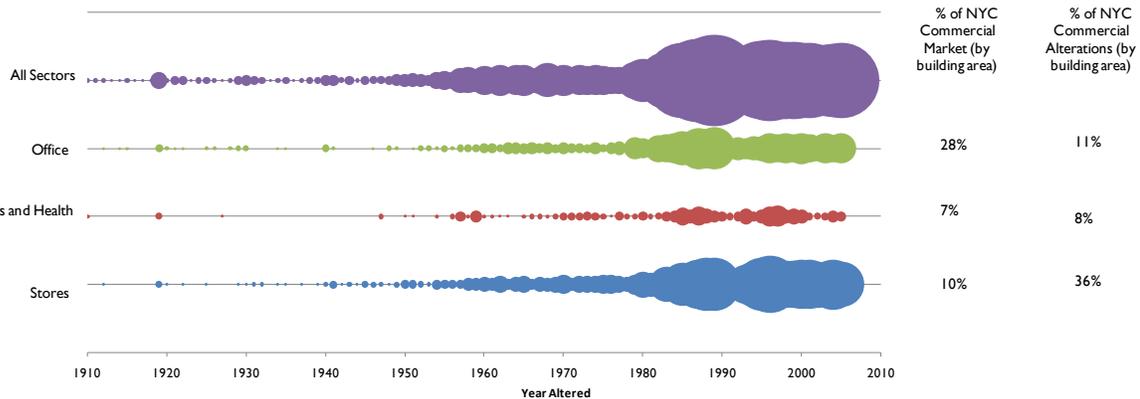
Residential construction has been on a steady rise since 1995; however the New York Building Congress forecasts a decrease in construction in the next three years. Note that the residential sector is more vulnerable than other sectors to the current financial market conditions.

Source: The New York Building Congress. "New York City Construction Outlook: Construction Forecasts 2008-2010."

## 5.2 WHEN WERE THE BUILDINGS ALTERED OR RENOVATED?

In addition to the opportunity for energy-efficient design during new construction, building alterations or renovations can provide an ideal time to incorporate energy efficiency options into existing buildings. Figure 78 shows that the majority of alterations in the commercial sector in New York City occurred in the past 25 years. Though stores comprise a low percentage of the total downstate market by building area (10%), they make up a high percentage of the total alterations (36%). Stores probably renovate more frequently than office buildings and other commercial buildings because retailers tend to be more concerned with leveraging emerging market trends in the hopes of maintaining and expanding existing customer bases. This implies a market opportunity for NYSERDA – program outreach efforts should target store owners and other retailers in the hopes of engaging them with energy efficiency messaging during planned alteration/renovation activity.

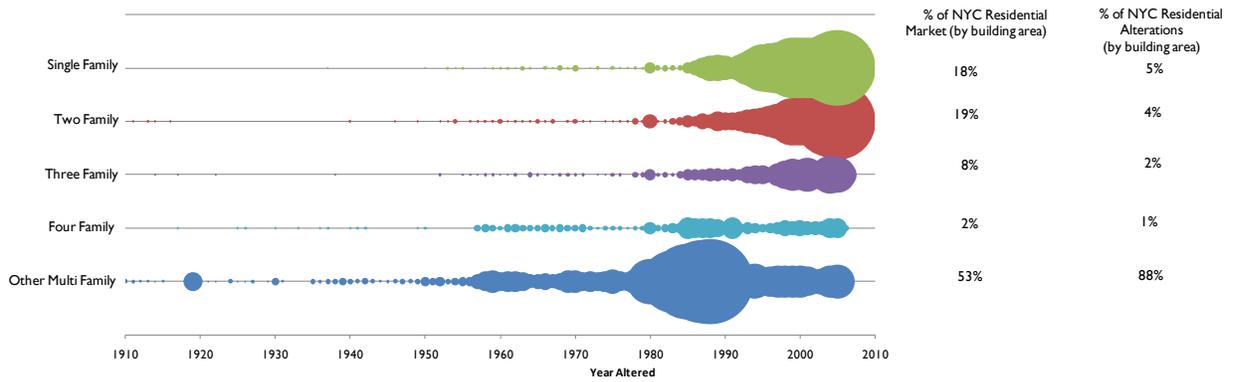
**Figure 78. Alterations in the Commercial Sector (1910-2006)**



Source: MapPLUTO™. Only includes the five counties that make up New York City: The Bronx, Queens, Kings, New York and Richmond. Bubble size indicates number of buildings altered. Percentages are for building area.

Figure 79 shows alterations in the residential sector in New York City from 1910 to 2007. Alterations in the residential sector have primarily occurred in the other multi-family sector (88%). Over half of the other multi-family (*i.e.*, greater than four family) alterations occurred between 1980 and 1989; however, a large percentage of the single family (55%), two family (68%), and three family (58%) alterations occurred between 2000 and 2007. Therefore, though a large majority of alterations occur in the multifamily sector, more recent alterations are occurring in the single, two and three family sectors. Recent activity in these sectors could indicate a need for assistance with energy efficiency and demand response improvements and is worthy of consideration when targeting program outreach efforts.

**Figure 79. Alterations in the Residential Sector (1910-2007)**

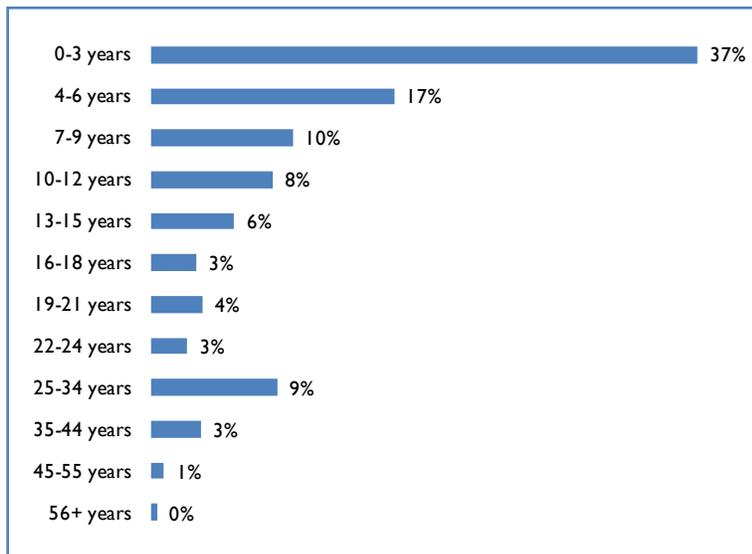


Source: MapPLUTO™. Only includes the five counties that make up New York City: The Bronx, Queens, Kings, New York and Richmond. Bubble size indicates number of buildings altered.

### 5.3 WHEN DID CURRENT RENTERS BEGIN THEIR LEASES?

The highest percentage (37%) of residential tenants have lived in their current units for 0-3 years, as found by the 2005 New York City Housing and Vacancy Survey (Figure 80). Only about 23% of tenants have lived in their current unit more than 15 years. Therefore, the majority of tenants live in their unit on a relatively short-term basis. The turnover of tenant spaces allows for building owners and managers to make improvements on units, which could involve energy efficiency components. However, it also potentially hinders efforts to work with tenants to install energy efficiency upgrades given that many tenants are likely not overly invested in their living spaces.

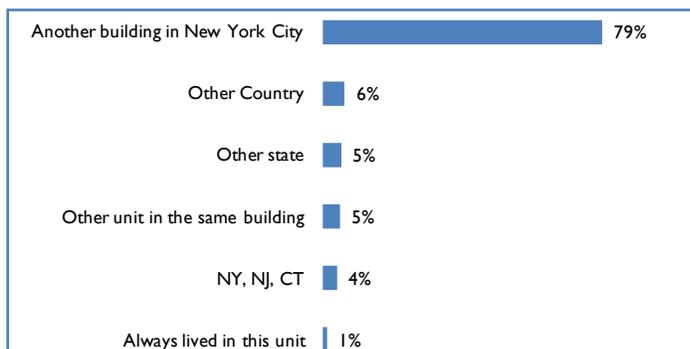
**Figure 80. Length of Time that Residential Tenants Have Lived In/Rented Their Current Unit**



Source: 2005 New York City Housing and Vacancy Survey. Available at <http://www.census.gov/hhes/www/housing/nychvs/nychvs.html>. Note that percentages may not add to 100% due to rounding.

