1

Introduction and Public Policy Context

1.1 Introduction

This report provides an update of the progress made to date implementing the **New York Energy $mart**[SM] Public Benefits Program (Program). Progress is reported for Program activities completed through December 31, 2006.[1] The report was prepared jointly by New York State Energy Research and Development Authority (NYSERDA) staff and a team of third-party evaluation assistance and specialty contractors, in accordance with the Memorandum of Understanding (MOU)[2] between NYSERDA, the New York State Department of Public Service (DPS), and the New York State Public Service Commission (PSC). This report was prepared on behalf of the System Benefits Charge Advisory Group[3] (Advisory Group), which serves as the Independent Program Evaluator as per the MOU. The Advisory Group was provided a draft report and met via teleconference to discuss the draft and review the findings of the evaluation contractors. Evaluation assistance and specialty contractors presented their work and research findings to the Advisory Group. Feedback and comments received on the draft report were incorporated into this final report. The SBC Advisory Group submits this report to the PSC in fulfillment of its responsibilities under the terms of the MOU.

The Advisory Group and DPS were actively involved in selecting the evaluation contractors who were retained through NYSERDA's competitive solicitation process and in developing the scopes of work for the evaluation activities, including apportioning the evaluation budget among the contractors and identifying the programs to be included in the evaluation. All evaluation contract awards were made through NYSERDA's competitive solicitation process whereby proposals were submitted in response to a Request for Proposals (RFP) that was developed and reviewed by a Technical Evaluation Panel (TEP). The Advisory Group and DPS were represented on all TEPs that were convened to review proposals and recommend contract awards. Advisory Group members had the opportunity to review and comment on individual evaluation contractor work plans and meet with the members of each contractor's team as they deemed necessary and appropriate. This report builds upon the evaluation framework and model used to

[1] Previous annual reports were issued in September 2000, January 2002, May 2003, May 2004, May 2005, and May 2006. Each report presents cumulative results from the Program's inception on July 1, 1998. The most recent report is available at www.nyserda.org and by request.

[2] Memorandum of Understanding between the New York State Public Service Commission, New York State Department of Public Service, and New York State Energy Research and Development Authority, March 11, 1998, revised December 6, 2001.

[3] The Advisory Group consists of 24 individuals representing varied interests, including utilities, business and environmental groups, energy service companies, community organizations, professional and trade associations, and national energy efficiency and energy research and development (R&D) organizations.

guide prior evaluation efforts and reports results for work completed from the program's inception through December 31, 2006.

1.2 Public Policy Context

The System Benefits Charge (SBC) Program administered by NYSERDA as the **New York Energy $mart**SM Program, was initiated in 1998 by order of the PSC[4] and has included three funding cycles.[5] The **New York Energy $mart**SM Program (Program) portfolio consists of numerous initiatives promoting energy efficiency, including both permanent efficiency reductions as well as peak demand management, facilitating renewable energy infrastructure development, providing energy services to low income New Yorkers, and conducting research, development, and demonstration of promising new products and technologies. The Program provides a myriad of services, and includes the dissemination of information to increase consumer energy awareness, marketing of programs and services, provision of financial incentives to spur customer and market investment in energy efficiency and demand management, development and testing of new products, commercializing new technologies, and gathering data and information.

The **New York Energy $mart**SM Program is currently in its third funding cycle, each of which is described below.

First Funding Cycle (1998 – 2001)

- June 1998 through June 2001. During this three-year period, NYSERDA's administration of the Program was begun with emphasis on designing programs, conducting outreach, and offering technical and financial assistance to customers and market allies to fully deploy programs. Programs were offered to all customers paying the SBC. During this period, NYSERDA administered approximately $58 million a year in SBC funding.

Second Funding Cycle (2001 – 2006)

- July 2001 through December 2002. During this five-year period, NYSERDA was provided approximately $147 million per year to continue and expand upon its current program offerings. Also during this period, the **New York Energy $mart**SM Program's implementation activities were greatly accelerated as committed program funding more than doubled in the first 18-month period, going from less than $300 million to more than $600 million. The rapid increase in program funding commitments was a direct result of program design, outreach, and marketing efforts introduced by NYSERDA during the first three years of the Program. NYSERDA's early efforts were designed to create a market capacity and capability to deliver energy efficiency and related services. Once created, Program activities could be readily accelerated, as partnerships were created with market allies, marketing and general awareness campaigns had succeeded in stimulating demand for services, and the market infrastructure was in place to deliver such services.

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

[5] The most recent cycle was initiated with the New York State Public Service Commission 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.

- January 2003 through December 2004. As the **New York Energy $mart^{SM}** Program evolved, NYSERDA selectively modified its funding commitments across the many programs offered. For example, funding modifications were required because some energy efficiency product markets, such as residential room air conditioners, were being transformed, and product incentive offerings as a result, could be reduced. Also, because the market and demand for energy efficiency services in New York is extensive, the Program needed to accept fewer service applications to preserve funds through the funding period ending June 2006, when the second funding cycle for the **New York Energy $mart^{SM}** Program ended.

- January 2005 through June 2006. NYSERDA continued to assess gaps and opportunities with respect to energy efficiency, low-income services, and R&D programs as a means to assist policy makers in deciding the future of funding for energy-related public benefits programs in the State.

Third Funding Cycle (2006 –2011)

- July 2006 through June 2011. The PSC extended the **New York Energy $mart^{SM}** Program for another five years, increasing funding from approximately $150 million to $175 million annually (with NYSERDA administering approximately $173.2 million annually and the balance provided to certain utilities for their utility-run programs). The continuation and expansion of the Program is designed to help maintain momentum for the State's efforts to develop competitive markets for energy efficiency; demand management (including peak load reduction); outreach and education services; research, development, and demonstration; low-income services; and to provide direct economic and environmental benefits to New Yorkers. The extended program will continue to address market barriers to the competitive procurement of these services.

1.3 Design and Conduct of the New York Energy $mart^{SM} Program

In order to successfully pursue these diverse activities, NYSERDA employs differing strategies. Representative strategies are presented in broad outline below. Many programs use a combination of these strategies. Discussions of individual activities are presented throughout this evaluation report.

- Market transformation programs promote energy efficiency by developing markets and permanently changing energy-related decisions by consumers, retailers, and manufacturers. Creating an energy efficiency "ethic" is critical if New Yorkers are to improve energy efficiency without sacrificing energy services – making decisions based on life-cycle economic benefits and costs, and sustainable environmental stewardship. Market transformation programs also promote the development of the energy-efficiency supply infrastructure through training, certification, marketing and other means.

- Energy efficiency programs identify energy savings opportunities and install energy-efficient products and technologies in single and multifamily homes, commercial buildings, and industrial plants.

- Load-management programs allow energy users to shift and reduce energy use from on-peak to off-peak periods – thereby reducing customers' energy use and bills, and improving the reliability of the electric system.[6]

- Low-income services make energy more affordable for low-income households by installing energy efficiency improvements and by disseminating energy information to homeowners, building owners and operators, and contractors.

- Research, Development and Demonstration (RD&D) programs develop alternative energy resources and technologies, deploy distributed generation and combined heat and power systems, develop and test new technologies and products, and collect and evaluate data for use in environmental analysis and in support of policy decision making. RD&D programs emphasize innovation and support projects and activities that provide opportunities for breakthroughs that might significantly improve existing technologies, products, and markets.

Different methods and protocols must be applied in evaluating each of the program offerings because their purposes and services are designed to meet different goals. Among the methods and protocols used and reported herein are measurement and verification (M&V); program theory and logic modeling; process evaluation; market characterization, assessment, and causality; benefit-cost and value-cost analyses; and, macroeconomic impact analysis.

1.4 Organization of the Report

This annual report describes how the **New York Energy $mart**[SM] Program is contributing to meeting its public policy goals.

This report is divided into the following sections:

Executive Summary

Section 1 - Introduction and Public Policy Context

Section 2 – Portfolio-Level Reporting

Section 3 – Commercial and Industrial Programs

Section 4 – Residential and Low-Income Programs

Section 5 - Research and Development Programs

[6] Reducing peak demand by shifting and reducing energy use from on-peak to off-peak periods increases energy productivity but may not reduce energy use or improve energy efficiency. If the electric load is shifted to an off-peak period and the same overall amount of energy is used, costs to consumers may be less, thus improving energy productivity, but the total quantity of energy used will be unchanged.

2

Portfolio-Level Reporting

The **New York Energy $mart**[SM] Program is a portfolio of numerous program initiatives that have individually and collectively helped the State make strides toward achieving its energy policy goals. This section presents findings and results for the portfolio of **New York Energy $mart**[SM] programs. The evaluations of individual program initiatives are presented separately in Sections 3, 4 and 5.

2.1 Budget and Spending Status

This financial overview of the **New York Energy $mart Program**[SM] presents budget and funding status from 1998 through December 31, 2006. The thirteen year budget is approximately $1.87 billion, of which $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 budgets for these program areas are presented in Table 2-1 along with the costs for program administration, program evaluation, the Environment Disclosure Program[1], and the New York State Cost Recovery Fee[2]. Figure 2-1 and Figure 2-2 present graphic representations of ratepayer System Benefits Charge (SBC) contributions.

[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.

Table 2-1. New York Energy $mart^{SM} Program Budget ($ million)

	Budget			% of Program Area Budget	% of Total Budget
	SBC I & SBC II [1,2]	SBC III [3]	Total Budget		
Program Areas					
Commercial/Industrial	359.2	276.7	635.9	37.8%	34.0%
Residential	167.1	135.0	302.1	18.0%	16.2%
Low-Income	128.4	190.2	318.6	19.0%	17.0%
Research and Development	210.8	182.0	392.8	23.4%	21.0%
General Awareness[4] (Marketing)	16.0	15.0	31.0	1.8%	1.7%
Program Areas Total	**$881.5**	**$798.9**	**$1,680.4**	**100.0%**	**89.8%**
Other Costs					
Program Administration	65.5	62.7	128.2	-	6.9%
Metrics and Evaluation	16.5	17.9	34.4	-	1.8%
Environmental Disclosure	1.9	0	1.9	-	0.1%
NYS Cost Recovery Fee[5]	9.0	16.4	25.4	-	1.4%
Other Costs Total	**$ 92.9**	**$97.1**	**$189.9**	**-**	**10.2%**
Total New York Energy $mart^{SM}	**$ 974.3**	**$ 896.0**	**$1,870.3**	**-**	**100.0%**

[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.

[5] 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.

Totals may not sum exactly due to rounding.

