



# Business Partners Commercial Lighting Program: Market Characterization and Assessment Report

## Presented to

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Authority



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## Table of Contents

Executive Summary .....	1
1 Introduction and Background.....	16
1.1 Report Format.....	16
1.2 Evaluation Objectives.....	17
1.3 Program Overview .....	18
2 Data Sources and Methods.....	20
2.1 Primary Data Collection.....	20
3 Market Characterization .....	32
3.1 Market Structure .....	32
3.2 Summary of Program Activity and Accomplishments .....	36
3.3 Method for Estimating Lighting Retrofit Market Size.....	64
4 Market Assessment.....	74
4.1 Summary of Market Actor Activity.....	74
4.2 Awareness and Knowledge of Energy-Efficient Lighting Opportunities.....	87
4.3 Energy Efficiency-Related Decision-Making and Sales Strategies.....	91
4.4 Business Partners Program’s Interaction with the Market .....	99
4.5 Barriers .....	102
4.6 Market Size .....	107
5 Key Findings and Actions for Consideration by Program Staff .....	110
5.1 Key Findings.....	110
5.2 Actions for Consideration by Program Staff.....	113

6 Appendix A. Data Collection Instruments..... 115

7 Appendix B. Logic Model..... 143

## List of Tables

Table 1. Business Partners SBC III Program Goals and Achievements.....	4
Table 2. Participating Business Partners Survey Sample Disposition.....	24
Table 3. Summary of Participant Survey Completes by Business Type.....	25
Table 4. Summary of Outcomes Related to Participating Companies Prioritized for Interview Completion.....	25
Table 5. Non-Participating Business Partners Sample Characteristics.....	26
Table 6. Non-Participating Business Partners Survey Sample Disposition.....	29
Table 7. Summary of Non-Participant Survey Completes by Business Type.....	30
Table 8. Business Partners SBC III Program Goals and Achievements.....	37
Table 9. Estimated Market Penetration of CLP.....	39
Table 10. Participation of Out-of-State Companies.....	40
Table 11. Summary of Incentive Projects by Facility Type.....	44
Table 12. Comparison of Lighting Technology Features.....	57
Table 13. Potential for Lighting Upgrades (ft <sup>2</sup> ) Relative to Total Statewide Building Space.....	66
Table 14. Summary of Lighting Upgrade Market Potential Among Buildings Eligible for SBC Program Participation.....	70
Table 15. Summary of Lighting Upgrade Market Potential, by County.....	70
Table 16. Number of Projects, Contractors.....	75
Table 17. Number of Projects, Distributors.....	75
Table 18. Market Sectors that Participants Work In.....	84
Table 19. Presentation of Energy-Efficient Lighting as Standard or Option.....	97
Table 20. Reasons for Not Applying for Project Incentives.....	107

## List of Figures

Figure 1. Business Partners by Type.....	5
Figure 2. Project Activity by Partner Type and Geography.....	7
Figure 3. Market Actors Targeted by Commercial Lighting Program .....	32
Figure 4. Lighting Project Process Steps and Key Players .....	35
Figure 5. Business Partners by Type.....	38
Figure 6. Mode of Lighting Training for Business Partners.....	42
Figure 7. Project Activity by Utility Territory .....	43
Figure 8. Summary of Incentive Projects by Type of Business Partner .....	45
Figure 9. Project Activity by Partner Type and Geography.....	46
Figure 10. Time Line of Federal and State Policies Affecting New York State Commercial Lighting Market.....	47
Figure 11. Standards for General Service Fluorescent Lamps, Effective July, 2012.....	49
Figure 12. Projected Shift in Installed Stock of 4-Foot Fluorescent Lamps Following 2012 Standards Change .....	50
Figure 13. Improvements in Commercial Building Energy Codes Over Time .....	52
Figure 14. Halogen Lamp Manufacturer Lamp Market Penetration Forecast .....	58
Figure 15. Energy Use in Commercial Buildings by Use Type .....	59
Figure 16. Triggers for Green Building Investment Among Building Owners.....	60
Figure 17. Green Building Market Size .....	62
Figure 18. Overview of Approach Used to Assess Lighting Upgrade Market Size .....	65
Figure 19. New York State Lighting Upgrade Market Potential, and Commercial Lighting Program Project Activity by Participant Business Type.....	68
Figure 20. Distribution of Projects per Company.....	76
Figure 21. Project Breakdowns by Type .....	77

Figure 22. Average Lighting Project Size (square feet).....	78
Figure 23. Frequency of Using Energy-Efficient Lighting on Projects (Contractors).....	79
Figure 24. Frequency of Using Energy-Efficient Lighting on Projects (Distributors) .....	80
Figure 25. Use of Lighting Products (Contractors).....	81
Figure 26. Use of Lighting Products (Distributors).....	83
Figure 27. Market Sectors with Most Work by Participation Status.....	85
Figure 28. Frequency of Using Lighting Designers on Projects (Contractors) .....	86
Figure 29. Frequency of Using Lighting Designers on Projects (Distributors).....	87
Figure 30. Familiarity with Tools and Techniques for Energy-Efficient Lighting (Contractors)..	88
Figure 31. Familiarity with Tools and Techniques for Energy-Efficient Lighting (Distributors) .	89
Figure 32. Confidence in Communicating about Energy Efficiency.....	90
Figure 33. Lighting Certifications .....	91
Figure 34. Energy Efficiency as a Business Priority .....	92
Figure 35. Driving Force Behind Decision to Promote Energy Efficiency (Contractors).....	93
Figure 36. Driving Force Behind Decision to Promote Energy Efficiency (Distributors) .....	94
Figure 37. Greatest Influence on Lighting System Specifications .....	95
Figure 38. Strategies Used to Improve Energy Efficiency Sales (Contractors).....	98
Figure 39. Strategies Used to Improve Energy Efficiency Sales (Distributors) .....	99
Figure 40. Greatest Impact on Energy Efficiency Market by Participation Status, Contractors .	100
Figure 41. Greatest Impact on Energy Efficiency Market by Participation Status, Distributors	101
Figure 42. Changes in Energy Efficiency Stocking Practices Since Participation in the CLP.....	102
Figure 43. Barriers to Energy Efficiency in Lighting Projects, Participating Contractors.....	103
Figure 44. Barriers to Energy Efficiency in Lighting Projects, Non-Participating Contractors...	103

Figure 45. Major Barriers by Participation Status, Contractors ..... 104

Figure 46. Barriers to Energy Efficiency in Lighting Projects, Participating Distributors ..... 104

Figure 47. Barriers to Energy Efficiency in Lighting Projects, Non-Participating Distributors.. 105

Figure 48. Major Barriers by Participation Status, Distributors ..... 106

Figure 49. Percentage of Commercial Floor Space Appropriate for Lighting Upgrades (Contractors)..... 108

Figure 50. Percentage of Commercial Floor Space Appropriate for Lighting Upgrades (Distributors) ..... 109

## Executive Summary

This report presents the results of the Market Characterization and Assessment (MCA) evaluation of the **New York Energy \$mart<sup>SM</sup>** Commercial Lighting Program (CLP), a component of the Business Partners Program. The MCA evaluation results can be used to assess progress towards meeting the Public Service Commission's (PSC's) public policy goals under which New York State Energy and Research Development Authority (NYSERDA) operates, as well as the institutional goals NYSEDA has established to move markets towards improved energy efficiency. In addition, the evaluation results can be used by NYSEDA program staff and managers to adjust program offerings as needed to ensure continual improvement of the programs and increase market interest and uptake of existing program offerings.

The Business Partners Program includes three primary functional components: Commercial Lighting, Building Performance and Heating, Ventilating, and Air Conditioning (HVAC), and Motor Systems.<sup>1</sup> The MCA team focused its evaluation activities on the lighting component of the program because of that component's majority contribution to program savings, its large population of participants, and its established presence in the market.<sup>2</sup> The primary goals of this CLP evaluation effort are consistent with those of the overall NYSEDA MCA evaluation:

1. Develop a comprehensive understanding of current and emerging markets for commercial lighting in New York (e.g., market structure and actors).
2. Provide baseline and background information required by NYSEDA to define and deliver the CLP program to target markets.
3. Track changes in the commercial lighting market over time.

The Business Partners Program works to increase the availability and sales of high-quality, energy-efficient products and services by supporting the companies that supply such products and services to commercial and industrial end-use customers. The types of entities eligible to participate in the CLP include lighting contractors, distributors, designers, architects, engineers, energy services companies (ESCOs), interior designers, and manufacturer representatives.

Participating companies agree to work with NYSEDA to promote energy-efficient products and services. In exchange, they receive training in advanced lighting system design practices,

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<sup>1</sup> A fourth component of the program, "Innovative Opportunities," is a minor program component, and has not been included in MCA evaluation planning.

<sup>2</sup> The Commercial Lighting element of the program is expected to account for 83 percent of annual energy savings resulting from the Business Partners Program. The program component is assumed to have a more established presence in the market due to the fact that it has a much greater number of program participants; according to program records, the Commercial Lighting Program component had 734 participants as of December 31, 2010, compared with 42 and 7 partners for the Motor Systems and Building Performance and HVAC program components respectively.



ongoing information on the latest developments and trends in the commercial lighting market, and financial incentives for completing eligible lighting projects or achieving other accomplishments rewarded by the program (e.g., bonuses are offered for completing small projects with a variety of space types, or projects in a particular utility service territory).

Market development is the primary focus of the program. Therefore, the CLP offers more modest incentives than other **New York Energy Smart<sup>SM</sup>** programs. Incentive amounts range from \$250 to as much as \$5,000 per award, and the maximum incentive payment a participating Business Partner may receive is \$75,000. The program targets new and existing commercial spaces between 1,000 and 100,000 ft<sup>2</sup>.<sup>3</sup> Projects must use new fixtures to qualify for an incentive (i.e., lamp and ballast replacements are not eligible). This program requirement is intended to maximize the energy saving impacts of lighting upgrades completed through the program. Furthermore, it emphasizes the importance of improving the efficiency of a lamp and ballast system, not just lamps themselves.

## Data Sources and Methods

Primary data collection activities consisted of in-depth interviews with program staff and industry experts, as well as surveys of program participants and non-participants. These activities were overseen by the MCA team, and the team conducted all in-depth interviews with program staff and industry association representatives. Survey design and implementation services were provided by APPRISE, NYSERDA's data collection evaluation contractor. Both survey efforts were designed to achieve 90/10 confidence/precision levels.

A telephone survey of 140 CLP participants was conducted from early December 2010 through early January 2011. Participants were defined as companies that signed a participation agreement with NYSERDA between program inception on January 1, 2009, and the team's data extraction on July 23, 2010. Of the 140 survey respondents, 67 percent (94) conduct work in the upstate region, and 33 percent (46) conduct work in the downstate region.

A telephone survey of 141 non-participants was conducted from mid-March to mid-May 2011. The study population was all firms that are eligible to participate in the CLP but that are not participating in the program. The sample frame was obtained from Dun & Bradstreet (D&B). Of the 141 survey respondents, 50 percent (70) conduct business primarily in upstate New York, 47 percent (67) conduct business primarily in downstate New York, and the remaining 3 percent could not specify a dominant region.

In order to provide a detailed discussion of results for those business types making up the largest share of program participation, this report presents survey results for electrical contractors and lighting equipment distributors only.

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<sup>3</sup> Program eligibility does not factor in building size, only the size of the space affected by the lighting project specified in a program application.

Secondary data sources used in the study included data from D&B, the U.S. Census Bureau, and the U.S. Department of Energy (DOE), as well as reports from McGraw-Hill Construction Dodge, the American Council for an Energy-Efficient Economy (ACEEE), the Appliance Standards Awareness Project, and PlaNYC, among others. The team obtained additional information from the Database of State Incentives for Efficiency and Renewable Energy (DSIRE).

## Market Characterization

### Market Structure

A wide range of professions can play a role in a commercial lighting project. As a result, a significant challenge facing those implementing the CLP is effectively addressing the diversity of professions targeted by the program. This challenge is compounded by the fact that the roles that different market actors play in a given project vary depending on the type and location of the project. Furthermore, as discussed in subsequent sections, the role of lighting designer is evolving in the marketplace. This adds to the range of possible project team relationships that may exist.

### Summary of Program Activity and Accomplishments

The Business Partners program goal is to sign up 1,800 partners across all three program components (CLP, Motor Systems, and Building Performance and HVAC) between July 1, 2006, and June 30, 2011. As of December 31, 2010, the CLP had 346 partners.<sup>4</sup> Therefore, as shown in Table 1, the CLP had contributed toward meeting 19 percent of the overall Business Partners program goal as of December 31, 2010.

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<sup>4</sup> This includes all companies that signed Participation Agreements from January 1, 2009, through June 30, 2010. As of January 1, 2009, the program officially transitioned from its previous version, the Small Commercial Lighting Program, to the current version, a component of the Business Partners Program. As a result, all companies that had previously participated in the SCLP program were required to sign new Participation Agreements. The program database includes 965 records. However, only 346 of those companies had signed Participation Agreements under the current version of the program (post-2008).

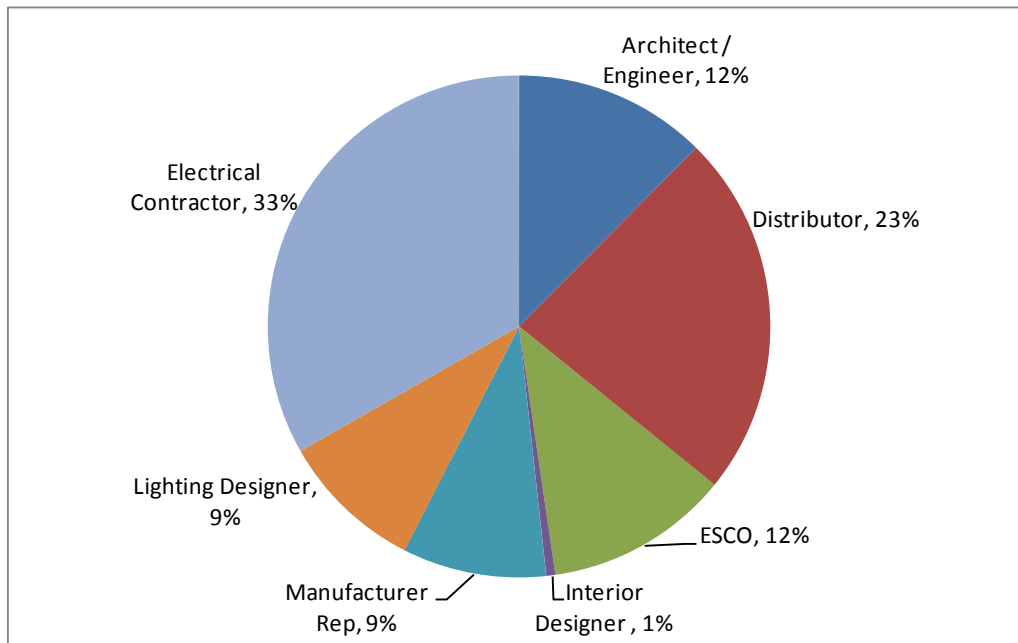
**Table 1. Business Partners SBC III Program Goals and Achievements**

Business Partner Program Area	Overall Program Goal (Number of Partners Enrolled July 1, 2006, through June 30, 2011)	Achievement (Number of Partners Enrolled as of 12/31/10)	Program Area Contribution to Overall Program Goal (%)
Commercial Lighting Program (CLP)	1,800	346	19%
Motor Systems		42	2%
Building Performance & HVAC		76	1%

Source: CLP data was obtained from program records. Data for other program components obtained from NYSERDA, *New York System Benefit Charge Programs Evaluation and Status Report, Year Ending December 31, 2009, Report to the Public Service Commission*, March 2010.

As shown in Figure 1, electrical contractors make up the largest group of program participants, with 115 participating electrical contractors representing 33 percent of all CLP participants. The majority of the contractors (83 percent) are located upstate. Lighting equipment distributor (Distributor) is the second most common business type among program participants, with 81 participants in the category, or 23 percent of all participants. As with contractors, the majority of the distributor population (85 percent) is located upstate. Architect and engineer and ESCO are the next largest categories of participants. The 43 participating architects and engineers, and the 41 participating ESCOs each make up approximately 12 percent of the total population of participants. Architects and engineers are distributed relatively evenly across the upstate and downstate regions.

**Figure 1. Business Partners by Type**



Source: CLP program records, current through December 31, 2010.

A more even distribution of business types exists now than in past years. The pool of companies that participated as SCLP trade allies prior to the program’s transition to Business Partners in 2009 was more heavily dominated by electrical contractors; electrical contractors represented 63 percent of the population of participating companies prior to the transition to Business Partners. Distributors comprised 11 percent of the pre-Business Partners population of participating companies, followed by architects and engineers, which represented 9 percent of participating companies.<sup>5</sup>

Business types for which the program appears to have the strongest market penetration include manufacturer representatives (100 percent), ESCOs (80 percent), distributors (17 percent) and lighting designers (15 percent). Interior designers (0.1 percent), architects (1 percent) and electrical contractors (3 percent) have the lowest levels of penetration.

Training participants in effective, efficient lighting design techniques is one of the key areas of focus of the CLP. Program tracking data indicates that a relatively small percentage of Partners are receiving their training from program workshops (9 percent). Thirty-six percent of Partners are self-trained, and the program lacks data on the mode of training employed by 54 percent of Partners.

During the 2009–2010 period, Con Edison’s service territory saw the greatest amount of program-funded project activity (122 projects, \$136,993 of incentive funds paid), followed by

<sup>5</sup> CLP program records current through December 31, 2010.

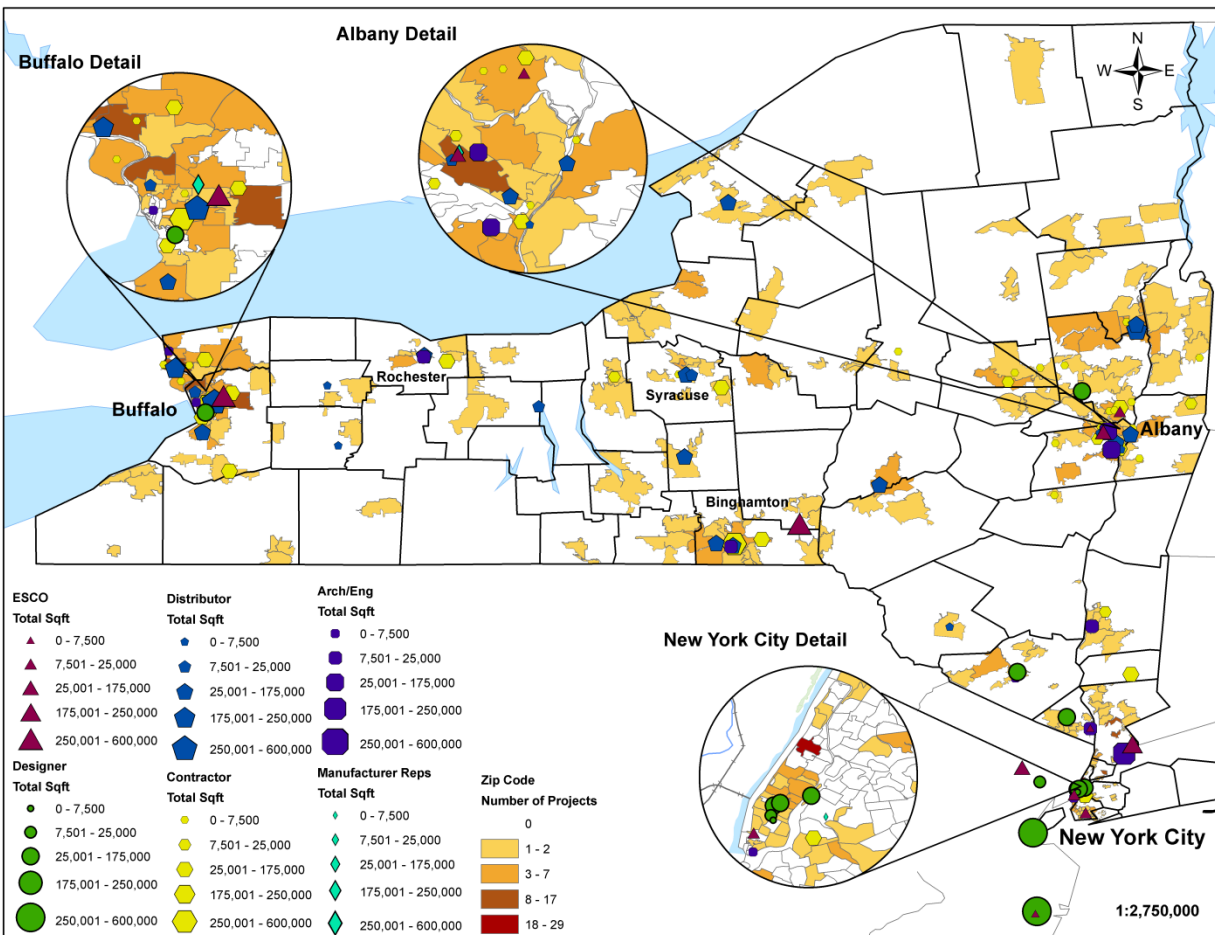
National Grid (109 projects, and \$109,919 of incentive funds paid) and New York State Electric & Gas (40 projects, and \$41,282 of incentive funds paid).

Distributors completed the largest numbers of projects receiving financial incentives from the program (152 projects), followed by lighting designers (140 projects) and ESCOs (113 projects). ESCO projects received the greatest amount of incentive funds (\$173,355), followed by distributors (\$152,523) and lighting designers (\$139,629).

Figure 2 presents project activity by Business Partner type. Each business type is represented by a different symbol. The symbols that appear on the map correspond with the location of each company, and the size of the symbol is scaled to reflect the square footage of the projects completed by a given company during 2009–2010. The map also shows the location of project activity, represented by shaded zip code areas. Darker shading corresponds with a greater amount of project activity.

The map reveals that concentrations of project activity exist in urban areas and that some geographic concentration of activity by participant business type exists. Project activity in the metropolitan New York City (NYC) area has been completed primarily by design firms, while project activity in upstate areas has been completed by a more diverse mix of partner types. The concentration of design firms in the NYC area is consistent with other industry sources, as well as surveys conducted for this evaluation, both of which indicate that projects in the downstate area are more likely to use a designated lighting designer than projects in the upstate area.

Figure 2. Project Activity by Partner Type and Geography



Source: CLP program records, current through December 31, 2010, Navigant analysis.

Federal, state, and local policies are fundamental forces shaping the commercial lighting market today. Equipment standards and tax incentives are two outcomes resulting from federal policy-making. Tightening of federal standards that will take effect for fluorescent and incandescent lamps during the next few years will drive a significant change in the lighting market; several lighting products commonly used in commercial facilities (e.g., four-foot linear and two-foot U-shaped T12s, and some T8s) will no longer be available in the marketplace. The standards will have the greatest impact on the retrofit market. Energy codes and the Energy Efficiency Portfolio Standard (EEPS) are two key policy mechanisms at play at the state level in New York. New York City has demonstrated in recent years that local policies can also drive substantial energy savings.

Lighting technology is advancing at a rapid pace. According to the CLP implementation contractor, most buildings with lighting systems installed just one year ago could likely find economically viable upgrade opportunities as a result of technological improvements that have

occurred within the last year.<sup>6</sup> Despite the availability of sophisticated, highly efficient technology, most existing buildings and a substantial number of new construction projects are not taking advantage of these newer technologies. The slow rate of adoption of newer technologies in existing buildings is due to factors including resistance to change and concerns about high upfront costs.

A few technologies of relevance to the CLP that show promise for significant future market growth include light-emitting diodes (LEDs), compact fluorescent lamps (CFLs), hybrid halogens, and wireless controls.

Large corporate building owners are starting to recognize the business benefits of green building investments, and efficient lighting specifically. Additional factors that appear most likely to play a role in advancing the commercial lighting market in the coming years include:

- » Benchmarking of energy use in existing buildings in NYC in response to City laws.
- » Lighting technology advancements and obsolescence of older technologies resulting from the implementation of federal standards.
- » Growing market awareness and support for energy-efficient commercial lighting.
- » High and potentially volatile electricity prices.

## Lighting Retrofit Market Size

The MCA team explored the size of the statewide lighting retrofit market. The primary goal of the analysis was to estimate the amount of commercial building space, by region and by business type, that is eligible to undergo a lighting upgrade. Drawing on data related to existing building stock as well as renovation and new construction trends in the state, the team prepared a high-level estimate of lighting upgrade opportunities.

The MCA team estimated the statewide market potential for CLP lighting upgrades is nearly three billion square feet. This square footage with potential for lighting upgrades represents 88 percent of the total CLP-eligible commercial building space in the state, and approximately 26 percent of all building space statewide.<sup>7</sup> The metropolitan areas of Buffalo, Rochester, Syracuse, Albany, and NYC have the greatest amount of square footage with lighting upgrade

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<sup>6</sup> Navigant communications with ICF Consulting, Fall 2010.

<sup>7</sup> Potentially eligible common space area at multifamily buildings was difficult to quantify. Thus, multifamily common area space was excluded from the analysis, despite the fact that multifamily space as a whole comprises approximately half of the total square footage in the state that is not single-family homes.



potential.<sup>8</sup> Statewide market potential is greatest in the office and bank sector, which possesses approximately 671 million ft<sup>2</sup> of eligible space.

## Market Assessment

Survey data support many of the team’s findings from secondary research, and provide greater depth on topics of particular relevance to the program. Survey questions addressed a broad range of topics including: types of lighting work completed, knowledge of energy-efficient lighting, energy-efficiency as a business priority, the role of different professions in specifying energy-efficient lighting, strategies used to incorporate energy-efficiency into lighting projects, factors influencing the market, and market barriers.

### Summary of Market Actor Activity

Contractors’ projects are most commonly lighting upgrades completed as part of broader renovation projects (45 percent of participating contractors’ projects and 52 percent of non-participating contractors’ projects). Participating distributors most commonly complete new construction projects (50 percent of all projects), while non-participating distributors most commonly complete lighting-only projects (49 percent of all projects).

Contractors generally complete fewer projects per year than distributors. The average number of projects completed per year by participating and non-participating contractors was 48 and 59, respectively. For distributors, the average number of projects completed by participants was 99, and 94 for non-participants. Average project sizes across all four respondent groups ranged from 11,795 (non-participating distributors) to 30,652 (participating contractors).

Use of at least some energy-efficient lighting in projects appears to be relatively common across all contractors and distributors. Approximately three-quarters of respondents in all four respondent groups report that they include energy-efficient lighting either in all or most of their projects.

Participating contractors and distributors both do most of their work in the office sector. Non-participating contractors do most of their work in the school/university sector, while non-participating distributors do most of their work in the industrial sector.

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<sup>8</sup> Although Nassau and Suffolk Counties represent 12.5 percent of the total commercial square footage in New York State, the potential in these counties is excluded from the analysis due to the fact that they are ineligible for SBC program participation.



The use of lighting designers is not currently standard practice in projects completed by contractors or distributors. The percentage of contractors and distributors reporting using lighting designers on all of their projects is less than 10 percent across all categories of respondents.

### Awareness and Knowledge

CLP participants, both contractors and distributors, are consistently more knowledgeable about energy-efficient lighting design tools and techniques (e.g. techniques to achieve even light distribution and to avoid glare) than non-participants. In the case of both contractors and distributors, a greater percentage of participants hold lighting and efficiency-related certifications than do non-participants. All categories of respondents report high levels of confidence in their ability to communicate with their clients about energy-efficiency.

Awareness of the CLP among non-participants is low. Only 4 percent of non-participating distributors and 38 percent of non-participating contractors have considered participating in the program. In addition, 54 percent of non-participating contractors and 72 percent of non-participating distributors have little or no familiarity with the program.

### Energy Efficiency-Related Decision-Making and Sales Strategies

Among contractors, a greater percentage of non-participants identify energy-efficiency as a *top* or *high* priority than participants (79 percent versus 71 percent). Thirty-nine percent of non-participating contractors identify energy-efficiency as a top priority, compared to 11 percent of participating contractors. This indicates that there are contractors active in the New York market that are highly motivated to pursue energy-efficiency, yet are not participating in NYSERDA's program. Among distributors, the differences between participants and non-participants are less pronounced.

The key driving forces behind the decision to promote energy efficiency are desire to gain a competitive advantage and customer demand. Desire to gain competitive advantage is the greatest driver for all respondent groups, with the exception of non-participating contractors, in which client demand is the top driver. The fact that a significantly greater percentage of participating than non-participating contractors (44 percent compared to 22 percent) identify competitive advantage as a key driver for their decision to promote energy-efficiency may indicate that participants view program participation as a tool to differentiate their companies from the competition.

There is not a clear consensus about which market actor type is most influential in the decision-making related to lighting specifications. However, engineers, electrical contractors and architects receive the highest overall ratings when responses are tallied across all four respondent groups (engineers, 92 percent; electrical contractors, 88 percent; and architects, 75 percent). Findings related to this topic were somewhat more definitive in the previous

evaluation of the program’s predecessor. In that evaluation, respondents reported that architects had the greatest influence over lighting project specifications.

Many lighting professionals are presenting beyond-code lighting as a standard offering, and this approach appears to be substantially increasing sales of high-efficiency lighting systems. In the case of both participating and non-participating contractors, approximately 40 percent of respondents present beyond-code lighting as a standard offering. For both participating and non-participating distributors the percentage is over 50 percent. For those who present code-compliant lighting as their standard offering, with beyond-code lighting as an option, relatively few clients select the beyond-code option.

The most common strategy used by all respondents to improve sales of energy-efficient lighting is to educate customers of the benefits of energy-efficient lighting. This strategy is used by over 75 percent of all contractors, and over 95 percent of all distributors. The next most common strategy, used by all contractors and participating distributors, is to establish relationships with other companies to secure better pricing.

### Program Interaction with the Market

Respondents view economic conditions, financial incentive programs, and electricity prices as the most influential factors affecting the market for energy efficiency. Financial incentives and economic conditions are the two most influential factors cited by participating contractors. Non-participating contractors rated electricity prices and financial incentives as the top two factors. Among distributors, financial incentives and electricity prices are most commonly cited as the most influential factors by participants, while non-participants identify state and local policies and financial incentives as most important.

The majority (86 percent) of participating distributors have started stocking more energy-efficient products since participation in the Business Partners Program.<sup>9</sup>

### Barriers

The factor most frequently cited as a major barrier to the energy-efficiency lighting market across all distributors and contractors is cost-related issues, followed by financing issues, reluctance to change, and timing issues. Issues such as aesthetics, quality-related issues and misperceptions about energy-efficient lighting were typically identified as minor market barriers. Aesthetic issues are more commonly cited as a major barrier by non-participating contractors and distributors than by participants. And participating contractors and distributors both identify misperceptions about energy-efficient products as a significant barrier. These factors seem to indicate that the market can still benefit substantially from education about the features and benefits of the latest generation of energy-efficient lighting products.

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<sup>9</sup> Note that this question was not asked of participating contractors.

Over two-thirds (68 percent) of participating contractors and over half (63 percent) of participating distributors completed qualifying projects for which they did not apply for NYSERDA's project incentives. The most common reason for not applying for incentives is the application process, cited by 63 percent of contractors and 55 percent of distributors who did not submit all eligible projects for incentives.

## Market Size

Survey findings support secondary research findings described in the market characterization section regarding the relatively large potential for additional energy-efficient lighting upgrades in the state. Among contractors, nearly two-thirds of participants (61 percent) and 53 percent of non-participants estimate that between 50 percent and 90 percent of their region's total commercial floor space could be upgraded. The views of participating distributors are similar to those of contractors; more than half of them (53 percent) estimate that between 50 and 90 percent of the region's floorspace could be updated. Non-participating distributors are particularly optimistic; 44 percent think that 90 percent or more of commercial floor space could be upgraded.

## Key Findings

The most significant findings from the evaluation are summarized in the bulleted lists included in this section. Lists of findings are organized by topic area.

## Program Activity and Accomplishments

- » Electrical contractors make up the largest group of program participants (33 percent), followed by distributors (23 percent), architects and engineers (12 percent), and ESCOs (12 percent).
- » A relatively small percentage of Partners are receiving their training from program workshops (9 percent).
- » Distributors completed the largest number of projects receiving financial incentives from the program (152 projects), while ESCO projects received the greatest amount of incentive funds (\$173,355).
- » The metropolitan NYC area has a heavy concentration of projects completed by design firms, while project activity in upstate areas has been completed by a more diverse mix of partner types.
- » Business types for which the program appears to have the strongest market penetration include manufacturer representatives, ESCOs, distributors and lighting designers. Interior designers, architects and electrical contractors are estimated to have the lowest levels of penetration.

## Market Activity and Market Potential

- » Participating contractors and distributors both do most of their work in the office sector. Non-participating contractors do most of their work in the school/university sector, while non-participating distributors do most of their work in the industrial sector.
- » Statewide market potential for CLP lighting upgrades is estimated at nearly three billion square feet, representing approximately 26 percent of all building space statewide.<sup>10</sup>
- » Opportunities are greatest in the metropolitan areas of Buffalo, Rochester, Syracuse, Albany, and NYC, and in the office and bank market sector.

## Knowledge and Use of Energy-Efficient Products and Techniques

- » Use of at least some energy-efficient lighting products is relatively common among all contractors and distributors. CLP participants are more knowledgeable about energy-efficient lighting techniques than non-participants.
- » Participants are more likely to hold energy-efficient lighting-related certifications, such as from the IES and NCQLP than non-participants.

## Energy Efficiency-Related Business Practices

- » There appears to be a substantial number of electrical contractors active in the New York market that are highly motivated to pursue energy-efficiency, yet are not participating in NYSERDA's program.
- » Presenting beyond-code lighting as a standard offering rather than as an option is a simple and relatively common method used to substantially increase sales of high-efficiency lighting systems.
- » Engineers, electrical contractors and architects appear to have the greatest influence over lighting specifications.
- » The most common strategy used by all respondents to improve sales of energy-efficient lighting is to educate customers of the benefits of energy-efficient lighting, followed by establishing relationships with other companies to secure better pricing.
- » The majority of participants who stock lighting equipment have started stocking more energy-efficient products since participating in the Business Partners Program.

## Market Drivers and Barriers

- » Competitive advantage and client demand were identified as the strongest drivers behind respondents' decisions to make energy-efficiency a business priority.

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<sup>10</sup> As noted earlier, potentially eligible common space area at multifamily buildings was difficult to quantify. Thus, multifamily common area space was excluded from the analysis, despite the fact that multifamily space as a whole comprises approximately half of the total square footage in the state that is not single-family homes.

- » Respondents believe that economic conditions, financial incentive programs, and electricity prices have the most significant influence on the market for energy efficiency.
- » A tightening of federal standards for lamps and ballasts that will go into effect during the next few years will have a major impact on the lighting market, particularly the market for retrofits.
- » Energy codes and the EEPS are two key policy mechanisms at play at the state level in New York. NYC has demonstrated in recent years that local policies can also drive substantial energy savings.
- » Factors that appear most likely to play a role in advancing the commercial lighting market in the coming years include: benchmarking of energy use in existing buildings; lighting technology advancements and obsolescence of older technologies; growing market awareness and support for energy-efficient commercial lighting; and high and potentially volatile electricity prices. Cost-related issues are the most substantial market barrier, followed by financing issues, reluctance to change, and timing issues.

## Challenges Facing the CLP

- » A variety of market actors are influential in lighting system specifications, meaning the program must work to effectively serve the diversity of professions targeted by the program.
- » Perceptions about the effort required to apply for program funding are keeping a substantial number of participants from submitting applications for all eligible projects.
- » Awareness of the CLP among non-participants is low.

## Changes in the Market Over Time

- » Market actors appear to be growing more aware of and confident in efficient lighting products than they were in 2005 when the last market characterization and assessment of the SCLP was conducted. However, misperceptions about energy-efficient lighting products remain.

## Actions for Consideration by Program Staff

The MCA team recommends that program staff consider taking the following steps to address findings from this evaluation:

- » Staff should continue to reach out to the full range of professions active in the lighting market, and should seek to achieve an even more balanced distribution of participation across professions.
- » NYSERDA should consider increasing program awareness and branding activities targeted at business types currently comprising a small percentage of program

participants (e.g., lighting designers, architects and engineers) in an effort to augment existing participation levels.

- » Staff should consider offering educational materials and trainings to end users in addition to continuing the program's educational activities that target product and service providers.
- » Program staff should consider holding regional conferences in parts of the state with the greatest amount of market potential (e.g., Buffalo, Rochester, Syracuse, and Albany).
- » Staff should consider highlighting the important effect that presentation strategy can have on a company's success in selling beyond-code lighting; presenting beyond-code lighting as a standard offering rather than as an option substantially increases sales of high-efficiency lighting systems.
- » Program staff should ensure that program collateral remains current with the rapidly changing market for energy efficient lighting products, technologies, and business practices.
- » In light of new federal standards for lamp efficiency, and upcoming standards for ballast efficiency, program staff should review financial incentive and other program offerings to ensure that they are well-matched to the changing needs of market participants.
- » Staff should consider opportunities to disseminate any publicly available summary data emerging from building benchmarking efforts in NYC.
- » Staff should continue to look for ways to streamline program participation processes, and/or make the simplicity of program processes more transparent to participants.
- » Given the low rate of participation in program training sessions, staff should consider rethinking the structure of current training efforts, or shift resources to alternative activities to educate the market about energy-efficient lighting. Staff should also more carefully track the mode of training program participants use to fulfill program eligibility requirements.
- » Recognizing the persistent role of upfront cost and financing issues as market barriers, NYSERDA should continue to offer some level of financial incentive to reduce upfront costs. NYSERDA should also work to educate CLP participants about other incentives and program offerings available for end-use customers with a goal of leveraging CLP participation as a means of driving end-use customer participation in other NYSERDA programs.



## 1 Introduction and Background

This report presents the results of the Market Characterization and Assessment (MCA) evaluation of the **New York Energy \$mart<sup>SM</sup>** Commercial Lighting Program (CLP), a component of the Business Partners (BP) Program. As specified in the New York State Energy Research and Development Authority (NYSERDA) Energy Public Benefits Program Evaluation Plan,<sup>11</sup> the primary objectives of the MCA evaluation effort are: (1) to develop a comprehensive understanding of current and emerging markets (e.g., market structure and actors); (2) to provide baseline and background information required by NYSERDA to define and deliver programs to target markets; and (3) to track changes in markets over time, with a specific focus on market indicators that are likely to be impacted by program offerings. When accomplished, these objectives 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 System Benefits Charge (SBC) Advisory Group, the New York State Public Service Commission (PSC), 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 remainder of this section describes the organization of the report and specific objectives of this evaluation, and provides an overview of the Business Partners Program, and the role of the CLP within that program.

### 1.1 Report Format

The report is organized as follows:

- » **Section 1. Introduction and Background** provides an overview of the report objectives and a description of the Business Partners Program.
- » **Section 2. Data Sources and Methods** outlines the overall data sources and methods used to conduct the evaluation.
- » **Section 3. Market Characterization** presents the results of the market characterization component of the evaluation. This section includes discussion of the market actors in the commercial lighting market in New York, including their roles in lighting project activity, and the populations of participating and eligible businesses. The section also reviews the policy framework affecting the commercial lighting market in the state, as well as a range of existing and emerging market forces and trends.

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<sup>11</sup> NYSERDA, *Energy Public Benefits Program Evaluation Plan*, December 2007.

- » **Section 4. Market Assessment** presents the results of the market assessment component of the evaluation. This section summarizes results from the surveys conducted with participating and nonparticipating lighting companies.
- » **Section 5. Key Findings and Actions for Consideration by Program Staff** synthesizes important findings presented throughout the report. The section also highlights themes and trends worthy of attention, and suggests actions for program staff to consider making to enhance future program success.

Appendices to the report include data collection instruments and the Business Partners Program logic model.

## 1.2 Evaluation Objectives

The Business Partners Program includes three primary functional components: Commercial Lighting, Building Performance and Heating, Ventilating, and Air Conditioning (HVAC), and Motor Systems.<sup>12</sup> Each component has unique attributes related to its implementation strategies, markets served, and expected outcomes. This warrants differentiation among components in the evaluation process. The MCA team focused its evaluation activities on the lighting component of the program because of that program component’s majority contribution to program savings, its large population of participants, and its established presence in the market.<sup>13</sup> Specific research requests presented by staff leading the HVAC and Building Performance and Motors components of the Business Partners Program have been addressed separately, and results of those efforts are excluded from this evaluation report.

The primary goals of this CLP evaluation effort are consistent with those of the overall NYSERDA MCA evaluation:

1. Develop a comprehensive understanding of current and emerging markets for commercial lighting in New York State (e.g., market structure and actors).
2. Provide baseline and background information required by NYSERDA to define and deliver the CLP program to target markets.
3. Track changes in the commercial lighting market over time.

The work effort was designed to ensure consistency with other program evaluation activities conducted by NYSERDA, including the last full MCA evaluation of the program’s predecessor, the Small Commercial Lighting Program (SCLP), in order to build upon prior research

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<sup>12</sup> A fourth component of the program, “Innovative Opportunities,” is a minor program component, and has not been included in MCA evaluation planning.

