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NYSERDA

New York State Energy Research and Development Authority

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Reports

May 31, 2007

The Honorable Jaclyn A. Brilling
Secretary
New York State Public Service Commission
Three Empire State Plaza
Albany, New York 12223-1350

Case 05-M-0090, Order Continuing the System Benefits Charge (SBC) and the SBC-Funded Public Benefit Programs

Dear Secretary Brilling,

Pursuant to the December 21, 2005 Order approving the continuation of the System Benefits Charge Program in the above-referenced proceeding, enclosed please find an original and five copies of the quarterly report for the period ending March 31, 2007, prepared by the New York State Energy Research and Development Authority.

Sincerely,

Robert G. Callender
Vice President for Programs

Enclosures

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NEW YORK ENERGY $MART℠ PROGRAM

QUARTERLY EVALUATION AND STATUS REPORT

QUARTERLY REPORT TO THE PUBLIC SERVICE COMMISSION

QUARTER ENDING MARCH 31, 2007

FINAL REPORT

MAY 2007

NEW YORK STATE
ENERGY RESEARCH AND
DEVELOPMENT AUTHORITY

NYSERDA

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Introduction

This report is an update on the progress of the **New York Energy $mart**[SM] Public Benefits Program (Program). It contains evaluation results on Program activities through the quarter ending March 31, 2007. The last full report on progress (through December 31, 2006) was issued in March 2007.[1]

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[2] (the Commission) and has included three funding cycles.[3] 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.

1.1 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 staff and 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 evaluation functions covered by the specialty contractor teams are: measurement and verification (M&V); market characterization, assessment and causality (MCAC) evaluation; process evaluation; and program theory and logic modeling.[4]

The report is divided into the following sections:

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[1] New York State Energy Research and Development Authority, **New York Energy $mart**[SM] *Program Evaluation and Status Report, Final Report*, March 2007.

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

[3] 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] The evaluation functions are currently being reorganized and transitioned to the following major categories: impact evaluation; market characterization and assessment; and process assessment and evaluation management.

2

Portfolio-Level Reporting

2.1 Budget and Spending Status

This section presents the financial data for the **New York Energy $mart**[SM] Program from 1998 through March 31, 2007. Of the $1.87 billion, thirteen-year budget, $1.68 billion is allocated to four major program areas – Commercial/Industrial, Residential, Low-Income, and Research and Development (R&D) – and a general awareness campaign. The percentage of each program area budget that has been spent to date is: 43.5% for Commercial and Industrial, 61.3% for Residential, 35.7% for Low-Income, and 31.3% for Research and Development. The budgets and spending for these program areas are presented in Table 2-1 along with the costs for program administration, program evaluation, the Environmental Disclosure Program[1], and the New York State Cost Recovery Fee[2]. Table 2-2 shows the budget and spending numbers for the individual programs in the **New York Energy $mart**[SM] Program portfolio.

Table 2-1. Financial Status of New York Energy $mart[SM] Program Through March 31, 2007 ($ million)

	Total 13-Year Budget	Funds Spent			
		SBC I & SBC II [1,2]	SBC III [3]	Total Spent	% of Budget Spent
Commercial/Industrial	635.9	247.1	29.2	276.3	43.5%
Residential	302.1	165.4	19.9	185.3	61.3%
Low-Income	318.6	86.6	27.1	113.6	35.7%
Research and Development	392.8	105.9	17.2	123.1	31.3%
General Awareness[4] (Marketing)	31.0	15.9	2.0	17.9	57.7%
Program Areas Total	**$1,680.4**	**$620.9**	**$95.3**	**$716.2**	**42.6%**

[1] This program provides electricity commodity suppliers with data for informing customers about the fuel mix and associated environmental impacts of their electricity sources.

[2] The New York State Cost Recovery Fee is assessed for services to public authorities. The fee is determined by the New York State Division of Budget and imposed and collected by the Department of Taxation and Finance.

	Total 13-Year Budget	Funds Spent			
		SBC I & SBC II [1,2]	SBC III [3]	Total Spent	% of Budget Spent
Program Administration	128.2	59.8	8.8	68.6	53.5%
Metrics and Evaluation	34.4	14.5	1.8	16.3	47.4%
Environmental Disclosure	1.9	0.8	0.1	0.9	47.4%
NYS Cost Recovery Fee	25.4	9.2	1.8	11.0	43.3%
Other Costs Total	**$189.9**	**$84.3**	**$12.5**	**$96.8**	**51.0%**
Total New York Energy Smart℠	**$1,870.3**	**$705.2**	**$107.8**	**$813.0**	**43.5%**

[1] Included with SBC II funding an additional $12.6 million from interest and unspent utility funds (distribution: Residential: $11.5 million; Program Administration: $0.88 million; and Metrics & Evaluation: $0.25 million).
[2] SBC I: July 1, 1998 through June 30, 2001; SBC II: July 1, 2001 through June 30, 2006.
[3] SBC III: July 1, 2006 through June 30, 2011.
[4] General Awareness previously included in Residential Program Area.
Totals may not sum exactly due to rounding. Source: NYSERDA

Table 2-2. Individual Programs – Financial Status through March 31, 2007 ($ million)

Program	Budget	Funds Spent			
	Total Budget	SBC I & SBC II [1]	SBC III [2]	Total Funds Spent	% of Budget Spent
Commercial/Industrial					
Peak Load Management	82.7	35.1	4.6	39.7	48.0%
Enhanced Commercial/ Industrial Performance	246.6	100.3	6.9	107.2	43.5%
New York Energy $mart℠ Business Partners	41.3	19.7	2.0	21.7	52.5%
Loan Fund and Financing	21.0	12.3	3.2	15.5	73.8%
Energy Smart Focus	19.9	3.6	0.8	4.4	22.1%
High Performance New Buildings	150.8	53.1	9.5	62.6	41.5%
FlexTech Technical Assistance	66.5	20.4	1.7	22.1	33.2%
Other	7.1	2.6	0.4	3.0	42.3%
Total Commercial & Industrial	**$635.9**	**$247.1**	**$29.2**	**$276.3**	**43.5%**
Residential & Low Income					
Single Family Home Performance	107.5	47.4	7.7	55.1	51.2%
Multifamily Building Performance	37.8	18.3	4.7	23.0	60.8%
Market Support Residential	144.2	96.5	6.4	102.9	71.4%
Communities and Education	12.6	3.2	1.2	4.4	34.9%
Subtotal Residential	**$302.1**	**$165.4**	**$19.9**	**$185.3**	**61.3%**
Single Family Home Performance	81.5	27.7	7.7	35.4	43.4%
Multifamily Building Performance	151.2	35.5	12.4	47.9	31.7%
EmPower New York	58.3	8.8	6.4	15.2	26.1%
Buying Strategies & Energy Awareness	17.7	4.7	0.5	5.2	29.4%
Other	9.9	9.9	0.0	9.9	100.0%
Subtotal Low-Income	**$318.6**	**$86.6**	**$27.1**	**$113.6**	**35.7%**
Total Residential and Low Income	**$620.7**	**$252.0**	**$47.0**	**$298.9**	**48.2%**

Program	Budget	Funds Spent			
	Total Budget	SBC I & SBC II [1]	SBC III [2]	Total Funds Spent	% of Budget Spent
Research and Development					
Public Benefit Power Transmission and Distribution	10.0	0.0	0.0	0.0	0.0%
Clean Energy Infrastructure	77.5	19.0	7.8	26.8	34.6%
Distributed Energy Resources: Products & Demonstrations	146.6	31.9	5.6	37.5	25.6%
Demand Response and Innovative Research	10.0	0.0	0.0	0.0	0.0%
Electric Transportation	5.0	0.0	<0.1	<0.1	0.0%
Environmental, Monitoring, Evaluation, & Protection	39.0	17.7	1.6	19.3	49.5%
Industrial and Municipal Process Efficiency	15.0	0.0	0.0	0.0	0.0%
Next Generation and Emerging Technologies	47.8	18.3	1.7	20.0	41.8%
Wholesale Renewable Energy Market	36.1	16.5	0.5	17.0	47.1%
Other	5.8	2.5	0.1	2.6	44.8%
Total Research and Development	**$392.8**	**$105.9**	**$17.2**	**$123.1**	**31.3%**
General Awareness (Marketing)	31.0	15.9	2.0	17.9	57.7%
Total New York Energy $mart℠ Programs	**$1,680.4**	**$620.9**	**$95.3**	**$716.2**	**42.3%**

[1] Included with SBC II funding an additional $12.6 million from interest and unspent utility funds (distribution: Residential: $11.5 million; Program Administration: $0.88 million; and Metrics & Evaluation: $0.25 million).

[2] SBC I: July 1, 1998 through June 30, 2001; SBC II: July 1, 2001 through June 30, 2006.

[3] SBC III: July 1, 2006 through June 30, 2011.

Totals may not sum exactly due to rounding. Source: NYSERDA

2.2 Portfolio Level Findings

2.2.1 Progress Toward Goals

Overall, the **New York Energy $mart℠** programs are performing well toward their one-year goals[3] in the areas of energy savings, demand reduction, and other key metrics. This section discusses general progress toward these goals, but Sections 4, 5, and 6 contain more detail on progress toward each specific goal. In summary:

- The Commercial/Industrial (C/I) programs have collectively added approximately 286 GWh of electricity savings over the past nine months. The majority of programs are progressing well toward their one-year electricity savings goals.

- Two Commercial/Industrial programs have already exceeded their one-year peak demand reduction goals. A few other C/I programs have nearly reached their goals in this area. Two remaining C/I programs are showing slower progress. However, three more months remain in the first year, during which summer peak demand reduction efforts are expected to increase.

[3] One-year goals were specified in the *System Benefits Charge Proposed Plan for New York Energy $mart℠ Programs (2006-2011)*, March 2, 2006. These goals were set at the program level, and included energy savings, demand reductions and other important metrics. The one-year goals cover the time period from July 1, 2006 through June 30, 2007. Five-year goals were also set and will be tracked in future reporting.

- Within the C/I program area, twelve different one-year goals have been set for metrics other than energy and peak demand savings. These metrics capture progress in key areas such as the number of customers served, allies participating, and dollars leveraged. The programs are progressing well on the majority (seven) of these twelve goals, and several goals have already been exceeded.

- While some of the Residential and Low-Income programs are still working toward their one-year electricity savings goals, the portfolio of Residential and Low-Income programs has added approximately 126 GWh in the past nine months. This is largely due to the addition of about 100 GWh from CFL and appliance installations in 2006, which was estimated through a recent market study by NYSERDA's evaluation contractors.

- Twenty-six near-terms goals have been set for important non-energy metrics in the Residential and Low-Income area, including the number of customers participating, outreach efforts and people affected, and dollars leveraged. With regard to these non-energy related goals, the Residential and Low-Income programs are performing well. Performance on about half of the goals is at or above expected levels three quarters into the first year. Several goals have already been met or exceeded.

- More than 30 near-term non-energy goals have been set for the Research & Development (R&D) portfolio. These goals address important metrics such as solicitations, projects, information dissemination, co-funding, and technology transfer. Overall, the R&D portfolio is performing well in terms of these non-energy goals.

Beyond the one-year goals, programs are also making excellent progress toward the following overarching public policy goals.

- Goal 1: 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.

  - Collectively, the **New York Energy $mart**[SM] programs are saving more than 2,800 GWh annually.

  - Almost 1,100 MW of peak demand reduction has been installed, including more than 560 MW from permanent measures and 530 MW from curtailable measures.

  - More than 100 GWh of renewable energy generation is generated annually.

- Goal 2: 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.

  - The **New York Energy $mart**[SM] programs are saving customers more than $430 million annually on their energy bills.

  - To date, 65,900 low-income households have been served. On average their energy bills have been reduced by $195 per year.

  - The **New York Energy $mart**[SM] Portfolio has achieved a benefit-cost ratio of 2.1 under the most conservative Total Market Effects Test scenario.

- Goal 3: 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.

  - The annual reduction of emissions from the **New York Energy $mart**[SM] Program energy savings is more than 2,400 tons of nitrogen oxide, 4,400 tons of sulfur dioxide, and 1.9 million tons of carbon dioxide.

  - Three contractors were recently selected to provide outreach and technical assistance under the Environmental Monitoring, Evaluation and Protection (EMEP) Program. These contractors will help NYSERDA to provide policy-makers with scientifically credible and objective information on the impacts of pollution associated with electricity generation. This will assist in developing cost-effective and equitable policies to protect public health and the environment in New York.

- Goal 4: 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 **New York Energy $mart**[SM] programs have led to the creation or retention of approximately 3,700 jobs.

  Over the past nine months, six contracts have been signed to expand renewable energy businesses (four contracts) and manufacture clean energy generation technologies (two contracts) in New York State.

2.2.2 Summary of Program Benefits

Table 2-3 shows the cumulative **New York Energy $mart**[SM] Program benefits through March 31, 2007, and through the last three calendar years. Cumulative annual electricity savings have reached more than 2,800 GWh. Peak demand reduction efforts have led to a total reduction of 1,095 MW which is split almost evenly between permanent and curtailable demand reductions. Renewable energy generation from the **New York Energy $mart**[SM] Program now amounts to 106 GWh. Additional metrics are summarized in Table 2-3.

Table 2-3. Cumulative Program Benefits from Installed Measures

Benefits	Through Year-End 2004	Through Year-End 2005	Through Year-End 2006	Through March 31, 2007[3]
Electricity Savings from Energy Efficiency and On-Site Generation (Annual GWh)	1,400	1,950	2,360	2,800
Peak Demand Reduction (MW)	860	1,040	1,113	1,095
Permanent Measures (MW)	325	445	495	562
Curtailable[1]	535	595	618	533
Annual Energy Bill Savings to Participating Customers ($ Million)	$195	$275	$340	$438
Net fuel savings (Annual MMBtu)	2,600,000	4,000,000	4,049,000	4,565,000

Benefits	Through Year-End 2004	Through Year-End 2005	Through Year-End 2006	Through March 31, 2007[3]
Renewable Energy Generation (Annual GWh)	102	103	105	106
Jobs Created and Retained per Year[2]	2,500	3,100	3,700	3,700
NO_x Emissions Reductions (Annual Tons)	1,280	1,750	2,060	2,440
SO_2 Emissions Reductions (Annual Tons)	2,320	3,170	3,800	4,470
CO_2 Emissions Reductions (Annual Tons)	1,000,000	1,400,000	1,600,000	1,900,000
Equivalent number of cars removed from NY roadways.	200,000	275,000	320,000	380,000

[1] Curtailable MW have decreased due to a reassessment of the impact of the Enabling Technologies program. MWs enabled under the SBC2 program Enabling Technologies for Price Responsive Load were not required to persist beyond the period of the contract. As such, the available MWs have steadily declined since the program's close.

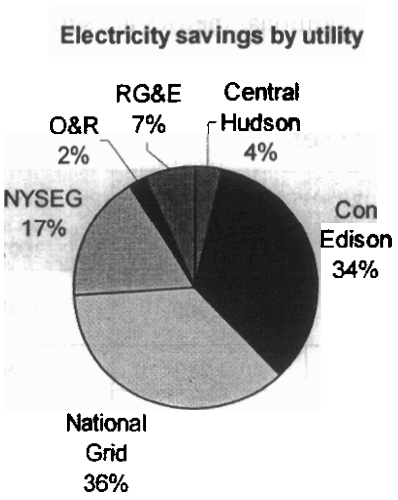
[2] Figures in this row represent the average number of jobs created and retained through year end. Results from 2004 and 2005 have been restated based on new analysis conducted in 2006.

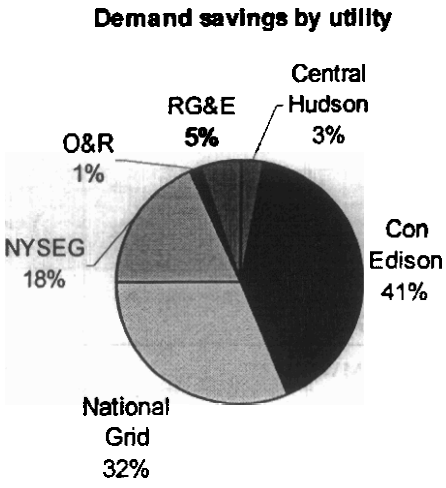
[3] Due to the addition of 2005 and 2006 CFL energy savings and 2006 appliance savings from the ENERGY STAR Products program the electricity savings and demand reductions for 1st quarter 2007 show a significant increase from year-end 2006. Year-end savings for 2005 and 2006 were not back-adjusted to reflect these additional savings. The gains in savings also impact bill savings, gas and oil savings and emissions reductions.

Geographic Distribution of Energy Savings and Peak Demand Reductions

Figure 2-1 shows the distribution of electricity savings and peak demand reduction by utility service area. The ConEdison and National Grid utility service areas are accruing the largest portion of both electricity and peak demand savings, followed by the NYSEG service area.

Figure 2-1. Net Electricity Savings and Peak Demand Reduction[4] by Utility Territory





[4] Both permanent and curtailable megawatt reductions were included.

2.3 Solicitations Update

Table 2-4 lists Requests for Proposals (RFPs) and Program Opportunity Notices (PONs) that were released during the first quarter of 2007. Only new solicitations released during the first three months of 2007 are included here. Additional solicitations released prior to the first quarter of 2007 could still be open. One noteworthy solicitation revision was made in February 2007 to add combined heat and power incentives to the Enhanced Commercial/Industrial Performance Program (PON 1101).

Table 2-4. Solicitations Issued in First Quarter 2007

Solicitation Number	Solicitation Name	Solicitation Release Date	Solicitation Closing Date
R&D Program Area			
PON 1115	Clean Energy Technology Manufacturing Incentive Program	1/08/07	3/1/07
PON 1115A	Clean Energy Technology Manufacturing Incentive Program	1/08/07	8/21/07
PON 1115B	Clean Energy Technology Manufacturing Incentive Program	1/08/07	1/23/08
PON 1118	Environmentally Preferred Power Systems Technologies	1/22/07	4/25/07
PON 1118A	Environmentally Preferred Power Systems Technologies	1/22/07	10/17/07
RFP 1038	Post-Construction Wildlife Monitoring at Wind Facilities	1/15/07	2/13/07
PON 1102	Transmission and Distribution Program	2/19/07	5/1/07
PON 1102A	Transmission and Distribution Program	2/19/07	11/1/07
PON 1130	Industrial Research, Development, and Demonstration	2/5/07	3/28/07
PON 1130A	Industrial Research, Development, and Demonstration	2/5/07	7/16/07
PON 1130B	Industrial Research, Development, and Demonstration	2/5/07	11/8/07
PON 1099	Advanced Clean-up & Emission Control Technologies for Biogas-fueled DG Systems	2/26/07	4/16/07
PON 1143	Advanced Transportation Technologies	2/26/07	4/30/07
PON 1143A	Advanced Transportation Technologies	2/26/07	9/27/07
Commercial and Industrial Program Area			
RFP 1053	New York Energy $mart Business Partners	1/29/07	3/13/07
RFP 1127	Downstate Marketing Program	1/29/07	3/5/07
RFP 1056	New York Energy $mart Business Partners (HVAC)	3/26/07	5/24/07
Residential Program Area			
RFP 1009	Implementation Contractor for Energy Smart Students Program	1/8/07	2/20/07
RFP 1117	NYSERDA Hotline and Fulfillment	1/8/07	2/6/07
RFP 1142	New York Energy $mart Communities Program Southern Tier Region	2/26/07	5/2/07

3

Cost-Effectiveness Analysis

3.1 Introduction

This section presents the results of the cost-effectiveness analysis of the **New York Energy $mart**[SM] Program from program inception to year-end 2006.[1] The analysis is based on spent funds and installed projects, and does not consider projects that are encumbered and in progress. As in prior years' analyses, a societal discount rate of 3% was used. A major difference in this year's analysis is that prior years' costs and benefits were converted to 2006 dollars using the Consumer Price Index to adjust for inflation. In the past years' analyses, all measures were assumed to be installed in a single year, regardless of when the installations occurred. Program activities during the period of 1999 to 2003 were combined and were treated as occurring in 2003, the first year of the analysis. The focal year of analysis was 2006. Thus benefits and costs from years prior to 2006 were compounded using the societal discount rate to represent costs and savings as of 2006. As in prior years, programs in the R&D area are not included in this analysis.

