

Section 5

PROGRESS TOWARD GOALS

This section of the report draws on the **New York Energy \$martSM** program results presented in Section 4 and matches them to the New York State Public Service Commission's (PSC's) two broad public policy goals, and NYSERDA's six planning goals. The PSC's goals for New York's public benefits program are to:

1. Promote competitive markets for energy efficiency services.
2. Provide direct benefits to electricity ratepayers or be of clear economic or environmental benefit to the people of New York.

The **New York Energy \$martSM** program, in 18 months of program implementation,¹ is able to demonstrate some significant progress toward the PSC's goals, as highlighted in Table 5-1. For program planning and design purposes, NYSERDA developed the following six goals, consistent with the PSC's public policy goals:

1. Improve efficiency of electricity use through cost-effective energy efficiency measures and services.
2. Transform the market for energy-efficient products and services, informing the public about the full-range of energy efficiency opportunities.
3. Promote and foster the energy efficiency industry.
4. Address the energy affordability issues of low-income households.
5. Invest in public benefit energy R&D, not likely to be provided by private markets, including promoting new energy technologies and maintaining environmental monitoring and protection.
6. Adopt a balanced and strategically prioritized portfolio of programs.

¹ While NYSERDA has completed its second full year of **New York Energy \$martSM** program administration, individual programs have been operational for approximately 18 months. Moreover, since program implementation was phased (not all programs were initiated at the same time) some programs are able to demonstrate greater progress toward goals than others.

TABLE 5-1: Summary of Progress Toward Goals

Public Policy Goals	
1. Promote competitive markets for energy efficiency services.	
<ul style="list-style-type: none"> • The New York Energy \$martSM program is providing a strategically balanced portfolio of over 30 programs that seek to overcome market barriers to increase supply and stimulate demand for energy efficiency products and services. • The number of known energy service companies (ESCOs) has increased. NYSERDA is working with over 40 ESCOs (five offer electricity as a commodity), and over 100 energy efficiency technical assistance providers. • The number of known firms providing rate analysis and aggregation services increased from 0 to 20 since program inception. • Programs are increasing consumer demand for energy efficiency services. <ul style="list-style-type: none"> – Four-fifths of customers surveyed in the Standard Performance Contract (SPC) program indicated that they would not have installed all of the identified measures without the program incentive. All customer respondents indicated that with an incentive, they were likely or very likely to install other types of energy savings measures in the future. 	<ul style="list-style-type: none"> – Two-thirds of SPC customer respondents never worked with an ESCO prior to the program and all respondents indicated that would consider purchasing electricity from an ESCO. – Premium Efficiency Motor program vendors surveyed indicated that the program increased their awareness of the benefits of energy efficiency and as a result, they have increased their stocking of energy-efficient motors. – ENERGY STAR[®] product sales and their share of the residential appliance market have increased. – Indicators of market transformation are showing some early progress in increasing awareness of the benefits of energy efficiency, and in stocking and sales of energy-efficient products and equipment. • NYSERDA has created a network of over 1,000 market allies to promote and support market adoption of energy efficiency products and services in New York. • Anticipated private sector capital investment (leveraging) exceeds \$326 million in the State for current programs.
2. Provide direct benefits to electricity ratepayers, or be of clear economic or environmental benefit to the people of New York.	
<ul style="list-style-type: none"> • The New York Energy \$martSM program has helped reduce the economic and energy burden carried by many ratepayers in New York State, most notably the lower-income population. <ul style="list-style-type: none"> – Annual savings of 409 million kWh of electricity (excluding generation from wind and photovoltaics) and 95 mW of electric demand are estimated to result from projects awarded & pending award. – When current programs are fully subscribed, the program has the potential to reduce energy bills by over \$69 million annually; reduce air pollutants emitted from the burning of fossil fuels by 708 tons of NO_x, 1,150 tons of SO₂, and 523,979 tons of CO₂; and create 1,684 jobs in New York. • The Energy Efficiency and Strategic R&D programs are finding niches in the marketplace and are positioned to develop and demonstrate new technologies to the benefit of New Yorkers. 	<ul style="list-style-type: none"> • New York consumers are afforded greater choice in selection of energy using equipment and appliances. • Several environmental protection, monitoring and evaluation technologies are being demonstrated, developed, and deployed to enhance the quality of information available to policymakers, ratepayers, and other stakeholders for energy related decision-making. • The Direct Installation program has served over 1,200 households, providing economic and safety benefits to building owners and tenants. Seventy percent of building owners surveyed indicated that they would not have installed any of the efficiency measures in individual apartments without this program. • The Renewable Energy program has 11.5 mW of wind power under construction and another 17.5 planned. The photovoltaic R&D initiatives are demonstrating technology on commercial and residential buildings. A total of 1 mW of PV installation is anticipated.