Source: NYSERDA

Figure 2-1. New York Energy $mart^{SM} Ratepayer Contributions by Utility[3] Service Area

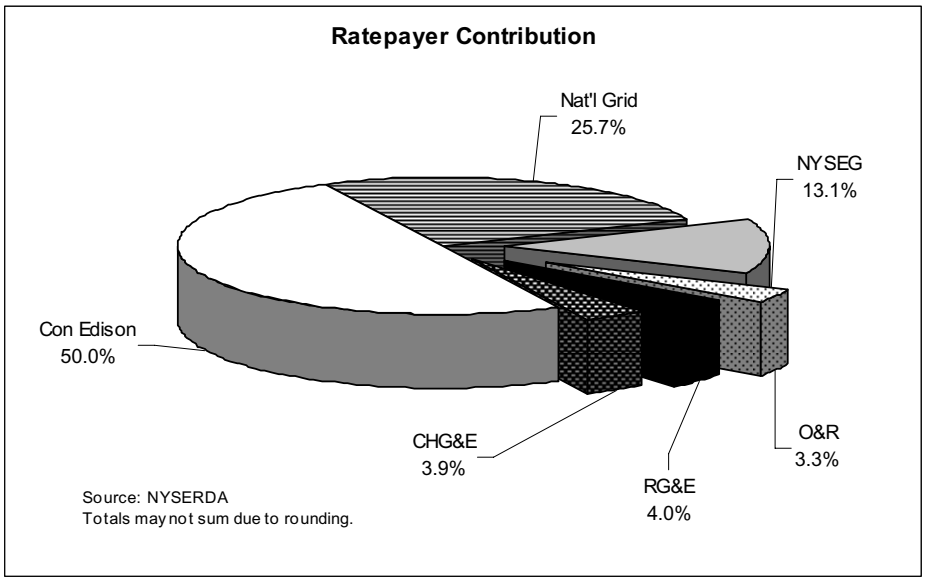
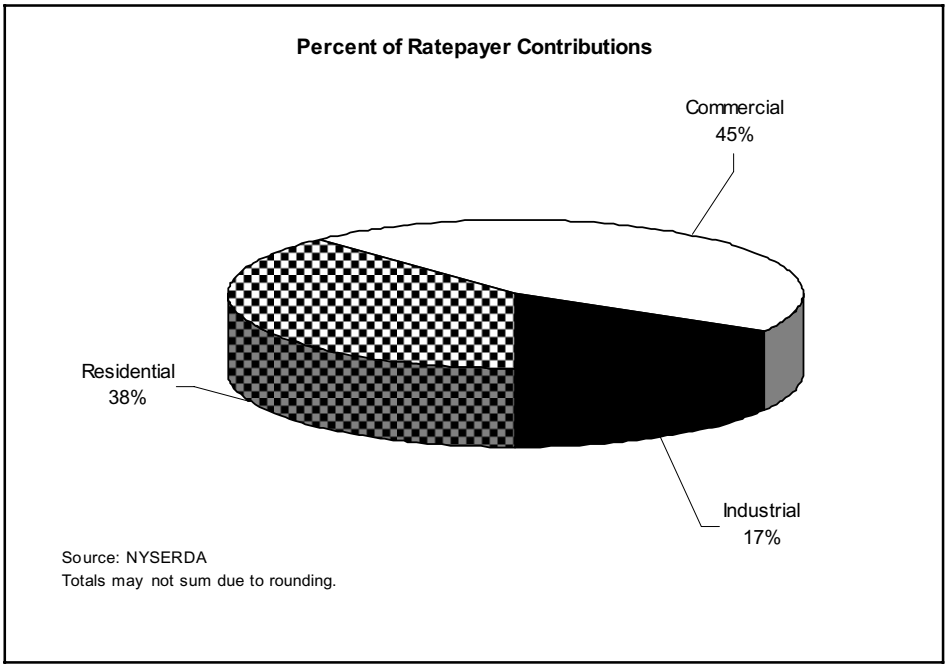


Figure 2-2. New York Energy $mart^{SM} Ratepayer Contributions by Sector



[3] The utility service areas: Central Hudson Gas and Electric, Inc. (CHG&E), Consolidated Edison Company of New York, Inc. (Con Edison), National Grid (Nat'l Grid), New York State Electric and Gas Corporation (NYSEG), Orange and Rockland Utilities, Inc. (O&R), Rochester Gas and Electric Corporation (RG&E).

2.1.1 Financial Status and Funding Allocation

The funding status of **New York Energy $mart^{SM}** through year-end 2006 is shown in Table 2-2. The percentage of funds spent relative to the thirteen-year budget for each program area is: Commercial/ Industrial 41.8%; Residential 58.8%; Low-Income 32.0%; and R&D 29.9%. Figure 2-3 provides historical information on program funding and spending.

Table 2-2. Financial Status of New York Energy $mart^{SM} Program ($ million)

	Total 13-Year Budget	Funds Spent			Encumbered Funds[4]	Committed Funds[5]
		SBC I & SBC II [1,2]	SBC III [3]	Total Spent and % of Budget	% of Budget Encumbered	% of Budget Committed
Program Areas						
Commercial/Industrial	635.9	247.1	18.3	265.5 41.8%	368.3 57.9%	399.5 62.8%
Residential[5]	302.1	165.4	12.1	177.6 58.8%	196.6 65.1%	206.3 68.3%
Low-Income	318.6	86.6	15.3	101.9 32.0%	139.3 43.7%	145.6 45.7%
Research and Development	392.8	105.9	11.7	117.6 29.9%	177.8 45.3%	201.5 51.3%
General Awareness[6] (Marketing)	31.0	15.9	0.8	16.7 53.9%	19.3 62.3%	19.3 62.3%
Program Areas Total	**$1,680.4**	**$620.9**	**$58.3**	**$679.2 40.4%**	**$898.5 53.6%**	**$972.3 57.9%**
Other Costs						
Program Administration	128.2	59.8	5.8	65.6 51.2%	65.6 51.2%	65.6 51.2%
Metrics and Evaluation	34.4	14.5	1.0	15.5 45.1%	17.5 50.9%	22.5 65.4%
Environmental Disclosure	1.9	0.8	0.1	0.9 47.4%	1.1 57.9%	1.1 57.9%
NYS Cost Recovery Fee	25.4	9.2	1.2	10.4 40.9%	10.4 40.9%	10.4 40.9%
Other Costs Total	**$189.9**	**$84.3**	**$8.1**	**$92.4 48.7%**	**$94.6 49.8%**	**$99.6 52.4%**
Total New York Energy Smart^{SM}	**$1,870.3**	**$705.2**	**$66.4**	**$771.6 41.3%**	**$993.3 53.1%**	**1,071.9 57.3%**

[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.

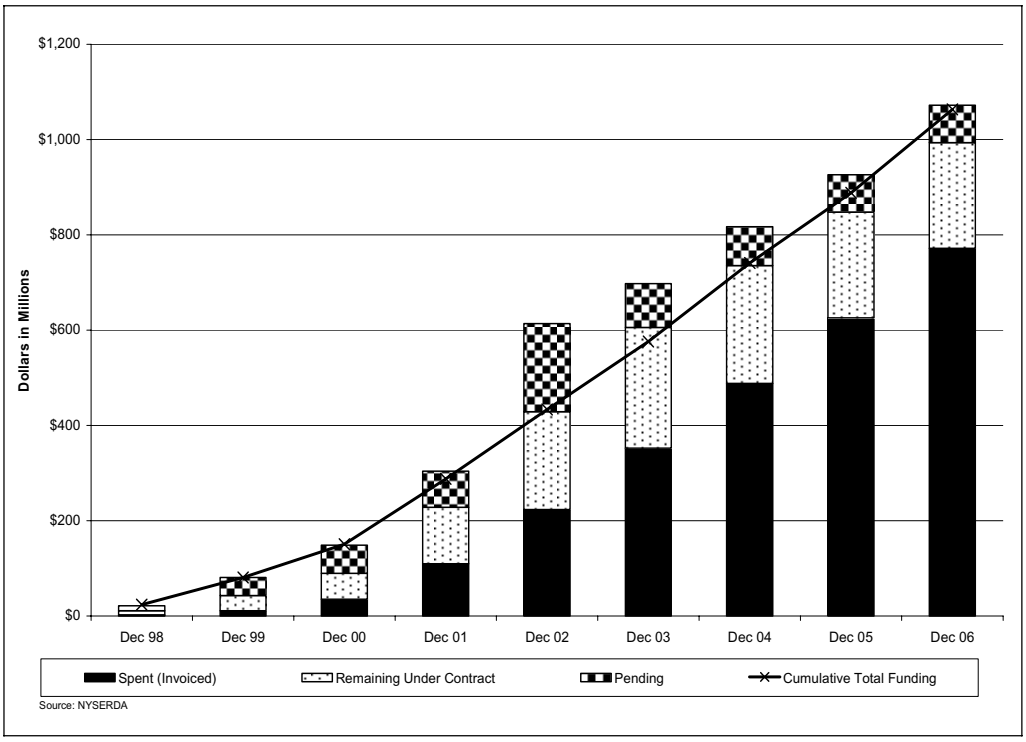
[4] Encumbered funds associated with signed contracts and purchase orders.

[5] Committed funds associated with encumbered funds and pending contracts.

[6] General Awareness previously included in Residential Progarm Area.

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

Figure 2-3. New York Energy $mart^{SM} Program Funding History and Activity December 1998 through December 2006



2.1.2 Program Areas

<u>Commercial/Industrial Program Area</u>

Table 2-3 presents detailed budget and funding information for the Commercial/Industrial programs. Figure 2-4 and Figure 2-5 show C/I program spending by utility service area and sector, respectively.

Table 2-3. Commercial/Industrial Programs – Financial Status ($ million)

Program	Budget			Funds Spent			Encumbered Funds[3] % of Budget Encumbered	Committed Funds[4] % of Budget Committed
	SBC I & SBC II [1]	SBC III [2]	Total Budget	SBC I & SBC II [1]	SBC III [2]	Total Funds Spent		
Peak Load Management	42.7	40.0	82.7	35.1	3.4	38.5 46.6%	55.3 66.9%	56.6 68.4%
Enhanced Commercial/ Industrial Performance	150.5	96.1	246.6	100.3	4.5	104.8 42.5%	146.1 59.2%	148.9 60.4%
New York Energy $mart^{SM} Business Partners	22.6	18.8	41.3	19.7	1.2	20.9 50.6%	24.5 59.3%	24.7% 59.8%
Loan Fund and Financing	10.5	10.5	21.0	12.3	1.5	13.8 65.7%	17.4 82.9%	17.4 82.9%
Energy Smart Focus	8.0	11.9	19.9	3.6	0.8	4.4 22.1%	5.1 25.6%	5.1 25.6%

High Performance New Buildings	80.8	70.0	150.8	53.1	5.7	58.8 39.0%	89.2 59.2%	114.4 75.9%
FlexTech Technical Assistance	37.0	29.5	66.5	20.4	1.1	21.5 32.3%	25.7 38.6%	27.4 41.2%
Other	7.1	0.0	7.1	2.6	0.1	2.7 38.0%	5.0 70.4%	5.0 70.4%
Total Commercial & Industrial	**359.2**	**276.7**	**635.9**	**247.1**	**18.3**	**265.5** **41.8%**	**368.3** **57.9%**	**399.5** **62.8%**

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

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

[3] Encumbered funds associated with signed contracts and purchase orders.