<sup>13</sup> The Commercial Lighting element of the program is expected to account for 83 percent of annual energy savings resulting from the Business Partners Program.



findings.<sup>14</sup> The MCA team’s ability to make comparisons with the most recent SCLP MCA evaluation report is limited; updated indicators were developed for the CLP to address the current state of the program, and most survey questions did not lend themselves well to direct comparison with the most recent SCLP report. In addition, the last SCLP evaluation drew on different data sources; that evaluation highlighted findings from a separate survey of facility owners, and the study did not include a survey of non-participating lighting product and service providers. Despite these complicating factors, several of the same topic areas were addressed in both evaluation studies, and discussion of how the market has changed since the last SCLP evaluation with regard to these topics is included where possible.

The MCA evaluation results can be used to assess progress towards meeting the PSC’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 increase market interest and uptake of existing program offerings.

### 1.3 Program Overview

The Business Partners Program works to increase the availability and sales of high-quality, energy-efficient products and services by supporting the companies that supply such products and services to commercial and industrial end-use customers. The program is premised on the theory that the suppliers of goods and services in the market are key to informing commercial and industrial end users about energy efficiency opportunities, and that expanding the capabilities of market suppliers will enhance overall market development efforts. Strengthening market infrastructure is also expected to build demand for energy efficiency products and services and increase activity in customer-targeted programs.

The CLP component of the Business Partners Program builds upon NYSERDA’s relationships with more than 1,000 companies that supply energy-efficient products and services to commercial and industrial entities in New York. Companies participating in the program include manufacturer representatives, distributors, architects, engineers, lighting designers, and energy service companies (ESCOs). These companies agree to work with NYSERDA to promote energy-efficient products and services. In exchange, they receive training in advanced lighting system design practices, ongoing information on the latest developments and trends in the commercial lighting market, and financial incentives for completing eligible lighting projects or achieving other accomplishments rewarded by the program (e.g., bonuses are offered for completing small projects with a variety of space types, or projects in a particular utility service territory).

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<sup>14</sup> An evaluation of the Small Commercial Lighting Program was conducted by Summit Blue Consulting in collaboration with Skumatz Economic Research Associates, Inc., and Global Energy Partners, Inc. Summit Blue Consulting was acquired by Navigant Consulting, Inc., in January 2010.

Market development is the primary focus of the program. Therefore, the CLP offers more modest incentives than other **New York Energy \$mart<sup>SM</sup>** programs. Incentive amounts range from \$250 to as much as \$5,000 per award, and the maximum incentive payment a participating Business Partner may receive is \$75,000. The program targets new and existing commercial spaces between 1,000 and 100,000 ft<sup>2</sup>.<sup>15</sup> Projects must use new fixtures to qualify for an incentive (i.e., lamp and ballast replacements are not eligible).

The Business Partners Program as a whole has a goal of creating brand identity to help build a strong energy efficiency industry and to help participating Business Partners differentiate themselves from their peers in a competitive marketplace. According to program staff, efforts related to branding have been limited thus far. However, through other programs activities, NYSERDA is working to improve the state's ability to achieve its energy efficiency goals by making it easier for commercial and industrial end users to gain access to high-quality energy efficiency products and services.

The Business Partners Program started in 2006 and has a 13-year budget of \$43.9 million.<sup>16</sup> More than 900 companies have participated in the CLP and its predecessor, the SCLP, since 2001. Participants in the SCLP, previously called trade allies, were required to sign new participation agreements when the program officially transitioned to the Business Partners Program in 2009. From January 2009 through December 2010, 346 companies signed participation agreements to become Business Partners.<sup>17</sup>

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<sup>15</sup> Program eligibility does not factor in building size, only the size of the space affected by the lighting project specified in a program application.

<sup>16</sup> Of the total 13-year budget, \$21.1 million was funded under SBC I and II, and \$22.8 million was funded under SBC3. NYSERDA, *New York's System Benefits Charge Programs Evaluation and Status Report, Quarter Ending March 31, 2011*, May 2011.

<sup>17</sup> NYSERDA, *New York System Benefit Charge Programs Evaluation and Status Report, Year Ending December 31, 2009, Report to the Public Service Commission*, March 2010.

## 2 Data Sources and Methods

This section describes primary and secondary data sources and methods used by the MCA team to evaluate the lighting component of the Business Partners (BP) program. Section 2.1 details the primary data collection efforts, including discussion of sample development, confidence and precision, and overall response rates. Section 2.2 highlights the secondary data sources used in the evaluation.

The primary and secondary data sources described in this section were components of a comprehensive research approach that consisted of the following activities:

- » Planning meetings with NYSERDA evaluation and BP staff.
- » Review of programmatic documentation including Program Opportunity Notice (PON) 1059, the BP tracking databases, and program-reported quarterly status reports.
- » Review of secondary data sources including previous evaluations of the BP commercial lighting program's predecessor (the Small Commercial Lighting Program).
- » Review of the BP CLP logic model to identify specific researchable issues, market barriers, and outcome measurement indicators for use in the evaluation.
- » Coordination with other NYSERDA evaluation contractors to maximize the efficiency of data collection, research and reporting efforts.
- » Primary data collection via interviews and surveys with the following market actor groups:
  - Program staff (in-depth interviews).
  - Industry association representatives (in-depth interviews).
  - Participating and non-participating providers of commercial lighting products and services (surveys).

### 2.1 Primary Data Collection

Primary data collection activities consisted of in-depth interviews with program staff and some industry experts, as well as surveys of program participants and non-participants. These activities were overseen by the MCA team, and the team conducted all in-depth interviews with program staff and industry association representatives. Survey design and implementation services were provided by APPRISE, NYSERDA's data collection evaluation contractor. Surveys were conducted by Issues & Answers using a computer-assisted telephone interview (CATI) survey instrument.

Data collection instruments were designed to address researchable issues and measurement indicators identified in the program logic model. The MCA team worked collaboratively with APPRISE to develop the survey instruments; additional input and approval were provided by NYSERDA program and evaluation staff, as well as DPS. The survey instruments included

questions aimed at gathering information about the business activities of Partner firms; Partner firms' experiences in the energy-efficient lighting market; market decision-making processes related to energy efficiency; commercial lighting market trends; and the effects of program participation on Partner firms. The final interview and survey instruments are presented in Appendix A.

For both the participating and non-participating survey efforts, NYSERDA sent advance letters to sample contacts notifying them of the survey effort.

Samples for the participant and non-participant groups were designed to reflect the population of companies that participate in the program. Target completes for different business types were set based on the composition of the program population as a whole (e.g., ESCOs represent approximately 12 percent of the population of companies participating in the program, so the goal was for ESCOs to comprise roughly 12 percent of survey respondents).

This sampling approach was selected because the study was conducted as part of an evaluation of the Business Partners program specifically; the study was not intended to be a full statewide assessment of the commercial lighting market. Due to the unique nature of the program and the diversity of participating business types, the MCA team believed that the population of existing participants was a relevant basis upon which to develop a non-participant sampling plan. After data had been collected and analyzed, a peer review of the report indicated that a preferable approach would have been to focus resources on those business types making up the largest percentage of participants (contractors and distributors), and to design the sample to reflect the total population of those companies in the state as a whole.

The main difference in outcomes that would have resulted had the MCA team used the sampling approach preferred by peer reviewers is that a greater number of responses would have been collected from non-participating electrical contractors and distributors. The MCA team would have obtained 68 non-participant completes for electrical contractors and 59 completes for distributors in order to achieve the appropriate levels of statistical confidence and precision. Instead, using the non-participant sampling approach that was based on program participation rates, the MCA team obtained 62 electrical contractor completes and 41 distributor completes.

Peer reviewers also expressed a strong preference for presenting all survey results according to business partner type. Therefore, this final version of the report presents survey results only for contractors and distributors.

The survey data presented in the report are weighted to reflect the volume of activity represented by each respondent relative to the total population of respondents of that type. Weighting factors were also developed for the sub-set of business types that were screened for the non-participant survey in order to correct for variations in the rates at which different business types were screened for survey eligibility. Screening of non-participants was conducted with an emphasis on achieving a distribution of respondents that would be similar to the composition of program participants, in terms of the percentages of different business types

represented. In order to address peer reviewers' interest in having the non-participant population be more reflective of the statewide populations of electrical contractors and distributors, a weighting correction was made.<sup>18</sup>

### **Program Staff, Implementation Contractor, and Trade Association In-Depth Interviews**

The MCA team conducted interviews with the NYSERDA staff person who manages the BP commercial lighting program, and a representative from ICF Incorporated, the contractor that administers the program. In-depth interviews were also conducted with representatives from two industry associations that serve the commercial lighting market in New York: representatives from both the NYC and Albany chapters of the Illuminating Engineering Society of New York were interviewed, along with a representative of the National Council on Qualifications for the Lighting Professions (NCQLP).

Interviews with program staff and industry association representatives provided valuable insight into market conditions in the state, and they provided contextual background that informed the development of market actor survey instruments.

### **Survey of Participating Business Partners**

#### **Sample**

##### *Target Population*

The study population was all firms that participate in the lighting component of NYSERDA's Business Partners Program.

##### *Sample Frame*

The sample frame was obtained from ICF International, NYSERDA's implementation contractor for the CLP. Participants were defined as companies that have signed a participation agreement with NYSERDA between its inception on January 1, 2009, and the team's data extraction on July 23, 2010. Companies participating in the survey may have more than one branch in New York. For sampling and interviewing purposes, each branch was considered a separate Partner if they were listed separately in the program database. However, in the cases where more than one branch had the same contact person listed in the database, only one branch was sampled. The final sample file included a total of 310 cases.

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<sup>18</sup> Relative weighting factors were developed to adjust the value of the completed cases in each SIC category based on the proportion that the SIC category has within the eligible population for that group.

### *Sample Selection*

The size of the sample frame (N = 310) and the number of completed interviews needed (n = 140) suggested that all of the sample would be needed. However, during early fielding, response rates and the quality of the sample were better than expected, so some sample cases were not fielded. A simple random sample of 260 was selected. Additionally, a priority sample of 20 cases was identified by Navigant Consulting, Inc. (Navigant). These priority cases were identified as the 20 Business Partners who account for approximately 80 percent of program activity. These priority cases were separated from the rest of the sample and received targeted calling efforts.

### *Target Completes*

The MCA team originally targeted 140 completes with 70 upstate and 70 downstate. However, the sample frame only contained 77 businesses located in the downstate area, and the team was uncomfortable defining upstate/downstate based on the location of a business because there were Partners from out-of-state, and the goal was to compare the answers of businesses that worked in the upstate versus downstate area. To ensure 90/10 confidence levels, the team used the finite population correction factor and found that the minimum number of completes needed for 90/10 confidence was 54 upstate and 37 downstate. In addition, the team monitored the sample disposition closely to make sure that those minimum targets were reached in each area. In addition, as noted above, the set of 20 Business Partners responsible for completing the majority of incentive projects funded through the program were prioritized for survey completion.

## **Data Collection**

### *Overview of Data Collection Procedures*

The questionnaire was administered as a telephone interview with the contact listed in the sample frame or someone else who could discuss issues related to the firm's participation in the Business Partners program and the firm's work with commercial lighting. Interviewers from Issues & Answers conducted the interviews using a CATI survey instrument.

Five comprehensive pretests were conducted by APPRISE Incorporated to refine the survey instrument. Extensive checks were also done prior to fielding to ensure that all skip patterns were correct and all question wording was comprehensible to respondents.

### *Survey Administration*

The study was fielded for 19 days from 12/7/2010 to 1/4/2011 to meet the target of 140 completed interviews. Interviewers called during daytime weekday hours. Calls were rotated between the morning and the afternoon on different days. If an interviewer reached the named contact's voice mail, a voice message was left on first contact. After the first contact, the interviewer left a



message every three days and attempted each number a minimum of 6 times and a maximum of 15 times. Towards the end of the field period, a targeted effort was made to complete additional interviews with contractors and ESCOs; this effort extended the field period. The interviews averaged 22 minutes 18 seconds. The team obtained 140 completes total, 11 of which were completes from the priority sample. Of the total number of completes, 94 interviewees worked in the upstate area and 46 mainly worked in the downstate area.

*Sample Disposition and Survey Response Rate*

Table 2 shows the disposition of all sampled telephone numbers dialed for this survey and provides the contact, cooperation, and overall response rate. The response rate estimates the fraction of all eligible respondents in the sample that were ultimately interviewed. The contact rate is the percentage of the working numbers where a request for an interview was made. The cooperation rate is the percentage of contact numbers where consent for an interview was not refused.<sup>19</sup> The contact rate for the study was 58.4 percent, the cooperation rate was 89.2 percent, and the overall response rate was 52.0 percent.

**Table 2. Participating Business Partners Survey Sample Disposition**

Disposition		Number	Percent
Complete		140	50%
Contacted	Refused	16	5.7%
	Break-off	1	0.4%
Not Contacted	Max. attempts / Respondent unavailable	69	24.6%
	Answer machine	43	15.4%
Excluded	Unusable number	11	3.9%
<b>Total Sample Used</b>		<b>280</b>	<b>100%</b>
<b>Response Rate<sup>a</sup></b>			<b>52%</b>

<sup>a</sup> Response rate = Completes/[Completes+refusals+breakoffs+not contacted+(e\*(unknown eligibility))]. For this study, e = .9607. However, for this sample, none of the sample was of unknown eligibility so e was not used in the calculation of the response rate.

Source: APPRISE, Inc.

<sup>19</sup> These disposition codes and rate formulae are consistent with the standards of the American Association for Public Opinion Research (AAPOR). The contact, cooperation and response rates are the AAPOR #3 rates.

Of the 140 survey respondents, 67 percent (94) conduct work in the upstate area, and 33 percent (46) conduct work in the downstate area. Table 3 presents a summary of participant surveys completed by business type.

**Table 3. Summary of Participant Survey Completes by Business Type**

Business Type	Number Completes	Percent of Total
Manufacturer Representative	15	11%
Architecture	7	5%
Interior Design	0	0%
Lighting Design	14	10%
Engineering	15	11%
Distribution	35	25%
Electrical Contracting	35	25%
ESCO	11	8%
Other	5	4%
Don't Know	3	2%
<b>Total</b>	<b>140</b>	<b>100%</b>

Source: APPRISE, Inc.

Table 4 presents a summary of the survey disposition with regard to the 20 priority participants noted earlier. These priority records represent the set of companies that is collectively responsible for completing more than 80 percent of the projects funded through the program, both in terms of square footage and number of projects.

**Table 4. Summary of Outcomes Related to Participating Companies Prioritized for Interview Completion**

Region	Prioritized Companies (Total)	Prioritized Companies Completing Survey	Total Participant Sample
Upstate	14	9	216
Downstate	4	1	77
Other <sup>1</sup>	2	1	30
<b>Total</b>	<b>20</b>	<b>11</b>	<b>323</b>

<sup>1</sup> Some companies were based in states other than New York, primarily New Jersey.



## Survey of Non-Participant Lighting Product and Service Providers

### Sample

#### *Target Population*

The study population was all firms that are eligible to participate in the lighting component of NYSERDA’s Business Partners Program but that are not participating in the program.

#### *Sample Frame*

The sample frame was obtained from Dun & Bradstreet (D&B) by the MCA team. A sample of businesses was identified using five different North American Industry Classification System (NAICS) codes that were associated with business types that participate in the Business Partners program. The five codes used were intended to target contractors, distributors, interior designers, architects, and engineers. The sample was limited to companies located in NYSERDA territory (i.e., New York State, excluding Long Island).

Although the initial goal was to build a non-participant sample that closely resembled the participant sample in the distribution of different business types, analytic considerations required oversampling of some business types. Interior designers were oversampled in order to have sufficient cases to allow separate analyses. Additionally, architects and engineers were treated as two separate categories to allow separate analyses, despite the fact that the program groups architects and engineers together. Table 5 shows the NAICS codes, the targeted number of completed interviews in each business category, and the amount of sample initially purchased.

**Table 5. Non-Participating Business Partners Sample Characteristics**

Business Type	NAICS Codes	Target Completes	Records Purchased
Contractors	23821	62	775
Distributors	42361	41	515
Interior Designers	54141	7	190
Architects	54131	15	150
Engineers	54133	15	150
<b>Total</b>		<b>140</b>	<b>1,780</b>

Source: APPRISE, Inc.

Since not all contractors, distributors, interior designers, architects, and engineers necessarily work on commercial lighting projects, a small amount of sample (n = 189) was screened in order

to test the eligibility rate of the sample for the survey. Initial testing obtained a 13 percent screening rate.

- » Such a low incidence rate could significantly increase survey fielding costs. Therefore, APPRISE researched whether a more honed sample frame could possibly be obtained.

Results showed that eight-digit SIC codes can be much more specific than NAICS codes. NAICS codes were used for the first D&B sample purchase because those codes are newer than SIC codes. However, the specificity of SIC codes made it possible to select narrower categories and provide a more targeted sample that would be more likely to contain eligible businesses.

After the initial data purchase, APPRISE noted that it already had access to an appropriate sample for the “engineer” business because it had been purchased from D&B for a separate survey effort. Therefore, that business category was excluded from the second sample purchase for this survey effort. Additional sample was purchased from D&B using eight-digit SIC codes that targeted the ten non-engineering SIC codes with the highest screening rates among the screened cases in the first purchase.

In order to make data collection more efficient, the full sample was screened in a separate first step for business eligibility. Once business eligibility had been established, the screened sample was used to launch the full survey effort.

### *Sample Selection*

The screening process of the first sample purchase resulted in the identification of 305 eligible non-engineering businesses that do commercial lighting work. These cases were then fielded for the full survey interview. For sampling and interviewing purposes, any companies and any branches of companies listed in the participant database were considered ineligible for this non-participant survey and were removed from the sample.

For the second sample purchase, 266 pieces of eligible sample were obtained from the screener. These were fielded in two rounds due to the ongoing screening effort, but unlike the first purchase, it was not a census attempt. The number of upstate sample fielded was restricted due to higher response rates among the upstate population.

### *Target Completes*

The original target was 140 completes with 70 upstate and 70 downstate, defined by whether a greater percentage of the firm's work is in the upstate or downstate area (question A7 of the survey). In addition, there were targets by business type in an effort to produce a set of non-participant survey respondents that would have a composition similar to the population of participating companies. Targets were set at: 62 contractors, 41 distributors, 7 interior designers, 15 architects, and 15 engineers, defined by their four-digit SIC code. Due to the low incidence rate of eligibility among certain groups, these quotas were relaxed in order to meet overall numbers of completes. The final distribution is as follows: 62 contractors, 41 distributors, 6 interior designers, 18 architects, and 14 engineers for a total of 141 completes. Seventy of the survey respondents are active in the upstate region, 67 are active in the downstate region, and 4 did not specify a region of greatest activity.

## **Data Collection**

### *Overview of Data Collection Procedures*

The questionnaire was administered as a telephone interview with the contact listed in the sample frame or someone else who could discuss issues related to the firm's work with commercial lighting. Interviewers from Issues & Answers conducted the interviews using a CATI survey instrument.

### *Survey Administration*

The study was fielded for 44 days from March 10, 2011 to May 11, 2011 to meet targets. Interviewers called during daytime weekday hours. Calls were rotated between the morning and the afternoon on different days. If interviewers reached the named contact's voice mail, they left a message on first contact. After the first contact, they left a message every three days and attempted each number a minimum of 8 times and a maximum of 15 times. Towards the end of the field period, a targeted effort was made to complete additional interviews with downstate respondents, especially contractors; this effort extended the field period. The interviews averaged 18 minutes 12 seconds.

### *Sample Disposition and Survey Response Rate*

Table 6 shows the disposition of all sampled telephone numbers dialed for this survey and provides the contact, cooperation, and overall response rates. The response rate estimates the fraction of all eligible respondents in the sample that were ultimately interviewed. The contact rate is the percentage of the working numbers where a request for an interview was made. The cooperation rate is the percentage of contact numbers where consent for an interview was not

refused.<sup>20</sup> The contact rate for the study was 44.8 percent, the cooperation rate was 59 percent, and the overall response rate range was between 26.3 percent and 28.2 percent.

**Table 6. Non-Participating Business Partners Survey Sample Disposition**

Disposition		Number	Percent
Complete		141	24.8%
Contacted	Refused	96	16.9%
	Break-off	2	0.4%
Not Contacted	Max. attempts / Respondent unavailable	183	32.2%
	Answer machine	41	7.2%
	Call Back / Left 800#	70	12.3%
Excluded	Unusable number	1	0.2%
<b>Total Sample Used</b>		<b>569</b>	<b>100%</b>
<b>Response Rate<sup>a</sup></b>			<b>26.3% - 28.2%</b>

<sup>a</sup> Response rate = Completes/[Completes+refusals+breakoffs+not contacted+(e\*(unknown eligibility))]. For this study, respondents could be determined to be ineligible because the business did not do commercial lighting work at all (this eligibility was, for the most part, established through the first screening process) or they could be deemed ineligible because they had not conducted a project that included lighting in the past two years. This second level of eligibility was determined a few questions into the full survey. For this reason, it is possible that some portion of the cases that were never contacted (max. attempts/respondent never available, answering machine, call back) would have been determined to be ineligible and should, therefore, be excluded from the calculation of response rate. To estimate this portion, a second calculation can be made that results in the probable response rate range being 26.3% to 28.2%.

Source: APPRISE, Inc.

<sup>20</sup> These disposition codes and rate formulae are consistent with the standards of the American Association for Public Opinion Research (AAPOR). The contact, cooperation, and response rates are the AAPOR #3 rates.

Of the 141 survey respondents, 50 percent (70) conduct business primarily in upstate New York, 47 percent (67) conduct business primarily in downstate New York, and the remaining 3 percent could not specify a dominant region. Table 7 presents a summary of non-participant surveys completed by business type.

**Table 7. Summary of Non-Participant Survey Completes by Business Type**

Business Type	Completes	Percent
Contractors	62	44%
Distributors	41	29%
Interior Designers	6	4%
Architects	18	13%
Engineers	14	10%
Total	141	100%

Source: APPRISE, Inc.

### Secondary Data Sources

The MCA team used many secondary data sources, including both proprietary and publicly available sources. The team purchased data from D&B to develop the nonparticipant sample frame. Contact information was obtained for companies with NAICS codes that correlate with business types that are eligible to participate in the CLP.

Several other data sources were reviewed as part of the market characterization effort. A number of findings presented in this report are supported by data from McGraw-Hill Construction, a company that maintains proprietary databases reflecting data collected from more than 60,000 current construction project plans and specifications across the U.S. Extensive references are made to McGraw-Hill data because the company is considered a leading source of data representative of activity and trends in the U.S. commercial building market. A database of existing building stock in New York State current through 2007, which was purchased from McGraw-Hill Construction-Dodge by Navigant, as part of a different NYSERDA evaluation effort, was used in this study for purposes of characterizing the lighting upgrade market size in the state (see Section 3). In addition, reports prepared by McGraw-Hill presenting findings and analysis based on their own surveys of building industry decision makers are referenced throughout this report. This includes a report prepared for the U.S. Department of Energy (DOE), *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*, as well as other reports.

Additional secondary data sources used to support the market characterization research include data from the U.S. Census Bureau, as well as reports from DOE, the American Council for an Energy-Efficient Economy (ACEEE), the Appliance Standards Awareness Project, and PlaNYC, among others. The team obtained additional information from the Database of State Incentives

for Efficiency and Renewable Energy (DSIRE). Citations are used throughout the report to note where these secondary data were used to support the evaluation.

The MCA team sought to reference only unbiased sources of information. However, in an effort to reflect the latest market trends, forecasts, and analyses conducted by product manufacturers are referenced in some places (e.g., reference to an Osram Sylvania study, and a TCP market forecast in Section 3). Use of these sources does not constitute an endorsement of these companies' views on the part of NYSERDA or the State of New York. Rather, they are used as examples of the data being used by industry leaders as the basis for investment decisions, and of opinions expressed by market experts.

### 3 Market Characterization

This section presents the results of the market characterization component of the evaluation. The section begins with a discussion of the market actors in the commercial lighting market in New York, including their roles in lighting project activity, and the populations of participating and eligible businesses. The section next provides a summary of program activity and accomplishments. Finally, this section reviews the policy framework affecting the commercial lighting market in the state, as well as a range of existing and emerging market forces and trends.

#### 3.1 Market Structure

##### Market Actors Targeted by Commercial Lighting Program

The CLP targets a broad range of professions that provide lighting-related products and services in the commercial lighting market in New York. The types of entities eligible to participate in the CLP include lighting contractors, distributors, designers, architects, engineers, energy services companies, interior designers, and manufacturer representatives. These eligible companies include both mid-market and downstream market entities, as shown in Figure 3.

**Figure 3. Market Actors Targeted by Commercial Lighting Program**



Source: Navigant Analysis

##### Roles of Market Actors in Lighting Projects

A wide range of professions can play a role in a commercial lighting project. As a result, a significant challenge facing those implementing the CLP is effectively addressing the diversity of professions targeted by the program. This challenge is compounded by the fact that the roles that different market actors play in a given project vary depending on the type and location of the project. Furthermore, as discussed in subsequent sections, the role of lighting designer is evolving in the marketplace. This adds to the range of possible project team relationships that may exist.

It is important to note that the CLP only targets participation by companies that provide lighting-related products and services to commercial entities. However, the definitions and population sizes shown in this report pertain to the broader professional fields within which lighting-focused companies operate. Due to limited data availability, the MCA Team was unable to identify tailored population sizes for the lighting-focused subsets of these broader professions.

Three key factors determining the types of roles various market actors play in a given commercial lighting project include:

## 1. Location

Projects that occur in the New York metropolitan area are more likely to involve a lighting designer. In contrast, lighting design for most projects occurring outside of the New York metropolitan area is completed by professionals whose primary business is something other than lighting design. Lighting designers may conduct work in the upstate region. However, the demand for their services outside the downstate area is limited to larger, high-profile projects.

## 2. Client Goals

Clients that are completing high-profile construction projects or that seek unique or distinctive design solutions are more likely to engage a dedicated lighting designer.

## 3. Project Scope

Projects that are part of a comprehensive construction effort (e.g., new construction or major renovation) are likely to be directed by an architect or engineering contractor. Architectural firms may subcontract to dedicated lighting designers. In contrast, for lighting retrofit projects, particularly those occurring outside of the downstate area, everything from design to execution of the project is often carried out by an electrical contractor. It is relatively common for electrical contractors to work in coordination with manufacturer representatives to complete standard applications of the manufacturer's products.<sup>21</sup>

As discussed in Section **Error! Reference source not found.**, there is not a consensus in the market about which professionals have the greatest influence over lighting specifications. Respondents often cited their own profession as the one with the greatest influence over lighting project specifications. This indicates that lighting projects do not always adhere to the same development process. Although it is difficult to define a typical commercial lighting project, Figure 4 presents the steps involved with many commercial lighting projects, and the

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<sup>21</sup> Navigant staff communications with representatives of the Illuminating Engineering Society of New York (Albany and New York City chapters) and the National Council on the Qualifications for the Lighting Professions, as well as the Commercial Lighting Program implementation contractor, ICF Consulting. September, 2010.



types of professionals that may be involved at each step. The steps outlined in Figure 4 are broadly applicable to both major construction and retrofit applications.

For projects involving a dedicated lighting designer, the designer is typically involved in the project from start to finish. During the earliest phases of the project the lighting designer is responsible for developing a draft design that will be further refined by the architects and electrical engineers assigned to the project (e.g., architects and engineers provide detail regarding how the lighting equipment will be structurally supported and wired).<sup>22</sup>

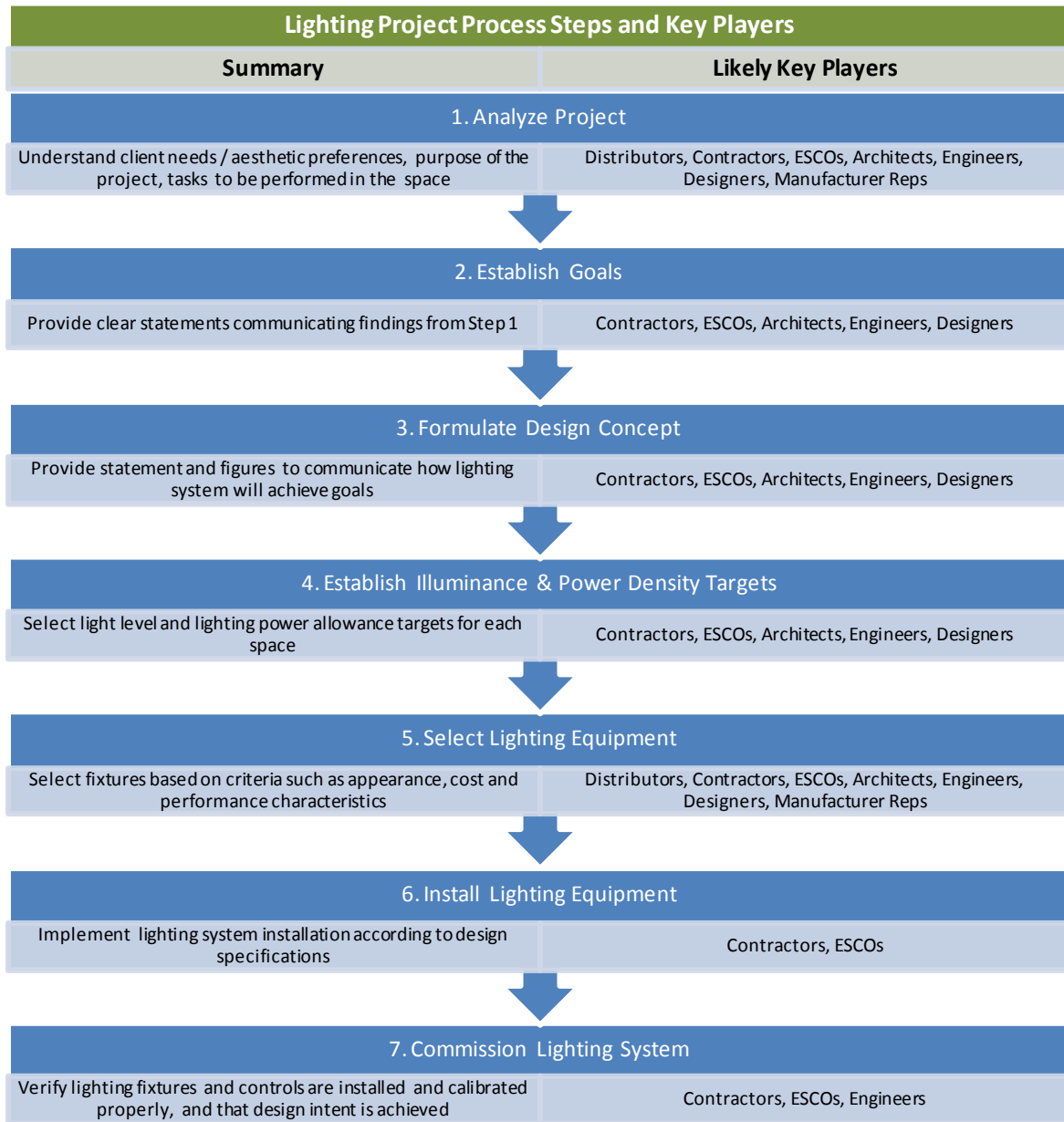
On the other end of the spectrum, if a project is relatively straightforward and the design team does not seek unique lighting system solutions, an electrical contractor may guide the process all the way from early design through to commissioning. In this type of project, the contractor may rely on design rules of thumb and apply more standardized, one-size-fits-all solutions in completing the lighting system.<sup>23</sup>

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<sup>22</sup> Burkett, R. "The Lighting Designer's Role in the Construction Process." *EC&M*. December 1, 2006.

<sup>23</sup> Navigant staff communications with representatives of lighting industry organizations operating in New York State, and the Commercial Lighting Program implementation contractor, ICF Consulting. September, 2010.

**Figure 4. Lighting Project Process Steps and Key Players**



Sources: New York Energy \$mart<sup>SM</sup> Small Commercial Lighting Program Technical Guide for Effective, Energy-Efficient Lighting and Navigant staff.

### Lighting Design—A Growing and Evolving Profession

Architects, engineers, and electrical contractors can all participate in training to gain skills in lighting system design so that they can supplement their more traditional roles with lighting design activity. However, the role of independent lighting designer also exists as a distinct profession. The profession emerged as a design specialty during the last 20 to 30 years.

According to a representative from the NCQLP, an organization that certifies lighting designers, the field is seeing steady growth.<sup>24</sup> A key factor contributing to the growth is the fact that in 2005 the U.S. General Services Administration (GSA) mandated that all lighting projects at federal facilities must engage the services of a lighting professional certified as Lighting Certified (LC) by the NCQLP.<sup>25</sup>

Those professionals focusing exclusively on lighting design typically participate in the International Association of Lighting Designers (IALD) and are certified by the NCQLP. Membership in IALD is limited to those who do not sell or install lighting equipment, and applications are peer reviewed. The NCQLP requires three years of experience and successful completion of an exam to obtain an LC certification. Lighting designers do add fees to projects they participate in; however, with their unique skill set and depth of focus on the lighting market, they seek to identify cost-saving opportunities that will save the projects money well in excess of their fees.<sup>26</sup>

### **3.2 Summary of Program Activity and Accomplishments**

The Business Partners program goal is to sign up 1,800 partners across all three program components (CLP, Motor Systems, Building Performance and HVAC) between July 1, 2006, and June 30, 2011. As of December 31, 2010, the commercial lighting component of the program (CLP) had 346 partners.<sup>27</sup> Therefore, as shown in Table 8, the CLP had met 19 percent of the overall Business Partners program goal as of December 31, 2010.

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<sup>24</sup> Navigant staff communication with representative of the National Council on the Qualifications for the Lighting Professions. September 20, 2010.

<sup>25</sup> The GSA's "Facilities Standards for Public Buildings Service" states that lighting design shall be performed or supervised by a practitioner credentialed as Lighting Certified by the National Council on Qualifications for the Lighting Professions. Section 6.8 Interior Lighting, Day Lighting, and Control Systems, p.189.

<sup>26</sup> Graf, S. *Importance of Using a Lighting Designer*. International Association of Lighting Designers. Available at: <http://www.iald.org/design/importance.asp>. Obtained August 19, 2010.

<sup>27</sup> This includes all companies that signed Participation Agreements from January 1, 2009, through June 30, 2010. As of January 1, 2009, the program officially transitioned from its previous version, the Small Commercial Lighting Program, to the current version, a component of the Business Partners Program. As a result, all companies that had previously participated in the SCLP program were required to sign new Participation Agreements. The program database includes 965 records. However, only 346 of those companies had signed Participation Agreements under the current version of the program (post-2008).

**Table 8. Business Partners SBC III Program Goals and Achievements**

Business Partner Program Area	Overall Program Goal (Number of Partners Enrolled July 1, 2006 through June 30, 2011)	Achievement (Number of Partners Enrolled as of 12/31/10)	Program Area Contribution to Overall Program Goal (%)
Commercial Lighting Program	1,800	346	19%
Motor Systems	1,800	42	1.9%
Building Performance & HVAC	1,800	7	1.4%

Source: CLP data was obtained from program records. Data for other program components obtained from NYSERDA, *New York System Benefit Charge Programs Evaluation and Status Report, Year Ending December 31, 2009, Report to the Public Service Commission*, March 2010.

The following sections describe the program’s market penetration and characterize the participating companies and projects being completed through the program.

### Participating Business Partners

As shown in Figure 5 **Error! Reference source not found.**, electrical contractors make up the largest group of program participants, with 115 participating contractors representing 33 percent of all CLP participants.<sup>28</sup> The majority of the contractors (83 percent) are located upstate.

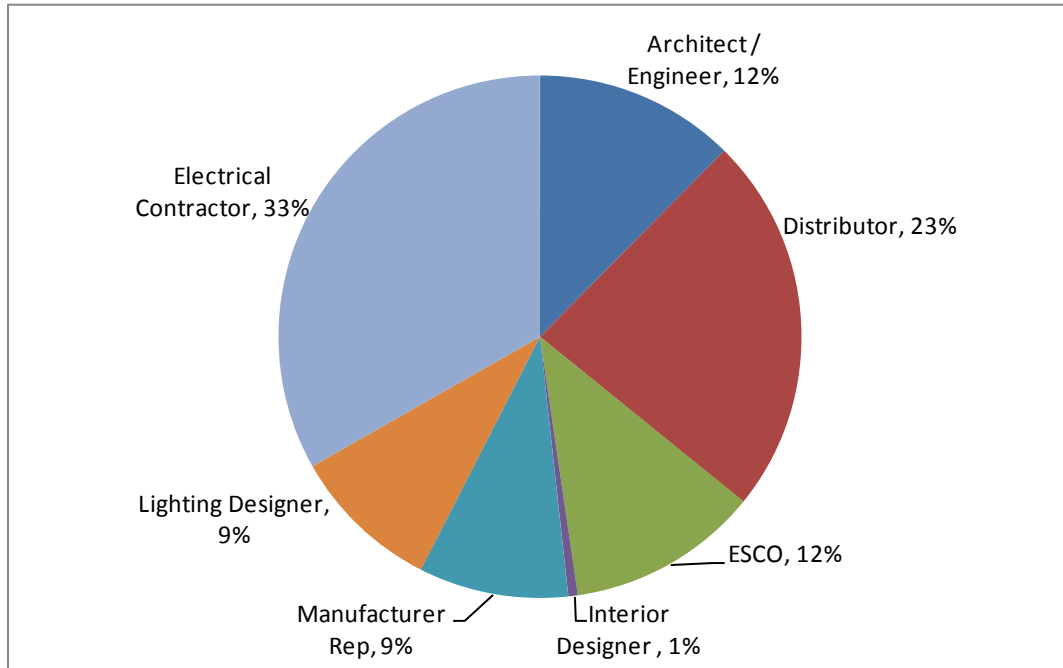
Distributor is the second most common business type among program participants, with 81 participants in the category, or 23 percent of all participants. As with contractors, the majority of the population (85 percent) is located upstate.

Architect and engineer and ESCO are the next largest categories of participants. The 43 participating architects and engineers, and the 41 participating ESCOs each make up approximately 12 percent of the total population of participants. Architects and engineers are distributed relatively evenly across the upstate and downstate regions, with 47 percent located in the downstate region, and the remainder located upstate. A larger percentage of ESCO participants are located downstate than upstate (41 percent downstate, 32 percent upstate).

<sup>28</sup> Unless otherwise noted, discussion refers to Business Partner Commercial Lighting program activity occurring between January 2009 and December 31, 2010.

Twenty-seven percent of ESCO participants are located out of state. This is more than for any other partner type.

**Figure 5. Business Partners by Type**



Source: CLP program records, current through December 31, 2010

A more even distribution of business types exists now than in past years. The pool of companies that participated as SCLP trade allies prior to the program’s transition to Business Partners in 2009 was more heavily dominated by electrical contractors; electrical contractors represented 63 percent of the population of participating companies prior to the transition to Business Partners. Distributors comprised 11 percent of the pre-Business Partners population of participating companies, followed by architects and engineers, which represents 9 percent of participating companies.<sup>29</sup>

As shown in Table 9, businesses participating in the program appear to represent a relatively small fraction of the total population of eligible businesses in the state as a whole, though market penetration is strong among certain business types. Market penetration was estimated by first obtaining Dun and Bradstreet population data for SIC codes that relate to the types of businesses targeted for program participation. Those population sizes were then adjusted, using the best available data sources, to reflect the number of businesses that actually conduct commercial lighting work and would be eligible to participate in the program.<sup>30</sup> The data

<sup>29</sup> CLP program records.

<sup>30</sup> For those SIC codes that were screened for purposes of non-participant sample frame development, screening results were used as a proxy for estimating eligible population size.

presented in Table 9 represent a roll-up of data for various SIC codes of relevance to the program. For SIC codes that were screened for purposes of non-participant sample frame development (electrical contractors, distributors, engineers), screening results were used as a proxy for estimating eligible population size. In other cases (ESCOs, lighting designers, and manufacturer representatives), data from relevant industry associations, from NYSERDA or Navigant analysis was used. In the case of architects and interior designers, there was not an efficient means by which to hone the population size, so D&B data were used.

Business types for which the program appears to have the strongest market penetration include manufacturer representatives (100 percent), ESCOs (80 percent), distributors (17 percent) and lighting designers (15 percent). Interior designers (0.1 percent), architects (1 percent) and electrical contractors (3 percent) have the lowest levels of penetration. Although electrical contractors already account for more program participants than any other business type, and it may be difficult to achieve a high level of market penetration given resources available to the program, this business type may warrant additional focus; according to survey data and interviews with industry experts conducted as part of this study, electrical contractors often play an important role in lighting design and installation, but they may lack knowledge of important energy-efficient lighting design strategies. Therefore, incremental program efforts focused on this business type could have an important impact on the market.

