

NYSERDA's Approach for Commercial Lighting Market Transformation

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ABSTRACT

The New York State Energy Research and Development Authority (NYSERDA) commercial lighting market transformation program aims to increase high quality, energy-efficient lighting in small- and medium-sized remodeling and renovation projects by influencing the practices of electrical contractors, lighting suppliers, and retailers. To begin, NYSERDA issued a program opportunity notice (PON) in the fall of 1999 to solicit proposals for design and implementation of lighting market transformation programs for delivery in the **New York Energy SmartSM** program area. The PON defined small- and medium-commercial spaces as less than 10,000 square feet and identified small retail, small office and convenience stores as examples. The PON also defined guidelines and tools as published information and processes providing easy-to-use explanations, advice, or designations that appropriately address the complexities involved in the design and selection of lighting equipment and systems. NYSERDA required proposers to target electrical contractors, lighting suppliers, and retailers and to use existing lighting guidelines and tools as instrumental parts of their market transformation efforts. NYSERDA also strongly encouraged proposers to involve the National Electrical Contractor Association (NECA) chapters, the National Association of Electrical Distributors, the National Association of Independent Lighting Distributors and other appropriate local chapters or associations in program design and implementation activities. This paper addresses NYSERDA's program design and early results including: defining high quality, energy-efficient lighting, reasons for selecting midstream market participants and incorporating existing tools and guidelines, involvement of NECA, progress of selected program(s), and anticipated indicators for measuring market impacts.

NYSERDA's Program Design

NYSERDA created the commercial lighting market transformation program as one of an umbrella of **New York Energy SmartSM** programs, funded by a systems benefit charge (SBC) from five of the State's seven investor-owned utilities.¹ **New York Energy SmartSM** programs are designed to lower electricity costs by encouraging energy efficiency as the State's electric utilities move to competition. As opposed to traditional energy-efficiency programs that focused on achieving immediate or customer-specific savings, these programs emphasize permanently improving the market, or reducing market barriers, for energy-efficient products or services. NYSERDA administers SBC funds and programs under an agreement with the New York State Public Service Commission.

From the early planning stages for SBC programs, NYSERDA identified lighting as a key opportunity. Lighting energy use represents one-third of the State's commercial and industrial electricity use, and nearly one-quarter of State's total electricity use.² Projects involving lighting changeouts occur frequently, often without an emphasis on energy efficiency and lighting quality.

¹The participating utilities are Central Hudson Gas and Electric Corporation, Consolidated Edison Company (Con Edison), New York State Electric and Gas Corporation, Niagara Mohawk Power Corporation, and Orange and Rockland Utilities.

²Estimates are based on electric energy use data from the Energy Information Administration (EIA) 1994 Manufacturing Energy Consumption Survey, the EIA 1992 Commercial Building Energy Consumption Survey, and 1997 New York State Patterns and Trends.

Additionally, companies have introduced, and continue to introduce, numerous new energy-efficient products. To capitalize on these opportunities, NYSERDA offers three programs with lighting incentives: the New Construction Program and the Standard Performance Contract Program, which primarily serve larger commercial and industrial projects, and the commercial lighting market transformation program, which focuses on smaller spaces. The New Construction Program primarily targets architects and engineers. The Standard Performance Contract Program primarily targets energy services companies. The commercial lighting market transformation program primarily targets electrical contractors, and lighting suppliers and retailers.

Preliminary analysis indicates that New York has 800 million square feet of small- and medium-commercial space. These buildings use an estimated 6,200 gigawatt hours of electricity a year for lighting. An estimated 100 to 200 million square feet of this space is remodeled annually, often with little consideration for energy efficiency and related quality issues.

In creating high quality, energy-efficient lighting in these spaces, decision makers face many barriers. Among them, as noted in the *Lighting Market Sourcebook*, decision makers:

- face limited lighting budgets and believe efficient lighting is initially more expensive;
- have questions on the reliability and performance of energy-efficient lighting products;
- believe that building occupants may have concerns, such as visibility or aesthetics, and not accept efficient lighting; and
- lack access to independent information on technologies, systems, and the lighting's impact on other building systems (Vorsatz et al. 1997, 92).

The industry market structure does not make it easy for decision makers to compare combinations of lighting components and analyze system interactions. However, the development of standardized guidelines and tools incorporating high quality lighting design principles creates new opportunities to reduce these barriers.

