

## Section 4

### SUMMARY OF PROGRAM ACTIVITIES AND OUTCOMES

This section presents an overview of the implementation status of the first three years of the **New York Energy Smart<sup>SM</sup>** program. Unless otherwise noted, the results represent activities and outcomes as of June 30, 2001. Detailed program-by-program descriptions and results are presented in Appendix A.

#### IMPLEMENTATION ACTIVITIES

##### Participating Customers

The number of participating customers or facilities for each program is shown in Table 4-1. A description of how participants were counted is also provided. Over 2,400 facilities are being served by the commercial and industrial (C/I) programs. The sector distribution of these facilities, shown in Figure 4-1, is as follows: 35% commercial, 29% institutional, 12% government, 5% not-for-profit, and 3% multifamily. Over 45,000 customers are being served by the residential and low-income programs. These customers are either receiving a direct incentive payment or are indirectly affected as tenants in multifamily buildings. For example, 1,090 low-income buildings are being considered for energy-efficient appliances and lighting through the Direct Installation program. Within these buildings, 9,279 residential units will be reviewed and considered for specific measures.

##### Product Sales

Table 4-2 provides data on the number of products sold through **New York Energy Smart<sup>SM</sup>** programs that target product distributors. Nearly 2,000 motors have been sold by vendors participating in the Premium Efficiency Motors program. Over 36,000 lighting products were purchased by customers through the Residential Appliance & Lighting Program Lighting Solutions Catalog that offered compact fluorescent light bulbs and fluorescent lighting fixtures. Over 2,000 fluorescent torchieres were sold at trade-in events. These torchieres replaced halogen torchieres that use significantly more energy than fluorescent torchieres and also present a fire hazard. Through June 30, 2001, nearly 3,000 ENERGYSTAR<sup>®</sup> air conditioners were purchased through the Keep Cool Program by customers who received a \$75 bounty payment toward the purchase of new ENERGYSTAR<sup>®</sup> air conditioners and for the retirement of old air conditioners.<sup>1</sup>

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<sup>1</sup> Keep Cool Program results as of September 2001 are presented in Appendix A.

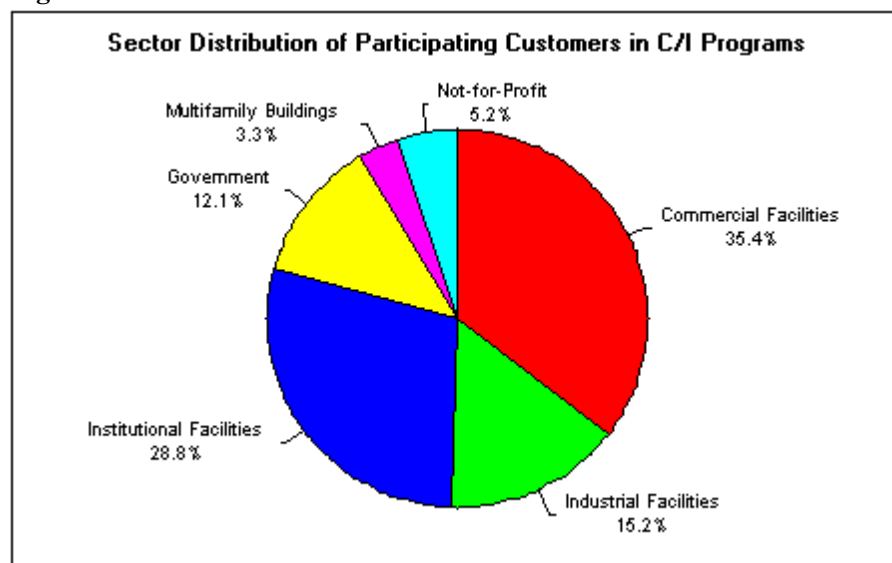
**Table 4- 1: Number of Customers or Facilities Served**

<b>Program</b>	<b>Customers or Facilities</b>	<b>Customer Definition</b>
<b>C/I Programs</b>		
C/I Performance (Standard Performance Contracting)	1,163	Number of facilities represented by 223 projects in program.
Institutional Performance Contracting Assistance	251	Number of participating facilities receiving 50% co-funding for energy audits.
C/I New Construction	509	Number of customer applications.
Cooling Recommissioning	73	Number of participating facilities.
Peak Load Reduction	473	Number of participating facilities.
Innovative Opportunities: C/I Geothermal Heat Pump	40	Number of participating facilities receiving design assistance for geothermal heat pumps.
Technical Assistance	789	Number of participating facilities receiving 50% co-funding for energy audits.
Loan Fund	49	Number of borrower applications from the C/I sector.
PV on Buildings	11	Number of commercial and institutional buildings in program.
Subtotal	3,358	
<b>Residential and Low-Income Programs</b>		
Residential Appliances & Lighting and Keep Cool Programs	10,462	Number of orders for products from the Lighting Solutions Catalog and 2-For-1 Bulb Offer.
	1,148	Number of multifamily buildings identified to receive energy assessments. To date, assessments have been completed on 54 buildings.
ENERGYSTAR <sup>®</sup> Homes	7	Number of ENERGYSTAR <sup>®</sup> homes completed.
Home Performance with ENERGYSTAR <sup>®</sup>	200	Number of completed home energy assessments. Thirty-two homes have undergone energy efficiency improvements.
Loan Fund	240	Number of residential borrower applications.
Innovative Opportunities: Residential	~20,000	Number of residential customers who have received home energy audit CDs.
Residential Comprehensive Energy Management	15	Number of multifamily buildings receiving incentives for submetering equipment.
	2,544	Number of multifamily residential units affected by program.
Low-Income Direct Installation	1,090	Number of low-income buildings in program.
	9,279	Number of residential units within these buildings.
Residential PV	50	Number of residential customers signed up to receive incentives for installing PV systems.
Subtotal	45,035	