The **New York Energy \$martSM** program's progress toward NYSERDA's six planning goals is discussed throughout this section. NYSERDA continues to modify individual **New York Energy \$martSM** programs to improve service delivery and success toward its goals.² The **New York Energy \$martSM** program, through June 30, 2000, reports the following progress.

1. Improve Efficiency of Electricity Use Through Cost-Effective Energy-Efficiency Measures and Services.

Virtually all of the **New York Energy \$martSM** program efforts are directed toward improving electric-energy efficiency. The Energy Services Industry, Market Transformation, Technical Assistance, Low-Income, and R&D (Renewable Energy, Energy Efficiency, and Strategic) programs are all designed to improve energy efficiency through education, improved operations, purchases and use of energy efficiency equipment and services, and technology development and demonstration. These programs are targeting adoption of energy-efficient appliances, lighting, heating, ventilation, and air conditioning (HVAC), motors, and renewable energy technology including photovoltaic systems, in New York's residential, commercial, institutional, and industrial sectors. In addition, these programs are working to improve building, lighting, and equipment designs and energy-using processes to improve energy efficiency. Anticipated energy savings and related performance indicators are summarized in Table 5-2.

Toward this goal, it is anticipated that the **New York Energy \$martSM** program will reduce electricity use by 409 million kWh and 95 mW annually from projects currently underway or pending, as shown in Table 5-2. Savings increase to 635 million kWh annually and 156 mW once available incentives are fully subscribed. This is equivalent to serving the average annual electricity needs of 106,000 residential households. In addition, to energy savings, air emissions are expected to decrease by 708 tons of NO_x, 1,150 tons of SO₂, and close to 524,000 tons of CO₂ once currently available incentives are fully subscribed. This is equivalent to removing approximately 105,000 automobiles from New York's roads annually. Total consumer savings from the **New York Energy \$martSM** programs, included in this evaluation, once fully subscribed, are expected to be over \$86 million annually, including electricity bill savings and identified oil and natural gas savings. The economic benefits from improving the efficiency of energy use, and reducing the amount of money leaving the State to pay for imported energy, are estimated to create close to 1,700 jobs in New York annually.³ Projected energy, economic, and environmental impacts are summarized in Table 5-2.

² NYSERDA's assesses programs and adapts programs to new information and emerging needs, based on information collected on current levels of market activity; market barriers and inequities; transaction risks; lost opportunities; and specific customers needs.

³ These jobs are expected to be in New York's service and retail trade sectors and will be supported annually, for as long as implemented energy efficiency measures are in effect.

TABLE 5-2: Projected Energy, Economic, and Environmental Impacts⁴

		Anticipated from Funds Awarded & Pending			Anticipated from Full Subscription		
Energy Savings and Demand Savings							
Electric (kWh and Demand Savings)	Energy Efficiency Programs	408.9 kWh			634.6 kWh		
		94.9 mW			155.6 mW		
	Clean Generation (Wind and PV Programs)	77.7 kWh			79.0 kWh		
		30.1 mW			30.6 mW		
	Total	486.6 kWh			713.6 kWh		
		125.0 mW			186.2 mW		
Oil & Natural Gas	Total (TBtu/yr.)	1.9 TBtu			3.3 TBtu		
Emission Reductions (tons/yr.)							
Source:		NO _x	SO ₂	CO ₂	NO _x	SO ₂	CO ₂
Electricity		307	617	180,311	476	958	279,875
Clean Generation Programs		58	117	34,269	59	119	34,823
Oil and Natural Gas		99	40	120,006	173	72	209,281
Total		464	774	334,586	708	1,150	523,979
Economic Benefits							
Electric Bill Reductions/yr. from Energy Efficiency programs		\$45.0 million			\$69.8 million		
Other Fuel Savings - oil and natural gas (Bill Savings/yr.)		\$9.7 million			\$17.0 million		
Total Energy Savings (annual)		\$54.7 million			\$86.8 million		
Economic (jobs/yr.)		1,061			1,684		

⁴ Impacts are estimated based on program activity through June 30, 2000 for only those programs reporting progress. All recently initiated and upcoming programs are excluded from these results. For example, energy and demand savings and associated impacts likely to be realized through the **New York Energy SmartSM** Commercial HVAC, Small Commercial Lighting, residential loan programs, Residential Building Performance Initiative, and Residential New Construction program, are not included.

