

# NEW YORK ENERGY \$MART<sup>SM</sup> PROGRAM QUARTERLY EVALUATION AND STATUS REPORT

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QUARTERLY REPORT TO THE DEPARTMENT OF PUBLIC SERVICE

QUARTER ENDING SEPTEMBER 30, 2006



# New York Energy \$mart<sup>SM</sup> Program

Quarterly Evaluation and Status Report

September 30, 2006



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# 1 Introduction and Program Administration

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## 1.1. Introduction

This report is an update on the progress of the **New York Energy \$mart<sup>SM</sup>** Public Benefits Program (Program). It contains evaluation results of Program activities through the quarter ending September 30, 2006. The last full report on progress (through December 31, 2005) was issued in May 2006.<sup>1</sup> The 13-year Program, funded by a System Benefits Charge (SBC) and administered by the New York State Energy Research and Development Authority (NYSERDA), was initiated in 1998 by order of the New York State Public Service Commission<sup>2</sup> (the Commission) and has included three funding cycles.<sup>3</sup> The Program portfolio consists of numerous initiatives promoting energy efficiency and demand management, facilitating renewable energy development, providing energy services to low income New Yorkers, and conducting research and development. The activities pursued by the Program include disseminating information to increase consumer energy awareness, marketing, providing financial incentives, developing and testing new products, commercializing new technologies, and gathering data and information.

## 1.2. Organization of the Report

The report was prepared by NYSERDA staff with contributions from a team of independent third-party evaluation assistance and specialty contractors. The contractors work closely with NYSERDA's program implementation contractors, customers, and market and trade allies to develop an understanding of the Program offerings and to conduct independent assessments of the Program's impacts and progress toward its established public policy goals. The contractor functions include impact assessment, market assessment and characterization, process evaluation, and evaluation management, and are described in Appendix A.

The report is divided into the following sections:

- 1 Introduction and Program Administration
- 2 Portfolio Reporting
- 3 Commercial and Industrial Program Results and Findings

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<sup>1</sup> New York State Energy Research and Development Authority, **New York Energy \$mart<sup>SM</sup>** Program Evaluation and Status Report, Final Report, May 2006.

<sup>2</sup> Case 94-E-1052, *et al.*, In the Matter of Competitive Opportunities Regarding Electric Service, Opinion 98-3, issued January 30, 1998.

<sup>3</sup> The most recent cycle was initiated with the New York State Public Service Commission order in Case 05-M-0900, In the Matter of the System Benefits Charge III, *Order Continuing the System Benefits Charge (SBC) and the SBC-funded Public Benefit Programs*, issued and effective December 21, 2005.

4 Residential Programs, Including Low-Income, Results and Findings

5 Research and Development Program Results and Findings

6 Program Evaluation Activities Summary

Appendices

## 2 Portfolio Reporting

### 2.1. Budget and Spending Status

This section presents an overview of the **New York Energy Smart Program<sup>SM</sup>** budget and spending. The Program has been funded in three cycles. Funding for the most recent cycle began on July 1, 2006 and extends through June 2011; annual funding for this cycle is \$175 million. The initial and second cycles had a combined budget of \$961.8 million.

The thirteen year budget for the three cycles is approximately \$1,857.8 million, of which \$1,668.9 million is allocated for the major program areas — Commercial and Industrial, Residential, and Research and Development. The budgets for these program areas are presented in Table 2.1. In addition,

Table 2.1 also shows costs for program administration, program evaluation, the Environmental Disclosure Program, and the New York State Cost Recovery Fee.<sup>4</sup>

A summary of funds spent through the third quarter of 2006 are listed in Table 2.2. The Commercial and Industrial program area has spent 40 percent of its budget, the Residential program area has spent 44 percent of the budget, and Research and Development has spent 28.5 percent of its budget.

In Table 2.3, the budget and spending information presented in

Table 2.1 and Table 2.2 is detailed for the individual programs in the **New York Energy Smart<sup>SM</sup>** Program portfolio. Current program offerings are a combination of new initiatives and streamlining, *i.e.*, enhancement, consolidation, and closing of previous programs. Graphic presentations of individual program budgets in the three program areas are seen in Figure 2.1, Figure 2.2, and Figure 2.3.

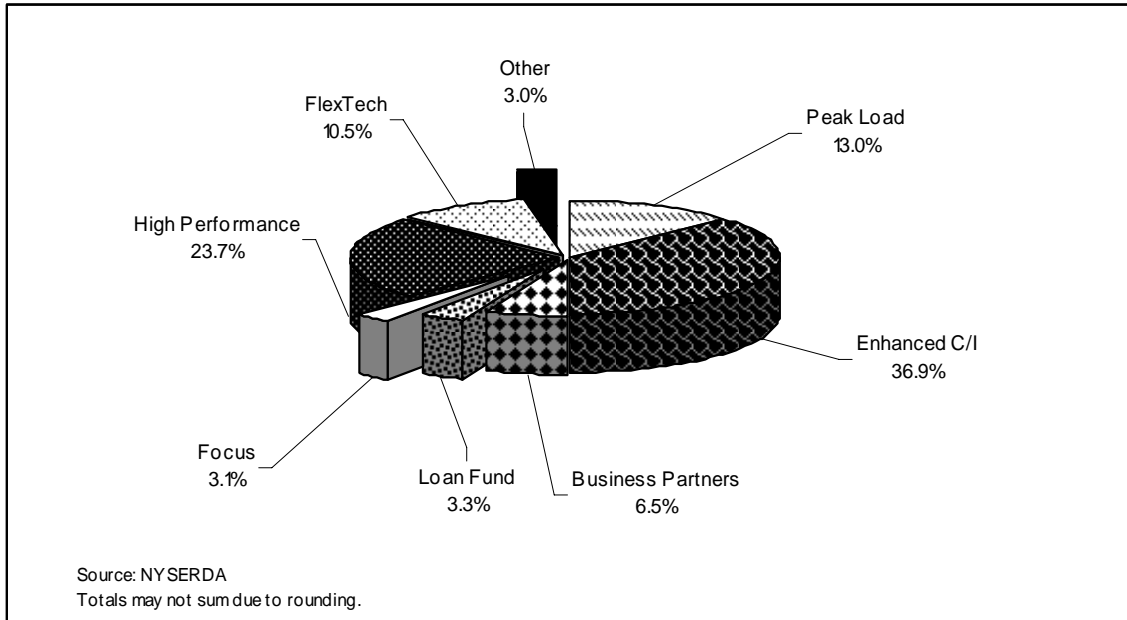
**Table 2.1. New York Energy Smart<sup>SM</sup> Program Budget**

	Budget (\$ millions)			% of Program Area Budget	\$ of Total Budget
	July 1, 1998 through June 30, 2006	July 1, 2006 through June 30, 2011	Total Budget		
<b>Program Areas</b>					
Commercial and Industrial	359.1	276.7	635.8	38.1%	34.2%
Residential	300.1	340.2	640.3	38.4%	34.5%
Research and Development	210.8	182.0	392.8	23.5%	21.1%
<b>Program Areas Total</b>	<b>\$ 870.0</b>	<b>\$ 798.9</b>	<b>\$ 1,668.9</b>	<b>100.0%</b>	<b>89.8%</b>
<b>Other Costs</b>					
Program Administration	64.6	62.7	\$ 127.3		6.9%
Metrics and Evaluation	16.2	17.9	34.1		1.8%
Environmental Disclosure	1.9	0.0	1.9		0.1%
NYS Recovery Fee	9.0	16.4	25.4		1.4%
<b>Other Costs Total</b>	<b>\$ 91.7</b>	<b>\$ 97.0</b>	<b>\$ 188.7</b>		<b>10.2%</b>
<b>Total New York Energy Smart<sup>SM</sup></b>	<b>\$ 961.8</b>	<b>\$ 896.0</b>	<b>\$ 1,857.8</b>		<b>100.0%</b>

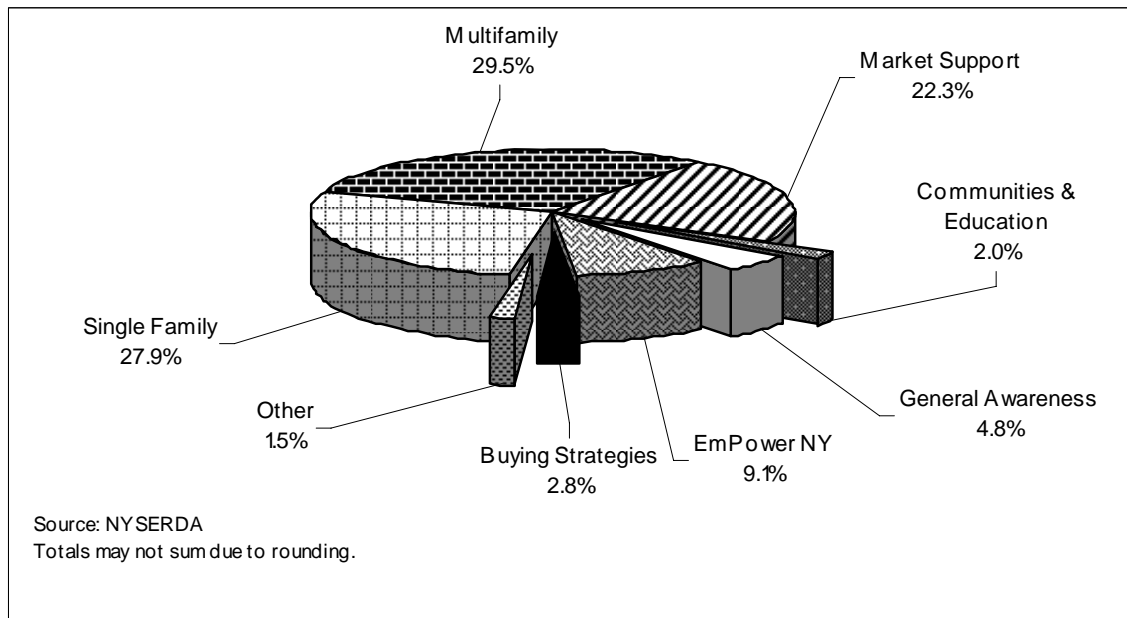
Totals may not sum due to rounding.