Prior to living in their current place of residence, the majority of tenants lived in another building in New York City. Only a small portion (9%) moved from NY, NJ, CT or another state, about 6% moved from another country, 5% moved from a different unit in the same building, and 1% have always lived in their current unit. Therefore, most tenants in New York City are moving to change buildings rather than to move in or out of New York City.

**Figure 81. Previous Residence Locations of Residential Tenants**

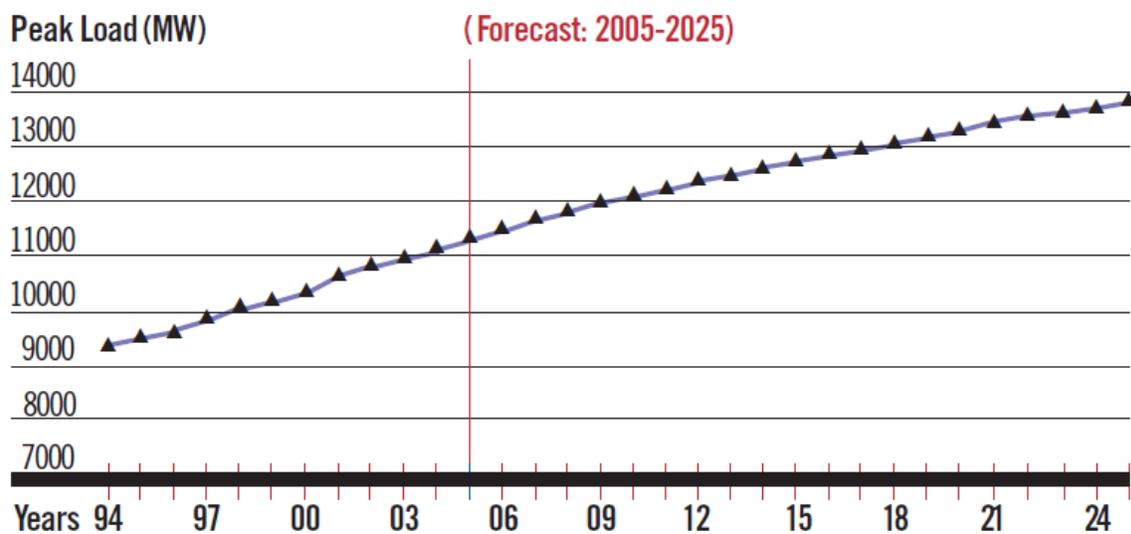


Source: 2005 New York City Housing and Vacancy Survey. Available at <http://www.census.gov/hhes/www/housing/nychvs/nychvs.html>.

## 5.4 WHEN AND BY HOW MUCH WILL PEAK LOAD CHANGE IN NYC?

According to the New York Building Congress, the peak load will continue to increase in NYC, from about 11,500 MW in 2005 to an estimated 14,000 MW in 2025 (Figure 82). Currently, New York City has a locational installed capacity requirement of 80%, set by the NYISO and the New York State Reliability Council, which means that 80% of the peak load must be met with resources within the New York City zone. If the NYISO and the New York State Reliability Council continue this requirement into the future, it may become more difficult to achieve, making energy efficiency and demand response efforts more valuable within the downstate region.

Figure 82. New York City Peak Load (1994-2025)



Source: Con Edison based on Urbanomics forecast.

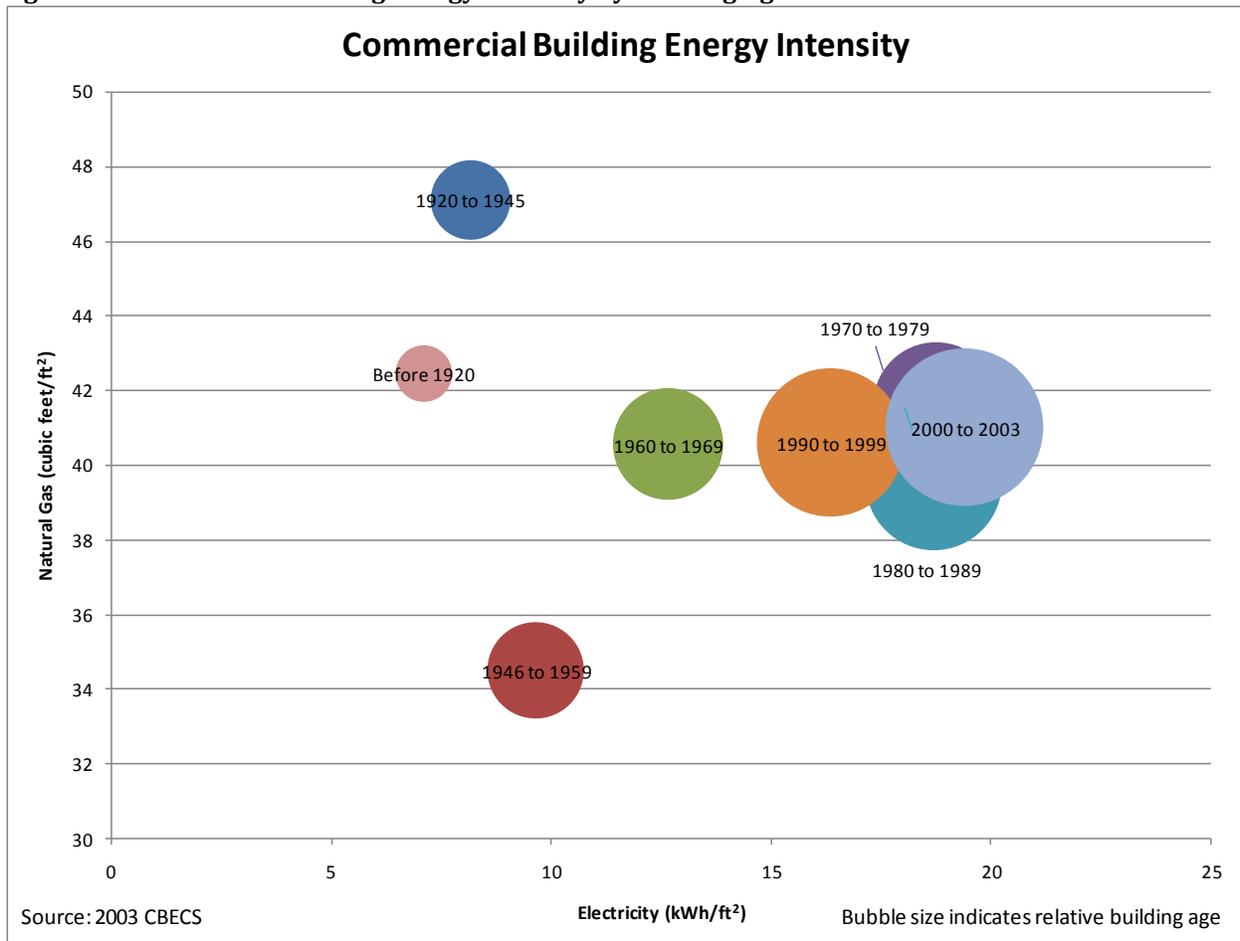
Sources: The New York Building Congress. "Electricity Outlook: Powering New York City's Economic Future- Part 2." Available at <http://www.buildingcongress.com/code/research-analysis.htm>. (for the chart) and the New York Independent System Operator. "Locational Installed Capacity Requirements Review: Covering the New York Control Area for 2007-2008 Capability Year." February 2007.

## 5.5 HOW DOES BUILDING AGE AFFECT ENERGY INTENSITY?

The electricity intensity of buildings in the study region varies between about 7kWh/ft<sup>2</sup> and 20 kWh/ft<sup>2</sup>, while the natural gas intensity varies between 30 ft<sup>3</sup>/ft<sup>2</sup> and 50 ft<sup>3</sup>/ft<sup>2</sup> with the majority of buildings using about 40 ft<sup>3</sup>/ft<sup>2</sup>.<sup>82</sup> The data show that buildings built before 1970 use less electricity per area than those built in 1970 or later. Also, in general, the electricity intensity increases with the age of the building, though this does not hold true for buildings built between 1970 and 1989.