## Participating Allies

Another measure of implementation activities is the number of service providers or trade allies that participate directly or indirectly in one of the programs. Direct participants are those that receive incentives from NYSERDA, such as energy service companies (ESCOs) that participate in the C/I Performance program. An example of an indirect participant is an architect or engineering (A/E) firm participating in the C/I New Construction program. These firms do not receive incentives from NYSERDA

**Figure 4-1**



but are still directly impacted by the program's high-efficiency message. The number and types of participating trade allies, shown in Table 4-3, are indicators of the extent of outreach activities conducted as well as indicators of the **New York Energy Smart<sup>SM</sup>** Program's efforts to develop a network of qualified service providers. Participating allies include ESCOs, engineering firms, A/E firms, manufacturing firms, load serving entities (LSE), curtailment service providers (CSP), wind developers, and customizers and installers. The distribution of participating allies is shown in Figure 4-2.

**Table 4-2: Product Sales**

Program	Number of Products	Outcome Description
Premium Efficiency Motors	1,919	Number of CEE-qualified premium efficiency motors for which participating vendors received a \$40 incentive.
Residential Lighting & Appliance and Keep Cool	36,362	Number of individual products purchased through the Lighting Solutions Catalogue and the 2-For-1 Bulb Offer.
	2,013	Number of ENERGYSTAR <sup>®</sup> torchieres sold during Torchiera Trade-In events.
	3,657	Number of ENERGYSTAR <sup>®</sup> air conditioners purchased through Keep Cool program.
	642,000	Estimated increase in purchases of ENERGYSTAR <sup>®</sup> appliances and lighting products since program inception.
<b>Total</b>	<b>685,951</b>	

**Table 4-3: Participating Allies by Program Area**

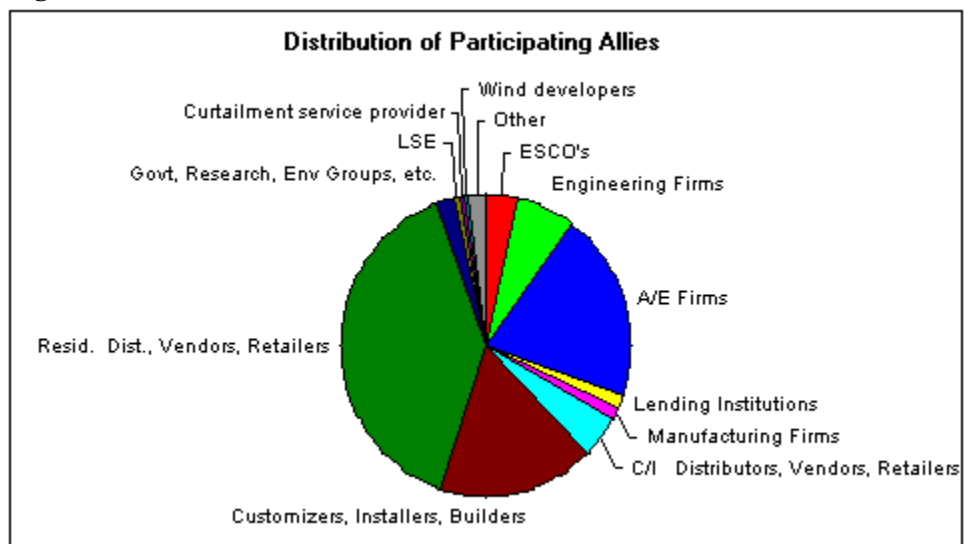
Program Area Ally Type	C/I Energy Efficiency Programs	Technical Assistance Programs	Residential Programs	Loan Programs	Low-Income Programs	Renewable Energy Programs	Environment and R&D Programs
ESCOs	71	16					
Engineering Firms	23	133					
A/E Firms	475						
Lending Institutions	0			61			
Manufacturing Firms	15		18				
C/I Distributors, Vendors, Retailers	98		10				
Customizers, Installers, Builders	287		108			14	
Resid. Distributors, Vendors, Retailers			931				
Govt, Research, Env Groups, etc.					28	3	14
LSEs	8		6			2	2
Curtailment Service	5						4
Wind Developers						14	
Other Allies	31	2	5		9		
<b>Total</b>	<b>1,013</b>	<b>151</b>	<b>1,078</b>	<b>61</b>	<b>37</b>	<b>33</b>	<b>20</b>

Note: The number of allies may be duplicated in some cases because the same allies participate in multiple program areas.