**Table 9. Estimated Market Penetration of CLP**

Business Type	Program Participants	Eligible Population	Penetration
Electrical Contractor	115	4,109	3%
Distributor	81	476	17%
Architect	21	3,957	1%
Engineer	22	283	8%
ESCO	41	51	80%
Lighting Designer	32	211	15%
Manufacturer Rep	32	32	100%
Interior Designer	2	3253	0.06%
Total	346	12,238	3%

Sources: Dun and Bradstreet population data, APPRISE non-participant screening results, NYSERDA, National Council on the Qualification of Lighting Professionals, National Association of Energy Service Professionals, National Electrical Manufacturer Representatives Association, NYSERDA, Navigant analysis.

As previously noted in Section 3.1, the CLP only targets participation by companies that provide lighting-related products and services to commercial entities, and these companies represent a subset of the broader population of professional fields of relevance to the program. Due to limited data availability, the MCA Team was unable to identify tailored population sizes

for the lighting-focused subsets of these broader professions. Therefore, market penetration could not be calculated. As shown in Table 10, the vast majority of partners are located in New York State. However, a handful of out-of-state companies participate as well. The out-of-state companies are primarily from states located in close proximity to New York State, including Connecticut, New Jersey, and Pennsylvania. As noted previously, there are more ESCOs located out of state than for any other category of participants.<sup>31</sup>

There are currently 24 companies participating in the program that are located out-of-state. This is roughly half as many out-of-state companies than were participating in the program prior to its transition to Business Partners. Manufacturers’ locations are distributed widely across the nation, while manufacturer representatives and other types of participating businesses are more likely to have offices located in New York.

**Table 10. Participation of Out-of-State Companies**

Business Partner Type / State	Percentage	Count of Partners
<b>Architect/Engineer</b>	<b>12%</b>	<b>43</b>
CT	0%	1
NY	12%	42
<b>Distributor</b>	<b>23%</b>	<b>81</b>
NJ	1%	2
NY	22%	77
PA	1%	2
<b>ESCO</b>	<b>12%</b>	<b>41</b>
CA	0%	1
CT	1%	2
KS	0%	1
MD	0%	1
NC	0%	1
NJ	1%	5

<sup>31</sup> According to the CLP guidelines (PON No. 1059), out-of-state companies are eligible to participate in the program as long as they primarily target customers located in utility territories that pay the System Benefits Charge. In order for projects to qualify for program incentives, they must be located in a building that pays the System Benefits Charge to an investor-owned utility. These utilities include: Central Hudson Gas & Electric Corporation, Con Edison, New York State Electric & Gas Corporation, National Grid Company, Orange & Rockland Utilities, Inc., and Rochester Gas and Electric Corporation.



Business Partner Type / State	Percentage	Count of Partners
NY	8%	30
<b>Interior Designer</b>	<b>1%</b>	<b>2</b>
NY	1%	2
<b>Manufacturer Rep</b>	<b>9%</b>	<b>32</b>
NJ	0%	1
NY	9%	30
PA	0%	1
<b>Lighting Designer</b>	<b>9%</b>	<b>32</b>
NC	0%	1
NJ	1%	4
NY	8%	27
<b>Electrical Contractor</b>	<b>33%</b>	<b>115</b>
MA	0%	1
NY	33%	114
<b>Grand Total</b>	<b>100%</b>	<b>346</b>
<b>Total NY</b>	<b>97%</b>	<b>322</b>
<b>Total Out-of-State</b>	<b>3%</b>	<b>24</b>

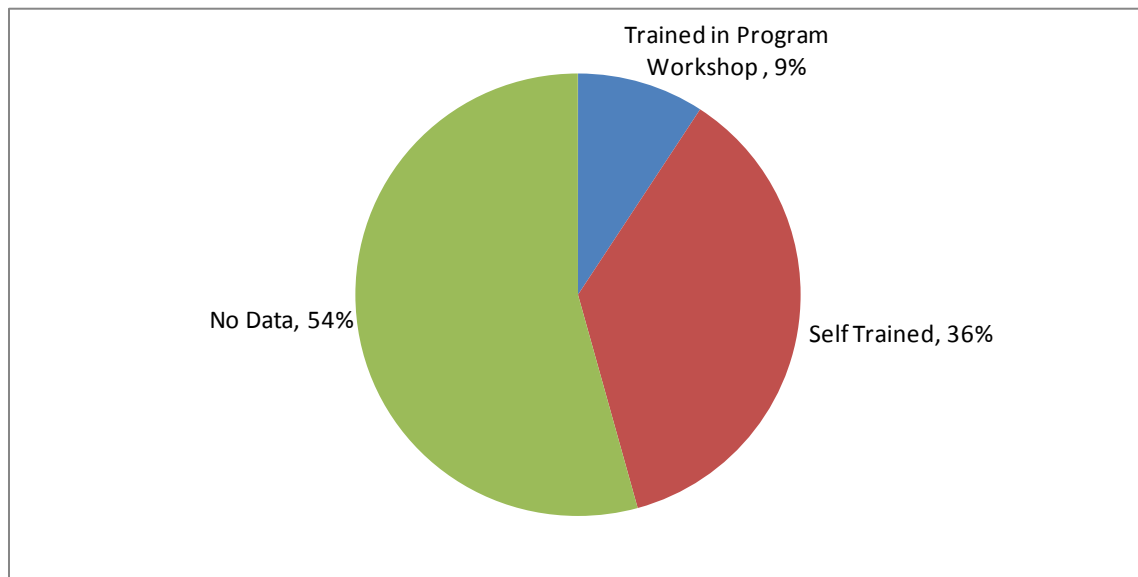
Source: CLP program records, current through December 31, 2010.

To become a Business Partner, a company must demonstrate that it has undergone training to acquire the knowledge and skills required of all program participants. Program tracking data indicates that a relatively small percentage of Partners are relying on the program to receive training required for program participation (9 percent). Thirty-six percent of Partners are self-trained, and the program lacks data on the mode of training employed by 54 percent of Partners. These data may reflect the fact that Partners who participated in an earlier iteration of the program (prior to the shift to Business Partners in 2009) would not have needed to undergo training again in order to participate in the Business Partners program. However, this is not discernible from the data available.

Staff report that the program shifted the focus of training activity within the last few years to focus more on providing training and workshops in advanced lighting market-related topics,

and placed less emphasis on training prospective Partners in basic knowledge required for program participation.

**Figure 6. Mode of Lighting Training for Business Partners**



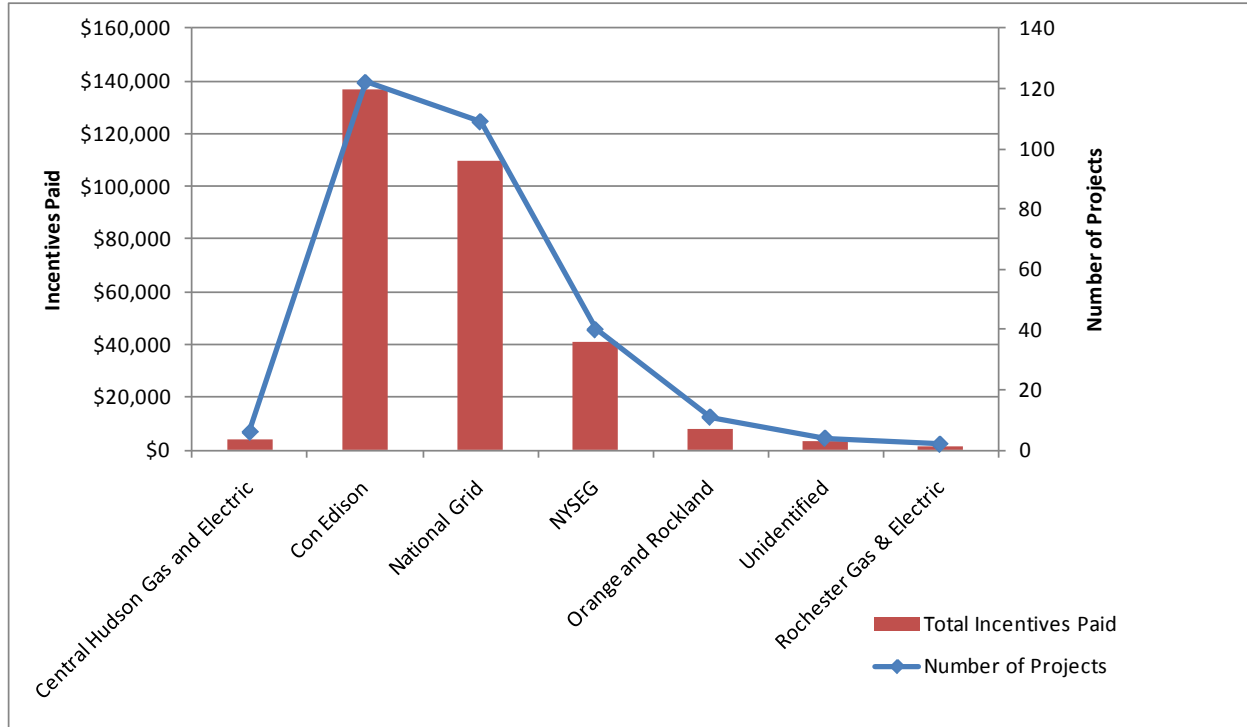
Source: CLP program records, current through December 31, 2010.

### Project Activity

The CLP pays financial incentives to Business Partners that complete effective, energy-efficient lighting projects that meet program criteria. Six hundred and sixty projects were funded during the period from January 2009, through the end of 2010. This represented approximately \$729,000 in incentive payments.

As shown in Figure 7, during the 2009-2010 period, Con Edison’s service territory saw the greatest amount of program-funded project activity (122 projects, \$136,993 of incentive funds paid), followed by National Grid (109 projects, and \$109,919 of incentive funds paid) and NYSEG (40 projects, and \$41,282 of incentive funds paid). These levels of activity are consistent with the rank order of the utilities in terms of retail energy sales to commercial customers; however, National Grid stands out as a leader in terms of its amount of project activity relative to its amount of statewide commercial electricity sales. Con Edison supplies 36 percent of total statewide electricity sales to commercial customers, and 45 percent of incentives paid through the program went to projects in this utility service territory. In contrast, National Grid (Niagara Mohawk) is responsible for 12 percent of statewide electricity sales to commercial customers, and 36 percent of project incentives paid were for projects in this utility service territory.

**Figure 7. Project Activity by Utility Territory**



Source: CLP program records, current through December 31, 2010.

As shown in Table 11, warehouses was the building type with the largest number of projects, and it was also the leading facility type in terms of annual savings (16,286,248 kWh annual savings), and incentive funds paid (\$206,334). Manufacturing facilities and schools were the next largest categories in terms of number of projects, with 103 and 102 projects, respectively). Projects at manufacturing facilities represented a much larger amount of savings than at schools (12,853,925 kWh and 1,733,050 kWh, respectively). Automotive facilities, offices, dormitories, grocery stores, and retail facilities were also among the largest categories of facility types undergoing upgrades with Business Partners program incentives.

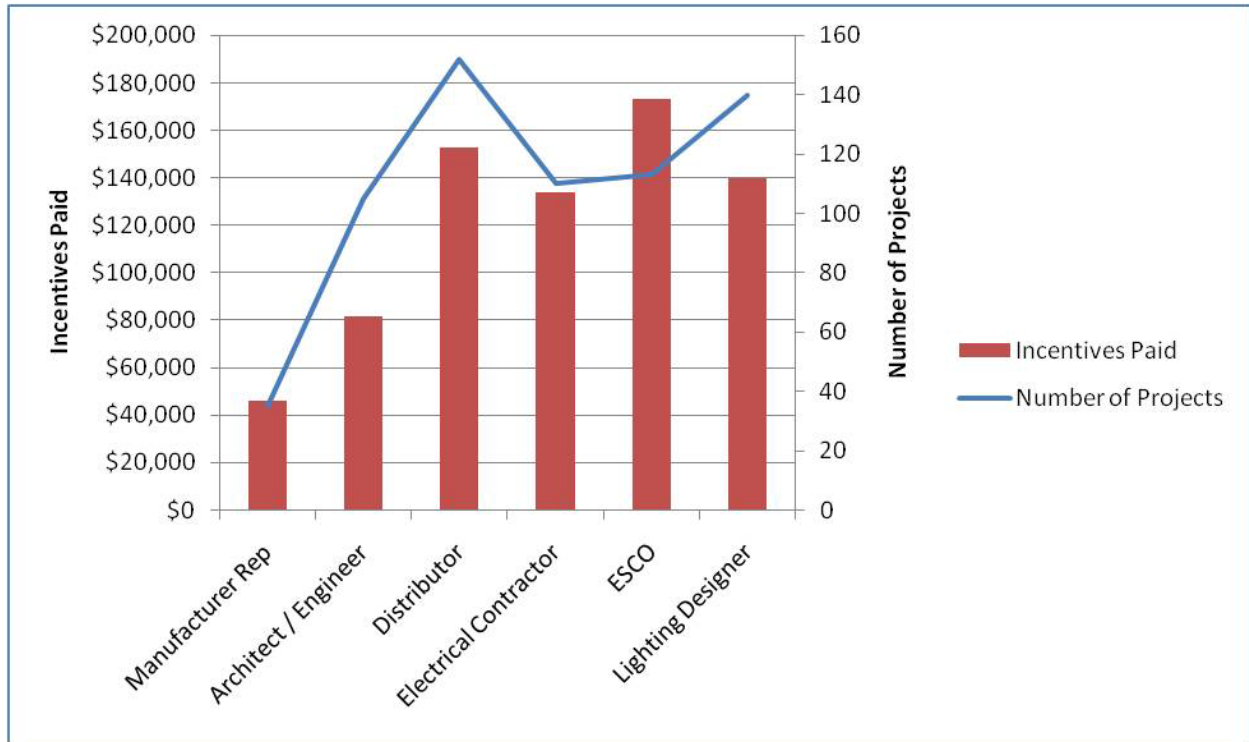
**Table 11. Summary of Incentive Projects by Facility Type**

Facility Type	Number of Projects	Incentives Paid
Automotive	56	\$49,119
Court	1	\$568
Dormitory	42	\$48,391
Exercise Building	19	\$21,326
Fire Station	9	\$6,023
Grocery Store	41	\$48,191
Hotel	1	\$1,000
Library	4	\$2,905
Manufacturing	103	\$150,382
Medical / Clinical Care	10	\$6,992
Museum	2	\$1,683
Office	51	\$45,744
Religious	7	\$5,122
Restaurant	1	\$630
Retail	38	\$27,911
School	102	\$90,725
Theater / Motion Picture	1	\$939
Town Hall	2	\$1,030
Warehouse	144	\$206,334
Unknown	21	\$11,356
<b>Grand Total</b>	<b>655</b>	<b>\$726,372</b>

Source: CLP program records, current through December 31, 2010.

As shown in Figure 8, distributors completed the largest numbers of projects receiving financial incentives from the program (152 projects), followed by lighting designers (140 projects) and ESCOs (113 projects). ESCO projects received the greatest amount of incentive funds (\$173,355), followed by distributors (\$152,523) and lighting designers (\$139,629).

**Figure 8. Summary of Incentive Projects by Type of Business Partner**

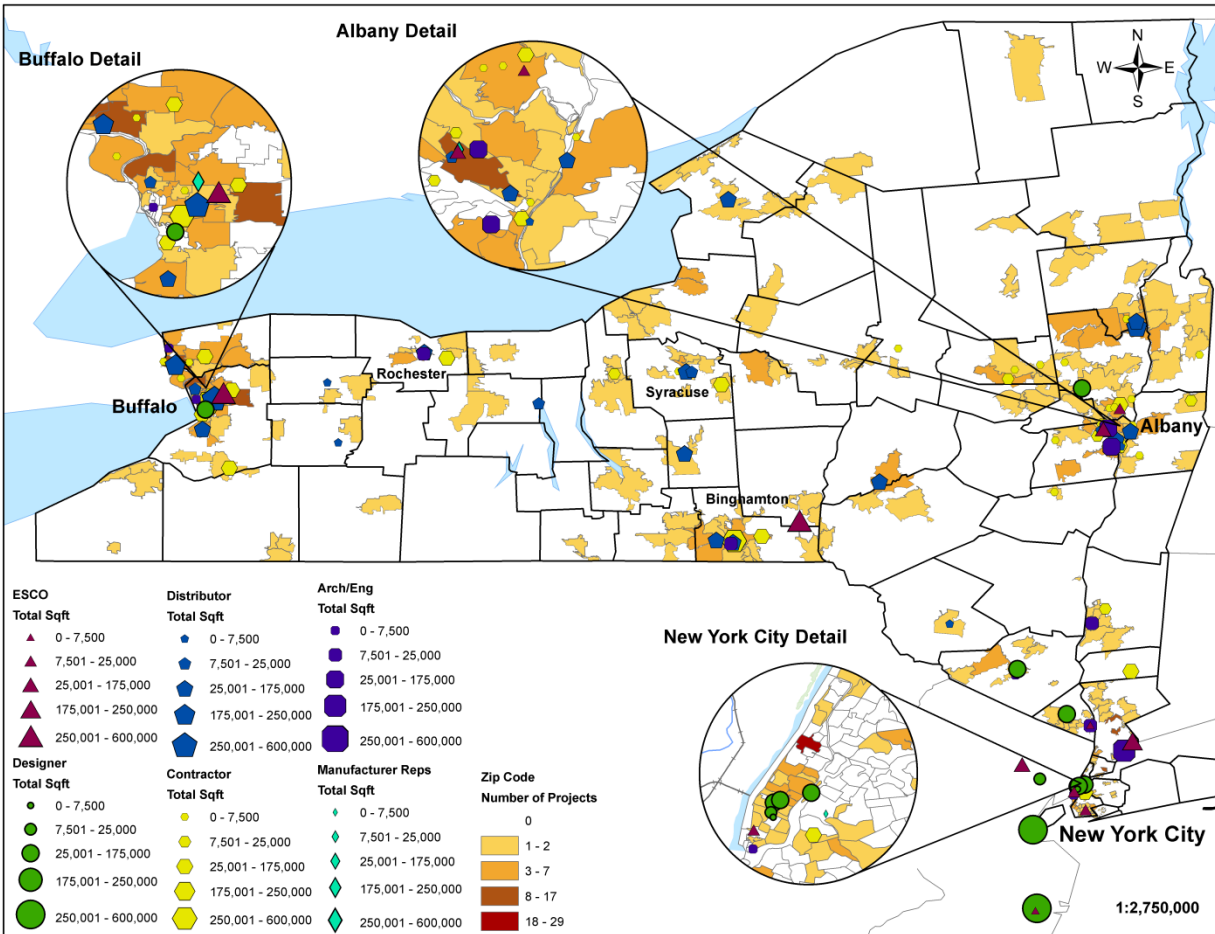


Source: CLP program records, current through December 31, 2010.

Figure 9, presents project activity by Business Partner type. Each business type is represented by a different symbol. The symbols that appear on the map correspond with the location of each company, and the size of the symbol is scaled to reflect the square footage of the projects completed by a given company during the 2009-2010 period. The map also shows the location of project activity, represented by shaded zip code areas. Darker shading corresponds with a greater amount of project activity.

The map reveals that concentrations of project activity exist in urban areas. Furthermore, there is some geographic concentration of activity by participant business type. The metropolitan NYC area has a heavy concentration of design firms, while project activity in upstate areas has been completed by a more diverse mix of partner types. The concentration of design firms in the NYC area is consistent with other industry sources, indicating that projects in the downstate area are much more likely to use a designated lighting designer than projects in the upstate area.

Figure 9. Project Activity by Partner Type and Geography



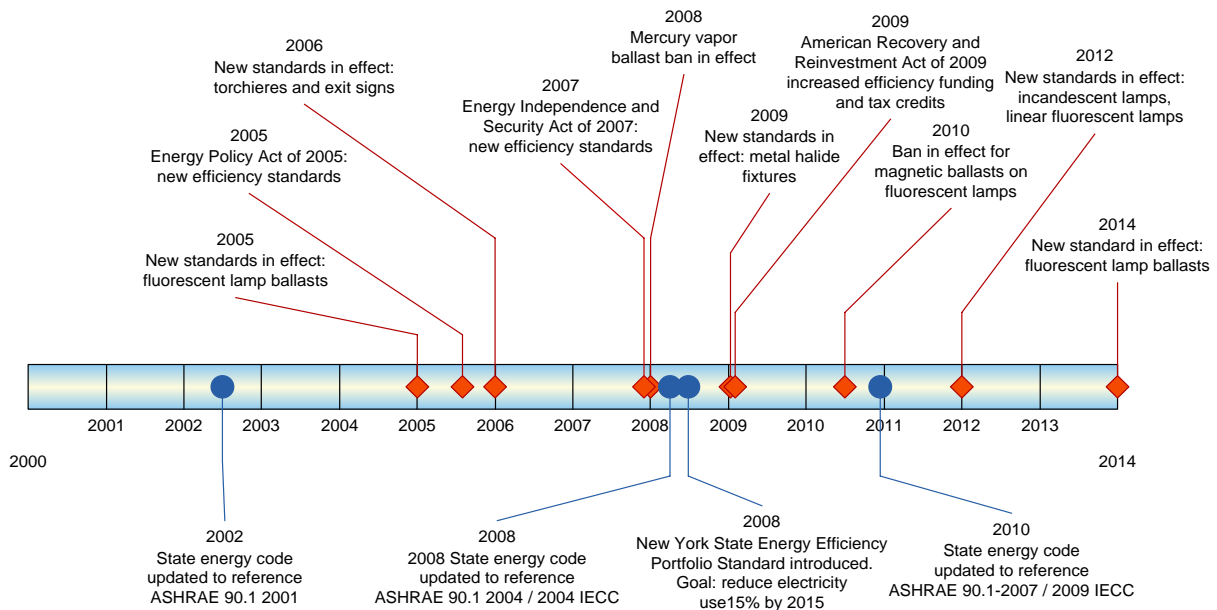
Source: CLP program records, current through December 31, 2010, Navigant analysis.

## Policy Framework

Federal, state, and local policies are fundamental forces shaping the commercial lighting market today. Equipment standards and tax incentives are two outcomes resulting from federal policy-making. Energy codes and EEPS are two key policy mechanisms at play at the state level in New York. NYC has demonstrated in recent years that local policies can also drive substantial energy savings. This section provides an overview of the primary policy developments affecting the commercial lighting market in New York.

Federal and state policies affecting the commercial lighting market in New York are presented in Figure 10. Milestones highlighted on the time line are discussed in the sections that follow.

**Figure 10. Time Line of Federal and State Policies Affecting New York State Commercial Lighting Market**



Sources: ACEEE, Appliance Standards Awareness Project and Navigant analysis.

### Federal Policy

A handful of federal policy developments during the past two decades have laid the groundwork for national-level efforts to advance energy efficiency in the U.S. Landmark federal legislation that has substantially affected the commercial lighting market includes:

- » **Energy Policy Act of 1992:**<sup>32</sup> The act called for improvements to building energy codes, setting equipment energy efficiency standards, and funded efficiency research and development (R&D) efforts.
- » **Energy Policy Act of 2005 (EPAcT):** The act set new equipment efficiency standards and mandated that DOE move ahead with additional efficiency standards through future rulemakings. The act also included requirements for improved building energy codes, supported a continuation of R&D activity, and called for efficiency improvements in public buildings. The Energy-Efficient Commercial Buildings Tax Deduction was also introduced as part of EPAcT. This provision enables building owners, or tenants making improvements to their leased space, to claim a tax deduction in the amount of \$0.30–

<sup>32</sup> Information on federal legislation affecting energy efficiency markets was obtained from the ACEEE. Available at: <http://www.aceee.org/sector/national-policy>. Obtained November 2, 2010.



\$1.80 per square foot of building space depending on the technology used and the level of energy savings achieved.<sup>33</sup>

- » **Energy Independence and Security Act of 2007:** Introduced additional equipment efficiency standards, including a mandate for major efficiency improvements in incandescent lamps, the common light bulb. The act also funded further R&D efforts, as well as efforts to deploy new efficiency technologies in commercial buildings.
- » **American Recovery and Reinvestment Act of 2009:** This economic stimulus package included \$17 billion in funds for energy efficiency-related initiatives, the largest funding allocation ever made for energy efficiency in the U.S. Much of the funding went to state and local governments to supplement resources available for existing energy efficiency incentive programs, and to support the introduction of new programs.

First established in the U.S. in 1987, equipment efficiency standards have proven one of the most effective federal policy tools for achieving large-scale nationwide reductions in energy consumption.<sup>34</sup> After a lapse in equipment standards activity during past presidential administrations, this policy mechanism has received substantial attention from the current administration. DOE is responsible for establishing and updating appliance standards over time, but has missed a number of rulemaking deadlines. DOE is currently working to catch up on missed deadlines and to introduce new and updated standards.<sup>35</sup>

Appliance standard milestones of relevance to the commercial lighting market are highlighted in Figure 10. During the past five years, new standards have gone into effect for:

- » Fluorescent lamp ballasts (2005)
- » Torchieres (2006)
- » Exit signs (2006)
- » Mercury vapor lamp ballasts (2008)
- » Metal halide fixtures (2009)

July 2010 marked a particularly significant milestone, when a ban went into effect for magnetic ballasts used in fluorescent lamp fixtures. According to DOE and other sources, a substantial portion of existing commercial buildings still use inefficient T12 fluorescent lighting with

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<sup>33</sup> DSIRE. *Energy Efficient Commercial Buildings Tax Deduction*. Available at: [http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=US40F&re=0&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US40F&re=0&ee=1). The tax deduction was initially available from 2006 through 2007, but was later extended through 2013.

<sup>34</sup> Equipment efficiency standards are also often referred to as “appliance efficiency standards.” Because the discussion here pertains to lighting-related equipment, the term “equipment efficiency standards” is used.

<sup>35</sup> Neubauer, M., DeLaski, A., DiMascio, M., & Nadel, S. 2009. *KaBOOM! The Power of Appliance Standards: Opportunities for New Federal Appliance and Equipment Standards*. American Council for an Energy-Efficient Economy and Appliance Standards Awareness Project.

magnetic ballasts, and as of 2009 magnetic ballasts were still specified in 14 percent of lighting projects in the U.S.<sup>36</sup>

Another major milestone will occur in 2012 when new standards will go into effect for linear fluorescent and incandescent lamps. Products that do not meet the new standard will be prohibited from manufacture. Several products are expected to be eliminated from the market as a result of the standard include, among them:

- » Most 4-foot linear and 2-foot U-shaped T12 lamps.
- » Many 8-foot T12 and T12 High Output lamps.
- » Some 4-foot T8 lamps with low color rendering index.<sup>37</sup>

**Figure 11. Standards for General Service Fluorescent Lamps, Effective July, 2012**

Lamp/Tube type	Correlated color temperature (CCT)	Minimum average lamp efficacy (lm/W)
4-foot medium bipin	≤4,500K	89
	>4,500K and ≤7,000K	88
2-foot U-shaped	≤4,500K	84
	>4,500K and ≤7,000K	81
8-foot slimline	≤4,500K	97
	>4,500K and ≤7,000K	93
8-foot high output	≤4,500K	92
	>4,500K and ≤7,000K	88
4-foot miniature bipin standard output	≤4,500K	86
	>4,500K and ≤7,000K	81
4-foot miniature bipin high output	≤4,500K	76
	>4,500K and ≤7,000K	72

Source: DOE. (2009) "Impact of Amended Energy Conservation Standards on General Service Fluorescent Lamps: FACT SHEET." March, 2011.

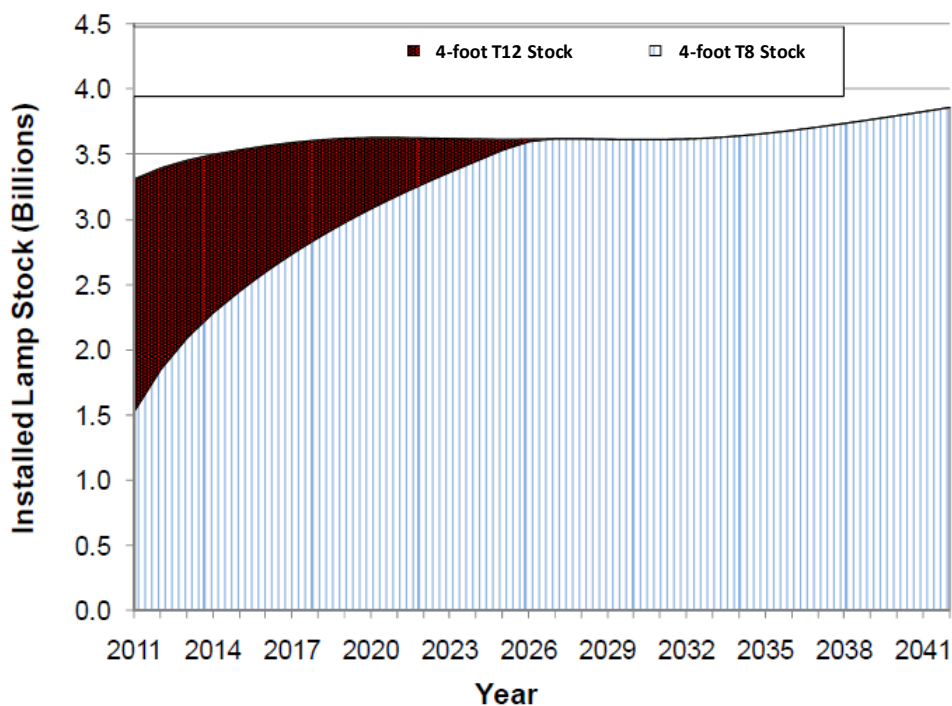
<sup>36</sup> U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction. Reference to the substantial volume of buildings that currently use magnetic ballasts was also made by representatives of industry organizations during communications with Navigant Consulting, Inc. staff, September 2010.

<sup>37</sup> DiLouie, C. "Services & Maintenance: Planning the Next Lighting Upgrade" *Today's Facility Manager*. August 2010.

The new standards for fluorescent lamps, coupled with the change in standards that went into effect for magnetic ballasts in 2010, are expected to effectively require the use of high performance T8 lamps.<sup>38</sup> High performance T8s are already commonly used in new construction and renovation markets. However, the standards changes will have a more significant impact on the lighting retrofit market.

U.S. DOE modeled numerous scenarios to estimate the impacts of the change in standards for fluorescent lamps. The modeling used 2005 data on the installed stock of lamps and ballasts, and applied assumptions about lamp purchasing events (e.g., lamp replacement, renovation and new construction), growth rates, replacement rates, and emerging technology penetration rates. Figure 12 presents one output from DOE’s modeling that highlights the projected rate at which four-foot T12 lamps will be completely phased out of the installed stock of lighting in commercial buildings. As shown in the figure, the market share for T12s will steadily decrease until they are completely absent from the installed stock by 2026.

**Figure 12. Projected Shift in Installed Stock of 4-Foot Fluorescent Lamps Following 2012 Standards Change**



Source: U.S. Department of Energy. Energy Conservation Standards and Test Procedures for General Service Fluorescent Lamps and Incandescent Reflector Lamps: Final Rule Technical Support Document, Chapter 11, Adapted from Figure 11.2.4 4-Foot Medium Bipin Standards Case Installed Lamp Stock (Emerging Technologies, Roll-up, Market Segment-Based Lighting Expertise Scenario, at TSL4).

<sup>38</sup> Appliance Standards Awareness Project. *Linear Tube Fluorescent Lamps*. Available at: <http://www.appliance-standards.org/node/6802>. Obtained August 15, 2011.

Under the new standards, upon failure of an existing lamp or ballast in a lighting system operating T12s, consumers would, in theory, dispose of the existing lamp and ballast system and replace it with a high performance T8 lamp and ballast system. However, initial assumptions about the impacts of the new standard may need revision as it appears that manufacturers are in the process of introducing a new variation of T12 lamp that complies with the new federal standard.<sup>39</sup> Because energy use in a lighting system is driven by the lamp-ballast combination, use of minimally-compliant lamps may result in continued use of less-efficient ballasts beyond the timeframes expected in DOE's modeling, and the planning horizons for lighting efficiency programs across the country. It is still not clear whether or how minimally-compliant T12 lamps will in fact affect the fluorescent lamp market going forward.

The introduction of new federal standards for fluorescent lamp ballasts in 2014 may address gaps in the 2012 lamp standards that allow for use of less-efficient lamp-ballast systems beyond the timeframes initially estimated by DOE. The proposed fluorescent lamp ballast rule released by DOE in April, 2011 is far-reaching, and includes ballasts that operate T8 and T5 systems.<sup>40</sup>

Tightening of standards for general service incandescent lamps (the common light bulb) that will occur during the next decade will also have a dramatic impact on the lighting market as a whole. Incandescent lamps must improve efficiency ratings by 25 percent to 30 percent during the 2012–2014 timeframe. By 2020, incandescent lamps must be 60 percent more efficient than they are today.<sup>41</sup> Though incandescent lamps see limited use in commercial applications, the tighter standards may indirectly affect the commercial lighting market by driving advancements in compact fluorescent lamp (CFL) and light-emitting diode (LED) technologies that do have more numerous commercial applications.

Although higher efficiency lighting will ultimately penetrate the market as a result of new federal standards, it will take some time for this transition to occur. During that transition period, programs like those offered by NYSERDA can help speed the adoption of newer technologies by offering incentives and educational tools.

As noted previously, another federal mandate affecting the commercial lighting market is the GSA's requirement that a lighting professional certified as an LC by the NCQLP must participate in the design or review of all lighting projects at federal facilities.<sup>42</sup>

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<sup>39</sup> Bonneville Power Authority. "T12 Federal Lighting Standard: Discussion of Impacts." June 16, 2011. Available at: [http://www.northwest-lighting.org/documents/T12\\_Federal\\_Lighting\\_Standard.pdf](http://www.northwest-lighting.org/documents/T12_Federal_Lighting_Standard.pdf). Obtained: August 15, 2011.

<sup>40</sup> Appliance Standards Awareness Project. *Fluorescent Lamp Ballasts*. Available at: <http://www.appliance-standards.org/node/6802>. Obtained August 15, 2011.

<sup>41</sup> Appliance Standards Awareness Project. *Incandescent General Service Lamps*. Available at: [http://www.standardsasap.org/products/incd\\_general.html](http://www.standardsasap.org/products/incd_general.html). Obtained November 1, 2010.

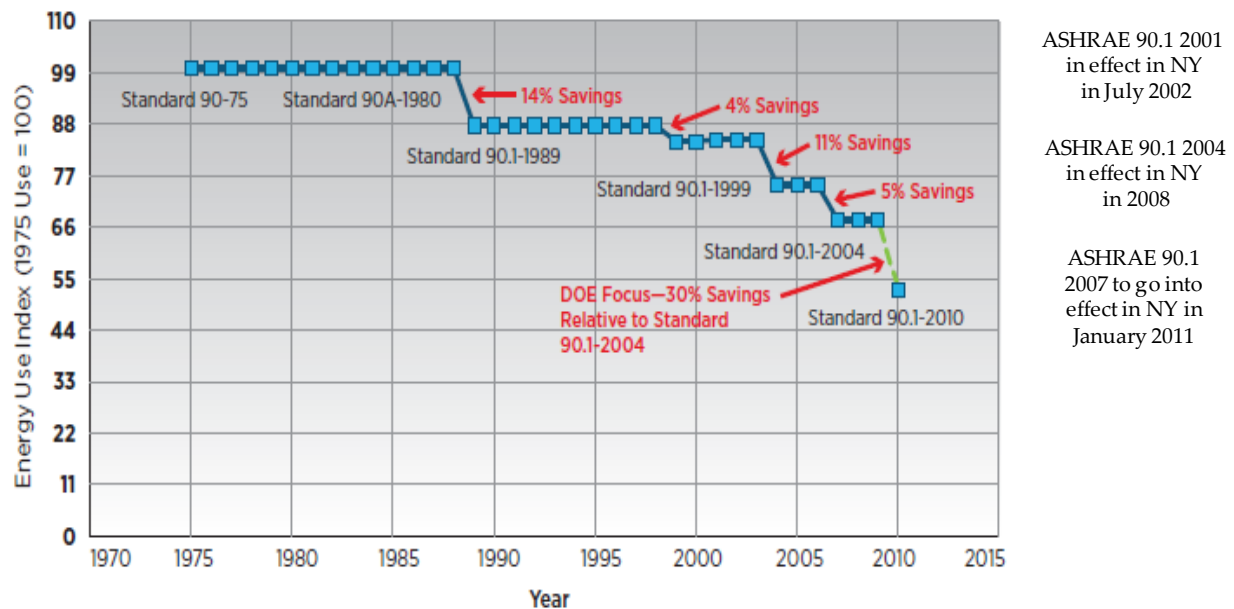
<sup>42</sup> The GSA's "Facilities Standards for Public Buildings Service" states that lighting design shall be performed or supervised by a practitioner credentialed as Lighting Certified by the National Council on Qualifications for the Lighting Professions (NCQLP). Section 6.8 Interior Lighting, Day Lighting, and Control Systems, p.189.

## State Policy

Building codes and the EEPS are two major state-level policies affecting the commercial lighting market in New York.

Building energy codes set minimum requirements for the energy-efficient design and construction of new buildings, and those undergoing renovation. The International Energy Conservation Code (IECC) and the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 90.1 are the two major baseline energy codes. Both codes were developed by independent organizations with input from stakeholders including federal, state, and local government entities. These stakeholders worked collaboratively to ensure a fair and open process, and to share the burden of updating energy codes on a regular basis. The baseline energy codes were selectively adopted by state and local entities, and then enforced by local municipal officials.<sup>43</sup> The Energy Conservation Construction Code of New York State was established in 1979. Updated versions of the code went into effect in 2002, 2008, and 2011. The current version of the energy code is based on the 2009 IECC and ASHRAE 90.1 2007 model energy codes.<sup>44</sup> The evolution of commercial building energy codes is depicted in Figure 13.

**Figure 13. Improvements in Commercial Building Energy Codes Over Time**



Source: U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

<sup>43</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. 2010. *Building Energy Codes 101*.

<sup>44</sup> Building Code Assistance Project, *Online Code Environment and Advocacy Network. New York Building Energy Code Summary*. Available at: <http://bcap-ocean.org/state-country/new-york>. Obtained November 2, 2010.

New construction and renovated space comprise only a small fraction of the building stock in New York State. Therefore, other policies are needed to spur energy savings in the state's vast quantity of existing building space. The EEPS, introduced by the New York Public Service Commission (the Commission) in 2008, forms the foundation for the state's efforts to reduce energy consumption across its entire building stock. The order establishing the EEPS sets a goal to reduce statewide energy consumption by 15 percent of forecast levels by 2015.<sup>45</sup> With the support of funding mechanisms approved by the Commission, utilities, NYSERDA, and other entities are offering a wide range of financial incentives and public education programs in an effort to achieve interim and long-term EEPS targets.<sup>46</sup> These programs include several that support efficiency advancements in commercial lighting.

The EEPS supplements New York's long history of offering energy efficiency incentive programs funded through the System Benefits Charge, a program introduced by the Commission in 1996. The SBC program involves the collection of ratepayer funds through a surcharge on customer electric bills. All six investor-owned utilities in the state participate in the program and funds are administered primarily by NYSERDA.<sup>47</sup>

### **New York City Efficiency Policies**

Launched by the Bloomberg administration in 2006, PlaNYC works on planning efforts addressing the major infrastructure-related improvements necessary to achieve long-term environmental sustainability in NYC. In December 2009, the NYC Council enacted laws stemming from PlaNYC's Greener, Greater Buildings Plan. The laws place a strong emphasis on reducing building energy use, particularly in the city's largest commercial buildings.

The focus on buildings is in response to the fact that, relative to the nation as a whole, a disproportionately large amount of the city's energy use, and associated greenhouse gas emissions, comes from buildings. More than two-thirds of energy consumption in NYC is from buildings, compared to a national average of one-third.<sup>48</sup> By 2030, at least 85 percent of NYC's energy usage and carbon emissions will come from buildings that exist today.<sup>49</sup> Because less than 4 percent of NYC's buildings contain roughly 50 percent of the city's built area, the new laws focus on taking early action in the largest buildings.<sup>50</sup>

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<sup>45</sup> New York Public Service Commission. *Case 07-M-0548. Order Establishing Energy Efficiency Portfolio Standard and Approving Programs*. Effective June 23, 2008.

<sup>46</sup> New York State Public Service Commission. *07-M-0548: Energy Efficiency Portfolio Standard*. Available at: <http://www3.dps.state.ny.us/W/PSCWeb.nsf/All/06F2FEE55575BD8A852576E4006F9AF7?OpenDocument>. Obtained November 2, 2010.

<sup>47</sup> Customers served by the New York Power Authority and the Long Island Power Authority (which includes consumers in Nassau and Suffolk Counties) operate their own programs funded through separate programs.

<sup>48</sup> PlaNYC. *A Greener Greater New York*. 2007.

<sup>49</sup> Ibid.

<sup>50</sup> Ibid.



Energy-related laws enacted in NYC in 2009 produced the following outcomes:<sup>51</sup>

1. Mandatory annual benchmarking and disclosure of energy use in all privately owned buildings larger than 50,000 ft<sup>2</sup>, and all city buildings larger than 10,000 ft<sup>2</sup>.
2. Mandatory lighting system upgrades in existing buildings larger than 50,000 ft<sup>2</sup>. Upgrades must be completed by 2025 and must meet or exceed code at the time of the upgrade.
3. Energy audits and retro-commissioning must be completed for buildings larger than 50,000 ft<sup>2</sup>.
4. Energy code improvements.