Figure 83 displays the average energy intensity per square foot by building age for commercial buildings. The electric intensity (kWh/ft<sup>2</sup>) is displayed along the x-axis and the natural gas intensity (cubic feet per ft<sup>2</sup>) is displayed along the y-axis; thus, a data point in the upper right quadrant would have high energy intensity for both electricity and natural gas. The size of the bubble corresponds with the year built category (*i.e.*, larger bubbles represent the newer building categories). Note that the energy intensity is based on the average of the Middle Atlantic census division average and Climate Zone 3 average because the downstate New York region is located in the overlap of those two geographic divisions.

**Figure 83. Commercial Building Energy Intensity by Building Age**



<sup>82</sup> U.S. Department of Energy, Energy Information Administration. *2003 Commercial Building Energy Consumption Survey (CBECS)*.

Although the correlation between “younger” buildings and relatively greater energy intensity may seem counter-intuitive initially, there may be several reasons for why this correlation exists. For example, many of the older, pre-war buildings in New York City were built with thicker walls, which provide better insulation during both the heating and the cooling season. Older buildings also tend to have fewer electrical outlets, and are therefore less accommodating of greater appliance and electronic plug loads. Relatively older buildings also have fewer (or none) elevators, which use a significant amount of energy. While these reasons are just among the many that may offer an explanation as to why the age-intensity correlation exists in buildings in the New York downstate region, the energy intensity of any given individual building is dependent on many factors that are also independent of the age of that building.

# 6. WHY

## Discussion and Conclusions

### 6.1 MARKET CHARACTERIZATION

Several key themes emerged over the course of this market characterization study. First and foremost, *the downstate region is heterogeneous and complex*. There is a large amount of building area (5.8 billion square feet), of which 56% is residential, 30% is commercial, 2% is industrial, and 12% is mixed/unknown. However, this mix of building uses varies significantly by county, with New York County containing nearly 42% of all commercial space in the region. Buildings tend to be large, multi-tenant buildings in densely constructed neighborhoods, posing difficulties with construction/renovation as well as energy efficiency decision-making.

*There is a complex web of relationships between different market actors with roles in the energy efficiency decision making process: architects/engineers, contractors, developers, building owners, property management firms, regulatory agencies, co-op boards, and tenants. Most leases are structured so that tenants, not building owners, are responsible for energy costs; thus, landlords have limited direct incentive to invest in system-level energy efficiency upgrades.*

*Limited space and high demand have created market conditions that favor landlords over tenants, resulting in high rents and limited negotiating power for tenants. However, recent turmoil in the financial sector and significant job losses in the region have resulted in rising vacancy rates and lower rents which may shift the power dynamic at least in the near term, particularly in the office sector. Building owners may consider energy efficiency upgrades or green building improvements as ways to differentiate themselves from the competition as tenants looking for new space suddenly have more options, provided that the owners receive assistance in funding the upfront costs of these improvements.*

*The residential market in downstate New York is significantly different than upstate: just 19% of downstate households are in single-family homes, as opposed to 66% of upstate households. Over half (58%) of downstate households are in multi-family buildings with five or more units. Few of these multi-unit buildings are sub-metered, meaning that household energy costs bear little*

relationship to actual household energy usage (conservers likely end up subsidizing the bills of heavy users in the building). Consumer utility costs in the region have grown significantly over the past five years. There are more renters than homeowners in every downstate county except Richmond and Westchester. Homeowners living in condominiums and co-op buildings have fewer options for energy efficiency upgrades than single-family homeowners because modifications to the shared spaces and equipment or conversion to sub-metering requires approval of the majority of owners in the building.

*Major new construction projects are occurring within the region*, including major redevelopment of lower Manhattan (former World Trade Center site and environs) and Hudson Yards (near the Javits Convention Center in Manhattan), as well as regional business districts such as Jamaica (Queens), downtown Brooklyn (Kings County), the Bronx Center, and the 125<sup>th</sup> Street Corridor (New York County). Targeting energy efficiency to areas that are already undergoing extensive construction projects saves both time and money by obviating the need for future retrofit projects and avoiding future permitting and logistical hassles.

## **6.2 MARKET ASSESSMENT**

The MCA team conducted interviews with three key market actor groups: commercial property management firms, energy service companies (ESCOs), and demand response (DR) providers. This section discusses the key themes that emerged in these primary data collection efforts.

*ESCOs and Demand Response Providers.* The ESCOs and demand response providers active in the downstate region are a diverse group in terms of tenure, geographic focus, and business models. Some of these market actors are very new to the market, while others have been established for ten years or more; some focus on the downstate region, but most are active throughout the state. Many of the ESCOs and some of the demand response providers feel that their time is best spent focusing on their core service, whereas other firms strive to gain a competitive advantage by providing comprehensive energy services, in some cases including energy efficiency. NYSERDA should recognize the diversity of the ESCOs and demand response providers active in the downstate region and develop personalized outreach strategies to appeal to each market actor's unique customer base and business model.

ESCO and DR provider firms that already seek to provide comprehensive services to their customers may be the highest priority for NYSERDA to target, as they are likely to be the most proactive in recommending NYSERDA to their customers. In the long run, the firms that provide some commodity-related services (but not energy efficiency) may have the greatest potential for working with NYSERDA, as they actively seek ways to differentiate themselves from the competition, but likely need more assistance from NYSERDA on identifying and promoting specific energy efficiency opportunities. Overall, the ESCOs and demand response providers were receptive to the idea of working with NYSERDA, but most also indicated that NYSERDA would need to actively reach out and engage them in specific discussions about opportunities to better serve their customers through the promotion of energy efficiency services.

*Commercial Property Management Firms.* The interviewed commercial property management firms are more homogenous than the other market actors interviewed: most focus 90%-100% on the downstate New York market, and most have been established for 25 years or longer. These market actors are sophisticated, well-established, and influential; the interviewed property managers control over 300 million square feet of commercial building space in the downstate region. Most of

the interviewed property managers have worked with NYSERDA in the past, and noted that a lack of customer awareness as well as perceived high costs and complexity of NYSERDA programs are barriers to their clients participating in NYSERDA programs. However, these market actors have incentives to assist their clients with NYSERDA program participation. Property managers are actively looking for ways to improve the financial performance of their real estate portfolio. They have observed that tenants are increasingly interested in occupying LEED-certified buildings and reducing their carbon footprint. They acknowledge that energy performance is not the highest priority when drawing up lease agreements, but also note that most leases include a mechanism for passing capital costs on to the tenants, which would allow them to pursue energy efficiency upgrades. Property managers are interested in establishing working relationships with NYSERDA staff to pursue program opportunities for their clients on an ongoing basis, and would likely be proactive partners.

Representatives from organizations within each market actor group expressed interest in more direct and sustained relationships with NYSERDA. This represents an important opportunity for NYSERDA to work with a relatively small number of individual organizations to influence the energy efficiency investment decisions affecting substantial amounts of building area in the downstate region. In order to fully capitalize on this opportunity, NYSERDA will need to acknowledge the heterogeneous nature of these organizations, both within and across the respective market actor groups, and employ targeted outreach and relationship-building activities accordingly. Given the magnitude of the potential opportunity, it may well make sense for NYSERDA to dedicate specific staff to these activities such that personal relationships are cultivated with key decision-makers in each organization and then nurtured and maintained in a manner befitting such joint business engagements.

# 7. APPENDICES

## APPENDIX A: PLUTO DATABASE BUILDING TYPES

Throughout this report, the Summit Blue team has presented data for New York City from the MapPLUTO™ database. This database includes a field titled “Building Class,” which was used to classify the buildings into “Major Building Classes,” including Residential, Commercial, Industrial, and Mixed, and “Minor Building Classes,” including categories such as One Family, Government, and Stores. Table 13 shows the link between the “Building Class” in the MapPLUTO™ database and the “Major Building Classes” and “Minor Building Classes” used by Summit Blue in the report.