<sup>4</sup> The New York State Cost Recovery Fee is assessed for services to public authorities. It is determined by the New York State Division of Budget and imposed and collected by the State Treasurer.

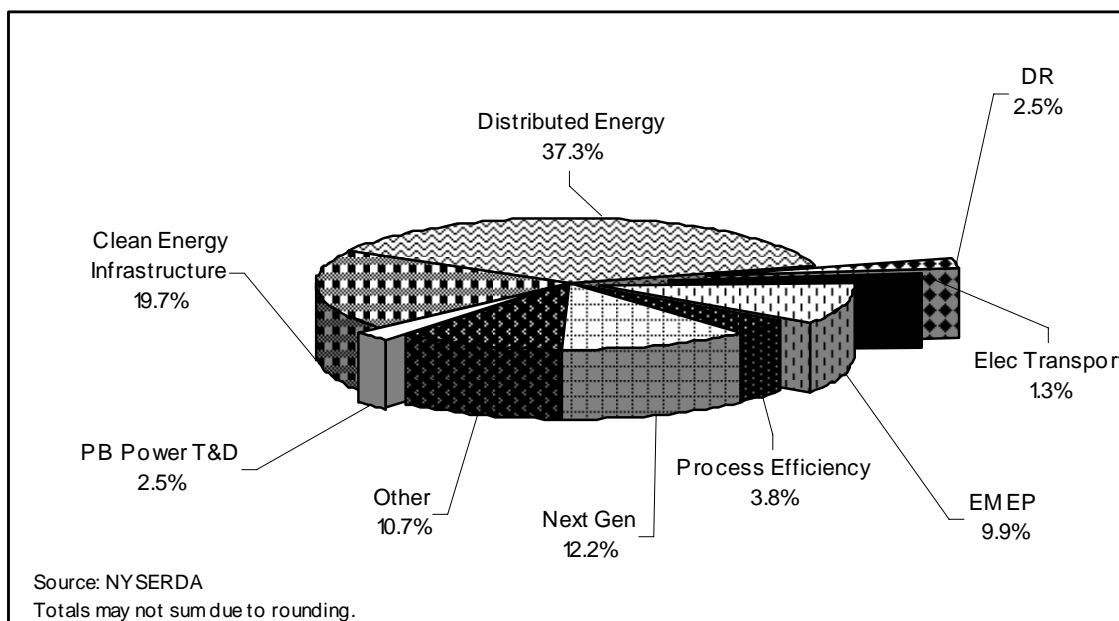
**Figure 2.1. Commercial and Industrial Program Budget**



**Figure 2.2. Residential Program Budget**



**Figure 2.3. Research and Development Program Budget**



**Table 2.2. New York Energy Smart<sup>SM</sup> Program Spending**

	Budget through June 31, 2011	Funds Spent (\$ millions)			Total Funds Spent	% of Budget Spent
		July 1, 1998 through June 30, 2006	July 1, 2006 through Sept. 30, 2006			
<b>Program Areas</b>						
Commercial and Industrial	635.8	247.2	7.3	254.5	40.0%	
Residential	640.3	267.9	14.1	282.0	44.0%	
Research and Development	392.8	105.9	6.0	111.8	28.5%	
<b>Program Areas Total</b>	<b>\$ 1,668.9</b>	<b>\$ 620.9</b>	<b>\$ 27.4</b>	<b>\$ 648.3</b>	<b>33.8%</b>	
<b>Other Costs</b>						
Program Administration	127.3	59.8	3.1	62.9	49.4%	
Metrics and Evaluation	34.1	14.6	0.5	15.1	44.3%	
Environmental Disclosure	1.9	0.8	0.0	0.8	42.1%	
NYS Recovery Fee	25.4	9.2	0.6	9.8	38.6%	
<b>Other Costs Total</b>	<b>\$ 188.7</b>	<b>\$ 84.4</b>	<b>\$ 4.2</b>	<b>\$ 88.6</b>	<b>47.0%</b>	
<b>Total New York Energy Smart<sup>SM</sup></b>	<b>\$ 1,857.8</b>	<b>\$ 705.4</b>	<b>\$ 31.6</b>	<b>\$ 736.9</b>	<b>39.7%</b>	

Totals may not sum due to rounding.

**Table 2.3. Budget and Spending by Individual New York Energy Smart<sup>SM</sup> Programs**

Programs	Budget (\$ millions)			Funds Spent (\$ millions)		
	From July 1, 1998 through June 30, 2006	From July 1, 2006 through June 30, 2011	Total Budget	From July 1, 1998 through June 30, 2006	From July 1, 2006 through Sept. 30, 2006	Total Funds Spent
<b>COMMERCIAL and INDUSTRIAL</b>						
Peak Load Management Program	42.7	40.0	82.7	35.1	1.2	36.3
Enhanced Commercial and Industrial Performance Program	138.7	96.1	234.8	94.2	1.9	96.1
New York Energy Smart <sup>SM</sup> Business Partners	22.6	18.8	41.4	19.7	0.5	20.2
Loan Fund and Financing	10.5	10.5	21.0	12.3	0.9	13.2
Energy Smart Focus	8.0	11.9	19.9	3.6	0.3	3.9
High Performance New Buildings	80.8	70.0	150.8	53.1	2.0	55.1
FlexTech Technical Assistance	37.0	29.5	66.5	20.4	0.5	20.9
Other	18.9	0.0	18.9	8.7	< 0.1	8.8
TOTAL Commercial & Industrial	\$ 359.1	\$ 276.7	\$ 635.8	\$ 247.2	\$ 7.3	\$ 254.5
<b>RESIDENTIAL</b>						
Single Family Home Performance	66.4	112.2	178.6	75.0	5.0	80.0
Multifamily Building Performance	94.0	95.0	189.0	53.7	3.8	57.5
Market Support EE Residential	94.1	49.0	143.1	96.5	2.1	98.6
Communities and Education	4.9	7.8	12.7	3.2	0.4	3.6
General Awareness Campaign	16.0	15.0	31.0	15.9	0.2	16.1
EmPower New York	8.8	49.5	58.3	8.8	2.5	11.3
Buying Strategies & Energy Awareness	6.1	11.7	17.8	4.7	0.1	4.8
Other	9.9	0.0	9.9	10.1	< 0.1	10.1
TOTAL Residential	\$ 300.1	\$ 340.2	\$ 640.3	\$ 267.9	\$ 14.1	\$ 282.0
<b>RESEARCH and DEVELOPMENT</b>						
Public Benefit Power Transmission and Distribution	0.0	10.0	10.0	0.0	0.0	0.0
Clean Energy Infrastructure	43.7	33.8	77.5	19.0	2.0	21.0
Distributed Energy Resources: Products and Demonstrations	74.1	72.5	146.6	31.8	2.5	34.3
Demand Response and Innovative Research	0.0	10.0	10.0	0.0	0.0	0.0
Electric Transportation	0.0	5.0	5.0	0.0	0.0	0.0
Environmental, Monitoring, Evaluation, and Protection	21.5	17.5	39.0	17.7	0.4	18.1
Industrial and Municipal Process Efficiency	0.0	15.0	15.0	0.0	0.0	0.0
Next Generation and Emerging Technologies	29.6	18.3	47.9	18.3	0.7	19.0
Other	41.9	0.0	41.9	19.0	0.4	19.4
TOTAL Research and Development	\$ 210.8	\$ 182.0	\$ 392.8	\$ 105.9	\$ 6.0	\$ 111.8
TOTAL New York Energy Smart <sup>SM</sup> Programs	\$ 870.0	\$ 798.9	\$ 1,668.9	\$ 620.9	\$ 27.4	\$ 648.3
Totals may not sum due to rounding.						

## 2.2. Portfolio Level Findings

### 2.2.1. Progress Toward Goals

On December 21, 2005, the Commission extended the SBC program through June 30, 2011 and increased the funding level to \$175 million per year. In the Order<sup>5</sup>, the Commission revised NYSERDA's public benefits program goals based on input from stakeholders. The revised goals are presented below:

- Improve New York's energy system reliability and security by reducing energy demand and increasing energy efficiency, supporting innovative transmission and distribution technologies that have broad application, and enabling fuel diversity, including renewable resources.
- Reduce the energy cost burden of New Yorkers by offering energy users, particularly the State's lowest income households, services that moderate the effects of energy price increases and volatility and provide access to cost-effective energy efficiency options.
- Mitigate the environmental and health impacts of energy use by increasing energy efficiency, encouraging the development of support services for renewable energy resources, and optimizing the energy performance of buildings and products.
- Create economic opportunity and promote economic well-being by supporting emerging energy technologies, fostering competition, improving productivity, stimulating the growth of New York energy businesses, and helping to meet future energy needs through efficiency and innovation.

The revised goals will be accomplished through development of new programs and modification of existing ones as suggested in the Order and by continuing to deploy successful strategies crafted during the previous two funding cycles. No major changes are envisioned to the programs.

NYSERDA's integrated evaluation framework is working well, providing benefits in its ability to demonstrate accomplishments, rationalize program approaches and implementation activities, and plan for program improvements and new programs. The approach adopted by NYSERDA is the only example of such a comprehensive approach in the U.S. Additionally, the value/cost methodology for R&D programs represents a potential improvement in the paradigm traditionally used to evaluate R&D programs prior to deployment.

NYSERDA has demonstrated leveraging national energy efficiency efforts — particularly ENERGY STAR® in the residential sector — to brand and disseminate energy efficient products in New York. Results from the evaluations show awareness and penetration of these products in New York are significantly higher than the national average.

NYSERDA has influenced some markets to the extent that efficient actions are being taken outside direct program participation but are directly attributable to program activities. NYSERDA is gradually becoming a trusted source of information about energy and efficient practices. However, while both the performance of the **New York Energy \$mart**<sup>SM</sup> portfolio of programs and the trajectory toward market transformation can be demonstrated, more work clearly needs to be done.