**Informational Activities**

Several New York Energy Smart<sup>SM</sup> programs provide funding for training and workshops. A few programs have advertising budgets to support media campaigns, public events, and public meetings. Table 4-4 summarizes these activities.

**Figure 4-2**



**Table 4-4: Informational and Training Activities by Program**

Program	Description of Activity and Results
Small Commercial Lighting	<ul style="list-style-type: none"> <li>• Editorial article placements in trade journals; total circulation 45,000+.</li> <li>• 12 workshops to train lighting distributors and contractors on design practices; 110 attendees.</li> <li>• 2,069 user sessions at Small Commercial Lighting area of NYSERDA web site.</li> </ul>
C/I HVAC	<ul style="list-style-type: none"> <li>• 7 workshops on benefits of commissioning; 150 attendees.</li> </ul>
Innovative Opportunities	<ul style="list-style-type: none"> <li>• 6 workshops on geothermal heat pumps; 55 attendees.</li> <li>• 3 workshops on transformers; ~60 attendees.</li> <li>• 4 continuing education courses on Energy Efficiency and Property Valuation for property appraisers and others in the real estate market; 98 attendees.</li> <li>• 3 two-day sessions for ESCOs addressing high-quality lighting technologies, applications, and evaluation issues; ~ 40 attendees.</li> <li>• 2 sessions on high quality lighting, one for healthcare facility managers and one for the Building Owners and Managers Association: ~ 30 attendees.</li> </ul>
New Construction	<ul style="list-style-type: none"> <li>• ~100 meetings informing attendees about the New Construction program and other SBC programs; ~5,000 attendees.</li> </ul>
Targeted Outreach Program	<ul style="list-style-type: none"> <li>• 12 meetings with the public on SBC programs; ~ 240 attendees.</li> </ul>
ENERGYSTAR <sup>®</sup> Public Awareness Campaign	<ul style="list-style-type: none"> <li>• TV, radio, and print ads resulted in one billion impressions.*</li> <li>• Program was represented at 122 events; total of 3.3 million in attendance.</li> <li>• getEnergySmart.org web site developed to educate consumers on energy efficiency products and practices. Includes energy university, home energy analyzer, and links to on-line energy efficiency product retailers. Over 113,000 user sessions logged.</li> </ul>
ENERGYSTAR <sup>®</sup> Homes	<ul style="list-style-type: none"> <li>• 13 million TV and Radio impressions.*</li> <li>• 2 million print ad impressions.*</li> <li>• 146 brochures and videos sent out.</li> <li>• 460 calls received on the hotline.</li> </ul>
Home Performance with ENERGYSTAR <sup>®</sup>	<ul style="list-style-type: none"> <li>• 15.9 million TV and Radio impressions.*</li> <li>• 2.5 million print ad impressions.*</li> <li>• 2,570 brochures sent out.</li> <li>• 17 workshops with home performance specialists; 55 attendees.</li> </ul>
Various renewable energy programs.	<ul style="list-style-type: none"> <li>• Launched the NYSolarGrant.com website to promote PV in remote areas and hybrid wind/PV systems.</li> <li>• 4 end-user workshops held on hybrid wind/PV systems; 70 attendees.</li> <li>• Creation of video to promote hybrid wind/PV systems in development.</li> <li>• Sponsored a two-day Wind Technologies and Applications workshop; 250 attendees.</li> </ul>
Environmental Monitoring, Evaluation, and Protection	<ul style="list-style-type: none"> <li>• Conference held in 1999; 200+ scientists, researchers, policy-makers, and public-interest groups in attendance.</li> <li>• Conference held in 2001; proceedings from conference to be published in a special edition of the journal <i>Environmental Pollution</i>.</li> </ul>
Various product R&D programs	<ul style="list-style-type: none"> <li>• Developed primers on the NY ISO's Emergency Demand Response and Day-Ahead Demand Response programs that are available on NYSERDA's web site.</li> <li>• Launched <a href="http://www.submeteronline.com">www.submeteronline.com</a> featuring educational material on submetering.</li> <li>• A number of lighting projects have provided training workshops and educational</li> </ul>

\* An impression is defined as the sum of the gross audience of all vehicles used in an advertiser's schedule. One person in the audience could experience hundreds of impressions.

Workshops to train service providers have been conducted through the following programs: Small Commercial Lighting, Geothermal Heat Pump, Home Performance with ENERGYSTAR,<sup>®</sup> and several lighting projects funded through the Energy Efficiency and R&D program. Conferences were held to bring together various stakeholders. Several web sites have been launched to educate the public and to provide customers with access to energy efficiency product vendors. Mass media advertising has been used to increase awareness of ENERGYSTAR<sup>®</sup> products and services.