Two tests were used in calculating the benefit/cost ratios:

1. Total Market Effects Test (TMET) compares quantifiable life-cycle benefits from program participants and spillover effects against NYSERDA and customer costs incurred in achieving the benefits.

2. Program-Efficiency Test (PET) compares the quantifiable life-cycle benefits used in the TMET test against only NYSERDA's costs. This test is also known as the program administrator test.

For each test, four scenarios were examined. The scenarios differ in the treatment of benefits. Scenario 1 includes only resource benefits. Scenario 2 adds market price effects to Scenario 1 benefits. Scenario 3 adds non-energy impacts to Scenario 2 benefits. Scenario 4 adds macroeconomic impacts to Scenario 3 benefits. These benefits are described below:

1. Resource benefits include benefits associated with reduced electricity generation and capacity (avoided costs), reduced use of natural gas and other fossil fuels valued at wholesale prices, and reduced water usage.
2. Energy and capacity market price effects, include benefits accruing to electricity customers from lower cost of energy and capacity. The energy market price effect results from lower average market clearing prices for electricity that result from kilowatt-hours saved by participants in the

[1] The Portfolio Screening Tool, version PST 2.05.02, developed by Optimal Energy, Inc., was used to conduct the analysis

New York Energy $mart[SM] Program. Lower prices result because the most expensive generating units are backed out due to lower energy requirements. The effect was estimated to be 0.0115 cents per kWh of program savings. The capacity market price effect results from reduction in the price of capacity due to reduced demand. The effect, derived from the New York Independent System Operator's Demand Curve, was estimated to be approximately $600 per kW-year for each kW reduction in the Con Edison Service area. For "Rest of State," the capacity cost reduction was estimated to be approximately $180 per kW-year for each kW reduction.[2]

3. Non-energy impact, include monetized values for benefits such as comfort, safety, and productivity.

4. Macroeconomic value-added includes benefits resulting primarily from lower energy bills and consumer spending of these bill savings. Value-added includes labor income (employee compensation and proprietor income) plus property income (interest, rental income, royalties, dividends, and profits), and indirect business taxes (primarily sales and excise taxes).

3.2 Summary of Results

Cumulative costs and benefits are presented in Table 3-1. The sum of program and participant costs totals approximately $2.0 billion. This year's analysis included full measure installation costs, resulting in lower benefit/cost ratios for the portfolio and some programs. Refinements to measure costs and installation costs are ongoing. The sum of resource benefits, market price effects, and non-energy impacts totals approximately $11.5 billion. The avoided wholesale costs used to estimate the resource benefits are presented in tables B-1, B-2, and B-3 in Appendix B of this document.

Table 3-1. Cumulative Benefits and Costs through Year-End 2006[3]

	Millions 2006$
Program Costs	$462
Participant Costs	$1,583
Total Costs	**$2,045**
Resource Benefits	$4,379
Market Price Effect	$1,699
Non-Energy Impacts	$2,966
Macroeconomic Effect	$2,450
Total Benefits	**$11,494**

[2] The methods used to calculate the market price effect, non-energy impacts, and macroeconomic impacts are described in the annual **New York Energy$mart**[SM] Program Evaluation and Status Report, March 31, 2007.

[3] The non-energy impacts and the macroeconomic impacts shown here are substantially higher than those shown in the annual **New York Energy$mart**[SM] Program Evaluation and Status Report, March 31, 2007. These discrepancies are due to errors in the original analysis. The slight discrepancy in the resource benefits is due to minor adjustments to savings. The relatively large change in participant costs is due to higher cost estimates for the Peak Load Management Program permanent measures. These changes are reflected in the benefit-cost ratios shown in Table 3-2. The ratios for Scenarios 3 and 4 differ from those shown in the March 2007 annual report.

Shown in Table 3-2 are the TMET and PET benefit/cost (B/C) ratios for the four scenarios. The TMET ratios range from 2.1 to 5.6. The PET ratios range from 9.5 to 24.9.

Table 3-2. B-C Ratios for the New York Energy $mart[SM] Portfolio

	Resource Benefits (Scenario 1)	Plus Market Price Effects (Scenario 2)	Plus Non-Energy Impacts (Scenario 3)	Plus Macroeconomic Impacts (Scenario 4)
Total Market Effects Test	2.1	3.0	4.4	5.6
Program Efficiency Test	9.5	13.2	19.6	24.9

Shown in Table 3-3 are the resource benefits, market price effects, and non-energy benefits for each program. Unlike in prior years, the **New York Energy Smart[SM]** Loan Fund was excluded, primarily because a large portion of the benefits are captured by other programs (*e.g.*, Home Performance with ENERGY STAR, Enhanced Commercial/Industrial Performance Program (ECIPP), High Performance Buildings, Peak Load Management, and Flex Tech Technical Assistance). Accomplishments of the Loan Fund are presented in Section 4.6 of this report.

Table 3-3. Present Value of Benefits for Measures Installed Through Year-End 2006 (Millions 2006$)

	Resource Benefits			Market Price Effect	Non-Energy Impacts
	Energy and Capacity	Natural Gas and Oil	Water		
ECIPP	$1,162	$0.5	-	$148	$923
High Performance Buildings	$332	-	-	$50	$229
Peak Load Management - Curtailable Load	**$201**	-	-	**$803**	**$27a**
Peak Load Management - Permanent	$224			$114	
Flex Tech Technical Assistance	**$961**	**$388**	-	**$132**	**$1,000**
Business Partners	$50	-	-	$9	$42
Market Support	$605	$63	$53	$429	$525
Small Homes	$20	$204	$1.1	$2.5	$151
Multifamily Performance Program	$55	$25		$9	$44
Empower	$24	$10	$1	$2	$25
Total	**$3,635**	**$690**	**$54**	**$1,699**	**$2,966**

Note: Wholesale avoided costs were used to calculate the resource benefits shown in this table. Water savings were valued at $0.003 per gallon based on analysis of 2004 residential water rates from seven New York water authorities.

a This value represents the insurance value provided by program participants enrolled in the New York ISO Emergency Demand Response Program.

Shown in Table 3-4 are the benefit/cost ratios for NYSERDA's C/I programs. The TMET Scenario 1 ratios range from 1.9 to 3.4. The TMET Scenario 2 ratios range from 2.0 to 11.3. The TMET Scenario 3 ratios range from 3.7 to 11.6.

Table 3-4. Benefit/Cost Ratios of Commercial/Industrial Programs

	ECIPP	High Performance Buildings	Peak Load Management Program (Permanent Measures)	Peak Load Management Program (Curtailable Load)	Technical Assistance	Business Partners
Total Resource Costs	$609.6	$99.1	$157.9	$91.0	$434.5	$19.1
Program Costs	$124.8	$49.1	$20.4	$19.6	$26.2	$15.4
Present Value of Resource Benefits	$1,162.9	$332.5	$201.3	$224.0	$1,348.4	$50.1
Present Value of Market Price Effect	$148.1	$50.6	$113.8	$802.7	$131.7	$9.0
Present Value of Non-Energy Impacts	$922.8	$229.0		$27.0	$1,000.0	$42.0
Scenario 1 TMET	1.9	3.4	1.3	2.5	3.1	2.6
Scenario 2 TMET	2.2	3.9	2.0	11.3	3.4	3.1
Scenario 3 TMET	3.7	6.2		11.6	5.7	5.3
Scenario 1 PET	9.3	6.8	9.9	11.4	51.5	3.3
Scenario 2 PET	10.5	7.8	15.4	52.4	56.5	3.8
Scenario 3 PET	17.9	12.5	15.4	53.8	94.7	6.6

All currency values are in million 2006 dollars.

Shown in Table 3-5 are the benefit/cost ratios for the residential and low-income programs. The TMET Scenario 1 ratios range from 0.8 to 2.4. The TMET Scenario 2 ratios range from 0.7 to 3.4. The TMET Scenario 3 ratios range from 1.1 to 5.0.

Table 3-5. Benefit/Cost Ratios of Residential and Low-Income Programs

	ENERGY STAR Market Support	ENERGY STAR Small Homes	Multifamily Building Performance Program	Empower
Total Resource Costs	$298.6	$148.8	$102.0	$22.6
Program Costs	$41.3	$60.1	$45.4	$22.6
Present Value of Resource Benefits	$720.4	$177.2	$81.7	$34.9
Present Value of Market Price Effect	$429.0	$1.6	$9.2	$2.0
Present Value of Non-Energy Impacts	$524.5	$120.6	$44.0	$25.3
Scenario 1 TMET	2.4	1.2	0.8	1.5
Scenario 2 TMET	3.8	1.2	0.9	1.6
Scenario 3 TMET	5.6	2.0	1.3	2.8
Scenario 1 PET	17.4	2.9	1.8	1.5
Scenario 2 PET	27.8	3.0	2.0	1.6
Scenario 3 PET	40.5	5.0	2.9	2.8

Annualized participant bill savings and annualized customer costs are presented in Table 3-6. Participant bill savings were calculated using the retail rates for electricity and natural gas shown in Table B-4 in Appendix B. The present value of the bill savings was divided by the program life to obtain the annualized bill savings. The annualized costs were obtained by levelizing the participants' contribution toward the project costs. The bill savings-to-cost ratio and program life are shown for each program.

Table 3-6. Participant Bill Savings and Participant Costs (Millions 2006$)

	Annualized Bill Savings	Annualized Participant Contribution	Savings to Cost Ratio	Measure-Weighted Program Life
ECIPP	$100	$32	3.1	20.0
High Performance Buildings	$29	$3	8.5	20.0
Peak Load Reduction Program (Permanent Measures)	$23	$12	2.0	15.0a
Flex Tech Technical Assistance	$108	$27	4.0	20.1
Business Partners	$6	$0.3	19.2	13.5
Market Support	$101	$8	13.0	10.2b
ENERGY STAR Small Homes	$13	$8	1.6	25.9b
Multifamily Building Performance Program	$5	$4	1.5	22.8b
Empower	$3	$0	Not applicable	17.6b

a Estimated, awaiting verification of distribution of measure types.

b Weighted by electricity versus natural gas saving measures.

Shown in Table 3-7 is the cumulative annual electric energy avoided at the generator for each program for projects installed through year-end 2006. A line loss factor of 9.9% was applied to the savings at the plug.

Table 3-7. Cumulative Electric Energy Avoided at Generation (GWh) for Projects Installed Through 2006

Program		Cumulative Annual				Lifetime
		1999-2003	2004	2005	2006	
ECIPP		451.7	632.8	791.8	919.9	18,515
High Performance Buildings		96.1	147.9	168.5	275.1	5,478
Peak Load Management Program (PLMP) - permanent		40.9	73.4	106.2	129.7	1,946
Flex Tech Technical Assistance		403.5	573.7	662.4	766.7	15,388
Business Partners		11.6	26.9	37.3	66.7	802
Market Support		215.5	265.5	492.1	716.1	7,200
ENERGY STAR Small Homes	Total ENERGY STAR Small Homes	7.3	13.1	18.9	26.1	427
	ENERGY STAR Labeled Homes	2.9	5.8	7.9	10.2	135
	Home Performance	4.4	7.3	11.0	15.9	292
Multifamily Building Performance Program (MBPP)	Total MBPP	16.7	19.0	36.0	42.0	877
	Assisted Multifamily	2.9	4.7	20.9	25.4	591
	Comprehensive Energy Management (CEM)	1.2	1.7	2.5	4.0	59
	Direct Installation	12.6	12.6	12.6	12.6	227
Empower		-	-	14.6	30.7	295

Shown in Table 3-8 is the cumulative electric capacity avoided at the generator for each program for projects installed through year-end 2006. A line loss factor of 9.9% was applied to the savings at the plug.

Table 3-8. Cumulative Peak MW Avoided at Generation for Projects Installed Through 2006

Program		1999-2003	2004	2005	2006
Enhanced CIPP		77	107	134	156
High Performance Buildings		21	32	36	59
Peak Load Management Program	PLMP Total	454	536	608	593
	Demand Response[1]	389	456	510	533
	Permanent	19	34	49	60
Flex Tech Technical Assistance		75	107	123	143
Business Partners		2.4	6.1	8.6	15
Market Support		257	266	306	350
ENERGY STAR Small Homes	ENERGY STAR Small Homes Total	1.0	1.7	2.5	3.6
	ENERGY STAR Labeled Homes	0.3	0.6	0.8	1.2
	ENERGY STAR Home Performance	0.7	1.1	1.7	2.4
Multifamily Building Performance Program	MBPP Total	2.7	3.1	4.9	6.1
	Assisted Multifamily	0.3	0.5	2.0	2.5
	CEM	0.6	0.8	1.1	1.8
	Direct Installation	1.8	1.8	1.8	1.8
Empower				1.8	3.6

[1] Includes Enabling Technologies Program

Shown in Table 3-9 is the annual spending for implementation associated with installed measures. In addition to these costs, administration and evaluation expenses were allocated to all programs as a percentage of the sum of incentives and implementation spending. A 7% factor was applied to program years 1999-2003 and 9% thereafter, in the benefit-cost calculations.

Table 3-9. Annual Spending on Implementation for Installed Measures (Millions, Nominal$)

Program Name		1999-2003	2004	2005	2006
ECIPP	ECIPP Total	$5.2	$1.7	$0.6	$1.5
	CIPP	$1.3	$1.4	$0.5	$1.4
	SEC	$3.9	$0.26	$0.07	$0.055
High Performance Buildings		$2.1	$2.3	$3.5	$1.9
Peak Load Reduction Program		$0.7	$0.16	$.26	$0.09
Flex Tech Technical Assistance		$0.30	-	$0.10	-
Business Partners	Business Partners Total	$4.4	$4.1	$1.3	$1.6
	Hospitality Lighting	-	-	-	$0.15
	Motors	$0.19	$2.2	$0.43	$0.43
	SCLP	$4.2	$1.9	$0.91	$1.0
Market Support	Market Support Total	$9.1	$5.5	$2.5	$4.5
	ENERGY STAR Products	$2.0	$4.0	$0.80	$2.2
	ENERGY STAR Products midstream incentives	$1.8	$1.1	$1.7	$2.3
	Keep Cool	$4.9	-	-	-
	Bulk Purchase	$0.41	-	-	-
ENERGY STAR Small Homes	ENERGY STAR Small Homes Total	$14.2	$12.6	$3.8	$15.9
	ENERGY STAR Labeled Homes	$6.3	$4.4	$3.1	$2.1
	ENERGY STAR Home Performance	$7.9	$8.2	$0.7	$13.8
Multifamily Building Performance Program	MBPP Total	$3.5	$0.9	$1.8	$0.3
	Assisted Multifamily Program (AMP)	$0.22	$0.19	$1.6	$0.10
	Comprehensive Energy Management (CEM)	$1.9	$0.73	$0.16	$0.16
	Direct Installation	$1.4	-	-	-
Empower		-	-	$3.0	$2.5

Table 3-10 shows the proportion of energy savings that were achieved downstate and upstate for each program. This information was obtained from program tracking reports, and in most cases the downstate area is comprised of the Consolidated Edison service territory. The proportion of savings was used to determine the avoided energy and capacity costs for the downstate and upstate areas.

Table 3-10. Percent of Energy Savings Downstate and Upstate as of 2006

Program Name		% of Energy Savings Downstate[1]	% of Energy Savings Upstate[1]
ECIPP	CIPP	31%	69%
	Smart Equipment Choices (SEC)	14%	86%
High Performance Buildings		22%	78%
Peak Load Reduction Program	Peak Load Demand Response (includes Enabling Technologies)	60%	40%
	Peak Load (Permanent)	92%	8%
Flex Tech Technical Assistance		27%	73%
Business Partners[2]	Hospitality Lighting	2%	98%
	Motors	12%	88%
	Small Commercial Lighting Program (SCLP)	15%	85%
ENERGY STAR Market Support	Products	55%	45%
	Keep Cool	76%	24%
	Bulk Purchase	71%	29%
ENERGY STAR Small Homes	ENERGY STAR Labeled Homes	9%	91%
	Home Performance	2%	98%
Multifamily Buildings Program	Assisted Multifamily Program (AMP)	38%	62%
	Comprehensive Energy Management (CEM)	100%	0%
	Direct Installation	93%	7%
Empower	Weatherization Network Initiative (WNI)	31%	69%
	Empower[3]	2%	98%

[1] Proportions are based on installed projects only, and may not be representative of the proportions for encumbered projects that are in progress.

[2] The HVAC initiative, which is part of the Business Partners Program, was not included in the current analysis.

[3] Empower began in the National Grid and NYSEG service areas and was expanded statewide during the second quarter of 2006.

Shown in Table 3-11 are the number of units installed through the programs in each of the past three years and prior, before adjusting for freeridership and spillover. The unit of measure varies by program as shown in the "Unit of Measure" column of Table 3-11.

Table 3-11. Number of Units Installed per Year (Gross)

Program		Unit of Measure	1999-2003	2004	2005	2006
ECIPP	C/I Performance Program	Peak MW	58.5	26.2	22.7	13.6
	Smart Equipment Choices	Peak MW	15.2	0.9	1.5	6.3
High Performance Buildings		Peak MW	15.4	8.3	3.3	16.9
Peak Load Management Program[1]	Demand Response (EDRP)[2]	Average MW Response[4]	155.5	2.7	0.0	1.9
	Demand Response (ICAP/SCR)[3]	Average MW Response[5]	198.8	58.4	48.6	19.5
	Peak Load Permanent	Peak MW	15.3	12.2	12.3	13.0
Flex Tech Technical Assistance		Peak MW	60.0	25.3	13.2	15.5
Business Partners[6]	Hospitality Lighting	Peak MW	-	-	-	0.9
	Motors	Peak MW	1.4	0.4	0.0	-
	Small Commercial Lighting	Peak MW	1.0	2.7	2.1	2.6
ES Small Homes	ENERGY STAR Labeled Homes	Number of homes (Thousands)	2.4	2.4	1.8	2.0
	Home Performance	Number of homes (Thousands)	2.6	1.4	2.1	2.6
	Assisted Home Performance	Number of homes (Thousands)	1.3	1.2	1.1	1.6
Multifamily Building Performance	AMP	Number of apartment units (Thousands)	1.6	1.0	8.7	2.4
	CEM	Number of meters (Thousands)	6.3	2.5	4.2	7.2
Empower	Weatherization Network Initiative	Peak MW			0.8	0.4
	Empower	Peak MW			0.8	1.2

[1] Performance rates of 0.9 and 0.65 were applied to ICAP/SCR and EDRP, respectively.

[2] Emergency Demand Response Program.

[3] Installed Capacity/Special Case Resources.

[4] Resources enabled for the EDRP were reduced by 35% to reflect a 65% long-run average performance rate.

[5] Resources enabled for the ICAP/SCR Program were reduced by 10% to reflect a 90% long-run average performance rate.

[6] The HVAC initiative, which is part of the Business Partners Program, was not included in the current analysis.

The number of units installed for the appliances and lighting program are shown separately in Table 3-12.

Table 3-12. Number of Appliances and Lighting Measures Installed Through the ENERGY STAR Appliances and Lighting Program

	1999-2003	2004	2005	2006
Appliances				
Air Cleaner	n/a	n/a	11,482	4,714
Ceiling Fan	n/a	12,672	5,630	9,333
Clothes Washer	85,536	44,440	36,969	42,403
Dehumidifiers	n/a	11,264	17,574	14,953
Dishwasher	71,720	6,952	20,511	0
Freezers	n/a	28,072	8,342	7,601
Refrigerator	79,376	38,984	109,005	116,016
Room AC	195,976	101,112	198,367	243,690
Through-the-wall room AC	n/a	88	33,967	59,682
Lighting				
CFLs	589,776	217,712	2,654,672	2,931,568
Lighting Fixtures (Total) [1]	589,776	217,712	2,654,672	2,931,568

n/a – measures not tracked.