[4] Committed funds associated with encumbered funds and pending contracts.

Totals may not sum exactly due to rounding.

Source: NYSERDA

Figure 2-4. C/I Funds Spent by Utility Service Area

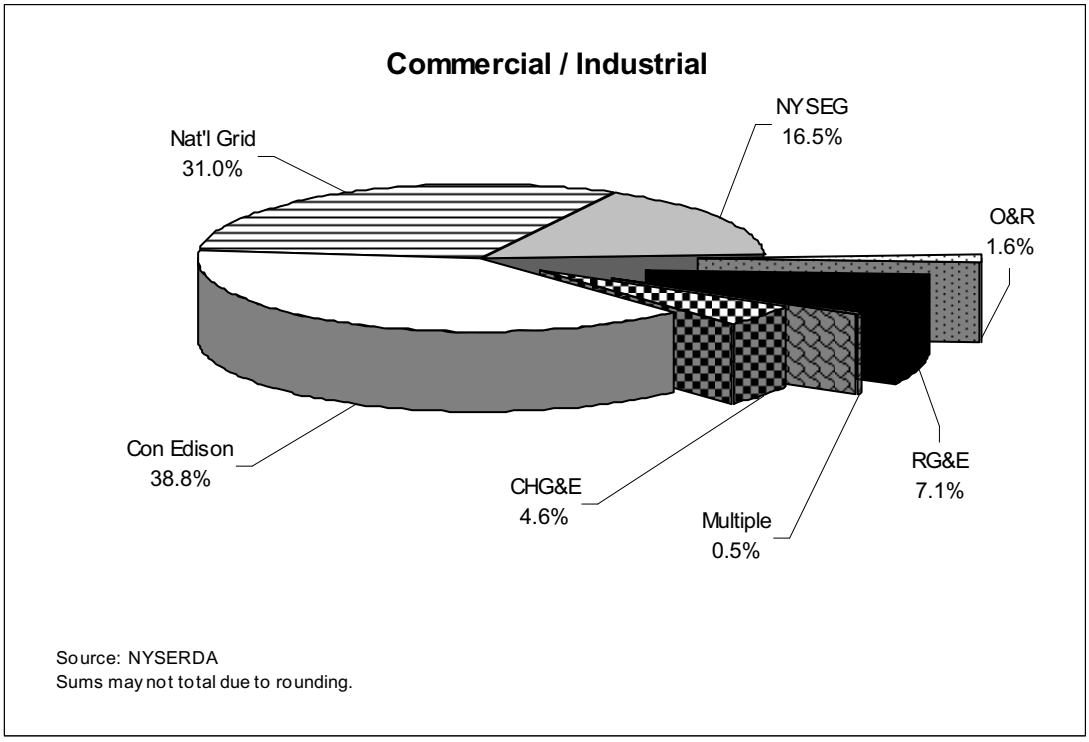
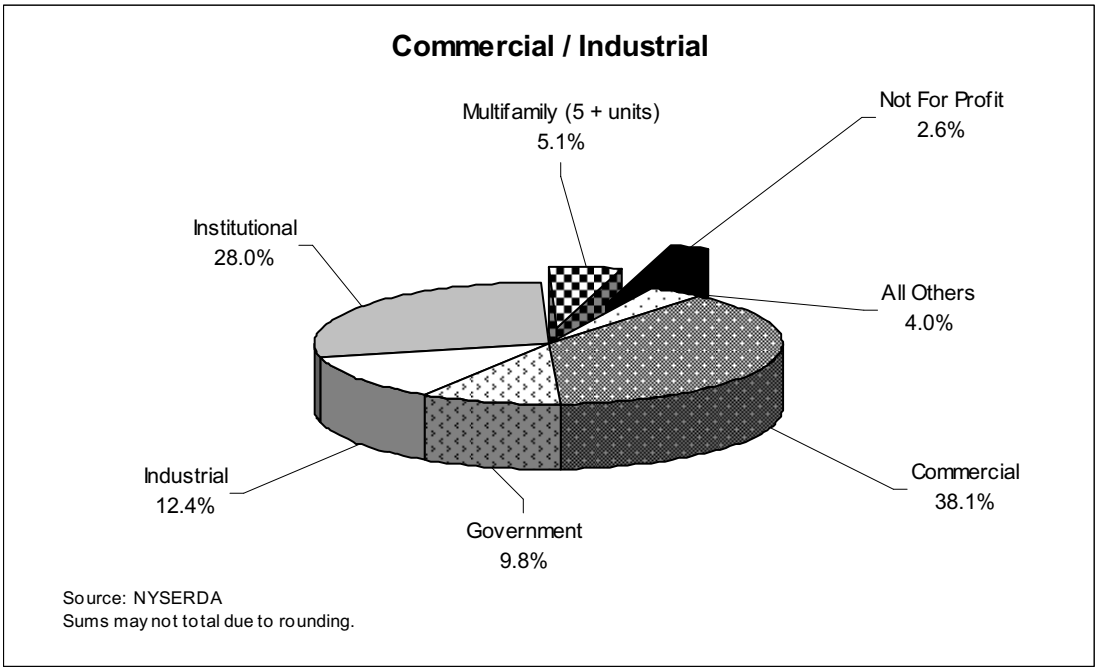


Figure 2-5. C/I Funds Spent by Sector



Residential and Low-Income Program Areas

Table 2-4 presents detailed budget and funding information for the Residential and Low-Income programs. Figure 2-6 and Figure 2-7 show Residential program spending by utility service area and housing type, respectively. Figure 2-8 and Figure 2-9 provide the same information for the Low-Income programs.

Table 2-4. Residential and Low-Income Programs - Financial Status ($ million)

Program	Budget			Funds Spent			Encumbered Funds[4] % of Budget Encumbered	Committed Funds[5] % of Budget Committed
	SBC I & SBC II [1, 2]	SBC III [3]	Total Budget	SBC I & SBC II [1, 2]	SBC III [3]	Total Funds Spent		
Residential Programs								
Single Family Home Performance	49.3	58.3	107.6	47.4	4.7	52.1 48.4%	54.8 50.9%	56.1 52.1%
Multifamily Building Performance	17.8	20.0	37.8	18.3	2.6	20.9 55.3%	28.9 76.5%	30.8 81.5%
Market Support Residential	95.2	49.0	144.2	96.5	4.2	100.7 69.8%	107.9 74.8%	113.3 78.6%
Communities and Education	4.9	7.8	12.6	3.2	0.7	3.9 31.0%	5.0 39.7%	6.0 47.6%
Subtotal Residential	**167.1**	**135.0**	**302.1**	**165.4**	**12.1**	**177.6 58.8%**	**196.6 65.1%**	**206.3 68.3%**
Low-Income Programs								
Single Family Home Performance	27.5	54.0	81.5	27.7	4.6	32.3 39.6%	34.5 42.3%	34.5 42.3%
Multifamily Building Performance	76.2	75.0	151.2	35.5	6.2	41.7 27.6%	76.1 50.3%	78.1 51.7%
EmPower New York	8.8	49.5	58.3	8.8	4.2	13.0 22.3%	13.4 23.0%	17.2 29.5%
Buying Strtegies & Energy Awareness	6.1	11.7	17.7	4.7	0.3	5.0 28.2%	5.4 30.5%	5.8 32.8%
Other	9.9	0.0	9.9	9.9	0.0	9.9 100.0%	9.9 100.0%	9.9 100.0%
Subtotal Low-Income	**128.4**	**190.2**	**318.6**	**86.6**	**15.3**	**101.9 32.0%**	**139.3 43.7%**	**145.6 45.7%**
TOTAL Residential and Low Income	**295.5**	**325.2**	**620.7**	**252.0**	**27.5**	**279.5 45.0%**	**336.0 54.1%**	**351.9 56.7%**

[1] Included with SBC II Residential funding an additional $11.5 million from interest and unspent utility funds.

[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] Encumbered funds associated with signed contracts and purchase orders.

[5] Committed funds associated with encumbered funds and pending contracts.

Totals may not sum exactly due to rounding.