## **PROGRAM OUTCOMES**

### **Energy Savings**

Anticipated annual electricity savings are shown in Table 4-5 for those programs that are operational and report energy savings.<sup>2</sup> These savings are based on funds awarded<sup>3</sup> through June 30, 2001. The total anticipated annual electricity savings is 927.7 million kWh and the total summer peak demand savings is 521.3 MW. Table 4-5 also lists the energy and demand savings from measures for which work has been completed as of June 30, 2001 (as opposed to work anticipated from funds awarded). The achieved annual savings are over 312.5 million kWh and the peak demand savings is 216.9 MW. Approximately 95 MW of this reduction, or 58% , is attributable to the Peak Load Reduction program. This program, in conjunction with the Enabling Technologies for Price Responsive Load program, an R&D program, helped curtail over 100 MW of electric load during the four-day period in August 2001 when the New York Independent System Operator activated the Emergency Demand Response Program.

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<sup>2</sup> Methods and assumptions used to determine kWh and KW savings are presented in Appendix B for selected programs.

<sup>3</sup> Unless otherwise noted, funds awarded include funds that have been contracted, approved for contracting, or set aside as a result of incentive applications.

**Table 4-5 Energy Savings by Program Area**

Program Area	Anticipated From Funds Awarded as of June 30, 2001		Installed As of June 30, 2001	
	Million kWh	MW	Million kWh	MW
<b>C/I Programs</b>				
C/I Performance (Standard Performance Contracting)	315.5	70.2	153.6	34.2
Institutional Energy Performance Contracting Assistance	170.6	45.1	TBD	TBD
New Construction	79.5	29.3	3.2	1.2
Cooling Recommissioning	57.0	11.1	12.4	2.4
Peak Load Reduction Program	N/A	221.4*	N/A	95.7*
Premium-Efficiency Motors	1.4	0.3	1.4	0.3
Technical Assistance Programs**	231.2	61.5	71.4	19.0
Loan Fund (C/I and Residential)	6.7	1.5	6.7	1.5
<b>Residential and Low-Income Programs</b>				
Appliance & Lighting	57.0	7.5	57.0	7.5
ENERGYSTAR® Homes	<0.1	<0.1	<0.1	<0.1
Home Performance with EnergyStar	<0.1	<0.1	<0.1	<0.1
Keep Cool	1.5	1.1	1.5	1.1
Residential Comprehensive Energy Management	1.2	1.0	TBD	TBD
Low-Income Direct Installation	7.6	1.1	5.3	0.8
<b>R&amp;D Programs</b>				
Enabling Technologies for Price Responsive Load	N/A	70*	N/A	53.1*
<b>Total</b>	<b>927.7</b>	<b>521.3</b>	<b>312.5</b>	<b>216.9</b>

\* Approximately 95% of this total represents emergency generator or load curtailment capacity.

\*\* Includes Technical Assistance, FlexTech, and Energy Audit Pilot programs.

## Clean Generation

The anticipated and achieved levels of electricity generation from renewable resources are presented in Table 4-6. Over 126 million kWh of clean generation are anticipated from projects for which funds have been awarded. Included in this total are 124 million kWh of electricity generated from three wind farm

facilities. The 11.5 MW project at Madison was completed in October 2000. The 30 MW Fenner project was completed in November 2001. The contract for the third 10 MW facility is under negotiations.

**Table 4-6 Anticipated and Achieved Electricity Generation from Renewable Resources**

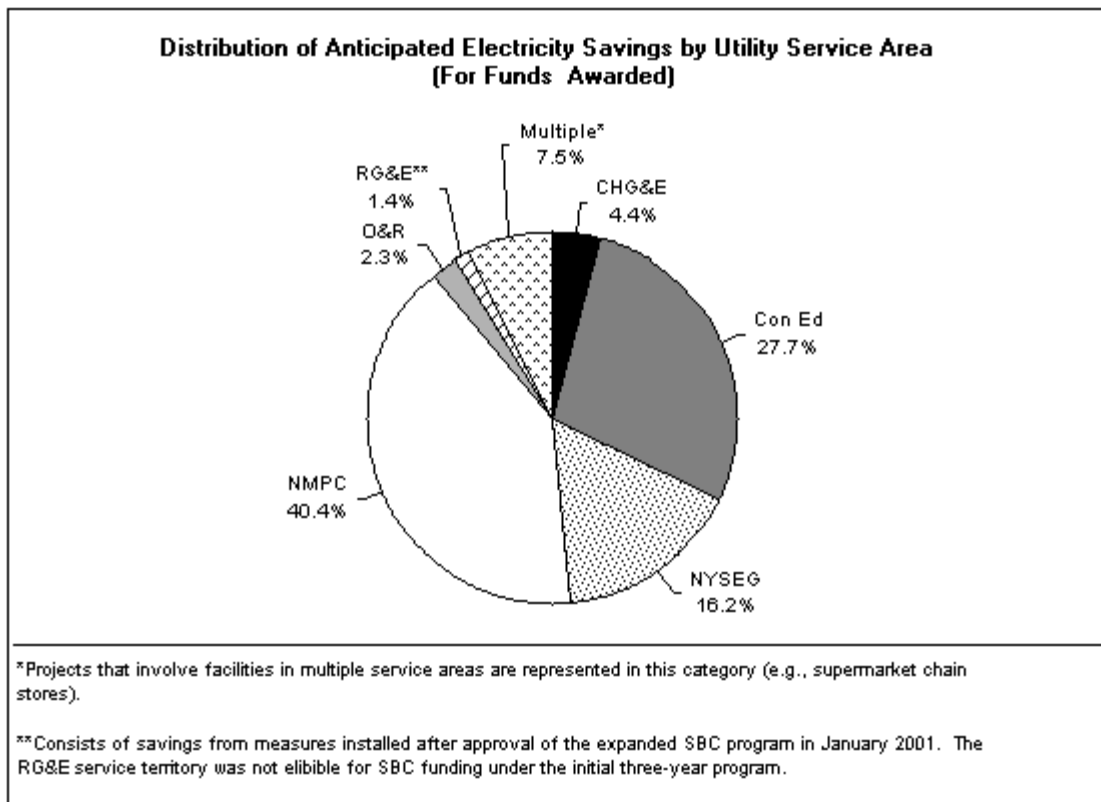
Program		Anticipated From Funds Awarded		Installed As of June 30, 2001	
		Million kWh	MW	Million kWh	MW
Wind Plant Demonstration		124.0	51.5	24.2*	11.5*
High-Value Wind & PV	Small wind	0.56	0.23	<0.00	<0.00
	PV	0.21	0.15	0.01	0.01
PV on Buildings		0.95	.70	0.21	0.15
Residential PV		0.40	0.29	<0.0	0.03
<b>Total</b>		<b>126.12</b>	<b>52.87</b>	<b>24.42</b>	<b>11.69</b>