Defining High Quality, Energy-Efficient Lighting

High quality lighting can deliver many benefits including energy efficiency; operational savings; and increased functionality, visual appeal, comfort, productivity, safety, retail sales, and profitability. By focusing on high quality, energy-efficient lighting applications as opposed to individual components, NYSERDA has the opportunity to promote efficiency, avoid the bad installations associated with early demand side management programs, and use the additional benefits, such as enhanced visual appearance or increased productivity, to help influence market behavior. As a starting point for the program, high quality, energy-efficient lighting is defined as at least 10% more energy-efficient than ASHRAE Standard 90.1-99 and effectively addressing quality issues such as glare, illuminance, light distribution, color appearance and contrast, daylighting integration, and system controls. One of the early challenges is to create a definition that can be systematically applied and can deliver verifiable, credible results.

Reasons For Targeting Mid-Stream Market Participants Involving Associations

Generally in the lighting industry, companies market specific components. The availability of market-based information addressing a systems approach, looking at the compatibility of different components (especially from different manufacturers), and identifying their effect on efficiency and lighting quality is relatively new. For many lighting projects, owners, managers, and developers specifically hire professional lighting designers, architects, and engineers for design services, which incorporate a systems view.

However, in small- and medium-sized remodeling and renovation projects, which are the focus of this effort, owners often cannot justify the resources to engage these professionals. Anecdotal conversations and views expressed in focus groups indicate that electrical contractors and lighting suppliers are key participants in design and that professional architects or engineers often are not involved. The *1997 New England C&I Lighting Market Transformation and*

Baseline Study found that remodeling and renovation events used designers about half the time (Stone et al. 1997, 70). Among medium-size end-users, only one third were highly likely to use outside experts for design services (Stone et al. 1997, 84). Likewise, a survey conducted by *Electrical Contractor Magazine* found that, “electrical contractors are playing a design and/or a design-and-specification role on jobs representing about 50% of the industry’s sales” (*Electrical Contractor Magazine* 1999).

To increase the likely participation by electrical contractors and lighting suppliers NYSERDA reached out early in the development of the PON to the National Electrical Contractors Association (NECA) and the National Association of Independent Lighting Distributors (NAILD). Both organizations provide a variety of informational and educational services to their members. Discussions showed that these associations were unlikely to submit proposals in response to a solicitation from NYSERDA. Instead, NYSERDA invited one of New York’s NECA chapter representatives to participate as a reviewer. His participation ensured that the views and concerns of the association and of contractors were heard throughout the program development, including the solicitation and the evaluation and selection of proposals.

Reasons for Incorporating Existing Tools And Guidelines

Recommendations from the 1995 Boston Edison DSM Settlement Board suggested that standardized guidelines on quality lighting design practices would increase the acceptance of energy-efficient design practices in many markets and minimize the need to retain highly trained and costly design professionals (Dagher 1998). Many organizations, both public and private, have invested resources through the Lighting Research Center (LRC), the Lighting Design Lab, the National Lighting Bureau and others to develop tools and information promoting energy-efficient lighting and good lighting practices. Examples of these efforts include:

- the DesignLights™ Consortium (DLC) *knowhow™ Series*,
- the National Dimming Initiative,
- the National Council on Qualifications for the Lighting Professions Lighting Certification (NCQLP),
- the LRC Demonstration and Evaluation of Lighting Technologies and Applications (DELTA) Portfolio or Snapshot reports,
- the LRC National Lighting Product Information Program (NLPIP) reports, and
- the National Lighting Bureau High Benefit Lighting Campaign.

To refer to these types of resources, NYSERDA adopted the terms guidelines and tools. The terms describe published information and processes that provide easy-to-use explanations, advice, or designations that appropriately address the complexities involved in the design and selection of lighting equipment and systems.

In small and medium commercial lighting projects, decision makers generally do not use or recognize these resources. Instead, they often rely on familiar model specifications and rules of thumb. NYSERDA realized that additional strategic efforts could help introduce new guidelines and tools into the market. One of the program’s goals is to induce lasting structural and behavioral changes in the market by having these new guidelines and tools adopted by decision makers as the new standards for practice or rules of thumb. A major strategy will be identifying how contractors and lighting suppliers can use these resources to enhance their businesses.