**Table 13. MapPLUTO™ building class codes and building classes as defined by Summit Blue Consulting and used in this report**

PLUTO Building Class Code	Major Building Class	Minor Building Class
No Class Listed	Unknown	Unknown
A0	Residential	One Family
A1	Residential	One Family
A2	Residential	One Family
A3	Residential	One Family
A4	Residential	One Family
A5	Residential	One Family
A6	Residential	One Family
A7	Residential	One Family
A8	Residential	One Family
A9	Residential	One Family
B1	Residential	Two Family
B2	Residential	Two Family
B3	Residential	Two Family
B9	Residential	Two Family
C0	Residential	Three Family
C1	Residential	Multi Family
C2	Residential	Multi Family
C3	Residential	Four Family
C4	Residential	Multi Family
C5	Residential	Multi Family
C6	Residential	Multi Family
C7	Mixed	Mixed
C8	Residential	Multi Family
C9	Residential	Multi Family
D0	Residential	Multi Family
D1	Residential	Multi Family
D2	Residential	Multi Family
D3	Residential	Multi Family
D4	Residential	Multi Family

<b>PLUTO Building Class Code</b>	<b>Major Building Class</b>	<b>Minor Building Class</b>
D5	Residential	Multi Family
D6	Mixed	Mixed
D7	Mixed	Mixed
D8	Residential	Multi Family
D9	Residential	Multi Family
E1	Commercial	Warehouse
E3	Commercial	Warehouse
E4	Commercial	Warehouse
E6	Commercial	Government
E7	Commercial	Warehouse
E9	Commercial	Warehouse
F1	Industrial	Manufacturing
F2	Industrial	Other Industrial
F4	Industrial	Other Industrial
F5	Industrial	Manufacturing
F8	Industrial	Other Industrial
F9	Industrial	Other Industrial
G0	Commercial	Garage / Gas Station
G1	Commercial	Garage / Gas Station
G2	Commercial	Garage / Gas Station
G3	Commercial	Garage / Gas Station
G4	Commercial	Garage / Gas Station
G5	Commercial	Garage / Gas Station
G6	Commercial	Garage / Gas Station
G7	Commercial	Garage / Gas Station
G8	Commercial	Garage / Gas Station
G9	Commercial	Garage / Gas Station
H1	Commercial	Hotels
H2	Commercial	Hotels
H3	Commercial	Hotels
H4	Commercial	Hotels
H5	Commercial	Hotels
H6	Commercial	Hotels
H7	Commercial	Hotels
H8	Commercial	Hotels
H9	Commercial	Hotels
I1	Commercial	Hospitals and Health
I2	Commercial	Hospitals and Health
I3	Commercial	Hospitals and Health

<b>PLUTO Building Class Code</b>	<b>Major Building Class</b>	<b>Minor Building Class</b>
I4	Commercial	Hospitals and Health
I5	Commercial	Hospitals and Health
I6	Commercial	Hospitals and Health
I7	Commercial	Hospitals and Health
I9	Commercial	Hospitals and Health
J1	Commercial	Theatres
J2	Commercial	Theatres
J3	Commercial	Theatres
J4	Commercial	Theatres
J5	Commercial	Theatres
J6	Commercial	Theatres
J7	Commercial	Theatres
J8	Commercial	Theatres
J9	Commercial	Theatres
K1	Commercial	Stores
K2	Commercial	Stores
K3	Commercial	Stores
K4	Commercial	Stores
K5	Commercial	Stores
K6	Commercial	Stores
K7	Commercial	Stores
K9	Commercial	Stores
L1	Mixed	Mixed
L2	Mixed	Mixed
L3	Mixed	Mixed
L8	Mixed	Mixed
L9	Mixed	Mixed
M1	Commercial	Churches, Synagogues, Etc.
M2	Commercial	Churches, Synagogues, Etc.
M3	Commercial	Churches, Synagogues, Etc.
M4	Commercial	Churches, Synagogues, Etc.
M9	Commercial	Churches, Synagogues, Etc.
N1	Commercial	Asylums and Homes
N2	Commercial	Asylums and Homes
N3	Commercial	Asylums and Homes
N4	Commercial	Asylums and Homes
N9	Commercial	Asylums and Homes
O1	Commercial	Office
O2	Commercial	Office

<b>PLUTO Building Class Code</b>	<b>Major Building Class</b>	<b>Minor Building Class</b>
O3	Commercial	Office
O4	Commercial	Office
O5	Commercial	Office
O6	Commercial	Office
O7	Commercial	Office
O8	Mixed	Mixed
O9	Commercial	Office
P1	Commercial	Public Assembly and Cultural
P2	Commercial	Public Assembly and Cultural
P3	Commercial	Public Assembly and Cultural
P4	Commercial	Public Assembly and Cultural
P5	Commercial	Public Assembly and Cultural
P6	Commercial	Public Assembly and Cultural
P7	Commercial	Public Assembly and Cultural
P8	Commercial	Public Assembly and Cultural
P9	Commercial	Public Assembly and Cultural
Q0	Commercial	Outdoor Recreation
Q1	Commercial	Outdoor Recreation
Q2	Commercial	Outdoor Recreation
Q3	Commercial	Outdoor Recreation
Q4	Commercial	Outdoor Recreation
Q5	Commercial	Outdoor Recreation
Q6	Commercial	Outdoor Recreation
Q7	Commercial	Outdoor Recreation
Q8	Commercial	Outdoor Recreation
Q9	Commercial	Outdoor Recreation
R0	Residential	Multi Family
R1	Residential	Multi Family
R2	Residential	Multi Family
R3	Residential	Multi Family
R4	Residential	Multi Family
R5	Commercial	Other Commercial
R6	Residential	Multi Family
R7	Commercial	Other Commercial
R8	Mixed	Mixed
R9	Residential	Multi Family
RC	Commercial	Other Commercial
RM	Mixed	Mixed
RR	Residential	Multi Family

<b>PLUTO Building Class Code</b>	<b>Major Building Class</b>	<b>Minor Building Class</b>
S0	Mixed	Mixed
S1	Mixed	Mixed
S2	Mixed	Mixed
S3	Mixed	Mixed
S4	Mixed	Mixed
S5	Mixed	Mixed
S9	Mixed	Mixed
T1	Commercial	Transportation
T2	Commercial	Transportation
T9	Commercial	Transportation
U0	Commercial	Utilities
U1	Commercial	Utilities
U2	Commercial	Utilities
U3	Commercial	Utilities
U4	Commercial	Utilities
U5	Commercial	Utilities
U6	Commercial	Utilities
U7	Commercial	Utilities
U8	Commercial	Utilities
U9	Commercial	Utilities
V0	Commercial	Vacant
V1	Commercial	Vacant
V2	Commercial	Vacant
V3	Commercial	Vacant
V4	Commercial	Vacant
V5	Commercial	Vacant
V6	Commercial	Vacant
V7	Commercial	Vacant
V8	Commercial	Vacant
V9	Commercial	Vacant
W1	Commercial	Education
W2	Commercial	Education
W3	Commercial	Education
W4	Commercial	Education
W5	Commercial	Education
W6	Commercial	Education
W7	Commercial	Education
W8	Commercial	Education
W9	Commercial	Education

<b>PLUTO Building Class Code</b>	<b>Major Building Class</b>	<b>Minor Building Class</b>
Y1	Commercial	Government
Y2	Commercial	Government
Y3	Commercial	Government
Y4	Commercial	Government
Y5	Commercial	Government
Y6	Commercial	Government
Y7	Commercial	Government
Y8	Commercial	Government
Y9	Commercial	Government
Z0	Commercial	Other Commercial
Z1	Commercial	Government
Z2	Commercial	Other Commercial
Z3	Commercial	Government
Z4	Commercial	Other Commercial
Z5	Commercial	Other Commercial
Z6	Commercial	Other Commercial
Z7	Commercial	Other Commercial
Z8	Commercial	Other Commercial
Z9	Commercial	Other Commercial

**APPENDIX B: SURVEY INSTRUMENTS**

# MC&A Downstate Study

## Property Management Firm Interview Guide

### Introduction

Hello, my name is \_\_\_\_\_, and I'm calling from \_\_\_\_\_ on behalf of the New York State Energy Research and Development Authority (NYSERDA).