Source: NYSERDA

Figure 2-6. Residential Funds Spent by Utility Service Area

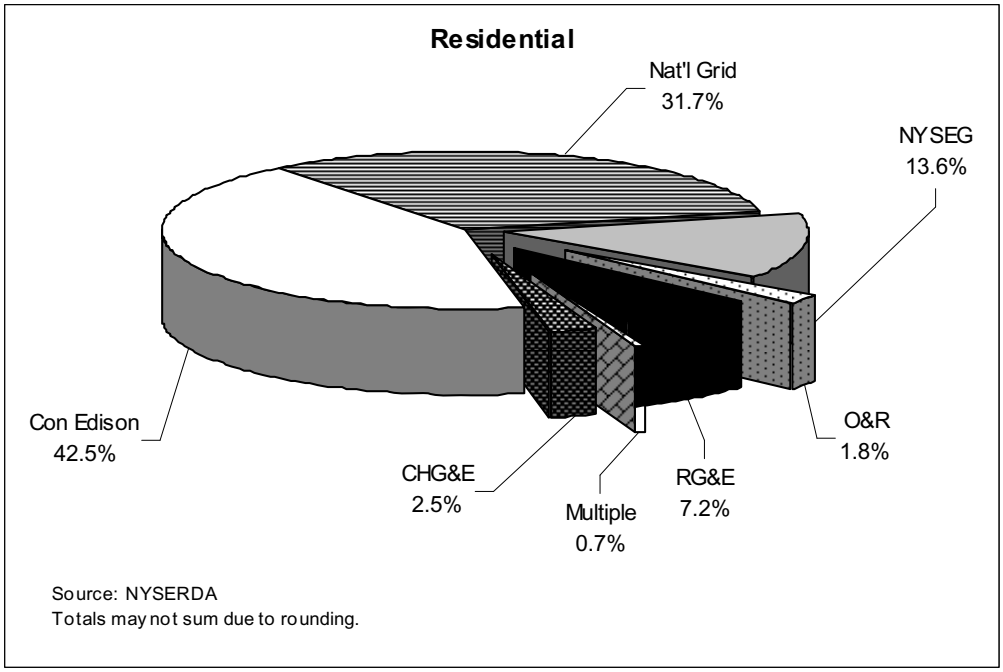


Figure 2-7. Residential Funds Spent by Housing Type

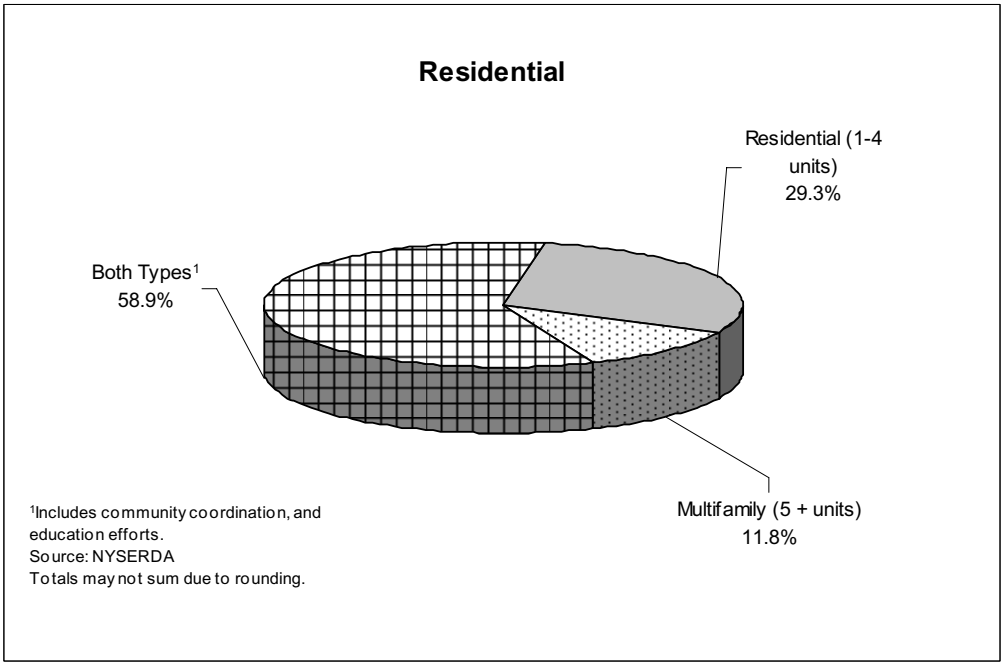


Figure 2-8. Low-Income Funds Spent by Utility Service Area

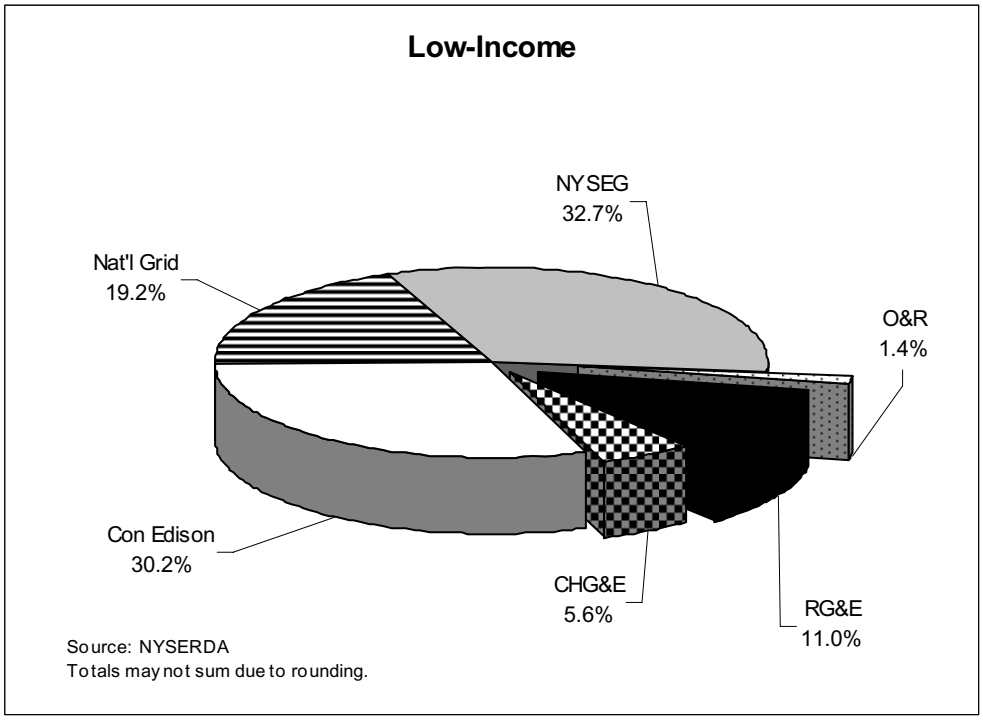
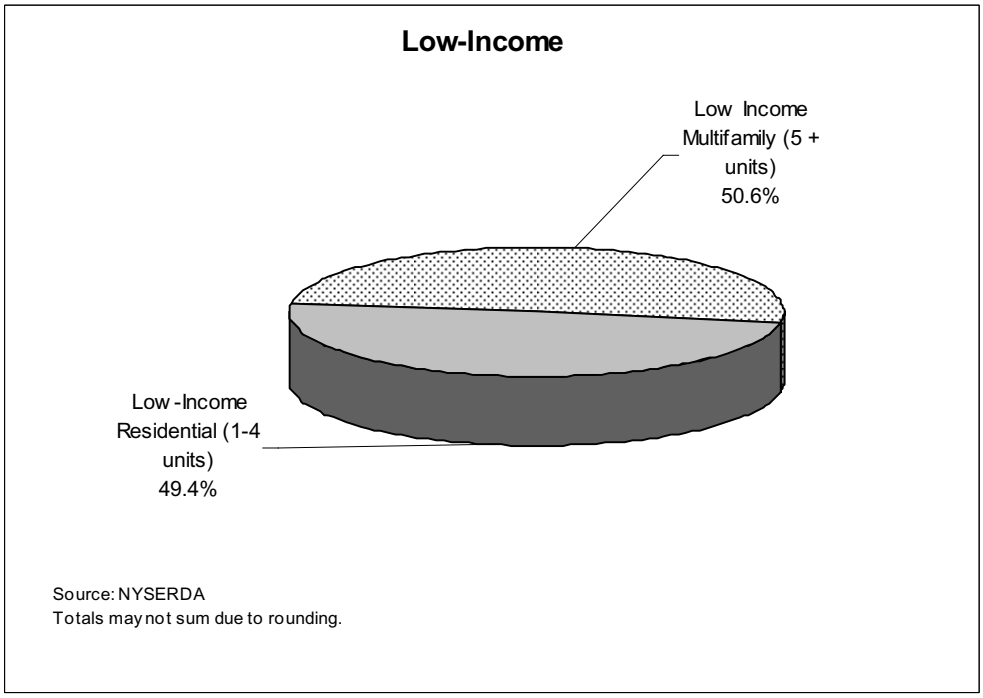


Figure 2-9. Low-Income Funds Spent by Housing Type



Research, Development and Demonstration Program Area

Table 2-5 presents detailed budget and funding information for the Research, Development and Demonstration (RD&D or R&D) programs. Figure 2-10 and Figure 2-11 show R&D Program spending by utility service area and technology.

Table 2-5. Research & Development Programs – Financial Status ($ million)

Program	Budget			Funds Spent			Encumbered Funds[3] % of Budget Encumbered	Committed Funds[4] % of Budget Committed
	SBC I & SBC II [1]	SBC III[2]	Total Budget	SBC I & SBC II[1]	SBC III [2]	Total Funds Spent % Funds Spent		
Public Benefit Power Transmission and Distribution	0.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0
Clean Energy Infrastructure	43.7	33.8	77.5	19.0	4.6	23.6 30.5%	33.6 43.4%	38.0 49.0%
Distributed Energy Resources: Products and Demonstrations	74.1	72.5	146.6	31.9	4.1	36.1 24.6%	69.6 47.5%	84.0 57.3%
Demand Response and Innovative Research	0.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0
Electric Transportation	0.0	5.0	5.0	0.0	0.0	0.0	0.4 8.0%	1.0 20.0%
Environmental, Monitoring, Evaluation, and Protection	21.5	17.5	39.0	17.7	1.0	18.7 47.9%	21.9 56.2%	24.3 62.3%
Industrial and Municipal Process Efficiency	0.0	15.0	15.0	0.0	0.0	0.0	0.2 1.3%	1.7 11.3%
Next Generation and Emerging Technologies	29.6	18.3	47.8	18.3	1.4	19.6 41.0%	22.8 47.7%	24.6 51.5%
Wholesale Renewable Energy Market	36.1	0.0	36.1	16.5	0.6	17.1 47.4%	23.6 65.4%	25.1 69.5%
Other	5.8	0.0	5.8	2.5	<0.1	2.5 43.1%	2.9 50.0%	2.9 50.0%
TOTAL Research & Development	**210.8**	**182.0**	**392.8**	**105.9**	**11.7**	**117.6 29.9%**	**175.1 44.6%**	**201.5 51.3%**

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

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

[3] Encumbered funds associated with signed contracts and purchase orders.

[4] Committed funds associated with encumbered funds and pending contracts.

Totals may not sum due to rounding.

