

The New York Energy \$martSM Commercial Lighting Program: The Evolution of a Market Transformation Program

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ABSTRACT

NYSERDA's Small Commercial Lighting Program (SCLP) evolved over the past nine years by continually implementing major changes. The lessons learned in engaging the hard-to-reach small business sector were successfully applied to all types of lighting projects as the Program evolved into the Commercial Lighting Program (CLP).

Lighting power allowances were adjusted as Code became more stringent, even though most submitted projects were not subject to the Code. In 2009 the Program offered bonuses for 20, 35, or 50% below Code. The lighting Business Partners became so knowledgeable in how to design better than Code, that those bonuses have been withdrawn.

Bonus incentives were offered for High Performance T8 (HPT8) systems. Market transformation to HPT8 succeeded and the bonus funds have been redirected to other technologies such as controls. Similarly, quality metrics and best design practices (including glare control) evolved as new technologies entered the market. LED product requirements also had to be established and included.

As the Program grew so did the types of market actors. Distributors, contractors, manufacturer reps, architects, engineers, lighting designers, interior designers, and ESCOs all have their own needs which had to be addressed as the various categories were added. Similarly, as the size of the projects grew, so did the types of applications, including offices, retail, manufacturing, industrial, warehousing, schools, and institutional. Lighting criteria had to be adjusted to meet the needs of the varying applications.

This paper will explain how the Program evolved over the years, lessons learned from the program, how problems were resolved, and how the Program is being positioned to meet the challenges and opportunities of the future.

Introduction

What began as the **New York Energy \$martSM** Small Commercial Lighting Program,¹ limited to lighting projects under 10,000sf, evolved into the Commercial Lighting Program, inclusive of lighting projects up to 100,000sf (hereafter referred to as the Program), is unlike most energy-efficiency programs. The Program was created to go beyond simple one-for-one retrofits and prescriptive incentives for energy-efficient lighting technologies. Traditional programs typically do not address the impact of lighting quality on the people who use the affected spaces (CEE 2005). Without first understanding the tasks performed within the space and the related lighting quality issues, lighting practitioners are not able to determine the

¹ This Program began in 2000 was called the Small Commercial Lighting Program. In 2009 the name was changed to the Commercial Lighting Program. The use of the term Program refers to both program names.

appropriate lighting design. While saving energy was a key goal in justifying Program funding, providing effective solutions – *The Right LightSM* - became the larger focus of this market transformation program.

The Program was established in 2000 by NYSERDA to overcome the limitations of poor lighting design, through the application of effective, energy-efficient lighting design. ICF International is the Program Administrator, and, along with The Lighting Research Center at Rensselaer Polytechnic Institute (LRC), ICF helped developed the Program design and implements the Program for NYSERDA.

The Program design model results in lighting systems optimally designed to meet specific application and energy efficiency needs. The systems are easy to use, aesthetically pleasing, and enhance the visual capability of people using the space. This requires both the proper selection of technologies and the proper system design and layout. The result is lighting that allows people to do the work they need to do in a pleasing, comfortable environment. Utility bills are lower, and people are happier and more productive.²

A key to the continuing success of the Program has been its ability to incorporate many changes over the years to reflect the needs of the market and the market players who participate in the Program. The lessons learned in why and how to evolve a market transformation program while continuing to increase energy savings has involved changes to: project size; incentive offerings and amounts; participant classifications; training and outreach methods; Program metrics; and lighting power allowances. The evolution of this market transformation program resulted in greater energy savings while transforming the way the participants design, specify, and sell lighting projects.

The Program and Its Evolution

Traditional energy-efficiency lighting programs pay incentives to end users for installing energy-efficient technology. This Program pays incentives to a network of trained mid-market lighting practitioners to change the way that lighting projects are designed, specified, and installed. The project criteria are designed to assure minimum quality standards while meeting lighting power densities at least 10% better than the current Energy Conservation Construction Code of New York (ECCCNYS or Code).

When the Program first started in 2000, NYSERDA convened a focus group which confirmed previous observations that electrical contractors did not have the training, experience, or tools necessary to design effective, energy-efficient lighting projects that would meet the needs and expectations of the people using the space. Yet, on many small projects the contractors were being asked to do the lighting layout or upgrade, and to recommend and purchase the products. The contractors would typically upgrade or replace the same quantity of fixtures without regard to light levels, uniformity, and color rendering. On new projects (with no existing lighting) they created layouts based on previous habits (such as 8ft. center to center), without any regard to the specific fixture photometry and spacing criteria.

