# EXECUTIVE SUMMARY

This report provides the findings and lessons learned from New York State Energy Research and Development Authority's (NYSERDA) design, administration, and evaluation of the **New York Energy $mart℠** Low-Income Energy Affordability Program, from June 1998 through June 30, 2002.[1] The report discusses the progress the Low-Income Energy Affordability Program has made toward achieving the following public policy goals:

- Reducing the energy burden of low-income consumers through improved energy efficiency, energy management strategies, and specific aggregation strategies.
- Coordinating with community-based organizations and existing public assistance programs to implement market-based energy procurement and efficiency strategies.
- Leveraging private and public funds and building on the successes of existing initiatives with weatherization and other community-based organizations.
- Providing a multi-faceted all-fuels approach by supplementing federal weatherization program funds and expanding the scope of services to include installing electric-reduction measures and electric-to-gas conversions in order to reduce the energy burden of low-income customers and support the viability of low-income multifamily buildings.
- Implementing specific aggregation strategies to increase the market power and self-sufficiency of low-income consumers who may not be served in the competitive energy marketplace.
- Informing low-income energy customers and State and community-based service providers of the services and options available to them. Developing printed materials that inform low-income consumers about purchasing and using energy efficiently, and improving the linkages among parties that help low-income and special-needs New Yorkers to address their energy requirements.

To date, the Low-Income Energy Affordability Program has demonstrated early progress in serving low-income customers' needs through improvements in energy efficiency, energy decision-making, and creating and supporting an infrastructure in the State that could help ensure continued progress well into the future. The infrastructure is supported by a partnership among State agencies, private energy efficiency and service contractors, policy makers, and community organizations and low-income advocates. This partnership is dedicated to serving customers' needs and directing resources to the areas of greatest need in support of the continuing transition to a fully-competitive energy marketplace.

Access to affordable energy is one of the most important energy issues facing New York's low-income residents. NYSERDA offers a variety of energy efficiency and energy information programs to New York's residential and low-income population through its Residential Energy Affordability Program. The program offers technical information and assistance, access to energy-efficient products and services, and advanced

[1] This report was prepared in response to an order by the New York State Public Service Commission (PSC) to report on the progress of NYSERDA's Low-Income New York Energy $mart℠ program.

technology for improved energy decision-making and management. The residential program and the low-income component are designed to build the infrastructure to deliver energy efficiency goods and services and to build consumer demand through targeted marketing.

NYSERDA is working closely with residential customers to make energy more affordable by helping to improve energy efficiency in homes, particularly for low-income customers who face the highest energy burden of all customers, and by encouraging customer aggregation to improve the terms and conditions of service delivery.

**Context of NYSERDA's Low-Income Energy Affordability Program**

- More than seven million New Yorkers have incomes below 80% of the state median income (SMI) and are eligible to receive some form of public housing or energy assistance. Energy assistance is usually restricted to those households below 60% of SMI.
  - The Low-Income Energy Affordability Program, administered by NYSERDA, complements the services of programs with lower income guidelines and assists customers who are ineligible under other program guidelines by providing the direct installation of energy efficiency measures and energy education and training for low-income customers and building owners and managers.
  - The **New York Energy $mart**SM transition to the expanded 5-year program coincided with an important change in the Weatherization Assistance Program (WAP) such that, for the first time, WAP could fund electric efficiency improvements. This change allowed NYSERDA to shift the focus from supplementing weatherization efforts, as with the Direct Installation program, to serving households with incomes between 60% and 80% of the SMI that were under-served by other public and private statewide energy efficiency programs.
- The private housing stock for this component of the residential sector is generally of poor quality and inefficient. Much of New York's publicly-assisted housing has unusually high energy costs due to the use of electric resistance heat in inadequately insulated buildings.
- Energy burden, defined as the ratio of energy cost to income, ranges from 7-29% for low-income households compared to 3% for higher-income households.
- Low-income residential energy customers in New York and the Northeast, generally, have some of the highest energy costs in the country. New York ranks among the top five states that have the highest electricity costs for residential customers.[2] As part of an integrated approach to address the high energy costs of residential low-income customers, New York has assembled a strategically-prioritized set of programs to reduce their energy burden.[3,4]
- The combination of poor housing stock, high energy costs, and New York's cold climate places a significant burden on low-income households to afford energy services.