\* As of November 2001, the total installed capacity was 41.5 MW and annual generation totaled 103 million kWh.

#### **Distribution of Electricity Savings by Utility Service Area**

The distribution of kWh savings in each utility service area is presented in Figure 4-3. At this time, nearly 30% of the anticipated total annual kWh savings are expected to occur in the Consolidated Edison service area and approximately 40% is expected to occur in the Niagara Mohawk service area. The service area distribution of kWh savings varies by program. Several programs have targeted the downstate area. Thus, the percentage of kWh savings in the Consolidated Edison service area is 78% for the Keep Cool Program, 55% for the Cooling Recommissioning Program, and 87% for the Low-Income Direct Installation Program. In addition, 59% of the committed incentives from the Peak Load Reduction Program has been awarded to customers in the Consolidated Edison service area.

**Figure 4-3: Distribution of Anticipated Electricity Savings by Utility Service Area**



### Program Costs per kWh and KW

Table 4-7 presents the cost per kWh and cost per KW for selected programs. For this analysis, the estimated life of each measure was multiplied by the anticipated annual kWh savings. Program cost per kWh was calculated by dividing program funds awarded by the total anticipated lifetime kWh savings for that program. Similarly, program cost per KW was calculated by dividing funds awarded by the demand savings anticipated from those funds. Programs that are in their initial stages of implementation were not included in the analysis because there is insufficient data to project reasonable estimates of costs relative to energy savings. Programs in the research and development area were also excluded.

Program costs per kWh range from \$0.003 for the technical assistance programs to \$0.08 for the Keep Cool Program which provides bounty payments for the retirement of old room air conditioners. Program costs per KW range from \$62 for the Peak Load Reduction Program to \$4,455 for the Low-Income Direct Installation Program.

**Table 4-7: Program Cost per kWh and kW**

Program	Funds Awarded (\$ Millions)	Anticipated Lifetime Energy Savings (millions of kWh)	Anticipated Peak Reduction (kW)	Program Cost per kWh	Program Cost per kW	Weighted Average Life of Measures (Years)*
<b>C/I Programs</b>						
C/I Performance (Standard Performance Contracting)	\$49.9	4,733	70,200	\$0.011	\$711	15
Institutional Performance Contracting Assistance	\$6.8	2,543	45,100	\$0.003	\$150	15
New Construction	\$28.1	1,582	29,300	\$0.018	\$959	20
Cooling Recommissioning	\$3.4	399	11,100	\$0.009	\$333	7
Peak Load Reduction	\$13.8	N/A	221,400	N/A	\$62	N/A
Premium-Efficiency Motors	\$0.6	21	300	\$0.029	\$2,000	15
Technical Assistance	\$9.3	3,468	61,500	\$0.003	\$150	15
Loan Fund	\$1.9	100	1,530	\$0.019	\$1,242	15
<b>Residential and Low-Income Programs</b>						
Appliance & Lighting	\$14.0	855	7,500	\$0.016	\$1,866	15
Keep Cool**	\$8.1	100	7,925	\$0.081	\$1,022	12
Low-Income Direct Installation	\$5.0	98.8	1,100	\$0.050	\$4,455	13

\* Measure lives were weighted relative to the amount of funding provided to individual measures.

\*\* Due to the seasonal nature of this program, the program costs, electricity savings, and peak demand reductions are based on activity through the end of the summer.

**Note:** Market transformation programs, such as Premium-Efficiency Motors and Appliances & Lighting, will have higher program costs per kWh and KW because a large portion of awarded funding has gone toward infrastructure development. As these programs continue, these initial investments are expected to produce increasingly higher levels of program activity, thereby resulting in lower costs per unit of energy savings. Furthermore, with the exception of the Appliances & Lighting Program, increases in energy savings attributable to spillover and market transformation effects were not included in the analysis, resulting in an under-representation of energy savings and an over-representation of program costs per unit of energy savings.