As other categories of practitioners were added to the Program it became clear³ that almost all categories of participants needed additional training to learn how to combine energy

² The effect of lighting quality on productivity has been documented by the Light Right Consortium (LightRight 2003).

³ Information was gathered from pre-training quizzes and after-training evaluations.

efficiency and lighting quality. To meet these needs, and to help transform the market, the Program evolved over time to include the following major elements:

- Recruiting a variety of lighting practitioners
- Basic and Advanced Training
- Development and distribution of tools and resources
- Technical and sales support from Account Managers and a Technical Specialist
- Incentives for the design and/or installation of qualified projects
- Bonus incentives for technology or for projects significantly better than Code
- Other incentives and cash awards including competition awards, marketing incentives, “Break-the-Ice” incentives for first projects, and demonstration projects awards.

The Program evolution from 2000 to February 2010 can best be understood by looking at the various Program components: participants; project size; quality metrics; program tools and resources; end user outreach and marketing; energy savings; and incentive offerings.

Participants

Originally, the Program had three types of Participant categories: contractors, distributors, and “other.” The other category included manufacturers and manufacturer reps. This group represented the supply side of the lighting market which was perceived to be the group most in need of training and assistance. Outreach was initially focused on distributors who in turn recruited their contractors, arranged trainings (for which they were paid an incentive), and assisted the contractors on potential projects. The manufacturers and reps assisted the Program by helping to identify distributor companies and promoting energy-efficient technologies to their distribution customers.

These three groups work closely with each other and depending on their level of expertise and experience, any one of them can be responsible for basic lighting layouts and product selection. As the Program developed it became clear that unless all three groups worked together on a project, any one of them could sabotage the quality and energy savings of the project. Therefore, outreach and training were extended to all, and applications were revised so that up to three participating companies could share in the project installation incentives.

While the supply-side participants continued to grow, it became clear that they were often limited by the designs and specifications they received from the design community. This was especially true in the New York City metropolitan area. To address this, the Program added participants from the design community. A separate pool of incentive funds was dedicated to those that design lighting projects for a fee, typically architects, engineers, and lighting design companies. A “Design Phase I” incentive was created for qualified designs (based on the Program criteria). In 2009 interior designers were added to the design group.

The principal reason for adding the designers was so that if they designed projects to meet the criteria, energy savings and quality would be locked into the plans. At the same time, the supply side of the industry would be less likely to “value engineer” the savings and quality out of the project because they would only receive incentives if the projects were installed as designed.

Recruitment for the supply side was primarily done through networking with other individual market actors. Designer recruiting was done through the Account Managers’ networks, but relied heavily on working with industry associations such as the Illuminating

Engineering Society (IES), the American Institute of Architects (AIA), the International Association of Lighting Designers (IALD), and International Interior Design Association (IIDA).

Two additional strategies were added for the design community: first was the creation of an Advanced Lighting Training for those who already had a good understanding of basic lighting knowledge; secondly, qualifying the courses for continuing education credits. Both of these strategies were put into effect, resulting in 60 to 100 designers registering for each of the regional trainings. These classes are held once every couple of years in 3 regions of the state, and are still continuing to draw large crowds.⁴

The final Participant category, added to the Program in 2009, was energy service companies (ESCOs). Moving fixtures for uniformity or totally redesigning a lighting layout to reduce the number of fixtures or types of fixtures (if appropriate) was simply not on the top of their list of priorities. The Program offered a way to provide incentives for ESCOs that were willing to take the extra steps to meet the Program criteria and provide *The Right Light*SM to their clients.

Project Size

The Program project size has always been based on the size of the lighting project and not the size of the building. Thus, a 5,000sf gym in a 200,000sf building is eligible as a project. Initially, the Program was developed with small offices, retail spaces in strip malls, and similar spaces in mind where the contractor might be making the decisions on the layout and technology. Within the first two years, it became clear that larger projects were also being influenced by the supply community, and that projects up to 25,000sf would benefit from the same principals (lighting quantity, quality, and energy efficiency).. Recognizing the success of the increase to 25,000sf (based on energy savings), input from the design community, and ESCOs that typically work on larger projects, in 2009 the limit was raised to 100,000sf maximum. This change also allowed spaces in multi-use buildings in larger metropolitan areas to be influenced.