### The State of Lighting Technology in Nonresidential Buildings

Lighting technology is advancing at a rapid pace. According to the CLP implementation contractor, most buildings with lighting systems installed just one year ago could likely find economically viable upgrade opportunities as a result of technological improvements that have occurred within the last year.<sup>52</sup>

It is well known that the inefficient T12 fluorescent lamps and magnetic ballasts used in many commercial applications in the past are now solidly outperformed by today's advanced T8 and T5 lamps, and electronic ballasts. Furthermore, new lighting fixture options and design strategies provide opportunities to transform the aesthetics of a commercial building space while improving occupant comfort through reduced glare, and better lighting quality. In addition to delivering energy cost savings, newer equipment also reduces maintenance costs because it lasts much longer than even some of the earlier stage efficient lighting technologies. For example, as described in its Lamp Product Catalog, Osram Sylvania reports that its newer T8 lamps last 20 percent longer than traditional T8s while also providing higher light output and better light quality.<sup>53</sup>

Despite the availability of sophisticated, highly efficient technology, most existing buildings and a substantial number of new construction projects are not taking advantage of these newer technologies. For example, the benefits of electronic ballasts are well established (e.g., reduced heating loads, less noise, and better light quality). However, research conducted for DOE shortly before the new standards went into banning the manufacture of magnetic ballasts found

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<sup>51</sup> DSIRE. *New York City- Energy Conservation Requirements for Existing Buildings*. Available at: [http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=NY16R&re=0&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NY16R&re=0&ee=1). Obtained October 28, 2010.

<sup>52</sup> Navigant communications with ICF Consulting. Fall 2010.

<sup>53</sup> Osram Sylvania Lamp Product Catalog. Available at: <http://www.sylvania.com/BusinessProducts/LightingForBusiness/Products/Lamps/Fluorescent/>. Obtained November 4, 2010. Use of this industry source does not constitute an endorsement of the company's views on the part of NYSERDA or the State of New York. Rather, the material is referenced as an example of the data being used by industry leaders as the basis for investment decisions, and of opinions expressed by market experts.



that 14 percent of projects involving fluorescent lights still included magnetic ballasts in their design. Office and living spaces (apartments and dormitories) had the highest level of specification of magnetic ballasts.<sup>54</sup> Use of magnetic ballasts will inevitably change once the effects of the July 2010 ban on magnetic ballasts take hold in the market. The slow rate of adoption of newer technologies in existing buildings is due to factors including resistance to change and concerns about high upfront costs.

According to NEMA, as of 2010 T12s made up about 30 percent of all fluorescent 4-foot lamps sold annually.<sup>55</sup> Another finding that provides insight into the current market share of T12s in the mid-Atlantic region is from a study conducted for PECO Electric, a utility serving the Philadelphia area. Lighting contractors surveyed for the study were asked to estimate the percentage of square footage in the area that uses various lamp types. Contractors estimated that 11 percent of the commercial and industrial building space in the area still uses T12s.<sup>56</sup>

As discussed previously, DOE projects that the market share for four-foot T12 lamps will steadily decrease following the effective date for new standards in July 2012, and that they will be completely replaced in the market by four-foot T8 lamps, and other suitable alternatives.

A few emerging technologies of relevance to the CLP that show promise for significant future market growth include LEDs, CFLs, hybrid halogens, and wireless controls.

LEDs are the focus of a great deal of industry, energy efficiency incentive program, and government R&D attention. LEDs are a type of solid-state lighting technology, meaning that they use semiconductors to convert electricity into light.<sup>57</sup> LED products currently available to consumers are expensive and their quality of performance is highly variable. However, LEDs are already being used in many commercial spaces, and the technology is expected to see substantial market growth in the coming years.

According to a recent survey of more than 350 lighting project decision makers conducted by Osram Sylvania, 73 percent of building managers and lighting professionals are either currently using LEDs or plan to use LED lighting in their commercial spaces.<sup>58</sup> Further evidence of the increasing adoption of LEDs is provided by a survey conducted by the Midwest Energy Efficiency Alliance, which found that more than 50 percent of responding utilities had already

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<sup>54</sup> U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

<sup>55</sup> DiLouie, C. *Services & Maintenance: Planning the Next Lighting Upgrade*. Today's Facility Manager. August 2010.

<sup>56</sup> Navigant/Itron, Preliminary results from lighting vendor surveys. "PECO BL study Lighting T8 tables for ETO.xlsx." Navigant staff communications with Jennifer Fagan. Itron. October 5, 2010.

<sup>57</sup> U.S. Department of Energy. *LED Basics*. Available at: <http://www1.eere.energy.gov/buildings/ssl/>. Obtained November 4, 2010.

<sup>58</sup> *Osram Sylvania Commercial Lighting Survey*. Available at: <http://www.sylvania.com/Energy/CommercialSurvey/>. Obtained November 4, 2010.

launched solid-state lighting initiatives within their organizations, and an additional 20 percent planned to do so within the next year.<sup>59</sup>

LEDs can be used in a number of indoor commercial applications including desk/task lightings, under-cabinet lighting, and recessed down lights. A key drawback of the technology is that it is temperature sensitive, making it challenging to design an effective luminaire. As a result, manufacturers must still overcome some significant design barriers before achieving the full market potential present in LED lighting.<sup>60</sup>

Although LEDs are receiving a great deal of industry attention, other technologies are undergoing major advancements as well. Hybrid halogen technology (e.g., parabolic aluminized reflector [PAR] and A-line lamps) is vying for a solid position in the incandescent replacement lamp market, and holds promise for many commercial applications. Although not as energy efficient as CFLs or LEDs, hybrid halogen lamps are seeing performance improvements due to advancements in materials. Their range of applications is expanding as well as they become better able to function as a directional light source. Costs are also declining due to improved manufacturing processes.<sup>61</sup>

CFLs are improving their ability to meet the needs of a wide range of customers, with new dimming capabilities, availability of more shapes and sizes, and cost declines. CFLs are also expected to be a primary replacement technology for incandescent lamps when most incandescent lamps are phased out within the next several years.<sup>62</sup>

Table 12 compares some of the features of current and emerging lighting technologies. As shown, T5s, T8s, and LEDs offer the best combination of lamp efficacy and useful life, although both attributes can be affected by the types of luminaires in which these lamps or modules are installed. However, the commercial lighting market must draw on a broad range of lamp products to address the full spectrum of client needs.

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<sup>59</sup> Bullman, C. Midwest Energy Efficiency Alliance. *EPA Energy Star Partner Meeting Panel Discussion*. October 2010. Available at: [http://www.energystar.gov/index.cfm?c=partners.pt\\_meetings](http://www.energystar.gov/index.cfm?c=partners.pt_meetings). Obtained November 4, 2010.

<sup>60</sup> U.S. Department of Energy. *LED Basics*. Available at: <http://www1.eere.energy.gov/buildings/ssl/>. Obtained November 4, 2010.

<sup>61</sup> Stockdale, S. *Advanced Lighting Technology*. EPA Energy Star Partner Meeting Panel Discussion. October 2010. Available at: [http://www.energystar.gov/index.cfm?c=partners.pt\\_meetings](http://www.energystar.gov/index.cfm?c=partners.pt_meetings). Obtained November 4, 2010.

<sup>62</sup> APT, Inc., 2010. *The U.S. Replacement Lamp Market 2010-2015 and the Impact of Federal Regulation on Energy Efficiency Lighting Programs*.

**Table 12. Comparison of Lighting Technology Features**

Technology	Lamp Efficacy (Lumens per Watt)	Useful Life (Hours)
LED	70 <sup>a</sup>	30,000–50,000 <sup>a</sup>
CFL	>50 <sup>a</sup>	8,000–10,000 <sup>a</sup>
T5	109 <sup>b</sup>	~30,000 <sup>a</sup>
T8	94–97 <sup>b</sup>	~30,000 <sup>b</sup>
Hybrid Halogen	25–30 <sup>c</sup>	3,000–4,000 <sup>b</sup>
Incandescent	12–15 <sup>a</sup>	1,000 <sup>a</sup>

<sup>a</sup> U.S. Department of Energy. LED Basics. Available at: <http://www1.eere.energy.gov>. Obtained Nov. 4, 2010.

<sup>b</sup> Osram Sylvania Lamp Product Catalog. Available at:

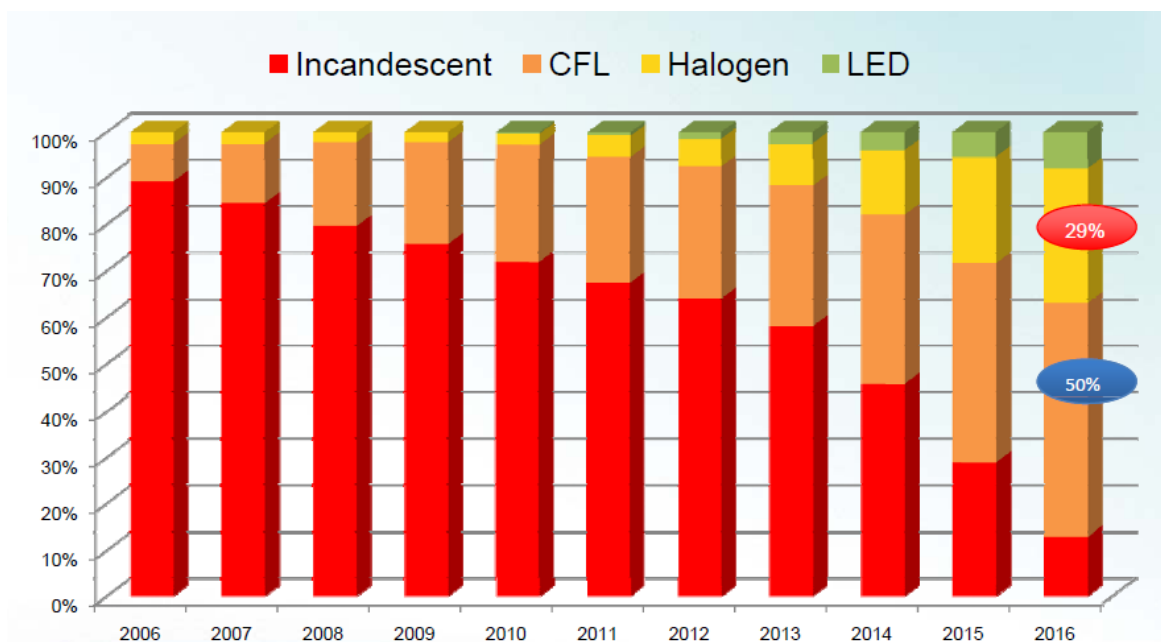
<http://www.sylvania.com/BusinessProducts/LightingForBusiness/Products/>. Obtained Nov. 4, 2010.

<sup>c</sup> Stockdale, S. Advanced Lighting Technology. EPA Energy Star Partner Meeting Panel Discussion. Oct. 2010.

Available at: [http://www.energystar.gov/index.cfm?c=partners.pt\\_meetings](http://www.energystar.gov/index.cfm?c=partners.pt_meetings). Obtained Nov. 4, 2010.

Figure 14 shows a halogen lamp manufacturer’s perspective on how market penetration of various existing and emerging technologies will unfold during the next five years. The manufacturer drew on a range of industry data, as well as its own judgment in preparing the forecast. However, the forecast may be biased toward the manufacturer’s own products. Nonetheless, it is the perspective of one market actor, and cannot be disregarded as it is being used by that company as the basis for major investment decisions.

**Figure 14. Halogen Lamp Manufacturer Lamp Market Penetration Forecast**



Source: Crowcroft, J. TCP Inc. EPA Energy Star Partner Meeting Panel Discussion. October 2010. Available at: [http://www.energystar.gov/index.cfm?c=partners.pt\\_meetings](http://www.energystar.gov/index.cfm?c=partners.pt_meetings). Obtained Nov. 4, 2010.<sup>63</sup>

Wireless controls are another important technological advancement. Lighting system controls are known to deliver substantial energy savings, but they are also notoriously expensive. Labor associated with wiring is the most expensive part of a retrofit. Eliminating labor expenses associated with wiring can decrease the overall installation cost by 50 percent. The ability to avoid disturbing building operations is another key attribute of wireless lighting system controls.<sup>64</sup>

### Market Forces and Trends

The energy policies outlined earlier play a fundamental role in establishing the context within which the commercial lighting market operates. Numerous additional forces act on the market, and either support or detract from investment in energy-efficient lighting. Some of the more notable triggers and barriers to investment are summarized in this section.

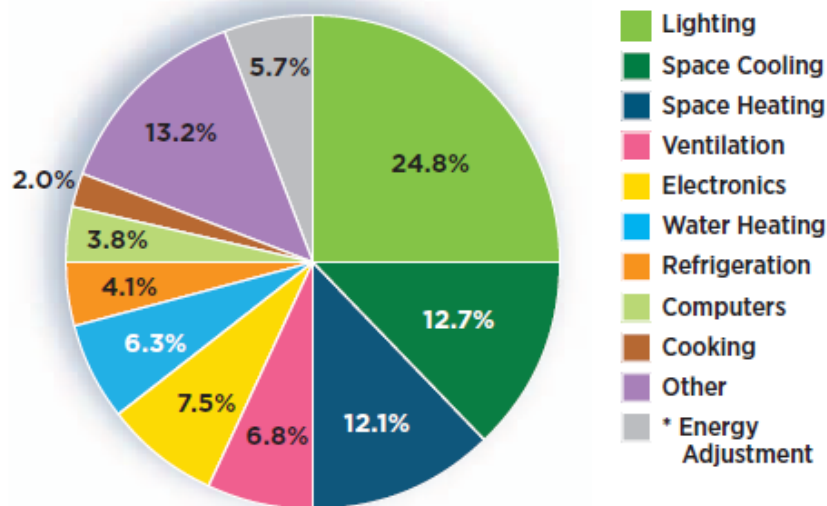
<sup>63</sup> Use of this industry source does not constitute an endorsement of the company’s views on the part of NYSERDA or the State of New York. Rather, the material is referenced as an example of the data being used by industry leaders as the basis for investment decisions, and of opinions expressed by market experts.

<sup>64</sup> Hounsell, D. *Lighting Retrofits: Managers Must Ensure Products Function Post-Installation*. Facilitiesnet. June 2010.

## Factors Supporting Investment in Energy-Efficient Lighting

As shown in Figure 15, lighting comprises approximately 25 percent of energy use in commercial buildings.<sup>65</sup> and lighting upgrades in existing buildings typically deliver paybacks in the range of two years.<sup>66</sup> These factors help position lighting as a low-hanging fruit among the range of possible efficiency improvements that can be made in a building. In fact, energy-efficient lighting is the most popular measure building owners include in green building projects.<sup>67</sup>

**Figure 15. Energy Use in Commercial Buildings by Use Type**



Source: U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

Large corporate building owners are starting to recognize the business benefits of green building investments, and efficient lighting specifically. Fifty-seven percent of lighting project decision makers surveyed by Osram Sylvania in 2010 reported that, compared to a few years ago, they are much more focused on lighting being energy efficient.<sup>68</sup> As a result of this growing

<sup>65</sup> U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

<sup>66</sup> DiLouie, C. *Lighting Upgrades: Opportunities In Existing Buildings*. Facilitiesnet. August 2009.

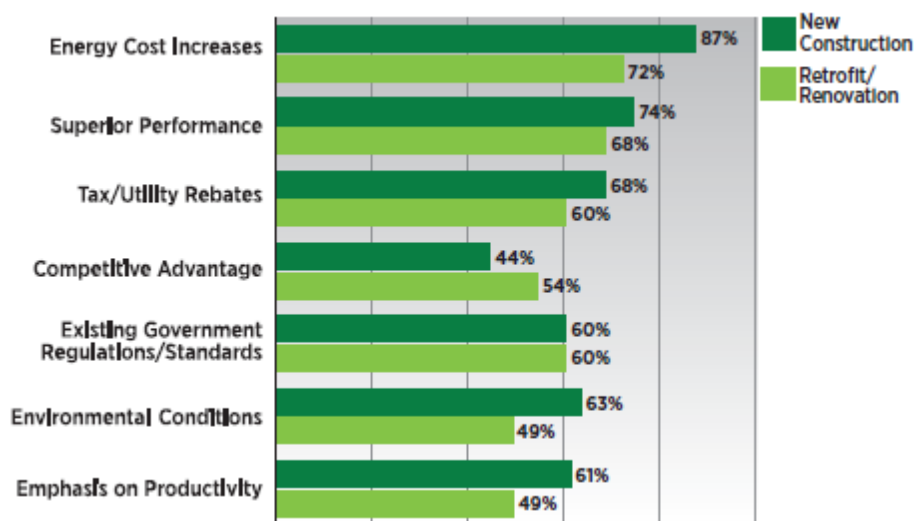
<sup>67</sup> DOE also reports that energy-efficient lighting systems are incorporated into 97 percent of green building retrofit and renovation projects in existing buildings. U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

<sup>68</sup> *Osram Sylvania Commercial Lighting Survey*. Available at: <http://www.sylvania.com/Energy/CommercialSurvey/>. Obtained November 4, 2010.

awareness of the benefits of efficient technologies, the economic downturn has not detracted from efforts to green buildings with more advanced lighting. Rather, according to data collected by McGraw-Hill Construction, as new construction activity has lagged during the poor economic conditions in recent years, building owner efforts to improve the energy performance of existing building stock have increased.<sup>69</sup>

Based on surveys of building owners and others active in the green building market conducted by McGraw-Hill Construction in 2009, the top factors supporting green building investment are those directly related to project economics: electricity prices and energy and cost savings (Figure 16).<sup>70</sup> Other factors that trigger green building investment include improved performance, tax and utility rebates, and competitive advantage.

**Figure 16. Triggers for Green Building Investment Among Building Owners**



Source: U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

<sup>69</sup> U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction. For the purposes of the McGraw-Hill Construction survey described in the report, “green buildings” are defined as those that incorporate environmentally sustainable features across multiple categories including energy performance, water efficiency, and environmentally sustainable materials.

<sup>70</sup> The DOE report in question, *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*, presents results for a variety of similar survey questions asked of different market actors. The data shown in this figure highlight energy cost increases as the top “trigger” for green building investment. Figures elsewhere in the report highlight energy cost savings as the top “driver promoting sustainability.” Because these factors are so interrelated and tied to project economics, they have been grouped together here as “factors directly related to project economics.”



Additional developments that are likely to support future growth in the market for energy-efficient commercial lighting include:

- » **Benchmarking of energy use in existing buildings.** As noted previously, NYC’s requirement that large commercial buildings benchmark and disclose their energy use on an annual basis is part of a broader movement among leading-edge jurisdictions elsewhere in the U.S. to benchmark building energy use. Similar requirements and voluntary programs have been introduced by California, as well as by cities including Washington, D.C., San Francisco, and Austin, Texas.
- » **Lighting technology advancements and obsolescence of older technologies.** The recent ban on magnetic ballasts will force many existing building owners and managers that have resisted change in the past to finally abandon their business-as-usual practices of lighting specification and lamp/ballast replacement. The phase-out of incandescent lamps during the next decade will also drive decision makers to explore new lighting solutions. The likely increase in demand for new lighting equipment should be met by a market ready to offer more efficient and sophisticated products, as evidenced by the rapid pace of advancement in lighting technologies noted earlier.
- » **Growing market awareness, and support for energy-efficient commercial lighting.** As described earlier, awareness of, and demand for, more environmentally sustainable buildings is rising, and efficient lighting is a proven and straightforward strategy for achieving green building goals. Efforts to achieve higher levels of lighting efficiency in commercial buildings will be met by greater levels of financial support for investments in new lighting systems. Several utilities in New York are now offering their own financial incentive programs to support efficient commercial lighting. These programs—namely, the Existing Facilities and New Construction programs—supplement NYSERDA’s well-established program activity.
- » **High and potentially volatile electricity prices.** Electricity prices for commercial customers in New York State are approximately 66 percent higher than the national average.<sup>71</sup> These high prices, coupled with historic volatility in energy prices in the state, and a growing understanding of the business case for energy efficiency investments, may lead building owners to increase investment in energy efficiency measures like lighting as a means of hedging future financial risk.<sup>72</sup>

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<sup>71</sup> U.S. Energy Information Administration. *New York State Energy Profile*. Available at: [http://tonto.eia.doe.gov/state/state\\_energy\\_profiles.cfm?sid=NY](http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=NY). Obtained November 3, 2010; U.S. Energy Information Administration. *Annual Energy Outlook 2010: Electricity Price Forecast Data*. Available at: <http://www.eia.gov/oiaf/forecasting.html>. Obtained November 4, 2010.

<sup>72</sup> U.S. Energy Information Administration. *Trends in New York’s Electricity Retail Prices Fact Sheet*. Available at: [http://www.eia.doe.gov/cneaf/electricity/page/fact\\_sheets/new\\_york.html](http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/new_york.html). Obtained November 4, 2010.



## Barriers to Investment in Energy Efficiency

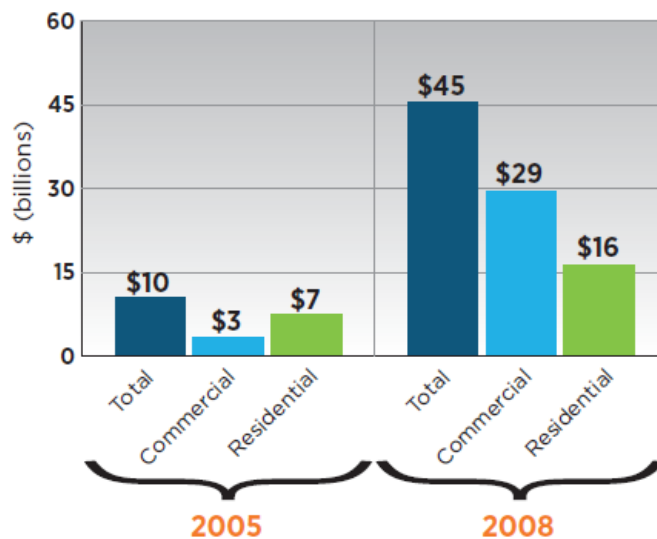
For business decision makers nationwide, the greatest barriers to investment in green building retrofits and renovation include perceived high upfront costs and budgeting challenges.<sup>73</sup> This topic is discussed further as part of the discussion of results of the survey efforts for this evaluation, presented in Section **Error! Reference source not found.** Cost-related barriers were also dominant when the last MCA evaluation of the SCLP was conducted.

Looking ahead, poor economic conditions are likely to limit new construction and major renovation activity for another few years. Most developers and real estate investors in the U.S. don't expect construction lending to rebound for at least three years because the market cannot bear high enough rents to warrant such investment. In NYC, rents would have to increase approximately 30 percent to justify construction of new buildings that lack substantial subsidies.<sup>74</sup> This lack of new construction activity during the next few years will limit an otherwise solid potential for growth in the commercial lighting market.

## Additional Trends

The market for green building in general is growing. According to DOE, the size of the green building market grew from \$10 billion in 2005 to \$45 billion in 2008 (see Figure 17).

**Figure 17. Green Building Market Size**



Source: U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

<sup>73</sup> McGraw-Hill Construction. 2010. *Smart Market Report: Green Building Retrofit & Renovation*.

<sup>74</sup> Pruitt, A.D. "Construction in New York? Skip It." *Wall Street Journal*. October 27, 2010.

The U.S. Green Buildings Council’s Leadership in Energy and Environmental Design (LEED) rating system, the U.S. Environmental Protection Agency and DOE’s ENERGY STAR Buildings program, and other voluntary environmental sustainability initiatives are experiencing a growth in influence in the marketplace. The number of projects being rated as ENERGY STAR Buildings has doubled since 2007 from 4,000 to 9,000. These buildings still only account for 0.2 percent of total existing commercial building stock. However, the growth in buildings obtaining the ENERGY STAR rating is an indicator that interest in energy efficiency is rising and should be sustained after economic conditions improve. LEED registered and certified projects have also grown steadily since 2006. New York is among the top four states in the nation for LEED-registered projects.<sup>75</sup>

### Statewide Commercial Lighting Retrofit Market Size

In response to a request from NYSERDA program staff, the MCA team explored the size of the statewide lighting retrofit market. The primary goal of the analysis was to estimate the amount of commercial building space, by region and by type that is eligible to undergo a lighting upgrade. Drawing on data related to existing building stock as well as renovation and new construction trends in the state, the team prepared a high-level estimate of lighting upgrade opportunities. The findings presented here will inform program staff efforts to identify promising geographic areas and building types that may be worthwhile focal points for future program recruitment and training efforts.

The study approach was developed with input from program staff and the implementation contractor, ICF. Due to practical limitations, eligible space was defined loosely as: 1) space that is likely to undergo renovation within the next two years; or 2) space in which a lighting system upgrade could likely be justified on the basis of projected cost savings.<sup>76</sup>

The approach used was to start with data on program-eligible commercial building space that existed prior to the most recent energy code upgrade in New York, which occurred in 2008. Based on reports of recent Business Partners Program experiences, it is apparent that most buildings constructed prior to 2008 that have not undergone a lighting system upgrade during the last year would benefit from recent advancements in lighting technology. Recognizing that a portion of building space constructed post-2007 would also include lighting upgrade opportunities (e.g., as space is altered to suit specific tenant needs), new construction was also factored into the market size estimate.

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<sup>75</sup> U.S. Department of Energy, Department of Energy Efficiency and Renewable Energy. *Energy Efficiency and Renewable Energy Trends in Residential and Commercial Buildings*. August 2010. Prepared for U.S. Department of Energy by McGraw-Hill Construction.

<sup>76</sup> In order to qualify to receive incentive funds from the CLP, a project must use new fixtures. Lamp and ballast replacements are not eligible. For practical reasons, the analysis does not account for this distinction.

### 3.3 Method for Estimating Lighting Retrofit Market Size

Navigant explored a variety of potential data sources for use in the study including, among other sources, DOE's Commercial Buildings Energy Consumption Survey (CBECS) and the energy efficiency potential studies completed for NYSERDA in 2003 and 2008. A McGraw-Hill Construction Dodge database of existing building stock was deemed the most appropriate data source to use as the foundation for the analysis (referred to as the Dodge Building Stock Database for the remainder of the report). The version of the Dodge database used by the MCA team includes data on existing commercial building stock in each year from 2001 through 2007, broken out by county and building type.

Using the 2007 Dodge Building Stock Database as a starting point, the MCA team removed square footage associated with building types for which program eligibility is limited or restricted. The CLP only allows incentives to be issued for upgrades in common areas for the following building types: dormitories, multifamily units (over four units), hotels, and motels. These building types represent 52 percent of the total building stock in the state, less single-family homes. Multifamily units comprise the vast majority of this space (50 percent of the total non-single-family space in the state). The Dodge dataset did not define what portion of the multifamily category pertained to spaces comprising over four units (the criteria for eligibility in multifamily space). Therefore, multifamily space was excluded from the analysis. Of the remaining space types in which only common areas are eligible, an accurate measure of the portion of this space which is common areas was unavailable. Therefore, based on professional judgment provided by the implementation contractor, the team assumed that roughly 10 percent of the square footage associated with these building types consists of common area space.

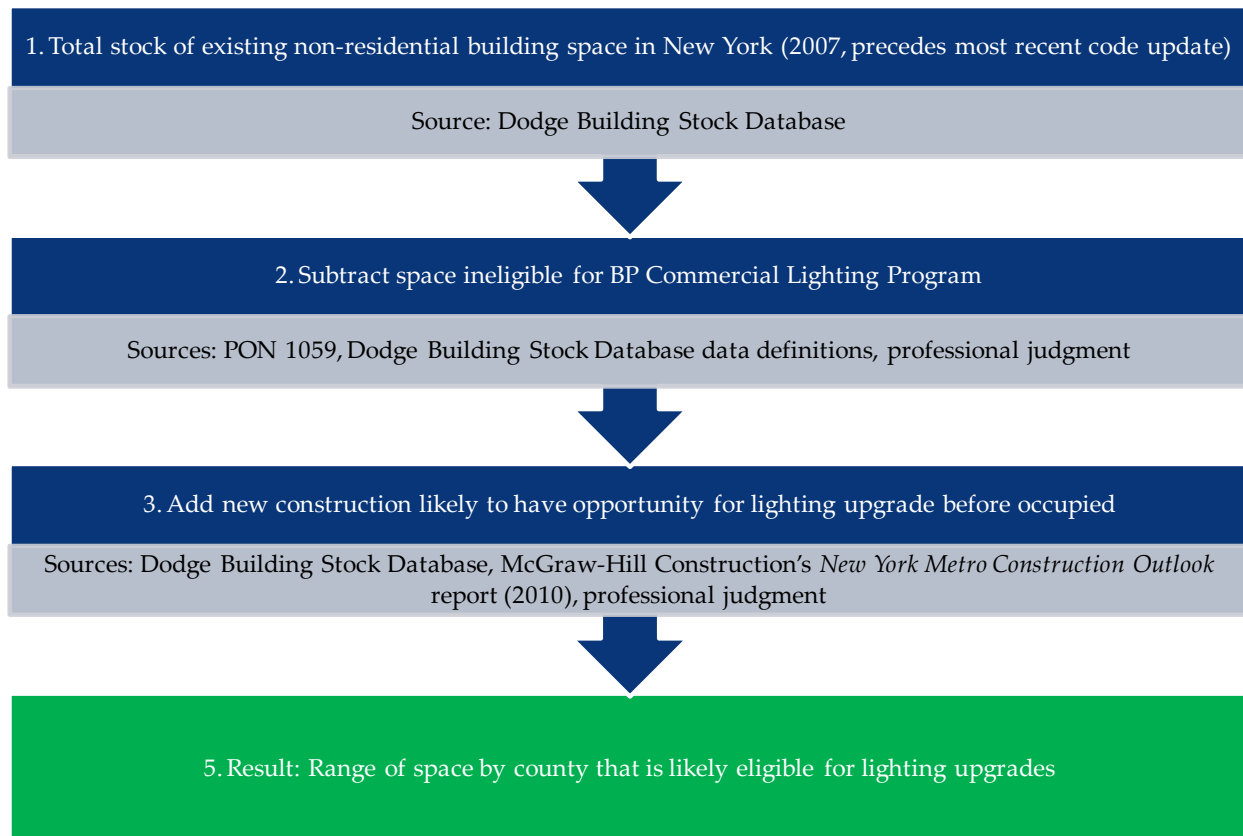
As noted earlier, a component of commercial new construction activity that has occurred since 2007 was also factored into the study to reflect the fact that some new construction is built without tenant-specific needs in mind and would be retrofit prior to tenant occupation. For purposes of the analysis the MCA team included all new construction from 2008, assuming technological advancements would enable space built in that year to potentially benefit from lighting upgrades. The MCA team assumed that 25 percent of new construction in 2009 would be eligible for retrofit, and that 50 percent of space built in 2010 would be eligible for retrofit. A smaller factor was used for 2009 than for 2010 to reflect that more space built in that year would currently be occupied. These assumptions are likely liberal because the slowdown in new construction has been accompanied by a decrease in the amount of space that is built to spec (i.e., built without a specific tenant's needs in mind).<sup>77</sup>

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<sup>77</sup> The team considered subtracting building space that had participated in the Commercial Lighting Program and other relevant NYSERDA incentive programs. However, considering how rapidly lighting technology is advancing, and given practical limitations associated with determining the lighting-specific upgrades that have occurred under

Overall assumptions for new construction were based on McGraw-Hill Construction data for new construction activity in the New York metropolitan area.<sup>78</sup> Although the MCA team deemed new construction worthy of including in the analysis, it is important to note that new construction accounted for only approximately one percent of the total building stock in 2009 and 2010.<sup>79</sup> For the purposes of understanding the market potential for lighting upgrades in the state, it is most important to focus on the characteristics of the New York building stock as a whole, and that is dominated by buildings constructed prior to 2008.

**Figure 18. Overview of Approach Used to Assess Lighting Upgrade Market Size**



Source: Navigant analysis

other NYSERDA programs, space that has already received NYSERDA incentives was not subtracted from the total eligible space.

<sup>78</sup> McGraw-Hill Construction. 2010. *Exclusive Report: New York Metro Construction Outlook 2010*.

<sup>79</sup> McGraw-Hill Construction. 2008. *Database of Existing Building Stock, New York*. Includes actual data through 2007. Growth factors assumed in the 2007 database of building stock were adjusted to reflect findings related to actual new construction activity presented in the 2010 New York Metro Construction Outlook prepared by McGraw-Hill Construction.

## Lighting Upgrade Market Potential Findings

The MCA team found the statewide market potential for CLP lighting upgrades is nearly three billion square feet. This square footage with potential for lighting upgrades represents 88 percent of the total CLP-eligible commercial building space in the state, and approximately 26 percent of all building space statewide.<sup>80</sup> Figure 18 highlights building stock with potential for lighting upgrades at the county level. The metropolitan areas of Buffalo, Rochester, Syracuse, Albany, and NYC have the greatest amount of square footage with lighting upgrade potential.<sup>81</sup>

**Table 13. Potential for Lighting Upgrades (ft<sup>2</sup>) Relative to Total Statewide Building Space**

Category	Quantity of Space (ft <sup>2</sup> )	Percent of Total CLP-Eligible Space
Market potential for CLP lighting upgrades <sup>82</sup>	2,981,499,293	88%
Total CLP-eligible space	2,981,499,293	100%
Total building space in New York State, including multi-family and single-family buildings	11,666,275,239	N/A

Sources: Dodge Building Stock Database and Navigant analysis.

The large market size found by the MCA team is supported by findings presented in a study that examined the market potential for energy efficiency measures in the state.<sup>83</sup> That study found that lighting accounts for 50 percent of the total energy efficiency market potential in commercial buildings in terms of energy savings (megawatt-hours). Although each study looks at market potential in different terms (the MCA team’s analysis focuses on market potential in terms of square footage, whereas the other study looks at market potential in terms of energy

<sup>80</sup> As noted earlier, potentially eligible common space area at multifamily buildings was difficult to quantify. Thus, multi-family common area space was excluded from the analysis, despite the fact that multi-family space as a whole comprises approximately half of the total square footage in the state that is not single-family homes.

<sup>81</sup> Although Nassau and Suffolk Counties represent 12.5 percent of the total commercial square footage in New York State, the potential in these counties is excluded from the analysis due to the fact that they lay outside of areas which are eligible for SBC program participation.

<sup>82</sup> Excludes potentially eligible multi-family common area space for reasons previously noted.

<sup>83</sup> Optimal Energy. 2008. *Achievable Electric Energy Efficiency Potential in New York State*.

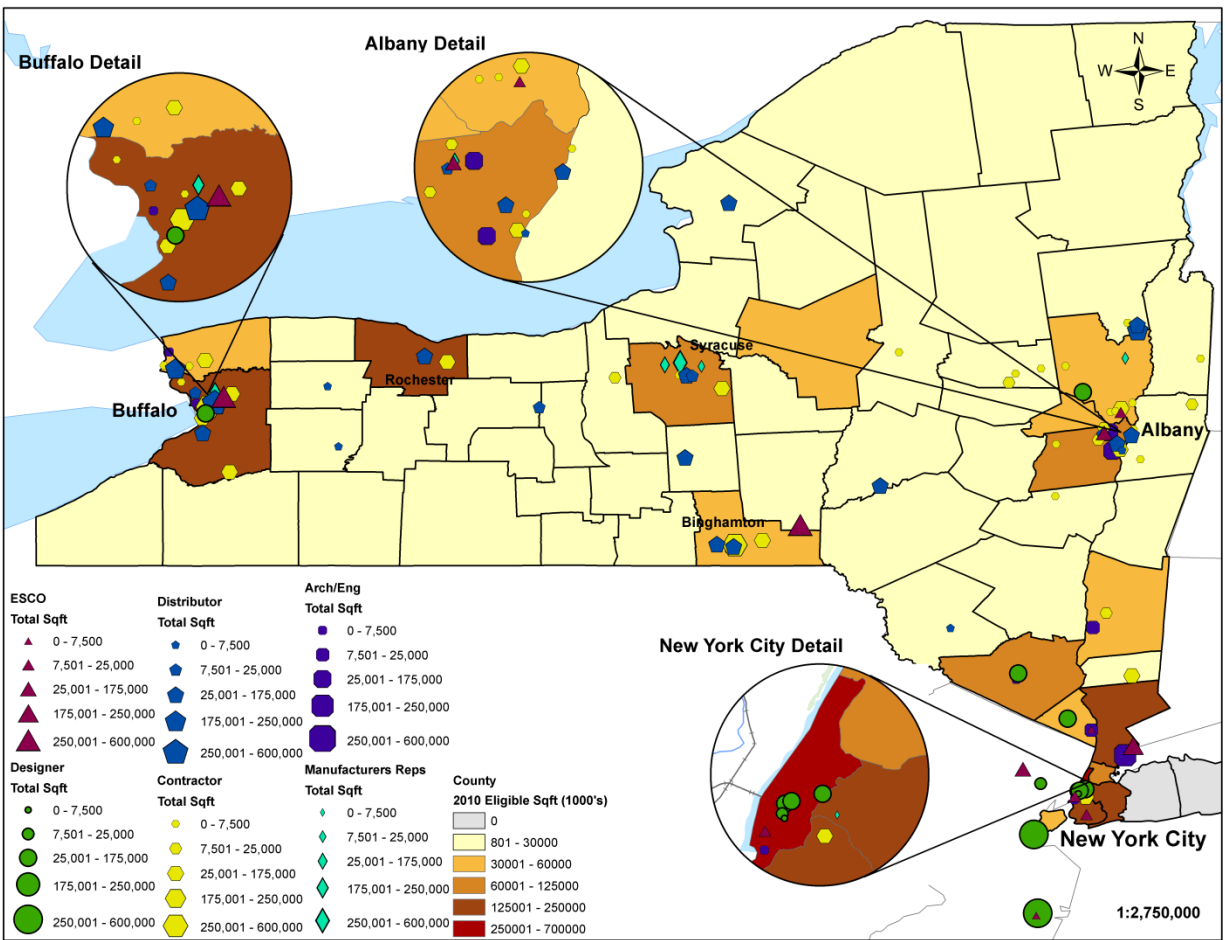
savings), both studies suggest that the market for energy-efficient lighting in the state is abundant.

Findings from surveys conducted for this evaluation study also indicate that market potential for energy-efficient lighting upgrades is large. Nearly two-thirds of participants (63 percent) and 44 percent of non-participants estimate that between 50 percent and 90 percent of their region's total commercial floor space could be upgraded. Non-participants more often think that 90 percent or more of commercial floor space could be upgraded (15 percent of non-participants compared to 9 percent of participants).

Figure 19 is a map showing the location and level of activity of participating Business Partners relative to the market potential for upgrades that exists in each county of the state. Different symbols are used to represent different business partner types. Each symbol on the map represents the location of a particular company, and the sizes of the symbols are scaled to reflect the relative amount of square footage of project work completed by each company. As shown, the project work that has occurred to date has been completed by companies located in areas where market potential is greatest. It appears that a few counties in the downstate region, and in the central part of the state have a great deal of market potential, but relatively low representation by business partners located within the county. This may warrant program activity to target participation by companies located within those counties, or the program may want to highlight the assessment of market potential presented in this study to encourage higher levels of project activity by current partners in areas with untapped potential.



**Figure 19. New York State Lighting Upgrade Market Potential, and Commercial Lighting Program Project Activity by Participant Business Type**



Source: Dodge Building Stock Database; NYSERDA Commercial Lighting Program tracking database; and Navigant analysis.

Table 14 and Table 15 illustrate the breakdown of eligible commercial space by building type. The categories of building types are those used by McGraw-Hill Construction. Table 14 shows the breakdown of total eligible space by type for the entire state. Table 15 presents the breakdown of building space for the counties possessing the highest concentration of eligible space. The counties highlighted in Table 15 include the five counties that make up the NYC area (Bronx, Kings, New York, Queens, and Richmond) along with Erie, Monroe, Onondaga, and Albany Counties. The potential within New York County is shown separately from the remainder of the NYC area because it represents the largest concentration of building space in the state, and, therefore, warrants a more detailed presentation.

As shown in Table 14, statewide market potential is greatest in the office and bank sector, which possesses approximately 671 million ft<sup>2</sup> of eligible space. This is followed by stores and



restaurants (524 million ft<sup>2</sup>) and manufacturing (515 million ft<sup>2</sup>). The schools, libraries, and labs category and warehouses category also rank among the top five categories for eligible square footage with 418 million ft<sup>2</sup> and 305 million ft<sup>2</sup>, respectively.

When analyzed by county (Table 15), the same set of five building types hold the top rankings. However, the order in which they are ranked varies by county. New York County possesses more potential square footage than any other county in the state, and it represents roughly 20 percent of the total eligible space statewide. Office and bank is the top-ranking space type in this county (302 million ft<sup>2</sup>), followed by stores and restaurants (87.4 million ft<sup>2</sup>) and warehouses (87.3 million ft<sup>2</sup>). Among the remainder of New York metropolitan area counties, the next largest cluster of eligible building space, schools, libraries and labs ranks highest (137 million ft<sup>2</sup>), followed by office and bank (129 million ft<sup>2</sup>) and stores and restaurants (128 million ft<sup>2</sup>).