In the business and institutional sectors, the significant improvements in efficiency and measured savings, while large in an absolute sense, represent only a small proportion of the potential market. In the residential sector, new technologies and products are already exceeding national standards, offering opportunities for further savings and showing the need for an ongoing presence in the market.

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<sup>5</sup> Case 94-E-0952 *et al.*, In the Matter of Competitive Opportunities Regarding Electric Service, *Staff Proposal for the Extension of the System Benefits Charge (SBC) and the SBC-funded Public Benefits Program*, August 30, 2005.

Internally, evaluation contractors found that NYSERDA’s portfolio of programs presents difficulties in distinguishing program effects from one another, and often presents consumers with overlapping options. Their recommendation that the programs be consolidated, as much as possible, was implemented under the most recent SBC Plan.

Finally, the sharing of program-level data has been a significant barrier to conducting evaluation and benefit/cost analyses. The evaluation contractors have spent significant resources working with program staff and implementation contractors to resolve these issues. NYSERDA is addressing this barrier by instituting a major consolidation of program tracking databases.

**2.2.2. Tabulated Summary of Program Benefits**

The energy, demand, and fuel savings from the **New York Energy \$mart<sup>SM</sup>** Program portfolio are presented in Table 2.4. Savings are shown after adjustments were applied for field-verified realization rates and for freeridership and spillover. From July 1, 2006 through September 30, 2006 the **New York Energy \$mart<sup>SM</sup>** programs produced 85 GWh in electric energy savings. This represents 33 percent of the first year goal set in the most recent SBC Plan. Demand reductions for the same period amounted to 23 MW, or 15 percent, of the first year goal of 152.5 MW.

Cumulative reductions in energy used have saved New York consumers \$310 million in electric, oil, and natural gas bills and reduced annual emissions by the amounts shown in Table 2.4. The annual CO<sub>2</sub> reduction is equivalent to removing 300,000 automobiles from New York’s roadways.

**Table 2.4. Cumulative Program Benefits from Installed Measures**

Benefits	Through Year-End 2003	Through Year-End 2004	Through Year-End 2005	Through September 30, 2006
Electricity Savings From Energy Efficiency and On-Site Generation (Annual GWh)	1,000	1,400	1,950	2,360
Peak Demand Reduction (MW)	880	860	1,001	1,090
Permanent Measures	270	325	410	480
Curtable	610	535	595	610
Annual Energy Bill Savings (\$ Million)	\$140	\$195	\$275	\$310
Net savings for gas and oil (Annual MMBtu)	2,800,000	2,600,000	4,000,000	4,225,000
Renewable Energy Generation (Annual GWh)	102	102	103	104
Jobs Created and Retained per Year	3,050	3,550	3,950	4,290
NO <sub>x</sub> Emissions Reductions (Annual Tons)	950	1,280	1,750	2,000
SO <sub>2</sub> Emissions Reductions (Annual Tons)	1,700	2,320	3,170	3,640
CO <sub>2</sub> Emissions Reductions (Annual Tons)	750,000	1,000,000	1,400,000	1,555,000
Equivalent number of cars removed from New York roadways.	150,000	200,000	275,000	300,000

**2.3. Evaluation Review**

Since inception of the SBC program, independent, third-party monitoring and evaluation reporting on **New York Energy \$mart<sup>SM</sup>** programs has been completed and recommendations for improvements in the programs have been generated. The evaluations included some combination of Measurement and Verification (M&V), Market Characterization, Assessment and Causality (MCAC), Process Evaluation,

and Program Theory and Logic Modeling (PT/LM) research. Reports and recommendations were produced for each of the three cycles: 2003-2004, 2004-2005, and 2005-2006.

In 2005, NYSERDA initiated a review of its overall evaluation effort to date. The process evaluation contractor team, together with program staff, reviewed two cycles of recommendations made by program evaluators. The evaluators also explored the experiences of Energy Analysis staff and program staff with the evaluations. The process evaluation team prepared an interim report on the findings from these interviews. After reviewing the interim report, NYSERDA management and the process evaluation team identified areas of research to include in the ongoing evaluation review. Thus, for the 2006 Evaluation Review, the process evaluation team examined program staffs' responses to the actionable recommendations made by the five evaluation contractors in 2005 and revisited the 2003-2004 recommendations that staffs reported had been considered, but not yet acted on.

For the 2003 recommendations, NYSERDA program staff prepared narrative responses. The process evaluation team then assigned categories to the narratives, compared their assignments, and determined a final category for each. For the 2004 recommendations, each recommendation was addressed during in-person interviews with program staff conducted in 2005 as part of the open-ended interviews regarding the evaluation experience. There were 174 recommendations for 2003 and 2004.<sup>6</sup>

For the 2005 recommendations, the process team chose to separate the recommendation review from the review of the evaluation process. The process team developed an on-line survey addressing the 2005 recommendations for each program and sent the survey to the one or two program staff members (usually the program manager) most capable of speaking to the status of the recommendations. The same categories of responses as noted above were offered for each recommendation and space was provided for open-ended comments for each. In addition, individual contacts who were unable to address the status of specific recommendations made referrals to appropriate staff. The on-line survey received responses to 56 of 71 recommendations made in 2005.

Analysis of the recommendations for the 2003, 2004, and 2005 evaluation cycles found that action was taken on 48% of the recommendations in the first two evaluation cycles and 67% in the third cycle. Also in the third cycle, a larger percentage of recommendations were considered for implementation by staff without action being taken.

Many intervening factors could affect these differences, and the team is not able to attribute these observed changes to any specific factor, although more analysis of interviews may identify some explanations. Some factors that may come into play are: as the programs undergo transition they are continually improved, so staff are better able to consider recommendations; as evaluators become more familiar with programs they may make more useful recommendations; some recommendations are not intended for the program staff and are intended for Energy Analysis staff, NYSERDA management, and stakeholders.

## 2.4. Solicitations Update

Table 2.5 lists Requests for Proposals (RFPs) and Program Opportunity Notices (PONs) that were released during the third quarter of 2006.

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<sup>6</sup> Baggett, S.A. and J.S. Peters, *Process Evaluation: Review of the Evaluation Process, Final Interim Report*, New York State Energy Research and Development Authority, May 2006.

**Table 2.5. Solicitations Issued in Third Quarter 2006**

Solicitation Number	Solicitation Name	Solicitation Release Date	Solicitation Closing Date
<b>R&amp;D Program Area</b>			
PON 1031	Advanced Sensors & Controls for Energy Management, Power Quality, & Electricity System Reliability	7/31/06	9/25/06
PON 1040	Waste & Wastewater Technologies	8/7/06	10/3/06
PON 1062	Advanced Building Envelopes and Energy Systems	8/23/06	10/18/06
PON 1079	Daylighting Technical Consulting, Training, and Demonstration	9/18/06	11/13/06
PON 1087	Heating and Cooling	9/11/06	11/9/06
<b>Commercial and Industrial Program Area</b>			
RFP 1057	New Construction Program Technical Assistance and Support Services	9/18/06	10/16/06
<b>Residential Program Area</b>			
RFP 1007	Low Income Forum on Energy Implementation Support	7/3/06	8/9/06
RFP 1020	Products Program	7/10/06	8/23/06
RFP 1017	Homes Implementation	8/11/06	9/13/06
RFP 988	Hotline and Fulfillment	9/4/06	10/11/06
RFP 1005	Quality Assurance Services for NYSERDA Residential Programs	9/18/06	10/26/06
RFP 1012	New York Energy \$mart <sup>SM</sup> Communities Services and Support Contractor	9/18/06	11/1/06
<b>Energy Analysis Program Area</b>			
RFP 1061	New York Energy \$mart <sup>SM</sup> Impact Assessment	8/7/06	9/5/06
RFP 1063	Process Assessment and Evaluation Management for the New York Energy \$mart <sup>SM</sup> Program	8/7/06	9/6/06
RFP 1065	Market Characterization and Assessment Evaluation Contractor for the New York Energy \$mart <sup>SM</sup> Program	8/7/06	9/7/06
RFP 1086	Data Collection Contractor for the New York Energy \$mart <sup>SM</sup> Program	9/25/06	10/19/06

# 3 Commercial and Industrial Program Results and Findings

## 3.1. Energy, Peak Demand, and Fuel Savings

**Table 3.1. Commercial and Industrial Program Goals and Achieved Energy, Demand, and Fuel Savings through September 30, 2006**

Program Name	Energy Savings through Sept. 30, 2006 (GWh)			Demand Reductions through Sept. 30, 2006 (MW)			Fuel Savings (MMBtu)		
	Goal through June 30, 2007	Savings Achieved		Goal through June 30, 2007	Savings Achieved		Goal through June 30, 2007	Savings Achieved	
		Through June 30, 2006	Through Sept. 30, 2006		Through June 30, 2006	Through Sept. 30, 2006		Through June 30, 2006	Through Sept. 30, 2006
<b>Peak Load Management</b>									
Callable (1)				53.0	461.0	463.5			
<i>Con Edison</i>				28.0	203.3	207.4			
Permanent (includes Cooling RCx)	19.0	96.5	105.4	13.0	44.7	52.4			
<i>Con Edison</i>	9.0	74.9	76.3	8.0	31.1	31.7			
<b>Enhanced Commercial and Industrial</b>	24.0	730.6	761.9	12.0	132.5	138.4	3,252	3,381	
<i>Con Edison</i>		224.1	226.2		54.7	55.0	495	515	
<b>New York Energy Smart Business Partners (2)</b>	10.0	54.1	57.3	2.5	11.8	12.6			
<i>Con Edison</i>		4.3	5.5		1.0	1.2			
<b>New York Energy Smart Loan Fund</b>		49.6	51.3		14.3	15.0	137,239	139,621	
<i>Con Edison</i>		0.5	9.8		0.5	1.5	4,941	7,966	
<b>New York Energy Smart Focus (3)</b>	5		0	1.0		0.0			
<i>Con Edison</i>			0			0.0			
<b>High Performance New Buildings</b>	35	223.2	226.5	4.0	45.5	46.5			
<i>Con Edison</i>		73.2	74.3		14.9	15.3			
<b>FlexTech Technical Assistance</b>	70	644.1	666.7	14.0	120.9	123.2	3,164,000	3,164,000	
<i>Con Edison</i>		163.0	168.7		30.6	31.2	800,846	800,846	
Curtable					10.2	10.2			
Overlap Removed		79.8	82.6		16.1	16.5			
<i>Con Edison C&amp;I Total</i>		540.1	560.9		336.1	343.3	806,282	809,328	
Statewide C&I Total	163.0	1,718.4	1,786.4	99.5	824.9	845.2	3,304,491	3,307,002	

Source: NYSEDA

Notes:

- The 'Goal through June 30, 2007' is a first year goal for the third cycle of Systems Benefit Charge funding.
- 'Savings Achieved' are cumulative since program inception and are adjusted by the realization rate and net to gross factor for that program.