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[2] The Energy Information Administration; U.S. Department of Energy. www.eia.doe.gov

[3] New York State Energy Plan and Final Environmental Impact Statement. June 2002.

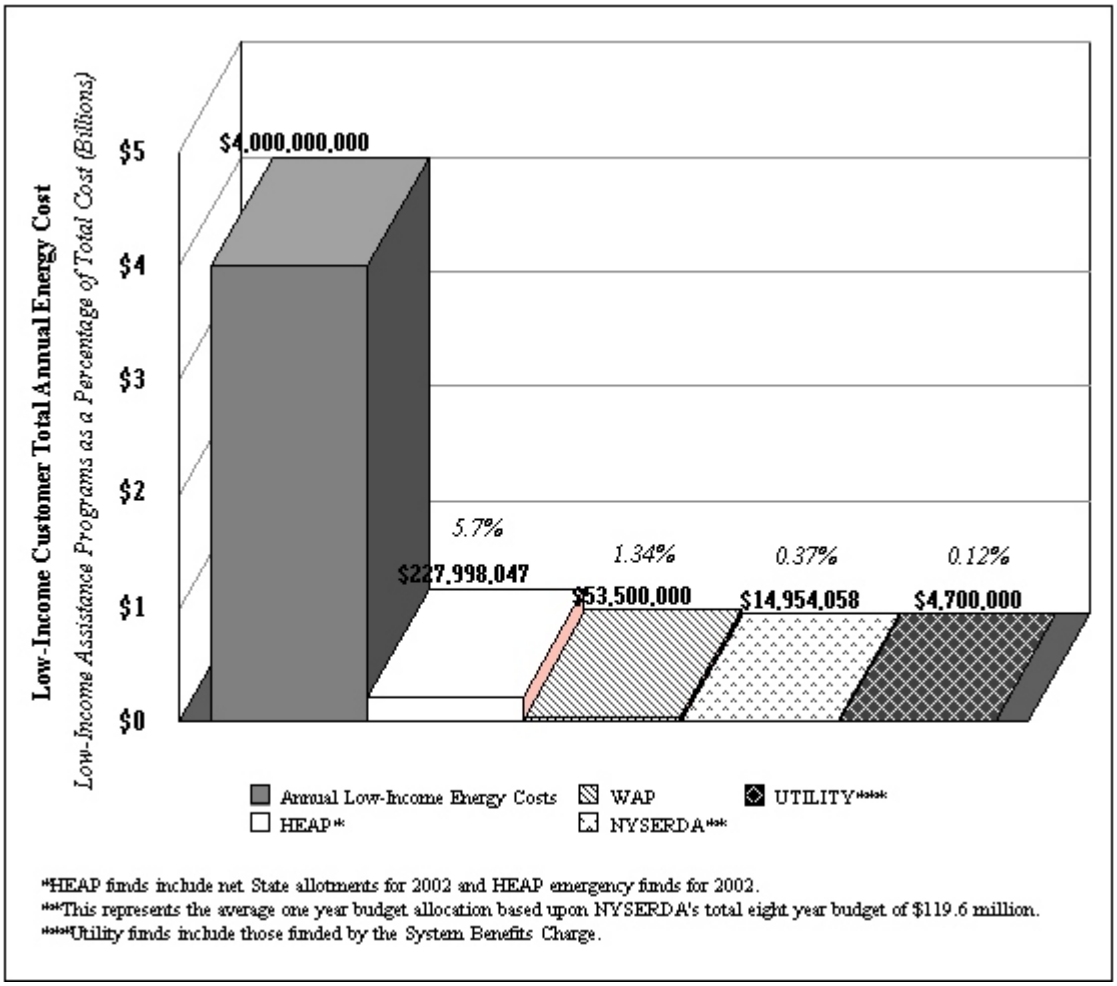
[4] New York State Energy Research and Development Authority. *System Benefits Charge: Revised Operating Plan for **New York Energy $mart**SM Programs (2001-2006).* June 12, 2002.