Our firm is conducting research for NYSERDA on the market for energy efficiency products and services in New York City to improve NYSERDA program offerings in the downstate region. As an independent research firm, \_\_\_\_\_ does not intend to report your responses in any way that would reveal your identity or the identity of your organization.

We are contacting a sample of property management firms in New York State to solicit their views regarding market dynamics and trends in New York City and Westchester County. For the purposes of this study, the terms "Downstate" and "New York City" are assumed to include the five boroughs of New York City (if needed, Manhattan, Brooklyn, Queens, the Bronx, and Staten Island), as well as Westchester County. I have you listed as the contact for **PM FIRM NAME**. Are you the appropriate person to discuss issues related to market dynamics and trends in New York City and Westchester County?

[IF YES, CONTINUE WITH GENERAL INSTRUCTIONS.]

This research effort should take approximately 20 minutes to complete. It is structured as an interview rather than a simple telephone survey in order to encourage active discussion. If I ask you about topics about which you don't know or the same response applies, tell me and we'll move on to the next question. Do you have any questions for me before we start?

[IF YES BUT NOW IS NOT A CONVENIENT TIME TO TALK, SCHEDULE A FOLLOW-UP DATE AND TIME, AND RECORD IT BELOW.]

[IF NO] Who at your company can best speak about market dynamics and trends in New York City and Westchester County?

[RECORD THE NAME AND NUMBER OF THE NEW CONTACT PERSON BELOW THEN FOLLOW UP WITH HIM OR HER.]

1. **APPOINTMENT DATE AND TIME:** \_\_\_\_\_

2. **NEW CONTACT NAME AND PHONE NUMBER:**

Name: \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_ Extension: \_\_\_\_\_

## Background

1. My records indicate that PM FIRM NAME is an active property management firm in NYC. Is this true? **[IF YES, GO TO Q3; IF NO, GO TO Q2]**
2. Has PM FIRM NAME ever been an active property management firm in NYC **[IF YES, GO TO Q2a; IF NO, TERMINATE]**
  - a. When did PM FIRM NAME exit the NYC market?
  - b. Why did PM FIRM NAME exit the NYC market? **[TERMINATE]**
3. How long has PM FIRM NAME been an active property manager in NYC?
  - a. Approximately how many square feet does PM FIRM NAME manage in NYC? Can you provide an estimated breakdown of this total square footage by market sector (i.e., Residential, Commercial, and Industrial)? **[PROBE FOR NUMBER OF BUILDINGS IF UNABLE TO BE MORE SPECIFIC]**
4. Does PM FIRM NAME primarily serve specific market sectors? **[IF YES, GO TO Q4a; IF NO, GO TO Q5]**
  - a. Which market sectors are targeted? Probe for residential, commercial, and/or industrial and then further disaggregation if possible (i.e., multifamily, offices, education, etc.)
  - b. Why does PM FIRM NAME target these market sectors?
5. Is PM FIRM NAME active in other parts of the state or only NYC? **[IF YES, GO TO Q5a; IF NO, GO TO Q5c]**
  - a. Approximately what percent of PM FIRM NAME's total revenues are generated in NYC?
  - b. Have you observed any noticeable differences between your accounts in NYC versus those in the rest of the state? Explain – probe for differences in firmographics, energy sophistication, etc. **[READ Q3d]**
  - c. Why did PM FIRM NAME opt to focus on NYC only?
  - d. **[STATE “For the remainder of this interview, please focus your answers on PM FIRM NAME's downstate (i.e., NYC) properties.” THEN GO TO Q6]**
6. Based on your knowledge of the NYC marketplace, approximately what percent of total building area is leased vs. owner-occupied?
  - a. Are these percentages consistent across market sectors (i.e., Residential, Commercial, and Industrial) or have you observed noticeable differences within sectors? **[EXPLAIN]**

- b. Have you noticed any trends regarding the total volume of leased vs. owner-occupied space over the past five years, or have these percentages remained fairly constant? **[EXPLAIN – PROBE FOR DRIVERS]**
- 7. Within **PM FIRM NAME's** building portfolio, approximately what percent of total building area is master-metered vs. sub-metered?
  - a. Are these percentages consistent across market sectors (i.e., Residential, Commercial, and Industrial) or have you observed noticeable differences within sectors? **[EXPLAIN]**
  - b. Have you noticed any trends regarding the total volume of master-metered vs. sub-metered space over the past five years, or have these percentages remained fairly constant? **[EXPLAIN – PROBE FOR DRIVERS]**
- 8. Within **PM FIRM NAME's** building portfolio, which lease structures are most prevalent (e.g., triple net, modified gross, etc.)?
  - a. Is this true across market sectors (i.e., Residential, Commercial, and Industrial) or are different lease structures more prevalent within specific market sectors? **[EXPLAIN]**
  - b. How do these prevailing lease structure(s) accommodate electric utility costs?
  - c. Has **PM FIRM NAME** negotiated any leases to directly address shared (tenant/landlord) investment in energy efficiency? **[IF YES, EXPLAIN]**

## Energy Considerations

- 9. In your opinion, how important are energy performance considerations and EE/green building opportunities to **PM FIRM NAME's** clientele relative to electric commodity costs? Please rank importance of energy performance and EE/green building opportunities on a 1 – 5 scale where 1 means not at all important (i.e., much less important than electric commodity costs) and 5 means critically important (i.e., much more important than electric commodity costs).
  - a. Has this always been the case or have you noticed a change in the relative importance of energy performance considerations and EE/green building opportunities over the past five years? **[EXPLAIN – PROBE FOR DRIVERS]**
- 10. Has the number of **PM FIRM NAME's** clients interested in pursuing EE/green building opportunities changed over the past three years? **[IF YES, EXPLAIN – PROBE FOR INCREASED VS. DECREASED, PRIMARY DRIVERS, ETC.]**
  - a. **[IF NUMBER HAS INCREASED]** How does **PM FIRM NAME** accommodate this increased interest in pursuing EE/green building opportunities? **[EXPLAIN – PROBE FOR IN-HOUSE STAFF, EXTERNAL THIRD-PARTY PROVIDER, REFERRED TO NYSEDA/UTILITY PROGRAM, ETC]**
  - b. In your opinion, what are the primary market drivers toward greater EE?

11. Does **PM FIRM NAME** provide EE/green building products and services? **[IF YES, CONTINUE. IF NO, SKIP TO Q12]**
- a. What types of EE/green building products and services does **PM FIRM NAME** provide?
  - b. Why does **PM FIRM NAME** provide these EE/green building products and services? Probe as needed (i.e., meet customer demand, obtain competitive advantage, additional revenue stream, etc.)
  - c. How does **PM FIRM NAME's** business model accommodate EE/green building products and services? **IF NEEDED** - that is, how does **PM FIRM NAME** realize financial or other value through the provision of EE/green building products and services?
  - d. Has **PM FIRM NAME's** position in the downstate market been strengthened as a result of offering EE/green building products and services to its clients? **[EXPLAIN - PROBE FOR ISSUES REGARDING DIVERSIFICATION OF MARKET OPPORTUNITIES, REVENUE STREAMS, ETC.]**
  - e. Has the provision of EE/green building products and services met internal profitability targets and/or expectations for level of work over the past three years? **[EXPLAIN]**
12. Does **PM FIRM NAME** refer its customers to external service providers or NYSERDA/Utility programs that assist with EE opportunities? **[IF YES, CONTINUE. IF NO, SKIP TO Q12b]**
- a. Which entities do you typically refer your clients to, in order to accommodate their interest in pursuing EE/green building opportunities?
    - i. Why do you refer your clients to these specific entities?
    - ii. Do you work with these entities to help your clients select the most appropriate program/incentive options?
    - iii. Does **PM FIRM NAME** plan to expand its service offerings in the near future to capitalize on this increased interest in EE/green building opportunities or will **PM FIRM NAME** continue to outsource this function? **[EXPLAIN]**
  - b. Why have you not referred your customers to any external service providers or NYSERDA/Utility programs that assist with EE opportunities?