The remaining counties with high concentrations of market potential are located outside the NYC area. In each of these counties, with the exception of Albany, manufacturing is either the top- or second-ranked category, and office and bank and stores and restaurants are also ranked in the top three categories. Albany County is unique in that manufacturing is ranked fifth. The office and bank sector and the stores and restaurants sector are ranked first and second, respectively, and the schools, libraries, and labs sector is ranked third.

**Table 14. Summary of Lighting Upgrade Market Potential Among Buildings Eligible for SBC Program Participation**

Project Type	2010 Eligible Square Feet
Office and Bank	671,074,139
Stores and Restaurants	523,737,501
Manufacturing	515,005,643
Schools, Libraries, Labs	418,039,673
Warehouses	305,404,467
Amusement	142,889,718
Religious	138,214,057
Parking Garage and Auto Service	83,423,385
Government Service	80,178,680
Miscellaneous Nonresidential	68,421,754
Hospitals and Other Health	20,070,057
Hotel/Motel	9,484,820
Dormitories	5,555,397
<b>Total</b>	<b>2,981,499,293</b>

Sources: Dodge Building Stock Dataset

**Table 15. Summary of Lighting Upgrade Market Potential, by County**

County	City	Project Type	2010 Eligible Square Feet
New York	New York	Office and Bank	302,266,100
		Stores and Restaurants	87,406,420
		Warehouses	87,307,924
		Manufacturing	85,196,934

County	City	Project Type	2010 Eligible Square Feet
		Schools, Libraries, Labs	42,150,682
		<b>Total</b>	<b>604,328,059</b>
Bronx, Kings, Queens, Richmond & Westchester Counties	Remainder of New York Metro	Schools, Libraries, Labs	137,278,434.7
		Office and Bank	128,630,353.9
		Stores and Restaurants	127,677,523.9
		Manufacturing	124,788,838.1
		Warehouses	66,925,090.5
		<b>Total</b>	<b>585,300,241</b>
Erie	Buffalo	Manufacturing	51,427,975.3
		Stores and Restaurants	50,756,349.9
		Office and Bank	41,141,743.2
		Schools, Libraries, Labs	30,908,471.6
		Warehouses	27,309,112.9
		<b>Total</b>	<b>201,543,653</b>
Monroe	Rochester	Manufacturing	50,694,913.7
		Office and Bank	36,006,296.6
		Stores and Restaurants	34,704,116.8
		Schools, Libraries,	24,060,188.5

County	City	Project Type	2010 Eligible Square Feet
		Labs	
		Warehouses	16,569,670.4
		<b>Total</b>	<b>162,035,186</b>
Onondaga	Syracuse	Stores and Restaurants	27,543,458.1
		Manufacturing	20,920,714.2
		Office and Bank	20,463,148.2
		Schools, Libraries, Labs	16,592,677.8
		Warehouses	16,274,568.2
		<b>Total</b>	<b>101,794,567</b>
Albany	Albany	Office and Bank	23,324,898.4
		Stores and Restaurants	18,601,005.9
		Schools, Libraries, Labs	12,484,230.9
		Warehouses	9,916,685.6
		Manufacturing	9,268,248.8
		<b>Total</b>	<b>73,595,070</b>

Source: Dodge Building Stock Database; NYSERDA Commercial Lighting Program tracking database; and Navigant analysis.

## Market Outlook

Findings indicate that the market for lighting upgrades in New York State shows promise for strong, steady growth in coming years. Key findings supporting this assessment include the following:

1. Energy-efficient lighting is the most popular measure building owners look to when completing green building retrofits and renovation projects. Furthermore, efficient lighting is regarded by energy efficiency experts as a basic strategy for reducing energy use in new buildings.
2. Decision makers are becoming more aware of the benefits of investing in green building in general, and energy-efficient lighting specifically.
3. The market potential for lighting upgrades in New York State is large, as demonstrated by analysis by the MCA team and findings in the potential studies completed for NYSERDA.
4. Stricter federal standards governing the efficiency of lighting equipment will require many building owners to replace existing lighting systems as lamp/ballast replacement in their existing fixtures will no longer be an option. Furthermore, efficient equipment will become standard practice in new construction and renovation projects.

Growth in the market for efficient lighting is a positive development for the CLP, as it supports the market development goals of the program. However, the CLP will need to adapt to changing market conditions. The CLP should consider revising recruitment targets and project eligibility criteria in order to reflect the large market size, and changes in what is considered standard-practice lighting design.

## 4 Market Assessment

This section presents the results of the participant and non-participant survey efforts conducted as part of this evaluation study. To the extent possible, this section also highlights how the market has changed since the last full evaluation of the CLP’s predecessor program, the SCLP, was conducted in 2005. As noted previously, the MCA team’s ability to make comparisons with the 2005 SCLP evaluation report is limited, as updated indicators were developed for this CLP evaluation to address the current state of the program, and most survey questions did not lend themselves well to direct comparison with the 2005 SCLP report. In addition, different populations were surveyed in the two studies. The 2005 SCLP study did not survey non-participating product and service providers as this evaluation does, and the 2005 SCLP study did include perspectives of facility owners, a group of market actors not addressed in the current evaluation. Despite the differences between the two studies, discussion of how the market has changed since the 2005 SCLP evaluation with regard to a few key topics (e.g., market barriers, knowledge of effective, efficient lighting design principles, and the influence of various professions on the specification of efficient lighting) is included where possible.

In this section the MCA team highlights those findings that are of statistical significance, as well as those deemed to be of practical significance to the program (e.g., data that appear to indicate a directional trend that program staff may find of interest).

### 4.1 Summary of Market Actor Activity

#### Project Types and Sizes<sup>84</sup>

Participating contractors completed an average of 48 lighting projects in New York State in the past two years, as shown in Table 16.<sup>85</sup> Although non-participating contractors had the higher average number of projects, more non-participants reported completing less than 10 projects (26 percent of non-participants compared to 15 percent of participants), indicating that a few non-participating contractors had high numbers of projects that skewed the average.

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<sup>84</sup> Data pertaining to the volume of project activity completed by respondents are not weighted, as this is the factor used as the basis for weighting all other data.

<sup>85</sup> Note that the surveys were fielded in the winter and spring of 2011. “The last two years” refers to the two years prior to survey fielding.

**Table 16. Number of Projects, Contractors**

	Participating Contractors	Non-Participating Contractors
Average Number of Projects	48	59
Median Number of Projects	20	22
Percent of Contractors with <10 Projects	15%	26%
Percent of Contractors with >100 Projects	8%	8%

Source: Participant and non-participant surveys, question A2

Distributors tended to report more completed projects than did contractors. Participating distributors completed an average of 99 lighting projects in New York in the past two years; non-participants completed an average of 94 lighting projects (Table 17).

**Table 17. Number of Projects, Distributors**

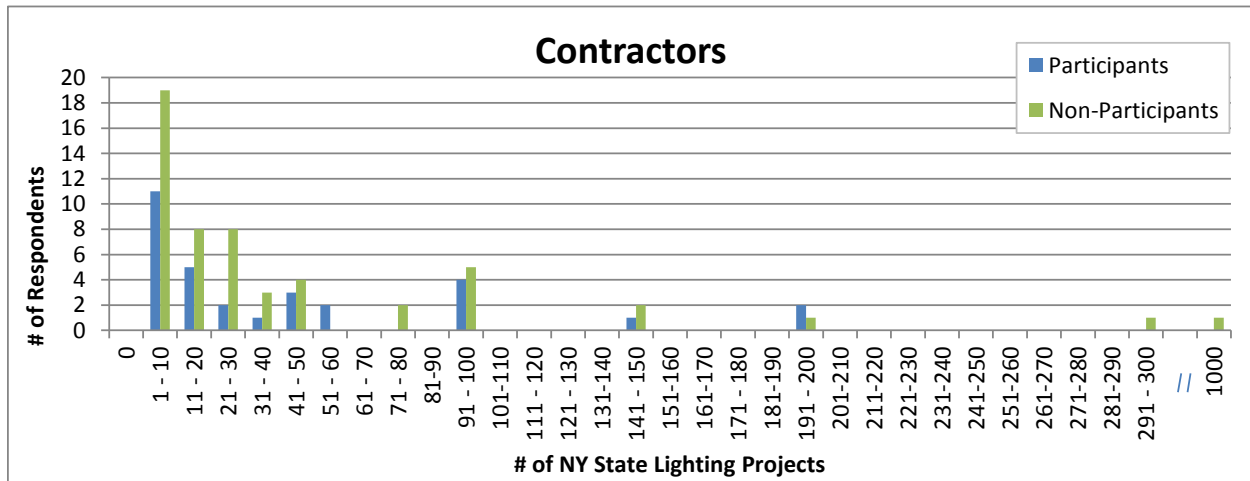
	Participating Distributors	Non-Participating Distributors
Average Number of Projects	99	94
Median Number of Projects	40	25
Percent of Distributors with <10 Projects	17%	7%
Percent of Distributors with >100 Projects	26%	7%

Source: Participant and non-participant surveys, question A2

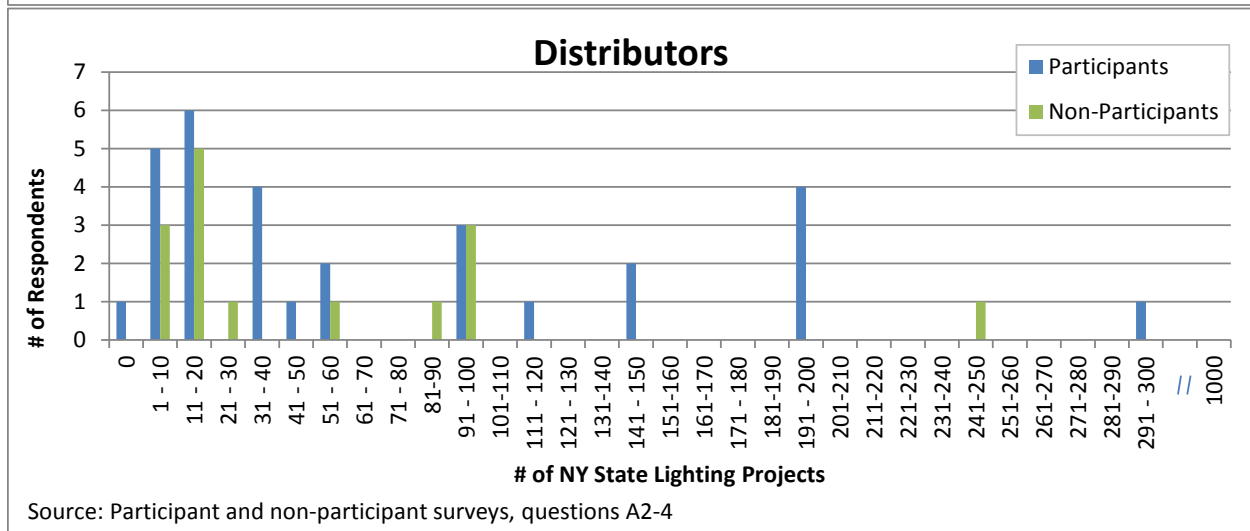
As shown in Figure 20, participants and non-participants vary widely in the number of projects completed, though the bulk of contractors completed fewer than 60 projects and the bulk of distributors completed fewer than 100 projects.



Figure 20. Distribution of Projects per Company



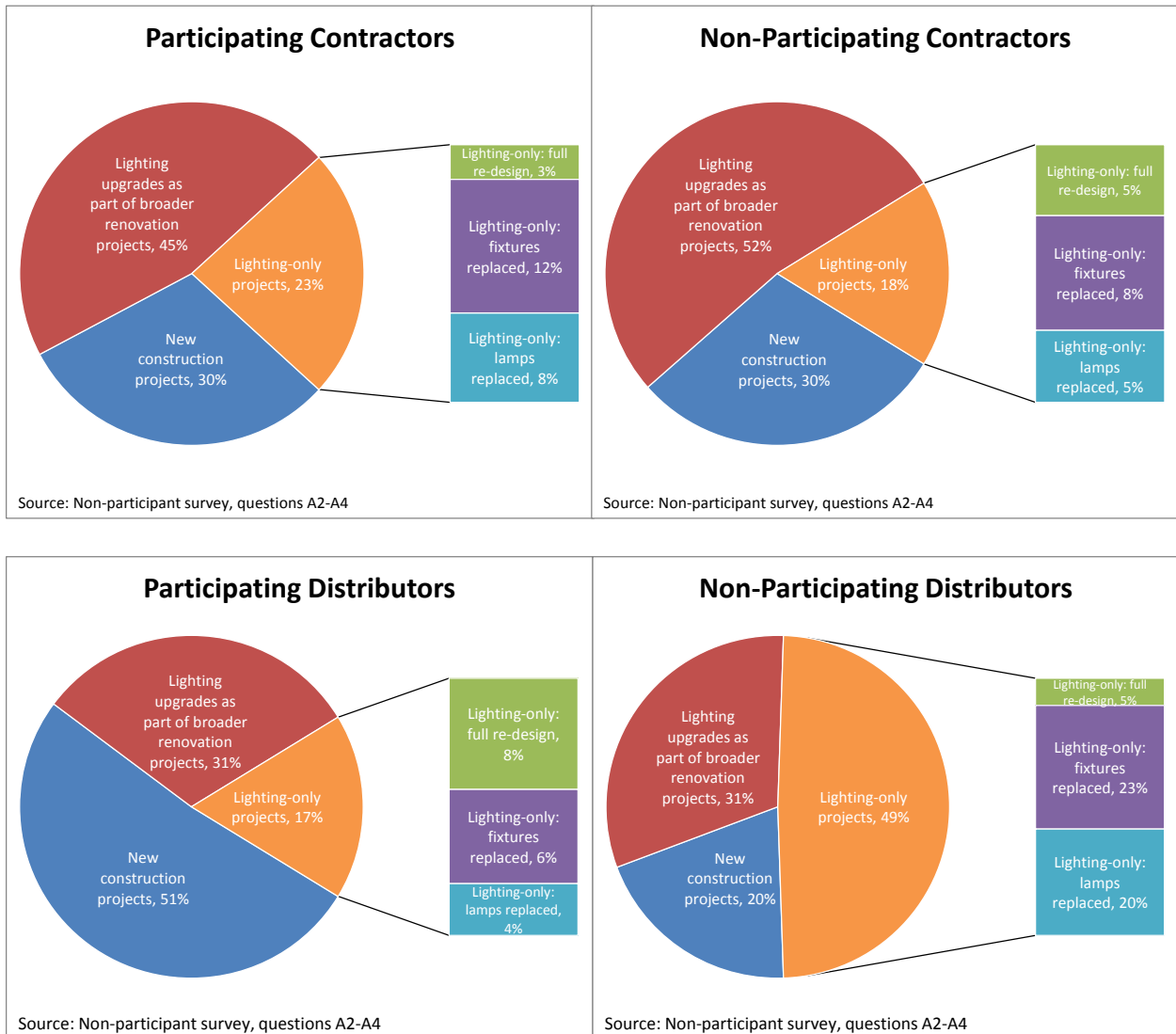
Source: Participant and non-participant surveys, questions A2-4



Source: Participant and non-participant surveys, questions A2-4

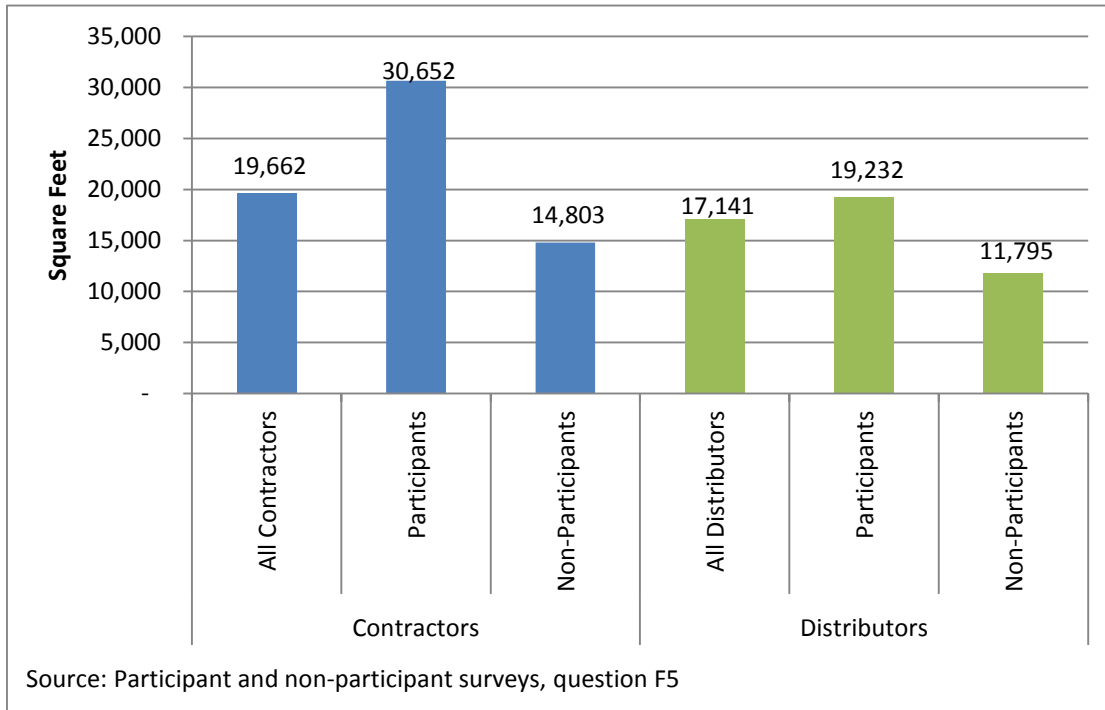
Contractors' projects are most commonly lighting upgrades as part of broader renovation projects (45 percent of participating contractors' projects and 52 percent of non-participating contractors' projects), as shown in Figure 21. Participating distributors most commonly do new construction projects (50 percent of all projects), while non-participating distributors do more lighting-only projects (49 percent of all projects).

**Figure 21. Project Breakdowns by Type**



The average square footage of a typical lighting project for participating contractors is 30,652 square feet; the average for non-participants is 14,804 square feet (Figure 22). For distributors, the average project is 19,232 square feet for participants and 11,795 square feet for non-participants.

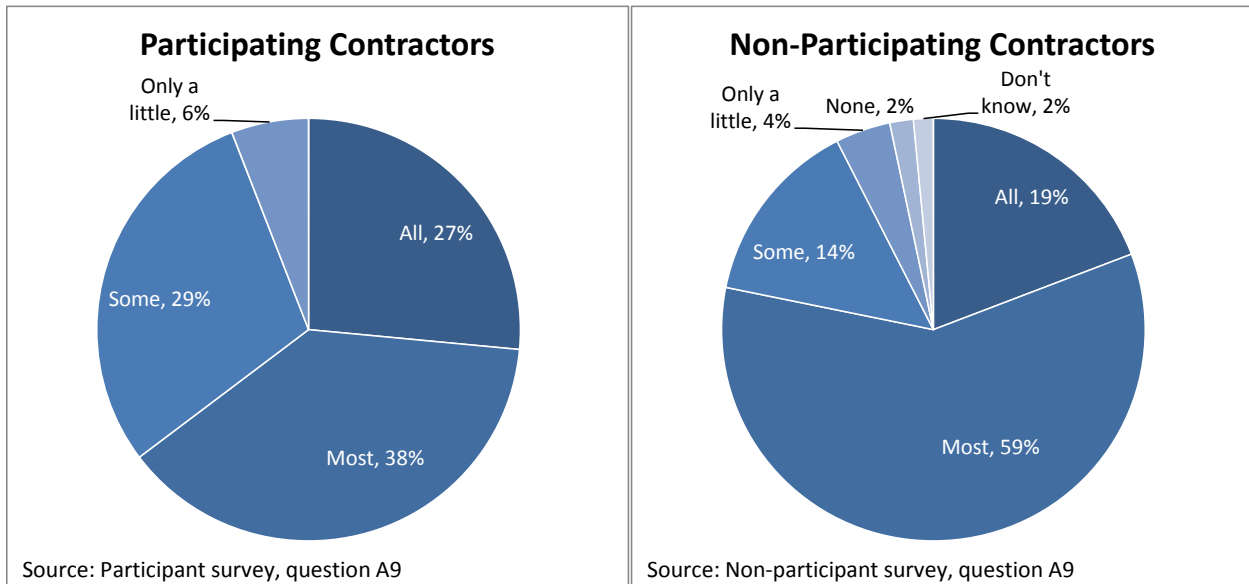
Figure 22. Average Lighting Project Size (square feet)



### Projects Using Energy-Efficient Lighting

The majority of contractors and distributors are using energy-efficient lighting in either “most” or “all” of their projects. Participating contractors report using energy-efficient lighting in *all* of their projects more often than do non-participants (27 percent of participants compared to 19 percent of non-participants), though the differences between participants and non-participants are not statistically significant. Interestingly, when looking at the percentage of non-participating contractors using energy-efficient lighting in either *all* or *most* of their projects, the non-participating contractors outnumber participating contractors, though that difference is not statistically significant.

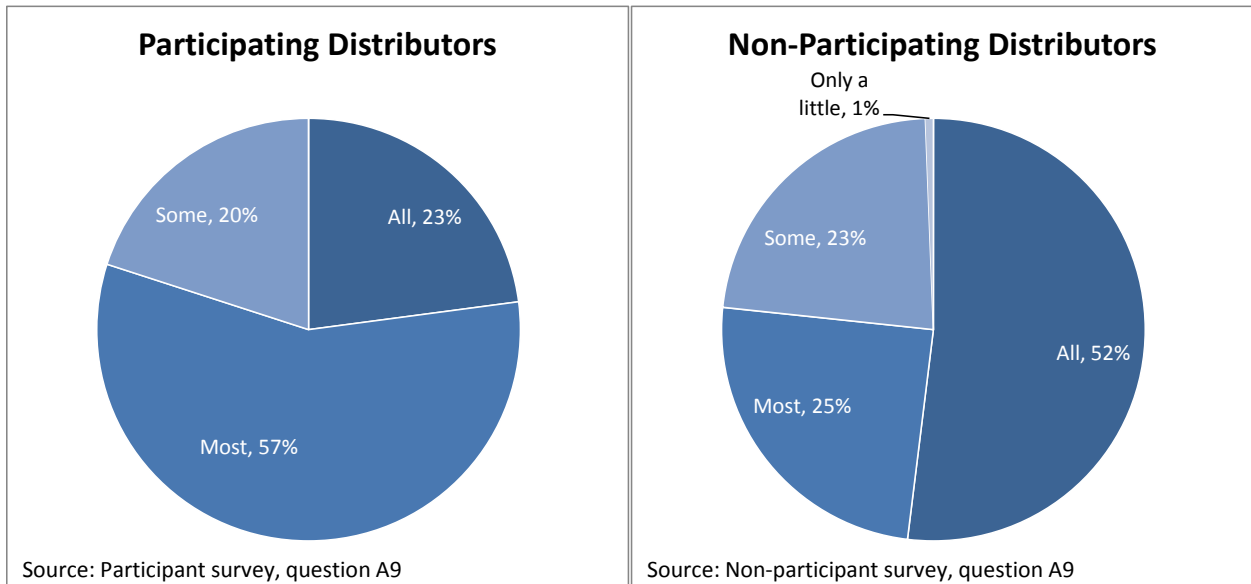
**Figure 23. Frequency of Using Energy-Efficient Lighting on Projects (Contractors)**



Note: the differences between participants and non-participants are statistically significant for the “Most” and “Some” responses, but not for other response categories.

In contrast to contractors, non-participating distributors report that they use energy-efficient lighting in *all* their projects more often than do participants (52 percent of non-participants compared to 23 percent of participants, as shown in Figure 24). The difference is statistically significant. The percentage of participating and non-participating distributors using energy-efficient lighting in either *all* or *most* of their projects is virtually the same (80 percent of participating distributors, and 77 percent of non-participating distributors).

Figure 24. Frequency of Using Energy-Efficient Lighting on Projects (Distributors)



Note: the differences between participants and non-participants are statistically significant for the “All” and “Most” responses, but not for “Some” and “Only a little.”

### Lighting Product Usage

In addition to being asked about how often they use energy-efficient lighting in general (described previously), respondents were asked about the extent to which they use specific types of lighting products. Figure 25 summarizes the usage of specific types of lighting products by participating and non-participating contractors. Nearly all participants (97 percent) use high-performance T8s sometimes or often. Participants use T5 high output lamps and cold cathode lighting more often than non-participants. Other differences between participants and non-participants are not statistically significant.

Figure 25. Use of Lighting Products (Contractors)

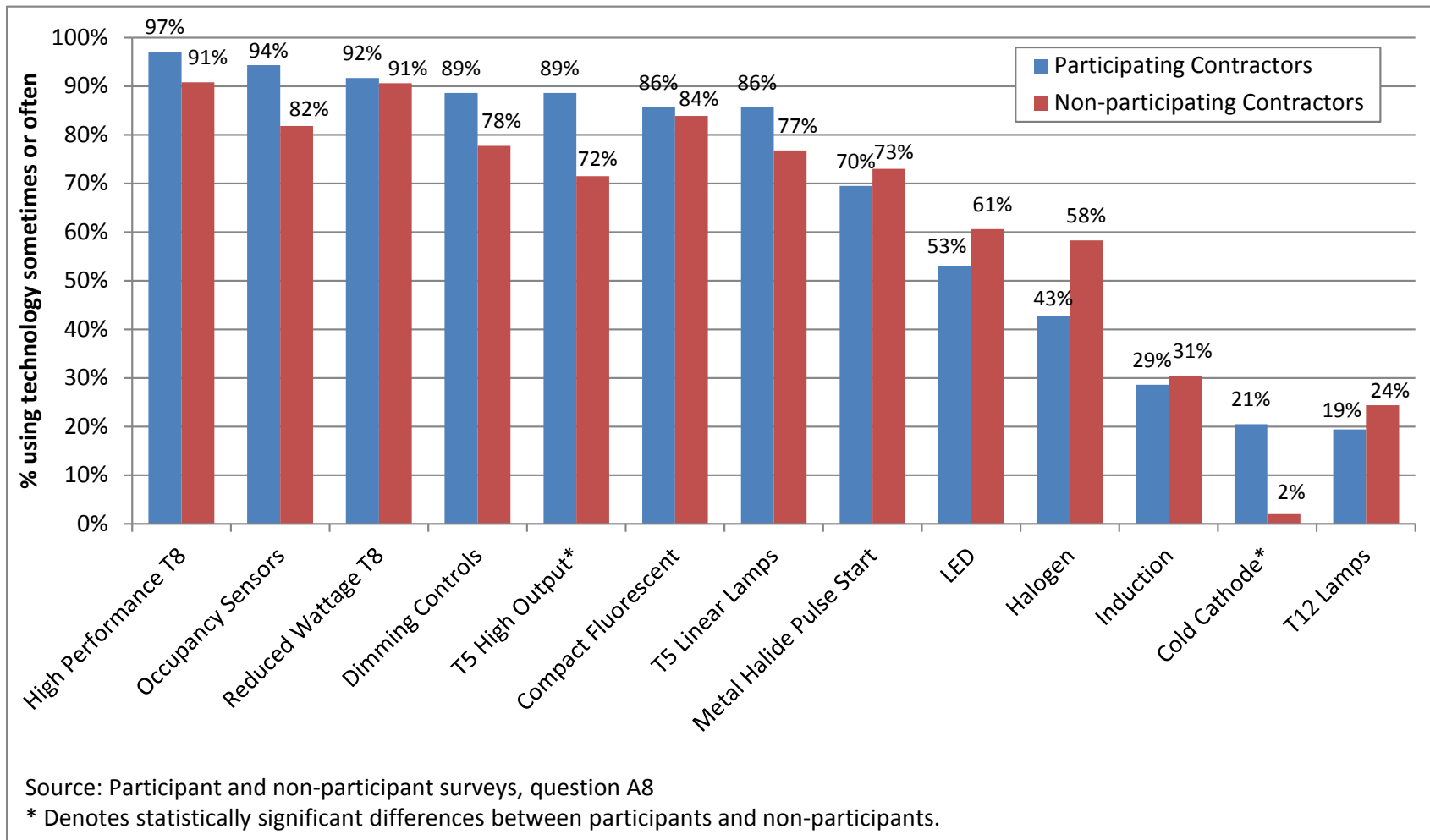
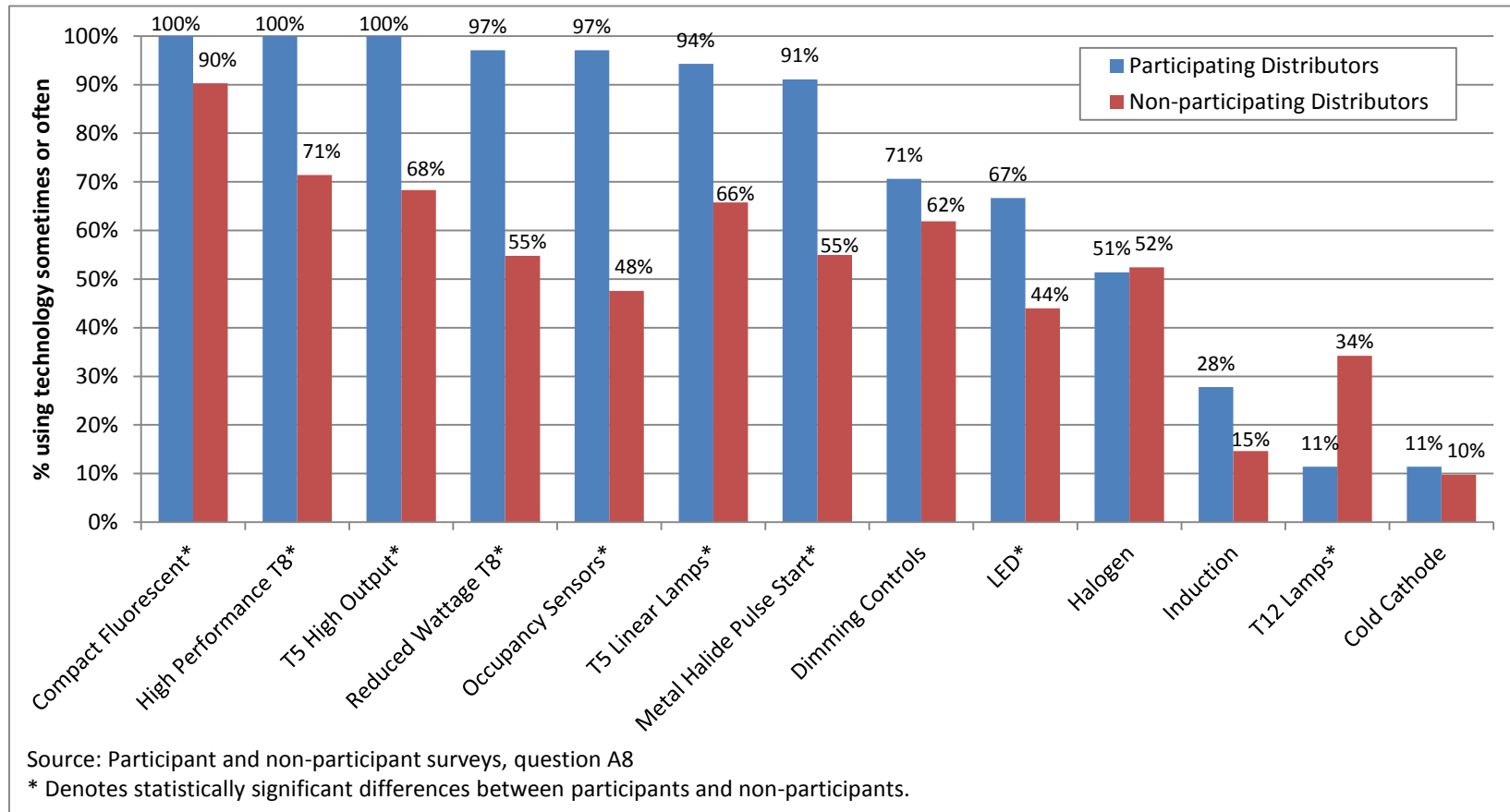


Figure 26 summarizes the usage of specific types of lighting products by participating and non-participating distributors. Compared with contractors, there are greater differences between participants and non-participants when considering distributors' product usage habits. In general, greater percentages of participating distributors use high-efficiency lighting technologies than do non-participants. All participating distributors (100 percent) use compact fluorescent lamps, high-performance T8s, and T5 high output lighting sometimes or often. The technology with the greatest difference between participants and non-participants is occupancy sensors; 97 percent of participants use occupancy sensors compared to 48 percent of non-participants. Non-participants are more likely than participants to use T12 lamps (34 percent of non-participants compared to 11 percent of participants).



Figure 26. Use of Lighting Products (Distributors)



## Market Sectors Served

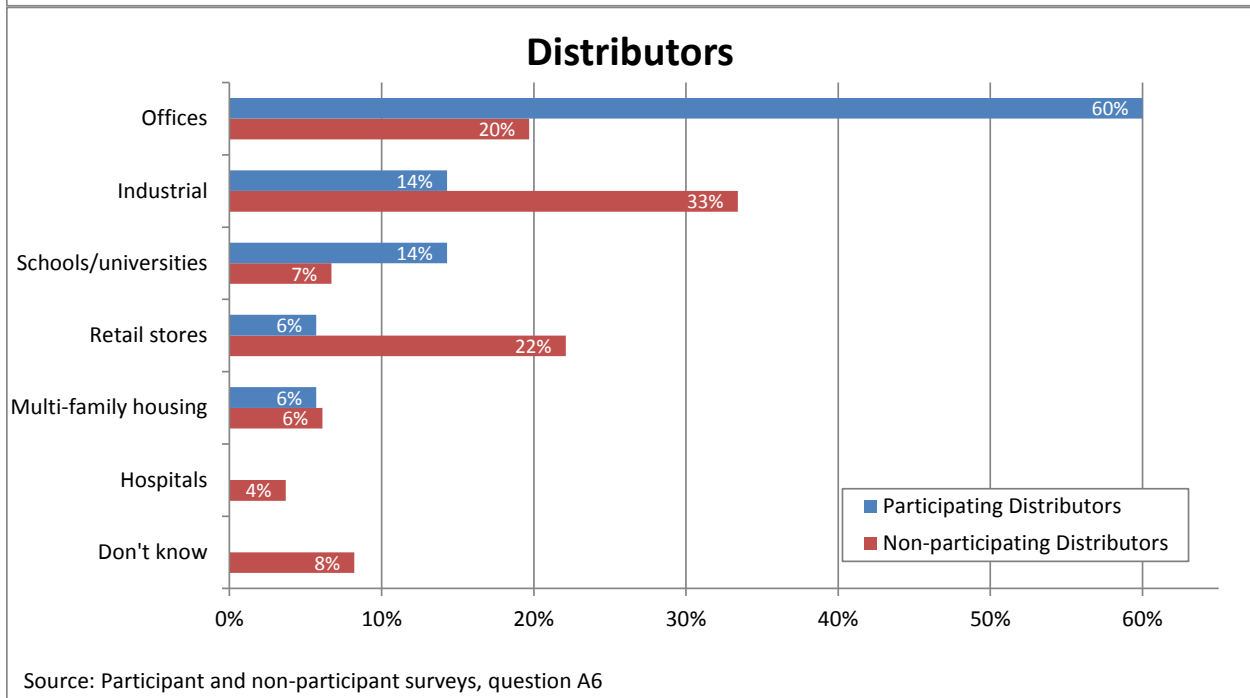
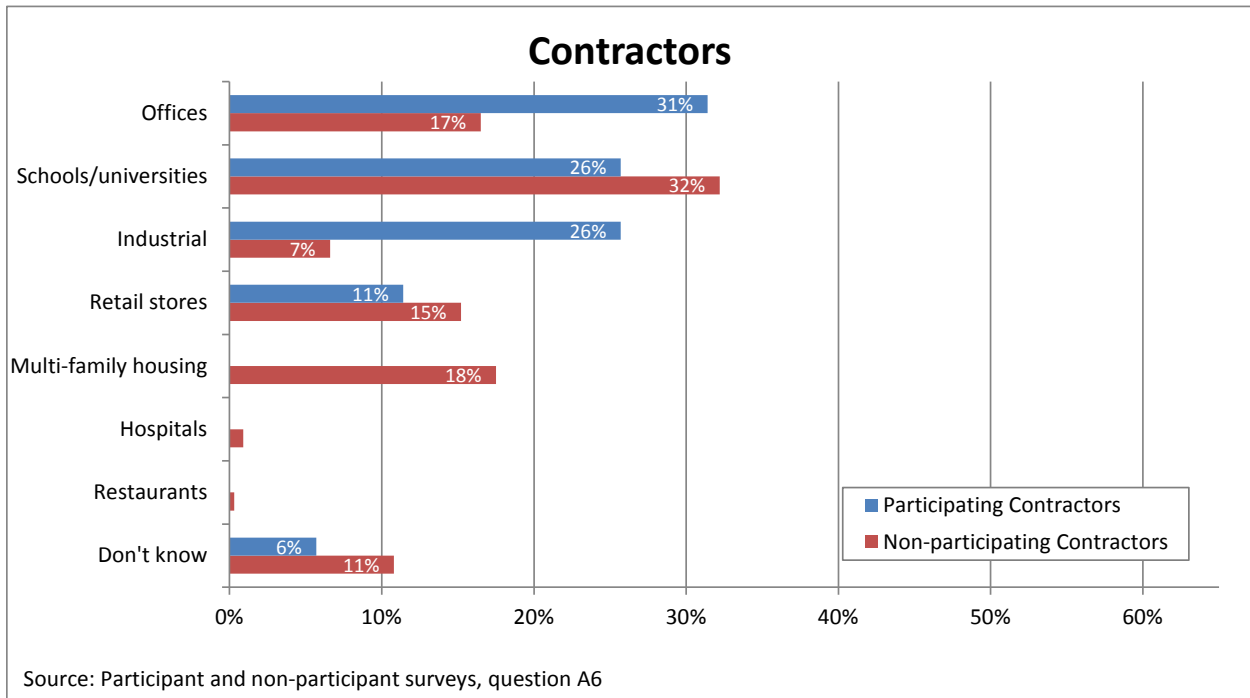
Survey respondents were asked to indicate all of the market sectors they serve. Nearly all (97 percent) participating contractors work in the office sector, and more than 80 percent work in the industrial, retail, and restaurant sectors (Table 18). All participating distributors report working in the industrial sector, and at least 89 percent of distributors report working in each of the other sectors (offices, retail, restaurants, schools/universities, and multi-family housing).

**Table 18. Market Sectors that Participants Work In**

Market Sector	% of Participating Contractors	% of Participating Distributors
Offices	97%	97%
Industrial	89%	100%
Retail stores	86%	97%
Restaurants	80%	94%
Hospitals	60%	97%
Schools/universities	57%	97%
Multi-family housing	51%	89%
Source: Participant survey, question A5 Note that respondents could provide multiple responses.		

Respondents were also asked which market sectors account for most of their work. Among participating contractors, most work is done in the office sector (31 percent), while non-participants most commonly work in schools/universities (32 percent) (Figure 27). Participating distributors overwhelmingly indicate that they do the most work in the office sector (60 percent of participating distributors compared to 20 percent of non-participants), while non-participating distributors do the most work in the industrial sector (33 percent).

**Figure 27. Market Sectors with Most Work by Participation Status**



Note: the differences between participants and non-participants are statistically significant for both contractors and distributors.

## Use of Lighting Designer

Figure 28 presents participating and non-participating contractors' frequencies of using lighting designers on projects. Relatively few contractors indicate that they use lighting designers on *all* projects, but nearly half of participants (43 percent) and more than half of non-participants use lighting designers on *some* or *all* projects. The differences between participants and non-participants are not statistically significant.