## Natural Gas and Oil Savings

Anticipated reductions in natural gas and oil use are shown in Table 4-8. Most of the anticipated savings are attributable to the technical assistance programs. ENERGYSTAR® Homes Program, which is a new program, has small savings at this time but is expected to show large increases as program activity increases.

**Table 4-8: Anticipated Annual Natural Gas and Oil Savings From Funds Awarded**

<b>Program</b>	<b>MMBtu of Natural Gas Savings</b>	<b>MMBtu of Oil Savings</b>
Geothermal Heat Pump Project*	156,114	3,499
Technical Assistance Programs**	2,312,500	770,883
ENERGYSTAR® Homes	195	145
<b>Total</b>	<b>2,468,809</b>	<b>774,477</b>

\* This project was funded through the C/I Innovative Opportunities program.

\*\* Includes Technical Assistance, FlexTech, and Energy Audit Pilot.

### Energy Bill Savings

Anticipated energy bill reductions from electricity savings, natural gas savings, and oil savings are shown in Table 4-9 by end-use sector. Annual bill savings are \$94 million for the commercial sector, \$17.2 million for the industrial sector, and \$7.8 million for the residential sector. Total savings for all sectors are approximately \$119.1 million annually. Energy bill savings result in increased economic activity because funds remain available for additional spending and job creation. Anticipated bill savings from funds awarded are expected to result in the creation or retention of about 2,311 jobs for each year that the savings are realized.<sup>4</sup>

**Table 4-9: Anticipated Energy Bill Savings From Funds Awarded**

<b>Sector</b>	<b>Electricity Bill Savings (\$ Millions/Year)*</b>	<b>Natural Gas Bill Savings (\$ Millions/Year)**</b>	<b>Oil Bill Savings (\$ Millions/Year)***</b>	<b>Total</b>
Commercial	\$79.1	\$12.1	\$2.8	\$94.0
Industrial	\$15.1	\$1.6	\$0.5	\$17.2
Residential	\$7.8	\$0.0	\$0.0	\$7.8
<b>Total</b>	<b>\$102.0</b>	<b>\$13.8</b>	<b>\$3.3</b>	<b>\$119.1</b>

\* Assumes electricity prices of \$0.114 for commercial customers, \$0.09 for industrial customers, and \$0.118 for residential customers.

\*\* Assumes natural gas prices of \$5.92/MMBtu for commercial customers and \$3.91/MMBtu for industrial customers.

\*\*\* Assumes oil prices of \$4.32/MMBtu for commercial customers and \$4.14/MMBtu for industrial customers.

<sup>4</sup> Based on the REMI Economic and Demographic Forecasting Model, developed by the Regional Economics Model, Inc. of Amherst, MA.

## Emissions Reductions

Anticipated reductions in air pollutant emissions from reduced electricity, natural gas, and oil use and from increased electricity generation from renewable resources are presented in Table 4-10. Anticipated reductions in nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), and carbon dioxide (CO<sub>2</sub>) emissions are based on 928 million kWh of annual electricity savings (see Table 4-5), 126 million kWh of clean generation from wind and PV (See Table 4-6), 2.5 tBtu of natural gas savings, and 0.8 tBtu of oil savings (See Table 4-8). The annual CO<sub>2</sub> reduction is equivalent to removing approximately 134,000 automobiles from New York's roadways for one year.

**Table 4-10: Anticipated Annual Emissions Reductions (Tons)**

Primary Pollutant	From Annual Electricity Savings (928 million kWh)	From Annual Natural Gas Savings (2.5 tBtu)	From Annual Oil Savings (0.8 tBtu)	From Annual Clean Generation: Wind & PV (126 million kWh)	All Sources
NO <sub>x</sub>	696	123	46	95	960
SO <sub>2</sub>	1,401	0	89	191	1,680
CO <sub>2</sub>	409,117	144,425	62,733	55,640	671,915

## Co-funding and Leveraging

The **New York Energy Smart<sup>SM</sup>** Program is attracting significant external spending in terms of co-funded and leveraged dollars. Anticipated external spending from funds awarded is shown in Table 4-11 for applicable programs. A description of the external funding is provided in Table 4-12 for each program. Co-funding includes customer expenditures on services such as energy audits as well as expenditures on purchase and installation of energy efficiency equipment. For example, in the Premium Efficiency Motors Program, the incremental cost of the high-efficiency motors purchased by end-use customers is considered co-funding. Co-funding also includes contributions from government entities and in-kind work by contractors. Anticipated leveraged investments, also shown in Table 4-11, represent anticipated investments associated with the implementation of measures recommended through programs which provide funding for feasibility studies or energy audits. For example, participants who have received funding for design assistance on geothermal heat pumps are anticipated to invest \$37.1 million to install the recommended geothermal heat pump systems.