## **Awareness of NYSERDA**

13. Prior to this call, were you aware of the New York State Energy Research and Development Authority, also known as NYSERDA? **[IF YES, GO TO Q14; IF NO, STATE "NYSERDA ADMINISTERS PROGRAMS TO INCREASE THE ENERGY EFFICIENCY AND REDUCE PEAK ENERGY DEMAND IN NEW AND EXISTING COMMERCIAL, INDUSTRIAL, AND RESIDENTIAL BUILDINGS THROUGHOUT NEW YORK STATE," THEN GO TO Q16]**

14. Please rate your current familiarity with NYSERDA on a 4-point scale where 1 means “not at all familiar” and 4 means “extremely familiar.” **[IF Q14 = 1, GO TO Q16]**
15. Has **PM FIRM NAME** previously participated in a NYSERDA EE/green building program either directly or on the behalf of one of its clients? **[IF YES, GO TO Q11a; IF NO, GO TO Q12]**
  - a. Please explain – Probe for program names, participation paths, etc.
16. In general, how would you rate **PM FIRM NAME’s** clientele’s current familiarity with NYSERDA using the same 4-point scale where 1 means “not at all familiar” and 4 means “extremely familiar.”
17. To the best of your knowledge, what % of **PM FIRM NAME’s** clientele has participated in a NYSERDA EE/green building program? **[IF DK, GO TO Q18]**
  - a. Has this % changed over the past three years? **[IF YES, EXPLAIN – PROBE FOR INCREASED VS. DECREASED, PRIMARY DRIVERS, ETC.]**
18. Based on your experience in the NYC market, what do you see as the primary barriers preventing **PM FIRM NAME’s** clientele from pursuing EE/green building opportunities?
19. Would **PM FIRM NAME** be interested in working with NYSERDA to initiate/expand the provision of EE/green building services to its client base? **[IF YES, GO TO Q19a; IF NO, GO TO Q19b]**
  - a. What steps could NYSERDA take to help **PM FIRM NAME** initiate/expand the provision of EE/green building services to its clients?
  - b. Why not?
20. Do you have any other thoughts or insights you would like to share regarding energy issues in NYC?

Those are all of the questions I have for you today. Thank you for your time.

# MC&A Downstate Study

## DR Service Provider Interview Guide

### Introduction

Hello, my name is \_\_\_\_\_, and I'm calling from \_\_\_\_\_ on behalf of the New York State Energy Research and Development Authority (NYSERDA).

Our firm is conducting research for NYSERDA on the market for energy efficiency products and services in New York City to improve NYSERDA program offerings in the downstate region. As an independent research firm, \_\_\_\_\_ does not intend to report your responses in any way that would reveal your identity or the identity of your organization.

We are contacting a sample of Demand Response (DR) Service Providers in New York State to solicit their views regarding market dynamics and trends in New York City and Westchester County. For the purposes of this study, the terms "Downstate" and "New York City" are assumed to include the five boroughs of New York City (if needed, Manhattan, Brooklyn, Queens, the Bronx, and Staten Island), as well as Westchester County. I have you listed as the contact for **DR PROVIDER NAME**. Are you the appropriate person to discuss issues related to the market for energy efficiency products and services in NYC as well as broader market trends?

#### **[IF YES, CONTINUE WITH GENERAL INSTRUCTIONS.]**

This research effort should take approximately 20 minutes to complete. It is structured as an interview rather than a simple telephone survey in order to encourage active discussion. If I ask you about topics about which you don't know or the same response applies, tell me and we'll move on to the next question. Do you have any questions for me before we start?

#### **[IF YES BUT NOW IS NOT A CONVENIENT TIME TO TALK, SCHEDULE A FOLLOW-UP DATE AND TIME, AND RECORD IT BELOW.]**

**[IF NO]** Who at your company can best speak about issues related to the market for energy efficiency products and services in NYC?

#### **[RECORD THE NAME AND NUMBER OF THE NEW CONTACT PERSON BELOW THEN FOLLOW UP WITH HIM OR HER.]**

1. APPOINTMENT DATE AND TIME:
2. NEW CONTACT NAME AND PHONE NUMBER:

Name: \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_ Extension: \_\_\_\_\_

## Background

1. First, my records indicate that DR PROVIDER NAME is currently an active DR service provider in NYC. Is this correct? **[IF YES, GO TO Q2; IF NO, GO TO Q3]**
2. How long has DR PROVIDER NAME been an active DR service provider in NYC?
  - a. Approximately how many customer accounts does DR PROVIDER NAME have in NYC? Can you provide an estimated breakdown of accounts by customer class (i.e., Residential, Commercial, and Industrial)?
  - b. Approximately how much enrolled load (MW) do these customer accounts represent? Can you provide an estimated breakdown of enrolled load by customer class (i.e., Residential, Commercial, and Industrial)?
  - c. Is DR PROVIDER NAME active in other parts of the state or only NYC? **[IF YES, GO TO Q2Ci; IF NO, GO TO Q2Civ]**
    - i. Approximately what percent of DR PROVIDER NAME's total revenues are generated in NYC?
    - ii. Have you observed any noticeable differences between your accounts in NYC versus those in the rest of the state? Explain – probe for differences in firmographics, energy sophistication, etc.
    - iii. State “For the remainder of this interview, please focus your answers on DR PROVIDER NAME's downstate (i.e., NYC) customer base.”
    - iv. Why did DR PROVIDER NAME opt to focus on NYC only? **[SKIP TO NEXT SECTION]**
3. Was DR PROVIDER NAME ever an active DR service provider in NYC? **[IF YES, GO TO Q3a; IF NO, THANK RESPONDENT FOR THEIR TIME AND TERMINATE INTERVIEW]**
  - a. When did DR PROVIDER NAME exit the NYC market?
  - b. Why did DR PROVIDER NAME exit the NYC market?

## Marketing/Recruiting Practices

4. Does DR PROVIDER NAME primarily serve specific market sectors? **[IF YES, GO TO Q4a; IF NO, GO TO Q5]**
  - a. Which market sectors are targeted? Probe for residential, commercial, and/or industrial and then further disaggregation if possible (i.e., multifamily, offices, education, etc.)
  - b. Why does DR PROVIDER NAME target these market sectors?

5. How does DR PROVIDER NAME recruit new customers? Probe for specific marketing channels including media buys, networking, etc.
6. Does DR PROVIDER NAME partner with other organizations to extend the reach of its customer marketing and recruiting efforts? For example, does DR PROVIDER NAME enter into co-branding arrangements with Con Edison when marketing to potential customers? **[IF YES, GO TO Q6a; IF NO, GO TO Q7]**
- Which organization(s) does DR PROVIDER NAME primarily partner with to extend the reach of its marketing and recruiting efforts?
  - Why does DR PROVIDER NAME partner with these organizations? Probe for issues like access to new markets, strong name recognition, etc.
  - Are there other organizations that DR PROVIDER NAME does not currently partner with but would like to do so to extend marketing reach? **[IF YES, EXPLAIN]**
7. Does DR PROVIDER NAME's marketing strategy emphasize the provision of energy efficiency (EE) products and services as a value-added service to potential customers? **[IF YES, GO TO Q7a; IF NO, ASK "WHY NOT" THEN SKIP TO NEXT SECTION]**
- How is this done? What EE products and services are promoted?
  - In your opinion, does marketing EE products and services to potential customers provide DR PROVIDER NAME with a competitive advantage in NYC?
  - Please explain – why or why not? Probe for ways in which DR PROVIDER NAME obtains competitive advantage (i.e., leverage current market trends, provide customers with hedge against energy price volatility, etc.)

## Value-added Services

8. **[IF Q7 = YES, INTRODUCE QUESTION WITH "OTHER THAN EE SERVICES"]** Does DR PROVIDER NAME provide its customers with any value-added services in addition to DR services? **[IF YES, GO TO Q8a; IF NO, ASK "WHY NOT" THEN SKIP TO Q9]**
- What additional services are provided?
9. In your opinion, how important are energy performance considerations and EE opportunities to DR PROVIDER NAME's customers relative to electric commodity costs? Please rank importance of energy performance and EE opportunities on a 1 – 5 scale where 1 means not at all important (i.e., much less important than electric commodity costs) and 5 means critically important (i.e., much more important than electric commodity costs).
10. **[IF Q7 = YES OR Q8a = EE SERVICES, STATE "YOU INDICATED THAT DR PROVIDER NAME PROVIDES EE PRODUCTS AND SERVICES AS A VALUE-ADDED SERVICE TO CUSTOMERS," THEN CONTINUE TO Q10a]** Does DR PROVIDER NAME provide EE products and services as a value-added service to customers? **[IF YES, GO TO Q10a; IF NO, GO TO Q14]**
- What types of EE products and services does DR PROVIDER NAME provide?