Source: NYSERDA

Figure 2-10. R&D Funds Spent by Utility Service Area

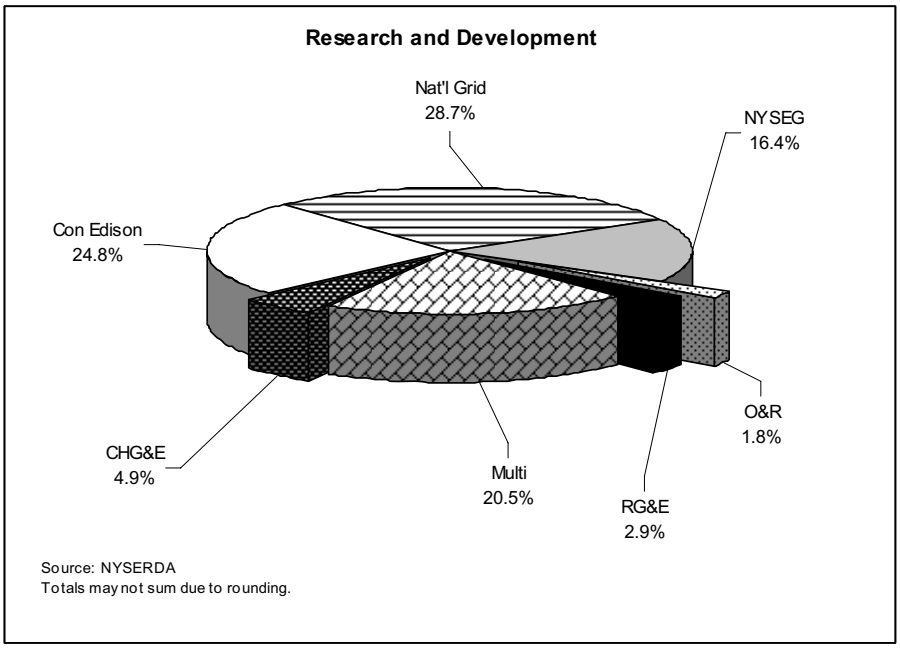
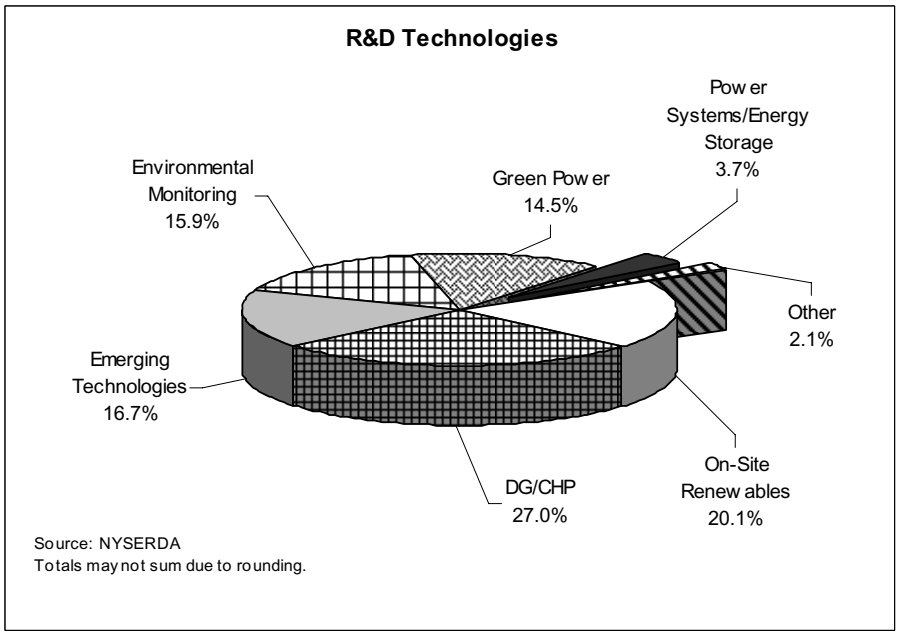


Figure 2-11. R&D Funds Spent by Technology



2.2 Portfolio Level Findings

This section discusses portfolio level findings related to progress toward overarching public policy goals, energy savings achievements, and economic analyses including macroeconomic impacts, market price effects, and overall cost-effectiveness. These findings are compiled based on the cumulative work of NYSERDA and its evaluation contractor teams over the past several years. Evaluation activities completed this year include:

- Measurement and Verification (M&V) work on FlexTech Technical Assistance, as well as database reviews for Peak Load Management, the Enhanced Commercial/Industrial Performance Program, the Small Commercial Lighting Program, High Performance New Buildings, Single Family Home Performance, EmPower New York, End Use Renewables, and DG/CHP.

- Market Characterization, Assessment and Causality (MCAC) work on Enhanced Commercial/Industrial Performance Program, High Performance New Buildings, and FlexTech Technical Assistance.

- Process Evaluation work on High Performance New Buildings, EmPower New York, and a portfolio-level evaluation review.

- Program Theory and Logic work on High Performance New Buildings, FlexTech Technical Assistance, all Residential and Low-Income programs (except Market Support, Buying Strategies and Energy Awareness), and Value/Cost analyses on DG/CHP and Environmental Monitoring, Evaluation and Protection.

- A peer review assessment of the Distributed Generation/Combined Heat and Power Program and the Environmental Monitoring, Evaluation and Protection Program.

NYSERDA expects to complete the following evaluation activities for inclusion in the next report (first quarter 2007):

- Measurement and Verification (M&V) work on Peak Load Management, Enhanced Commercial/Industrial Performance, the Small Commercial Lighting Program, Home Performance with ENERGY STAR, EmPower New York, and Enabling Technologies.

- Market Characterization, Assessment and Causality (MCAC) work on non-participant market effects/spillover, the Market Support Program (residential ENERGY STAR focused), and Non-Energy Impacts.

- Process Evaluation work on End Use Renewables, the Assisted Multifamily Program, and EmPower New York.

- Program Theory and Logic work on: the **New York Energy $mart**^{SM} Focus Program, Business Partners, and the **New York Energy $mart**^{SM} Loan Fund; General Awareness efforts, Market Support, and Low-Income Buying Strategies; and R&D programs including Public Benefit Power Transmission and Distribution and Next Generation and Enabling Technologies.

2.2.1 Progress Toward Goals

This section presents the cumulative progress of the **New York Energy $mart^{SM}** Program toward meeting the four overarching public policy goals set forth and recently revised by the PSC.[4] Overall, the Program is making good progress toward achieving the long term goals. The goals and progress through December 31, 2006 are shown in Table 2-6. Substantial additional program-specific and sector-level accomplishments have been documented within NYSERDA and independent evaluation contractor reports and are contributing to the development of sustainable progress being made toward these important overarching public policy goals.

Table 2-6. New York Energy $mart^{SM} Goals and Progress through December 31, 2006

Public Policy Goal	Progress as of December 31, 2006
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.	The **New York Energy $mart^{SM}** Program has improved system-wide reliability and peak demand reduction, enabling 618 MW of callable load reduction and installing efficiency measures that permanently reduce peak demand by another 495 MW.
	The **New York Energy $mart^{SM}** Program has led to the installation of energy efficiency measures saving more than 2,360 GWh per year.
	The **New York Energy $mart^{SM}** Program has led to the installation of wind and photovoltaic technologies which provide more than 100 GWh of clean electricity generation per year.
	With funding from **New York Energy $mart^{SM}**, the U.S. Department of Energy and private sources, the world's first in-grid underground superconducting cable was installed and began operations on July 20, 2006 in the National Grid utility system. Superconducting cables can carry three to five times more power than conventional cables of the same size and can meet increasing power demands in urban areas by retrofitting old underground cables, eliminating the need to acquire new rights-of-way.
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}** Program has saved participating customers nearly $340 million in annual energy costs.
	Approximately 60,000 eligible New York low-income customers received direct assistance through the **New York Energy $mart^{SM}** programs, resulting in $220/year in average customer energy bill savings for this under served population.
	Approximately 2,200 small business customers have been served through the Smart Equipment Choices Program.
	Approximately 3,000 multi-family units will participate in time-sensitive electricity rate pilot projects.
	The **New York Energy $mart^{SM}** portfolio has achieved a benefit-cost ratio of 2.4 under the most conservative Total Market Effects Test scenario.
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 resulting from **New York Energy $mart^{SM}** Programs' energy savings is 2,060 tons of nitrogen oxide (NOX), 3,800 tons of sulfur dioxide (SO_2), and 1.6 million tons of carbon dioxide (CO_2).
	Between 2002 and 2006, the number of PV and small wind installers participating in the **New York Energy $mart^{SM}** Program has increased from 30 to 102. The Program has supported more than 1,680 attendees at PV and small wind training events, and helped 27 installers in the PV program become certified

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

Public Policy Goal	Progress as of December 31, 2006
	by the North American Board of Certified Energy Practitioners (NABCEP).
	The **New York Energy $mart**SM Program has helped optimize energy performance in approximately 650 new commercial buildings, more than 8,500 new homes, and more than 13,800 existing homes. Additionally, more than 8,500 energy efficiency projects have been completed in commercial/industrial buildings.
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.	Averaged over a 19-year analysis period, the **New York Energy $mart**SM Program creates and sustains on average more than 8,600 jobs, increases labor income by $182 million per year, increases total output by $456 million per year, and increases value added by $211 million per year.
	The **New York Energy $mart**SM Program activities were instrumental in EPA revising its ENERGY STAR computer specifications to incorporate 80 PLUS® criteria for active power efficiency thresholds.[5]
	Under the Environmental Product development program, total product sales grew from $13 million in 2004 to $28 million in 2005.

2.2.2 Reported and Achieved Energy, Demand and Fuel Savings

The energy, peak demand, and fuel savings from the **New York Energy $mart**SM Program portfolio from 1998 through December 2006 are presented in Table 2-7. The table shows both program-reported savings and savings after adjustments were applied for field-verified realization rates, freeridership, and spillover. The purpose of the adjustments that are applied to the program-reported savings is as follows:

- Realization rates are developed by the Measurement and Verification contractor to account for differences in program reported savings and the performance of actual installations.
- Freeridership adjustments are developed by the MCAC contractor to subtract any program reported savings that would have happened in the absence of the program due to naturally-occurring adoption.
- Spillover adjustments, also developed by the MCAC contractor, add to program reported savings when participants or non-participants implement energy-saving measures due to the program's influence, but do not apply to participate in the program.

During 2006 the **New York Energy $mart**SM programs contributed 410 GWh in electricity savings, which represents a 17% increase in savings beyond those achieved by the end of 2005. Achieved permanent peak demand reduction increased by 77 MW or 7% from 2005. Achieved non-electric savings decreased by 150,000 MMBtu or 4%.

Also shown in Table 2-7 is the estimated overlap in savings across programs. Overlapping savings are expected – for example, overlap occurs when a customer first participates in the Technical Assistance (TA) Program to obtain a detailed energy audit of a facility and then participates in the Enhanced Commercial/Industrial Performance Program (ECIPP) to access incentives for the implementation of recommended measures. Database searches were performed to locate savings claimed for the same customer(s) for the same measure(s). When identified, overlap factors were developed to account for the same savings claimed under more than one program. Since both technical assistance and incentives for measures are equally vital to convincing customers to take action, and there was no reliable way of

[5] 80 PLUS is a national upstream buy-down program that encourages market transformation groups and computer manufacturers to get more energy-efficient power supplies into PCs and desktop-derived servers.

allocating the savings to one program or the other, the adjustments are made only at the sector level. In the case of the Distributed Generation/Combined Heat and Power (DG/CHP) Program, where R&D savings overlap with programs in the Commercial/Industrial sector, savings were removed from the portfolio and are shown in the table as "Cross-Sector Overlap Removed."

The reductions in energy use translate into:

- $340 million in annual energy bill savings (electric, oil and natural gas) in 2006 for New York consumers,
- 2,060 tons of annual nitrogen oxide (NO_x) emission reductions,
- 3,800 tons of annual sulfur dioxide (SO_2) emission reductions, and
- 1.6 million tons of annual carbon dioxide (CO_2) emission reductions which are equivalent to removing 320,000 automobiles from New York's roadways.