## 3.2. Progress Toward Goals

### 3.2.1. Peak Load Management Program

**Table 3.2. Peak Load Management Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Customers receiving assistance	145	22

This program was formerly known as the Peak Load Reduction Program.

**Program Highlights**

- Staff provided training to Outreach Program Consultants operating in New York City on topics including the New York Independent System Operator’s demand response programs, New York Department of Environmental Conservation permitting requirements, and the peak load management program.
- On November 8-9, 2006, NYSERDA sponsored the Peak Load Management Association’s Fall 2006 conference focusing on demand response technologies, services, and practices. Conference attendees included representatives of regional Independent System Operators, New York utilities, demand response providers, and large energy users. A session was offered on the System-Wide Program.

**3.2.2. Enhanced Commercial and Industrial Performance Program**

**Table 3.3. Enhanced Commercial and Industrial Performance Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Leveraged Funds (\$ million)	\$80	129
Customer projects	680	353

This program is a consolidation of the Commercial Industrial Performance Program and the Smart Equipment Choices Program.

**3.2.3. New York Energy \$mart<sup>SM</sup> Business Partners**

**Table 3.4. New York Energy \$mart<sup>SM</sup> Business Partners Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Business Partners	300	4

New York Energy \$mart<sup>SM</sup> Business Partners is a consolidation of the following programs:

- Premium Efficiency Motors
- Small Commercial Lighting Program
- Commercial HVAC Program
- Commercial and Industrial Innovative Opportunities Program

### 3.2.4. New York Energy \$mart<sup>SM</sup> Loan Fund and Financing Program

**Table 3.5. New York Energy \$mart<sup>SM</sup> Loan Fund and Financing Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Customers receiving assistance	100	21
Participating lenders*	25	3
Leveraged loan amount	\$12,000,000	\$5,000,000
* Current market conditions cause many lenders to be acquired and merged with other institutions, therefore projecting future participation numbers is difficult.		

### 3.2.5. Energy Smart Focus Program

**Table 3.6. Energy Smart Focus Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Customers Receiving Assistance	2,000	0

#### Program Highlights

This new initiative will provide services to facilitate and encourage sector-specific energy efficiency improvements and practices.

- An internal team is developing the program, refining the program goals, and identifying sector needs.
- An RFP was released to selected contractors to service the hospitality sector and the institutional sector, including K-12 schools, State government facilities, commercial real estate, industrial manufacturing, municipal water and wastewater facilities.

### 3.2.6. High Performance New Buildings Program

**Table 3.7. High Performance New Buildings Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Customers receiving assistance	140	N/A
Construction market affected (sq.ft.)	14,000,000	N/A
Participating A&E firms	180	N/A

The High Performance New Buildings Program was previously called the New Construction Program.

#### Program Highlights

- Since its inception, the program has affected nearly 130 million square feet of commercial building floorspace in New York. Staff are currently managing 1,303 active projects. Activities in the Consolidated Edison Company of New York, Inc. territory exceed projections. More than 1.7 MW of demand savings have been encumbered and more than 10 MW are pending.

- Staff continue to advise on the development of energy efficiency guidelines for redevelopment of the World Trade Center and the transportation hub and memorial, in particular.

**3.2.7. FlexTech Technical Assistance Program**

**Table 3.8. FlexTech Technical Assistance Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Customers receiving assistance	540	100

The FlexTech Technical Assistance program is a consolidation of services previously offered under the FlexTech program and the Energy Audit Programs with the addition of delivery of feasibility studies and other types of technical assistance.

Program Highlights

- RFP 1030 closed in August. The RFP sought proposals from firms interested in becoming Walkthrough Audit Contractors for the **New York Energy \$mart<sup>SM</sup>** Audit Program for the next five years.
- Flexible Technical (FlexTech) Services Program RFP 1051 is being prepared for issuance to obtain new statewide FlexTech Contractors for the next three years.
- PON 963 addresses combined heat and power and renewable generation activities of the FlexTech Technical Assistance Program and went to the Management Review committee for project funding approval in August 2006. One hydrogenation, one wind turbine, and two combined heat and power feasibility studies were approved.

**3.3. Summary of Completed Evaluation Activities**

**3.3.1. FlexTech Technical Assistance Program Logic**

The **New York Energy \$mart<sup>SM</sup>** FlexTech Technical Assistance program (FlexTech) seeks to increase the productivity and economic competitiveness of New York organizations by identifying and encouraging the implementation of cost-effective energy efficiency measures. FlexTech operates within the large and diverse nonresidential sector, which includes commercial, industrial and institutional buildings. The primary focus of the FlexTech program is to provide information to customers to aid in their decisions about the upgrade or retrofit of energy-using systems in existing nonresidential buildings. Market actors targeted by the FlexTech Program include engineering firms and technical consultants that support institutional, commercial and industrial decision-making regarding capital investment and equipment upgrades. FlexTech also targets the business owners and managers, property owners and managers, institutional decision makers and industrial firms who make decisions about the energy efficiency of projects and need the technical support services to inform those decisions. Indirectly, the program also leverages the expertise of equipment vendors, installation contractors and energy service companies.

### Program Activities

FlexTech Program activities work mainly with market actors within the demand-side and mid-market/infrastructure areas to help address key market barriers. These activities can be grouped into four main areas: (1) Promotion and Outreach, (2) Contractor Selection and Approval Activities (3) Technical Assistance and Review, and (4) Coordination with other incentive programs.

### Program Barriers and Issues

The FlexTech program assists customers in improving their energy efficiency by providing the information and expertise needed to aid in or improve their decisions to upgrade equipment, improve processes, or otherwise invest in energy efficiency. The program operates within the larger NYSERDA portfolio designed to create market opportunities and maximize benefit for participants and society. To facilitate participation, FlexTech works to overcome a variety of market barriers and issues including:

- Lack of time and competing priorities
- Volatility and risk related to energy prices and business environment
- Lack of information to support energy efficiency investment in the commercial and industrial sector
- A diverse set of targeted customers that include different sizes and types of customer facilities and systems, with a wide range of needs for technical information
- Lack of funding to support analysis; competing needs for capital
- Lack of awareness, knowledge and understanding of energy efficiency features
- Uncertainty about savings
- High incremental or first costs

### Program Outputs, Outcomes and Associated Measurement Indicators

For purposes of this report, outputs are defined as the immediate results from specific program activities. These results are more easily identified and quantified through counting and/or review of program records. Outcomes are distinguished from outputs by their less direct (and often harder to quantify) results from specific program activities. Outcomes represent anticipated impacts associated with NYSERDA's program activities and will vary depending on the time period being assessed. On a continuum, program activities will lead to immediate outputs that, if successful, will collectively work toward achievement of anticipated short, intermediate and long-term outcomes.

The FlexTech logic effort conducted this year included development of detailed output and outcome lists and documentation of potential data sources and data collection approaches that could be used to obtain data in future evaluation efforts. Where appropriate, the need for baseline data was also noted.

### Program Logic Model

The logic model diagram for the FlexTech Technical Assistance Program can be found in the Appendix. This logic model diagram presents the key features of the program, shows linkages between activities, outputs, and outcomes, and identifies potential external influences. The logic diagram in the appendix is presented at a high level, but future evaluation research could include developing a more detailed logic model to examine anticipated linkages and performance through the various outcomes.



## 4 Residential Programs, Including Low-Income, Results and Findings

### 4.1. Energy, Peak Demand, and Fuel Savings

**Table 4.1. Residential and Low-income Program Energy and Demand Savings through September 30, 2006**

Program Name	Energy Savings through Sept. 30, 2006 (GWh)			Demand Reductions through Sept. 30, 2006 (MW)			Fuel Savings (MMBtu)		
	Goal through June 30, 2007	Savings Achieved		Goal through June 30, 2007	Savings Achieved		Goal through June 30, 2007	Savings Achieved	
		Through June 30, 2006	Through Sept. 30, 2006		Through June 30, 2006	Through Sept. 30, 2006		Through June 30, 2006	Through Sept. 30, 2006
<b>Single Family Home Performance</b>									
Existing Homes	5.3	13.5	13.9		2.0	2.1	94,600	523,821	576,119
<i>Con Edison</i>		0.2	0.3		0.0	0.0		995	1,095
New Homes	1.8	7.3	8.2		0.9	0.9	28,100	461,953	492,983
<i>Con Edison</i>		0.7	0.7		0.2	0.2		36,956	39,439
<b>Multifamily Building Performance</b>									
Existing Buildings	45.1	31.0	34.7		3.9	7.0	1,202,900	43,932	105,316
<i>Con Edison</i>		30.2	33.9		3.8	6.9		4,833	11,585
New Buildings	4.8		0.0			0.0	129,800		0
<i>Con Edison</i>			0.0			0.0			0
<b>Market Support</b>	30.0	303.9	303.9		71.7	68.3		341,920	341,920
<i>Con Edison</i>		69.9	69.9		16.5	15.7		58,126	58,126
<b>EmPower New York</b>	10.2	23.2	27.4		2.5	3.0	21,700	59,341	74,756
<i>Con Edison</i>		2.0	2.2		0.0	0.0		0	0
<i>Con Edison Residential Total</i>		103.0	106.9		20.5	22.8		100,911	110,245
Statewide Residential Total	97.2	378.9	388.1		81.1	81.3	1,477,100	1,430,967	1,591,094

Source: NYSERDA

Notes:

- The 'Goal through June 30, 2007' is a first year goal for the third cycle of Systems Benefit Charge funding.
- Savings Achieved' are cumulative since program inception and are adjusted by the realization rate and net to gross factor for that program.
- Energy and demand savings for the Keep Cool program (included under Market Support) were stepped down to account for early replacement units reaching the end of their useful lives; had they still been in service they would now have been replaced with currently-available standard efficiency models. The savings in these later years are calculated by taking the difference between the standard efficiency model and the ENERGY STAR model. This accounts for the decrease in MW impacts from the second quarter of 2006.