- b. Why does DR PROVIDER NAME provide these EE products and services? Probe as needed (i.e., meet customer demand, obtain competitive advantage, additional revenue stream, etc.)
- c. How does DR PROVIDER NAME provide these EE products and services - in-house staff, external third-party provider, referred to NYSERDA/utility program, etc.? **[IF REFERRED TO NYSERDA/UTILITY PROGRAM, ASK “DOES DR PROVIDER NAME ASSIST ITS CUSTOMERS WITH SELECTING THE MOST APPROPRIATE PROGRAM/INCENTIVE OPTION?”]**
- d. Approximately what % of DR PROVIDER NAME’s customer base takes advantage of EE product and service offerings?
- e. Has this % increased/decreased over the past three years? **[IF NO, GO TO Q11]**
- f. In your opinion, what are the primary market drivers toward greater EE?
11. How does DR PROVIDER NAME’s business model accommodate EE products and services? IF NEEDED - that is, how does DR PROVIDER NAME realize financial or other value through the provision of EE products and services?
12. Has DR PROVIDER NAME’s position in the downstate market been strengthened as a result of offering EE products and services to its customer base? **[IF NO, GO TO Q13]**
- a. Please explain – Probe for issues regarding diversification of market opportunities, revenue streams, etc. or reasons that EE may have harmed DR PROVIDER NAME’s relative position
13. Has the provision of EE products and services met internal profitability targets and/or expectations for level of work over the past three years? **[IF YES, GO TO Q13a; IF NO, GO TO Q13b]**
- a. Does DR PROVIDER NAME plan to expand its EE product and service offerings in the near future? Explain.
- b. Why do you think this is; that is, what have been the primary impediments?
14. **[DO NOT ASK IF RESPONDENT ANSWERED Q11 - Q13 ]** Why does DR PROVIDER NAME not provide EE products and services to potential customers? Probe for issues such as insufficient demand, financial disincentive, not core competency, etc.
- a. Approximately what % of DR PROVIDER NAME’s customer base has expressed interest in pursuing EE opportunities? **[IF % = 0, SKIP TO NEXT SECTION]**
- b. How do you respond to these customers?
- c. Does DR PROVIDER NAME plan to expand its service offerings in the near future to capitalize on this customer interest in EE? Explain.

## Awareness of NYSERDA

15. Prior to this call, were you aware of the New York State Energy Research and Development Authority, also known as NYSERDA? **[IF YES, GO TO Q16; IF NO, STATE “NYSERDA ADMINISTERS PROGRAMS TO INCREASE THE ENERGY EFFICIENCY AND REDUCE PEAK ENERGY DEMAND IN NEW AND EXISTING COMMERCIAL, INDUSTRIAL, AND RESIDENTIAL BUILDINGS THROUGHOUT NEW YORK STATE,” THEN GO TO Q20]**

16. Please rate your current familiarity with NYSERDA on a 4-point scale where 1 means “not at all familiar” and 4 means “extremely familiar.”

17. Has DR PROVIDER NAME previously participated in a NYSERDA EE program either directly or on the behalf of one of its customers? **[IF YES, GO TO Q17a; IF NO, GO TO Q18]**

a. Please explain – Probe for program names, participation paths, etc.

18. In general, how would you rate DR PROVIDER NAME’s customers’ current familiarity with NYSERDA using the same 4-point scale where 1 means “not at all familiar” and 4 means “extremely familiar.”

19. To the best of your knowledge, what % of DR PROVIDER NAME’s customer base has participated in a NYSERDA EE program? **[IF DK, GO TO Q20]**

a. Has this % changed over the past three years? **[IF YES, EXPLAIN – PROBE FOR INCREASED VS. DECREASED, PRIMARY DRIVERS, ETC.]**

20. Does DR PROVIDER NAME ever refer customers who are interested in pursuing EE opportunities to other organizations implementing EE programs (i.e., NYSERDA, Con Edison, NYPA, NYC, etc.) **[IF YES, EXPLAIN]**

21. In your opinion, has the number of DR PROVIDER NAME’s customers interested in pursuing EE opportunities changed over the past three years? **[IF YES, EXPLAIN – PROBE FOR INCREASED VS. DECREASED, PRIMARY DRIVERS, ETC.]**

22. Based on your experience in the NYC market, what do you see as the primary barriers preventing DR PROVIDER NAME’s customers from pursuing EE opportunities?

23. Would DR PROVIDER NAME be interested in working with NYSERDA to initiate/expand the provision of EE services to its customer base? **[IF YES, GO TO Q23a; IF NO, GO TO Q23b]**

a. What steps could NYSERDA take to help DR PROVIDER NAME initiate/expand the provision of EE services to its customer base?

b. Why not?

24. Do you have any other thoughts or insights you would like to share regarding energy issues in NYC?

Those are all of the questions I have for you today. Thank you for your time.

# MC&A Downstate Study

## ESCO Interview Guide

### Introduction

Hello, my name is \_\_\_\_\_, and I'm calling from \_\_\_\_\_ on behalf of the New York State Energy Research and Development Authority (NYSERDA).

Our firm is conducting research for NYSERDA on the market for energy efficiency products and services in New York City to improve NYSERDA program offerings in the downstate region. As an independent research firm, \_\_\_\_\_ does not intend to report your responses in any way that would reveal your identity or the identity of your organization.

We are contacting a sample of ESCOs in New York State to solicit their views regarding market dynamics and trends in New York City and Westchester County. For the purposes of this study, the terms "Downstate" and "New York City" are assumed to include the five boroughs of New York City (if needed, Manhattan, Brooklyn, Queens, the Bronx, and Staten Island), as well as Westchester County. I have you listed as the contact for **ESCO NAME**. Are you the appropriate person to discuss issues related to the market for energy efficiency products and services in NYC as well as broader market trends?

[IF YES, CONTINUE WITH GENERAL INSTRUCTIONS.]

This research effort should take approximately 20 minutes to complete. It is structured as an interview rather than a simple telephone survey in order to encourage active discussion. If I ask you about topics about which you don't know or the same response applies, tell me and we'll move on to the next question. Do you have any questions for me before we start?

[IF YES BUT NOW IS NOT A CONVENIENT TIME TO TALK, SCHEDULE A FOLLOW-UP DATE AND TIME, AND RECORD IT BELOW.]

[IF NO] Who at your company can best speak about issues related to the market for energy efficiency products and services in NYC?

[RECORD THE NAME AND NUMBER OF THE NEW CONTACT PERSON BELOW THEN FOLLOW UP WITH HIM OR HER.]

3. **APPOINTMENT DATE AND TIME:** \_\_\_\_\_

4. **NEW CONTACT NAME AND PHONE NUMBER:**

Name: \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_ Extension: \_\_\_\_\_

## Background

21. First, my records indicate that ESCO NAME is currently an active electric commodity supplier in NYC. Is this correct? **[IF YES, GO TO Q2; IF NO, GO TO Q3]**
22. How long has ESCO NAME been an active electric commodity supplier in NYC?
- Approximately how many customer accounts does ESCO NAME have in NYC? Can you provide an estimated breakdown of accounts by customer class (i.e., Residential, Commercial, and Industrial)?
  - Approximately how much enrolled load (MWh) do these customer accounts represent? Can you provide an estimated breakdown of enrolled load by customer class (i.e., Residential, Commercial, and Industrial)?
  - Is ESCO NAME active in other parts of the state or only NYC? **[IF YES, GO TO Q2Ci; IF NO, GO TO Q2Civ]**
    - Approximately what percent of ESCO NAME's total revenues are generated in NYC?
    - Have you observed any noticeable differences between your accounts in NYC versus those in the rest of the state? Explain – probe for differences in firmographics, energy sophistication, etc.
    - State “For the remainder of this interview, please focus your answers on ESCO NAME's downstate (i.e., NYC) customer base.”**
    - Why did ESCO NAME opt to focus on NYC only? **[SKIP TO NEXT SECTION]**
23. Was ESCO NAME ever an active electric commodity supplier in NYC? **[IF YES, GO TO Q3a; IF NO, THANK RESPONDENT FOR THEIR TIME AND TERMINATE INTERVIEW]**
- When did ESCO NAME exit the NYC market?
  - Why did ESCO NAME exit the NYC market?