Table 2-7. Reported and Adjusted Cumulative Annual Energy, Demand, and Fuel Savings through December 2006[6]

	Energy Savings (GWh)			Peak Demand Reduction (MW)			Fuel Savings (MMBtu)[7]		
Program	**Reported GWh**	**Adjusted GWh**	***% of Reported***	**Reported MW**	**Adjusted MW**	***% of Reported***	**Reported MMBtu**	**Adjusted MMBtu**	***% of Reported***
Peak Load Management: Callable	-	-	-	488.1	470.5	96%	-	-	-
Peak Load Management: Permanent	113.5	118.0	104%	52.3	54.5	104%	-	-	-
Enhanced Commercial/ Industrial Performance	845.9	836.3	99%	182.8	142.0	78%	6,593	4,615	70%
New York Energy $mart[SM] Business Partners[8]	51.7	60.7	117%	11.0	13.3	120%	-	-	-
New York Energy $mart[SM] Loan Fund and Financing	65.5	51.3	78%	11.7	15.0	128%	111,590	139,621	125%
New York Energy $mart[SM] Focus	0	0	0	0	0	0	-	-	-

[6] Subtotals, totals and percentages may not calculate exactly due to rounding.

[7] Depending on the program and measure, non-electric savings are developed from either engineering calculations or deemed values for installations of energy efficiency measures. All fossil fuel savings are included in Table 2-7.

[8] 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.

	Energy Savings (GWh)			Peak Demand Reduction (MW)			Fuel Savings (MMBtu)[7]		
Program	**Reported GWh**	**Adjusted GWh**	***% of Reported***	**Reported MW**	**Adjusted MW**	***% of Reported***	**Reported MMBtu**	**Adjusted MMBtu**	***% of Reported***
High Performance New Buildings	193.6	250.3	129%	41.4	53.5	129%	-	-	-
Flex Tech Technical Assistance: Permanent	612.0	697.6	114%	114	130.0	114%	2,513,073	2,864,903	114%
Flex Tech Technical Assistance: Curtailable	-	-	-	8.9	10.2	114%	-	-	-
Overlap Removed[9]	-	141.9	-	-	26.1	-	-	-	-
Subtotal Commercial/ Industrial	1,882.3	1,872.2	96%	910.2	862.9	95%	2,631,256	3,009,140	114%
Single Family Home Performance (excluding Assisted Home Performance)	15.9	18.4	116%	2.0	2.5	124%	858,955	987,109	115%
Single Family Home Performance: Assisted Home Performance	4.9	5.5	113%	0.7	0.8	120%	216,256	242,207	112%
Multifamily Building Performance (Excluding Assisted Multifamily Program)	14.7	15.1	103%	2.4	3.3	138%	-	-	-
Multifamily Building Performance: Assisted Multifamily Program	28.4	23.1	81%	1.7	1.8	106%	167,303	140,541	84%
Market Support Program[10]	287.7	303.8	106%	71.5	72.8	102%	341,920	341,920	100%
EmPower New York	27.9	27.9	100%	3.3	3.3	100%	66,891	66,891	100%
Subtotal Residential and Low-Income	379.5	393.9	104%	81.6	84.5	104%	1,651,325	1,778,668	108%

[9] Sector level savings have been adjusted to remove overlap between complementary programs, as such, the 'Achieved Savings' columns will not sum to the sector total.

[10] Savings numbers for the ENERGY STAR Products program have been developed by the MCAC Team.

	Energy Savings (GWh)			Peak Demand Reduction (MW)			Fuel Savings (MMBtu)[7]		
Program	**Reported GWh**	**Adjusted GWh**	***% of Reported***	**Reported MW**	**Adjusted MW**	***% of Reported***	**Reported MMBtu**	**Adjusted MMBtu**	***% of Reported***
DG-CHP Demonstration Program	93.5	96.7	103%	18.8	21.1	112%	-777,721[11]	-738,327	95%
Demand Response and Innovative Rate Research	-	-	-	208.1	137.2	66%[12]	-	-	-
Renewable Energy Production	104.4	104.6	100%	8.8	8.4	96%	-	-	-
Subtotal R&D	197.9	201.3	102%	235.7	166.7	71%	-777,721	-738,327	95%
Cross Sector Overlap Removed	-	7.7	-	-	1.5	-	-	-	-
NYE$ Portfolio	**2,459.7**	**2,459.7**	**100%**	**1,227.5**	**1,112.6**	**91%**	**3,504,860**	**4,049,481**	**116%**

2.2.3 Economic Analysis

This section discusses the macroeconomic impacts of the **New York Energy $mart**SM Program, as well as the cost effectiveness analysis of the deployment programs.

Macroeconomic Impact Analysis

Expenditures made by NYSERDA and participants within the **New York Energy $mart**SM Program have substantial macroeconomic impacts that go beyond direct benefits to participants. Purchases of goods and services through the program set off a ripple effect of spending and re-spending that influences many sectors of the New York economy, and the level and distribution of employment and income in the State.

The macroeconomic impact analysis of the **New York Energy $mart**SM Program undertaken for this report was designed to quantify the net impacts of the programs by comparing the impacts of Program expenditures and energy savings to the impacts that would have resulted had the programs not been implemented and the money not been paid by ratepayers into the System Benefits Charge (SBC) fund. The Base Case provides a frame of reference with which to compare the impacts of the **New York Energy $mart**SM Program. The Base Case estimates the impacts that the SBC funds would have had on the New York economy, had they been retained by the customers of the participating utilities in the absence of the program. The components of the Base Case include: (1) increased disposable income available to residential consumers; (2) increased retained earnings available to businesses; and (3) increased purchases of electricity, natural gas, and oil due to the absence of the energy savings provided

[11] 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.

[12] The Demand Response and Innovative Rate Research Program does not require that enabled demand reductions be maintained. This large adjustment is based on M&V results and indicates the portion of the enabled MW reduction that was maintained.

by the program. The Program Case estimates the impact on the New York economy of SBC funds allocated to the portfolio of **New York Energy $mart**[SM] Program expenditures. The net macroeconomic impacts are expressed in terms of annual employment[13], labor income[14], total industry output[15], and value added[16]. Note that the macroeconomic results reported in this section are limited to the impacts that are most directly associated with the Program expenditures and the annual energy savings due to those expenditures. The analysis does not capture the more indirect and long-term potential impacts that may result from more widespread market transformation (*i.e*; permanent adoption of new energy efficiency measures as the status quo in the marketplace).

Material changes from the previous analyses are as follows.

1. The program implementation period has been changed from eight years to 13 years due to the extension of the **New York Energy $mart**[SM] Program though June 30, 2011.

2. The average life of measures installed under the **New York Energy $mart**[SM] Program was changed from 10 to 15 years.

3. The index for apportioning jobs created during the year of program implementation and the out years, is now based on the program's cumulative annual energy savings and annual spending, instead of solely on spending as was the case in previous analyses.

The last two changes were made based on available program data in an effort to improve the accuracy and usefulness of the results of this year's macroeconomic analysis.

Results of Analysis

Results of the macroeconomic analysis, encompassing 14 years of program implementation (1999-2012)[17] and fifteen years[18] following program implementation (2013-2027), indicate that the **New York Energy $mart**[SM] Program can reasonably be expected to provide net macroeconomic benefits to New York in the form of increased employment, labor income, total output, and value added. Table 2-8 indicates that the **New York Energy $mart**[SM] Program, averaged over the 29-year analysis period, is expected to create and sustain an average of over 8,600 jobs compared to the number of jobs that would have existed in the absence of the program. In addition, the program increases labor income by $321 million per year, increases total output by $456 million per year, and increases value added by $211 million per year.

---

[13] Employment includes total wage and salary employees as well as self-employed jobs in a region. It includes both full-time and part-time workers and is measured in annual average jobs.

[14] Labor income includes both employee compensation and proprietor income.

[15] Total industry output is the value of total sales revenue, which includes both final and intermediate goods and services. It can be measured as the total value of purchases by intermediate and final consumers.

[16] Value added includes the components of 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).

[17] Although the SBC funding period ends on June 30, 2011, not all funds are expected to be fully expended by this point. Therefore, the program implementation period was extended through 2012 based on a projection of when funds would be completely spent for installed equipment.

[18] A fifteen-year period was selected to represent the average life of measures installed under the **New York Energy $mart**[SM] Program.

Table 2-8. Summary of Macroeconomic Impacts of the New York Energy $mart^{SM} Program (Constant 2006$)

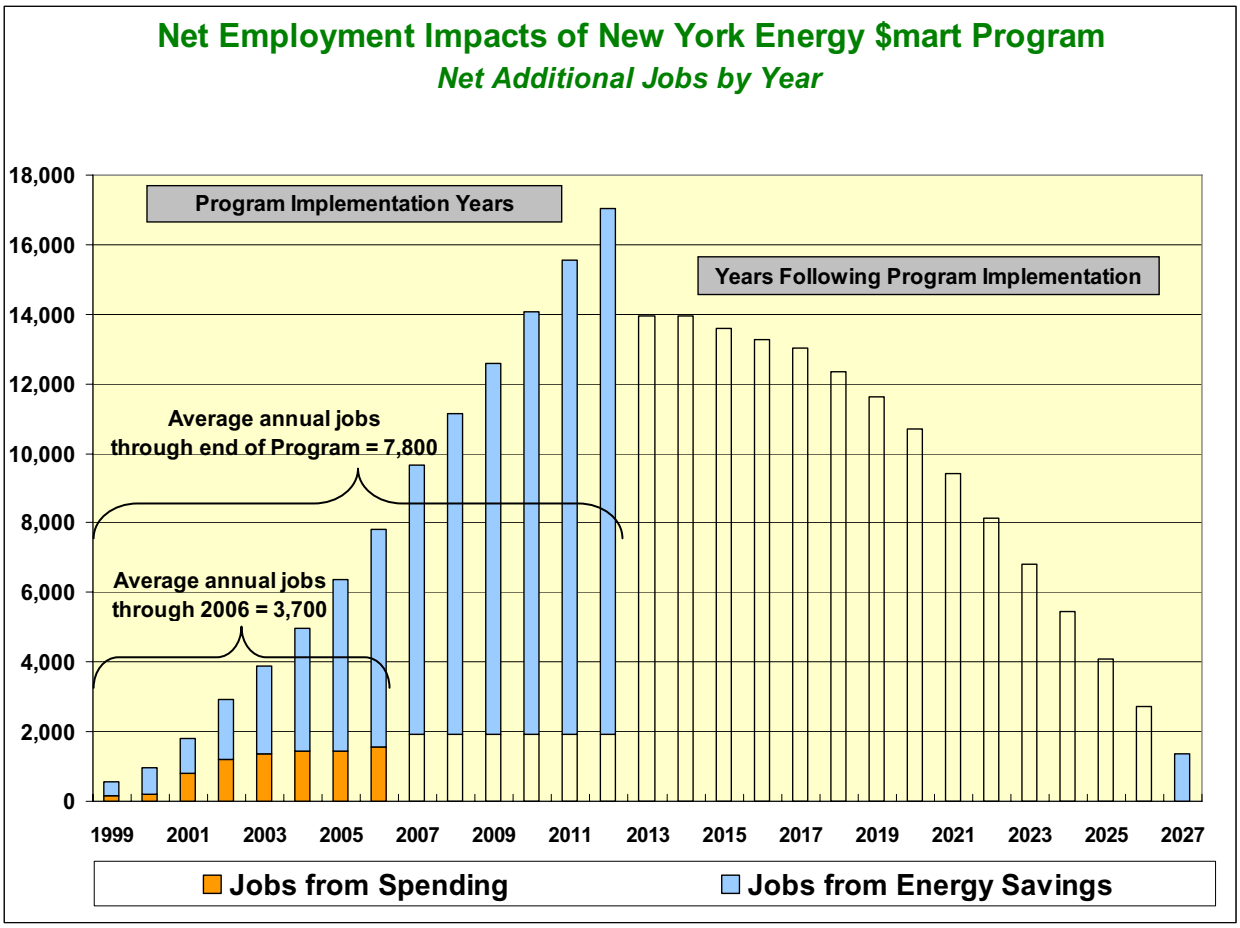
Economic Variable	Program Implementation Years (1999-2012)	Years Following Program Implementation (2013-2027)	Annual Average over 29-year Analysis Period (1999-2027)
Net Job Growth	7,807	9,362	8,612
Labor Income	$361 Million	$283 Million	$321 Million
Total Output	$573 Million	$346 Million	$456 Million
Value Added	$271 Million	$154 Million	$211 Million