NYSERDA’s Program Opportunity Notice

Based on these considerations, NYSERDA developed a \$3.5 million competitive solicitation for the design and implementation of an effective market transformation program that influences the practices of electrical contractors, lighting suppliers, and retailers and results in measurable improvements in the availability, promotion, sales, and implementation of high quality, energy-efficient lighting in small- and medium-sized remodeling and renovation projects; for example, small retail, small office, and convenience store spaces. The program provides the

opportunity to develop and test market-based delivery strategies for introducing guidelines to decision makers on targeted lighting projects within the **New York Energy SmartSM** program area. It also provides the opportunity to test the supposition that properly designed and targeted assistance, information, training, marketing, and incentives can lead the market to increase the availability, adoption, and penetration of energy-efficient lighting practices and products.

NYSERDA issued a competitive solicitation in October 1999. The solicitation called for the design and implementation of market transformation programs for high quality, energy-efficient lighting in small- and medium-commercial spaces (i.e., less than 10,000 square feet). It limited eligibility to the **New York Energy SmartSM** program area. The stated program goal was to improve lighting in 50 million square feet of commercial space through participating electrical contractors, lighting suppliers, and retailers. NYSERDA required proposers to target these midstream market participants and to use existing guidelines and tools that result in high performance lighting practices. NYSERDA also required all proposals to address: market characterization and program design; a marketing assessment and integration with other public and private efforts; education, training, technical and other assistance activities for contractors and suppliers; identification, development, and administration of incentives; and program monitoring, evaluation and market progress reports. NYSERDA anticipated making up to three awards; with multiple awards, NYSERDA envisioned offering each program in a distinct geographic area, with a focus on the use and application of different guidelines or tools.

Early Results

In January, NYSERDA made one award to ICF Consulting, with their team of the LRC, Con Edison, Honeywell DMC Services, and Opinion Dynamics Corporation (ODC). The \$3.5 million program will serve the entire **New York Energy SmartSM** program area with up to \$1.1 million of the total targeted towards incentives. An advisory group has been created to review program plans, and to give input and feedback that increases the focus and likely success of the planned market transformation activities. It includes representatives from NECA, NAILD, the Chamber Alliance of New York, the Illuminating Engineering Society, National Council for Qualifications on the Lighting Professions, Sustainable Energy Partnerships, and the New York State Department of Public Service.

Proposed Small Commercial Lighting Program

In its proposal, ICF Consulting identified three distinct and important small business segments for its market focus: locally owned and operated businesses (less than 5 locations), multi-site businesses (franchises and chains of small business locations), and small businesses occupying space controlled and managed by property management firms. The program proposed to use the *DLC knowhowTM Series*, NCQLP Lighting Certification, LRC DELTA Portfolio or Snapshot reports, and the LRC NLPIP reports as the tools and guidelines to promote high quality, energy-efficient lighting practices. Anticipated program activities included:

- a quality lighting marketing campaign aimed at lighting distributors and retailers, front line lighting specifiers and installers, small business owners and managers, and commercial real-estate managers, and owners of small commercial spaces;
- training sessions for electrical contractors with web-based follow-up;
- train-the-trainers sessions for larger distributors, contractors and industry associations;
- specialized training;
- supplier and distributor outreach activities;
- contractor assistance with customer outreach; and
- demonstration projects.

The ICF Consulting team planned to design the proposed demonstration projects to raise media attention and customer awareness on the benefits resulting from high quality, energy-efficient

lighting. Additionally, the team planned to target up to \$1.1 million in incentives to mid-market participants with the intent of encouraging: cooperative advertising, participation in training, demonstration projects, and reporting of lighting project information.

The project was broken into two phases: phase one covered market assessment and characterization, pilot projects, and finalizing the program design, and phase two covers implementation and evaluation. Phase one was completed in June. ODC led the market assessment and characterization and ICF Consulting led the program design and pilot projects.

Results from the Market Assessment and Characterization

ODC selected program market indicators, conducted market research on the targeted market segments and the delivery of high quality, energy-efficient lighting to assess the program premises, inform the program design and create the market performance baseline, and identified