## Marketing/Recruiting Practices

24. Does ESCO NAME primarily serve specific market sectors? **[IF YES, GO TO Q4a; IF NO, GO TO Q5]**
- Which market sectors are targeted? Probe for residential, commercial, and/or industrial and then further disaggregation if possible (i.e., multifamily, offices, education, etc.)
  - Why does ESCO NAME target these market sectors?

25. How does **ESCO NAME** recruit new customers? Probe for specific marketing channels including media buys, networking, etc.
26. Does **ESCO NAME** partner with other organizations to extend the reach of its customer marketing and recruiting efforts? For example, does **ESCO NAME** enter into co-branding arrangements with Con Edison when marketing to potential customers? **[IF YES, GO TO Q6a; IF NO, GO TO Q7]**
- Which organization(s) does **ESCO NAME** primarily partner with to extend the reach of its marketing and recruiting efforts?
  - Why does **ESCO NAME** partner with these organizations? Probe for issues like access to new markets, strong name recognition, etc.
  - Are there other organizations that **ESCO NAME** does not currently partner with but would like to do so to extend marketing reach? **[IF YES, EXPLAIN]**
27. Does **ESCO NAME's** marketing strategy emphasize the provision of energy efficiency (EE) products and services as a value-added service to potential customers? **[IF YES, GO TO Q7a; IF NO, ASK "WHY NOT" THEN SKIP TO NEXT SECTION]**
- How is this done? What EE products and services are promoted?
  - In your opinion, does marketing EE products and services to potential customers provide **ESCO NAME** with a competitive advantage in NYC?
  - Please explain – why or why not? Probe for ways in which obtains competitive advantage (i.e., leverage current market trends, provide customers with hedge against energy price volatility, etc.)

## Value-added Services

28. **[IF Q7 = YES, INTRODUCE QUESTION WITH "OTHER THAN EE SERVICES"]** Does **ESCO NAME** provide its customers with any value-added services in addition to electric commodity? **[IF YES, GO TO Q8a; IF NO, ASK "WHY NOT" THEN SKIP TO Q9]**
- What additional services are provided?
29. In your opinion, how important are energy performance considerations and EE opportunities to **ESCO NAME's** customers relative to electric commodity costs? Please rank importance of energy performance and EE opportunities on a 1 – 5 scale where 1 means not at all important (i.e., much less important than electric commodity costs) and 5 means critically important (i.e., much more important than electric commodity costs).
30. **[IF Q7 = YES OR Q8a = EE SERVICES, STATE "YOU INDICATED THAT **ESCO NAME** PROVIDES EE PRODUCTS AND SERVICES AS A VALUE-ADDED SERVICE TO CUSTOMERS," THEN CONTINUE TO Q10a]** Does **ESCO NAME** provide EE products and services as a value-added service to customers? **[IF YES, GO TO Q10a; IF NO, GO TO Q14]**
- What types of EE products and services does **ESCO NAME** provide?

- b. Why does ESCO NAME provide these EE products and services? Probe as needed (i.e., meet customer demand, obtain competitive advantage, additional revenue stream, etc.)
  - c. How does ESCO NAME provide these EE products and services - in-house staff, external third-party provider, referred to NYSERDA/utility program, etc.? **[IF REFERRED TO NYSERDA/UTILITY PROGRAM, ASK “DOES ESCO NAME ASSIST ITS CUSTOMERS WITH SELECTING THE MOST APPROPRIATE PROGRAM/INCENTIVE OPTION?”]**
  - d. Approximately what % of ESCO NAME's customer base takes advantage of EE product and service offerings?
  - e. Has this % increased/decreased over the past three years? **[IF NO, GO TO Q11]**
  - f. In your opinion, what are the primary market drivers toward greater EE?
31. How does ESCO NAME's business model accommodate EE products and services? **IF NEEDED** - that is, how does ESCO NAME realize financial or other value through the provision of EE products and services?
32. Has ESCO NAME's position in the downstate market been strengthened as a result of offering EE products and services to its customer base? **[IF NO, GO TO Q13]**
- a. Please explain – Probe for issues regarding diversification of market opportunities, revenue streams, etc. or reasons that EE may have harmed ESCO NAME's relative position
33. Has the provision of EE products and services met internal profitability targets and/or expectations for level of work over the past three years? **[IF YES, GO TO Q13a; IF NO, GO TO Q13b]**
- a. Does ESCO NAME plan to expand its EE product and service offerings in the near future? Explain.
  - b. Why do you think this is; that is, what have been the primary impediments?
34. **[DO NOT ASK IF RESPONDENT ANSWERED Q11 - Q13 ]** Why does ESCO NAME not provide EE products and services to potential customers? Probe for issues such as insufficient demand, financial disincentive, not core competency, etc.
- a. Approximately what % of ESCO NAME's customer base has expressed interest in pursuing EE opportunities? **[IF % = 0, SKIP TO NEXT SECTION]**
  - b. How do you respond to these customers?
  - c. Does ESCO NAME plan to expand its service offerings in the near future to capitalize on this customer interest in EE? Explain.

## Awareness of NYSERDA

35. Prior to this call, were you aware of the New York State Energy Research and Development Authority, also known as NYSERDA? **[IF YES, GO TO Q16; IF NO, STATE “NYSERDA ADMINISTERS PROGRAMS TO INCREASE THE ENERGY EFFICIENCY AND REDUCE PEAK ENERGY DEMAND IN NEW AND EXISTING COMMERCIAL, INDUSTRIAL, AND RESIDENTIAL BUILDINGS THROUGHOUT NEW YORK STATE,” THEN GO TO Q20]**
36. Please rate your current familiarity with NYSERDA on a 4-point scale where 1 means “not at all familiar” and 4 means “extremely familiar.”
37. Has ESCO NAME previously participated in a NYSERDA EE program either directly or on the behalf of one of its customers? **[IF YES, GO TO Q17a; IF NO, GO TO Q18]**
- Please explain – Probe for program names, participation paths, etc.
38. In general, how would you rate ESCO NAME’s customers’ current familiarity with NYSERDA using the same 4-point scale where 1 means “not at all familiar” and 4 means “extremely familiar.”
39. To the best of your knowledge, what % of ESCO NAME’s customer base has participated in a NYSERDA EE program? **[IF DK, GO TO Q20]**
- Has this % changed over the past three years? **[IF YES, EXPLAIN – PROBE FOR INCREASED VS. DECREASED, PRIMARY DRIVERS, ETC.]**
40. Does ESCO NAME ever refer customers who are interested in pursuing EE opportunities to other organizations implementing EE programs (i.e., NYSERDA, Con Edison, NYPA, NYC, etc.) **[IF YES, EXPLAIN]**
41. In your opinion, has the number of ESCO NAME’s customers interested in pursuing EE opportunities changed over the past three years? **[IF YES, EXPLAIN – PROBE FOR INCREASED VS. DECREASED, PRIMARY DRIVERS, ETC.]**
42. Based on your experience in the NYC market, what do you see as the primary barriers preventing ESCO NAME’s customers from pursuing EE opportunities?
43. Would ESCO NAME be interested in working with NYSERDA to initiate/expand the provision of EE services to its customer base? **[IF YES, GO TO Q23a; IF NO, GO TO Q23b]**
- What steps could NYSERDA take to help ESCO NAME initiate/expand the provision of EE services to its customer base?
  - Why not?
44. Do you have any other thoughts or insights you would like to share regarding energy issues in NYC?

Those are all of the questions I have for you today. Thank you for your time.