Employment Results

Results of the analysis indicate that the **New York Energy $mart^{SM}** Program provides substantial net macroeconomic benefits to New York in the form of increased employment, both during the program implementation years (1999-2012) and throughout the years following implementation (2013-2027), during which the energy efficiency measures implemented by the program continue to accrue annual energy savings. As shown in Table 2-8 the program is estimated to create and sustain an average of over 8,600 jobs over the 29-year analysis period, compared to the estimated number of jobs that would have existed in the absence of the program. Figure 2-12 shows net jobs created and sustained by individual year, and shows that the program is estimated to result in an average net gain of approximately 7,800 jobs during the program implementation years, and an average of more than 9,300 jobs per year throughout the years following implementation.[19] On average, more than 8,600 net jobs are created over the 29 years of program implementation. These are jobs that are estimated to exist, net of jobs that are lost in certain sectors as a result of the program. Note that the annual average employment results are not additive; the values reported represent the number of jobs created and sustained over each of the specified periods: (1) the 14 program implementation years (1999-2012); (2) the 15 years following program implementation (2013-2027); or (3) the annual average over the entire 29-year analysis period (1999-2027).

[19] 82% of all jobs created during the program implementation years are due to energy bill savings, while 18% of jobs created are due to spending. In years following program implementation, all jobs created are due to energy savings.

Figure 2-12. 2006 Update – Net Employment Impacts by Year



Labor Income Results

Labor income includes both employee compensation and proprietor income. Results indicate that the **New York Energy $mart**[SM] Program also provides substantial net macroeconomic benefits to New York in the form of increased labor income. Table 2-8 shows that the Program is estimated to result in an average net gain of $321 million in labor income in each year over the 29-year analysis period. The program is estimated to provide a net gain in labor income of $361 million per year during the program implementation years (1999-2012) and $283 million throughout the years following implementation (2013-2027).

Total Output and Value Added Results

Total industry output is the value of total sales revenue, which includes both final and intermediate goods and services. It can be measured as the total value of purchases by intermediate and final consumers. Value added includes the components of 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). Table 2-8 shows that the program is estimated to result in an average net gain of $456 million in total output and $211 million in value added in each year over the 29-year analysis period. During the program implementation years (1999-2012), the program is estimated to provide a net gain in total output of $573 million per year and a net gain in value added of $271 million

per year. Throughout the years following implementation (2013-2027), the program is estimated to result in a net gain in total output of $346 million per year and a net gain in value added of $154 million per year.

Benefit Cost Analysis of Deployment Programs

This section presents an overview of the benefit cost analysis of the **New York Energy $mart**[SM] Program[20] for measures installed through year-end 2006. Four types of benefits were considered in the analysis:

1. Resource benefits, including benefits associated with reduced electricity generation and capacity (avoided costs), as well as reduced use of natural gas, oil, propane, and water.
2. Participant non-energy impacts, including monetized values for benefits such as comfort, safety, and productivity. These benefits accrue to participants and include spillover effects.
3. Energy and capacity market price effects including benefits accruing to all electricity customers by lowering the price of energy and capacity.
4. Macroeconomic value added. These benefits result primarily from lower energy bills and consumer spending of these bill savings. Value added includes the components of 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).

The monetized value of environmental benefits, such as reductions in emissions of sulfur dioxide, nitrogen oxides, and carbon dioxide, were not included as a benefit in the benefit cost analysis. With respect to sulfur dioxide and nitrogen oxides, since there are statewide regulatory emission caps as well as emission trading markets, emission credits may likely be sold in the marketplace, allowing generators to reduce operating costs (*e.g.*, through less stringent pollution controls) or expand generation (*e.g.*, to meet economic growth) without exceeding their caps. The net effect will be statewide emissions meeting the caps for sulfur dioxide and nitrogen oxides.

All costs incurred in years prior to 2006 were adjusted and are reported in year 2006 dollars. A discount rate of 3% was used to discount future benefits and costs and to compound past benefits and costs

A summary of the various benefits are presented in Table 2-9. Shown are the present values of resource benefits, non-energy impacts, market price effects, and macroeconomic benefits.

[20] A more detailed benefit cost analysis will be available in the 2007 1st Quarterly Report.

Table 2-9. Summary of Benefits ($ million)

	Through 2003	2004	2005	2006	Total
Present Value of Resource Benefits (2006$)	$1,901	$930	$664	$913	**$4,408**
Present Value of Non-Energy Impacts (2006$)	-	-	-	-	**$1,315**
Present value of 3-years of Market Price Effects (2006$)	$860	$214	$171	$220	**$1,465**
Present Value of Incremental Macroeconomic Benefits (2006$)	$431	$213	$245	$279	**$1,168**

A summary of costs is presented in Table 2-10. The cumulative measure cost is $1.65 billion, made up of $.3 billion of program incentives and $1.4 billion of participant co-funding. Program Implementation costs are $.2 billion. Implementation costs include a 9% administration and evaluation charge on all program spending, including spending on incentives.

Table 2-10. Summary of Costs Through 2006 ($ million)

	Incremental installed cost (full cost for retrofit)	Incentives	Participant Contribution	Program Implementation
Portfolio Total (2006$)	$1,650	$292	$1,447	$209

The calculation of the non-energy impacts (NEIs) are shown in Table 2-11. The impacts were estimated as a percentage of customer electricity and natural gas bill savings. The present value of the electricity bill savings is $2.36 billion, the natural gas bill savings is $925 million, and the present value of the non-energy impacts is $1.3 billion.

Table 2-11. Non-energy Impacts as a Percent of Bill Savings ($ million)

	Electric Retail Benefits	Natural Gas Retail Benefits	NEI %	NEI Value
Portfolio Total (2006$)	$ 2,363	$ 925	40%	$1,315

The energy market price effect results from lower average market clearing price for electricity due to kWh's saved by the **New York Energy $mart**^{SM} Program. Lower prices result because the most expensive units are backed out due to lower energy requirements. The per kWh effect was estimated to be 0.0115 cents per kWh. 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 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. The cost estimates were weighted by region, resulting in a cost of $277 per kW-year.

Benefit cost ratios for deployment programs are shown in Table 2-12 and are reported in a manner that is consistent with all past annual evaluation status reports. Two different tests were used to calculate B/C ratios:

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

2. Program-Efficiency Test (PET) compares the same quantifiable life-cycle benefits against only NYSERDA's costs. This test can also be called the program administrator test.

Scenario 1 includes only resource benefits. Scenario 2 adds non-energy impacts to Scenario 1. Scenario 3 adds market price effects to Scenario 2. Scenario 4 adds macroeconomic impacts to Scenario 3.

Table 2-12. Benefit Cost Ratios for the New York Energy $mart^{SM} Portfolio

	Resource Benefits (Scenario 1)	Plus Non-Energy Impacts (Scenario 2)	Plus Price Effects (Scenario 3)	Plus Macroeconomic Impacts (Scenario 4)
Total Market Effects Test[1]	2.4	3.1	3.2	3.3
Program Efficiency Test	8.8	11.4	11.9	12.4

[1] The method of estimating measure costs for retrofit/early replacement programs was modified in this year's analysis resulting in higher measure costs, and therefore, lower benefit cost ratios for the total market effects test.

2.3 Portfolio Process Evaluation

2.3.1 Solicitations Released

During 2006, 49 solicitations were issued to competitively select contractors for program design and implementation services. In total, 461 proposals were received, 164 (36%) of which were approved for funding. Information on solicitations released in 2006 is shown in Table 2-13.

Table 2-13. Solicitations Released Through Year-End 2006[1]

Solicitation Number	Solicitation Name	Solicitation Release Date	Solicitation Closing Date
PON 949	Renewable Energy Business Development	2/13/06	5/3/06
PON 954	Energy Efficient Displays and Digital Signage	2/6/06	3/21/06
PON 998	Industrial Process and Productivity Improvement	4/3/06	6/8/06
PON 998A	Industrial Process and Productivity Improvement	4/3/06	10/5/06
PON 955	Peak Load Reduction Program	1/2/06	6/30/06
RFP 958	Contractor Services for Establishing NYS Appliance Standards	1/23/06	2/16/06
PON 984	Commercial/Industrial Performance Program	1/30/06	6/30/06
PON 1042	Power Systems Technologies	6/19/06	8/22/06
PON 1043	Distributed Generation as Combined Heat and Power	6/19/06	8/22/06
RFP 1032	Reference Design Guidebook	6/5/06	7/13/06
PON 989	Consumer Education Through Local TV	4/7/06	5/30/06