With each increase in project size, the overall square footage impacted grew and the energy savings increased. Additionally, the percentage of improvement (measured in W/sf better than Code) also increased. A large part of that increase came from the large saving opportunities in warehouse and industrial applications where 40 to 60% better than Code became the norm. The larger project limits also increased the participation of the fee-based design community as many of them tend to work on larger projects.

Quality Metrics

There are many elements that contribute to lighting quality. The continuing challenges to market transformation programs are to use metrics that are definable and measurable, that are based on readily available information, and that can be understood by the Program participants. At the same time, the metrics have to be able to evolve or change with emerging technologies and represent industry best practices. Additionally it is important that the Program not conflict with end user prescriptive incentive programs that might sway lighting practitioners to choose products based on incentives for the end user rather than on what is best for the application. Working with the Lighting Research Center, a set of quality metrics was established that could meet the above requirements. For many of these metrics, market transformation happened as

⁴ The March 2010 Advanced training had almost 100 registrants within the first week the training was announced.

market actors had to learn how to read photometric reports, how to establish appropriate light levels, determine spacing criteria, and look up the color rendering index for light sources.

Uniformity (vertical and horizontal). The Program requires that luminaires must be spaced within the manufacturer's recommended spacing criteria (SC) based on photometric reports. The distance between walls and adjacent luminaires can not exceed one-half of the luminaire spacing criteria and closer spacing is preferred. Direct/indirect luminaires must be spaced so as to provide uniform lighting at the workplace and uniform ceiling brightness. All of this is measurable based on the lighting layout and compliance can be evaluated by the Program's on-line project application tool.

Mean illuminance. Illuminance value recommendations—also called light level targets—are based on the typical tasks performed in the space. Target ranges for each space type, based on Illuminating Engineering Society (IES) mean illuminance recommendations, are provided to Participants. As Participants submitted projects with previously undefined space types, case-by-case decisions had to be rendered by the Technical Specialist. Additionally, certain space types needed additional clarification. As an example, the Program listed only one light level for gyms, but the IES handbook lists four different classifications for gyms ranging from elementary schools to international competition, each with a different recommended light level. Rather than complicating the Program by listing every possible application, Account Managers and the Technical Specialist work with the Participants to identify the proper light level for undefined spaces. Light levels can be measured on the job site, or evaluated using standard lighting software, or the Program on-line project application tool.

Color Rendering Index (CRI). Light sources differ in their ability to render the color of objects "correctly or naturally." CRI expresses the color rendering capability of a lamp on a scale of 0 to 100. In 2000, lighting technology was evolving from T12 cool white lamps (CRI below 70) to T8 sources with options for 700 series lamps (CRI in the 70s) and 800 series lamps (CRI in the 80s). At that time, there was a significant cost increase for the 800 series. Also, most common metal halide (MH) sources above 150W were typically below 70. The original Program criteria required that the CRI of lamps must be 70 or higher for general use. The Program strongly recommend that 80 CRI lamps be used in critical applications (such as health care and specialty retail stores) where the color rendering of skin tones and merchandise is very important. Because high-CRI metal halide (MH) lamps were not available in all wattages, the Program accepted a CRI of 65 or higher for MH lamps of 250 watts or greater in industrial and warehouse applications.

CRI is one example of how emerging technologies resulted in changes to the Program criteria. With the emergence of High Performance T8 Systems (HPT8), T5HO linear fluorescent highbay fixtures to replace MH in certain applications, and T5 direct/indirect systems and volumetric fixtures, the Program was revised in 2009 to require a minimum of 80CRI in all spaces where color rendering is important. The lamp specification sheets or product catalogs provide sufficient information to determine lamp qualifications.

Glare control. The measure that is used to determine how much light is coming out of a lighting fixture in a particular direction is luminous intensity (LI). Well before the publication of IES Recommended Practices for Office Lighting (RP1-04) the Program instituted glare control metrics based on luminous intensity values. One of the reasons for using this metric was that the

information was readily accessible on fixture cut sheets and photometric reports. Different LI maximum levels were set for various applications.