External spending increases the number of customers that can be served with limited resources and increases customer involvement in projects. Anticipated co-funding from program activities through June 30, 2001 is approximately \$356 million. Anticipated leveraged investments is approximately \$262 million. The total anticipated external spending is \$618 million. Given the \$201 million committed for

all program and administration costs as of June 30, 2001, the ratio of external spending to **New York Energy Smart<sup>SM</sup>** funds is 3.1 to 1.

**Table 4-11: Anticipated External Funding Contribution from Funds Awarded**

<b>Program</b>	<b>[1] Funds Awarded (\$ millions)</b>	<b>[2] Anticipated Co-funding (\$ million)</b>	<b>[3] Anticipated Leveraged Investments</b>	<b>[4] Total External Spending [2] + [3]</b>	<b>[5] Ratio of External Spending to New York Energy Smart<sup>SM</sup> Funding</b>
<b>C/I Programs</b>					
C/I Performance	\$49.9	\$155.7		\$155.7	3.1
New Construction	\$28.1	\$24.5		\$24.5	0.9
Cooling Recommissioning	\$3.7	\$0.8		\$0.8	0.2
Peak Load Reduction	\$13.8	\$9.2		\$9.2	0.7
Premium Efficiency Motors	\$0.6	\$0.3		\$0.3	0.5
C/I Innovative Opportunities: Geothermal Heat Pump Project	\$0.3	NA	\$37.1	\$37.1	117.4
C/I Innovative Opportunities: Other	\$2.3	\$0.3		\$0.3	0.1
Technical Assistance	\$9.3	\$9.5	\$129.5	\$139.0	15.0
Institutional Performance Contracting	\$6.8	\$6.8	\$94.9	\$101.7	15.0
Loan Fund	\$1.9	\$2.1		\$2.1	1.1
<b>Residential and Low-Income Programs</b>					
Residential Appliance & Lighting and ENERGY STAR <sup>®</sup> Awareness Campaign	\$14.0	\$39.3		\$39.3	2.8
Keep Cool	\$2.3	\$1.5		\$1.5	0.6
Direct Installation	\$5.5	\$1.7		\$1.7	0.3
<b>R&amp;D</b>					
Wind Power Plant	\$6.0	\$63.0		\$63.0	10.5
Wind Prospecting	\$0.6	\$1.7		\$1.7	2.9
Residential PV	\$1.3	\$3.6		\$3.6	2.9
PV on Buildings	\$3.0	\$3.1		\$3.1	1.0
High-Value Wind and PV	\$1.5	\$2.0		\$2.0	1.4
Environmental Monitoring, Evaluation and Protection	\$7.1	\$7.7		\$7.7	1.1
Energy Efficiency & Strategic R&D	\$9.0	\$21.7		\$21.7	2.4
Enabling Technologies for Price Responsive Load	\$0.8	\$1.0		\$1.0	1.2
Distributed Generation-Combined Heat & Power	\$0.4	\$0.8		\$0.8	2.0
<b>Total</b>	<b>\$169.1*</b>	<b>\$356.2</b>	<b>\$261.5</b>	<b>\$617.7</b>	

\* This table does not include new programs or programs with no co-funding.

**Table 4-12: Description of External Funding**

Program	Description
C/I Performance	Estimated full cost of measures to be installed less financial incentives.
New Construction	Participating customers' added costs to install higher-efficiency measures compared to standard measures.
Cooling Recommissioning	Participating customers' portion of the technical assistance and implementation costs.
Peak Load Reduction	Participating customers' portion of the technical assistance and implementation costs.
Premium Efficiency Motors	Participating customers' added costs to purchase higher-efficiency motors compared to standard motors.
C/I Innovative Opportunities: Geothermal Heat Pump Project	Estimate of leveraged investments based on full cost of the measures assuming that 2/3 of the facilities receiving design assistance implement the recommended heat pumps.
C/I Innovative Opportunities: Other	Co-funding from project participants.
Technical Assistance	Participating customers' co-funding of studies, generally 50% of study costs. Estimate of leveraged investments based on full cost of measures assuming that 2/3 of the recommendations are implemented.
Institutional Performance Contracting Assistance	Same as Technical Assistance.
Loan Fund	20% of the total loan value (this represents the estimated incremental cost of higher-efficiency measures).
Residential Appliance & Lighting and ENERGY STAR® Awareness Campaign	<p>Co-funding for the Residential Appliance &amp; Lighting Program includes: (1) contributions by participating retailers and contractors toward cooperative ads, contests, and special promotions; (2) costs paid by participating multifamily building owners and residential customers for ENERGY STAR® products bought through NYSERDA initiatives (e.g., Lighting Solutions Catalogue and Torchiere Trade-Ins); and (3) the added cost incurred by the public to purchase ENERGY STAR® appliance and lighting products compared to standard products. Number 3 is based on the estimated increase in the sale of ENERGY STAR® products attributable to NYSERDA programs.</p> <p>Co-funding for the ENERGY STAR® Awareness Campaign include the dollar value of Public Service Announcements, other free ads, and U.S EPA's co-funding for production costs of ads aired in New York State.</p>
Keep Cool	Participating customers' added cost of purchasing ENERGY STAR® air conditioners compared to standard air conditioners.
Direct Installation	Estimated contribution by the Weatherization Assistance Program (WAP) and participating building owners toward cost of electric reduction measures.
Wind Power Plant	Estimated cost of the wind power plants less program funding.
All other R&D programs	Co-funding from project participants.