## 4.2. Residential Programs: Progress Toward Goals

### 4.2.1. Single Family Home Performance Program

**Table 4.2. Single Family Home Performance Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Existing households served through HPWES	3,225	913
New Homes built through NYESLH	2,150	547
<u>Low-Income Goals and Achievements</u>		
New low-income homes built through NYESLH	800	0
Existing low-income households served through HPWES	2,100	308

#### Program Highlights

- Through September 2006, Ithaca Neighborhood Housing Services, Home HeadQuarters, Utica Home Ownership Center, and Neighborhood Housing Services of New York City have pre-approved loans for 168 households of which 65 have credit scores below 640.

### 4.2.2. Multifamily Building Performance Program

**Table 4.3. Multifamily Building Performance Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Number of units receiving services (existing buildings)	7,800	3,952
Number of units receiving services (new construction)	1,500	151
Tenant Energy Savings (\$250 per unit per year)	\$2,325,000	\$1,025,750
<u>Low-Income Goals and Achievements</u>		
Number of units receiving services (existing buildings)	29,640	3,961
Number of units receiving services (new construction)	2,540	0
Direct tenant bill savings (at \$195 per unit per year)	\$6,275,100	\$772,395

### 4.2.3. Market Support Program

**Table 4.4. Market Support Program Goals achieved from July 1, 2006 through September**

**30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
New manufacturing partners	4	0
New retail partners (independent)	20	0
New retail partners (big box, mass merchandisers)	1+	0
ENERGY STAR® market share increase – targeted products (on average, across products)	5%	N/A

**Program Highlights**

Partner recruitment was limited during this time while program staff focused on developing the strategy for the Change-A-Light and holiday lighting campaigns. Partner recruitment will continue in earnest in January 2007.

A Socket Boy Tour across the state was held during the summer. The Tour helped promote the Stay Cool Program and the Have an Energy Smart Summer campaign with an estimated three million consumer impressions. Several representatives from NYSERDA attended events across the State where the Socket Boy mascot was featured. Thousands of brochures were distributed and several media interviews were scheduled with coordination between the two campaigns.

ENERGY STAR products staff met with the New York State Department of Environmental Conservation (NYSDEC) on compact fluorescent light (CFL) recycling and disposal measures. NYSDEC has agreed to conduct training on CFL and fluorescent recycling and disposal in the fall and has provided feedback on a new educational brochure explaining the benefits of using CFLs, how to identify the correct product for the right application, and how to properly dispose of them when they break or burn out.

**4.2.4. Communities and Education Program**

**Table 4.5. Communities and Education Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Teachers trained	1,000	86
Students reached	30,000	4,293
Community events held statewide	200	73
Recruiting seminars held statewide	100	0
Home performance contractors, technicians, builders and raters recruited for the Single Family Home Performance Program	160	N/A
Building analysts, designers, energy consultants, equipment installers, etc recruited for Multifamily Building Performance Program	20	N/A

### Program Highlights

The Key Leader Institute is a conference held as part of the Energy Smart Students Program to train teachers in New York on holding energy workshops for other teachers. The Institute was conducted in July 2006, and twenty teachers attended the four-day conference. The conference included training sessions on the science of energy, energy literacy, and energy efficiency at school and at home.

As part of the Energy \$mart Communities Program, RFP 1012 (NYE\$ Communities Services and Support Contractor) was released. The purpose of this solicitation is to select a contractor that will assist in recruitment and will be responsible for coordinating training and outreach activities.

## **4.3. Summary of Completed Evaluation Activities**

### **4.3.1. Communities and Education Program Logic**

The Communities and Education Program through the Energy Smart Students (ESS) and the **New York Energy \$mart<sup>SM</sup>** Communities initiatives offer market infrastructure development for short-term program support and long-term market development for residential energy efficiency.

The ESS initiative partners with a variety of education associations throughout New York and includes summer conferences, regional workshops, newsletters, and teacher training to provide school-based energy efficiency education for teachers and students in grades K-12. The market actors targeted by the ESS initiative include curriculum developers, training contractors, State Education Department Teacher Centers, teachers, school districts, curriculum committees, students, museums, and libraries.

The **New York Energy \$mart<sup>SM</sup>** Communities initiative brings organizations and agencies together to develop and support local projects that serve as demonstrations of energy efficiency and renewable technologies and show how these projects create economic, social, and environmental benefits. The Communities initiative provides information and support throughout the community to encourage and enable local individuals and organizations to pursue energy efficiency and renewable projects.

Market actors targeted by the Communities initiative include equipment manufacturers and developers; residential customers, including existing and potential new home owners; multifamily building owners; local policy makers and community leaders; community organizations and institutions; contractors; builders; retailers; distributors; Home Energy Rating Service (HERS) providers; HERS raters; multifamily property managers; and sub-contractors and building trades.

This section describes the logic elements associated with this program. Specific details are presented where the two initiatives target different market actors and face different barriers.

Key activities of the Communities initiative include:

- Defining and identifying Energy Target Zones
- Identifying, educating and providing support material for Community Coordinators
- Developing and providing educational and marketing materials
- Providing program referral and liaison services with other **New York Energy Smart<sup>SM</sup>** programs
- Identifying and participating in appropriate community events for education and outreach
- Recruiting partners for other **New York Energy Smart<sup>SM</sup>** programs
- Tracking and reporting activities with community organizations and leaders

Key activities of the ESS initiative include:

- Developing and refining a cooperative network with the New York State Education Department, Statewide Teacher Associations, Teacher Centers and allied organizations
- Selecting and refining energy education curriculum
- Holding workshops for teacher training, called Train-the-Teacher workshops, to train leader teachers the skills needed to train other teachers
- Developing and refining classroom materials and teaching tools
- Providing small financial awards to teachers for energy education projects
- Participating in NYSERDA's schools team to coordinate services for energy education, school facility improvements and transportation
- Collecting, tracking and verifying data

For the Communities initiative, a key supply-side barrier that affects market actors such as equipment manufacturers and developers is the following:

- Lack of information and awareness among upstream market actors regarding the benefits and business opportunities for energy-efficient homes, efficient equipment, renewable energy and load management products, and related services

In addition, key market infrastructure and policy barriers that affect market actors such as contractors, builders, retailers and distributors include the following:

- Lack of information and awareness among mid-stream market actors regarding the benefits and business opportunities for energy-efficient homes, efficient equipment, renewable energy and load management products, and related services
- Limited experience with energy-efficient homes and equipment, renewable energy products, load management equipment, and energy monitoring equipment
- Uncertainty about product performance and profit potential for providing energy efficiency services
- Undervaluing energy efficiency, sustainability and their impact for economic development
- Lack of available real-time pricing and other load management options
- Lack of time and income for attending training and certification exams

Lastly, key demand-side barriers that affect market actors such as residential customers, multifamily building owners, and communities include the following:

- Lack of awareness, knowledge and understanding of energy efficiency, renewable energy and load management features, products and services
- Information costs associated with understanding these features and associated benefits
- Competing needs for capital
- Lack of reliable information on energy-efficient practices in existing homes
- Resistance to new and/or innovative technologies
- Performance uncertainties
- Split incentives for rental units (building owners often do not pay the energy bills, the tenant does but has little incentive or ability to improve the property)
- Undervaluing energy efficiency, sustainability and their impact for economic development
- Lack of available real-time pricing and other load management options
- Lack of policies amenable to energy efficiency and renewables
- Resistance to changing contractors or making demands upon their contractors

For the ESS initiative, a key supply-side barrier that affects market actors such as curriculum developers is the following:

- Lack of information and awareness among upstream market actors regarding the benefits of energy efficiency, renewable energy and load management for schools and homes

Key market infrastructure and policy barriers that affect market actors such as teachers, school districts, teacher unions, curriculum committees include the following:

- Teachers have limited time to learn new material and to incorporate this material into lesson plans
- Lack of school time to teach efficiency/renewables given other educational requirements
- Lack of available age-appropriate curriculum and teaching tools for teaching energy efficiency/renewables
- Lack of evidence that teaching about energy efficiency/renewables can help students master required math and science skills

Key demand-side barriers that affect market actors such as students and communities includes:

- Undervaluing the long-term impacts for investments in energy efficiency and renewables for environmental and community health
- Lack of awareness, knowledge and understanding of energy efficiency, renewable energy and load management features, products and services
- Information costs associated with understanding these features and associated benefits
- Competing issues for learning and focus
- Many have low sense of necessity/urgency due to denial of global climate change and its likely consequences

#### Program Outputs, Outcomes and Associated Market Indicators

For purposes of this report, outputs are defined as the immediate results from specific program activities. These results are easily identified and quantified through counting and review of program records. Outcomes are distinguished from outputs by their less direct, and often harder to quantify, results from specific program activities. Outcomes represent anticipated impacts associated with NYSERDA's program activities and will vary depending on the time period being assessed. Over time, program activities will lead to immediate outputs that, if successful, will lead toward achievement of anticipated short, intermediate, and long-term outcomes.