However, contractors and distributors were unfamiliar with this criterion and reading and interpreting the information on the reports proved to be a challenge. The most common reason for project disqualification was LI. This criterion was also conflicting with other incentive programs based on fixture efficiency (typically more efficient fixtures have a higher LI). After two years of struggling with the criterion, but wishing to maintain a level of quality as the market was transformed, the metric became a “recommendation” for the supply side participants, but was kept as mandatory for the design community. This is a measureable metric, verifiable by the fixture photometric report.

The introduction of High Performance Low Glare fixtures (often referred to as volumetric type fixtures) which distribute light differently than other direct sources brought another round of changes. In 2009, this fixture category was defined and included in the Program as an alternative method for meeting the glare control requirements.

Summary of Program Enrollment and Criteria Changes

	Start	Development	As of Feb 2010
Participants	Distributor, Contractor, Manufacturer Rep	Added Architects, Engineers, Lighting Designers	ESCOs Interior Designers
Project Size	10,000sf	25,000sf	100,000sf
Uniformity	Based on Spacing Criteria	No Change	No Change
Mean Illuminance	IES Recommendations	Grew to include non listed or undefined spaces	Considering potential changes based on the “aging eye”
Color Rendering	70 required, 65 allowed for MH	80 recommended	80 required for all spaces where CRI is important
Glare Control	LI required	LI required for designers, recommended for others	Included High Efficiency Low Glare fixtures as alternative. Not required for any application where fixtures are mounted above 15ft.

Program Tools and Resources

One of the Program’s initial goals was to provide Participants with the tools and resources necessary to design and sell effective, energy efficient projects - *The Right LightSM* -to their customers.

The first tool developed for the Program was the application and project evaluation form which served to collect all the information on the lighting project. This was transformed into an on-line tool where participants enter the information and get an immediate evaluation of their project. The importance of this real-time feedback is that Participants are able to enter the project information during the planning or design stages and then, if the project does not qualify, make necessary changes (on their own or working with the Account Manager) to qualify the project. The on-line tool was adjusted as project size, quality metrics, incentive offerings, lighting power allowances, and other Program changes were made. While originally every project was required to be entered into the tool, in late 2008 the Program was modified to allow alternative proof of compliance, such as Comcheck, for energy usage and lighting software to show quality lighting compliance.

Another important tool developed under the Program was the Life Cycle Cost Tool (LCCT). While many existing tools worked well for simple lamp/ballast retrofits or one-for-one fixture replacements, they could not accommodate multiple fixture types within the same space or a large number of spaces each using different fixture types. Because the Program promoted the use of using different fixture types within a space (ambient, accent, task), and specifying different fixture types for different applications (office, corridor, warehouse, conference room, etc.) a new LCCT was created. The tool provides a summary of the energy savings, simple payback, return on investment, and net present value.

Other supporting materials. Initially the only supporting documents used by the Program were those available from other sources such as the DesignLights™ Consortium (DLC) case studies and How-to Guides, Delta Case Studies and NLRIP materials from the Lighting Research Center. Those materials formed the basis for supporting and training materials. Over time, many of those materials became outdated based on more stringent energy codes, new technologies, and changes in industry best practices. New Program specific materials were created including:

- Program Case Studies based on actual Program qualified projects. Each case study highlighted an individual project, or group of projects, from a particular market segment, that addressed specific market segment needs. Studies included retail, office, banking, warehousing, industrial, and medical office space. As Program criteria changed and more stringent energy codes were embraced, older case studies were dropped, and new ones were created.
- In 2008 NYSERDA integrated some of the HPT8 training materials, and all of the DLC marketing materials into the Program, including User Tips, Marketing Brochure, and the Technical Brief.
- A glossary of lighting terms was developed that specifically addresses how lighting terms relate to the Program. As criteria change, the glossary is updated.
- The “Frequently Asked Questions” guide addresses questions about Program participation, incentives, training, and the process qualifying projects. This too has evolved over the life of the Program. Not only is the content updated, but in the beginning it was only offered as a handout, then it was made available as a PDF on the Website, and now it has its own page on the Website where existing or potential participants can “click” on a question and be directed to the appropriate answer.
- The “Technical Guide for Effective, Energy-Efficiency Lighting is a modified version of the Advanced Lighting Training and is available as a PDF or an on-line step-by-step training.