[1] Includes ceiling lighting, celing fans with lights, outdoor lighting, suspended lights, torchieres, under-cabinet lighting, and wall lighting.

Table 3-13 presents the estimated project cost for each program. Costs were estimated using cumulative measure costs through year-end 2006 and dividing this value by either cumulative kW savings or other units of measure such as number of homes or number of meters. This per unit cost was assumed to be the cost in 2006 and the measure costs for prior years were adjusted for inflation. Also shown in Table 3-13 are the average incentives per unit of measure obtained by dividing the cumulative incentives paid by the cumulative number of KW (or other unit of measure). Measure lives used in the analysis are shown in Table B-5 in Appendix B.

Table 3-13. Average Project Cost and Incentives

Program		Unit of Measure	Average Project Cost per Unit (Nominal 2006$)	Average Project Incentives per Unit (Nominal 2006$)
ECIPP	CIPP	Per KW	$4,086a	$732
	SEC	Per KW	$686b	$349
High Performance Buildings		Per KW	$1,449b	$725
Peak Load Reduction Program	Demand Response (EDRP)[1]	Per KW Response	$234a ($27 for Enabling Technologies)	$41 ($9 for Enabling Technologies)
	Demand Response (ICAP/SCR)[2]	Per KW Response	$169a ($20 for Enabling Technologies)	$41 ($9 for Enabling Technologies)
	Peak Load Permanent	Per KW	$2,398a,c	$342
Flex Tech Technical Assistance		Per KW	$2,947a	$185
Business Partners	Hospitality Lighting	Per KW	$397b	$133
	Motors	Per KW	$1,214b	$324
	SCLP	Per KW	$255b	$72
Market Support	Keep Cool	Per ACs	$303b	$42 (blended)
	Bulk Purchase	Per KW	$1,700b	$844
	Appliances and Lighting	Per KW	$2,070b	$12
ES Small Homes	ES Labeled Homes	Per Home	$2,000b	$152
	ES Home Performance	Per Home	$7,131a	$1,122
	Assisted Home Performance	Per Home	$7,625a	$3,813
Multifamily Building Performance	Assisted Multifamily Program (AMP)	Per Apartment	$4,900a	$988
	Comprehensive Energy Management (CEM)	Per Meter	$780a	$474
Empower	Weatherization Network Initiative (WNI)	Per KW	3,003a	$3,003
	Empower	Per KW	5,479a	$5,479

a Project cost includes installation costs.

b Incremental cost difference between standard efficiency and high-efficiency.

c This number was updated from $395 per KW used in the previous benefit/cost analysis

[1] Emergency Demand Response Program.

[2] Installed Capacity/Special Case Resources.

4

Commercial/Industrial Programs

4.1 Commercial/Industrial Evaluation Activities

4.1.1 Completed Evaluation Activities

Table 4-1 shows evaluation activities that have been completed on the Commercial/Industrial programs this quarter. Several studies have been completed, and results are included in Section 4.

Table 4-1. 1st Quarter 2007 C/I Program Completed Evaluation Activities

Program Name	Former Program Name (if applicable)	Theory & Logic	Measurement and Verification (M&V)	Market Characterization, Assessment and Causality (MCAC)	Process Evaluation
Peak Load Management	Peak Load Reduction Program (PLRP) Enabling Technology	-	Update	-	-
Enhanced Commercial and Industrial Performance Program	C/I Performance Program (CIPP) Smart Equipment Choices (SEC)	-	Update on CIPP	Non-Energy Impacts for CIPP	-
New York Energy Smart[SM] Business Partners Program	Premium-Efficiency Motors Commercial HVAC Small Commercial Lighting (SCLP)	-	Update on SCLP	Non-Energy Impacts for SCLP	-
New York Energy Smart[SM] Loan Fund and Financing	**New York Energy Smart**[SM] Loan Fund	-	-	-	-
New York Energy Smart[SM] Focus	Energy Smart Schools Program	-			

Program Name	Former Program Name (if applicable)	Theory & Logic	Measurement and Verification (M&V)	Market Characterization, Assessment and Causality (MCAC)	Process Evaluation
High Performance New Buildings	New Construction Program	-	-	-	-
Flex Tech Technical Assistance	Technical Assistance, FlexTech, & Energy Audit Programs	-	-	-	-

4.1.2 Evaluation Activities in Progress and Planned

Several evaluation activities are underway and are expected to be completed within the next quarter. These include:

- A Market Characterization, Assessment, and Causality evaluation study on non-participant market spillover in the Commercial/Industrial sector.
- Program Theory and Logic work on **New York Energy $mart^{SM}** Business Partners, Loan Fund and Financing Program, and Focus programs.

Currently, the new **New York Energy $mart^{SM}** program evaluation contractor teams are still developing plans for future evaluations to be conducted in the Commercial/Industrial sector. These plans will be designed in future reports.

4.2 Summary of C/I Evaluation Results

4.2.1 Progress Toward Non-Energy Goals

Within the C/I program area, twelve different one-year goals have been set for metrics other than energy and peak demand savings. These metrics capture progress in key areas such as the number of customers served, allies participating, and dollars leveraged. The programs are progressing well on the majority (seven) of these twelve goals. In fact, goals have already been achieved in the following areas:

- The Enhanced Commercial/Industrial Performance Program has leveraged $85 million in customer investments, surpassing its goal of $80 million;
- The Business Partners Program has signed up more than 730 partners, surpassing its goal of 300;
- The Loan Fund has leveraged $18.9 million in customer improvements, exceeding its goal of $12 million; and
- The High Performance Buildings Program has worked with more than 380 participating A&E firms, exceeding its goal of working with 180 firms.

On four of the eleven goals, achievements are generally in the 30 to 50% range, and progress will continue to be monitored through the end of the first year.

4.2.2 Energy, Peak Demand and Fuel Savings

Table 4-2 shows the electricity savings achieved by the Commercial/Industrial programs as well as progress toward the one-year goals that have been established for select programs. Table 4-3 shows peak demand savings and progress toward several program-specific goals in that area. Table 4-4 shows other fuel savings. Generally speaking, the programs are progressing well toward the goals that have been set for electricity and peak demand savings. Progress on all fronts will continue to be monitored through the end of the first year.

Table 4-2. C/I Program Cumulative Annual Electricity Savings through March 31, 2007 and Progress toward One-Year Goal

Program	Energy Savings (GWh)			
	Savings Achieved through		One-Year Goal through June 30, 2007	Progress Toward One-Year Goal (% achieved)
	June 30, 2006a	March 31, 2007		
Peak Load Management: Permanent	106.4a	127.8	19.0	113%
ConEdison	66.9a	87.1	9.0	225%
Enhanced Commercial and Industrial Performance Program	730.6	854.3	24.0	515%
ConEdison	224.1	231.6	n/a	n/a
Business Partners Program	54.1	62.2b	10.0	80%
ConEdison	4.3	7.6	n/a	n/a
Loan Fund and Financing	49.6	57.7	n/a	n/a
ConEdison	0.5	11.5	n/a	n/a
Focus Program	0	0	5.0	0%
ConEdison	0	0	n/a	n/a
High Performance New Buildings	223.2	276.5	35	152%
ConEdison	48.2	58.2	n/a	n/a
Flex Tech Technical Assistance	644.1	738.2	70	134%
ConEdison	115.2	199.3	n/a	n/a
Overlap Removed	**126.7**	**148.7**	**n/a**	**n/a**
ConEdison C/I Total	**459.2**	**595.4**	**n/a**	**n/a**
Statewide C/I Total	**1,681.3**	**1,967.9**	**n/a**	**n/a**

Note: n/a means not applicable (*i.e.*, a goal has not been set for this program).

a Savings reported previously included projects funded through the ConEdison Power Savings Partners Program. These savings have been removed to more accurately reflect accomplishments.

b Savings for the Commercial HVAC portion of the program have been reduced as of 4th Quarter 2006. This approach was taken due to the known short-term nature of savings from advanced diagnostics and commissioning, which were part of the program.

Table 4-3. C/I Program Cumulative Peak Demand Savings through March 31, 2007 and Progress toward One-Year Goal

Program	Peak Demand Reductions (MW)			
	Savings Achieved through		One-Year Goal through June 30, 2007	Progress Toward One-Year Goal (% achieved)
	June 30, 2006a	March 31, 2007		
Peak Load Management: Permanent	42.5a	51.5	13	69%
ConEdison	27.4a	35.5	8.0	101%
Peak Load Management: Callable	421.1a	423.9	53	5%
ConEdison	188.3a	190.9	28	9%
Enhanced Commercial and Industrial Performance Program	132.5	143.4	12.0	90%
ConEdison	54.7	52.3	n/a	n/a
Business Partners Program	11.8	14.2	2.5	95%
ConEdison	1.0	1.7	n/a	n/a
Loan Fund and Financing	14.3	17.3	n/a	n/a
ConEdison	0.5	1.4	n/a	n/a
Focus Program	0	0	1.0	0%
ConEdison	0	0	n/a	n/a
High Performance New Buildings	45.5	64.9	4.0	486%
ConEdison	15.9	20.7	n/a	n/a
Flex Tech Technical Assistance	120.9	136.1	14.0	108%
ConEdison	30.6	36.7	n/a	n/a
Flex Tech Technical Assistance: Callable	10.2	10.3	n/a	n/a
Overlap Removed	**24.5**	**27.5**	**n/a**	**n/a**
ConEdison C/I Total	**318.4**	**339.2**	**n/a**	**n/a**
Statewide C/I Total	**774.4**	**834.0**	**n/a**	**n/a**

a Savings reported previously included projects funded through the ConEdison Power Savings Partners Program. These savings have been removed to more accurately reflect accomplishments.

Note: n/a means not applicable (*i.e.*, a goal has not been set for this program).

Table 4-4. C/I Program Cumulative Annual Fuel Savings through March 31, 2007

Program	Fuel Savings (MMBtu)	
	Savings Achieved through	
	June 30, 2006	March 31, 2007
Enhanced Commercial and Industrial Performance Program	3,252	4,589
ConEdison	495	699
Loan Fund and Financing	137,239	555,243
ConEdison	4,941	19,989
Flex Tech Technical Assistance[1]	3,164,000	2,981,736
ConEdison	800,846	805,069
Overlap Removed	158,200	149,087
ConEdison C/I Total	**806,282**	**825,756**
Statewide C/I Total	**3,304,491**	**3,541,567**

Note: There were no one-year goals for fuel savings.

[1] The methodology to assess impacts focuses on developing samples based on electricity savings, rather than fuel, resulting in a less than optimal sample for fuel-savings projects and fluctuation over time in the calculated impacts. Sampling based on fuel savings is planned for future evaluation work.

4.2.3 Non-Energy Impacts

This section presents research findings from the non-energy impacts (NEI) evaluation conducted for NYSERDA by Summit Blue Consulting during late 2006 and early 2007. The evaluation examined the NEIs associated with the following **New York Energy $mart**[SM] programs:

- Commercial/Industrial Performance Program (CIPP)
- Small Commercial Lighting Program (SCLP)

Results were derived from surveys with building managers at facilities participating in each program. In addition to answering questions regarding the participating facilities' energy-efficient lighting projects and awareness of NEIs, respondents were asked to complete two series of questions that sought to quantify the NEIs associated with the two programs. In an effort to maintain continuity with past research while continuing to explore new methods, the current evaluation employed an extension of the direct query/scaling method used in the 2003 - 2005 NEI assessments (Direct Query), as well as the much newer conjoint method that was first tested in the 2005 NYSERDA NEI assessment (Conjoint Analysis).

The primary goals of the current NEI evaluation were to: 1) extend the scaling approach used in previous NYSERDA NEI evaluations in order to compare current results with those from past studies, as well as to compare the value estimates for certain NEIs, where applicable, to those from the conjoint analysis approach; and 2) apply findings from a review of relevant NEI and economics literature to enhance design and analysis, and inform future NYSERDA NEI studies.

This year's assessment built on lessons learned from initial testing of the conjoint method conducted during the 2005 evaluation. The form of conjoint analysis applied in this assessment allows respondents to choose between bundles of attributes (both positive and negative) that they can, theoretically, consider real-world consumer product options. In each bundle of attributes, or choice option, one attribute is

expressed in dollar terms. Based on the choices made by respondents, estimates can be made regarding the dollar value of each attribute using econometric techniques.

Key Findings

Key findings from the direct query survey component include:

- The most highly valued NEI was "Energy Equipment O&M Costs," which was valued by respondents at a level equal to approximately 22% of the energy savings realized by respondents. It was also the second most commonly reported NEI, with 58% of all respondents reporting a decrease in Energy & Equipment O&M costs as a result of completing their project. Approximately half of the respondents reporting a positive experience with this NEI stated that the decrease in costs was due to longer equipment lifetime. About 15% said the decreased costs were due to improved equipment reliability.

- The next most highly valued NEIs were "Lighting Quality" (with an average value of 11% of annual cost savings), "Occupant Comfort" (with an average value of 11% of annual energy cost savings), and "Productivity" (with an average value of 10% of annual electricity cost savings).

- Twenty-three percent of respondents reported productivity improvements as a result of completing their project, noting an average productivity increase of 13% compared to conditions prior to completing their project. Increased productivity was attributed to a variety of related project impacts, such as improved equipment reliability and worker comfort and satisfaction. Productivity increases also resulted from increased sales at retail facilities and decreased defects at manufacturing facilities, both of which were attributed to improved lighting quality.

- In terms of the most commonly reported NEIs, "Sense of Doing Good for the Environment" ranked highest with 66% of all respondents reporting a positive experience with respect to this NEI followed by "Energy Equipment O&M Cost Savings," (58% of respondents reporting a positive experience) and "Occupant Comfort" (45% of respondents reporting a positive experience).

Key findings from the conjoint analysis survey component include:

- The most highly valued NEI was "Even Light Distribution," which was valued by respondents at approximately six percent of average electricity cost savings across the CIPP and SCLP samples. This conjoint attribute is related to "Occupant Comfort," an NEI that respondents valued highly in the direct query survey component (valued at 11% of annual energy cost savings).

- "Lighting Quality," presented in terms of "color rendering index," was the second most valuable conjoint attribute. It was valued at approximately three percent of average electricity cost savings associated with CIPP and SCLP projects. Lighting quality was also a highly valued NEI in the Direct Query survey component (valued at 11% of annual energy cost savings).

- "Lamp Life" was the third most valuable conjoint attribute. It was valued at approximately two percent of the average energy cost savings associated with CIPP and SCLP projects. The Direct Query NEI most closely related to this conjoint attribute is "Energy Equipment O&M Costs." Interestingly, "Energy Equipment O&M Costs" was ranked highest among NEIs included in the Direct Query survey component.

Comparing Direct Query and Conjoint Analysis Results Over Time

Table 4-5 and Table 4-6 summarize respondent perceptions of NEI value as a percentage of their facilities' annual energy cost savings (where 100% means the value of the NEIs is equal to the value of the energy cost savings). Results are presented from prior NEI studies as well as from the two estimation methods used in the current (Year 4) evaluation. The results of four consecutive years of NYSERDA NEI studies provide clear evidence that **New York Energy $mart**[SM] program participants are experiencing positive program-related NEIs, and that these benefits hold value for participants.

These data also show that results from the CIPP NEI studies have all fallen within the same general range (38-49%) over the last four years, with the exception of the Year 4 Conjoint Analysis results, which are somewhat lower than the others (11%). There is less consistency across the SCLP results, though the Conjoint Analysis results from both the Year 3 and Year 4 studies are lower (ranging from 4-11%) than the Direct Query results from those years (31-72%). In all instances, NEIs are viewed by participants as less valuable than then energy savings, but are still important given the percentages derived from this study.

Table 4-5. Annual Direct Query NEI Values Calculated as a Percentage of Energy Cost Savings

Program	Years 1 & 2 2003-2004 Evaluations (de-rated)	Year 3 2005/2006 Evaluation	Year 4 2006/2007 Evaluation
CIPP	25% - 35%	46%	38%
SCLP	31% - 52%	51%	72%

Table 4-6. Annual Conjoint Analysis NEI Values Calculated as a Percentage of Energy Cost Savings

Program	Year 3 2005/2006 Evaluation	Year 4 2006/2007 Evaluation
CIPP	49%	11%
SCLP	4%	11%

It is difficult to make a direct comparison between the Direct Query and Conjoint Analysis results. The variance in results from NYSERDA NEI studies shown in Table 4-5 and Table 4-6 could be the result of a variety of factors.

First, the finding that Conjoint Analysis results have tended to show lower values than the Direct Query results could reflect the fact that Conjoint Analysis question sets have examined the value of just four non-cost-related attributes, while the Direct Query survey questions queried respondents on a substantially larger set of NEIs. Presenting respondents with a long list of potential NEIs in the Direct Query survey component may have affected the "overall value" assigned by respondents. In contrast, for the Conjoint Analysis questions, respondents' willingness-to-pay values were constrained by the limited number of attributes presented as well as the levels specified for each attribute.

While there were some NEIs from the Direct Query questions which closely paralleled attributes included in the conjoint questions (i.e., "Lighting Quality" was included in both question sets, and "Energy Equipment O&M Costs" and "Lamp Life" address similar issues), one would not necessarily expect that the two different methods would yield the same values. Direct Query results are affected by the fact that project energy savings are used as the benchmark for respondents when asking them to place a dollar value on NEIs. In contrast, the Conjoint Analysis method uses an indirect approach to calculate NEI values based on the strength of respondent preferences for particular attributes. Therefore, results are less likely to be biased by other factors. However, it is notable that the direct query and conjoint analysis results both fall within the same general range at the individual attribute level (*i.e.*, within the range of 1-20% of annual energy cost savings).

In addition, the literature indicates that respondents have difficulty placing a dollar value on attributes that they are not accustomed to thinking about in monetary terms, and that respondents often over-estimate the value of non-market goods when asked to do so in an open-ended format. Therefore, it is not surprising that the conjoint results represent lower NEI values than do the direct query results.

A factor that may have contributed to the variability in Direct Query results across the four assessments is that the question format has undergone revisions with each subsequent year as the Summit Blue Team worked to refine the analytic approach. While efforts have been made to maintain consistency across the Direct Query question formats used each year (an adaptation of the direct query method from the Year 1 and Year 2 NEI studies), with each new year additional refinements have been applied, which may be reflected in the results. The Year 4 study applied a number of findings from the literature review and consultation with expert economists that could account for some of the observed variability.

Another potential factor accounting for the variance in the results of the different NYSERDA NEI studies is the possibility of variance in participants' experiences with NEIs. This variance in experience may be even greater for SCLP participants for whom there is significant diversity among the building types represented by respondents.

An additional consideration is that, while the sample sizes are representative of the population of program participants, they are still relatively small. Little can be done to alleviate this problem for the Direct Query results, which depend on reports of respondent experiences. Efforts to limit the number of surveys program participants are asked to complete reduces the pool of potential respondents. In addition, despite multiple follow-up emails and phone calls, it can be difficult to achieve high response rates among building managers at companies that have participated in NYSERDA programs. One potential strategy for increasing the response rate for the Conjoint Analysis survey component is to include non-participants in this component of the study. Because non-participating building managers should share the same general decision-making framework and understanding of energy-related issues as participating building managers, these respondents could prove a valuable addition to the sample. However, the non-participant results would be more relevant for marketing and program design purposes than for actually estimating the value of NEIs for past program participants since it would be difficult to obtain data necessary to discount initial conjoint values for actual experience.