- As energy markets are restructured, interventions are required to assure that low-income clients can participate in ways that lower their energy costs.

- New York's residential energy sector, including low-income households, spent $12 billion for household energy in 2000. The residential sector experienced a rise in spending on energy of 17% from the 1999 level.[5] Such increases in energy costs directly affect low-income customers' ability to pay and ability to afford energy.

- Energy expenses for all low-income households in New York are estimated to exceed $4 billion per year.[6] Less than eight percent of these expenditures are leveraged by low-income energy assistance programs, including those from the WAP, Home Energy Assistance Program (HEAP), and public benefits funded programs. As shown in Figure S-1, the assistance provided by NYSERDA's Low-Income Energy Assistance Program represents less than one-half of one percent of the total annual low-income energy expenditure in New York.[7]

**Figure S-1.**




[5] NYSERDA. Patterns and Trends, New York State Energy Profiles: 1986-2000. December 2001.

[6] NYSERDA.

[7] The data used for Figure S-1 represents approximate budgets for 2002. The total low-income energy expenditure was calculated by multiplying 2.7 million low-income households by an average annual household energy expenditure of $1,400. See Section 2, Market Overview for further detail.

## Program Outcomes

Tables S-1 and S-2 present the cumulative progress made toward selected program success indicators and goals of the **New York Energy $mart**SM Low-Income Energy Affordability Program through June 30, 2002.

**Table S-1. Progress Toward Goals of the Low-Income Energy Affordability Program *(Cumulative Results Through June 30, 2002)***

| Success Indicator or Goal | | Progress |
|---|---|---|
| ***Goal: Improve the energy efficiency and access to energy options for under-served customers.*** | | |
| Estimated Electric (kWh) Savings | | 33,071,412[(a)] |
| ***Goal: Improve system-wide reliability through end-user efficiency actions.*** | | |
| Estimated Electric Demand (kW) Savings | | 7,073[(b)] |
| ***Goal: Reduce the energy burden of low-income customers.*** | | |
| Estimated Annual Electric Bill Reduction/unit | | $ 299 per unit/peryear[(c)] |
| Estimated Total Annual Cost Savings | | $6,118,211[(d)] |
| Benefit-to-Cost Ratio | | 2.4 to 1[(e)] |
| ***Goal: Reduce environmental impacts of energy production and use.*** | | |
| Estimated Annual Emission Reductions | *Sulfur Dioxide ($SO_2$)* | 49.93 tons[(f)] |
| | *Nitrogen Oxide ($NO_x$)* | 24.80 tons[(g)] |
| | *Carbon Dioxide ($CO_2$)* | 14,584.4 tons[(h)] |
| | *Carbon Monoxide (CO)* | 71.1 tons[(i)] |
| | *Particulate Matter (PM)* | 1.98 tons[(j)] |

Table S-1. Notes

[(a)] This calculation includes electricity savings (kWh) for installed measures under the Direct Installation program and projected savings for the Publicly Assisted Housing (PAHP) program through June 30, 2002.

[(b)] This calculation includes electric demand savings (kW) for installed measures under the Direct Installation and projected demand savings under the Publicly Assisted Housing program through June 30, 2002.