End user outreach and marketing. In the beginning the focus was on direct outreach via presentations at local meetings to organizations such as Chambers of Commerce, Building Owners and Managers Association, and Rotary Clubs. An early lesson learned was that while attendees at these organizational meetings were very interested in how to save energy and improve lighting quality, most of them were not the decision makers. Additionally, there was no way to directly link the attendee back to a Program participant to capture a specific project. This approach was dropped in the early stages of the Program.

As the network of participants increased, the Program developed a direct marketing campaign aimed at driving small business owners to the participant network. The Program

developed both radio and print marketing media. This outreach included a multi-lingual approach in New York City, again targeted directly at the small business owner. The overall campaign was directed at how better lighting can result in better business. While there was no way to quantify the influence of the campaign, based on responses to the Program hotline and emails, it was not a huge success. On the other hand, there is no way to know if business owners, prompted by the campaign, contacted their electricians or lighting suppliers directly and participated in lighting upgrades.

Another approach uses Google AdWords to direct people looking to improve lighting or save energy to the Program Website. This campaign has, based on tracking records, brought many people to the site Home Page and subsequently to other pages on the site where they can learn more about lighting or select a participating Program company to work with. Although many of the Website visitors were from out of state, there were a large number from New York. This campaign was launched again in 2010 with a major modification. Visitors are directed to specific landing sites (one for lighting practitioners and one for end users). This allows for better tracking to determine if the visitors actually contact the Program implementer for more information or to become a Participant. It allows better tracking of the end users to see if they inquire about a Participant or if they contact the Program implementer or more information.

Despite some of the setbacks in the early end user outreach and marketing, the number of projects, square footage affected, and energy savings from the projects continued to grow year after year. Based on input from the Program participants and feed back from the Account Managers (who often have direct contact with end users), it was determined that the main reason for growth was participants bringing the Program to their existing and potential customers. The more the participants learned, the more comfortable they were with the criteria and the Program benefits, and the easier it was for them to qualify and sell projects. Therefore, in late 2009 the decision was made to move funds originally slated for end user outreach and marketing (other than the funds for Google AdWords) to Account Management.

Energy savings. Energy savings reported for the Program are based on actual installed lighting load (less credits for controls) as compared to baselines. New construction or total renovations are compared to existing Code, and lighting upgrades (not required to meet Code) are compared to older ASHRAE/IES 90.1 standards. The minimum lighting power densities allowed must be at least 10% better than Code, based on the space-by-space method. As the Code changed over the life of the Program, the lighting power allowances and baselines used to evaluate energy savings were adjusted. A draft of the 2010 Code is out for review, and additional changes will be made to the Program when the new Code becomes effective. The evolution of lower energy use, and the subsequent savings was actually one of the easiest evolutions in the Program. As W/sf allowance shrank as a result of Code Changes (as an example, office space allowance went from 1.5 in 2000 to 1.0 in 2007), participants proved they were able to increase the square footage they influenced and still come in at 20, 30, and 50% better than Code while providing appropriate light levels.

Summary of Tolls and Resources

	Start	Development	As of Feb 2010
Application & Verification	Manual	On-line Tool	Other documentation allowed
End-User Outreach	Local Meetings	Marketing Materials	Google AdWords
Energy Savings	ASHRAE/IES1999	New York State Code 2007	Reviewing NYS Code 2010

Incentive Offerings and Awards

In some cases incentives were created to help bring about market transformation, and in some cases they were eliminated or changed in reaction to market transformation. Some incentive changes were motivated by the addition of new participant categories, and project size, or in response to their reception among Program participants. The following highlights some of these changes.

Project installation incentives. Originally set at one level for projects up to 10,000sf, as the allowed project size increased to 25,000sf a tiered incentive was established: 1,000 to 5,000; 5,001 to 15,000; and 15,001 to 25,000sf. When the space size was increased to 100,000sf, an additional incentive per sf (above the 25,000sf) was added to the incentive pool.

Technology bonus. A \$0.01 incentive per sf of the affected space was added in 2009 for the use of controls and/or High Performance T8 Systems. Because the HPT8 market in New York had been significantly transformed by 2010, the HPT8 bonus was removed. However, because more than half of the qualified projects were still not including controls as part of basic lighting upgrades, the incentive for controls was increased to \$0.03 per sf in hopes of motivating better market transformation.