Summary and Lessons Learned

In summary, in designing the current NEI study, a strong effort was made to apply findings from a literature review and to combine the strengths of the available methods for estimating NEI values. This yielded results that are within a reasonable range of those from prior NEI studies conducted by NYSERDA, while increasing the amount of descriptive data provided by the study, as well as the level of confidence in the precision of the results. The Conjoint Analysis results are recommended for use in NYSERDA's cost-benefit analysis because they are thought to be more precise and conservative than the

Direct Query results. However, both the Direct Query and Conjoint Analysis survey components warrant application in future NYSERDA NEI studies, and the literature review presented in this report should help guide the development of further refinements for both survey components. Assumptions used in designing the conjoint study and applying conjoint results at the program-level should be reviewed by others so that the application of this method can gain greater acceptance for uses in which it is well-suited.

Select lessons learned from the NEI evaluation include the following:

- There are inherent limitations associated with estimating dollar values for NEIs. However, where value does clearly exist, it is important to apply well-defined techniques and to put forth as sound an approach as possible to capture the value of program-related NEIs.
- Tradeoffs and assumptions must be made when applying methods for estimating NEI values. This is acceptable as long as the tradeoffs and assumptions are well-justified and clearly communicated.
- Extensive background research and access to quantitative data on NEIs from other studies is necessary for developing focused, reasonable, and realistic attributes and levels for conjoint analyses.
- Gathering information on project details and incorporating qualitative feedback into Direct Query questioning is valuable for interpreting results and for providing a greater understanding of participants' NEI experiences. Careful consideration must be made at the outset of the study design regarding the project-specific data points that will be necessary for interpreting conjoint results.

4.3 Peak Load Management Program (PLMP)

4.3.1 Progress Toward Goals

One non-energy goal has been set for the Peak Load Management Program. This goal, as well as progress for the first nine months, is shown in Table 4-7. Near term goals and progress related to energy and peak demand savings were shown in Section 4.2.2.

Table 4-7. Peak Load Management Program – Near-Term Goal and Achievement

Activity	Program Goal (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Customers receiving assistance	145	47

4.3.2 Energy, Peak Demand and Fuel Savings

Table 4-8 shows the cumulative annual energy and peak demand savings from the PLMP. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification (M&V) and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

M&V activities consisted of file reviews, phone interviews and site visits for a random sample of 21 projects. The objective of the site visits was to confirm that the proposed measures and equipment were

still installed and operational, and interview facility representatives about equipment use, operating schedules and past demand response activities. In addition, engineers quantified the enabled demand reduction potential by inspecting equipment listed as enabled in NYSERDA's records, and assessing the limitations on simultaneously calling the entire enabled load.

Discrepancies between program-reported and verified savings were identified, including: 1) two interval meter projects where the equipment has been removed and the communications link severed, and 2) a project that double-counted savings for both the interval meter installed and the load carried by distributed generation, accounting for the lower realization rates.

Table 4-8. PLMP Cumulative Annual Energy and Peak Demand Savings (through March 2007)

	Program Reported Savings	M&V Realiza-tion rate	Adjusted Gross Savings	Freerider-ship	Spillover	Net-to-Gross Ratio[1]	Net Savings
DEGI (MW)	90.1	0.86	77.5	24%	25%	0.95	73.6
LC/S (MW)	151.1	0.92	139.0	24%	25%	0.95	132.0
PDRE (MW)	43.9	0.95	41.7	25%	37%	1.03	42.9
Cooling Recom-missoning (MW)	8.6	1.0	8.6	0%	0%	1.0	8.6
IM (MW)	233.9	0.85	198.8	10%	22%	1.1	218.3
Total MW	**527.5**	-	**465.6**		-		**475.4**
PDRE (MWh)	100,376	1.0	100,376	25%	37%	1.03	103,136
Cooling Recom-missoning (MWh)	24,700	1.0	24,700	0%	0%	1.0	24,700
Total MWh	**125,076**	-	**125,076**		-		**127,836**

[1] Net-to-Gross Ratio = (1-Freeridership) * (1+Spillover).

4.4 Enhanced Commercial and Industrial Performance Program (ECIPP)

4.4.1 Progress Toward Goals

Non-energy goals set for the ECIPP, as well as progress toward these goals for the first nine months, are shown in Table 4-9. Near term goals and progress related to energy and peak demand savings were shown in Section 4.2.2.

Table 4-9. Enhanced Commercial and Industrial Performance Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Leveraged Funds ($ million)	$80	$85
Customer projects	680	487

4.4.2 Energy, Peak Demand and Fuel Savings

Table 4-10 shows the cumulative annual energy and peak demand savings from the ECIPP. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Attribution Analysis Findings

In 2006 – 2007, the MCAC Team conducted a retrospective evaluation of the CIPP to reassess attribution of program savings and examine participant motivations and decision-making criteria for participating in the program. The study consisted of telephone interviews with participating end-use customers and energy service companies (ESCOs). In addition, Integrated Data Collection surveys administered to participating end-use customers and ESCOs before and after project completion were used to supplement the overarching retrospective attribution effort. Attribution findings are summarized in this section, and results related to participant motivations are presented in Section 4.4.3.

The current MCAC attribution analysis developed estimates of freeridership and spillover to arrive at an estimate of the program's net energy savings resulting from projects completed since January 2005. These results are combined with those from the previous MCAC analysis, which focused on projects completed prior to 2005, to yield blended freeridership and spillover estimates covering all completed projects since program inception. Selected findings include:

- Both end-use customers and ESCOs tend to credit the program with having an impact on decision-making regarding incorporation of high efficiency measures and designs. For example, more than 65% of end-use customers and more than 70% of ESCOs responding to the retrospective survey report that the CIPP in some way influenced "either the type or efficiency level of the measures/designs…or the amount of high efficiency measures/designs" incorporated at the project site.

- In the current analysis covering CIPP projects completed since January 2005, freeridership is estimated at 35%. This freeridership rate reflects the fact that many program participants believe that they would have installed at least a portion of the high efficiency equipment and designs even without the technical support and financial incentives offered by NYSERDA. While the freeridership estimate is slightly higher than the 30% reported in the 2005 MCAC analysis, this is to be expected as higher efficiency measures become the industry standard and market transformation occurs.

- The current spillover estimate—including both participant and non-participant spillover—is 58%, which more than offsets the impact of freeridership on program savings. This is greater than the 39% reported in the 2005 MCAC analysis, but increasing levels of spillover can also be expected as the CIPP influences more market actors, and as those market actors that were influenced by the

program in its early years have gone on to incorporate the lessons learned through the CIPP into other projects.

- Across all projects since program inception, the blended freeridership is estimated at 31%, the blended spillover is estimated at 44%, and the blended net-to-gross (NTG) ratio is estimated at 1.04 (with lower and upper bounds of 0.86 and 1.22). The net-to-gross ratio for the CIPP program has increased since it was estimated for the 2005 MCAC analysis.

Table 4-10. ECIPP Cumulative Annual Energy and Peak Demand Savings (Through March 2007)

	Program Reported Savings	Realization Rate	Adjusted Gross Savings	Freeridership	Spillover	Net-to-Gross Ratio	Net Savings
Commercial/Industrial Performance Program							
MWh/year	737,378	1.01	744,752	31%	44%	1.04a	774,542
MW On-Peak	158.2	0.77	121.8	31%	44%	1.04a	126.7
Smart Equipment Choices							
MWh/year	123,163	0.93	114,542	51%	45%	0.7b	79,721
MW On-Peak	25.8	0.93	24.0	51%	45%	0.7b	16.7
MMBtu/year	6,593	1.0	6,593	51%	45%	0.7b	4,589
Enhanced Commercial/Industrial Performance Program (ECIPP) - Total							
MWh/year	860,542	N/A	859,294	N/A	N/A	N/A	854,263
MW On-Peak	184.0	N/A	145.8	N/A	N/A	N/A	143.4
MMBtu/year	6,593	N/A	6,593	N/A	N/A	N/A	4,589

a Net-to-Gross Ratio = 1-Freeridership+Spillover (a weighted average of the NTG ratios estimated in the previous MCAC analysis and this current analysis is shown here).

b Net-to-Gross Ratio = (1-Freeridership) * (1+Spillover).

4.4.3 Other Evaluation Findings

Participant Motivations and Decision-Making Criteria Findings

As part of the 2006 – 2007 MCAC surveys, end-use customers were asked a series of questions related to their decision to participate in the CIPP and install high-efficiency measures. Selected findings include:

- The most common source of information about the CIPP was ESCOs (reported by 31% of respondents), followed by equipment vendors (9%), program marketing materials including the NYSERDA website (12% in aggregate) and colleagues (4%). These results imply that word-of-mouth communications among ESCOs and their customers are a primary means used to market the program beyond PON releases and program marketing materials as well as a major method of information exchange from program participants to non-participants.

- The majority of end-use customer respondents, nearly 80%, indicated that most ideas for energy efficiency projects and facility upgrades were generated internally, often by engineering staff or a committee dedicated to saving energy. Respondents then contracted with ESCOs to more fully flesh

out available equipment options and convert their desires for energy efficiency upgrades into tangible projects that deliver energy savings and the associated bill reductions.

- Nearly one-quarter of end-use customer respondents indicated that their organization had a formal policy requiring the purchase of energy efficient equipment. Of organizations that had energy efficiency policies, about one-third of those policies were developed after participation in the CIPP, implying that program participation is helping some end-use customers to overcome key market barriers to further investments in energy efficiency including customers' lack of experience with high efficiency products, lack of information about available technologies and expected savings, and uncertainty of savings, reliability, or performance of high efficiency equipment.

4.5 New York Energy $mart[SM] Business Partners

4.5.1 Progress Toward Goals

One near-term non-energy goal has been set for the Business Partners Program. This goal, as well as progress for the first nine months, is shown in Table 4-11. Near term goals and progress related to energy and peak demand savings were shown in Section 4.2.2.

Table 4-11. New York Energy $mart[SM] Business Partners Program – Near-Term Goal and Achievement

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Business Partners (signed up)	300	737

4.5.2 Energy, Peak Demand and Fuel Savings

Table 4-12 shows the cumulative annual energy and peak demand savings from the Business Partners Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 4-12. New York Energy $mart℠ Business Partners Cumulative Annual Energy and Peak Demand Savings (through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Freeridership	Spillover	Net-to-Gross Ratio[1]	Net Savings
Small Commercial Lighting							
MWh/year	36,211	0.96	34,762	39%	79%	1.09	37,957
MW On-Peak	9.1	1.0	9.1	39%	79%	1.09	9.9
Premium-Efficiency Motors[2]							
MWh/year	9,586	1.0	9,586	67%	168%	0.88	8,776
MW On-Peak	1.8	1.0	1.8	67%	113%	0.70	1.3
Commercial HVAC[3]							
MWh/ year	6,767	N/A	6,767	N/A	N/A	N/A	6,767
MW On-Peak	2.0	N/A	2.0	N/A	N/A	N/A	2.0
Hospitality Lighting							
MWh/ year	8,505	Not Evaluated	8,505	Not Evaluated	Not Evaluated	Not Evaluated	8,505
MW On-Peak	0.9	Not Evaluated	0.9	Not Evaluated	Not Evaluated	Not Evaluated	0.9
Total Business Partners							
MWh/ year	61,171	N/A	59,722	N/A	N/A	N/A	62,160
MW On-Peak	13.8	N/A	13.8	N/A	N/A	N/A	14.2

[1] Net-to-Gross Ratio = (1-Freeridership) * (1+Spillover).

[2] Savings from the prior motor incentive program have been held constant since last year. Savings achieved in 2006 from the new motor management program and the STAC 100 Motors program, in the amount of 296,202 kWh and 48 kW, have been added in the Net Savings column.

[3] Savings for the Commercial HVAC portion of the program have been reduced as of 4th Quarter 2006. This approach was taken due to the known short-term nature of savings from advanced diagnostics and commissioning, which were part of the program.

N/A – not applicable

4.6 New York Energy $mart℠ Loan Fund and Financing Program

4.6.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Loan Fund and Financing Program. These one-year goals, as well as progress for the first nine months, are shown in Table 4-13. The Program has

already surpassed its goal to leverage $12 million in energy efficiency improvements, and has nearly met the goal to sign up 25 participating lenders. The number of closed loans is falling somewhat short of projections but is still more than 50% of the goal with one quarter remaining in the first year. This result indicates that the Loan Fund projects have been larger than projected.

Table 4-13. New York Energy $mart[SM] Loan Fund and Financing Program – Near-Term Goals and Achievements for Commercial/Industrial Projects

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Customers receiving assistance (closed commercial/industrial loans)	100	52
Participating lenders (signed participation agreements)	25	22
Leveraged loan amount (for closed commercial/industrial loans)	$12,000,000	$18,900,000

4.6.2 Energy, Peak Demand and Fuel Savings

Table 4-14 shows the cumulative annual energy and peak demand savings from the Loan Fund and Financing Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 4-14. Loan Fund Cumulative Annual Energy and Peak Demand Savings (through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Freeridership	Spillover	Net-to-Gross Ratio[1]	Net Savings
MWh/year	73,915	0.85	62,750	27%	19%	0.92	57,730
MW On-Peak	13.1	1.39	18.8	27%	19%	0.92	17.3
MMBtu	443,768	1.36	603,524	27%	19%	0.92	555,243

[1] Net-to-Gross Ratio = 1-Freeridership+Spillover.

4.7 Energy Smart Focus Program

4.7.1 Progress Toward Goals

One near-term non-energy goal has been set for the Energy Smart Focus Program. This one-year goal, as well as progress for the first nine months, is shown in Table 4-15. Near term goals and progress related to energy and peak demand savings were shown in Section 4.2.2.

Table 4-15. Energy Smart Focus Program – Near-Term Goal and Achievement

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Participants Receiving Assistance	2,000	657a

a A portion of this number is participants of the Comprehensive Energy Strategies (Energy Smart Schools) Program, a precursor to the institutional sector of the Energy Smart Focus Program, that were provided assistance and are thus represented in this table.

4.7.2 Energy, Peak Demand and Fuel Savings

To date, direct energy impacts have not been tracked for the Comprehensive Energy Strategies (Energy Smart Schools) Program, a precursor to the institutional sector of the Energy Smart Focus Program.

4.8 High Performance New Buildings Program

4.8.1 Progress Toward Goals

Several near-term non-energy goals have been set for the High Performance Buildings Program. These one-year goals, as well as progress for the first nine months, are shown in Table 4-16. The Program has already surpassed its goal for the number of participating architecture and engineering (A&E) firms. Achievements are on track in terms of the square footage affected by the program. However, the number of completed projects is falling somewhat short at about 50% of the goal with three months remaining in the first year. Due to the unpredictable construction season, and the long time frame for completing new buildings, it is often difficult to exactly forecast program production. Near term goals and progress related to energy and peak demand savings were shown in Section 4.2.2.

Table 4-16. High Performance New Buildings Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Customers receiving assistance (completed projects)	140	67
Construction market affected (square feet)	14,000,000	9,450,000
Participating A&E firms	180	384

4.8.2 Energy, Peak Demand and Fuel Savings

Table 4-17 shows the cumulative annual energy and peak demand savings from the High Performance New Buildings Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 4-17. High Performance New Buildings Cumulative Annual Energy and Peak Demand Savings (through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Freeridership	Spillover	Net-to-Gross Ratio[1]	Net Savings
MWh/year	213,814	1.06	226,643	40%	85%	1.22	276,504
MW On-Peak	50.2	1.06	53.2	40%	85%	1.22	64.9

[1] Net-to-Gross Ratio = 1-Freeridership+Spillover (a weighted average of the NTG ratios estimated in the previous MCAC analysis and this current analysis is shown here).

4.9 FlexTech Technical Assistance Program

4.9.1 Progress Toward Goals

A near-term goal has been set for t he number of participants in the FlexTech Technical Assistance Program. This one-year goal, as well as progress for the first nine months, is shown in Table 4-18. The program has achieved just over 50% of the goal nine months into the first year. Near term goals and progress related to energy and peak demand savings were shown in Section 4.2.2.

Table 4-18. FlexTech Technical Assistance Program – Near-Term Goal and Achievement

Activity	Program Goal (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Customers receiving assistance (approved proposals)	540	280

4.9.2 Energy, Peak Demand and Fuel Savings

Table 4-19 shows the cumulative annual energy and peak demand savings from the FlexTech Technical Assistance Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 4-19. FlexTech Technical Assistance Program Cumulative Annual Energy and Peak Demand Savings (through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Freerider-ship	Spillover	Net-to-Gross Ratio[1]	Net Savings
MWh/ year	647,536	1.0	647,536	25%	48%	1.14	738,191
MW On-Peak	119.4	1.0	119.4	25%	48%	1.14	136.1
MW Enabled	9.0	1.0	9.0	25%	48%	1.14	10.3
MMBtu	2,615,558	1.0	2,615,558	25%	48%	1.14	2,981,736

[1] Net-to-Gross Ratio = 1-Freeridership+Spillover (a weighted average of the NTG ratios estimated in the previous MCAC analysis and this current analysis is shown here).

4.9.3 Other Evaluation Findings

As part of the 2006 – 2007 MCAC surveys, end-use customers were also asked a series of questions related to their decision to participate in the TA and FlexTech (TA) Program and install high-efficiency measures. Selected findings include:

- More customers learned about the TA Program from NYSERDA than from any other source: altogether, 36% of participants learned about the Program from NYSERDA, either through the Program's own marketing and outreach efforts (20%) or from the NYSERDA website (16%).

- The person overseeing the project at the customer site is typically not the ultimate decision maker when it comes to whether or not to install the recommended measures: 66% of the respondents indicated that the report was passed up the chain of command for the final decision. Therefore, although the primary end-use customer contact during the course of the study is likely to be an individual that is highly familiar with the facilities and quite technologically minded, the ultimate audience for the report is often less technically minded and is motivated more by the economics of a project.

- The importance of rigorous financial data was affirmed. For example, 90% of respondents indicated that the payback period was considered in the decision-making process, 58% reported that payback was a "make-or-break" criterion, and 71% indicated that the up-front cost relative to the available budget was also an important factor.

The responses to the survey also revealed that end-users are often aware of the measures that the audits recommend, but in order to proceed with installation they rely heavily on the independent, objective, and credible reports they receive through the Program. The TA Program is highly effective not just at increasing awareness of energy efficiency measures, but at accelerating the timeframe in which those measures are installed. In addition, many respondents were extremely satisfied with the services received through the Program.

5

Residential and Low-Income Programs

5.1 Residential and Low-Income Evaluation Activities

5.1.1 Completed Evaluation Activities

Table 5-1 shows evaluation activities that have been completed on the Residential and Low-Income programs this quarter. Several significant studies have been completed, and results are included in Section 5. All of the recently completed program logic models are included in Appendix A.

Table 5-1. 1st Quarter 2007 Residential and Low-Income Program Completed Evaluation Activities

Program Name	Predecessor Program (if applicable)	Theory & Logic	Measurement and Verification (M&V)	Market Characterization, Assessment and Causality (MCAC)	Process Evaluation
Single Family Home Performance Program	Home Performance with ENERGY STAR® ENERGY STAR Homes Program	-	-	-	-
Multifamily Building Performance Program	Residential Comprehensive Energy Management (CEM) Program Residential Technical Assistance Program (ResTech) Assisted Multifamily Program (AMP)	-	-	-	Update on AMP
Market Support Program	Keep Cool, Stay Cool! ENERGY STAR Products and Marketing Program	Full theory and logic	-	Lighting market study and update of program savings	-

Program Name	Predecessor Program (if applicable)	Theory & Logic	Measurement and Verification (M&V)	Market Characterization, Assessment and Causality (MCAC)	Process Evaluation
Communities and Education Program	New York Energy $mart[SM] Communities Energy Smart Students Program	-	-	-	-
EmPower New York		-	Full review	-	-
Buying Strategies and Energy Awareness Program	Low-Income Buying Strategies Program Low Income Energy Program Awareness Low-Income Forum on Energy	Full theory and logic	-	-	-

5.1.2 Evaluation Activities in Progress and Planned

Several evaluation activities are underway and are expected to be completed within the next quarter. These include:

- Measurement & Verification studies on Home Performance with Energy Star and Energy Star Labeled Homes.