2. Transforming the Market for Energy-Efficient Products and Services, Informing the Public about the Full Range of Energy Efficiency Opportunities.

While it is recognized that market transformation takes time to achieve, there are several early indications that the **New York Energy \$martSM** program is beginning to have some positive effect in markets in terms of increasing the supply and demand for energy efficiency products and services. Specific **New York Energy \$martSM** program efforts are designed to increase consumer awareness of energy efficiency equipment, products, and services, and facilitate lasting structural change in business and consumer decision making regarding energy efficiency. To date, several studies and surveys conducted by NYSERDA and its evaluation contractors, GDS Associates, Inc., and Oak Ridge National Laboratory (in the conduct of its case studies), and **New York Energy \$martSM** program implementation contractors, point to some early success.

Improvements are being reported in:

- Business and consumer awareness and knowledge of energy efficiency opportunities, and products and services (*e.g.*, the number of ENERGY STAR[®] program partners has increased from 27 retailers [42 stores] in the third quarter of 1999, to 266 retailers [325 stores] as of the end of the second quarter 2000).
- Consumer interest in and demand for energy-efficient products, equipment, and services (*e.g.*, inquiries [hits] made through the Residential Appliances and Lighting program supported web-site have grown from 200 hits per quarter, early in the program, to more than 650 hits per quarter through June 2000).
- Market actor promotion of, and ability to promote, energy efficiency products and services (*e.g.*, retailer promotion and sale of ENERGY STAR[®] appliances and televisions have increased by nearly 100,000 units within the geographic area served, since program inception).
- Sales of energy-efficient products and equipment, and use of energy efficiency services (*e.g.*, consumer reported purchases of ENERGY STAR[®] room air-conditioners [as a percentage of total air-conditioner purchases] have increased from less than 9.5% in 1999 to over 24% through February 2000).
- Market actor manufacturing, stocking, display, promotion and sales of energy-efficient products and equipment (*e.g.*, the percentage of ENERGY STAR[®] products on display, that are labeled such, has increased for 11 out of 15 covered products, from less than 2% on many lighting and appliance products to well over 50%, and in some cases 100%, since program inception).

In addition to these effects, NYSERDA coordinates its programs with other regional and national organizations to support market transformation. As a result of these coordination efforts, and in particular the efforts of the Consortium for Energy Efficiency, Inc., (of which NYSERDA is an active member and funding partner), the federal minimum efficiency standards for residential clothes washers

has been increased 35% above the existing standard. Also as a result of these efforts, the standards for ENERGY STAR® products, including clothes washers, room air-conditioners, dishwashers, and refrigerators, have increased. These changes are both structural and sustainable, thus improving the energy efficiency of these products significantly over current levels.

3. Fostering the Energy Efficiency Industry.

A number of individual **New York Energy \$martSM** program efforts work to foster the energy efficiency industry, including the Standard Performance Contract and the Institutional Performance Contracting Assistance programs, and several Market Transformation, Technical Assistance, and R&D programs (results from these programs were provided earlier and will not be repeated here). It is apparent, however, that the network of market allies, including ESCOs, technical assistance contractors, building engineers and architects, and equipment distributors and retailers helping to promote energy efficiency products and services through the **New York Energy \$martSM** program is substantial. To date, over 1,000 market allies are working with NYSERDA to promote and support the adoption of energy efficiency products and services in New York.

The Energy Efficiency and Strategic R&D, and photovoltaic programs support the development of new technologies and demonstrate new applications in support of New York's energy efficiency industry. The majority of **New York Energy \$martSM** program funding is dedicated to this purpose. The **New York Energy \$martSM** program also includes a wide variety of efforts through various programs that provide education and training to ensure proper design and installation of equipment.