Break the ice incentive. This addition to the slate of incentives (added around 2005) was created to attract trained Contractors to become more active in the Program. Contractors submitting their first qualifying project were eligible for this \$300 incentive. In 2009 the incentive was raised to \$500 to encourage more contractors to participate, especially ESCOs who were added to those eligible to receive the incentive.

Better than code. The Program wanted to encourage Participants to aim for even greater energy efficiency. A slate of offerings was added for going beyond Code: \$0.01 per sf for 20% better; \$0.02 per sf for 35% better; and \$0.03 per sf for 50% better. However, based on conversations between the Account Managers and the participants it was determined that the incentives were not a motivating factor in the success. Due to new technologies and what they had learned through the Program, participants would have designed to reach these levels whether the incentive was there or not. Therefore, these incentives were removed in February 2010.

Design incentives. The Program offers incentives for qualified designs (Design Phase I). As project size increased, the offering grew into a tiered incentive with additional funds for square footage over 25,000 sf. The incentive amount was increased over the life of the Program because the design community told us that the incentives being offered were not large enough to compensate for the extra time spent on the paper work. When the Program was modified in 2008

to allow methods other than the on-line tool application to show compliance, this objection became less justified.

Case study incentives. In the beginning, the Program offered a \$1,500 incentive to the design/installation team if a project was chosen for a case study. Over the years it became apparent that participants were anxious to have their projects selected because of the free publicity they received from a third party like NYSERDA. Therefore this incentive is being eliminated.

Installation competition. This quarterly competition originally rewarded Contractors and Distributors who showed their involvement in the Program based on the greatest number or square footage of qualified lighting projects during each competition period. As new Participant categories were added, similar awards were added for each group. Today there are nine competition categories each quarter, depending on the size and type of the participant, with each category winner eligible for a \$1,000 award.

Lighting certification. The Program promotes The National Council on Qualifications for the Lighting Professions (NCQLP) Lighting Certification (LC) program to employees of Program Business Partners. A one-time \$300 incentive is available to full-time employees who take the LC examination, which is administered once a year. This incentive has remained constant, but is currently under review for the next round of the Program due to the increased cost of the exam.

Marketing incentive. An early attempt at providing a marketing incentive to participating companies that promoted their involvement in the Program proved to be frustrating for the Participants due to the complexity and rules needed to meet NYSERDA’s internal requirements. In 2009 a modified version of the incentive offering was launched, providing a one-time \$150 incentive for promoting the Program on the company Website or in marketing materials. In turn, a link from the Program Website to the company Website is offered. The offering was significantly simplified by providing the exact wording that had to be used, thus eliminating review by NYSERDA.⁵

Summary of Incentive Offerings

	Start	Development	As of Feb 2010
Project	\$500	Tiered based on size \$500, \$750, \$1000	Includes incentive per sf over 25,000sf
Technology Bonus	None	Controls and HPT8 \$0.01 sf	Controls Only \$0.03 per sf
Break the Ice for first project	\$300 for contractors	\$500 for contractors and ESCOs	\$500 for contractors and ESCOs
Design Incentives	\$500	Tiered	Includes incentive per sf over 25,000sf
Case Studies	\$1500	\$1500	Under consideration for removal
Competition	\$1,000 Distributors and Contractors Only	\$1,000 added manufacturer reps	\$1,000 added designers and ESCOs
Lighting Certification	None	\$300	Under consideration based on increased cost
Marketing Incentive	\$200 Complex	None	\$150 Simplified

⁵ The Program implementer reviews the draft and pre-approval is required.

And Now the Numbers

Ultimately the success of any Program has to be judged by the numbers. This Program has had its ups and downs over the years. But, by remaining flexible and continually evolving the Program to meet the needs of the participants and the needs end users, all Program goals have continuously been exceeded throughout the Program history.⁶

Participants. Over the life of the Program, 897 companies signed Participation Agreements to join and support the Program. Until 2009, signing a Participation Agreement had no firm requirement for actively participating. In March 2009 all companies interest in participating (and being listed on the Website) were required to sign a new Agreement which required that the Participant submit at least one project within six months or be dropped from the on-line list. While this decreased the number of participating companies, the goal was to ensure that end users were interacting with companies that were experienced in designing and/or installing *The Right LightSM* for their customers.