The Communities and Education logic effort conducted this year included development of detailed output and outcome lists, as well as documentation of potential data sources and data collection approaches that could be used to obtain data to report on these in future evaluation efforts. Where appropriate, the need for baseline data was also noted.

#### Program Logic Model

The logic model diagrams for the Communities and ESS initiatives can be found in the Appendix. These logic model diagrams present the key features of the program; show linkages among activities, outputs, and outcomes; and identify potential external influences.

#### Testable Program Hypotheses

Based on assessment of these initiatives, the following researchable issues have been identified. Some already have been examined and others continue to be investigated through the activities of NYSERDA's evaluation contractors.

The following researchable issues relate to the Communities initiative:

- Are the community networks developing effective infrastructure to promote energy efficiency and use of renewable systems in communities?
- Are the materials and assistance provided effective in developing appropriate NYSERDA programs in the community?
- Are effective community champions for efficiency and renewable projects being recruited, properly trained, and supported?
- How effective are the community events at supporting community development in the areas of energy efficiency and renewable resources by increasing awareness, knowledge, and recognition of the benefits of energy efficiency? How can they be more effective?
- Where is the community and how is it progressing with the support of the Communities initiative toward becoming more self-supporting and achieving sustainable levels of efficiency and renewables investment?
- What is the level of benefits (*i.e.*, how can they be measured) provided given the support of the Communities initiative?
- What are the changes in demand and behavior due to the Communities initiative?
- To what extent do external influences inhibit and/or enhance program operations and effects?

The following researchable issues relate to the ESS initiative:

- Is the extent of interaction with the State Department of Education, education network and local school districts sufficient, effective?
- Is the network of key leaders, their training and their activities increasing teacher awareness, knowledge and acceptance of energy efficiency and renewables to be incorporated into effective energy education curriculum?
- Is the school team effective in creating school projects that save energy and work well as learning tools for the students at that school?
- Are the school projects effectively used within the teaching material by the teachers offering energy education at that school?
- Are the case studies effective and effectively being used to create program growth across the education network, teachers and teaching material?
- How effective is the energy education curriculum for increasing student awareness, attitudes, and enabling a student to encourage actions within their family?
- To what extent do external influences inhibit and enhance program operations and effects?

Research addressing these questions will help to validate the reasonableness of the associated theories and will help to inform NYSERDA program staff of progress and potential areas for program enhancement and refinement.

## 4.4. Low Income Program: Progress Toward Goals

### 4.4.1. EmPower New York<sup>SM</sup>

**Table 4.6. EmPower New York<sup>SM</sup> Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Households served	6,300	1,778

#### Program Highlights

- 360 projects were completed in September 2006, bringing the total for the program to date to 8,432 at an average cost of \$1,147 each and average annual savings of \$250. 2,099 audits are under way, and 1,081 projects are in process.
- In September 2006, 32 energy and financial management workshops were attended by 377 people, for a total of 686 workshops attended by 6,609 people since inception of the program.
- The Weatherization Network Initiative, a low-income program being integrated into the EmPower New York<sup>SM</sup> Program, has completed a total of 5,621 completions at an average cost of \$672 per unit and average annual savings of \$176. Through September 30, 2006, the program has exceeded its initial goal of 5,481 by completing an additional 140 units.

### 4.4.2. Buying Strategies and Energy Awareness

**Table 4.7. Buying Strategies and Energy Awareness Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Funds leveraged through buying strategies initiative (annual \$)	\$4 million	N/A
Additional* low-income individuals reached through newsletters and weekly newspapers	1,000,000	N/A
Additional low-income individuals reached through seminars and workshops	3,000	N/A
Additional contractors and other partners recruited in low-income districts	10	N/A
Additional students reached in schools serving largely low-income populations	20,000	2,862
Additional goals reflect increases over and above achievements made under the residential programs and from which the low-income sector also benefits. Additional goals will target regions where marketing and outreach through the residential program have not yielded desired results among low-income consumers.		

## 4.5. Summary of Completed Evaluation Activities

### 4.5.1. EmPower New York<sup>SM</sup> Program Logic

The EmPower New York<sup>SM</sup> program is among NYSERDA's portfolio of **New York Energy Smart<sup>SM</sup>** programs that serve low-income households in the state. Customers of SBC-participating utilities with incomes below 60 percent of the state median income and households enrolled in utility low-income payment assistance programs are eligible for services. Property owners and tenants may be served, and

the program targets one-to-four family homes and multifamily buildings with fewer than 100 units. Market actors targeted by the program include utility companies, energy services contractors, community-based organizations, weatherization agencies, energy education contractors, energy efficiency equipment suppliers, low-income residential customers, and low-income residential property owners, including multifamily building owners.

#### Program Activities

Key EmPower New York<sup>SM</sup> Program Activities include

- Marketing
- Recruiting and enrolling energy services contractors
- Customer referrals and selecting participants
- Customer audits and installation of energy efficiency measures
- Customer education
- Quality control
- Quality assurance
- Coordination with other low-income programs

#### Program Barriers

Key supply-side program barriers that affect market actors, including manufacturers and distributors, include

- Energy efficient equipment costs 30 to 40 percent more than conventional equipment
- Energy efficient products are not widely available for purchase and for some emergency repairs because of distribution problems

#### Market and Policy Barriers

Key market infrastructure and policy barriers that affect market actors, including lenders, financial institutions, auditors, contractors, community betterment organizations, weatherization agencies, and utilities, include

- Business practices and regulations limit the use of life-cycle-cost analysis for low-income properties
- Staff turnover is frequent at community betterment organizations and weatherization assistance program agencies
- Training and accreditation of energy services contractors is expensive
- Unavailability of eligible contractors
- Energy service contractors lack interest and willingness to effectively deliver assistance to low-income populations
- Contractors prefer to sell and install familiar measures
- Contracts have limited skill sets (*e.g.*, many cannot install hard-wired lighting)
- Access is denied to utility data on customer energy consumption and billings
- Federal weatherization funding is inadequate to meet needs of low-income households

#### Demand-side Barriers

Key demand-side barriers that affect market actors, including low-income households and multifamily building owners, include

- Income-eligible customers have limited financial and informational resources to address energy efficiency in their homes
- Split incentives for owners and renters — building owners often do not pay the energy bills while tenants have little incentive or ability to improve the property
- Security of energy efficient equipment is lacking
- Consumers are not aware of the value and benefits of purchasing and using energy efficient equipment
- Consumers lack reliable information about energy efficient practices in existing homes
- Consumers resist new and innovative technologies
- Performance of energy efficient equipment is uncertain
- Owners lack financing to make improvements to low-income properties
- Lack of consideration of operation and maintenance costs compared to first cost outlays when making capital investment decisions (multifamily building owners)
- Income-eligible customers have limited awareness of weatherization, fuel assistance, and other available services related to energy use in homes

#### Program Outputs, Outcomes, and Associated Measurement Indicators

Outputs are defined as the immediate results of specific program activities. Results are more easily identified and quantified by counting and reviewing program records. Outcomes are distinguished from outputs by their less direct, and often harder to quantify, results of specific program activities. Outcomes represent anticipated impacts associated with NYSERDA's program activities and will vary depending on the time period being assessed. Over time, program activities will lead to immediate outputs that, if successful, will collectively lead toward achievement of anticipated short, intermediate, and long-term outcomes.

The EmPower New York<sup>SM</sup> logic effort conducted in 2006 included development of detailed output and outcome lists and documentation of potential data sources and data collection approaches that could be used to obtain data to report on the outputs and outcomes in future evaluation efforts. Where appropriate, the need for baseline data was noted.

#### Program Logic Model

The logic model diagram for the EmPower New York<sup>SM</sup> Program can be found in the Appendix. The logic model diagram presents the key features of the program; shows linkages among activities, outputs, and outcomes; and identifies potential external influences. While the logic diagram presented in the appendix is at a high level, future evaluation research could include developing a more detailed logic model to examine anticipated linkages and performance.

#### Program Testable Hypotheses

Based on the assessment of the EmPower New York<sup>SM</sup> program, the researchable issues noted below were identified.

- Has awareness and knowledge of the EmPower New York<sup>SM</sup> program changed among the utilities, community betterment organizations, weatherization assistance program agencies, and energy services contractors?
- How well does the program cooperate with other regional and national low-income program efforts?

- Are the services provided by trained auditors and installation contractors leading to increased installation of energy efficiency measures in low-income households?
- Is the training provided to energy services contractors effective?
- Are the most appropriate households being selected for full participation in the program?
- Are the realized energy savings and bill reductions from the installed energy efficiency measures consistent with initial expectations?
- Is the program resulting in notable energy cost reductions for low-income households? Is it increasing their ability to meet other priority spending needs?
- Is participation in the program by low-income residents and building owners increasing their knowledge about energy saving behaviors and measures?
- How many and what percentage of full participants receive important health and safety services?
- Are energy services contractors and equipment suppliers finding the provision of energy efficient equipment and services to be profitable through the program? Is their support for and promotion of energy efficiency products and services increasing over time?
- Is the low-income residential market large enough to sustain energy services contractors in the long run?
- For low-income building owners and households, how important is energy efficiency relative to other factors influencing financial decisions?
- To what extent are external influences impacting program accomplishments?

Research addressing these questions will help to validate the reasonableness of the associated theories and will help inform NYSERDA program staff of progress and potential areas for program enhancement and refinement.