4. Address the Energy Affordability Issues of Low-Income Households.

The portfolio of Low-Income Energy Affordability programs is designed to improve energy affordability through the use of energy management and energy efficiency strategies. While many of the low-income initiatives are new, they leverage existing community and other public resources to deliver a consistent message and program services. The Direct Installation program, the largest of the low-income programs, has installed energy efficiency measures in more than 1,200 households. Case study results, conducted as part of the **New York Energy \$martSM** program evaluation, show that low-income customers served by the program can save upwards of 25% on their household electricity costs.

The Low-Income Public Awareness program, including the State's Low-Income Forum on Energy (LIFE) initiative is creating and helping to support a network of State and community-based organizations dedicated to bringing the benefits of energy efficiency to the low-income population through a variety of means. The first LIFE Forum was held in late 1998 and smaller groups of interested parties continue to meet regularly to address energy affordability needs.

5. Invest in Public Benefit Energy Research and Development (R&D) That Is Unlikely to Be Provided by Private Markets, Including Promoting New Energy Technologies, and Maintaining Environmental Monitoring and Protection.

The R&D programs consist of initiatives in: Renewable Energy; Energy Efficiency and Strategic R&D; and Environmental Monitoring, Evaluation, and Protection. Collectively, these programs have allocated nearly all of their three-year funding to projects that will benefit New York businesses, industry, and consumers, as well as support technologies that might otherwise not be supported by private markets.

To date, an 11.5 mW utility-scale wind plant is under construction, and two additional projects with a combined capacity of 15 to 17.5 mW are under development. This activity far exceeds the original program goal of installing 4 mW of wind power. Moreover, contracts were awarded for the installation of approximately 285 residential grid-connected PV systems which will lead to 400 kW of capacity, and will assist in developing the infrastructure for residential PV systems by providing technical experience to installers. The commercial PV on Buildings program, has selected five contractor's proposals to install 600 kW of capacity.

The Energy Efficiency and Strategic R&D programs have initiated 24 energy efficiency projects and 14 strategic projects in various technology areas, including: developing and commercializing a residential heating system that reduces energy use by an average 75% compared to conventional systems; a project to overcome technical, economic, and institutional barriers to use of day-lighting in school designs in New York; several advanced metering projects focusing on reducing energy use and costs; clean distributed generation projects ranging from fuel cells in individual residences to high-capacity power cells and batteries for use in computers, cell phones, and small vehicles; and various alternative fuel technologies.

The Environmental Monitoring, Evaluation, and Protection program to date, has brought in over \$4 million from out-of-state, to address a number of New York's environmental concerns. The program has been successful in establishing a comprehensive research portfolio, and active program and science advisory committees in a little over one year. Late in 1999, the program cosponsored a conference that brought together 200 policy-makers and scientists to share information on environmental research initiatives in New York State, covering a wide-range of issues, including mercury in the Adirondacks; recovery of lakes from acidification; health impacts of ultra-fine particles; analysis of ozone and fine particles in the Northeast; and measurement of ozone precursors and fine particles in New York.

6. Adopt a Balanced and Strategically Prioritized Portfolio of Projects.

The **New York Energy \$martSM** program has a variety of program initiatives underway that work

together to address the PSC's broad public policy goals for the State's public benefit program. The programs and the goals that each addresses is identified in Table 5-3. The **New York Energy \$martSM** portfolio of programs is well diversified and balanced as shown in Table 5-3. The table shows which programs are influencing each NYSERDA-adopted goal. A check (✓) in the table indicates programs that primarily influence (directly impact) a particular goal, an (X) indicates that a program has a secondary influence upon a goal, and an (–) symbol indicates that the program has an indirect influence upon the goal.

The **New York Energy \$martSM** program portfolio addresses all of the major market sectors within the State. It has accomplished this by strategically prioritizing the needs of these markets (through NYSERDA's six planning goals) and creating and implementing cost-effective energy efficiency, market transformation, technical assistance, low-income, and research and development programs to target these needs accordingly. The efficient and effective delivery of energy efficiency services and products throughout New York's sectors has been an important component of addressing market needs and achieving early program success. In addition, the **New York Energy \$martSM** portfolio influences a full spectrum of decision-making channels along the supply chain for energy efficiency products and services from manufacturers to end-use customers (as described in Section 3 of this report).