Solicitation Number	Solicitation Name	Solicitation Release Date	Solicitation Closing Date
RFP 1026	General Awareness and Education	5/1/06	6/12/06
PON 996	EMEP Outreach Assistance	4/24/06	5/24/06
PON 1001	Synthesis of Electricity Generation Impacts to Wildlife	4/10/06	5/4/06
PON 1035	New Construction Program Incentives	5/29/06	3/31/07
PON 1045	Technical Assistance	5/22/06	11/30/06
RFP 1030	New York Energy $mart Energy Audit Program	6/26/06	8/16/06
RFP 986	Marketing Strategy, Planning, Partner Support and PR	5/15/06	7/5/06
RFP 1011	Program Implementer for Multifamily Building Performance Program	5/22/06	6/22/06
PON 1031	Advanced Sensors & Controls for Energy Management, Power Quality, & Electricity System Reliability	7/31/06	9/25/06
PON 1040	Waste & Wastewater Technologies	8/7/006	10/3/06
PON 1062	Advanced Building Envelopes and Energy Systems	8/23/06	10/18/06
PON 1079	Daylighting Technical Consulting, Training, and Demonstration	9/18/06	11/13/06
PON 1087	Heating and Cooling	9/11/06	11/9/06
RFP 1057	New Construction Program Technical Assistance and Support Services	9/18/06	10/16/06
RFP 1007	Low Income Forum on Energy Implementation Support	7/3/06	8/9/06
RFP 1020	Products Program	7/10/06	8/23/06
RFP 1017	Homes Implementation	8/11/06	9/13/06
RFP 988	Hotline and Fulfillment	9/4/06	10/11/06
RFP 1005	Quality Assurance Services for NYSERDA Residential Programs	9/18/06	10/26/06
RFP 1012	New York Energy $mart℠ Communities Services and Support Contractor	9/18/06	11/1/06
RFP 1061	New York Energy $mart℠ Impact Assessment	8/7/06	9/5/06
RFP 1063	Process Assessment and Evaluation Management for the New York Energy $mart℠ Program	8/7/06	9/6/06
RFP 1065	Market Characterization and Assessment Evaluation Contractor for the New York Energy $mart℠ Program	8/7/06	9/7/06
RFP 1086	Data Collection Contractor for the New York Energy $mart℠ Program	9/25/06	10/19/06
PON 1085	Solar Thermal Evaluation	11/20/06	2/5/07
PON 1105	Next Generation Emerging Technologies	11/6/06	1/22/07
PON 1105A	Next Generation Emerging Technologies	11/6/06	6/7/07
RFP 1068	Lighting Incubator	11/13/06	1/25/07
RFP 1111	Natural Gas & Petroleum Exploration, Production, Efficiency, and Emissions Reduction	11/13/06	12/28/06
RFP 1111A	Natural Gas & Petroleum Exploration, Production, Efficiency, and	11/13/06	8/7/07

Solicitation Number	Solicitation Name	Solicitation Release Date	Solicitation Closing Date
	Emissions Reduction		
PON 1097	Peak Load Reduction Program	10/30/06	3/31/08
PON 1101	Enhanced Commercial/Industrial Performance Program	11/20/06	3/31/07
RFP 1051	Flexible Technical Assistance	10/30/06	12/11/06
RFP 1046	Technical Assistance	12/11/07	5/31/07
PON 1110	NYC Marketing & Education Through Local TV	11/13/06	12/21/06
RFP 1114	**New York Energy $mart**SM Communities Program	11/13/06	1/8/07
RFP 980	Outreach and Training Support for **New York Energy $mart**SM Loan Fund in Con Edison Service Territory	12/25/06	2/7/07
PON 1122	Innovation in Lighting: New Products, Demonstrations, and Testing	12/18/06	2/26/07

[1] Requests for Proposals (RFPs) are solicitations used for identifying and procuring projects that represent a specific area of interest and include a statement of work with a high degree of specificity describing the work contemplated and the evaluation criteria to be used. A single award with no cost-sharing is usually the norm. Program Opportunity Notices (PONs) are solicitations used for identifying and procuring projects that demonstrate technical, economic, and environmental characteristics in particular technology areas. Multiple awards are usually made and cost-sharing is the norm.

2.3.2 Evaluation Review and Recommendations

This summary, developed by the Research Into Action Process Evaluation team, presents a review of the evaluation process from June 2003 through October 2006.

Study Purpose

The purpose of the study was to assess the results of the evaluation work from the perspective of its execution and outcomes in the context of how it was envisioned and planned. Questions that were addressed included:

- Was the evaluation process effectively created?
- Did it have the outcomes intended (including building evaluation capacity, greater integration of evaluation into program processes, and meeting stakeholder requirements)?
- Was the evaluation model an effective one and should it be changed or revised?

In addition to addressing these questions, this review provides feedback to NYSERDA and the SBC Advisory Group as they work with contractors in the next phase of evaluation work to be undertaken. The study also provides insights for the larger evaluation community interested in assessing the most appropriate ways to evaluate such comprehensive, market-oriented programs like the **New York Energy $mart**SM portfolio.

Methodology

To address all of these research issues, the process evaluation team has undertaken two cycles of data collection. The first occurred in 2005 and included 30 interviews with NYSERDA's senior management, the Energy Analysis evaluation team, and program staffs. The interviews addressed the history of the evaluation effort, its implementation, and responses to the evaluation work done to date. The second

round of data collection, leading to the results summarized in this report, occurred in 2006. Twenty-nine individual and four group interviews were conducted with NYSERDA's Energy Analysis evaluation team and program staff members, as well as with the specialty evaluation contractors and members of the SBC Advisory Group that oversees the independent evaluation effort.

Three cycles of independent, third-party monitoring and evaluation reporting on **New York Energy $mart**SM programs have been completed during the period assessed (these three evaluation cycles concluded in 2004, 2005 and 2006), with each cycle resulting in recommendations for improvements in the programs. The interviewers asked NYSERDA staff to reflect on these cycles and the types of evaluation efforts conducted in each, and asked program staffs to assess the degree to which they had taken action in response to the recommendations of evaluators. The review of recommendations also asked staff members to identify the reasons for their actions or inaction. A total of 174 recommendations were reviewed for the first two evaluation cycles, and 93 were reviewed for the third cycle.

Finally, to place the results of the evaluation review in context of wider practices for using evaluation in large organizations, the process evaluation team conducted a review of the literature across a wide range of fields. The goal was to provide an overview of how other energy efficiency entities and other large organizations use evaluation findings in planning, program design, and program implementation.

Summary of Results

These results are viewed in terms of NYSERDA's unique approach to evaluation. With a budget ranging from less than 0.5% to 2% for evaluation during the SBC funding cycles, NYSERDA implemented an evaluation model using teams of specialty contractors to conduct crosscutting evaluations of multiple programs. NYSERDA's evaluation structure was intended to provide independent evaluation at many levels, with the goal of aggregation to the portfolio level. This focus on the portfolio level as the ultimate evaluation objective is driven by the reporting requirements of the PSC.

While the first year of the evaluation was especially challenging for program staffs, the Energy Analysis evaluation team, and the specialty evaluation contractors, significant improvement was reported over the three years. By year three, increased evaluation capacity was seen in the improved knowledge and skills of the Energy Analysis evaluation team, and in program staffs' more positive views of evaluation's use in program planning and implementation, as well as in greater communication with the Energy Analysis evaluation team. Further evidence of increased evaluation capacity is seen in the SBC Advisory Group's reported greater clarity of its role in the evaluation, and in the specialty contractors' reports of greater knowledge of the programs and processes.

Use of the evaluation findings has also increased over the three years, with both program staff and the Energy Analysis evaluation team reporting increased awareness of evaluation in program planning and solicitation processes. While some program staff indicate they do not use the evaluation findings, others report using the findings to change programs, improve data collection or recording, prepare public presentations, and for program marketing. Reported consideration of, or action on the recommendations resulting from the evaluations has also increased. In the earlier evaluation cycles, some action was reported on less than 50% of the recommendations; in the most recent cycle, this number had risen to 67%. While action on 100% of the recommendations is not expected, this increase may be due in part to: improvements on the part of the contractors (recommendations that reflect better knowledge of programs and are more realistic in context); program staffs' increased involvement in setting the research agenda and thus producing recommendations more closely related to timely programmatic issues; and/or some positive response bias as program staff, in this second round of interviews, perceived it important to indicate action was being taken. Also, it is important to note that NYSERDA staff have been quick to address many issues identified in the various evaluation contractor team reports – often before the draft

reports were even finalized. The Public Service Commission, Department of Public Service staff, and the SBC Advisory Group are also key users of the evaluation findings.

Reporting processes, initially characterized as disjointed and time-consuming (specifically in preparation of the annual report), have improved over the three evaluation cycles. The SBC Advisory Group expressed high levels of satisfaction with both the evaluation process and its outcomes, including reports.

Based on the findings of this review, there is clear indication that NYSERDA has achieved many of its goals for the evaluation effort and there has been definite improvement in both process and outcomes from year one of the assessment period to year three. However, there are still pockets of resistance among program staff members, including lingering views of the evaluation process as not meeting their needs or not adequately measuring their programs under consideration. Unrealistic expectations on the part of program staff, as well as conflicting, multiple objectives with a highly constrained evaluation budget likely contribute to this resistance. Also, there is inconsistent support among managers for evaluation and unclear expectations among some staff members regarding the recommendations they receive from the evaluation reports. All of these factors indicate that there is still room to continue the improvements already seen over the last three years by continued effort to foster a culture that recognizes the value and relevance of evaluation for program planning and implementation. The recommendations below are intended to address some of the residual effects of the first three years of the current evaluation model (especially from the first year) and to assist NYSERDA in continuing its path of improving the process and outcomes of the evaluation.

Recommendations

- Consider development of a theory and logic model for the evaluation. Program staff, as well as specialty and oversight evaluation contractors, identified the need for a clearly articulated evaluation plan. The literature review also points to the necessity of a clearly articulated vision for process and outcomes. As part of the March 2006 Amended SBC III Operating Plan, a vision was articulated, but a specific plan has not been developed, rather it is to be developed with the evaluation contractors. Development of a well-defined plan for process and outcomes will reduce uncertainty about evaluation expectations for all stakeholders and make transparent the balance between evaluation for program improvement and evaluation for stakeholder accountability in developing the goals and tasks. In this process, the following should be addressed:

    - Define the portfolio evaluation goals

    - Define the portfolio tasks and approach

    - Define tasks at the program and sector levels

- Once a theory and logic model has been developed for the evaluation, the resulting plan should be clearly communicated at all levels of the organization. General communication of an evaluation plan could greatly reduce the uncertainty and discomfort felt by all involved in the effort. Key elements of the plan to be communicated include:

    - Expectations of the Energy Analysis evaluation team, program staff, and contractors in the model

    - Expectations for how recommendations from the evaluation are to be used

- As part of the overall evaluation plan, a discussion of potential products resulting from the evaluation should occur. This process should involve program staff and other stakeholders in identifying all audiences for the evaluation findings, resulting in a plan for dissemination approaches to meet the range of audiences identified. Communication of evaluation results has so far focused largely on meeting stakeholder requirements and the products have successfully met these requirements. There are many other audiences for the evaluation results, including potential program participants, the general public, and other energy professionals.

- As part of a review of roles, NYSERDA should continue to examine the skills needed for their model of evaluation and ensure that Energy Analysis evaluation team members have the skills and direction to serve the roles defined for them. NYSERDA has continued to build evaluation knowledge and skills in the Energy Analysis evaluation team and program staff report that they are more often working with the team early in their program planning and solicitation processes. Some additional skills and knowledge are needed to ensure that capacity building continues within the Energy Analysis team and that the team members can then continue to help build capacity throughout the organization.