  Process Evaluation on the EmPower Program.

- Results from the NYSERDA oversample to the Consortium for Energy Efficiency's national ENERGY STAR survey.

In addition to the above activities that are currently underway, an Impact Evaluation on the effect of EmPower New York on customer's ability to pay and continue service is being planned and will commence during the coming quarter. This evaluation is being conducted by the new **New York Energy $mart[SM]** Program Impact Evaluation contractor team. When this study is completed, results will be summarized in an upcoming evaluation report.

5.2 Summary of Residential and Low-Income Evaluation Results

5.2.1 Progress Toward Non-Energy Goals

Twenty-six near-terms goals have been set for important non-energy metrics in the Residential and Low-Income area, including the number of customers participating, outreach efforts and people affected, and dollars leveraged. With regard to these non-energy related goals, the Residential and Low-Income programs are performing well. Performance on approximately half of the goals is at or above expected levels. Several goals have already been met or exceeded, including:

- The Market Support Program has met or surpassed all three of its goals related to new partner sign-ups;

- The Communities and Education Program reached more than 38,000 students, surpassing its goal of 30,000 students; and
- The Buying Strategies and Energy Awareness Program has exceeded its goal to reach 3,000 low-income individuals by reaching 3,800 through seminars and workshops.

Performance on all of the non-energy goals will continue to be monitored through the end of the first year.

5.2.2 Energy, Peak Demand and Fuel Savings

Table 5-2 shows Residential and Low-Income program electric saving through March 31, 2007 and progress toward the first year goals. Several programs show excellent performance, and have already met or exceeded their goals, while others are showing somewhat slower than expected performance. Table 5-3 and Table 5-4 show peak demand reductions and fuel savings, respectively. Table 5-4 includes progress toward first year fuel savings goals. Several programs are on track, or have already achieved their goals for fuel savings.

Table 5-2. Residential and Low-Income Program Cumulative Annual Electricity Savings through March 31, 2007 and Progress toward One-Year Goals

Program	Energy Savings (GWh)			
	Savings Achieved through		One-Year Goal through June 30, 2007	Progress Toward One-Year Goal (% achieved)
	June 30, 2006	March 31, 2007		
Single Family Home Performance Program: Existing Homes[1]	13.5	15.3	5.3	35%
ConEdison	0.2	0.3	n/a	n/a
Single Family Home Performance Program: New Homes	7.3	10.0	1.8	150%
ConEdison	0.7	0.7	n/a	n/a
Multifamily Building Performance Program: Existing Buildings[2]	31.0	42.8	45.1	26%
ConEdison	30.2	27.7	n/a	n/a
Multifamily Building Performance Program: New Buildings	0	0	4.8	0
ConEdison	0	0	n/a	n/a
Market Support Program	539.1	647.0	30	360%
ConEdison	305.2	359.4	n/a	n/a
EmPower New York	23.2	25.7	10.2	24%
ConEdison	2.0	2.6	n/a	n/a
ConEdison Residential & Low-Income Total	**338.3**	**390.6**	**n/a**	**n/a**
Statewide Residential & Low-Income Total	**614.1**	**740.8**	**n/a**	n/a

[1] Savings for the low-income Assisted Home Performance Program (5.8 GWh) are included in this row.

[2] Savings for the low-income Assisted Multifamily Program (24.9 GWh) are included in this row.

Table 5-3. Residential and Low-Income Program Cumulative Peak Demand Reductions through March 31, 2007

Program	Demand Reductions (MW)	
	Savings Achieved through	
	June 30, 2006	March 31, 2007
Single Family Home Performance Program: Existing Homes[1]	2.0	2.3
ConEdison	0.0	0.0
Single Family Home Performance Program: New Homes	0.9	1.2
ConEdison	0.2	0.2
Multifamily Building Performance Program: Existing Buildings[2]	3.9	4.3
ConEdison	3.8	2.8
Multifamily Building Performance Program: New Buildings	n/a	0
ConEdison	n/a	(n/a)
Market Support Program	104.3	121.7
ConEdison	56.4	69.0
EmPower New York	2.5	3.6
ConEdison	0.0	0.4
ConEdison Residential & Low-Income Total	**60.5**	**72.4**
Statewide Residential & Low-Income Total	**113.7**	**133.1**

Note: No goals were set for peak demand reduction.

[1] Savings for the low-income Assisted Home Performance Program are included in this row. They represent 0.8 MW of these savings.

[2] Savings for the low-income Assisted Multifamily Program are included in this row. They represent 1.8 MW of these savings.

Table 5-4. Residential and Low-Income Program Cumulative Annual Fuel Savings through March 31, 2007 and Progress toward One-Year Goals

Program	Fuel Savings (MMBtu)			
	Savings Achieved through		One-Year Goal through June 30, 2007	Progress Toward One-Year Goal (% achieved)
	June 30, 2006	March 31, 2007		
Single Family Home Performance Program: Existing Homes[1]	523,821	707,001	239,800	76%
ConEdison	9,900	13,362	n/a	n/a
Single Family Home Performance Program: New Homes	508,247a	623,206	103,700	111%
ConEdison	40,660	49,857	n/a	n/a
Multifamily Building Performance Program: Existing Buildings[2]	43,932	150,883	1,202,900	9%
ConEdison	12,581	57,393	n/a	n/a

Program	Fuel Savings (MMBtu)			
	Savings Achieved through		One-Year Goal through June 30, 2007	Progress Toward One-Year Goal (% achieved)
	June 30, 2006	March 31, 2007		
Multifamily Building Performance Program: New Buildings	n/a	0	129,800	0%
ConEdison	n/a	0	n/a	n/a
Market Support Program	341,920	374,163	n/a	n/a
ConEdison	184,945	202,385	n/a	n/a
EmPower New York	59,341	83,198	21,700	110%
ConEdison	0	12	n/a	n/a
ConEdison Residential & Low-Income Total	**248,085**	**323,009**	**n/a**	**n/a**
Statewide Residential & Low-Income Total	**1,477,261**	**1,938,452**	**n/a**	**n/a**

[1] Savings for the low-income Assisted Home Performance Program are included in this row. They represent 242,207 MMBtu of these savings.

[2] Savings for the low-income Assisted Multifamily Program are included in this row. They represent 140,541 MMBtu of these savings.

a This value does not match an earlier published value due to changes made to the program tracking database in response to evaluation completed by the M&V contractor.

5.3 Single Family Home Performance Program

5.3.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Single Family Home Performance Program. These one-year goals, as well as progress for the first nine months, are shown in Table 5-5. Progress toward energy goals was included in Section 5.2.2.

Table 5-5. Single Family Home Performance Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
New York ENERGY STAR Labeled Homes Initiative		
New ENERGY STAR Labeled Homes built	2,150	1,562
New low-income ENERGY STAR Labeled Homes built	800	2
Home Performance with ENERGY STAR Initiative		
Existing homes served (receiving treatment)	3,225	1,927
Existing low-income homes served (receiving treatment)	2,100	1,096

5.3.2 Energy, Peak Demand and Fuel Savings

Table 5-6 shows the cumulative annual energy and peak demand savings from the Single Family Home Performance Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 5-6. Single Family Home Performance Program Cumulative Annual Energy and Peak Demand Savings (Through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Freeridership	Spillover	Net-to-Gross Ratio[1]	Net Savings
New York ENERGY STAR Labeled Homes Initiative							
MWh/year	8,468	1.01	8,553	28%	47.6%	1.17	10,007
MW On-Peak	0.9	1.11	1.0	28%	47.6%	1.17	1.2
MMBtu	532,655	1.0	532,655	28%	47.6%	1.17	623,206
Home Performance with ENERGY STAR[2]							
MWh/year	13,565	1.01	13,701	26%	41%	1.12	15,345
MW On-Peak	1.9	1.07	2.0	26%	41%	1.12	2.3
MMBtu	631,251	1.0	631,251	26%	41%	1.12	707,001
Single Family Home Performance Program – Total							
MWh/year	22,034	N/A	22,254	N/A	N/A	N/A	25,352
MW On-Peak	2.8	N/A	3.1	N/A	N/A	N/A	3.5
MMBtu	1,163,906	N/A	1,163,906	N/A	N/A	N/A	1,330,207

[1] Net-to-Gross Ratio = 1-Freeridership+Spillover (a weighted average of the NTG ratios estimated in the previous MCAC analysis and this current analysis is shown here).

[2] Savings for the low-income Assisted Home Performance Program are included in these figures. They represent approximately 5,800 MWh, 0.8 MW, and 242,207 MMBtu of these savings.

5.4 Multifamily Building Performance Program

5.4.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Multifamily Building Performance Program. These one-year goals, as well as progress for the first nine months, are shown in Table 5-7. Progress toward energy goals was shown in Section 5.2.2.

Table 5-7. Multifamily Building Performance Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Number of existing multifamily units receiving energy efficiency services (completed projects)	7,800	0
Number of new multifamily units receiving energy efficiency services	1,500	0
Tenant energy savings per year (at $250/unit)	$2,325,000	$0
Number of existing low-income multifamily units receiving energy efficiency services (completed projects)	29,640	8,579
Number of new low-income multifamily units receiving energy efficiency services	2,540	0
Low-income tenant energy savings per year (at $195/unit)	$6,275,100	$1,672905

5.4.2 Energy, Peak Demand and Fuel Savings

Table 5-8 shows the cumulative annual energy and peak demand savings from the Multifamily Building Performance Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 5-8. Multifamily Building Performance Program Cumulative Annual Energy and Peak Demand Savings (Through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Free-ridership	Spillover	Net-to-Gross Ratio[1]	Net Savings
Assisted Multifamily Program (AMP)							
MWh/year	30,516	0.97	29,601	27%	15%	0.84	24,850
MW On-Peak	1.9	1.26	2.4	27%	15%	0.84	2.0
MMBtu	179,730	1.0	179,730	27%	15%	0.84	150,883
Comprehensive Energy Management (CEM) Program							
MWh/year	5,712	0.97	5,541	2%	18%	1.16	6,408
MW On-Peak	0.3	1.77	.5	2%	18%	1.16	0.6
Low Income Direct Installation							
MWh/year	11,494	1.0	11,494	0%	0%	1.0	11,494
MW On-Peak	1.6	1.0	1.6	0%	0%	1.0	1.6

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Free-ridership	Spillover	Net-to-Gross Ratio[1]	Net Savings
Multifamily Building Performance Program – Total							
MWh/year	47,722	N/A	46,635	N/A	N/A	N/A	42,751
MW On-Peak	3.8	N/A	4.6	N/A	N/A	N/A	4.3
MMBtu	179,730	N/A	179,730	N/A	N/A	N/A	150,883

[1] Net-to-Gross Ratio = (1-Freeridership) * (1+Spillover).

5.4.3 Other Evaluation Findings

Process Evaluation Summary

A process evaluation of the Assisted Multifamily Program (AMP) and the ENERGY STAR Multifamily New Construction Pilot Program (New Construction Pilot), and the application of these findings to the new Multifamily Building Performance Program (MBPP), was recently completed.

The AMP was a major component of the **New York Energy Smart**[SM] Program. Multifamily buildings also received services under several other programs including the Residential Technical Assistance Program (ResTech), the Comprehensive Energy Management Program (CEM), the **New York Energy $mart**[SM] Loan Fund (Loan Fund), the Multifamily Building Standardized Training Program (MBST), and the New Construction Pilot. In May 2007, AMP and all of these other programs serving the multifamily sectors were merged into the MBPP.

Between July 1, 2006 and December 31, 2006, 6,803 customers living in existing multifamily units participated in the AMP. Since AMP's inception, there have been 79 buildings serving 13,616 units that have received efficiency services.

Study Objectives and Methods

For this process evaluation, three staff and two implementation contractors were interviewed. An in-depth survey that included numerous open ended responses was administered to 34 participant and 33 partial participant building owners and managers connected to the AMP. In addition, seven building owners/managers and four building performance specialists (BPS) who participated in the New Construction Pilot were interviewed. One ResTech building representative was also interviewed.

Synopsis of Findings

Process evaluation surveys and interviews indicate that the new MBPP program is in a good position to begin in its restructured form. The new program melds all of the **New York Energy Smart**[SM] multifamily functions into a single comprehensive program. A major goal of the MBPP is to design a program that is simple, streamlined, and easily understood by builders and managers and the BPSs. The new structure accomplishes the following:

- Creation of a single program that combines all of the separate multifamily program services into a single comprehensive program.

- Empowerment of the building owners and managers to select and manage their relationship with the building specialist who provide technical services.

- Empowerment of the building specialists, who must be certified by NYSERDA, to sell themselves and the jobs to building owners and managers and to thus become stewards of their own businesses.

- Provision of financial incentives to help defray the costs of technical support and to reduce the cost of project financing. Also structuring of incentives to reward those projects that exceed performance thresholds and shifting of the payment schedule so that BPS payment is in part tied to the project completion.

The two major issues that were repeatedly mentioned by all parties across the range of programs now encompassed under MBPP are processing delays and difficulties in finding adequate financing.

Delays in the approval of the application, implementation plan, and financing package were an issue even for the participants who completed projects. The majority of the contacted participants think that experience, the change of program implementers, and the modifications to the program process will lessen delays in the future. The MBPP planners are also hoping that provisions to withhold some of the payments from the BPS firms until jobs are completed will quicken completions. Many partial participants in the AMP program cited delays and challenges working with the NYSERDA team as their main concerns with AMP, and almost all of the partial participants do not expect these issues will get better under MBPP. Success at improving the speed of project processing will be most critical if the program is to meet the goal of attracting new construction projects where construction schedules are relatively inflexible.

Financing, be it difficulties in securing project financing in general and/or problems with the level of NYSERDA's support and the specific approval process, was a frequently mentioned concern by participants and partial participants. MBPP has developed a set of incentives that are both larger than in previous multifamily programs and hopefully more understandable and easier to implement. The incentives are geared directly to the goal of the program to be market-based and to provide funds for technical support and some direct compensation of capital investments. The incentives also provide a performance reward for those buildings meeting exemplary savings levels. An important innovation to the program is the addition of a tiered approach for existing buildings which sets the incentive award levels differently depending upon the current efficiency of the buildings.

In general, after talking with participants and non-participants from previous multifamily program efforts, the evaluation team finds that the MBPP is a logical and streamlined improvement over the earlier collection of multifamily programs. In this first year of operation, the MBPP team, including the evaluators, needs to monitor the following areas to make sure that the program operates efficiently and continues to meet its long-term potential.

- Building Infrastructure and Demand for Services in Concert with Each Other — A major challenge for MBPP is coordinating the development of the demand for the services with the development of those services. Three specific issues that require attention include:

    - Dealing with Backlog of Projects Started under AMP — Some building owners have held back projects because they found out that the incentives would be larger under MBPP. If there are a lot of these, it could put pressure on the system just when everyone is learning the new process.

- Attracting New Participants — A challenge for the program may be to attract new building owners and managers to participate in the program, particularly those controlling market-rate buildings. The program may need to do some market research to gauge awareness and interest among the broader market sector.

- Increasing the Pool of Building Performance Specialists — Finding qualified professionals is a major limitation on the ability of most existing firms to expand business. MBPP may need to expand its support of education and training programs that build knowledge in building sciences.

- Implementing Incentive Structure for Existing Buildings — MBPP has developed a new incentive structure that benchmarks buildings by their current efficiency and divides all buildings into quartiles, this enables the program to set the performance goals and incentive level based on the building's quartile placement. As a new approach, there are bound to be questions and unexpected issues that need to be addressed.

- Encouraging Investment in Tenant Spaces — Because it is so much harder to treat tenant spaces and because the benefits accrue to customers who do not have the resources or control to solve their own energy inefficiencies, the program should track the investments separately and also consider offering higher incentives when tenants are the beneficiaries of the investments.

Conclusions and Recommendations

The findings lead to the following conclusion and recommendations.

Conclusion: MBPP is in a good position to begin.

- Lessons have been incorporated from earlier programs and evaluation reports. Program modifications make MBPP more market-based and streamlined.

- The implementer, QA provider, and BPSs are all experienced and ready to begin.

- Developing an incentive structure for existing buildings was a big challenge. The approach developed is logical and provides performance incentives to buildings at all stages of energy efficiency. Because it is new and innovative, its use should be closely monitored.

- There are a core of building owners and managers who have tested the program via AMP and the New Construction Pilot who will be prime potential applicants under MBPP. They are comfortable with the process and already have familiarity with finding funding and working with a BPS.

Recommendation 1: MBPP Needs to Monitor the Financial Support Issue

- Participants in the Pilot see current support as too low. Participants in AMP also struggled with financing, with difficulties in acquisition of financing as the principal reason firms partial participants dropped out of AMP.

- MBPP needs to distinguish between investments that serve common areas and lower the owner's energy costs and measures in tenant spaces that lower tenant's energy bills. Greater financial support is needed, and justified, to accomplish the latter, but if all investment is lumped together, building owners are unlikely to maximize investment in tenant spaces.

- MBPP should consider offering higher incentives for investments made to tenant spaces.

Recommendation 2: MBPP Should Conduct a Process Evaluation Follow-up in One Year

- Conduct detailed case studies of the first participants in MBPP to make sure the process is as expected.
- Continue collecting market intelligence on participants, partial participants, and potential participants.
- Closely track paperwork flow and progress through the project pipeline.

5.5 Market Support Program

5.5.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Market Support Program. These one-year goals, as well as progress for the first nine months, are shown in Table 5-9. The Program has already met or exceeded three out of four first-year goals. Progress toward the Program's energy-related goals was shown in Section 5.2.2.

Table 5-9. Market Support Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
New manufacturing partners signed up	4	4
New retail partners (independent) signed up	20	42
New retail partners (big box, mass merchandisers) signed up	1+	3+
ENERGY STAR market share increase on targeted products (on average, across products)	5%	1%

5.5.2 Energy, Peak Demand and Fuel Savings

Table 5-10 shows the cumulative annual energy and peak demand savings from the Market Support Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Sales and Savings Attributable to the ENERGY STAR Products and Marketing Program

Savings from CFL sales and installations were derived by first estimating the market share for ENERGY STAR CFLs through estimates of total market size and sales of ENERGY STAR products. Next, portions of the market share were allocated to extraneous, non-Program effects and the impacts of other NYSERDA residential Programs. The remaining market share, after these effects, was considered attributable to the ENERGY STAR Products Program.

- An estimated 1.5 CFLs per household were purchased in the **New York Energy $mart**[SM] area in 2005, higher than the national average of 0.8 CFLs per household, and substantially higher than the average of 0.4 CFLs per household in non-program areas.

- Over 18 million ENERGY STAR CFLs were sold in the **New York Energy $mart**[SM] area in 2005-2006, approximately 7.5 million of which were attributable to the **New York Energy $mart**[SM] Products Program after accounting for expected baseline sales. The bulbs attributable to the Program during these two years result in expected annual savings of close to 358 GWh and over 31 MW.

In addition to CFL sales, a total of 78,715 lighting fixtures and ceiling fans with lights were sold by participating retailers in 2005-2006, resulting in expected annual savings of close to 9 GWh and over 0.5 MW.

Finally, the estimate of appliance sales attributable to the program was also updated through year-end 2006 using methods established in previous years. This analysis included the following components:

- Use of primary data from surveys along with secondary data (from sources like New York ENERGY STAR partners, Association of Home Appliance Manufacturers (AHAM), and D&R International) to estimate total product sales and ENERGY STAR market share increases over time.