**Figure 28. Frequency of Using Lighting Designers on Projects (Contractors)**

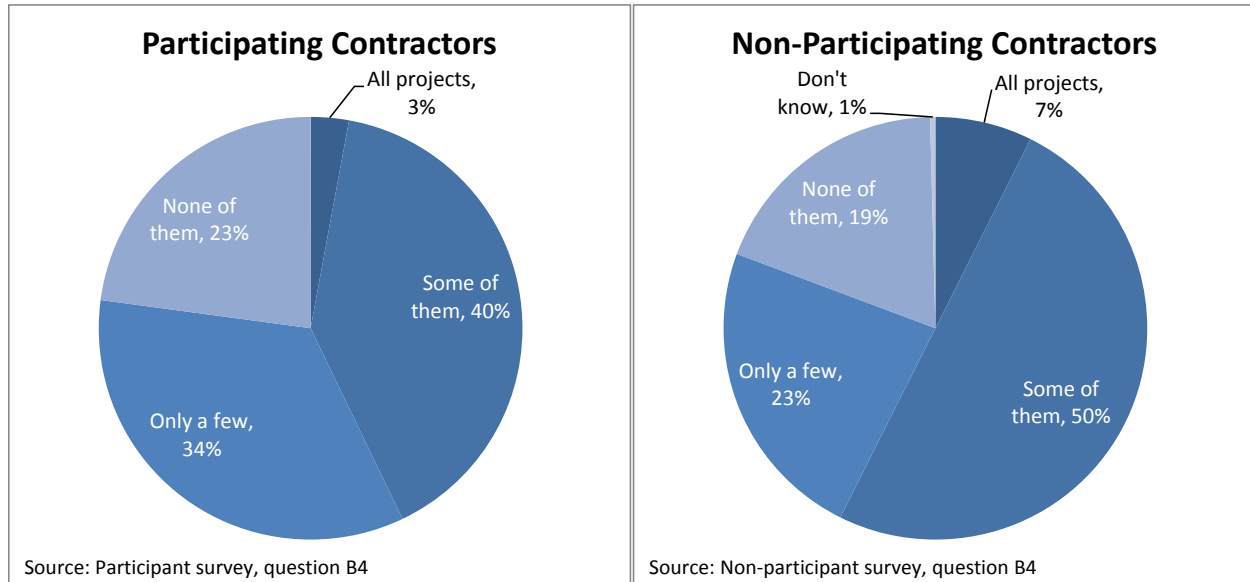
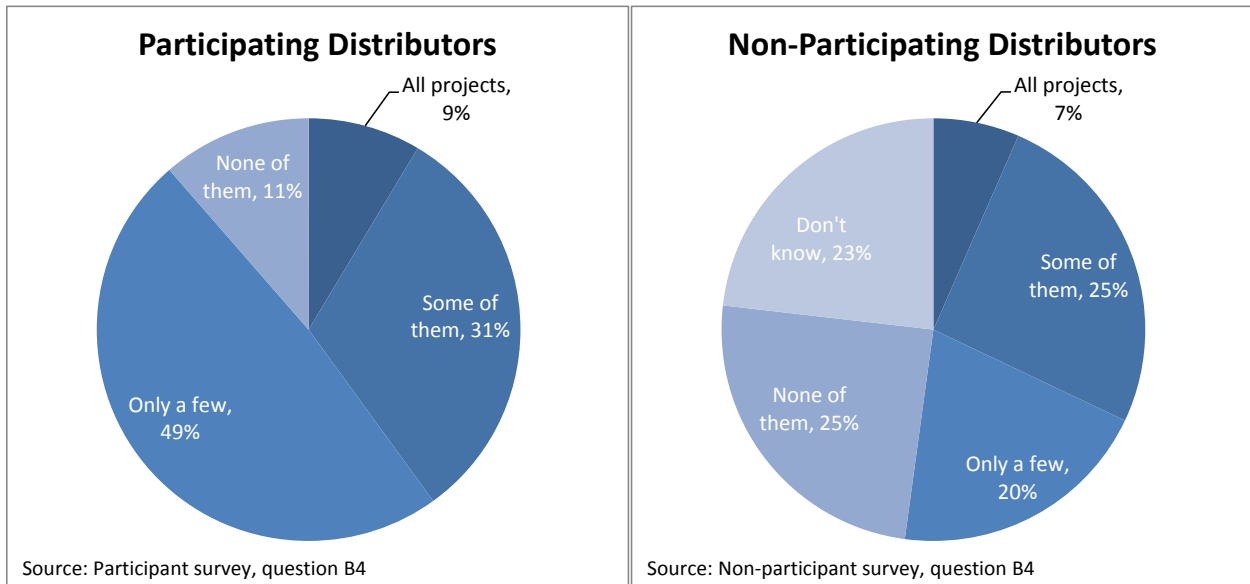


Figure 29 presents participating and non-participating distributors' frequencies of using lighting designers on projects. Similar to contractors, relatively few distributors indicate that they use lighting designers on *all* projects, but nearly half of participants (40 percent) and approximately one-third of non-participants (32 percent) use lighting designers on *some* or *all* projects. The differences between participants and non-participants are not statistically significant.

Figure 29. Frequency of Using Lighting Designers on Projects (Distributors)

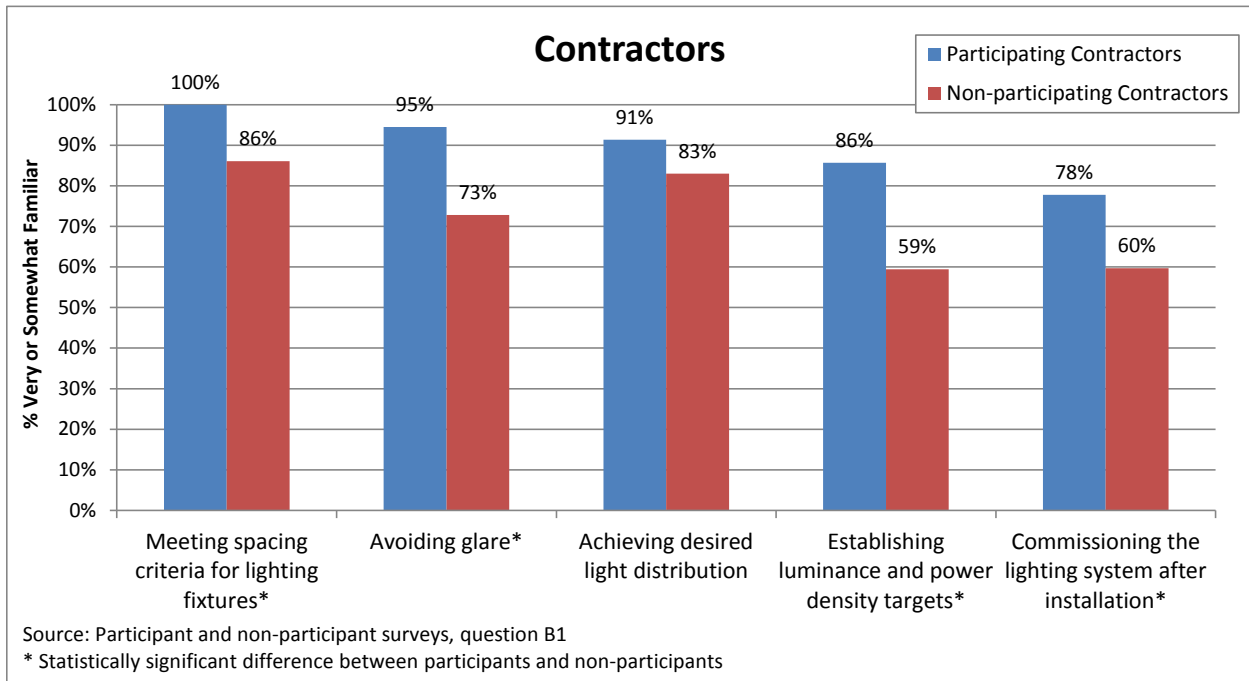


## 4.2 Awareness and Knowledge of Energy-Efficient Lighting Opportunities

### Familiarity with Tools and Techniques for Achieving Effective, Efficient Commercial Lighting Systems

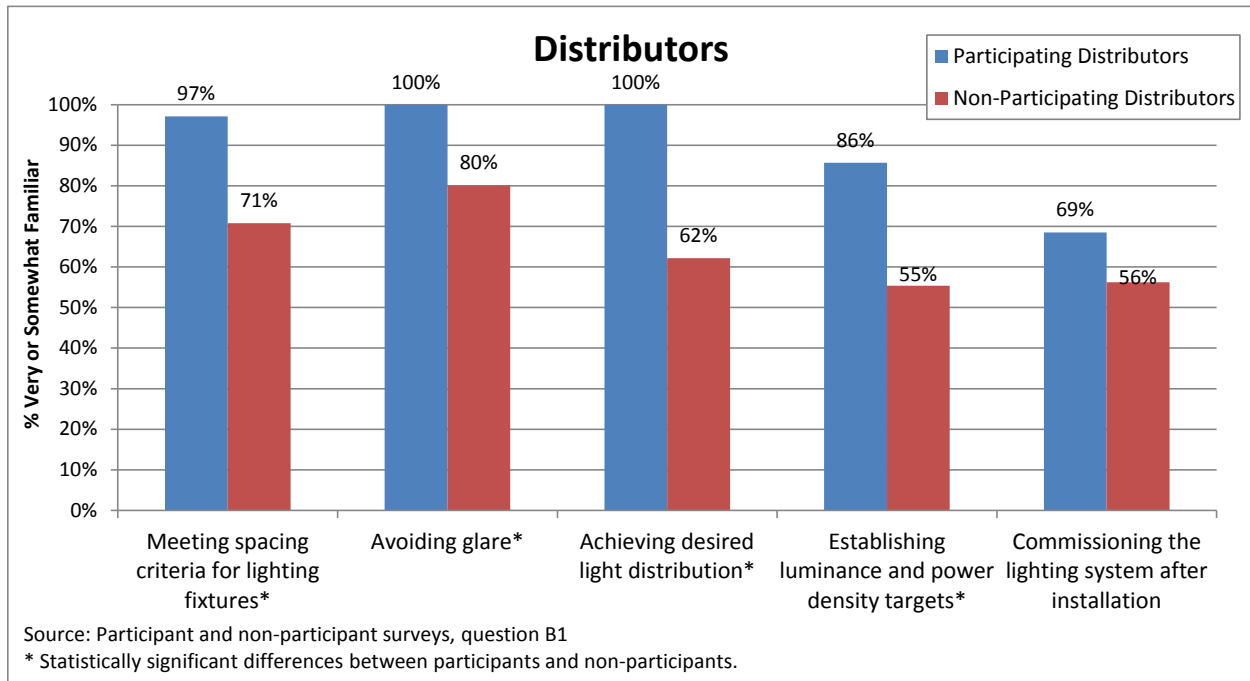
Participating contractors consistently report higher familiarity with tools and techniques associated with energy-efficient lighting relative to non-participants (Figure 30). All participating contractors (100 percent) report being somewhat or very familiar with meeting spacing criteria for lighting fixtures, and nearly all (95 percent) are familiar with avoiding glare. Non-participants are most familiar with meeting spacing criteria for lighting fixtures (86 percent) and achieving desired light distribution (83 percent).

**Figure 30. Familiarity with Tools and Techniques for Energy-Efficient Lighting (Contractors)**



Participating distributors also consistently report higher familiarity with tools and techniques associated with energy-efficient lighting relative to non-participants (Figure 31). All participants (100 percent) report being somewhat or very familiar with avoiding glare and achieving desired light distribution, and nearly all participants (97 percent) report being familiar with meeting spacing criteria for lighting fixtures. The tools and techniques with which non-participating distributors are most familiar are avoiding glare (80 percent) and meeting spacing criteria for lighting fixtures (71 percent).

**Figure 31. Familiarity with Tools and Techniques for Energy-Efficient Lighting (Distributors)**



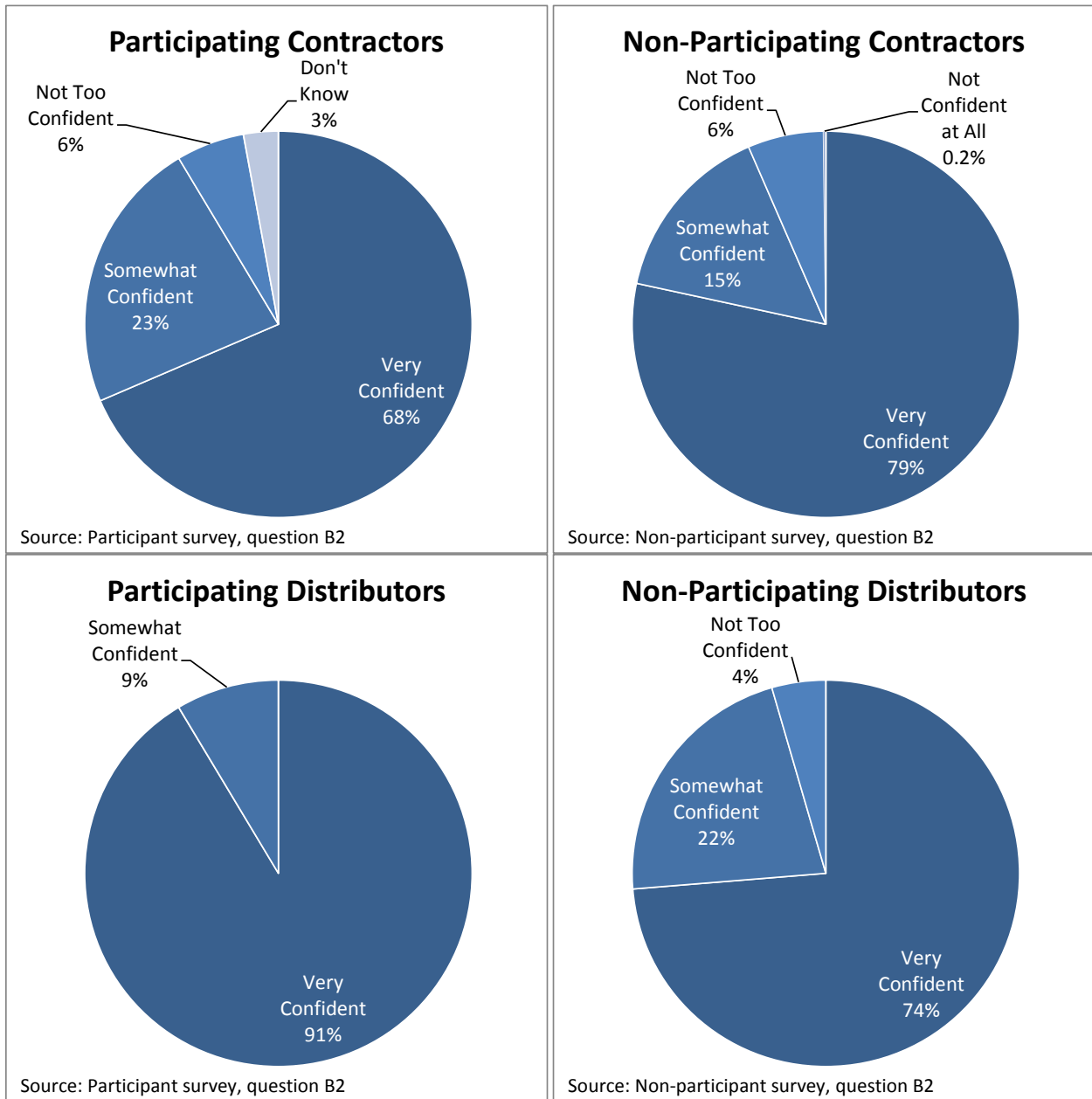
This high level of knowledge held by NYSERDA program participants is similar to that found in the last evaluation of the SCLP in 2005; 95 percent of respondents to that SCLP evaluation survey of program participants indicated that they were either somewhat familiar or extremely familiar with effective, energy-efficient lighting applications.

### Confidence in Communicating about Energy-Efficient Lighting

The majority of participating and non-participating contractors and distributors are very confident in their ability to communicate about energy efficiency. In the case of both participating and non-participating contractors at least 90 percent are *very* or *somewhat* confident. All participating distributors consider themselves *very* or *somewhat* confident, compared to 96 percent of non-participants (Figure 32). The differences between participants and non-participants are not statistically significant for contractors, but are statistically significant for distributors.



**Figure 32. Confidence in Communicating about Energy Efficiency**



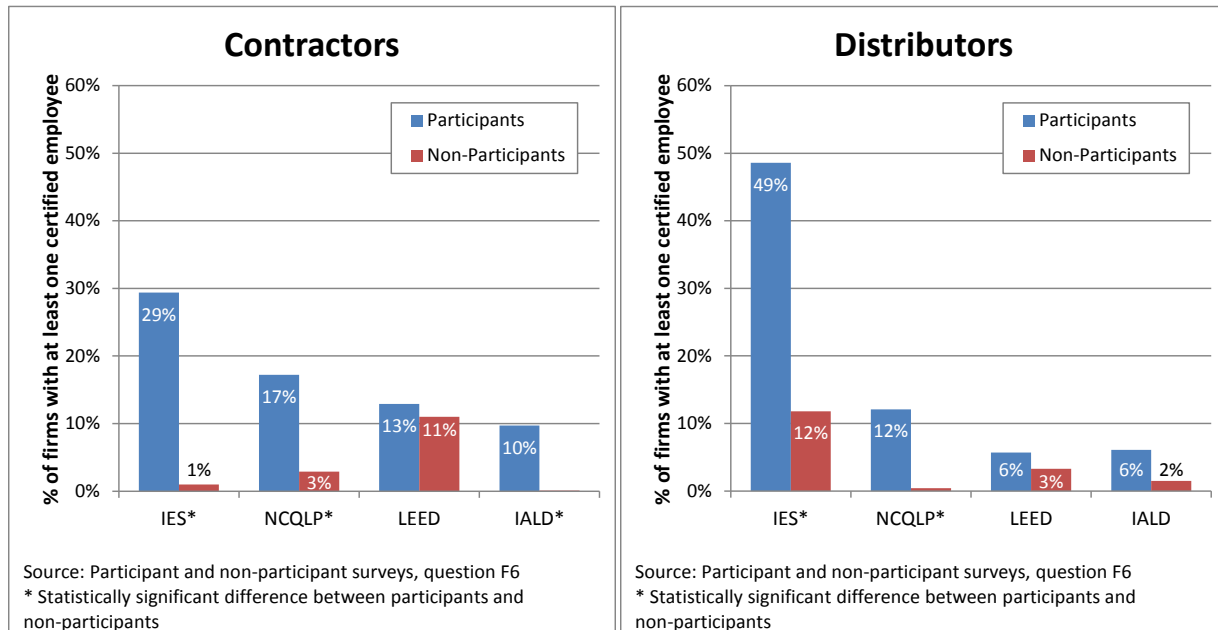
Note: the differences between participants and non-participants are statistically significant for distributors, but not for contractors.

### Lighting Certifications

Figure 33 presents the percentages of participating and non-participating firms that have employees with specific lighting certifications. Participating firms consistently have a higher certification rate than non-participating firms, although the differences are only statistically

significant for the IES, NCQLP, and IALD certifications for contractors, and the IES and NCQLP certifications for distributors.

**Figure 33. Lighting Certifications**



### Awareness of CLP Among Non-Participants

Awareness of the CLP among non-participants is low. Only 4 percent of non-participating distributors and 38 percent of non-participating contractors have considered participating in the program; 54 percent of non-participating contractors and 72 percent of non-participating distributors have little or no familiarity with the program.

No non-participating contractors and seven percent of non-participating distributors have participated (or had one of their colleagues participate) in any NYSERDA Business Partner Program training sessions.

## 4.3 Energy Efficiency-Related Decision-Making and Sales Strategies

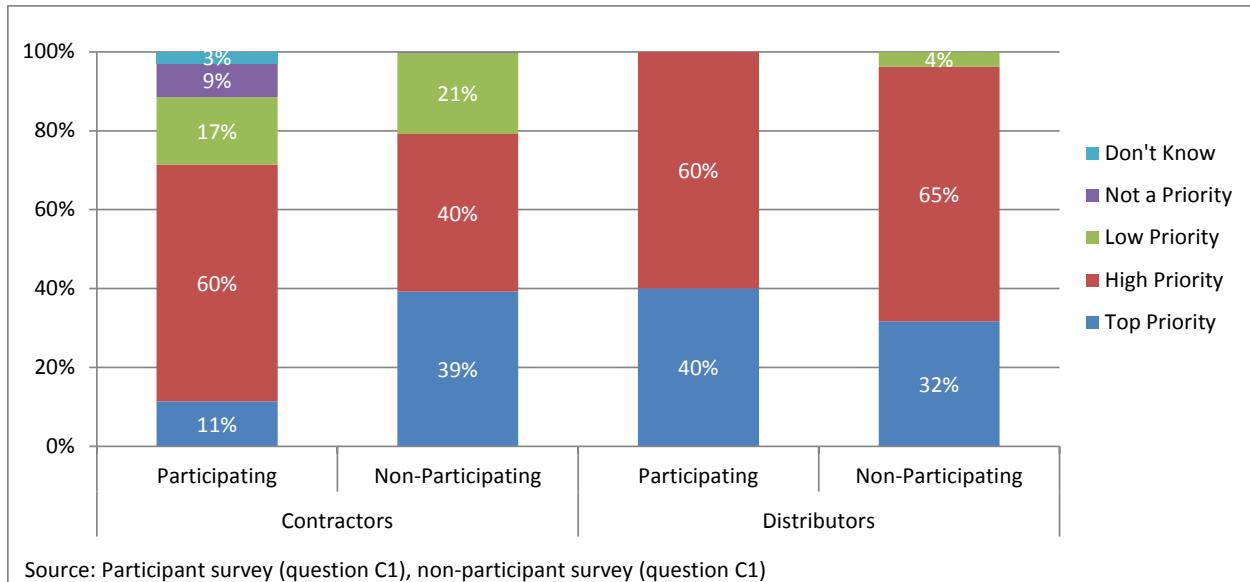
### Energy Efficiency as Business Priority

Among contractors, a greater percentage of non-participants report that energy-efficiency is either a *top* or *high* priority than participants. Eleven percent of participants indicate that energy efficiency is their top business priority; an additional 60 percent identify it as a high priority (Figure 34). Thirty-nine percent of non-participating contractors describe energy efficiency as their top business priority, and 40 percent identify it as a high priority. The differences between participants and non-participants are statistically significant. This indicates that there are

contractors active in the New York market that highly value energy efficiency yet are not participating in the CLP.

Among distributors, the differences between participants and non-participants are less pronounced, and are not statistically significant. Four in ten (40 percent) participating distributors describe energy efficiency as their top priority, and the remaining 60 percent indicate it is a high priority.

**Figure 34. Energy Efficiency as a Business Priority**

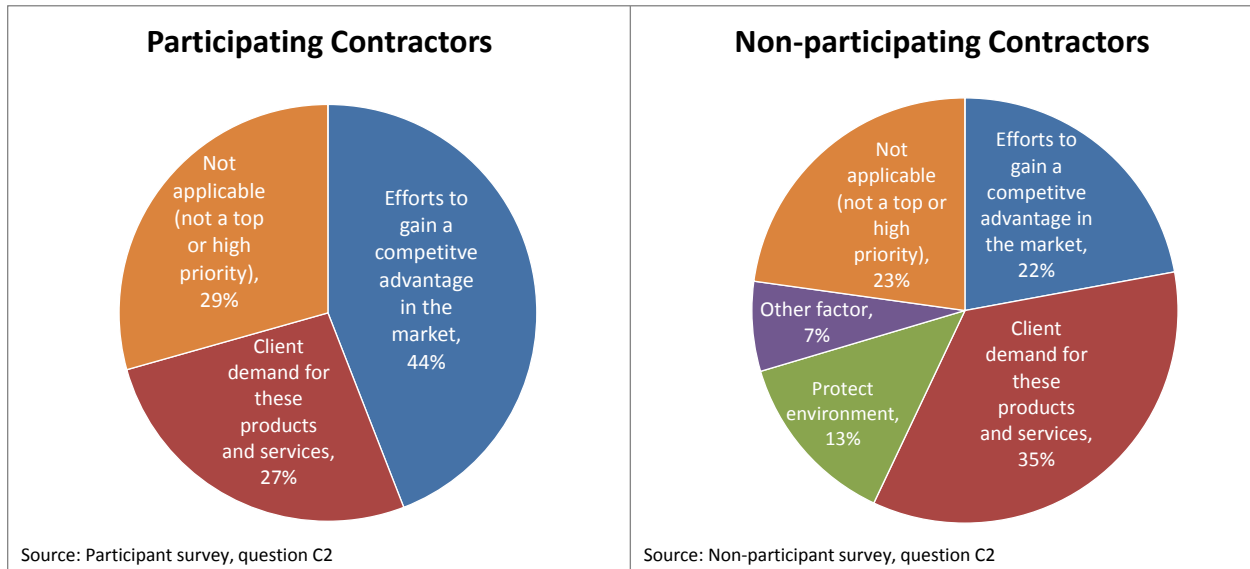


Note: the differences between participants and non-participants are statistically significant for contractors, but not for distributors.

Figure 35 presents the most significant drivers behind contractors' decision to make energy efficiency a top business priority. Among participants, nearly half (44 percent) indicate that the desire to gain a competitive advantage was the most significant driver, followed by 27 percent who are driven by customer demand for energy efficiency. Non-participating contractors most often identify customer demand as the driving force (35 percent), followed by the desire to gain a competitive advantage (22 percent). The differences between participating and non-participating contractors are statistically significant. The fact that a significantly greater percentage of participants than non-participants identify competitive advantage as a key driver for their decision to promote energy-efficiency may indicate that participants view program participation as a tool to differentiate their companies from the competition. It also appears that client demand for energy-efficient lighting is strong since this was identified by more than one-quarter of participants and non-participants alike as the most significant driver for promoting energy-efficient lighting.

No participating contractors indicate that they are motivated by the desire to protect the environment, while 13 percent of non-participants cite that as the driving force between making energy efficiency a high priority.

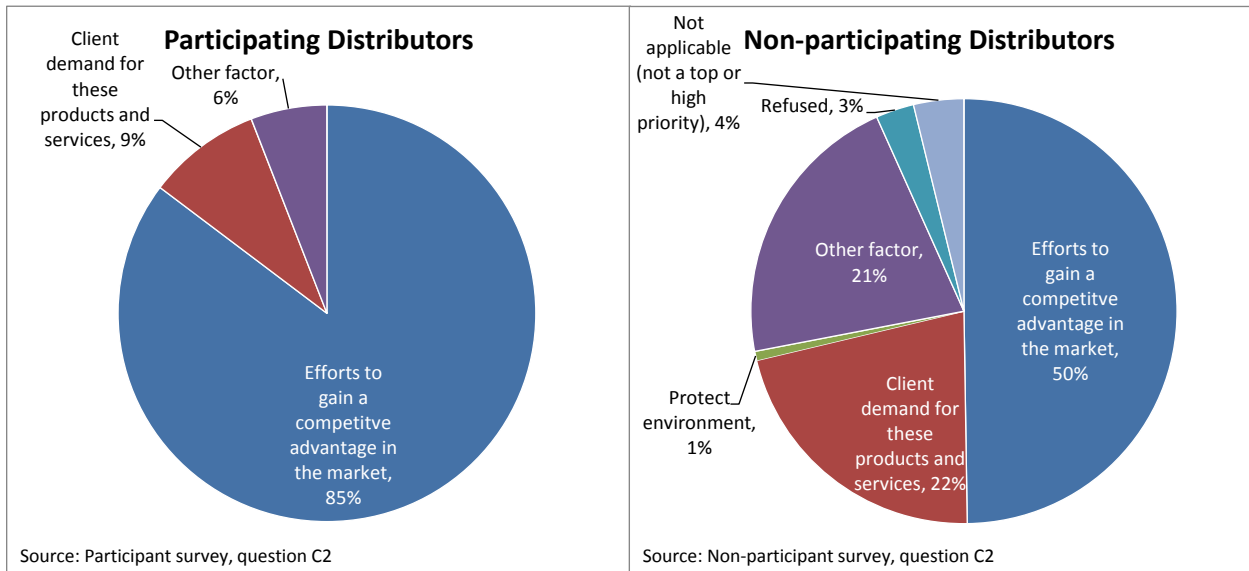
**Figure 35. Driving Force Behind Decision to Promote Energy Efficiency (Contractors)**



Note: the differences between participants and non-participants are statistically significant.

Figure 36 presents the most significant drivers behind distributors’ decision to make energy efficiency a top business priority. Participating and non-participating distributors both identify the desire to obtain a competitive advantage as the most significant driver, cited by 85 percent of participants and 50 percent of non-participants. The next most common driver is customer demand for energy efficiency, cited by 9 percent of participants and 22 percent of non-participants. Non-participants also identify state codes as influential in making energy efficiency a priority for their business (included in “Other factor”).

**Figure 36. Driving Force Behind Decision to Promote Energy Efficiency (Distributors)**

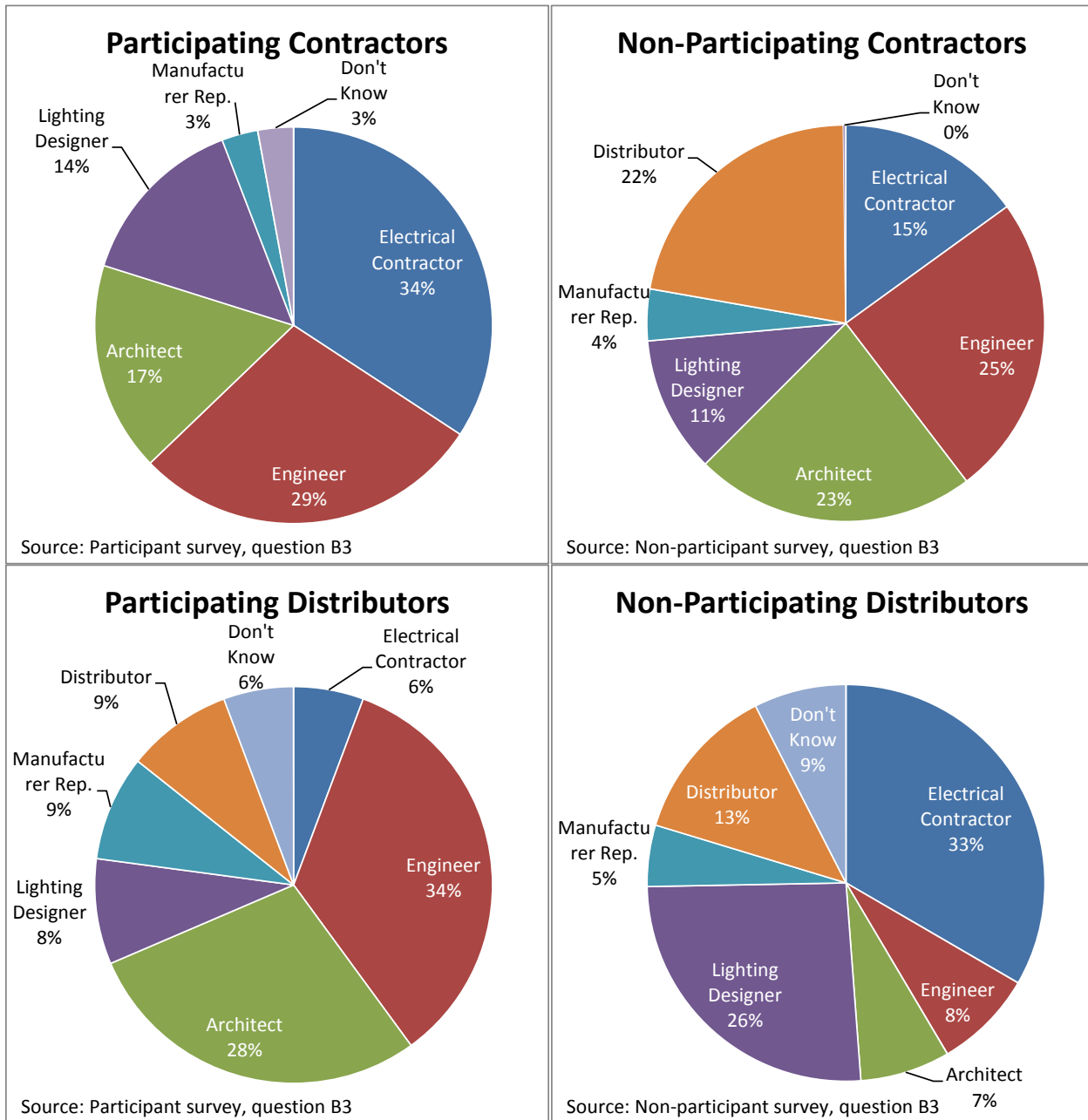


Note: the difference between participants and non-participants is statistically significant only for the “efforts to gain a competitive advantage” response category; none of the other response categories have statistically significant differences.

### Most Influential Market Actors

As shown in Figure 37, there is not a clear consensus about which market actor type is most influential in the decision-making related to lighting specifications. However, engineers, electrical contractors and architects receive the highest overall ratings when responses are tallied across all four respondent groups (engineers, 92 percent; electrical contractors, 88 percent; and architects, 75 percent). Participating contractors identify electrical contractors and engineers as the most influential on lighting system specifications. These professions are cited as being the most influential by 34 percent and 29 percent of participating contractors, respectively. Non-participating contractors most often cite engineers as most influential (25 percent of non-participant contractors). Participating distributors view engineers and architects as the most influential market actors, cited by 34 percent and 28 percent, respectively. Non-participating distributors most commonly cite engineers as most influential (33 percent), followed by lighting designers (26 percent).

**Figure 37. Greatest Influence on Lighting System Specifications**



Note: the differences between participants and non-participants are statistically significant for both contractors and distributors.

Findings related to this topic were somewhat more definitive in the 2005 evaluation of the SCLP than in the current study. Lighting professionals surveyed for the 2005 evaluation reported that architects had the greatest influence over lighting project specifications. The greater diversity of opinions expressed in the current study may indicate that there is a broader spectrum of project

scenarios in play in the market now than in 2005. However, the significance of the contrasting results cannot be tested given differences in the design of the two studies.

### Presentation of Energy-Efficient Lighting

Many lighting professionals present beyond-code lighting as a standard offering, and this approach appears to be substantially increasing sales of high-efficiency lighting systems.

Forty percent of participating contractors report that their standard offering is more efficient than code; 45 percent of non-participating contractors report the same, though the difference is not statistically significant. In contrast, over half of participating distributors (57 percent) report that their standard offering is more efficient than code; 56 percent of non-participants report the same. An additional 17 percent of non-participating distributors do not know whether their standard offering would meet or exceed code; the remainder present code-compliant lighting as the standard offering and offer more efficient equipment as an option.

Participants and non-participants who offer high-efficiency as an option rather than the standard offering were asked how often customers select the higher efficiency options; among both contractors and distributors, participants more often report that their customers “often” or “sometimes” select higher efficiency options than do non-participants. This indicates that participating contractors and distributors are having more success at “up-selling” their customers to higher efficiency levels than non-participants.

Presenting beyond-code lighting as a standard offering appears to be the most effective means of assuring that a client will end up with high-efficiency lighting. Upfront capital is often a constraint in construction projects. Therefore, when a client is shown two options, it is likely that she will choose the less expensive option. The fact that so many contractors and distributors feel comfortable presenting beyond-code lighting as a standard offering to their clients would be worth highlighting to those that are not currently engaging in this practice. Many may still choose to present both options in an effort to provide clients with greater flexibility and an ability to cut costs where possible, but this knowledge may prompt some to change their practices.



**Table 19. Presentation of Energy-Efficient Lighting as Standard or Option**

	Contractors		Distributors	
	Participants	Non-Participants	Participants	Non-Participants
<b>Code is standard</b>	<b>49%</b>	<b>45%</b>	<b>43%*</b>	<b>28%</b>
Customers <i>always</i> select higher efficiency options	0%*	15%	3%	0%
Customers <i>often</i> select higher efficiency options	9%*	3%	17%	14%
Customers <i>sometimes</i> select higher efficiency options	34%*	12%	23%	6%
Customers <i>rarely</i> select higher efficiency options	3%*	12%	0%	7%
<i>Don't know</i> how often customers select higher efficiency options	3%	3%	0%	0%
<b>Beyond-code is standard</b>	<b>40%</b>	<b>45%</b>	<b>57%</b>	<b>56%</b>
Don't know	11%	10%	0%*	16%

Source: Participant and non-participant surveys, questions B5 and B6

\* Indicates that differences between participants and non-participants are statistically significant.

### Strategies to Improve Energy Efficiency Sales

Figure 38 displays strategies used by participating and non-participating contractors to be successful in selling effective energy-efficient lighting products and services. Non-participating contractors more often indicate the use of each strategy, though the differences between participants and non-participants are only statistically significant for some of the strategies. The most common strategy used by contractors is educating customers about the benefits of energy-efficient lighting, used by 77 percent of participants and 81 percent of non-participants. Non-participating contractors more often work to establish relationships with other companies and expand their company’s scope of services to improve efficiency sales than do participating contractors; the other differences are not statistically significant.

**Figure 38. Strategies Used to Improve Energy Efficiency Sales (Contractors)**

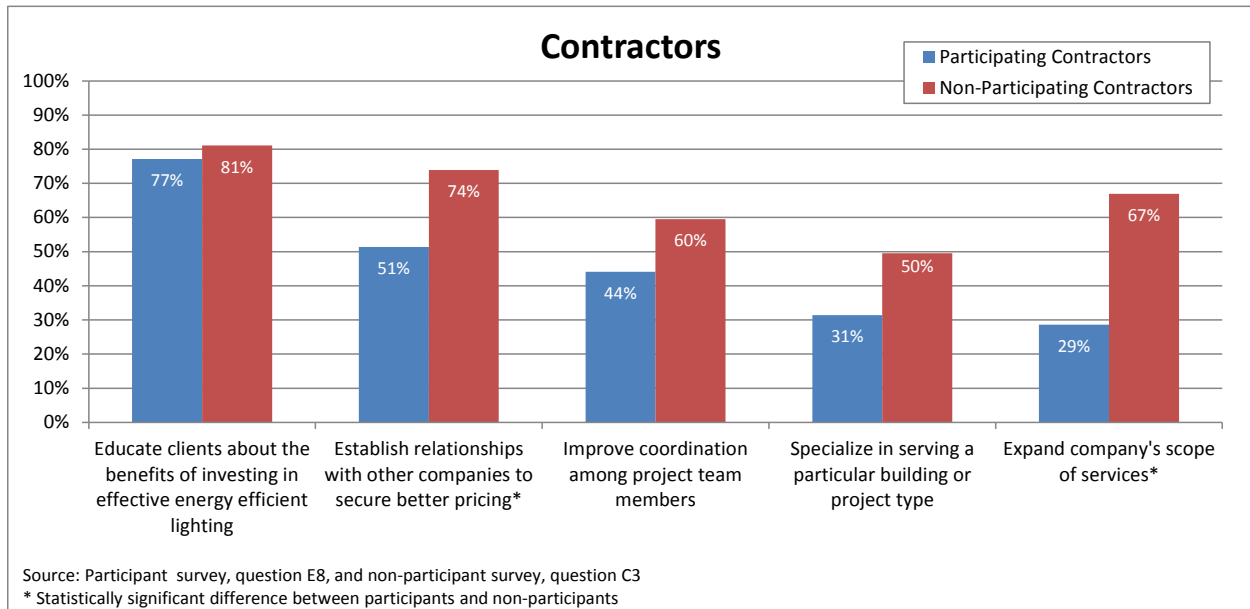
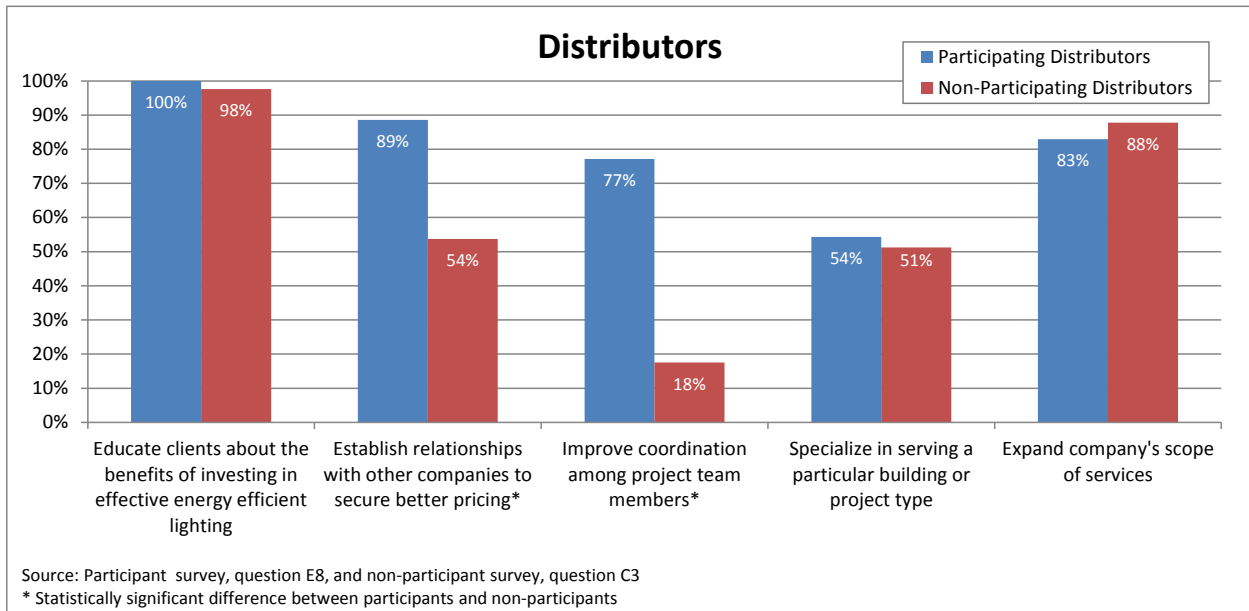


Figure 39 displays strategies used by participating and non-participating distributors to be successful in selling effective energy-efficient lighting products and services. The most common strategy is educating customers about the benefits of energy-efficient lighting, used by 100 percent of participants and 98 percent of non-participants. Participating distributors also regularly establish relationships with other companies to secure better pricing (89 percent), while 54 percent of non-participants take that strategy. Expanding the companies' scope of services is also a common strategy used by both participating (83 percent) and non-participating distributors (88 percent).