TABLE 5-3: Program Portfolio Balance and Effects

		<i>Goal 1: Improve efficiency of electricity use through cost-effective energy efficiency measures and services.</i>	<i>Goal 2: Transform the market for energy-efficient products and services, informing the public about the full-range of energy efficiency opportunities.</i>	<i>Goal 3: Promote and foster the energy efficiency industry.</i>	<i>Goal 4: Address the energy affordability issues of low-income households.</i>	<i>Goal 5: Invest in public benefit energy markets, including promoting private technologies and maintaining environmental monitoring and protection.</i>	<i>Goal 6: Adopt a balanced and strategically prioritized portfolio of programs.</i>
Energy Services Industry	Standard Performance Contract	✓	✗	✓			✗
	Institutional Energy Performance Contracting	✗		✓			✗
Market Transformation Programs	New Construction	✓	✓	✗			✗
	Premium Efficiency Motors	✗	✓	✗			✗
	Small Commercial Lighting	✗	✓	--			✗
	Commercial HVAC	✗	✓	--			✗
	New York Energy Smart SM Loan Fund	✗	✓	--			✗
	Loan Fund Multi-family Building Demonstration	✗	✓	--			✗
	Innovative Opportunities: C/I	✗	✓	✗			✗
	Residential Appliances and Lighting	✓	✓	✗			✗
	Energy Star® Public Awareness	✓	✓	--			✗
	Home Improvement Loan Program	✓	✗	--			✗
	Residential New Construction	✗	✓	--			✗
	Res. Building Perform. Market Enhancement	--	--	✓			✗
	Innovative Opportunities: Residential	✗	--	--			✗
Technical Assistance and Outreach Programs	Energy Feasibility Studies	✓	✗	✓			✗
	Energy Operations Management	✓	✓	✓			✗
	Rate Analysis and Aggregation	✗	✓	✓			✗
	Energy Audit Pilot Program	✓	✗	✓			✗
	Flex Tech	✓	✗	✓			✗
	Residential Comp. Energy Management Services	✗	✓	✗			✗
		✓	Primary Element - Indicates the program directly influences (targets all efforts toward) the goal.				
		✗	Secondary Element - Indicates the program influences particular goal, but not as a direct result of program logic, actions or anticipated outcomes.				
		--	Supporting Element - Program supports the goal, but does not directly target outcomes toward the goal.				

TABLE 5-3: Program Portfolio Balance and Effects (Continued)

		<i>Goal 1: Improve efficiency of electricity use through cost-effective energy efficiency measures and services.</i>	<i>Goal 2: Transform the market for energy-efficient products and services, informing the public about the full-range of energy efficiency opportunities.</i>	<i>Goal 3: Promote and foster the energy efficiency industry.</i>	<i>Goal 4: Address the energy affordability issues of low-income households.</i>	<i>Goal 5: Invest in public benefit energy R&D, not likely to be provided by private technologies and maintaining environmental monitoring and protection.</i>	<i>Goal 6: Adopt a balanced and strategically prioritized portfolio of programs.</i>
Low-Income Programs	Low-Income Direct Installation Program	X	--	--	✓		X
	Low-Income Aggregation	--	--		✓		X
	Technical Assistance for Low-Income Publicly-Assisted Housing	--		--	✓		X
	Affordable Assisted Housing	X	--		✓		X
	Low-Income Public Awareness		X	--	✓		X
Renewables R&D Programs	New York State Wind Power Plant Demonstration			X		✓	X
	Wind Prospecting Program	--		✓		✓	X
	Residential Photovoltaics	--	--	✓		✓	X
	Photovoltaics on Buildings	--		✓		✓	X
	High Value Photovoltaics and Wind			--		✓	X
	Willow Plantation Development			--		✓	X
Environmental Quality Programs	Environmental Monitoring, Evaluation and Protection					✓	X
	Development & Demonstration of Innovative Pollution Monitoring Instruments					✓	X
	Environmental Quality Projects Identified in the PSCs System Benefits Charge Order					✓	X
Energy Efficiency and Strategic R&D	Energy Efficiency Research and Development	X	--	--		✓	X
	Strategic Research and Development	X		--		✓	X

✓	Indicates the program influences particular goal.
X	Secondary Element - Indicates the program influences particular goal, but not as a direct result of program logic, actions or anticipated outcomes.
--	Supporting Element - Program supports the goal, but does not directly target outcomes toward the goal.