- Examination of baseline market share data from surveys in New York and other sources to estimate the ENERGY STAR market share increase that is attributable to the national ENERGY STAR program efforts, the impacts of other state efforts, high energy prices, and other exogenous factors. The portion of the market share increase estimated to be due to the national program (and not NYSERDA's efforts) varied depending on the product.

- For 2006, approximately 498,000 appliance units were credited to the Program, leading to annual savings of 30.3 GWh.

The savings from lighting and appliances determined to be attributed to the program in the analysis described was added to the prior savings to produce the cumulative annual program net savings.

Table 5-10. Market Support Program Cumulative Annual Energy and Peak Demand Savings (Through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Free-ridership	Spillover	Net-to-Gross Ratio[1]	Net Savings
ENERGY STAR Products and Marketing (2006)							
MWh/year	Not applicable[2]						604,867
MW On-Peak							107.4
MMBtu							357,854
Keep Cool							
MWh/year	5,159	1.0	5,159	18%	15%	0.94	4,865
MW On-Peak	8.8	1.0	8.8	18%	15%	0.94	8.3
Bulk Purchase							
MWh/year	19,451	2.03	39,486	10%	5%	0.95	37,314
MW On-Peak	3.9	1.62	6.3	10%	5%	0.95	6.0
MMBtu	24,307	0.71	17,258	10%	5%	0.95	16,309
Market Support Program – Total							
MWh/year	n/a	n/a	n/a	n/a	n/a	n/a	647,046
MW On-Peak	n/a	n/a	n/a	n/a	n/a	n/a	121.7
MMBtu	n/a	n/a	n/a	n/a	n/a	n/a	374,163

[1] Net-to-Gross Ratio = (1-Freeridership) * (1+Spillover).

[2] The net savings attributable to the ENERGY STAR Products and Marketing Program are determined based on market research by the MCAC team. Thus, there are no program reported savings, realization rate, or net-to-gross adjustments.

5.5.3 Other Evaluation Findings

Program Theory and Logic Work

Program theory and logic work was recently completed for the Market Support Program. The program logic diagram can be found in Appendix A.

Lighting Market Study

Methodology

In 2006-2007, the MCAC team conducted a market characterization, market assessment, and attribution (attribution results were already discussed in Section 5.5.2 above) evaluation of the **New York Energy $mart**[SM] Products Program. This evaluation focused exclusively on energy-efficient products; program marketing efforts were not evaluated as part of this effort. Furthermore, to address the increased Program implementation efforts in the lighting arena, as well as some of the gaps in previous lighting market evaluation efforts, the evaluation focused exclusively on the lighting component of the Program.[12]

[12] Indicators covering a broad range of ENERGY STAR products were also examined. These include ENERGY STAR awareness and perceptions, pricing and incremental cost, and market share analysis.

Along with an analysis of secondary data sources, the evaluation consisted of:

- Telephone surveys with participating and non-participating lighting retailers; participating and non-participating lighting distributors; and participating and non-participating lighting manufacturers
- On-site interviews with non-participant lighting retailer managers
- On-site measurement of non-participant retailer stocking and display practices

This comprehensive approach generated information on a number of topics, including the size of the residential market for qualifying lighting equipment; the type and quantity of efficiency measures installed as a result of the Program; changes in awareness and understanding of energy efficiency; and the estimated influence and attribution of energy savings to the **New York Energy $mart**[SM] Products Program.

Market Characterization and Assessment Findings

In 2006, approximately 86.2 million light bulbs and 8.8 million lighting fixtures were sold to the residential market in the **New York Energy $mart**[SM] Program area.

- The majority of bulbs are sold through home improvement stores (36%), department stores (32%), and grocery stores (24%). The majority of fixtures are sold through home improvement stores (61%) and department stores (20%).
- The current program requirement that retail partners sell multiple ENERGY STAR products, plus the sales data requirement, has limited retailer participation: NYSERDA retail partners represent only 2% of all bulb sales and 4% of all fixture sales.
- The primary market barriers to the sale of ENERGY STAR compact fluorescent light (CFL) bulbs and fixtures include high first cost, lack of awareness, and insufficient style options.
- In 2006, the market share for ENERGY STAR CFLs was approximately 11%, while the average market share for all types of ENERGY STAR permanent (hard-wired) fixtures was approximately 6%.
- Awareness among non-participating retailers of ENERGY STAR lighting and the **New York Energy $mart**[SM] Products Program was low: only 42% of non-participating retailers reported being familiar with the ENERGY STAR Logo for compact fluorescent light bulbs, and only 12% were aware of the Program. Few retailers (18% of participants and 6% of non-participants) understood the difference between ENERGY STAR and non-ENERGY STAR CFLs.
- Both participant and non-participant retailers who were familiar with ENERGY STAR CFLs or fixtures perceived that fewer than half of their customers were aware of energy efficient lighting products. Despite the low awareness, the retailers – particularly the participants –reported that customer demand and sales of ENERGY STAR lighting products were increasing.
- All (100%) of the retailers that were aware of ENERGY STAR lighting products, including both participants and non-participants, indicated that ENERGY STAR CFLs and/or permanent lighting fixtures are just as readily available as the non-ENERGY STAR versions

- In site visits to 20 non-participating lighting retailers, 17% of the total display area was devoted to some combination of ENERGY STAR and non-ENERGY STAR qualified CFLs. The majority of this CFL display area--84%--was used specifically for ENERGY STAR CFL displays. Some stores had over 25 models of CFLs.

- Only four of the eleven non-participating fixture retailers that were visited carried ENERGY STAR fixtures. The percent of ENERGY STAR fixtures on display at these stores ranged from 5% to 39%.

5.6 Communities and Education Program

5.6.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Communities and Education Program. These one-year goals, as well as progress for the first nine months, are shown in Table 5-11.

Table 5-11. Communities and Education Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Teachers trained	1,000	575
Students reached	30,000	38,505
Community events held statewide	200	144
Recruiting seminars held statewide	100	11
Home performance contractors, technicians, builders and raters recruited for the Single Family Home Performance Program	160	45
Building analysts, designers, energy consultants, equipment installers, etc. recruited for Multifamily Building Performance Program	20	6

5.7 EmPower New York[SM]

EmPower New York[SM] was launched in July 2004 to provide energy efficiency measures and energy-use management education to participants in the Niagara Mohawk (now National Grid) and NYSEG low-income programs. The Weatherization Network Initiative (WNI) was launched by NYSERDA in 2003 to deliver electric reduction measures through a statewide network of Community Based Organizations (CBOs) in coordination with the Weatherization Assistance Program. CBOs are not-for-profit agencies that provide low-income households with services that complements the services of **New York Energy $mart[SM]** programs. Under the latest round of SBC funding, the Weatherization Network Initiative was merged with EmPower New York to simplify the program structure and provide more comprehensive services to eligible participants.

5.7.1 Progress Toward Goals

One near-term non-energy goal has been set for the EmPower Program. This one-year goal, as well as progress for the first nine months, is shown in Table 5-12. The program is progressing well and will

likely achieve its goal of serving 6,300 households by June 30, 2007. Progress toward the Program's energy-related goals was provided in Section 5.2.2.

Table 5-12. EmPower New York℠ Program – Near-Term Goal and Achievement

Activity	Program Goal (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Households served (completed)	6,300	5,964

In addition to installation of efficiency measures, all participating households receive in-home energy management education and are invited to attend energy and financial management workshops. These two-hour workshops are open to the public and are held across the SBC territory. Through the first nine months, a total of 386 workshops have been delivered with over 3,400 participants. For the program to date, 1,008 workshops have been delivered with a total of more than 9,500 participants.

5.7.2 Energy, Peak Demand and Fuel Savings

Table 5-13 shows the cumulative annual energy and peak demand savings from the EmPower Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

The EmPower New York Program was evaluated by the Measurement and Verification contractor in 2006. Based on site inspections conducted at twenty homes, the realization rates shown in Table 5-13 were developed. The lower realization rate for electric savings was mainly due to factors such as compact fluorescent light bulbs being installed in low usage areas, incorrect savings assumptions, and errors in transferring data between the calculator and the database.

Table 5-13. EmPower New York℠ Program Cumulative Annual Energy and Peak Demand Savings (Through March 2007)

	Program Reported Savings	Realization Rate	Adjusted Gross Savings	Net-to-Gross Ratio	Net Savings
EmPower New York					
MWh/year	21,575	0.81	17,475	Not evaluated	17,475
MW On-Peak	2.3	1.0	2.3	Not evaluated	2.3
MMBtu	83,198	1.0	83,198	Not evaluated	83,198
Weatherization Network Initiative					
MWh/year	8,196	1.0	8,196	Not evaluated	8,196
MW On-Peak	1.3	1.0	1.3	Not evaluated	1.3
Total					
MWh/year	29,770	n/a	25,671	Not evaluated	25,671
MW On-Peak	3.6	n/a	3.6	Not evaluated	3.6
MMBtu	83,198	n/a	83,198	Not evaluated	83,198

5.8 Buying Strategies and Energy Awareness Program

5.8.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Buying Strategies and Energy Awareness Program. These one-year goals, as well as progress for the first nine months, are shown in Table 5-14. The program is showing good progress toward meeting, and in some cases exceeding, its near-term goals.

Table 5-14. Buying Strategies and Energy Awareness Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Funds leveraged through Buying Strategies initiative	$4 million	$2.5 – 3.2 million
Additional low-income individuals reached via newsletters, weekly newspapers, etc. (readership)	1,000,000	240,000
Additional low-income individuals reached via seminars and workshops (attendees)	3,000	3,800
Additional contractors and other partners recruited in low-income districts	10	9
Additional students reached in schools serving low-income populations (number of individuals given educational materials)	20,000	15,402

5.8.2 Other Evaluation Findings

Program theory and logic work was recently completed for the Buying Strategies Program. The program logic diagram can be found in Appendix A of this report.

6

Research and Development Programs

6.1 Reseach & Development (R&D) Program Evaluation Activities

6.1.1 Completed Evaluation Activities

Table 6-1 shows evaluation activities that have been completed on the R&D programs this quarter. Results from these studies are included in Section 6.

Table 6-1. 1st Quarter 2007 R&D Program Completed Evaluation Activities

Program Name	Predecessor Program (if applicable)	Theory & Logic	Measurement and Verification (M&V)	Market Characteriza-tion, Assessment and Causality (MCAC)	Process Evaluation
Public Benefit Power Transmission and Distribution Research		-	-	-	-
Clean Energy Infrastructure	End-Use Renewable Energy Market	-	-	-	Update on End-Use Renewables
Power Systems Product Development		-	-	-	-
DG-CHP Demonstration	Distributed Power Generation/CHP CHP Demonstrations Power Systems Technology – Product Development Strategic Energy Reliability	-	-	-	-

Program Name	Predecessor Program (if applicable)	Theory & Logic	Measurement and Verification (M&V)	Market Characterization, Assessment and Causality (MCAC)	Process Evaluation
Demand Response and Innovative Rate Research		-	M&V Update	-	-
Electric Transportation		-	-	-	-
Environmental Monitoring, Evaluation and Protection					
Industrial Research, Development and Demonstration				-	-
Municipal Water and Wastewater Efficiency					
Next Generation and Emerging Technologies	Next Generation of Energy-Efficient End-Use Technologies	-		-	

6.1.2 *Evaluation Activities in Progress and Planned*

Several evaluation activities are underway and are expected to be completed within the next quarter. These include: Program Theory and Logic work on Public Benefit Power Transmission and Distribution, Demand Response and Innovative Rate Research, and Next Generation and Emerging Technologies. Results from these evaluation activities that are underway will be highlighted in the next quarterly report.

In addition to the above activities that are currently underway, an Impact Evaluation on the Research and Development sector is being planned and will likely commence during the coming quarter. This evaluation will be conducted by the new **New York Energy $mart**[SM] Program Impact Evaluation contractor team. When this study is completed, results will be summarized in upcoming evaluation reports.

6.2 Summary of R&D Evaluation Results

6.2.1 *Progress Toward Non-Energy Goals*

More than 30 near-term non-energy goals have been set for the R&D portfolio. These goals address important metrics such as solicitations, projects, information dissemination, co-funding, and technology transfer. Overall, the R&D portfolio is performing well in terms of these non-energy goals. Progress highlights include the following:

- Seven R&D solicitations were released in the first quarter of 2007, some with multiple phases.

- Performance data on 26 DG/CHP projects is now available on the Internet, facilitating performance monitoring and promoting technology transfer.
- Six contracts have been signed to expand renewable energy businesses (four contracts) and manufacture clean energy generation technologies (two contracts) in New York.
- Over the past nine months, the EMEP Program has led to the publication of 20 articles in the areas of air quality/health effects and ecosystems.
- Over the past nine months, five water and wastewater technical assistance projects were completed and another four were approved.

6.2.2 Energy, Peak Demand, Fuel Savings, and Clean Generation

Table 6-2 shows the energy savings and clean energy production achieved by the R&D portfolio through March 31, 2007. In total, 18.7 GWh have been added in the nine months since June 30, 2006. Table 6-3 provides demand reduction achievements, and Table 6-4 shows impacts for other fuels such as natural gas and oil. These tables also show the change over time since June 30, 2006.

Table 6-2. R&D Program Electricity Savings and Clean Generation through March 31, 2007

Program	Energy Savings (GWh)	
	Savings Achieved through	
	June 30, 2006	March 31, 2007
DG-CHP Demonstration Program[1]	82.7	100.6
ConEdison	42.0	38.6a
Renewable Energy Production	103.8	106.0
ConEdison	0.5	0.9
Overlap Removed	**6.6**	**8.1**
ConEdison R&D Total	**42.5**	**39.5**
Statewide R&D Total	**179.9**	**198.6**

[1] 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 wastewater 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.

a The reduction in savings in the Con Edison utility territory is due to a refinement of methodology for estimating impacts, rather than a true decrease.

Table 6-3. R&D Program Cumulative Peak Demand Reductions through March 31, 2007

Program	Demand Reductions (MW)	
	Savings Achieved through	
	June 30, 2006	March 31, 2007
DG-CHP Demonstration Program	18.1	21.9
ConEdison	8.5	8.5
Demand Response and Innovative Rate Research	137.2	99.0a
ConEdison	68.6	24.7
Renewable Energy Production	8.1	9.0
ConEdison	0.3	0.4
Overlap Removed	1.3	1.5
ConEdison R&D Total	**77.4**	**33.6**
Statewide R&D Total	**162.1**	**128.4**

a MWs enabled under the SBC2 program Enabling Technologies for Price Responsive Load were not required to persist beyond the period of the contract. As such, the available MWs have steadily declined since the program's close.

Table 6-4. R&D Program Cumulative Annual Fuel Savings through March 31, 2007

Program	Fuel Savings (MMBtu)	
	Savings Achieved through	
	June 30, 2006	March 31, 2007
DG-CHP Demonstration Program[1]	-571,310	-766,206
ConEdison	-266,937	-296,424
ConEdison R&D Total	**-266,937**	**-296,424**
Statewide R&D Total	**-571,310**	**-766,206**

[1] 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 wastewater 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.

6.3 Public Benefit Power Transmission and Distribution Research

6.3.1 Progress Toward Goals

Two near-term goals have been set for the Public Benefit Power Transmission and Distribution Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-5.

Table 6-5. Public Benefit Power Transmission and Distribution Research Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Strategy and coordination meeting	Identification of priority R&D areas by spring 2006	Priority areas in two tracks (Policy, Technology) have been identified. Policy aspects could include business strategies, regulatory issues, public policy, and advanced concepts. Technology aspects could include things all along the continuum from monitoring and diagnostics, to data processing and analysis, optimized visualization, secure communication, and improved control and system performance.
Issue annual solicitations	Select and fund five or more projects and studies aimed at the priority R&D areas by fall 2006	Solicitation (PON 1102) was issued in first quarter 2007 announcing the availability of $5 million and inviting proposals with two rounds of due dates (May 1, 2007 and November 1, 2007).

6.4 Clean Energy Infrastructure

6.4.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Clean Energy Infrastructure Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-6. Energy-related goals and progress were included in Section 6.2.2.

Table 6-6. Clean Energy Infrastructure Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007	
Education, Consumer Awareness and Market Development			
New accredited training institutions	1	0	4 KidWind Teacher Training Workshops; 2 small wind training; 2 NABCEP[1] prep courses
New certification exams	1	0	
Training workshops	5	8	
Renewable Resource Applications			
Stakeholder workshops	2	1	1 Workforce Development Conference; 5 solicitations: 2 focusing on wind and wildlife interactions; 2 involved with business expansion; 1 for outreach and analytical services.
Competitive research solicitations	3	5	

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007	
Clean Energy Technology Manufacturing and Business Development			
Companies expanding renewable business networks	5	4	4 signed contracts for business growth; 2 contracts signed for manufacturing of clean energy technology.
Companies expanding manufacturing	2	2	

[1] North American Board of Certified Energy Practitioners (NABCEP).

6.4.2 Clean Energy Generation

Table 6-7 shows the cumulative annual clean generation from the Clean Energy Infrastructure Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 6-7. Clean Energy Infrastructure Program Cumulative Annual Clean Generation (Through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Energy Generations	Net-to-Gross Ratio	Net Energy Generation
End Use Renewables					
MWh/year	5,518	1.04	6,051	1.0	6,051
MW On-Peak	3.3	0.85	2.8	1.0	2.8
Wholesale Renewables					
MWh/year	99,995	1.0	99,995	1.0	99,995
MW On-Peak	6.2	1.0	6.2	1.0	6.2
Clean Energy Totals					
MWh/year	105,813	n/a	106,046	n/a	106,046
MW On-Peak	9.5	n/a	9.0	n/a	9.0

6.4.3 Other Evaluation Findings

Analysis of PV System Size and Cost

Table 6-8 highlights some key information from PON 716 on photovoltaic (PV) system size and cost. In total, 466 systems have been installed and an additional 225 systems are in progress. Residential systems are generally half the size of systems in the commercial and industrial sectors. However, system cost (per KW-DC) is similar across the sectors.

Table 6-8. PV System Size and Cost Summary

Status	Sector	Number of Systems	Average Size (kW DC)	Average Cost Before Incentive ($ per kW DC)	Minimum Cost ($ per kW DC)	Maximum Cost ($ per kW DC)
Completed	Residential	422	5.01	$8,601.30	$5,173.80	$26,232.95a
Completed	Industrial	2	11.47	$9,101.33	$8,310.05	$9,892.62
Completed	Commercial	42	10.64	$8,093.34	$6,398.38	$10,319.92
Subtotal (completed systems)	-	**466**	-	**$8,598.66**	-	-
In Process	Residential	195	5.84	$8,776.39	$0.00	$16,634.03
In Process	Industrial	2	10.03	$9,044.09	$8,964.34	$9,123.84
In Process	Commercial	28	11.99	$10,509.03	$7,331.06	$18,844.44
Total (all systems)	-	**691**	-	**$9,020.91**	-	-

a This relatively high-cost project was a 17.14 KW building-integrated PV system installed on a multifamily building in New York City.

End Use Renewables Process Evaluation

A process evaluation of the Photovoltaic (PV) Program, which is a component of NYSERDA's Clean Energy Infrastructure Research and Development Program, was recently completed. The PV Program aims to contribute to the development of a sustainable market for renewable energy technologies by supporting the growth and maturation of the New York market for customer-sited PV systems. The PV Program is part of NYSERDA's R&D cluster of programs and includes: providing incentives to installers for new, high quality, grid-connected PV systems; fostering the development of accredited PV training programs; promoting and facilitating PV installer certification; and providing business development and market support incentives for PV dealers and installers. This evaluation addresses the PV incentive program component and builds on a process evaluation of the program conducted in 2004.

Study Objectives and Methods

The current study sought to better understand the experiences of five groups of market actors: utility staff responsible for the interconnection of customer-sited PV systems, NYSERDA-approved PV installers, longer-term PV customers (those with PV systems in place for more than 21 months), professionals who attended NYSERDA's Renewable Energy & Energy Efficiency Workforce Education Conference held in November 2006, and NYSERDA's training contractors.