**Figure 39. Strategies Used to Improve Energy Efficiency Sales (Distributors)**



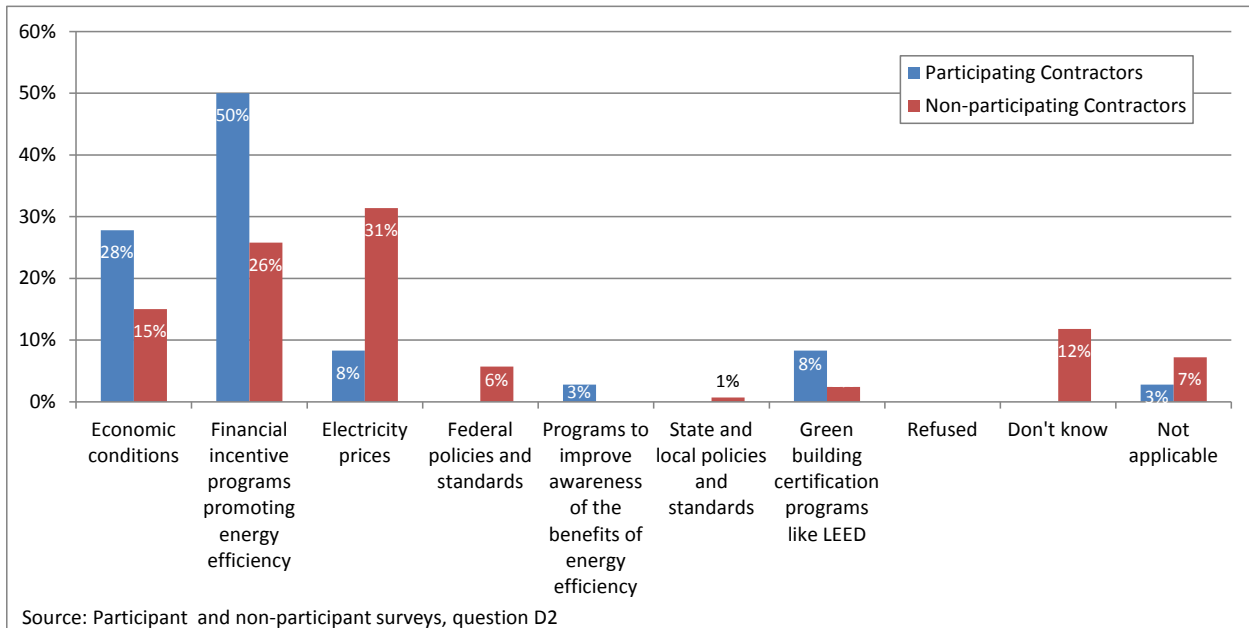
#### 4.4 Business Partners Program’s Interaction with the Market

##### Factors Influencing Market for Energy Efficiency

Participating contractors and distributors identify economic conditions, financial incentive programs, and electricity prices as the most significant influences on the market for energy efficiency.

Participating and non-participating contractors vary significantly in their view of the *most* significant impact on the energy efficiency market (Figure 40). Not surprisingly, considering they benefit financially from the CLP, participants are more likely to say financial incentive programs have the greatest impact (50 percent of participants compared to 26 percent of non-participants). Non-participants are more likely to cite electricity prices (31 percent of non-participants compared to 8 percent of participants). The differences between participants and non-participants are statistically significant.

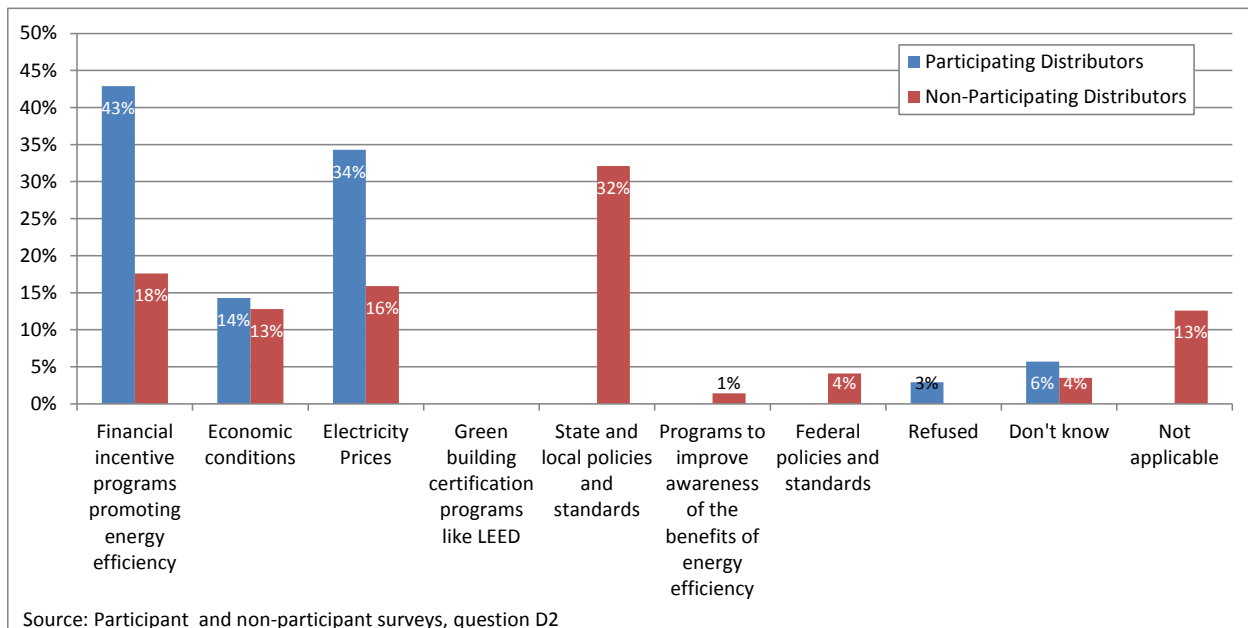
**Figure 40. Greatest Impact on Energy Efficiency Market by Participation Status, Contractors**



Note: the differences between participants and non-participants are statistically significant.

Participating and non-participating distributors also vary significantly in their view of the *most* significant impact on the energy efficiency market (Figure 41). As with contractors, it is not surprising that participants are more likely to say financial incentive programs are the greatest impact (43 percent of participants compared to 18 percent of non-participants). Non-participants are more likely to cite state and local policies and standards (32 percent of non-participants compared to 0 percent of participants). Participants are also more likely to cite electricity prices as the greatest influence (34 percent of participants compared to 16 percent of non-participants). The differences between participants and non-participants are statistically significant.

**Figure 41. Greatest Impact on Energy Efficiency Market by Participation Status, Distributors**



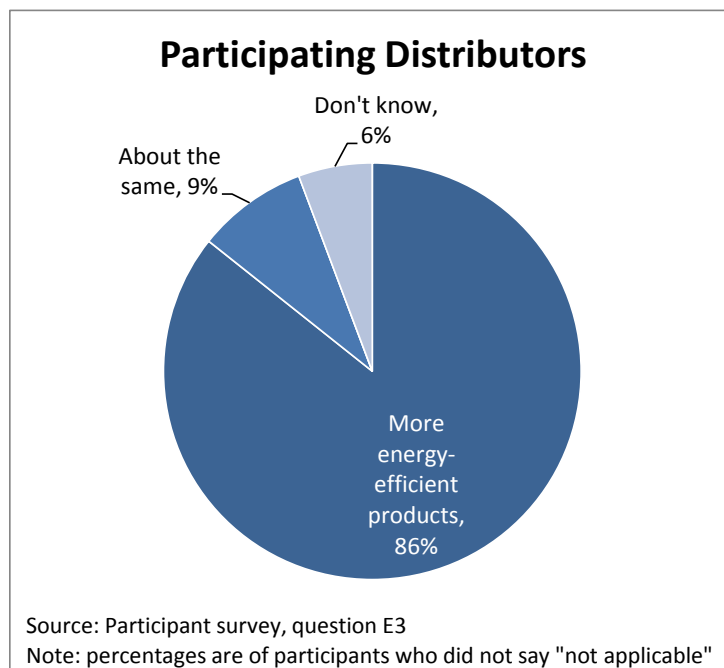
Note: the differences between participants and non-participants are statistically significant.

### Energy Efficiency Stocking Practices

The majority (86 percent) of participating distributors have started stocking more energy-efficient products since participating in the CLP (Figure 42).<sup>86</sup> This implies that the program is generating a positive influence in terms of driving the market toward more efficient lighting technologies.

<sup>86</sup> Note that this question was not asked of participating contractors.

**Figure 42. Changes in Energy Efficiency Stocking Practices Since Participation in the CLP**



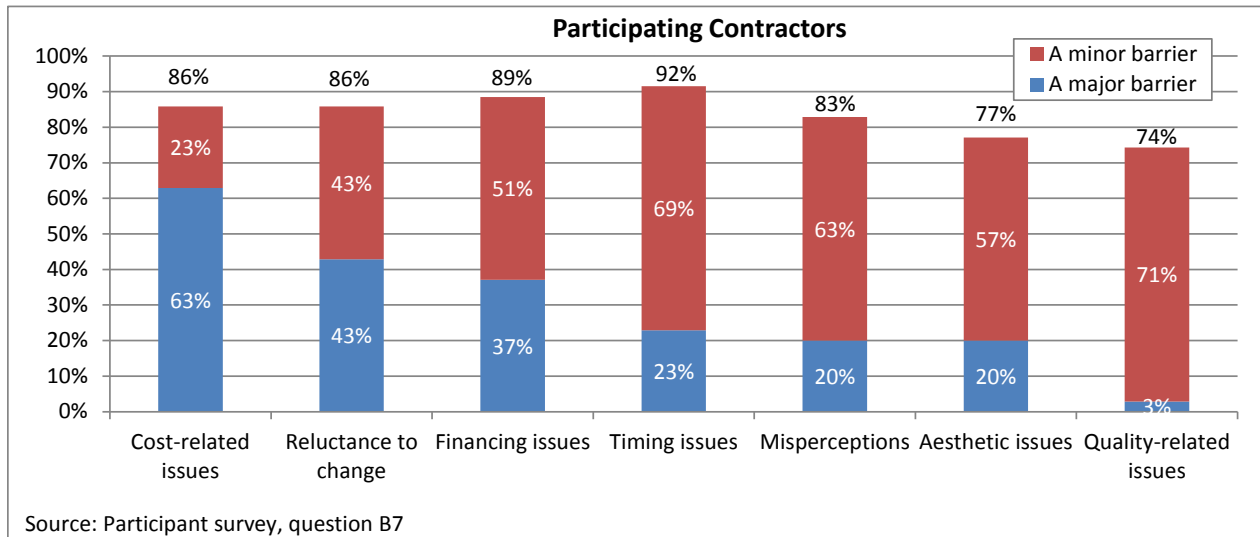
## 4.5 Barriers

### Market Barriers

The factor most frequently cited as a major barrier to the energy-efficiency lighting market across all distributors and contractors is cost-related issues, followed by financing issues, reluctance to change, and timing issues. Issues such as aesthetics, quality-related issues and misperceptions about energy-efficient lighting are typically identified as minor market barriers. Non-participating contractors and distributors more commonly cite aesthetic issues as a major barrier than do participants. Quality-related issues are commonly cited as a major barrier by non-participating contractors than participants. And participating contractors and distributors both identify misperceptions about energy-efficient products as a significant barrier. These factors seem to indicate that the market can still benefit substantially from education about the features and benefits of the latest energy-efficient lighting products.

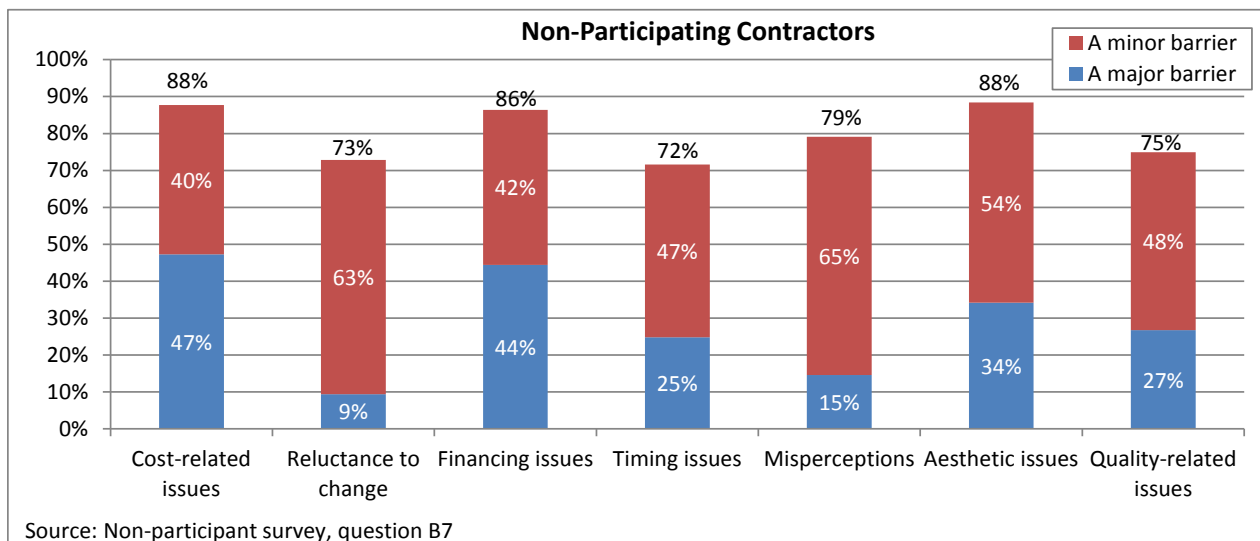
According to participating contractors, the most significant market barriers to energy efficiency in lighting projects are cost-related issues, reluctance to change, and financing issues (**Error! Reference source not found.**). Other barriers such as timing, misperceptions, aesthetics, and quality-related issues are often described as minor barriers, with fewer than 25 percent of participants regarding any of them as major barriers.

**Figure 43. Barriers to Energy Efficiency in Lighting Projects, Participating Contractors**



Non-participating contractors similarly perceive cost-related issues and financing issues as the most significant market barriers to energy efficiency in lighting projects (Figure 44); aesthetics are also perceived to be a significant market barrier by this group.

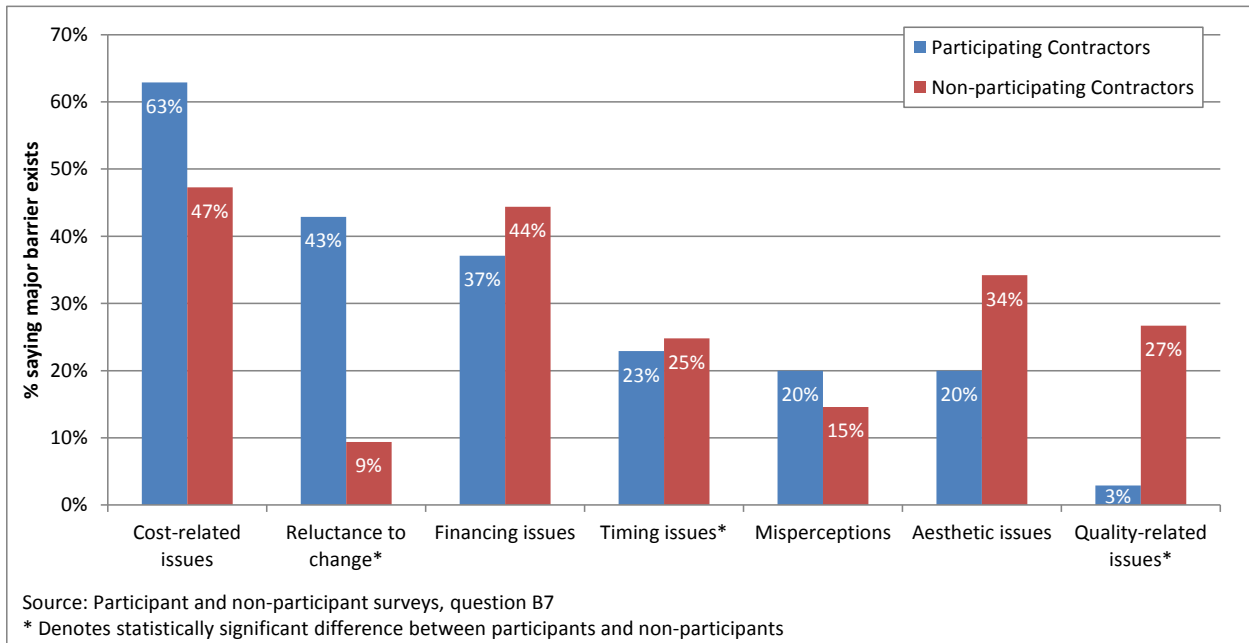
**Figure 44. Barriers to Energy Efficiency in Lighting Projects, Non-Participating Contractors**



Among contractors, participants and non-participants view most of the market barriers similarly, but participants view “reluctance to change” as more significant than do non-participants, and non-participants perceive timing issues and quality-related issues as more significant barriers than do participants (Figure 45). Other differences between participants and non-participants are not statistically significant.

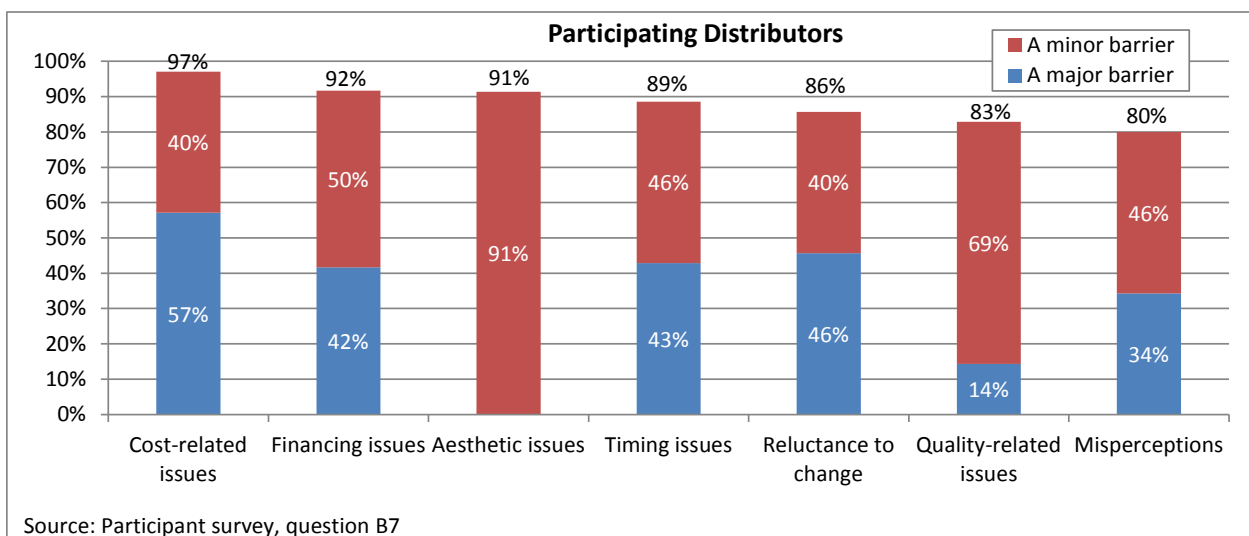


**Figure 45. Major Barriers by Participation Status, Contractors**



According to participating distributors, the most significant market barriers to energy efficiency in lighting projects are cost-related issues, financing issues, timing issues, and reluctance to change (Figure 46). Other barriers such as misperceptions, aesthetics, and quality-related issues are often described as minor barriers, with fewer than 35 percent of participants regarding any of them as major barriers.

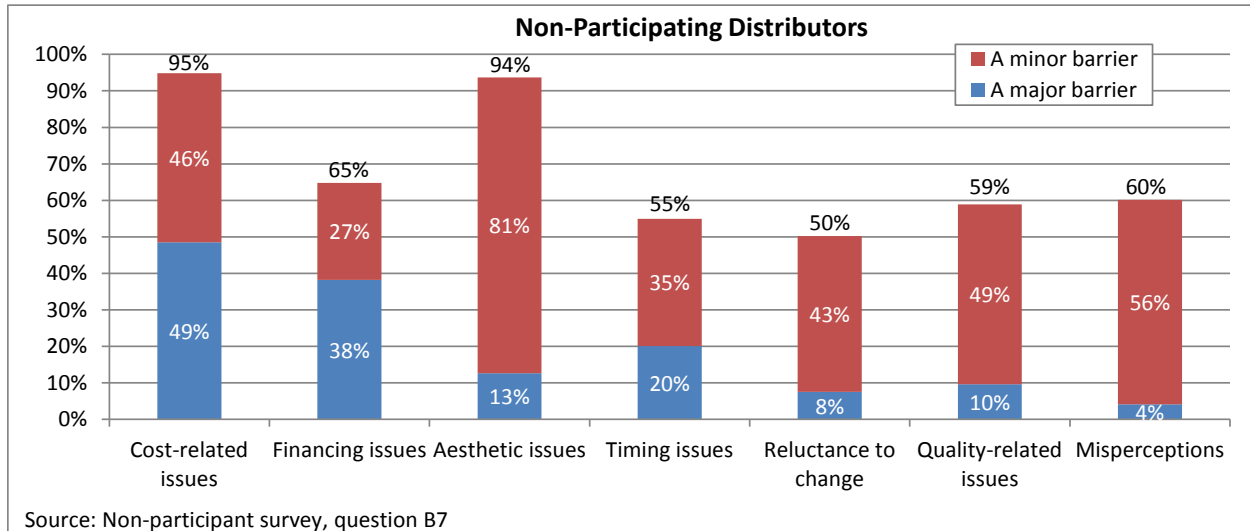
**Figure 46. Barriers to Energy Efficiency in Lighting Projects, Participating Distributors**



Non-participating distributors similarly perceive cost-related issues and financing issues as the most significant market barriers to energy efficiency in lighting projects, though non-

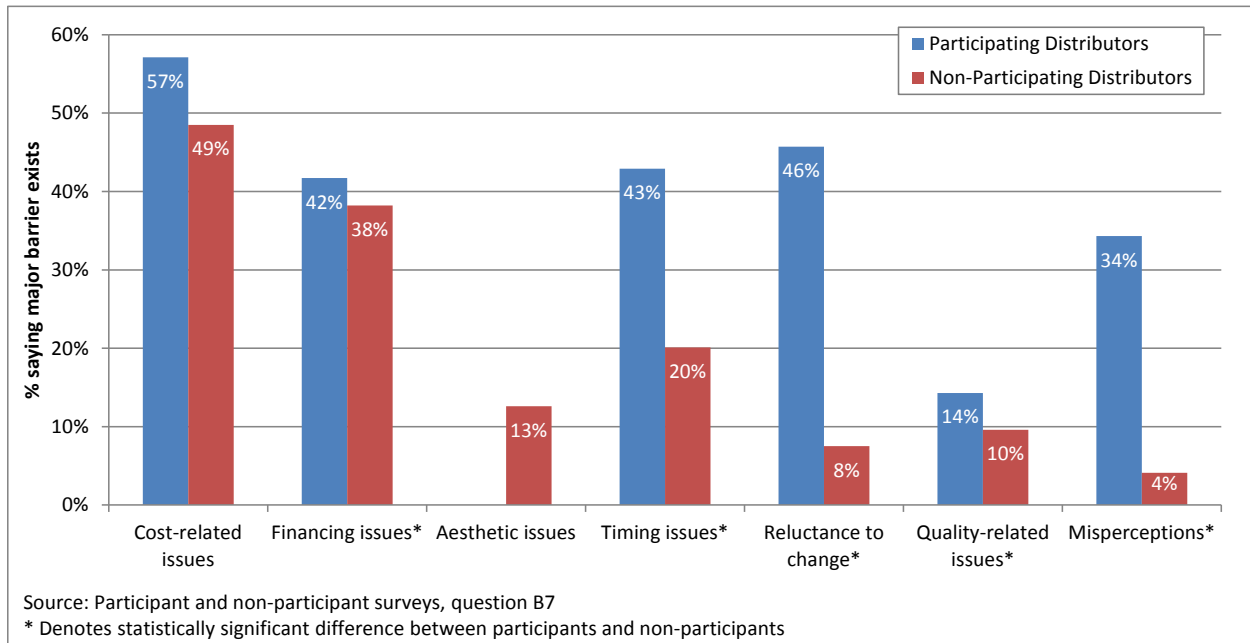
participants view financing issues as a less significant barrier than do participants (Figure 47). Aesthetics are also a commonly cited barrier, although just 13 percent of non-participating distributors view aesthetics as a *major* barrier.

**Figure 47. Barriers to Energy Efficiency in Lighting Projects, Non-Participating Distributors**



Among distributors, participants perceive reluctance to change, timing issues, quality-related issues, and misperceptions as more significant barriers than do non-participants (Figure 48). The only barrier that non-participants cite as a major barrier more often than do participants is aesthetics, though the difference between participants and non-participants is not statistically significant. Participating and non-participating distributors’ views are similar about other barriers.

**Figure 48. Major Barriers by Participation Status, Distributors**



Cost-related issues were also found to be the dominant market barrier in the 2005 evaluation of the SCLP. Financing was not a barrier that was explored in that evaluation. Other strong market barriers reported by respondents to that 2005 evaluation included customers’ lack of awareness of energy-efficient products, a lack of belief or appreciation for the savings and other benefits provided by energy-efficient lighting, and insufficient product availability.

### Program Barriers

Over two-thirds (68 percent) of participating contractors and over half (63 percent) of participating distributors completed qualifying projects for which they did not apply for NYSERDA’s project incentives. The most common reason for not applying for incentives is the application process, cited by 63 percent of contractors and 55 percent of distributors who did not submit all eligible projects for incentives (Table 20).

**Table 20. Reasons for Not Applying for Project Incentives**

Reason	% of Participants with Non-Incented Projects	
	Contractors (n=24)	Distributors (n=22)
Application process	63%	55%
No knowledge of program incentives	17%	5%
Don't know how to apply	4%	0%
Not eligible	4%	5%
Others applied	4%	5%
Didn't plan for it	0%	18%
Not interested	0%	14%
Didn't think to apply	0%	9%

Source: Participant survey, questions E1 and E2.

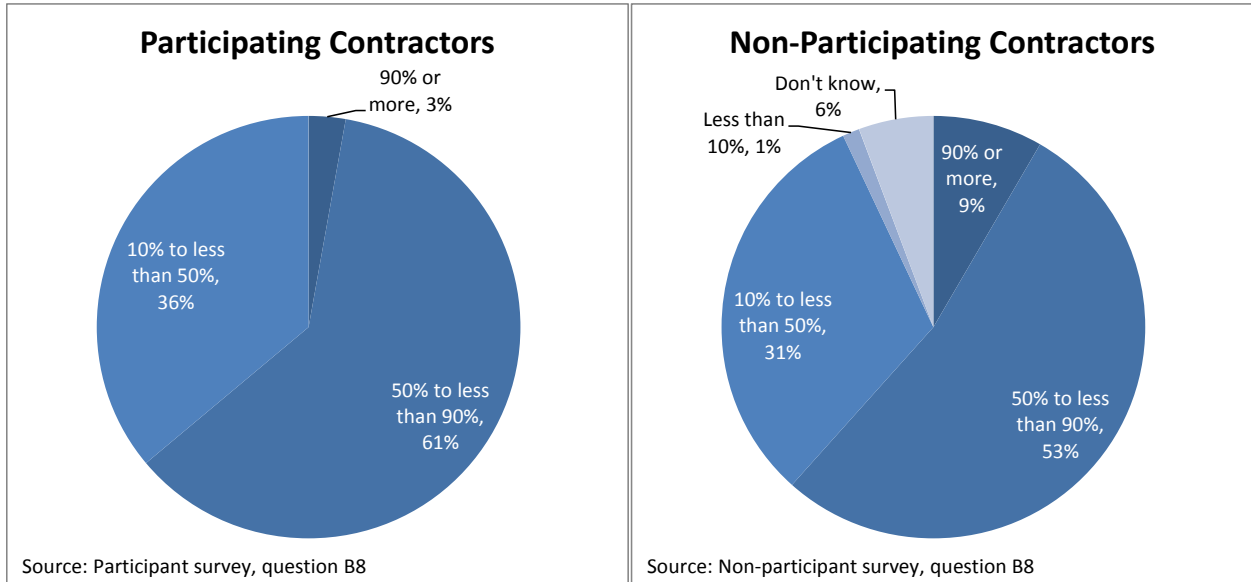
Note that respondents could provide more than one reason, so percentages may not sum to 100%.

Respondents to the 2005 survey of SCLP program participants provided feedback on this same topic. At that time, participants reported that, on average, they submitted program incentive applications for one-fifth of all program-eligible projects.

#### **4.6 Market Size**

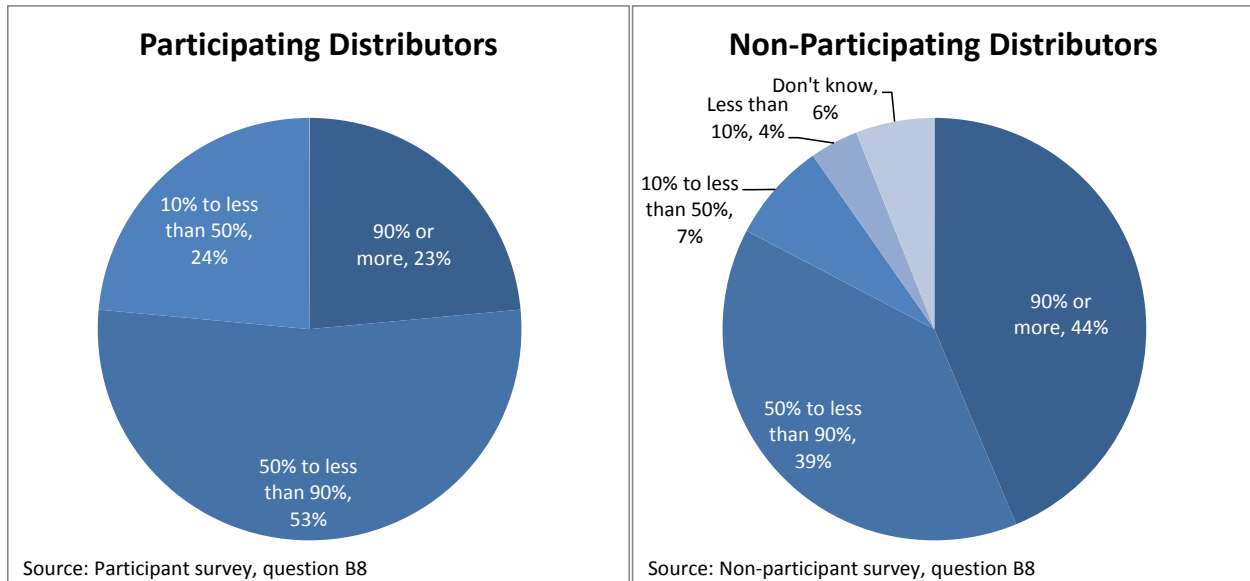
Survey results support secondary research findings regarding the relatively large potential for additional energy-efficient lighting upgrades in the state. Among contractors, nearly two-thirds of participants (61 percent) and 53 percent of non-participants estimate that between 50 percent and 90 percent of their region's total commercial floor space could be upgraded (Figure 49). Non-participants more often think that 90 percent or more of commercial floor space could be upgraded (9 percent of non-participants compared to 3 percent of participants), though differences between participants and non-participants are not statistically significant.

**Figure 49. Percentage of Commercial Floor Space Appropriate for Lighting Upgrades (Contractors)**



Distributors generally think that more of the region’s commercial building space could benefit from lighting efficiency upgrades, in comparison to the contractor results presented above. Among distributors, more than half of participants (53 percent) and 39 percent of non-participants estimate that between 50 percent and 90 percent of their region’s total commercial floor space could be upgraded (Figure 50). Non-participants more often think that 90 percent or more of commercial floor space could be upgraded (44 percent of non-participants compared to 23 percent of participants), and differences between participants and non-participants are statistically significant.

**Figure 50. Percentage of Commercial Floor Space Appropriate for Lighting Upgrades (Distributors)**



Note: the differences between participants and non-participants are statistically significant.

## 5 Key Findings and Actions for Consideration by Program Staff

The most significant findings resulting from the evaluation study are summarized in the bulleted lists included in this section. Lists of findings are organized by topic area.

### 5.1 Key Findings

#### Program Activity and Accomplishments

- » Electrical contractors make up the largest group of program participants, and distributor is the second most common business type among program participants. Architect and engineer and ESCO are the next largest categories of participants. Though electrical contractors are the largest group of participants, the market penetration estimate for this group is low. Additional recruitment efforts targeted at electrical contractors is warranted, though high levels of penetration may be limited by program resources.
- » It appears that a relatively small percentage of Partners rely on the program's training sessions to receive the basic training necessary to qualify for program participation (nine percent). Thirty-six percent of Partners are self-trained, and the program lacks data on the mode of training employed by 54 percent of Partners.
- » The majority of program activity is occurring in Con Edison's service territory (122 projects, \$136,993 of incentive funds paid), followed by National Grid (109 projects, and \$109,919 of incentive funds paid) and NYSEG (40 projects, and \$41,282 of incentive funds paid).
- » Distributors completed the largest number of projects receiving financial incentives from the program (152 projects), followed by lighting designers (140 projects) and ESCOs (113 projects). ESCO projects received the greatest amount of incentive funds (\$173,355), followed by distributors (\$152,523) and lighting designers (\$139,629).
- » The metropolitan NYC area has a heavy concentration of projects completed by design firms, while project activity in upstate areas has been completed by a more diverse mix of partner types.



## Market Activity and Market Potential

- » Participating contractors and distributors both do most of their work in the office sector. Non-participating contractors do most of their work in the school / university sector, while non-participating distributors do most of their work in the industrial sector.
- » Statewide market potential for CLP lighting upgrades is nearly three billion square feet. This represents 88 percent of the total CLP-eligible commercial building space in the state, and approximately 26 percent of all building space statewide.<sup>87</sup>
- » The metropolitan areas of Buffalo, Rochester, Syracuse, Albany, and NYC have the greatest amount of square footage with lighting upgrade potential.<sup>88</sup>

## Knowledge and Use of Energy-Efficient Products and Techniques

- » Use of at least some energy-efficient lighting products is relatively common among all contractors and distributors. Participating distributors and contractors report higher levels of usage of several high-efficiency lighting products than do non-participants.
- » CLP participants are more knowledgeable about energy-efficient lighting techniques than non-participants.
- » Participants are more likely to hold energy-efficient lighting-related certifications, such as from the IES and NCQLP.

## Energy Efficiency-Related Business Practices

- » Among contractors, a greater percentage of non-participants identify energy-efficiency as a *top* or *high* priority than participants, indicating that there are contractors active in the New York market that are highly motivated to pursue energy-efficiency, yet are not participating in the CLP.
- » Presenting beyond-code lighting as a standard offering rather than as an option substantially increases sales of high-efficiency lighting systems. Over 40 percent of respondents in each respondent category report that they present beyond-code lighting as a standard offering. For those who present code-compliant lighting as their standard offering, with beyond-code lighting as an option, relatively few clients select the beyond-code option.
- » Engineers, electrical contractors and architects appear to have the greatest influence over lighting specifications.

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<sup>87</sup> As noted earlier, potentially eligible common space area at multifamily buildings was difficult to quantify. Thus, multifamily common area space was excluded from the analysis, despite the fact that multifamily space as a whole comprises approximately half of the total square footage in the state that is not single-family homes.

<sup>88</sup> Although Nassau and Suffolk Counties represent 12.5 percent of the total commercial square footage in New York State, the potential in these counties is excluded from the analysis due to the fact that they lay outside of areas eligible for SBC program participation.

- » The most common strategy used by all respondents to improve sales of energy-efficient lighting is to educate customers of the benefits of energy-efficient lighting, followed by establishing relationships with other companies to secure better pricing.
- » The majority of participants who stock lighting equipment have started stocking more energy-efficient products since participation in the Business Partners Program.

## Market Drivers and Barriers

- » Contractors and distributors identify competitive advantage and client demand as the strongest drivers behind their decisions to make energy-efficiency a business priority. A significantly greater percentage of participating than non-participating contractors identify competitive advantage as a key driver for their decision to promote energy-efficiency, which may indicate that participants view program participation as a tool to differentiate their companies from the competition.
- » Economic conditions, financial incentive programs, and electricity prices appear to be the factors with the most significant influence on the market for energy efficiency.
- » Equipment standards and tax incentives are two critical outcomes resulting from federal policy-making. Energy codes and the Energy Efficiency Portfolio Standard are two key policy mechanisms at play at the state level in New York. NYC has demonstrated in recent years that local policies can also drive substantial energy savings.
- » Developments that are likely to support future growth in the market for energy-efficient commercial lighting include: benchmarking of energy use in existing buildings; lighting technology advancements and obsolescence of older technologies; growing market awareness, and support for energy-efficient commercial lighting; and high and potentially volatile electricity prices.
- » The factor most frequently cited as a major barrier to the energy-efficiency lighting market across all distributors and contractors is cost-related issues, followed by financing issues, reluctance to change, and timing issues.

## Barriers and Challenges Facing the CLP

- » A variety of market actors influence the decision to incorporate energy efficiency in lighting system specifications, and the actor with the greatest influence varies from project to project. Effectively addressing the diversity of professions targeted by the program is a challenge for program implementers.
- » Over two-thirds (68 percent) of participating contractors and over half (63 percent) of participating distributors completed qualifying projects for which they did not apply for NYSERDA's project incentives. The most common reason for not applying for incentives is the application process.
- » Awareness of the CLP among non-participants is low.

## Changes in the Market Over Time

- » Market actors appear to be growing more aware of and confident in efficient products than they were in 2005 when the last market characterization and assessment of the SCLP was conducted. However, misperceptions about energy efficient lighting products remain.

## 5.2 Actions for Consideration by Program Staff

The MCA team suggests that program staff consider taking the following steps to address findings from this evaluation:

- » Given the diversity of market actors with influence on lighting specifications, program staff should continue to reach out to the full range of professions active in the lighting market. Furthermore, program staff should seek to achieve an even more balanced distribution of participation across professions.
- » NYSERDA should bolster program awareness and branding activities in an effort to increase program participation. Distributors and electrical contractors currently comprise over 50 percent of program participants. Program staff should consider focusing more attention on recruiting participants from the other target business categories (e.g., lighting designers, manufacturer representatives, architects, engineers and ESCOs). Building a broader network of Business Partners will help ensure that the large remaining market potential for energy-efficient lighting upgrades is pursued promptly, and by highly qualified firms. Awareness activities around efficient lighting are particularly important now, as federal efficiency standards take effect and some confusion is resulting among consumers.
- » Staff should consider offering educational materials and trainings to end users in addition to continuing educational activities that target product and service providers. Both participants and non-participants view client education as a key strategy for improving energy efficiency sales, and both see competitive advantage as a significant driver behind their decision to promote energy-efficient lighting. Therefore, program efforts to relieve product and service providers of some of the burden of educating end-users may lead to greater levels of program participation. The strategy may be particularly effective if the program were to provide end-user-focused educational materials and collateral as a benefit to participants.
- » Program staff should consider holding regional conferences in parts of the state with the greatest amount of market potential (e.g., Buffalo, Rochester, Syracuse, and Albany). Staff should make a strong effort to include participation by local commercial property owners and managers, as well as providers of lighting products and services that are not yet active in the program. The conferences would serve as an opportunity for program participants to exchange information and ideas with one another, to expand awareness

of the program among non-participants, and to boost program participants' sales in key regions of the state.

- » Staff should consider highlighting the important effect that presentation strategy can have on a company's success in selling beyond-code lighting; presenting beyond-code lighting as a standard offering rather than as an option substantially increases sales of high-efficiency lighting systems. Given that presenting beyond-code lighting as standard practice appears to be a simple and effective tool for selling high-efficiency lighting systems, staff may want to highlight this finding in training sessions, particularly those geared toward participants in the upstate region where the practice is currently much less common than in the downstate region.
- » Program staff should ensure that program collateral remains current with the rapidly changing market for energy efficient lighting products, technologies, and business practices .
- » In light of new federal standards for lamp efficiency, and upcoming standards for ballast efficiency, program staff should continue to review financial incentive levels and other program offerings to ensure that they are well-matched to the changing needs of market participants. Program incentives and educational tools can be viewed as an opportunity to speed the market's transition to standard-compliant lighting, and to encourage decision-makers to push beyond minimal compliance where it is economically feasible.
- » Staff should consider opportunities to disseminate any publicly available summary data emerging from building benchmarking efforts in NYC. Presentations that can be downloaded online are likely to increase traffic on the CLP webpage, and data documenting market potential may provide a strong incentive for non-participating companies to start participating in the program.
- » Staff should continue to look for ways to streamline program participation processes, and/or make the simplicity of program processes more transparent to participants.
- » Given the relatively low rate of participation in program training sessions, it may make sense to rethink the structure of current training efforts, or shift resources to alternative activities to educate the market about energy-efficient lighting. Staff should also more carefully track the mode of training program participants use to fulfill program eligibility requirements.
- » Recognizing the persistent role of upfront cost and financing issues as market barriers, NYSERDA should continue to offer some level of financial incentive to reduce upfront costs. NYSERDA should also work to educate CLP participants about other incentives and program offerings available for end-use customers with a goal of leveraging CLP participation as a means of driving end-use customer participation in other NYSERDA programs.