## R&D: Renewable Energy

The renewable energy program has initiated several projects. Project descriptions, funding levels, and outcomes are shown in Table 4-13. The major goals of the renewable energy program are to develop the supply and demand for renewable power. Objectives include development of green marketing and green power pricing. Green marketing refers to the marketing of green power in a competitive market in which customers can choose electricity providers based on whether the provider's product mix includes green resources. Green pricing refers to pricing that reflects the amount of green power in the product mix offered by electricity providers, giving customers the option of supporting investments in renewable power production. As of June 30, 2001, the total anticipated capacity from utility-scale wind power is 51.5 MW.<sup>5</sup>

**Table 4-13: Renewable Energy Program Description and Results**

Project and Funding Level	Description	Anticipated Results from Committed Funds	Results as of June 30, 2001
Wind Plant Demonstration (\$9 million)	Provides funding to demonstrate utility-scale wind farms	51.5 MW of installed capacity. <sup>6</sup>	11.5 MW Madison plant operational in 09/00.
PV on Buildings (\$3.0 million)	Provides funding to install PV panels that replace building materials in commercial, industrial, and institutional buildings.	679 kW from 10 projects.	150 kW system completed on a library in Ithaca.
Residential PV (\$1.2 million)	Provides funding to three PV contractors to assist homeowners in installing approximately 285 grid-connected PV systems.	285 1-kW systems.	30 systems installed. 31 ordered. <sup>7</sup>
Willow Farm (\$878,000)	Provides co-funding to assist in the development of dedicated willow plantations.	TBD	Between 1998 and 2000, over 700 acres of willow crops were planted.
High-Value Wind & PV (\$1.5 million)	Current projects include small wind development; demonstration of a PV system with battery backup that will be used as an uninterruptible power supply; and installation of remote PV and hybrid wind/PV systems.	<ul style="list-style-type: none"> <li>• 9 small-wind systems ranging in size from 2 to 66 kW;</li> <li>• 18 remote PV systems;</li> <li>• 3 50-kW uninterruptible power supply systems.</li> </ul>	5 remote PV systems installed.
Wind Prospecting (\$600,000)	Provides funding for wind developers to assess wind resources, environmental impacts, and community support at promising sites.	Six contractors were selected. Each project has the potential for building a wind farm of at least 10 MW.	N/A

<sup>5</sup> An additional 6.6 MW wind facility, constructed by the Niagara Mohawk Power Company using SBC funds and located in Wethersfield, Wyoming County, is not included in this total.

<sup>6</sup> The 51.5 MW includes the 11.5 MW Madison plant, the 30 MW Fenner plant which was completed in November 2001, and a proposed 10 MW plant.

<sup>7</sup> As of December 31, 2001.

## **R&D: Environment**

The goals of the **New York Energy Smart<sup>SM</sup>** Environmental Monitoring, Evaluation, and Protection (EMEP) program are to:

- Improve the scientific understanding of primary and secondary pollutants related to electricity generation (*e.g.*, SO<sub>x</sub>, NO<sub>x</sub>, ozone, particulates, mercury, etc.);
- Assess the environmental impact of electricity generation relative to other sources of pollution;
- Increase the understanding of local versus regional sources of air pollution in New York State; and
- Develop approaches to mitigate environmental impacts of electricity generation.

Five Program Opportunity Notices (PONs) have been issued resulting in 19 projects. Two major program conferences have been held. More than 20 papers have been published in peer reviewed journals. EMEP monitoring data are being used to formulate new environmental policies, *e.g.*, acid rain control policies. Several comprehensive and strategic studies are underway to assist in the formulation of future environmental policies, including actions to attain ambient particulate matter standards. Additional information on this program is presented in Appendix A.

## **R&D: Product Development and Demonstration**

Three programs have been developed in the Product R&D area: (1) Energy Efficiency and Strategic R&D, (2) Enabling Technologies for Price Responsive Load Management, and (3) Distributed Generation-Combined Heat and Power. The Energy Efficiency and Strategic R&D program has issued two program opportunity notices (PONs) and selected 38 projects for funding.

The first solicitation for the Enabling Technologies for Price Responsive Load Management was released in January 2001. The goal of this program, funded at approximately \$800,000, is to facilitate participation in the New York Independent System Operator's (NYISO) Emergency Demand Response Program (EDRP) and the Day-Ahead Demand Response Program (DADRP). The NYISO provides cash payments to EDRP participants who are successful in curtailing load during times of electric system emergencies. The DADRP allows customers to treat their electricity load curtailment as generation, allowing them to bid in the day-ahead market. Both programs alleviate summer peak demand shortages.

PONs for the Distributed Generation-Combined Heat and Power program were released in August 2000 and March 2001. These PONs resulted in a portfolio of 42 demonstration projects. As of December 2001, the anticipated installed electric capacity from these projects, once fully implemented, is 44 MW. Approximately 32 MW of this demand reduction is expected to be in place by the end of 2002.