The research employed in-depth telephone interviews with interconnection staff at each of the six investor-owned electric utilities (eight individuals in all), a web-based survey to which 40 installers responded, a telephone survey of 46 customers with PV projects completed prior to February 2005, a telephone survey of 43 conference attendees, and in-depth telephone interviews with 17 training contractors.

Synopsis of Findings

The utility interconnection staffs reported being very conscious of their obligations under the Standard Interconnection Requirements (SIR) and making diligent efforts to process the PV applications in

compliance with the time limits. Installer reports of typical turn-around times for the application process and interconnection provided confirmation that the utilities' interconnection activities typically occur within the SIR-specified limits of 60 business days, but suggest the utilities' application processing may often exceeds the SIR-specified limits of 10 business days. From the perspectives of the utility staffs, delays most commonly occurred because of incomplete or inaccurate information provided by the installers. Staffs report that the interconnection applications they received are improving in terms of correctness and completeness as installers gain more experience. From the perspectives of the installers, utilities are very slow to respond to questions or resolve issues. Installers with significant PV installation experience were as likely as lesser-experienced installers to report delays. Nonetheless, majorities of installers expressed satisfaction with their typical interconnection experiences at three utilities and expressed dissatisfaction with their typical experiences at a fourth utility. For the two remaining utilities, roughly equal proportions of installers were satisfied and dissatisfied with their experiences.

Installers reported that delays commonly resulted from permitting and lack of equipment availability. They described municipal regulators and inspectors that lack knowledge and experience with PV systems and some municipalities that have what installers judged to be particularly onerous requirements, such as New York City's requirements that all systems receive costly UL certification as well as a professional engineer's stamp.

Nearly all customers were satisfied with the reliability of their systems, their systems' performance, the system installation and service, their savings on their utility bills, and 80% were satisfied with the cost of their system. About two-thirds of customers said their systems' actual output met or exceeded their expectations, and about half reported that their systems' output on a sunny summer day equals or exceeds their electricity usage. Four customers (nearly 10% of the sample) described serious problems with their utility billing since the installation of their systems and difficulties they had resolving those problems. Nearly three-quarters of customers would be interested in receiving emails from NYSERDA regarding expected system production given current solar conditions. Finally, virtually all customers had recommended PV systems to others and were interested in talking with potential system owners or indicated they were already involved in such activity, such as participating in solar home shows.

NYSERDA's Renewable Energy & Energy Efficiency Workforce Education Conference succeeded in attracting both newcomers to the field and veteran organizations training students through established training programs in renewable energy and energy efficiency. Attendees have programs that offer credit toward degrees and certificates and hands-on training and internship opportunities. Large proportions of attendees expressed satisfaction with the conference with respect to their program development activities and a desire to attend another conference in a year or two.

Contacts were most likely to have attended the conference to learn from each other, improve their programs, and obtain technical information. The contacts, especially NYSERDA's training contractors, emphasized the interdisciplinary nature of renewable energy and expressed a preference that a future conference not be so "tightly focused" on PV. They believe collaboration among trainers is essential to moving forward with the training and development of a renewables/efficiency workforce and expressed appreciation for NYSERDA's activities in this arena. Conference attendees noted some challenges to renewable energy profession: a need for more hands-on training than can typically be accomplished in a classroom setting and thus a need for a master apprenticeship program, and the need to train students in the basics of a variety of disciplines.

Conclusions and Recommendations

Conclusion 1: The installation of customer-sited PV systems is adversely affected by the lack of standard approaches to permitting and regulatory approval at the municipal level. Some municipalities have

requirements on the books that installers find time consuming and expensive, yet even in the absence of specific regulations for PV systems, delays can result as officials struggle to apply their building codes to such systems and make subjective, sometimes inappropriate decisions. The building codes of New York City significantly increase system costs, which are already higher in comparison with other parts of the state due to higher labor costs. The codes severely limit most installers' ability to makes sales in New York City and might suggest to other municipalities that such codes are necessary to ensure the safety of PV systems.

Recommendation 1: NYSERDA's efforts to facilitate municipal oversight of PV installations are important. NYSERDA should raise awareness among municipal governments of the increasing prevalence of PV systems and provide direction on how governments might address PV in their construction codes without constricting the market for this important source of power. NYSERDA might work through such organizations as the New York State Conference of Mayors and Municipal Officials or the New York regional chapters of the American Planning Association. NYSERDA could make municipal officials aware that their citizens may soon be asking them to approve PV installations and present the benefits of having their codes appropriately updated. Materials could present example language from cities that have already updated their codes. One additional step NYSERDA could take to promote understanding and educate the municipalities is to conduct joint inspections of PV systems with code officials.

Conclusion 2: For the most part, the utilities appear to be meeting their obligations under SIR, yet both installers and customers report times where utilities seemingly have acted to thwart PV system installation or operation, and most installers, including experienced ones, report instances of lengthy turn-around times.

Recommendation 2A: NYSERDA should consider taking steps to ensure customers and installers understand the process for reporting to the Department of Public Services such instances where they believe the utility is not meeting its obligations under SIR.

Recommendation 2B: As most contacts agree that small PV installations are increasingly becoming uniform, NYSERDA could help installers submit accurate interconnection applications to utilities by providing templates of "one-line" system diagrams.

Conclusion 3: Customers responded positively to the NYSERDA Program Manager's idea of providing PV customers with periodic emails regarding expected system production given current solar conditions. Customers are spontaneously sharing their solar experiences with others, sometimes in quasi-formal settings, such as speaking to groups of which they are members or as participants in solar home tours.

Recommendation 3: The Program Manager should move forward with plans to communicate with customers through periodic emails. As potential customers of new technologies frequently want to speak with customers already using the technology, the Program Manager should identify those few customers that might be appropriate to be trained as speakers for talking to groups about their own experience with renewables. Such training could particularly focus on those customers participating in the National Tour of Solar Homes.

Conclusion 4: Training professionals involved in renewables and efficiency clearly appreciate NYSERDA's efforts to create a workforce to meet a growing demand for tradespeople in these fields and commend NYSERDA as doing "as much or more than anyone to build a workforce." NYSERDA's Renewable Energy & Energy Efficiency Workforce Education Conference reached people working in New York and the Northeast region, as well as training professionals working outside the region. Thus, the workforce development infrastructure is growing in response to both NYSERDA's direct efforts to

foster the infrastructure and in response to consumer demand for systems resulting from incentives for renewable energy systems.

Recommendation 4: It could be useful for the PV Program team to gain additional understanding of the strengths and limitations of workforce development. A review of the experiences of other renewable energy programs with fostering a qualified workforce and coordinating this with the development of customer demand could provide valuable lessons for the PV Program.

Conclusion 5: Conference attendees expressed enthusiasm for another conference on workforce development, with most contacts suggesting it be held a year after the first one. Attendees primarily suggested that NYSERDA do "more of the same," yet specific suggestions were offered to broaden the conference's scope somewhat to address multi-disciplinary facets of renewables and related fields and include more "hands-on" features and demonstrations of technologies and products.

Recommendation 5: NYSERDA Program/Project Managers should feel confident in their plans to hold a second conference in March 2008 and should consider attendees recommendations for enhancing the conference.

6.5 Power Systems Product Development

6.5.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Power Systems Product Development Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-9.

During the period Power Systems Product Development Program issued Program Opportunity Notice (PON) 1042 was issued resulting in a total of 36 proposals received and 13 projects approved for NYSERDA funding. Also, during the period a second Power Systems Technology Development solicitation, PON 1118, was issued offering two closing dates in 2007.

Project Milestones that occurred during the period include:

- Environmental Permitting of the Roosevelt Island Tidal Energy Project.
- Completion of battery installation of the 7.2 MWh hour Sodium Sulfur energy storage demonstration project at the metropolitan Transit Authority long Island Bus natural gas refueling station in Garden city Long Island.
- Gaia Power began marketing of their 11 KWh PowerTower energy storage and management system for use in residential emergency power and power quality markets.
- Taylor Recycling in Montgomery currently sorts and recycles 450 tons per day (tpd) construction and demolition (C&D) waste. Taylor is planning to construct and operate a 300 dry tpd gasifier to fuel a 24 MW gas turbine generator at the site. NYSERDA co-funded a feasibility study to establish a gasifier feedstock, and to prepare preliminary permit applications was completed.

Table 6-9. Power Systems Product Development Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Product development contracts awarded	10	13
New products commercially launched	1	
Successful new product field tests and demonstrations	2	
Projects successfully completing milestones	4	6
Assessments and studies of new technologies completed	3	1

6.6 DG-CHP Demonstration

6.6.1 Progress Toward Goals

Several near-term non-energy goals have been set for the DG-CHP Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-10. Energy-related goals and progress were shown in Section 6.2.2.

Table 6-10. DG-CHP Demonstration Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Initiate DG-CHP incentive program	Develop and implement a CHP incentive program in cooperation with other DG-CHP programs	SBC funds are included in E-CIPP (PON 1101 issued in Q1 of 2007) available as a CHP subscription program for commercial & industrial customers in ConEd territory. A CHP subscription offering for multifamily residential customers has been approved by NYSERDA management.
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 in June 2006. Thirty-four proposals were received per due date August 22, 2006. Seven CHP demonstration projects were selected and are in process of being contracted.
Technology transfer	Require performance monitoring of all demonstration projects and export data to the CHP website	Currently, data is posted on http://chp.nyserda.org for 26 projects.

6.6.2 Energy, Peak Demand and Fuel Savings

Table 6-11 shows the cumulative annual energy and peak demand savings from the DG-CHP Program. A realization rate and net-to-gross ratio are applied to adjust the program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Table 6-11. DG-CHP Program Cumulative Annual Energy and Peak Demand Savings (Through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Freerider-ship	Spillover	Net-to-Gross Ratio[1]	Net Savings
MWh/year	104,048	0.90	93,955	15%	26%	1.07	100,626
MW	20.8	0.98	20.5	15%	26%	1.07	21.9
MMBtu/year[2]	-813,893	0.88	-715,412	15%	26%	1.07	-766,206

[1] Net-to-Gross Ratio = (1-Freeridership) * (1+Spillover).

[2] 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.

6.7 Demand Response and Innovative Rate Research

6.7.1 Progress Toward Goals

Two near-term non-energy goals have been set for the Demand Response and Innovative Rate Research Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-12. Energy-related goals and progress were shown in Section 6.2.2.

Table 6-12. Demand Response and Innovative Rate Research Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007	Achieved July 1, 2006 through March 31, 2007
Increase small customer participation in wholesale and local demand response programs (MW)	33	Planned a public forum for program design comments to take place in New York City in early April. The solicitation is scheduled for release as PON 1106 in 2nd quarter 2007. Initiated an evaluation of the financial benefits (energy, demand and capacity savings) resulting from use of fleet managed window air conditioners that emphasize advanced controls for periods of peak demand and high electricity costs.
Increase the number of multifamily apartment units participating in real-time and other time-sensitive electric rate pilots	500 apartment units	Coordinated a pilot program design with DPS, New York City, & Con Edison officials. Planned a public forum for comments to take place in early April in New York City. The solicitation release as PON 1151 is set for the 2nd quarter of 2007.

6.7.2 Energy, Peak Demand and Fuel Savings

Table 6-13 shows the cumulative annual energy and peak demand savings from the Demand Response and Innovative Rate Research Program. A realization rate and net-to-gross ratio are applied to adjust the

program reported savings based on the most recent Measurement and Verification and Attribution evaluation studies. Net savings in the rightmost column are the total savings being claimed by the program after these evaluation activities.

Enabling Technology was a research and development program that sought innovative ways of aggregating, dispatching and reporting demand response. Projects were selected in part for their ability to demonstrate and commercialize new methods of aggregating load. The program did not require that the enabled demand reduction be maintained. Enabled demand reduction is a potential quantity that may or may not translate into curtailed load in response to a New York Independent System Operator call for emergency resources. These factors contribute to the low realization rate (0.50) shown in Table 6-13.

Table 6-13. Demand Response and Innovative Rate Research Program Cumulative Annual Energy and Peak Demand Savings (Through March 2007)

	Program-Reported Savings	Realization Rate	Adjusted Gross Savings	Net-to-Gross Ratio	Net Savings
Enabled MW	208.3	0.50a	104.2	0.95	99.0

a MWs enabled under the SBC2 program Enabling Technologies for Price Responsive Load were not required to persist beyond the period of the contract. As such, the available MWs have steadily declined since the program's close.

6.8 Electric Transportation

6.8.1 Progress Toward Goals

Several near-term non-energy goals have been set for the Electric Transportation Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-14.

During the period, the Electric Transportation Program issued Program Opportunity Notice (PON) 1003 resulting in a total of 15 proposals received and five projects approved for NYSERDA funding. Also, during the period a second Electric Transportation Technology Development solicitation, PON 1143, was issued offering two closing dates in 2007.

Projects approved for funding during the period include:

- Development of an energy efficient train control system for the New York City subway market.
- Development of an automatic rail switch and third rail heating system that will reduce energy consumption necessary for de-icing.
- Development and demonstration of electric powered trailer refrigeration for long for refrigerated trucks.
- Development of an Anti-Diesel Idling guide book to assist municipal planning and zoning officials in developing idling reduction strategies.

Table 6-14. Electric Transportation Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007	Achieved July 1, 2006 through March 31, 2007
Solicitations released	2	2
Proposals reviewed	N/A	15
Projects funded	N/A	5
Funding/Co-funding	$1,000,000/$1,000,000	$800,000/$900,000

6.9 Environmental Monitoring, Evaluation, and Protection (EMEP)

6.9.1 Progress Toward Goals

Several near-term goals have been set for the Environmental Monitoring, Evaluation and Protection Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-15. Overall, the Program is performing well with respect to these goals.

Table 6-15. Environmental Monitoring, Evaluation, and Protection Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007	Achieved July 1, 2006 through March 31, 2007
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 two other major program advisory meetings were held regarding the plan. One other major program advisory meeting is planned for April. All of the attendees at the planning meetings were state or nationally recognized experts in their fields. 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. A research solicitation has been approved by senior management with an anticipated May 2007 issue.
Sponsor workshops, conferences, and seminars	2	NYSERDA held a one-day conference with environmental organizations to exchange information and ideas concerning environmental issues and initiatives in New York State. EMEP co-sponsored a workshop on the creation of a soil-monitoring network in the Northeast.
Provide web-based EMEP data and information	40,000 customer "visits," inquiries, and downloads from EMEP's web page	During this period, hits on EMEP web sites totaled nearly 135,000 and downloads totaled more than 17,000.

Activity	Program Goals (July 1, 2006 through June 30, 2007	Achieved July 1, 2006 through March 31, 2007
Publish NYSERDA research reports	5	5 research reports and 1 executive summary published
Publish peer-reviewed journal articles	15	16 articles were published in the area of Air Quality/Health Effects, and 4 articles were published in the area of Ecosystems.
Provide briefings to decision makers	2	Sponsored a meeting with policymakers concerning wind and wildlife.

6.10 Industrial Research, Development and Demonstration

6.10.1 Progress Toward Goals

Two near-term goals have been set for the Industrial Research, Development, and Demonstration Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-16.

Table 6-16. Industrial Research, Development and Demonstration Program -- Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved from July 1, 2006 through March 31, 2007
Issue annual solicitations	By fall 2006,contract for 6 to 10 demonstrations and feasibility studies of innovative and under-utilized 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. In round 2 NYSERDA selected 5 projects to receive SBC funding. PON 1130 was issued with three rounds of due dates (March 28, July 16, and November 8, 2007) with total funding exceeding $5.7 million. Efforts for proposal review and selection are in process for round 1.
Program metrics	Document realized energy efficiency, environmental, and economic benefits	Projects are being contracted with requirements for documentation of performance metrics. Projects have not yet been completed; therefore, metrics cannot be ascertained at this time.

6.11 Municipal Water and Wastewater Efficiency

6.11.1 Progress Toward Goals

Several near-term goals have been set for the Municipal Water and Wastewater Efficiency Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-17.

Table 6-17. Municipal Water and Wastewater Efficiency Program – Near-Term Goals and Achievements

Activity	Program Goals (July 1, 2006 through June 30, 2007	Achieved July 1, 2006 through March 31, 2007
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 (Municipal Water and Wastewater Technologies Development and Demonstration Program) was issued and seventeen (17) proposals were received requesting approximately $3.9 million in NYSERDA funding. Five projects were recommended for funding, three of which will use SBC funds.
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.	NYSERDA sponsored an energy management training session for the target sector, co-developed by EPRI and the New York Water Environment Association (NYWEA). Approximately 70 individuals representing consultants, engineers, and municipalities attended the two-day session. Additionally, the materials developed for the session will be offered through NYWEA in webcast format in the near future. Energy management presentations were given at four NYSEFC-facilitated Co-Funding Committee conferences and at a NYSDEC-sponsored training for local elected officials. The presentations were also part of a webcast hosted by the Comptroller's Office. At a minimum, 100 individuals participated in these presentations. The submetering and evaluation of 20 wastewater treatment plants has been completed. The final reports and summary of findings have been posted online. (In a related sector-based EES program, the Energy Smart Focus solicitation was developed, which will provide several sectors with customized services and strategies in support of energy efficiency. Proposals supporting the Municipal Water and Wastewater Sector were reviewed by a Technical Evaluation Panel for technical merit, and a single contract is being developed.)
Technical Assistance	Develop six new projects while reviewing and approving six ongoing projects.	Four new Technical Assistance (TA) projects were approved to begin work totaling $34K in NYSERDA funds. Five TA projects, representing $93K in NYSERDA funds, were completed.

6.11.2 Energy, Peak Demand and Fuel Savings

On average, the municipal water and wastewater projects take five to seven years from conception to implementation. However, once implementation is complete, the projects should lead to nearly 43,000 MWh of electricity savings and 15,000 kW of peak demand reduction. Depending on the effectiveness of information dissemination from knowledge created, the potential exists for substantial electric savings and demand reductions due to replication across the broader New York municipal water/wastewater market sector.

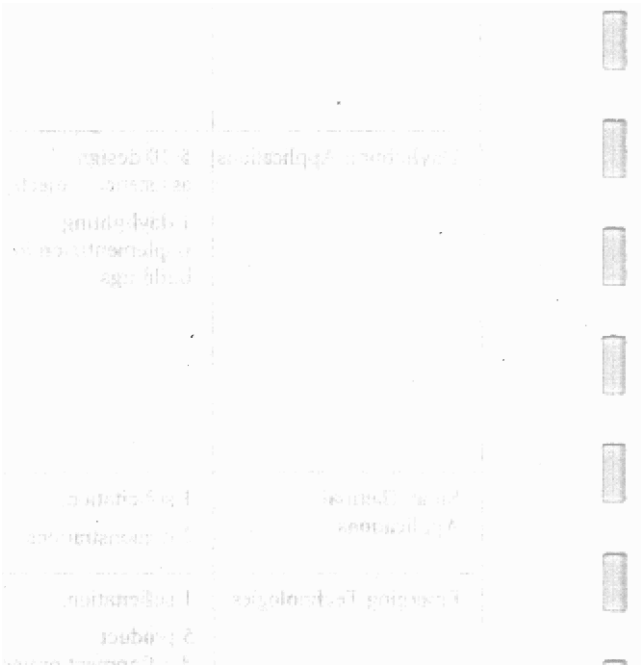
6.12 Next Generation and Emerging Technologies

6.12.1 Progress Toward Goals

Several near-term goals have been set for the Next Generation and Emerging Technologies Program. These one-year goals, as well as progress for the first nine months, are shown in Table 6-18.