Table 1. Selected Market Indicators for the Small Commercial Lighting Program

	Manufacturers	Electrical Contractors	Lighting Retailers Lighting Suppliers	Lighting Designers, Consultants, Architects	End-users
Quantitative Indicators					
Awareness/knowledge of HQ/EE lighting options	*	*	*	*	*
Familiarity and use of guidelines/tools		*		*	*
High efficiency lighting products produced as a % of total products.	*				
% of products sold that are energy efficient.			*		
% of jobs where you make a recommendation regarding layout of lighting.		*		*	
% of jobs where HQ/EE lighting options are promoted/offered to customers or % of jobs recommended that have a design or HQ/EE lighting element (these are the same, tight?)		*		*	
% of jobs completed that have a design or HQ/EE lighting element.		*		*	
% of customers who consider HQ/EE lighting concepts when making lighting decisions.					*
% of facility lighting that currently meets NYSEERDA? HQ/EE standards.					*
Decision criteria used for making lighting purchases.					*
Qualitative Indicators					
Attitude toward HQ/EE lighting concepts.	*		*		*
Attitude toward/acceptance of HQ/EE lighting concepts (combine with above?)		*		*	
Information on marketing for HQ/EE lighting	*		*	*	*
Contractor/retailer inquiries about HQ/EE lighting	*		*		
Customer inquiries about HQ/EE lighting.			*	*	*
Decision-making role in lighting design layout.	*	*	*	*	*
Use of guidelines and tools previously developed.					*
Relative concerns regarding lighting at customer facilities.					*

or verified the market barriers that should be addressed by the program. Table 1 shows the selected market indicators. The indicators address all the major decision makers involved in the targeted lighting projects, and contain both quantitative and qualitative information.

ODC conducted focus groups, in-depth interviews, quantitative surveys, and secondary research for its market research. Through this research, ODC verified the major premises NYSERDA used to structure the program. In addition ODC found that architects, engineers, and lighting designers provide lighting design services some of the time in small- and medium-commercial projects and should be included among the targeted market participants. ODC also found that while the small commercial customers reacted favorably to the benefits associated with quality lighting, they wanted to see proof that these benefits were real.

Pilot Project Results

ICF Consulting, working with LRC and Honeywell DMC, conducted a small number of pilot projects to test the proposed program approaches, to demonstrate the intent and willingness of targeted market players to participate, and to capture the energy savings and quality lighting impacts that results from typical projects. From a pool of twenty candidates, ICF Consulting selected four projects to pursue. For P&M Diesel, a 12,000 square foot industrial space, the team provided training and design recommendations to the lighting supplier and contractor to improve the design of a lighting project already underway. On two projects, Burger King and CVS, the team worked with facility staff to increase the lighting quality and efficiency of remodel designs. For a Community Care Physicians Office, the team worked with the facility manager, the lighting supplier, and the contractor to improve the lighting in exam rooms, offices, laboratory and treatment rooms, and the reception area.

The pilots gave the ICF team insight into the drivers, concerns, and agendas of the various participants in a lighting project. During the training and design assistance, the participating contractors, suppliers, and facility staff provided insights into their typical relationships and interactions. The team used these insights to refine the proposed training and design assistance that will be delivered in phase two. Through the pilots, ICF Consulting explored how available program incentives could be used among multiple participants. ICF Consulting also addressed operational issues like developing project participation forms and processes or coordinating with other **New York Energy SmartSM** programs that they will be able to use in the implementation phase.

Conclusions

High quality, energy-efficient lighting in small- and medium-commercial spaces presents a promising market transformation opportunity. In small- and medium-commercial spaces, projects involving lighting occur frequently. Depending on the project structure, electrical contractors, lighting suppliers, architects, engineers, or lighting designers have key design roles. These market participants and the small commercial customers agree with the concepts of high, quality, energy efficient lighting. The customers indicate they are willing and interested if they see proof of the benefits. Training and assistance, using tools and guidelines from the DLC, LRC, and others, can help provide the proof and the know-how for these projects.

NYSERDA's Small Commercial Lighting program has just started. Based on the pilot projects, the team is optimistic about the approach. As the program progresses, ODC will evaluate program activities and progress towards changing the market. NYSERDA looks forward to sharing the results.

REFERENCES

Dagher, Sarah G. (Northeast Energy Efficiency Partnerships, Inc.) 1998. Personal communication. May 22.

Electrical Contractor Magazine. 1999. *Guide to the Electrical Contracting Market*. Vienna, Va.:Market Specific Research.

Stone, Corey, Shel Feldman, Bruce Meburg, Dave Messner, Jim Foley, Max Johnson, and Alison Regen. 1997. *New England C&I Lighting Market Transformation and Baseline Study: Final Report*.

Vorsatz, Diana, Leslie Shown, Jonathan Komey, Mithra Moezzi, Andrea Denver, and Barbara Atkinson. 1997. *Lighting Market Sourcebook for the U.S.* LBNL-39102. Berkeley, Calif.: Ernesto Orlando Lawrence Berkely Laboratory.