# 5 Research and Development Program Results and Findings

## 5.1. Energy, Peak Demand, and Fuel Savings

**Table 5.1. Research and Development Energy and Peak Demand Goals and Adjusted Energy, Demand, and Fuel Savings through September 30, 2006**

Program Name	Energy Savings through Sept. 30, 2006 (GWh)			Demand Reductions through Sept. 30, 2006 (MW)			Fuel Savings (MMBtu)		
	Goal through June 30, 2007	Savings Achieved		Goal through June 30, 2007	Savings Achieved		Goal through June 30, 2007	Savings Achieved	
		Through June 30, 2006	Through Sept. 30, 2006		Through June 30, 2006	Through Sept. 30, 2006		Through June 30, 2006	Through Sept. 30, 2006
<b>DG-CHP Demonstration Program (1)</b>		82.7	90.0	20.0	18.1	19.7		-571,310	-671,440
<i>Con Edison</i>		42.0	42.0	10.0	8.5	8.5		-266,937	-287,673
<b>Demand Response and Innovative Rate Research</b>				33.0	137.2	137.2			
<i>Con Edison</i>					137.2	137.2			
<b>Renewable Energy Production (SBC 1 &amp; 2 only)</b>		103.8	104.5		8.1	8.8			
<i>Con Edison</i>		0.5	0.5		0.3	0.3			
<i>Overlap Removed</i>		6.6	7.2		1.3	1.4			
<i>Con Edison R&amp;D Total</i>		42.5	42.5	10.0	146.0	146.0		-266,937	-287,673
Statewide R&D Total		179.9	187.4	53.0	162.1	164.4		-571,310	-671,440

Source: NYSERDA

Notes:

- The 'Goal through June 30, 2007' is a first year goal for the third cycle of Systems Benefit Charge funding.
- Savings Achieved' are cumulative since program inception and are adjusted by the realization rate and net to gross factor for that program.
- Because the electricity saved by the DG/CHP projects replaces electricity formerly purchased from the grid, the program has reduced fuel used at central generating stations, for a net decrease statewide due to greater efficiency of the DG/CHP systems at sites where imported fuel is used. The fuel avoided at the central generating plant is determined from the electricity generated by the DG/CHP installations. Furthermore, at additional projects such as waste water treatment plants, electricity generation is powered fully or partially by digester gas produced on site. Such fuel switching achieves natural gas conservation above and beyond what is achieved through efficiency alone.

## 5.2. Progress Toward Goals

### 5.2.1. Public Benefit Power Transmission and Distribution Research

**Table 5.2. Public Benefit Power Transmission and Distribution Research Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Strategy and coordination meeting	Identification of priority R&D areas by spring 2006	<ul style="list-style-type: none"> <li>▪ Priority areas in two tracks — Policy and Technology — have been identified.</li> <li>▪ Policy aspects could include business strategies, regulatory issues, public policy, and advanced concepts.</li> <li>▪ Technology aspects could include monitoring and diagnostics, data processing and analysis, optimized visualization, secure communication, and improved control and system performance.</li> </ul>
Issue annual solicitations	Select and fund five or more projects and studies aimed at the priority R&D areas by fall 2006	Staff anticipate issuing solicitation PON 1102 in the first quarter of 2007. Current efforts are devoted to harmonizing concepts with the recently-launched M&V logic model.

**5.2.2. Clean Energy Infrastructure**

**Table 5.3. Clean Energy Infrastructure Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Education, Consumer Awareness and Market Development		Workshops held:
▪ New accredited training institutions	1	▪ 4 KidWind Teacher Training workshops
▪ New certification exams	1	▪ 2 small wind training
▪ Training workshops	5	▪ 1 NABCEP prep
Renewable Resource Applications		4 solicitations were issued
▪ Stakeholder workshops	2	▪ 2 focused on wind generation and wildlife interactions
▪ Competitive research solicitations	3	▪ 2 promote business expansion
Clean Energy Technology Manufacturing and Business Development		Contracts are being negotiated with 4 firms intending to manufacture clean energy products in New York .
▪ Companies expanding renewable business networks	5	0
▪ Companies expanding manufacturing	2	4

**5.2.3. Power Systems Product Development**

**Table 5.4. Power Systems Product Development Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Product development contracts awarded	10	N/A
New products commercially launched	1	N/A
Sales (cumulative \$)		N/A
Successful new product field tests and demonstrations	2	N/A
Projects successfully completing milestones	4	N/A
Assessments and studies of new technologies	3	N/A

Program Highlights

Thirty six proposals were received in response to PON 1042: Environmentally Preferred Power Systems Technologies, Energy Storage Demonstration, and Environmental Impact Assessments and Mitigation. This solicitation emphasized product development in renewable and environmentally preferred power

generation. Projects funded include: eight solar photovoltaic system projects; five fuel cell projects; five kinetic hydroelectric projects; eight wind and bio-mass generation projects; and three energy storage projects.

**5.2.4. DG-CHP Demonstration**

**Table 5.5. DG-CHP Demonstration Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Initiate DG-CHP incentive program	Develop and implement a CHP incentive program in cooperation with other DG-CHP programs	Staff are observing activity under NYSERDA's recently launched CHP subscription program using ConEd System Wide Program funds..
Issue annual solicitations and incentive offers	Fund up to 10 CHP demonstration projects with a cumulative capacity of 20 MW and with 10 MW downstate	PON 1043 was issued, and thirty-four proposals were received by the due date of August 22, 2006. Proposal review and selection are in process.
Technology transfer	Require performance monitoring of all demonstration projects and export data to the CHP website	Data for 21 projects are posted on <a href="http://chp.nyserda.org">http://chp.nyserda.org</a> .

Program Highlights

During the third quarter of 2006, NYSERDA staff continued to assess mechanisms for a DG-CHP incentive program which will complement the annual competitive solicitation. In addition to the acquisition of installed generating resources, the value of demonstrating model projects which can be replicated at a large number of sites in New York is of significant importance and will be an important component of program design.

**5.2.5. Demand Response and Innovative Rate Research**

**Table 5.6. Demand Response and Innovative Rate Research Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Increase small customer participation in wholesale and local demand response programs (MW)	33	Parametric studies were conducted to model the physical impacts of demand response programs.
Increase the number of multifamily apartment units participating in real-time and other time-sensitive electric rate pilots	500 apartment units	Structured conceptual development of an offering to be released in the fourth quarter of 2006..

Program Highlights

Time Sensitive Price Pilots, a time-based, behind-the-master-meter rate, is being implemented in New York City at three multifamily building sites containing 3,000 apartments. The current short-duration

shadow-bill trial will be followed by education and training pending acceptance of the new rate plan by renters and management.

**5.2.6. Environmental Monitoring, Evaluation, and Protection**

**Table 5.7. Environmental Monitoring, Evaluation, and Protection Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Develop detailed multi-year EMEP research plan with input from policymakers, scientists, and stakeholders	Complete EMEP research plan in year 1	One planning meeting has been held with the EMEP advisors, and several other major program advisory meetings are currently being planned for the next several months. NYSERDA has signed a contract with the New York Academy of Sciences to help develop the technical research plan.
Develop, contract, and manage research projects aimed at priority energy-related environmental research areas	Issue 1 solicitation for outreach and science-policy analysis in year 1 Issue 1 solicitation addressing priority research needs Contract 8 projects	Three contractors were selected for the EMEP Outreach and Technical Assistance PON.
Disseminate information	2	
Sponsor workshops, conferences, and seminars		
Provide web-based EMEP data and information	40,000 customer "visits," inquiries, and downloads from EMEP's web page	During this quarter, hits on EMEP web sites totaled more than 40,000 and downloads totaled more than 7,000
Publish NYSERDA research reports	5	1 research report and 1 executive summary were published
Publish peer-reviewed journal articles	15	
Provide briefings to decision makers	2	NYSERDA sponsored a meeting with policymakers concerning the effect of wind generation installations on wildlife.

**5.2.7. Industrial Process and Productivity Improvement**

**Table 5.8. Industrial Process and Productivity Improvement Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Issue annual solicitations	By fall 2006, contract for 6 to 10 demonstrations and feasibility studies of innovative technologies that save energy and improve productivity in the industrial sector	PON 998 was issued with two rounds of due dates (June 8 and October 5, 2006) with total funding of \$4 million. In round 1, NYSERDA selected 6 projects to receive SBC funding. Proposal review and project selection are in process for round 2.
Program metrics	Document realized energy efficiency, environmental, and economic benefits	Projects are being contracted with requirements for documentation of performance metrics. Projects have not been completed; therefore, metrics cannot be ascertained at this time.

Program Highlights

During the third quarter of 2006, NYSERDA solicited proposals under this category. Several projects have been selected for funding and additional proposals are under review.

### 5.2.8. Municipal Water and Wastewater Efficiency

**Table 5.9. Municipal Water and Wastewater Efficiency Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Issue annual solicitation	Select and fund 5 or more projects, provide assistance to a minimum of 5 municipal wastewater and water treatment facilities.	PON 1040 was issued and 17 proposals were received requesting \$3.9 million in NYSERDA funding. Several proposals were recommended for contracting, and contracts are being negotiated.
Technology transfer	Provide critical information on technologies and strategies that will optimize energy production and use at municipal wastewater and water treatment facilities. Provide information to 100 treatment facilities in New York.	A training session for the target sector was developed by the Electric Power Research Institute (EPRI), the New York Water Environment, and NYSERDA.