Table 6-18. Next Generation and Emerging Technologies Program – Near-Term Goals and Achievements

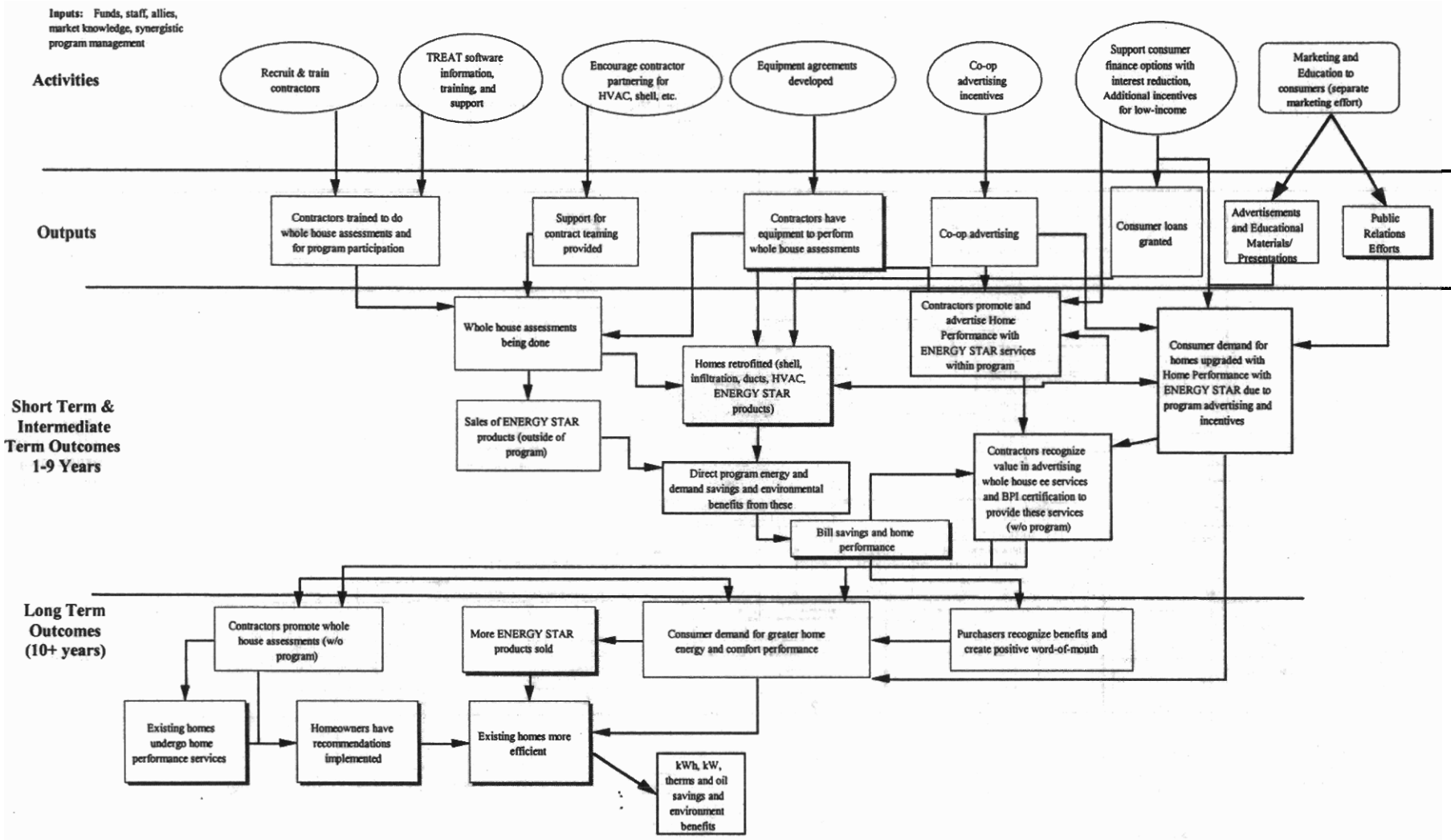
Activity	Program Goals (July 1, 2006 through June 30, 2007)	Achieved July 1, 2006 through March 31, 2007
Advanced Building Program	2 solicitations, 5 product development projects, 1 demonstration test bed	Received preliminary results from survey of ENERGY STAR homes constructed in NYS since 2000 from an agreement resulting from RFP 1032 Reference Design Guide for Energy Efficient Residential Construction. Work received includes descriptive statistics on size, location, energy related construction details, and systems and estimated energy use. Two agreements have been contracted from PON 1062 Demonstration of Advanced Envelopes and Compressorless Air Conditioning. The solicitation, PON1126 Next Generation Technologies for Residential Buildings, has been finalized. Due dates are set for May and September. $1.5 million is available PON 1096 Demonstration of High Performance Residential Homes – solicitation developed.
Daylighting Applications	5-10 design assistance projects, 1 daylighting implementation in buildings	PON 1079 Daylight Technical Services, Training and Demonstrations. Of nine proposals received, five were recommended for funding in the amount of $765,000. Projects are to provide demonstration, evaluation, and technical services for daylighting applications in buildings. RFP 1068 Establishment of a Lighting Incubator Center to Support Lighting Start-up Companies in New York was issued with total available funding of $2 million. Two proposals were received and one was selected for funding. Contract negotiations are underway. PON 1122 Innovation in Lighting: New Products, Demonstrations, and Testing. Thirteen proposals were received with requested funding totaling $2,460,023 (available: $250,000 SBC and $750,000 statutory funding).
Solar Thermal Applications	1 solicitation, 2 demonstrations	PON 1085 Solar Thermal Demonstrations: Seven of the 13 proposals received were recommended for NYSERDA funding totaling $490,000 (50% SBC, 50% statutory funding).
Emerging Technologies	1 solicitation, 5 product development projects	PON 1105 Next Generation Emerging Technologies: $4,000,000 in funding for two rounds of proposals. For the first round, due January 22, 2007, 23 project proposals were received and 10 projects were recommended for $1.56 million in funding. Second round proposals are due by June 7, 2007.



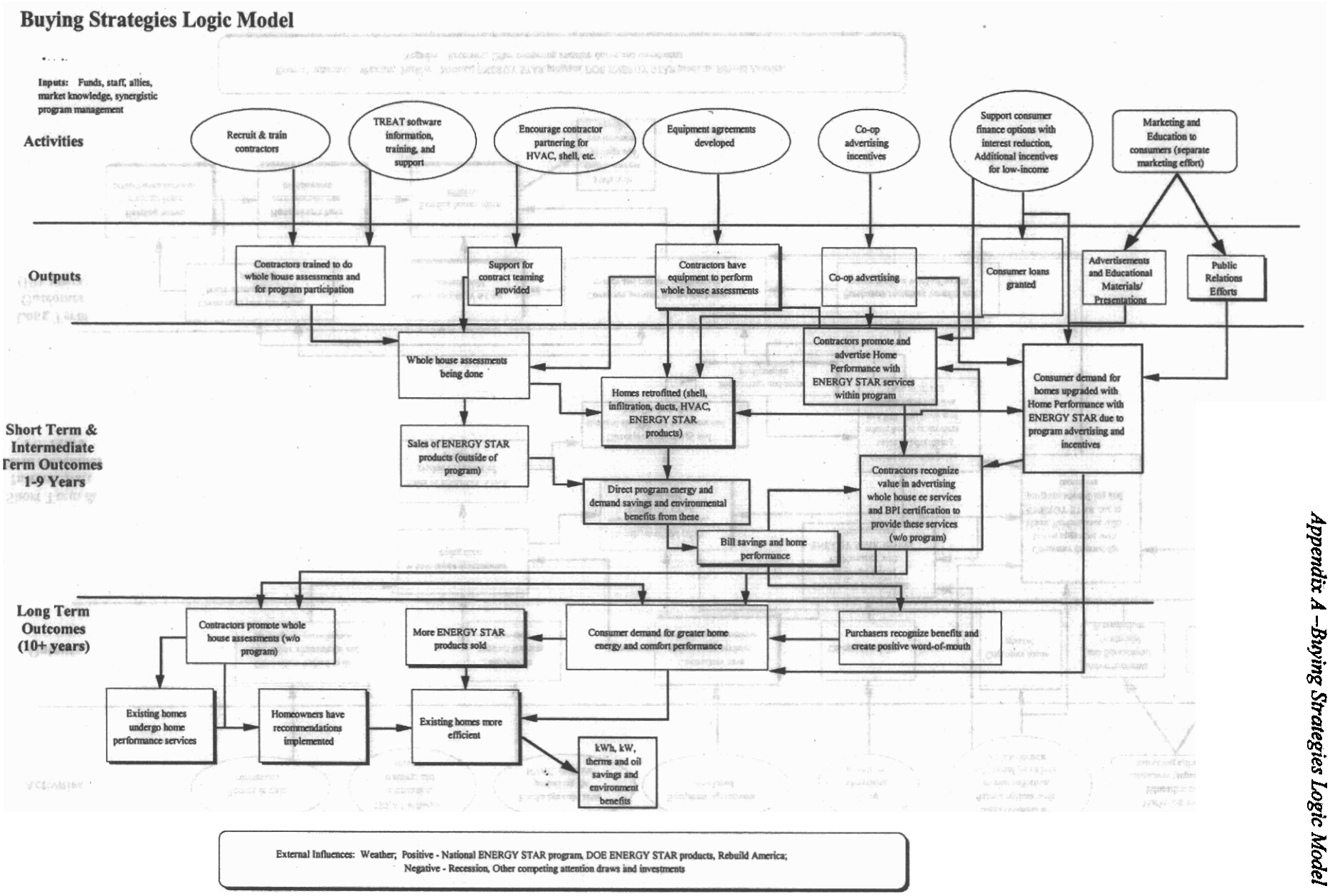
Appendix A: Logic Models

This section includes two logic models completed during the first quarter of 2007 by NYSERDA's evaluation contractors. These logic models are for the residential Market Support and Buying Strategies programs. For program results, see Section 5.

Market Support Logic Model



Buying Strategies Logic Model



Appendix B: Additional Cost-Effectiveness Inputs

This appendix contains additional key cost-effectiveness analysis inputs that were not featured in Section 3 of this report.

Table B-1. Upstate Avoided Energy and Capacity Cost Forecast ($2006)

	Summer peak	Summer off-peak	Summer shoulder	Winter peak	Winter off peak	Winter shoulder	Summer Gener. Capacity	Winter Gener. Capacity
Year	$/kWh	$/kWh	$/kWh	$/kWh	$/kWh	$/kWh	$/kW-yr	$/kW-yr
2003	0.08	0.06	0.07	0.07	0.06	0.06	11.97	7.01
2004	0.08	0.06	0.07	0.07	0.06	0.06	11.97	7.01
2005	0.08	0.06	0.07	0.07	0.06	0.06	11.97	7.01
2006	0.08	0.06	0.07	0.07	0.06	0.06	11.97	7.01
2007	0.08	0.05	0.06	0.07	0.05	0.06	10.81	6.33
2008	0.09	0.07	0.07	0.08	0.06	0.07	13.03	7.63
2009	0.07	0.05	0.06	0.06	0.05	0.06	10.49	6.14
2010	0.07	0.05	0.06	0.06	0.05	0.06	10.33	6.05
2011	0.06	0.05	0.05	0.05	0.04	0.05	9.09	5.32
2012	0.07	0.05	0.05	0.06	0.04	0.05	9.50	5.57
2013	0.07	0.05	0.05	0.06	0.04	0.05	9.47	5.55
2014	0.08	0.05	0.06	0.06	0.05	0.06	10.72	6.28
2015	0.06	0.04	0.05	0.05	0.04	0.05	8.56	5.01
2016	0.07	0.05	0.05	0.06	0.04	0.05	9.57	5.60
2017	0.07	0.05	0.05	0.06	0.04	0.05	9.34	5.47
2018	0.07	0.05	0.06	0.06	0.05	0.06	10.58	6.20
2019	0.07	0.05	0.06	0.06	0.05	0.06	10.44	6.12
2020	0.08	0.06	0.07	0.07	0.05	0.06	11.57	6.78
2021	0.07	0.05	0.06	0.06	0.05	0.06	10.36	6.07
2022	0.07	0.05	0.06	0.06	0.05	0.05	10.06	5.89
2023	0.07	0.05	0.06	0.06	0.05	0.06	10.22	5.98
2024	0.07	0.05	0.06	0.06	0.05	0.05	9.66	5.66
2025-2052	0.07	0.05	0.06	0.06	0.05	0.05	9.68	5.67

Note: The load-weighted average hourly day-ahead NYISO wholesale electric prices from January 1, 2004 through December 31, 2006 (in constant 2006$) were used in years 2003 to 2006. Forecasted prices reflect the pattern of prices in the wholesale gas price forecast developed for the Natural Gas Energy Efficiency Resource Development Potential in New York, Optimal Energy, Inc., 2006.

Table B-2. Downstate Avoided Energy and Capacity Cost Forecast ($2006)

Year	Summer Peak	Summer off-peak	Summer shoulder	winter peak	winter off peak	winter shoulder	Summer Gener. Capacity	Winter Gener. Capacity
2003	0.13	0.08	0.09	0.10	0.07	0.08	54.23	30.51
2004	0.13	0.08	0.09	0.10	0.07	0.08	54.23	30.51
2005	0.13	0.08	0.09	0.10	0.07	0.08	54.23	30.51
2006	0.13	0.08	0.09	0.10	0.07	0.08	54.23	30.51
2007	0.11	0.07	0.09	0.09	0.06	0.08	48.99	27.57
2008	0.14	0.08	0.10	0.10	0.08	0.09	59.06	33.23
2009	0.11	0.07	0.08	0.08	0.06	0.07	47.53	26.74
2010	0.11	0.07	0.08	0.08	0.06	0.07	46.83	26.35
2011	0.10	0.06	0.07	0.07	0.05	0.06	41.19	23.17
2012	0.10	0.06	0.08	0.08	0.05	0.07	43.06	24.23
2013	0.10	0.06	0.08	0.08	0.05	0.07	42.91	24.14
2014	0.11	0.07	0.09	0.09	0.06	0.07	48.58	27.33
2015	0.09	0.05	0.07	0.07	0.05	0.06	38.78	21.82
2016	0.10	0.06	0.08	0.08	0.06	0.07	43.36	24.40
2017	0.10	0.06	0.07	0.07	0.05	0.07	42.31	23.81
2018	0.11	0.07	0.08	0.08	0.06	0.07	47.96	26.99
2019	0.11	0.07	0.08	0.08	0.06	0.07	47.32	26.62
2020	0.12	0.07	0.09	0.09	0.07	0.08	52.44	29.51
2021	0.11	0.07	0.08	0.08	0.06	0.07	46.96	26.42
2022	0.11	0.06	0.08	0.08	0.06	0.07	45.60	25.66
2023	0.11	0.07	0.08	0.08	0.06	0.07	46.31	26.05
2024	0.10	0.06	0.08	0.08	0.06	0.07	43.78	24.64
2025-2052	0.10	0.06	0.08	0.08	0.06	0.07	43.90	24.70

Note: The load-weighted monthly NYISO capacity prices from January 1, 2004 through December 31, 2006 (in constant 2006$) were used in years 2003 to 2006. Forecasted prices reflect the pattern of prices in the wholesale gas price forecast developed for the Natural Gas Energy Efficiency Resource Development Potential in New York, Optimal Energy, Inc., 2006.

Table B-3. Wholesale Fossil Fuel Cost Forecast ($2006 per MMBtu)

	Wholesale Natural Gas[1]	Wholesale Distillate Oil[2]
2003	6.79	11.12
2004	6.93	11.08
2005	9.84	11.04
2006	9.76	11.00
2007	8.82	10.96
2008	10.63	10.92
2009	8.55	11.12
2010	8.43	11.08
2011	7.41	11.04
2012	7.75	11.00
2013	7.72	10.96
2014	8.74	10.92
2015	6.98	11.12
2016	7.80	11.08
2017	7.62	11.04
2018	8.63	11.00
2019	8.52	10.96
2020	9.44	10.92
2021	8.45	11.12
2022	8.21	11.08
2023	8.33	11.04
2024	7.88	11.00
2025 -2052	7.90	10.96

[1] Source: Natural Gas Energy Efficiency Resource Development Potential in New York, Optimal Energy, Inc., 2006.

[2] Source: Energy Information Administration

Table B-4. Retail Electricity and Natural Gas Price Forecast

	Upstate Electricity		Downstate Electricity		Statewide Natural Gas	
	Residential ($/KWh)	C/I ($/KWh)	Residential ($/KWh)	C/I ($/KWh)	Residential Natural Gas	C/I Natural Gas
2003	0.1021	0.1260	0.1738	0.2042	12.15	8.79
2004	0.1007	0.1242	0.1714	0.2013	12.83	10.01
2005	0.1093	0.1348	0.1860	0.2186	12.15	12.65
2006	0.1130	0.1422	0.2233	0.2443	12.83	12.18
2007	0.1021	0.1285	0.2017	0.2207	14.65	11.82
2008	0.1231	0.1549	0.2432	0.2660	15.28	11.62
2009	0.0990	0.1246	0.1957	0.2141	14.93	11.48
2010	0.0976	0.1228	0.1928	0.2109	14.73	11.37
2011	0.0858	0.1080	0.1696	0.1855	14.59	11.29
2012	0.0897	0.1129	0.1773	0.1940	14.48	11.22
2013	0.0894	0.1125	0.1767	0.1933	14.40	11.16
2014	0.1012	0.1274	0.2000	0.2188	14.32	11.10
2015	0.0808	0.1017	0.1597	0.1747	14.26	11.05
2016	0.0903	0.1137	0.1785	0.1953	14.21	11.01
2017	0.0882	0.1109	0.1742	0.1906	14.16	10.97
2018	0.0999	0.1258	0.1975	0.2161	14.12	10.93
2019	0.0986	0.1241	0.1948	0.2132	14.08	10.90
2020	0.1093	0.1375	0.2159	0.2362	14.04	10.87
2021	0.0978	0.1231	0.1934	0.2115	14.01	10.84
2022	0.0950	0.1196	0.1878	0.2054	13.98	10.82
2023	0.0965	0.1214	0.1907	0.2086	13.95	10.79
2024	0.0912	0.1148	0.1803	0.1972	13.92	10.77
2025-2052	0.0915	0.1151	0.1807	0.1977	13.90	10.74

Historical values from Patterns and Trends, NYSERDA, 2006. Forecasted prices reflect the pattern of prices in the wholesale gas price forecast developed for the Natural Gas Energy Efficiency Resource Development Potential in New York, Optimal Energy, Inc., 2006.

Table B-5. Program/Measure Lives

	Life
Enhanced CIPP	**20.0**
Cooling/HVAC	24.0
Lighting	20.0
Motors	20.0
Smart Equipment Choices (Program Level)	14.8
High Performance Buildings (Program Level)	**20.0**
Peak Load Management Program	-
Enabling Technologies Emergenc Demand Response Program	6.0
ET ICAP/SCR	6.0
Peak Load Reduction Progrm EDPR	6.0
PLRP SCR	6.0
PLRP Permanent Measures	15.0
Technical Assistance Program	**20.1**
Building Controls	15.0
Cooling/HVAC	24.0
Generation	20.0
Industrial Process	20.0
Lighting	20.0
Motors	20.0
Other	20.0
Shell	30.0
Business Partners	**13.5**
Hospitality lighting	5.0
Motors	20.0
SCLP	14.0
Residential Programs	-
Air and Duct Sealing	20.0
Air Cleaner	15.0
Central Air Conditioner	15.0
CFLs	6.8
Clotheswasher	15.0
Cooling Systems	15.0

	Life
Dehumidifiers	19.0
Dishwasher	13.0
Domestic Hot Water	15.0
Dryer	15.0
Envelope/Shell	40.0
Fan	15.0
Heating	30.0
Insulation	20.0
Lighting tixtures	12.0
Motors	15.0
Pipe or tank wrap	8.0
PV systems	30.0
Refrigerator/Freezer	19.0
Room AC	19.0
Showerheads	8.0
Submetering	15.0
Torchieres	12.0
Waterbeds	8.0