## 6 Appendix A. Data Collection Instruments

### MCA Evaluation of the Business Partners Program

#### Commercial Lighting – Participant Survey

##### INTRODUCTION AND RESPONDENT IDENTIFICATION/SELECTION

Hello, my name is [INTERVIEWER NAME], and I'm calling from [PHONE CENTER NAME], on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA. May I please speak with [NAME]?

Our firm is conducting research for NYSERDA on the commercial lighting component of the Business Partners Program to improve NYSERDA programs that serve the commercial lighting market. As part of this research we are conducting interviews with companies that participate in NYSERDA's Business Partners program.

Q1. Are you the appropriate person to discuss issues related to your firm's participation in NYSERDA's Business Partners program and your firm's work with commercial lighting?

- |                     |              |
|---------------------|--------------|
| 01 YES              | [SKIP TO A1] |
| 02 NO, WRONG PERSON |              |
| 96 REFUSED          | [TERMINATE]  |
| 97 DON'T KNOW       | [TERMINATE]  |

Q2. Who at your firm can best speak about your firm's participation in this NYSERDA program or attended a Business Partners program training session?

[INTERVIEWER NOTE: The target respondent is the person listed in the program files. If that person is no longer at the company or indicates in Q1 that they are not the correct person, the interview may be conducted with a person at the company who attended a Business Partners training session and/or is aware of company's participation in the program.]

[RECORD CONTACT INFORMATION: NAME, TITLE, PHONE NUMBER]

**READ IF NECESSARY:** The Business Partners Program keeps participating lighting product and service providers informed about new lighting market developments. The program also provides participating companies with incentives in the range of \$500 - \$3,000 per project for completing lighting systems that meet the program's criteria.

**ONCE THE CORRECT RESPONDENT IS ON THE PHONE, GO TO INTRODUCTION SCREEN, THEN:**

Q3. Are you familiar with the Business Partners Program?

- 1 YES
- 2 NO
- 96 REFUSED
- 97 DON'T KNOW

**IF NO, DK OR REF READ:** The Business Partners Program keeps participating lighting product and service providers informed about new lighting market developments. The program also provides participating companies with incentives in the range of \$500 - \$3,000 per project for completing lighting systems that meet the program's criteria.

**READ:**

Before we begin, I'd like you to keep in mind that throughout the survey, when we ask you about the projects you work on, or the market for lighting in New York State, we're referring to the part of the state that's within NYSERDA's jurisdiction. NYSERDA's jurisdiction EXCLUDES Long Island, so when you describe your experiences in the market, please try to refer just to projects in New York State but outside of Long Island.

**A. General and Lighting Specific Business Questions**

A1. First, I'd like to ask you some questions about the kind of work your company does. How would you characterize your company's *primary* business activity? **[READ, CODE ONE RESPONSE ONLY]**

- 01 Representing Lighting Manufacturers
- 02 Architecture
- 03 Interior Design
- 04 Lighting Design
- 05 Engineering
- 06 Distribution
- 07 Electrical Contracting
- 08 ESCO
- 95 OTHER \_\_\_\_\_
- 96 REFUSED
- 97 DON'T KNOW

**[SKIP TO A5 IF A1=01]**

- A2. About how many projects has your company completed in New York State, in the past two years, that included any lighting-related work?

NUMBER OF PROJECTS \_\_\_\_\_

996 REFUSED

997 DON'T KNOW

- A3. Thinking about all of these projects, I'd like to know what percent of them fall into each of the following three categories: new construction, lighting upgrades that are part of a broader renovation project, and lighting-only projects. First, what percent of all your lighting projects in the last two years in NY state were...**[READ ITEM DO NOT ROTATE]**

- a. New construction projects
- b. Lighting upgrades that are part of a broader renovation project
- c. Lighting-only projects

PERCENT \_\_\_\_\_

996 REFUSED

997 DON'T KNOW

**[SKIP TO A5 IF A3c=0, 996, OR 997]**

- A4. Now I'd like you to think just about your *lighting-only projects* in the past two years. What percentage of these projects falls into each of the following three categories – 1) a full lighting system re-design; 2) fixtures are replaced but the overall system design remains the same; 3) lamps and ballast are replaced in existing fixtures? First, what percent of your lighting only projects in the past two years were...**[READ ITEM DO NOT ROTATE]**

- a. A full lighting system re-design
- b. Lighting fixtures are replaced but the overall system design remains the same
- c. Lamps and ballast are replaced in the *existing fixtures*

PERCENT \_\_\_\_\_

996 REFUSED

997 DON'T KNOW

- A5. To which of the following market sectors do you provide any kind of lighting related products or services? **[READ LIST, CODE YES OR NO FOR EACH]**

- a. Offices
- b. Retail stores



- c. Restaurants
- d. Schools or universities
- e. Industrial
- f. Hospitals
- g. Multi-family housing
  - 01 YES
  - 02 NO
  - 96 REFUSED
  - 97 DON'T KNOW

**[SKIP TO A7 IF ONLY ONE YES IN A5]**

A6. In which of these sectors do you do the most work in terms of sales?

**[READ LIST FROM A5 OF ALL ITEMS=1, CODE ONE RESPONSE ONLY]**

- 01 Offices
- 02 Retail stores
- 03 Restaurants
- 04 Schools or universities
- 05 Industrial
- 06 Hospitals
- 07 Multi-family housing
- 96 REFUSED
- 97 DON'T KNOW

A7. I'd like to know where you do your lighting related work – upstate or downstate. What percentage of your lighting-related work is for clients in the downstate area which includes NY city and Westchester county and what percentage is in Upstate NY which would be everything but NY city, Westchester County and Long Island)?

- a. DOWNSTATE
- b. UPSTATE

PERCENT \_\_\_\_\_  
 996 REFUSED  
 997 DON'T KNOW

A8. Now I'm going to read you a list of specific lighting products. For each one, please tell me.

**[IF A1=06]** how often you sell this product for use in non-residential lighting projects – often, sometimes, rarely, or never.



**[IF A1~06]** how often your company incorporates this product or service into a lighting system for non-residential buildings – often, sometimes, rarely, or never.

First, **[INSERT ITEM, ROTATE]**

- a. Dimming controls
- b. Occupancy sensors
- c. T12 lamps
- d. High performance T8 ballasts and lamps
- e. Reduced wattage T8
- f. T5 linear lamps
- g. T5 High Output linear lamps
- h. Compact fluorescent lighting
- i. Halogen lighting
- j. Induction lighting
- k. LED (for uses other than exit signs)
- l. Incandescent
- m. Metal Halide Standard
- n. Metal halide Pulse Start

- 01 OFTEN
- 02 SOMETIMES
- 03 RARELY
- 04 NEVER
- 96 REFUSED
- 97 DON'T KNOW

A9. Thinking about all of your company's lighting-related work, about how much of it involves the use or sale of *energy efficient lighting* - all of it, most of it, some of it, only a little of it, or none of it?

- 01 ALL OF IT
- 02 MOST OF IT
- 03 SOME OF IT
- 04 ONLY A LITTLE
- 05 NONE OF IT
- 96 REFUSED
- 97 DON'T KNOW

## B. Respondent’s Experience in the Energy Efficient Lighting Market

I’d like to talk specifically about what the Business Partners Program refers to as effective energy efficient lighting. By this, we mean lighting systems that are designed to deliver light that is aesthetically pleasing and appropriate to the needs of the space, and that use 10 percent less energy than the state energy code requirements.

B1. I’m going to read you a list of tools and techniques for achieving effective, efficient commercial lighting systems. For each one please tell me if you are very familiar, somewhat familiar, not too familiar, or not at all familiar with that item. First, how familiar are you with...**[INSERT ITEM ROTATE]**

- a. meeting spacing criteria for lighting fixtures
- b. avoiding glare
- c. achieving desired light distribution
- d. establishing luminance and power density targets
- e. commissioning the lighting system after installation

- 01 VERY FAMILIAR
- 02 SOMEWHAT FAMILIAR
- 03 NOT TOO FAMILIAR
- 04 NOT AT ALL FAMILIAR
- 96 REFUSED
- 97 DON’T KNOW

B2. In general, how confident are you in your ability to communicate with your clients about the importance of investing in effective energy efficient lighting – very confident, somewhat confident, not too confident, or not at all confident?

- 01 VERY CONFIDENT
- 02 SOMEWHAT CONFIDENT
- 03 NOT TOO CONFIDENT
- 04 NOT CONFIDENT AT ALL
- 96 REFUSED
- 97 DON’T KNOW

B3. We’re trying to understand which professional on the project team typically has the most influence over lighting system specifications. Based on your earlier responses, it sounds like the majority of your projects are

**[INSERT ‘New construction’, ‘Lighting upgrades’ or ‘Lighting only’ BASED ON HIGHEST PERCENTAGE IN A3a, A3b, A3c] in the**

[INSERT 'DOWNSTATE' OR 'UPSTATE' BASED ON HIGHEST PERCENTAGE IN A7a, A7b] area.

[IF PERCENTAGES ARE EQUAL IN THE HIGHEST CATEGORIES, READ ALL CATEGORIES WITH HIGHEST PERCENTAGE]

For these projects, generally, which professional typically has the greatest influence over lighting system specifications? [READ LIST, CODE ONE RESPONSE ONLY]

[FOR A1=01 OR {A1 NE 01 AND (A3=96,97 OR A7=96,97)}, READ]

We're trying to understand which professional on the project team typically has the most influence over lighting system specifications. For the majority of your projects, generally, which professional typically has the greatest influence over lighting system specifications?

[INTERVIEWER NOTE: IF RESPONDENT SAYS MORE THAN ONE, PROBE TO SELECT MOST INFLUENTIAL IN TYPICAL PROJECT]

- 01 manufacturer representative
- 02 architect
- 03 lighting designer
- 04 engineer
- 05 electrical contractor
- 95 OTHER \_\_\_\_\_
- 96 REFUSED
- 97 DON'T KNOW

[SKIP TO B5 IF A1=04]

B4. How many of your company's lighting projects typically involve use of a lighting designer – all of them, some of them, only a few, or none of them?

- 01 ALL OF THEM
- 02 SOME OF THEM
- 03 ONLY A FEW
- 04 NONE OF THEM
- 96 REFUSED
- 97 DON'T KNOW

B5. In general, how do you present your clients with effective energy efficient options – do you...[READ STATEMENTS, ROTATE]

- 01 Offer code compliant lighting as a baseline option, and then offer higher efficiency options as alternatives,

or do you...

02 Incorporate beyond-code lighting design into all of your projects as standard practice **[SKIP TO B7]**

96 REFUSED **[SKIP TO B7]**

97 DON'T KNOW **[SKIP TO B7]**

B6. How often do your clients select the higher efficiency options – always, often, sometimes, rarely, or never?

01 ALWAYS

02 OFTEN

03 SOMETIMES

04 RARELY

05 NEVER

96 REFUSED

97 DON'T KNOW

B7. Now I'm going to read you a list of potential barriers you might face in trying to

**[IF A1~=06]** incorporate energy efficiency into your lighting projects.

**[IF A1=06]** sell energy efficient products.

For each one, please tell me how much of a barrier it is for you – a major barrier, a minor barrier or not a barrier? First, **[INSERT ITEMS, ROTATE]**

**[READ IF NECESSARY]** Is this a major barrier, a minor barrier, or not a barrier you might face in trying to incorporate energy efficiency into your lighting projects?

- a. Reluctance to changing the way things have always been done
- b. Timing issues **[READ IF NECESSARY:** For example, you get involved in lighting projects after equipment has already been specified.]
- c. Aesthetic issues
- d. Cost-related issues
- e. Quality-related issues
- f. Financing issues
- g. Misperceptions about energy efficient lighting

01 A MAJOR BARRIER

02 A MINOR BARRIER

03 NOT A BARRIER

96 REFUSED

97 DON'T KNOW

B8. We're interested in estimating the amount of building space that could undergo lighting upgrades through the Business Partners program. I'd like you to think about *all the commercial building space in the region that you serve* – about what percent of the square footage of commercial building space in that region would you say could be upgraded to a more advanced lighting system? **[READ LIST]**

- 01 Less than 10 percent
- 02 10 percent to less than 50 percent
- 03 50 percent to less than 90 percent
- 04 90 percent or more
- 96 REFUSED
- 97 DON'T KNOW

**C. Decision-Making Related to Energy Efficiency**

C1. Thinking about your company's business priorities, would you say that the promotion and sales of energy efficiency lighting products and services is a top priority, a high priority but not a top priority, a low priority, or not a priority?

- 01 TOP PRIORITY
- 02 HIGH PRIORITY
- 03 LOW PRIORITY **[SKIP TO D1]**
- 04 NOT A PRIORITY **[SKIP TO D1]**
- 96 REFUSED **[SKIP TO D1]**
- 97 DON'T KNOW **[SKIP TO D1]**

C2. What is the main driving force behind your company's decision to promote the sale of energy efficiency products and services? Is it: **[READ STATEMENTS, ROTATE 1 AND 2, ALWAYS READ 03 LAST]**

- 01 client demand for these products and services,
- 02 efforts to gain a competitive advantage in the market, or is it
- 03 some other factor (SPECIFY \_\_\_\_\_)
- 96 REFUSED
- 97 DON'T KNOW

**D. Market Trends**

D1. I'm going to read you a list of various factors that may influence the market for effective energy efficient lighting. For each, please tell me whether you think it has a major impact, a minor impact or no impact on the market. First, **[INSERT ITEM]**

**[READ IF NECESSARY]** Does this factor have a major impact, a minor impact or no impact on the market for effective energy efficient lighting?

- a. Economic conditions
- b. Federal policies and standards
- c. State and local policies and standards
- d. Financial incentive programs promoting energy efficiency
- e. Programs to improve awareness of the benefits of energy efficiency
- f. Green building certification programs like LEED
- g. Electricity prices

- 01 MAJOR IMPACT
- 02 MINOR IMPACT
- 03 NO IMPACT
- 96 REFUSED
- 97 DON'T KNOW

**[SKIP TO E1 IF ONLY ONE ITEM IN D1=01 OR NOTHING=01 AND ONLY ONE ITEM IN D1=02]**

D2. Which of these would you say has had the greatest impact on the market for effective energy efficient lighting? **[PROGRAMMING NOTE: SHOW ONLY ITEMS WHERE D1=01, IF D1NE01, SHOW ONLY ITEMS WHERE D1=02, IF D1 NE 01 OR 02, DISPLAY ALL ITEMS IN LIST]**

**[READ LIST IF NECESSARY]**

- 01 Economic conditions
- 02 Federal policies and standards
- 03 State and local policies and standards
- 04 Financial incentive programs promoting energy efficiency
- 05 Programs to improve awareness of the benefits of energy efficiency
- 06 Green building certification programs like LEED
- 07 Electricity prices
- 96 REFUSED
- 97 DON'T KNOW

## E. Program Participation

Now I'd like to talk about your company's participation in the NYSERDA Business Partners Program.

E1. Since you began participating in NYSERDA's Business Partners program, have you completed any lighting projects that would likely have qualified for project incentives but for which you did not actually apply for project incentives?

- 01 YES
- 02 NO [SKIP TO E3]
- 96 REFUSED [SKIP TO E3]
- 97 DON'T KNOW [SKIP TO E3]

E2. Why didn't you apply for project incentives for those projects? [DO NOT READ. CODE ALL THAT APPLY]

- 01 DIDN'T KNOW HOW TO APPLY
- 02 DIDN'T THINK TO APPLY
- 03 DIDN'T PLAN FOR IT BEFORE THE WORK BEGAN
- 04 DIDN'T WANT TO GO THROUGH APPLICATION PROCESS
- 05 OTHER (SPECIFY \_\_\_\_\_)
- 96 REFUSED
- 97 DON'T KNOW

[SKIP TO E4 IF A1 NE 06]

E3. Since you began participating in the NYSERDA Business Partners program, are you stocking more energy efficient lighting products, fewer, or about the same as you did before program participation?

- 01 MORE EE PRODUCTS
- 02 ABOUT THE SAME
- 03 FEWER EE PRODUCTS
- 96 REFUSED
- 97 DON'T KNOW

E4. How much of your company's marketing material references your status as a participant in NYSERDA's Business Partners program – all of it, some of it, only a little of it, none of it?

- 01 ALL
- 02 SOME
- 03 ONLY A LITTLE

- 04 NONE
- 96 REFUSED
- 97 DON'T KNOW

E5. Have you used the lifecycle cost tool that is provided by the program?

**[READ IF NECESSARY:** This tool is an Excel spreadsheet that compares the lifetime costs of EE lighting with the lifetime costs of conventional lighting.]

- 01 YES
- 02 NO **[SKIP TO E7]**
- 96 REFUSED **[SKIP TO E7]**
- 97 DON'T KNOW **[SKIP TO E7]**

E6. How helpful has this tool been – very helpful, somewhat helpful, not too helpful, or not at all helpful?

- 01 VERY HELPFUL
- 02 SOMEWHAT HELPFUL
- 03 NOT TOO HELPFUL
- 04 NOT AT ALL HELPFUL
- 96 REFUSED
- 97 DON'T KNOW

E7. If the Business Partner program offered energy auditor training for participants so that firms can get their own in-house energy auditors, how interested would your firm be in the new offering – very interested, somewhat interested, not too interested or not at all interested?

- 01 VERY INTERESTED
- 02 SOMEWHAT INTERESTED
- 03 NOT TOO INTERESTED
- 04 NOT AT ALL INTERESTED
- 96 REFUSED
- 97 DON'T KNOW

E8. I'm going to read you a list of strategies that companies might use to be successful in selling effective energy efficient lighting products and services. For each, please tell me whether or not it is a strategy your company is using. First, **[INSERT ITEM, ROTATE]**, is this a strategy your company is using or not?



**[READ IF NECESSARY:** Is this a strategy your company is using to be successful in selling effective energy efficient lighting products and services or not?]

- a. establish relationships with other companies to secure better pricing
- b. expand your company's scope of services
- c. specialize in serving a particular building or project type
- d. improve coordination among project team members
- e. educate clients about the benefits of investing in effective energy efficient lighting

- 01 YES
- 02 NO
- 96 REFUSED
- 97 DON'T KNOW

## F. Firmographics

F1. In the past two years, has your business revenue from the sale of effective energy efficient lighting products and services increased, decreased or stayed the same?

- 01 INCREASED
- 02 DECREASED
- 03 STAYED THE SAME           **[SKIP TO F3]**
- 96 REFUSED                       **[SKIP TO F3]**
- 97 DON'T KNOW                 **[SKIP TO F3]**

F2. Has it **[IF F1=01: 'increased']/IF F1=02: 'decreased']** by less than 10 percent, 10 percent to less than 50 percent or by 50 percent or more?

- 01 LESS THAN 10 PERCENT
- 02 10 PERCENT TO LESS THAN 50 PERCENT
- 03 50 PERCENT OR MORE
- 96 REFUSED
- 97 DON'T KNOW

F3. How many branch locations does your organization have in New York State, excluding Long Island?

- NUMBER \_\_\_\_\_
- 96 REFUSED
- 97 DON'T KNOW

F4. Approximately how many full time employees does your organization employ at all of its locations in New York State, excluding Long Island?

NUMBER \_\_\_\_\_  
996 REFUSED  
997 DON'T KNOW

F5. What is your estimate of the average square footage of a typical lighting-related project for your company?

\_\_\_\_\_ SQUARE FEET  
96 REFUSED  
97 DON'T KNOW

F6. About how many individuals in your company hold the following certifications or memberships?

- a. NCQLP (National Council on Qualifications for the Lighting Professions' Lighting Certified Professional)
- b. International Association of Lighting Designers
- c. LEED Accredited Professional
- d. Illuminating Engineering Society

NUMBER \_\_\_\_\_  
996 REFUSED  
997 DON'T KNOW

*CLOSING: Those are all the questions I have. I'd like to thank you so much for taking the time to talk with me today. The information you have provided will be very helpful in improving NYSERDA's Business Partner program and we appreciate your input.*

## MCA Evaluation of the Business Partners Program

### Commercial Lighting – NON-Participant Survey

#### INTRODUCTION AND RESPONDENT IDENTIFICATION/SELECTION

Hello, my name is [INTERVIEWER NAME], and I'm calling from [PHONE CENTER NAME], on behalf of the New York State Energy Research and Development Authority, also known as NYSERDA. May I please speak with [TITLE/NAME]?

[IF NO NAME IS AVAILABLE, READ: May I please speak with someone familiar with your firm's commercial lighting work?]

We are conducting research for NYSERDA to guide the future of a financial incentive program called Business Partners. The program is designed to help build the commercial lighting market in New York State by providing support to companies like yours. As part of this research, we are conducting interviews with companies that have not participated in the program. My questions should only take about 15 minutes. Would now be a good time for you?

Q2. Are you the appropriate person to discuss issues related to your firm's work with commercial lighting?

03 YES [SKIP TO Q3]

04 NO, WRONG PERSON

98 REFUSED [TERMINATE]

99 DON'T KNOW [TERMINATE]

Q2. Who at your firm can best speak about your firm's commercial lighting work?

[RECORD CONTACT INFORMATION: NAME, TITLE, PHONE NUMBER]

[READ IF NECESSARY]– As an independent research firm, we do not intend to report your responses in any way that would reveal your identity or the identity of your company. If you

have questions, you can contact NYSERDA's project manager, Ken Galarneau, at (518) 862-1090 x3534.

**READ:**

Before we begin, I'd like you to keep in mind that throughout the survey, when we ask you about the projects you work on, or the market for lighting in New York State, we're referring to the part of the state that's within NYSERDA's jurisdiction. NYSERDA's jurisdiction EXCLUDES Long Island, so when you describe your experiences in the market, please try to refer just to projects in New York State but outside of Long Island.

Q3. How familiar are you with NYSERDA – would you say you are: very familiar, somewhat familiar, not too familiar, or not at all familiar?

- 01 VERY FAMILIAR
- 02 SOMEWHAT FAMILIAR
- 03 NOT TOO FAMILIAR
- 04 NOT AT ALL FAMILIAR [SKIP TO S1]
- 96 REFUSED [SKIP TO S1]
- 97 DON'T KNOW [SKIP TO S1]

Q4. How familiar are you with NYSERDA's Business Partners program? The Business Partners program informs participating companies about new lighting market developments. It also provides them with incentives typically in the range of \$500 to \$3,000 per project for designing and installing lighting systems that meet program criteria. Would you say you are: very familiar, somewhat familiar, not too familiar, or not at all familiar?

- 01 VERY FAMILIAR
- 02 SOMEWHAT FAMILIAR
- 03 NOT TOO FAMILIAR
- 04 NOT AT ALL FAMILIAR
- 96 REFUSED
- 97 DON'T KNOW

Q5. To the best of your knowledge, has your firm participated in any NYSERDA or **New York Energy \$mart<sup>SM</sup>** programs in the past five years? [READ IF NECESSARY: NYSERDA = New York State Energy Research and Development Authority]

- 01 YES, PARTICIPATED IN NYSERDA PROGRAMS
- 02 NO, DID NOT PARTICIPATE IN ANY NYSERDA PROGRAMS [SKIP TO A1]
- 96 REFUSED [SKIP TO S1]
- 97 DON'T KNOW [SKIP TO S1]

Q6. Which NYSERDA programs has your organization participated in? [DO NOT READ. MARK ALL THAT APPLY.]

- 01 FLEX TECH (Interviewer Note: The Flexible Technical Assistance Program provides audits and technical assistance to identify opportunities for energy efficiency improvements.)
- 02 NEW CONSTRUCTION PROGRAM (Interviewer Note: This program provides financial incentives to lower the cost of energy efficiency improvements completed in new facilities.)
- 03 EXISTING FACILITIES PROGRAM (Interviewer Note: This program provides financial incentives to lower the cost of energy efficiency improvements completed in existing facilities)
- 04 MOTORS OR HVAC COMPONENT OF BUSINESS PARTNERS PROGRAM, (Interviewer Note: The Business Partners Program provides modest incentives to companies providing energy efficiency products and services to help build the market for these goods and services)
- 05 LIGHTING COMPONENT OF BUSINESS PARTNERS PROGRAM  
[TERMINATE]
- 95 OTHER (SPECIFY)
- 96 REFUSED
- 97 DON'T KNOW

IF Q6=05, TERMINATE INTERVIEW

**A. General and Lighting Specific Business Questions**

A1. First, I'd like to ask you some questions about the kind of work your company does. How would you characterize your company's *primary* business activity? **[READ, CODE ONE RESPONSE ONLY]**

- 01 Representing Lighting Manufacturers **[SKIP TO A5]**
- 02 Architecture
- 03 Interior Design
- 04 Lighting Design
- 05 Engineering
- 06 Distribution
- 07 Electrical Contracting
- 08 ESCO
- 95 NONE OF THESE      TERMINATE
- 96 REFUSED              TERMINATE
- 97 DON'T KNOW        TERMINATE

A2. About how many projects has your company completed in New York State, in the past two years, that included any lighting-related work?

NUMBER OF PROJECTS \_\_\_\_\_

996 REFUSED

997 DON'T KNOW

**[IF A2=0, TERMINATE]**

A3. Thinking about all of your lighting-related projects, I'd like to know what percent of them fall into each of the following three categories: new construction, lighting upgrades that are part of a broader renovation project, and lighting-only projects. First, what percent of all your lighting projects in the last two years in NY State were... **[READ ITEM DO NOT ROTATE, a+b+c SHOULD BE < OR = 100]**

d. New construction projects

e. Lighting upgrades that are part of a broader renovation project

f. Lighting-only projects

PERCENT \_\_\_\_\_

996 REFUSED

997 DON'T KNOW

**[SKIP TO A5 IF A3c=0, 996, OR 997]**

A4. Now I'd like you to think just about your *lighting-only projects* in the past two years. What percentage of these projects falls into each of the following three categories – 1) a full lighting system re-design; 2) fixtures are replaced but the overall system design remains the same; 3) lamps and ballasts are replaced in existing fixtures? First, what percent of your lighting only projects in the past two years were...**[READ ITEM DO NOT ROTATE, a+b+c SHOULD BE < OR = 100]**

a. A full lighting system re-design

b. Lighting fixtures are replaced but the overall system design remains the same

c. Lamps and ballasts are replaced in the *existing fixtures*

PERCENT \_\_\_\_\_

996 REFUSED

997 DON'T KNOW

01 YES

02 NO

96 REFUSED

97 DON'T KNOW

A6. In which of these sectors do you do the most work in terms of sales?

**[READ LIST FROM A5 OF ALL ITEMS=1, CODE ONE RESPONSE ONLY]**

- 08 Offices
- 09 Retail stores
- 10 Restaurants
- 11 Schools or universities
- 12 Industrial
- 13 Hospitals
- 14 Multi-family housing
- 96 REFUSED
- 97 DON'T KNOW

A7. I'd like to know where you do your lighting related work – upstate or downstate. What percentage of your lighting-related work is for clients in the downstate area which includes NY City and Westchester County and what percentage is in Upstate NY which would be everything but NY city, Westchester County and Long Island? **[a+b SHOULD BE < OR = 100]**

a. DOWNSTATE

b. UPSTATE

- PERCENT \_\_\_\_\_
- 996 REFUSED
- 997 DON'T KNOW

A8. Now I'm going to read you a list of specific lighting products. For each one, please tell me

**[IF A1=06]** how often you sell this product for use in non-residential lighting projects – often, sometimes, rarely, or never.

**[IF A1~06]** how often your company incorporates this product or service into a lighting system for non-residential buildings – often, sometimes, rarely, or never. First, **[INSERT ITEM, RANDOMIZE]**

- o. Dimming controls
- p. Occupancy sensors
- q. T12 lamps
- r. High performance T8 ballasts and lamps
- s. Reduced wattage T8

- t. T5 linear lamps
- u. T5 High Output linear lamps
- v. Compact fluorescent lighting
- w. Halogen lighting
- x. Induction lighting
- y. LED for uses other than exit signs
- z. Cold cathode lighting
- aa. Metal halide Pulse Start
  - 05 OFTEN
  - 06 SOMETIMES
  - 07 RARELY
  - 08 NEVER
  - 96 REFUSED
  - 97 DON'T KNOW

A9. Thinking about all of your company's lighting-related work, about how much of it involves the use or sale of *energy efficient lighting* - all of it, most of it, some of it, only a little of it, or none of it? [READ IF NECESSARY: By energy efficient lighting, we mean lighting systems that use 10% less energy than the state energy code requirements.]

- 01 ALL OF IT
- 02 MOST OF IT
- 03 SOME OF IT
- 04 ONLY A LITTLE
- 05 NONE OF IT                      GO TO B3
- 96 REFUSED
- 97 DON'T KNOW

**B. Respondent's Experience in the Energy Efficient Lighting Market**

I'd like to talk specifically about "effective energy efficient lighting." By this, we mean lighting systems that are designed to deliver light that is aesthetically pleasing and appropriate to the needs of the space, and that use 10 percent less energy than the state energy code requirements.

[IF A9=05, SKIP TO B3]

B1. I'm going to read you a list of tools and techniques for achieving effective, efficient commercial lighting systems. For each one please tell me if you are very familiar, somewhat familiar, not too familiar, or not at all familiar with that item. First, how familiar are you with...[INSERT ITEM RANDOMIZE]

- f. spacing for lighting fixtures
- g. avoiding glare



- h. achieving desired light distribution
- i. establishing luminance and power density targets
- j. commissioning the lighting system after installation

- 05 VERY FAMILIAR
- 06 SOMEWHAT FAMILIAR
- 07 NOT TOO FAMILIAR
- 08 NOT AT ALL FAMILIAR
- 96 REFUSED
- 97 DON'T KNOW

B2. In general, how confident are you in your ability to communicate with your clients about the importance of investing in effective energy efficient lighting – very confident, somewhat confident, not too confident, or not at all confident?

- 05 VERY CONFIDENT
- 06 SOMEWHAT CONFIDENT
- 07 NOT TOO CONFIDENT
- 08 NOT CONFIDENT AT ALL
- 96 REFUSED
- 97 DON'T KNOW

B3. We're trying to understand which professional on the project team typically has the most influence over lighting system specifications. Based on your earlier responses, it sounds like the majority of your projects are

**[INSERT 'New construction', 'Lighting upgrades' or "Lighting only' BASED ON HIGHEST PERCENTAGE IN A3a, A3b, A3c] in the**

**[INSERT 'DOWNSTATE' OR 'UPSTATE' BASED ON HIGHEST PERCENTAGE IN A7a, A7b] area.**

**[IF PERCENTAGES ARE EQUAL IN THE HIGHEST CATEGORIES, READ ALL CATEGORIES WITH HIGHEST PERCENTAGE]**

For these projects, generally, which professional typically has the greatest influence over lighting system specifications? **[READ LIST, CODE ONE RESPONSE ONLY]**

**[FOR A1=01 OR {A1 NE 01 AND (A3=0,996,997 OR A7=0,996,997)}, READ]**

We're trying to understand which professional on the project team typically has the most influence over lighting system specifications. For the majority of your projects, generally, which professional typically has the greatest influence over lighting system specifications?

**[INTERVIEWER NOTE: IF RESPONDENT SAYS MORE THAN ONE, PROBE TO SELECT MOST INFLUENTIAL IN TYPICAL PROJECT]**

- 06 Lighting Manufacturer Representative
- 07 Architect
- 08 Interior Designer
- 09 Lighting Designer
- 10 Engineer
- 11 Distributor
- 12 Electrical Contractor
- 13 ESCO
- 98 OTHER \_\_\_\_\_
- 99 REFUSED
- 100 DON'T KNOW

**[SKIP TO B5 IF A1=04]**

B4. How many of your company's lighting projects typically involve use of a lighting designer – all of them, some of them, only a few, or none of them?

- 05 ALL OF THEM
- 06 SOME OF THEM
- 07 ONLY A FEW
- 08 NONE OF THEM
- 98 REFUSED
- 99 DON'T KNOW

**[IF A9=05, SKIP TO B8]**

B5. In general, how do you present your clients with effective energy efficient options – do you...**[READ STATEMENTS, ROTATE]**

01 Offer code compliant lighting as a baseline option, and then offer higher efficiency options as alternatives,

**or do you...**

02 Incorporate beyond-code lighting design into all of your projects as standard practice **[SKIP TO B7]**

96 REFUSED **[SKIP TO B7]**

97 DON'T KNOW **[SKIP TO B7]**

[IF A9=05, SKIP TO B7]

B6. How often do your clients select the higher efficiency options – always, often, sometimes, rarely, or never?

06 ALWAYS

07 OFTEN

08 SOMETIMES

09 RARELY

10 NEVER

96 REFUSED

97 DON'T KNOW

B7. Now I'm going to read you a list of potential barriers you might face in trying to

[IF A1~=06] incorporate energy efficiency into your lighting projects.

[IF A1=06] sell energy efficient products.

For each one, please tell me how much of a barrier it is for you – a major barrier, a minor barrier or not a barrier? First, [INSERT ITEMS, RANDOMIZE]

[READ IF NECESSARY] Is this a major barrier, a minor barrier, or not a barrier you might face in trying to incorporate energy efficiency into your lighting projects?

- h. Reluctance to changing the way things have always been done
- i. Timing issues [READ IF NECESSARY: For example, you get involved in lighting projects after equipment has already been specified.]
- j. Aesthetic issues
- k. Cost-related issues
- l. Quality-related issues
- m. Financing issues
- n. Misperceptions about energy efficient lighting

04 A MAJOR BARRIER

05 A MINOR BARRIER

06 NOT A BARRIER

96 REFUSED

97 DON'T KNOW

B8. We're interested in estimating the amount of building space that could undergo lighting upgrades. I'd like you to think about *all the commercial building space in the region that you serve* – about what percent of the square footage of commercial building space

in that region would you say could be upgraded to a more advanced lighting system?  
**[READ LIST]**

- 05 Less than 10 percent
- 06 10 percent to less than 50 percent
- 07 50 percent to less than 90 percent
- 08 90 percent or more
- 98 REFUSED
- 99 DON'T KNOW

**C. Decision-Making Related to Energy Efficiency**

C1. Thinking about your company's business priorities, would you say that the promotion and sales of energy efficiency lighting products and services is a top priority, a high priority but not a top priority, a low priority, or not a priority?

- 05 TOP PRIORITY
- 06 HIGH PRIORITY
- 07 LOW PRIORITY                   **[SKIP TO C3]**
- 08 NOT A PRIORITY   **[SKIP TO D1]**
  
- 96 REFUSED                   **[SKIP TO D1]**
  
- 97 DON'T KNOW                   **[SKIP TO D1]**

C2. What is the main driving force behind your company's decision to promote the sale of energy efficiency products and services? Is it: **[READ STATEMENTS, ROTATE 1 AND 2, ALWAYS READ 95 LAST]**

- 03 client demand for these products and services,
- 04 efforts to gain a competitive advantage in the market, or is it
- 95 some other factor (SPECIFY \_\_\_\_\_)
- 96 REFUSED
- 97 DON'T KNOW

C3. I'm going to read you a list of strategies that companies might use to be successful in selling effective energy efficient lighting products and services. For each, please tell me whether or not it is a strategy your company is using. First, **[INSERT ITEM, RANDOMIZE]**, is this a strategy your company is using or not? **[READ IF NECESSARY: Is this a strategy your company is using to be successful in selling effective energy efficient lighting products and services or not?]**

f. establish relationships with other companies to secure better pricing

- g. expand your company's scope of services
- h. specialize in serving a particular building or project type
- i. improve coordination among project team members
- j. educate clients about the benefits of investing in effective energy efficient lighting

03 YES

04 NO

96 REFUSED

97 DON'T KNOW

## D. Market Trends

D1. I'm going to read you a list of various factors that may influence the market for effective energy efficient lighting. For each, please tell me whether you think it has a major impact, a minor impact or no impact on the market. First, **[INSERT ITEM]**

**[READ IF NECESSARY]** Does this factor have a major impact, a minor impact or no impact on the market for effective energy efficient lighting?

- a. Economic conditions
- b. Federal policies and standards
- c. State and local policies and standards
- d. Financial incentive programs promoting energy efficiency
- e. Programs to improve awareness of the benefits of energy efficiency
- f. Green building certification programs like LEED
- g. Electricity prices

04 MAJOR IMPACT

05 MINOR IMPACT

06 NO IMPACT

96 REFUSED

97 DON'T KNOW

**[SKIP TO E1 IF ONLY ONE ITEM IN D1=01 OR NOTHING=01 AND ONLY ONE ITEM IN D1=02]**

- D2. Which of these would you say has had the greatest impact on the market for effective energy efficient lighting? [PROGRAMMING NOTE: SHOW ONLY ITEMS WHERE D1=01, IF D1NE01, SHOW ONLY ITEMS WHERE D1=02, IF D1 NE 01 OR 02, DISPLAY ALL ITEMS IN LIST]

[READ LIST IF NECESSARY]

- 08 Economic conditions
- 09 Federal policies and standards
- 10 State and local policies and standards
- 11 Financial incentive programs promoting energy efficiency
- 12 Programs to improve awareness of the benefits of energy efficiency
- 13 Green building certification programs like LEED
- 14 Electricity prices
- 96 REFUSED
- 97 DON'T KNOW

**E. Program Interest, Barriers to Participation**

[IF Q4=1 or 2, ASK E1, OTHERWISE SKIP TO F1]

Now I'd like to talk about NYSERDA's Business Partner Program.

- E1. You indicated earlier that you are familiar with NYSERDA's Business Partners Program. Has your firm ever considered participating as a Business Partner in this program or not?

- 1 YES, CONSIDERED PARTICIPATING
- 2 NO, NEVER CONSIDERED
- 96 REFUSED
- 97 DON'T KNOW

- E2. Can you tell me why your firm has decided not to participate in the program? [DO NOT READ. CODE ALL THAT APPLY ]

- 1 DON'T SPECIFY LIGHTING/OTHERS ON PROJECT TEAM RESPONSIBLE FOR THIS
- 2 DON'T THINK WE QUALIFY FOR THE PROGRAM
- 3 DON'T DO ENOUGH OF THAT TYPE OF WORK TO MAKE IT WORTHWHILE
- 4 TOO MUCH PAPERWORK TO APPLY/TOO TIME CONSUMING TO APPLY
- 5 INCONVENIENT TRAINING/NOT ABLE TO ATTEND TRAINING
- 6 PROGRAM INCENTIVE LEVELS TOO LOW
- 7 RELY ON OTHER SOURCES FOR MARKET INFORMATION

- 8 PROGRAM SERVICES ARE POOR QUALITY
- 9 OTHER
- 96 REFUSED
- 97 DON'T KNOW

E3. Have you or anyone else at your firm participated in a Business Partners program training session?

- 1 YES
- 2 NO
- 96 REFUSED
- 97 DON'T KNOW

E4. Have you taken advantage of any other services offered by the program (e.g., the lifecycle cost tool or other resources)?

- 1 YES
- 2 NO
- 96 REFUSED
- 97 DON'T KNOW

## F. Firmographics

F1. In the past two years, has your business revenue from the sale of effective energy efficient lighting products and services increased, decreased or stayed the same?

- 01 INCREASED
- 02 DECREASED
- 03 STAYED THE SAME [SKIP TO F3]
- 96 REFUSED [SKIP TO F3]
- 97 DON'T KNOW [SKIP TO F3]

F2. Has it [IF F1=01: 'increased']/IF F1=02: 'decreased'] by less than 10 percent, 10 percent to less than 50 percent or by 50 percent or more?

- 04 LESS THAN 10 PERCENT
- 05 10 PERCENT TO LESS THAN 50 PERCENT
- 06 50 PERCENT OR MORE
- 96 REFUSED
- 97 DON'T KNOW

F4. Approximately how many full time employees does your organization employ at all of its locations in New York State, excluding Long Island?

NUMBER \_\_\_\_\_

96 REFUSED

97 DON'T KNOW

- F5. What is your estimate of the average square footage of a typical lighting-related project for your company?

\_\_\_\_\_ SQUARE FEET

98 REFUSED

99 DON'T KNOW

- F6. About how many individuals in your company hold the following certifications or memberships?

- e. NCQLP (National Council on Qualifications for the Lighting Professions' Lighting Certified Professional)
- f. International Association of Lighting Designers
- g. LEED Accredited Professional
- h. Illuminating Engineering Society

NUMBER \_\_\_\_\_

96 REFUSED

97 DON'T KNOW

*CLOSING: Those are all the questions I have. I'd like to thank you so much for taking the time to talk with me today. The information you have provided will be very helpful in improving NYSERDA's Business Partner program and we appreciate your input.*



7 Appendix B. Logic Model