### 5.2.9. Next Generation and Emerging Technologies.

**Table 5.10. Next Generation and Emerging Technologies Program Goals achieved from July 1, 2006 through September 30, 2006**

Activity	First Year Goal through June 30, 2007	Achievements from July 1, 2006 through September 30, 2006
Discrete Building Technologies	<ul style="list-style-type: none"> <li>▪ 1 solicitation,</li> <li>▪ 5 product development projects</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fifteen proposals were received in response to PON 1031 <i>Advanced Sensors and Controls for Building and Industrial Applications</i>. Total available funding is \$1.5 million.</li> </ul>
Advanced Building Demonstrations	<ul style="list-style-type: none"> <li>▪ 1 solicitation,</li> <li>▪ 1 demonstration test bed</li> </ul>	<ul style="list-style-type: none"> <li>▪ Proposals in response to PON 1062 <i>Advanced Building Envelopes and Energy Systems</i> are due by October 18, 2006. Total funding available is \$1 million.</li> <li>▪ One proposal was funded for RFP 1032 <i>Reference Design Guide</i> with total funding of \$100,000.</li> </ul>
Daylighting Applications	<ul style="list-style-type: none"> <li>▪ 5-10 design assistance projects,</li> <li>▪ 1 daylighting implementation in buildings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Proposals submissions for PON 1079 <i>Daylight Technical Services, Training and Demonstrations</i> are due by November 13, 2006. Total available funding is \$675,000.</li> </ul>
Solar Thermal Applications	<ul style="list-style-type: none"> <li>▪ 1 solicitation,</li> <li>▪ 2 demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Submissions for PON 1085 <i>Solar Thermal Demonstrations</i> are due by February 5, 2007. Total available funding is \$500,000.</li> </ul>
Emerging Technologies	<ul style="list-style-type: none"> <li>▪ 1 solicitation,</li> <li>▪ 5 product development projects</li> </ul>	<ul style="list-style-type: none"> <li>▪ Three projects involving emerging hydrogen technologies were selected to be funded with SBC funds through PON 957 <i>Hydrogen Technology Development and Demonstration</i>.</li> </ul>

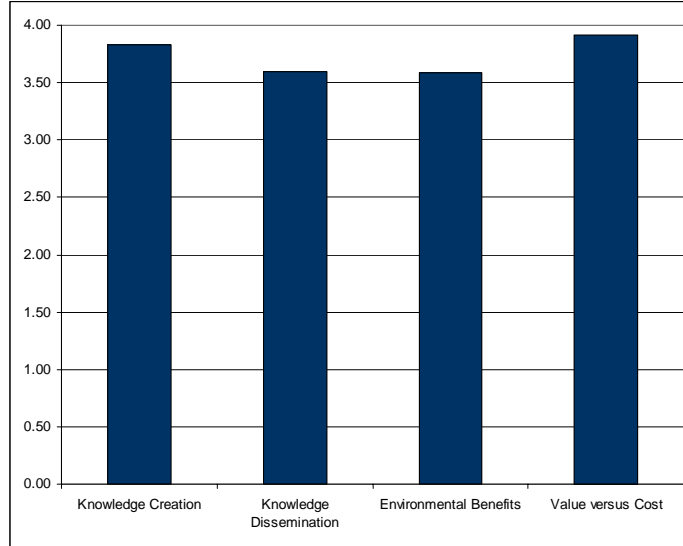
## 5.3. Summary of Completed Evaluation Activities

### 5.3.1. Evaluation Findings

In 2006, GDS Associates and Hescong Mahone Group, Inc., implemented a peer review assessment of two programs. A panel of experts reviewed the program accomplishments and rated the programs on various dimensions. The Environmental Monitoring, Evaluation, and Protection (EMEP) Program was assessed on four dimensions of effectiveness — knowledge creation, knowledge dissemination,

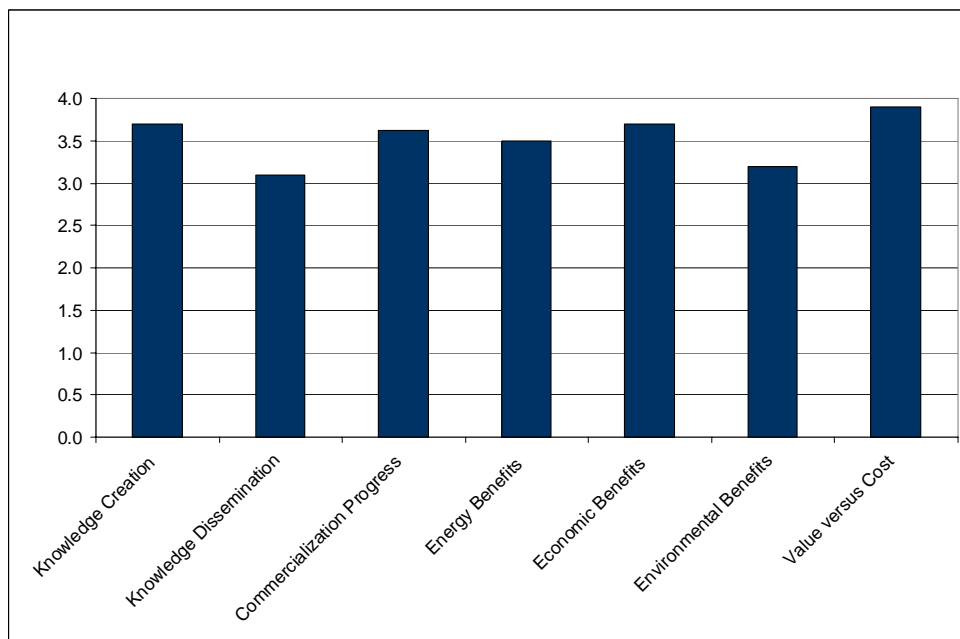
environmental benefits, and value versus cost. Shown in Figure 5.1, are the results of the ratings. The reviewer scores were very positive. The rating for all dimensions was above 3.5 (out of a maximum possible of 4.0). The overall score across all dimensions was 3.7.

**Figure 5.1. Mean Ratings for EMEP, by Outcome and Value versus Cost**



The DG-CHP Demonstration Program was assessed on five dimensions of effectiveness — knowledge creation, knowledge dissemination, commercialization progress, economic impact, energy impact, and environmental impact. The results of the ratings are in Figure 5.2. For the six outcomes, all scores are above 3.0 (our of a maximum possible score of 4.0). Four of the six equal or exceed 3.5, and the overall score across all outcomes is 3.6.

**Figure 5.2. Mean Ratings for CHP, by Outcome and Value versus Cost**



Reviewer was asked to provide comments to support or explain the scores they assigned to each effectiveness dimension as well as suggestions for improvement. Numerous comments were provided and all appeared to be thoughtful and well-informed. These comments and additional information about the peer review assessment are provided in the Appendix.



## **6 Program Evaluation Activities Summary**

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The following summarizes ongoing and planned activities by the evaluation assistance and specialty contractors. Results of completed activities are included throughout the report.

### **Market Characterization, Assessment, and Causality**

#### Non-Energy Impacts

- Refine non-energy impacts methodologies to increase sample sizes and improve response rates.
- Focus on direct query approach and supplying data to be used in benefit/cost analyses, but also improve and extend the conjoint analysis approach.
- Conduct primary research targeting one to two key sectors and/or measure categories.

#### Residential Retrospective Evaluation

- Analyze Consortium for Energy Efficiency (CEE) ENERGY STAR survey over sample data for New York, including comparing New York to national, high, and low publicity areas.
- Update ENERGY STAR products market share data, including attribution analysis and energy savings calculations.
- Compare incremental pricing of ENERGY STAR products to variations in features using regression models and data collected by the Energy Star Products and Marketing program.
- Study the lighting market in New York to determine market share of compact fluorescent lamps and fixtures for retailers, manufacturers (both participating and non-participating), and distributors.

#### Enhanced Commercial and Industrial Performance Program (CIPP) and Flex Tech FlexTech Technical Assistance Retrospective Evaluation

- Update attribution estimate.
- Collect measure adoption rate information.
- Probe for answers about remaining useful life of equipment through expanded freeridership questions.

#### Non-Participant Market Effects

- Study commercial and institutional upstream and midstream market actors.
- Re-examine prior analysis for non-participant spillover
- Incorporate elements to assess the state of the market and impacts (market effects) of the **New York Energy \$mart<sup>SM</sup>**.

### **Process Evaluation**

#### EmPower New York<sup>SM</sup> Program

- Full process evaluation

### High Performance New Buildings

- Review ideas for streamlining program delivery, overcoming barriers, and improving market penetration in New York City.
- Ensure that the new database will meet the needs of program and evaluation staff.
- Assess usefulness of data analysis tool.
- Determine best practices of other new construction programs and provide recommendations.

### Multifamily Building Performance Program

- Provide support to program managers regarding decisions about changes to the design and delivery of the former Assisted Multifamily Program.
- Interview former and new implementation contractors, program participants, and non-participants about their positive and negative views of the Assisted Multifamily Program and the Multifamily Building Performance Program.
- Provide actionable recommendations for program improvement.

### New York Energy \$mart<sup>SM</sup> Business Partners Program

- Provide support to program managers with respect to decisions about the design and delivery of the new program.
- Review program documents to ensure that lessons learned from previous process evaluations have been incorporated.

### Clean Energy Infrastructure Program

- Full process evaluation

### Evaluation Review

- Interview program staff about their responses to evaluation contractor recommendations and determined how they use the recommendations.
- Interview key program staff, NYSERDA Evaluation Team members, evaluation assistance contractors, and the SBC Advisory Group co-chairs regarding their experiences with the evaluation activities.
- Conduct a best-practices review of methods used by successful organizations and businesses to embrace and use evaluation recommendations to improve their operations.

### Program Theory and Logic

- Review all previously developed program logic models.
- Update, where necessary, logic models for programs that will continue under the third round of the **New York Energy \$mart<sup>SM</sup>** Program, *e.g.*, Peak Load Management, FlexTech Technical Assistance.
- Create logic models for new programs, *e.g.*, Multifamily Building Performance, Public Benefit Power Transmission and Distribution, and draw upon applicable information contained in logic models developed for existing programs.
- Review and update all sector-level logic models and the portfolio-wide logic model to ensure they are consistent with the System Benefits Charge Operating Plan and that they reflect the latest information gained from completed work.

### **Measurement and Verification**

- Conduct a full measurement and verification evaluation of the EmPower New York<sup>SM</sup> Program.
- Update M&V for the following programs: Enhanced Commercial and Industrial Performance, Home Performance with ENERGY STAR, Peak Load Management, **New York Energy \$mart<sup>SM</sup>** Business Partners, and FlexTech Technical Assistance.
- Review data reported by program staff and ensure quality of program databases.
- Update and expand deemed-savings database.



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## ***APPENDICES***

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- A. NYSERDA Research And Development Value Cost Study
  - B. System Benefits Charge Program Genealogy
  - C. EmPower New York<sup>SM</sup> Program Logic
  - D. Technical Analysis Program Logic
  - E. Communities and Education Program Logic
-