While the above number (897) refers to the individual companies. The actual number of individuals that received live training (or were trained through the qualification process) is over 1,800. This number is significant when considering that training is one of the prime ingredients for market transformation.

Projects and square footage. Over 1,500 individual projects have been qualified under the Program. In addition to the qualified projects, other projects were influenced by the Program. These include projects that were over the square footage allowed; projects that met some of the criteria but not all the criteria; and projects that exceeded the “two projects per end user in the same building” restriction.

The 1,550 projects represent 13.3 million sf of space that met the Program criteria at the time of installation. Realizing that initially projects were limited to a maximum of 10,000sf, this is a significant accomplishment.

Energy and demand savings. The estimated savings through the Program are based on the actual installed wattage and hours of use compared to the baseline at the time of installation. The qualified projects resulted in 78.6 GWh energy savings and 21,330kW demand savings.

Incentive costs. As the Program evolved and the number of projects, size of projects, and number of Participants increased, the incentive cost per square foot and kWh saved decreased. In looking at these numbers, it is important to remember that there are many benefits due to the quality of the lighting that go beyond the pure energy savings. Because each new official release of the Program had its own incentive pool, tracking is complex. However, the following examples provide a good overview:

September 1, 2003 – June 30, 2008

- \$736,250 - includes all incentives including projects, bonuses, marketing, case studies, competitions, etc.
- \$.10 per square foot of qualified projects (includes all incentives)

⁶ All numbers presented are from the Program’s inception in July 2000 to January 31, 2010.

- \$0.13 per kWh saved (actual project and design incentives only)⁷

March 2009 – January 31, 2010

- \$414,629 – includes all incentives including projects, bonuses, marketing, case studies, competitions, etc.
- \$0.11 per square foot of qualified projects (includes all incentives)
- \$0.10 per kWh saved (actual project and design incentives only)⁸

With the removal of bonuses for “better than Code” beginning February 2010, it is anticipated that the incentive costs related to square footage and energy savings will improve even more.

Even with the high startup costs associated with educating and establishing the network of qualified lighting installers and designers, the benefits have substantially exceeded costs. A total resource cost test of the program was conducted in 2006 for the time period starting from program inception through year-end 2005. The benefit/cost (B/C) ratio was 2.5 without including non-energy impacts and 3.8 with non-energy impacts included (NYSERDA 2006). Furthermore a measurement and verification evaluation in 2007 indicated that the Program realization rate for energy savings was 0.94, demonstrating the accuracy in the Program’s stated energy savings⁹. An updated benefit/cost evaluation is underway with preliminary calculations indicating that the Program’s B/C ratios remain favorable.

Summary of the Numbers¹⁰

Companies	Participants	# Projects	Project Sq. Ft.	Energy Savings	Demand Savings
897	>1,800	>1,500	13.3 M	>78.6GWh	>21,330kW

Summary

Market Transformation can be a successful tool for achieving significant energy savings. However, for programs to remain viable and effective they must continue to evolve and address the needs of the participants and end users; be flexible enough to know and adjust to what is working and what is not working; integrate with and conform with other related programs, emerging technologies, and ever changing best practices; and continually raise the bar to achieve the program goals. At the same time, market transformation programs must continually be evaluated for their ability to meet energy savings goals in a cost effective manner, and make adjustments when and if they are needed.

The NYSERDA Commercial Lighting Program has proven its ability to do all of this while bringing effective, energy-efficient lighting solutions - *The Right LightSM* - to New York State business owners through its network of trained Business Partners, and hopefully will

⁷ This figure does not include marketing incentives, competition awards, Break the Ice incentives or Bonuses for Projects in Con Edison Territory.

⁸ This figure does not include marketing incentives, competition awards, Break the Ice incentives or Bonuses for Projects in Con Edison Territory.

⁹ M&V Evaluation: Small Commercial Lighting Program. Prepared by Nexant. May, 2007.

¹⁰ All number shown are from Program start until January 31, 2010

continue to do so for years to come. As new energy codes are put in place, new technologies are developed, and best practices are amended, the Program will continue to evolve. As the bar is raised, the market will continue to be transformed, allowing for even more effective, energy-efficient lighting solutions.

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