[(c)] This figure reflects the average energy bill reduction for participants in the Direct Installation and Publicly Assisted Housing programs. The figure was calculated by dividing the total kWh savings by the total number of customers served by these two programs and then multiplying by the average price per kWh of electricity for the majority of customers served (18.5 cents per kWh). The 18.5 cents represents the average price of electricity (cents per kWh) paid by residential customers in the Con Edison service area where over 90% of the savings for the programs occurred. The average price per kWh came from the following source: *New York State Department of Public Service. Financial Statistics of the Major Investor-Owned Utilities in New York State. 2000.*

[(d)] This figure includes owner and tenant savings in buildings served by the Direct Installation and Publicly Assisted Housing programs. The figure was calculated by multiplying the averaged cost of electricity in the Con Edison service area (18.5 cents) by the total electricity kWh savings. The average price per kWh came from the following source: *New York State Department of Public Service. Financial Statistics of the Major Investor-Owned Utilities in New York State. 2000.* The majority of the kWh savings achieved by the programs, through the date of this report, have occurred in New York City and the Con Edison service area.

[(e)] The present value of $6,118,211 annual energy savings over the 12-year estimated average life of the measures installed with a 5% discount rate and no escalation is $54,227,243. The benefit cost ratio is based on NYSERDA's total investment of $21,808,437.

[(f)] This figure was calculated by multiplying the total electricity (kWh) savings by the factor .00302 to convert into pounds of sulfur dioxide, and then dividing by 2000 to obtain tons of sulfur dioxide.

[(g)] This figure was calculated by multiplying the total electricity (kWh) savings by the factor .0015 to convert into pounds of nitrogen oxides, and then dividing by 2000 to obtain tons of nitrogen oxide.

[(h)] This figure was calculated by multiplying the total electricity (kWh) savings by the factor 0.882 to convert into pounds of carbon dioxide, and then dividing by 2000 to obtain tons of carbon dioxide.

[(i)] This figure was calculated by multiplying the total electricity (kWh) savings by the factor 0.0043 to convert into pounds of carbon monoxide, and then dividing by 2000 to obtain tons.

[(j)] This figure was calculated by multiplying the total electricity (kWh) savings by the factor 0.00012 to convert into pounds of particulate matter, and then dividing by 2000 to obtain tons.

**Table S-2. Additional Progress of the Low-Income Energy Affordability Program**
***(Cumulative Results Through June 30, 2002)***

| Success Indicator or Goal | Progress |
|---|---|
| Estimated Total Leveraged Funding | >$49.3 million[a] |
| Estimated Total Funding to NYSERDA Funding Ratio | 3 to 1 |
| Total Number of Customers Served | >20,455 low-income households[b] |
| Total Funding Committed | $21.7 million[c] |

[a] This calculation included the leveraged investments from the Direct Installation and Publicly Assisted Housing Programs. The remaining Low-Income Energy Affordability Programs have leveraged external dollars as well, but they were not captured in this calculation. Thus this calculation is thought to be conservative and does not fully capture the total leveraged investment impact of the entire Low-Income Energy Affordability Portfolio.

[b] This figure includes the number of low-income households served by the Direct Installation (10,235 households) and the Publicly Assisted Housing Program (10,220). The reported number does not include participants in pilot aggregation projects.

[c] This figure was calculated based upon the final report from AEA for Direct Installation program and activity reports from HR&A for the Publicly Assisted Housing Program. See Tables 4-5 and 4-14 in Section 4 of this report for further detail.

*Additional Results-To-Date*

- Based upon estimated electricity (kWh) savings of 33.1 million kWh, the Low-Income Energy Affordability Program has reduced carbon dioxide emissions by more than 14,500 tons per year. This reduction in carbon dioxide emissions equates to removing approximately 2,900 automobiles from New York roadways each year.

- The Low-Income Energy Affordability Program leveraged additional investments from WAP. As a result heating fuel savings of 601,377 MMBtu have been achieved in households that have been served by the Direct Installation and PAHP programs. The heating fuel savings achieved through WAP efforts equates to a total customer cost savings (for gas only) of $6.9 million or $338 per customer.[8]

- Statewide, low-income energy assistance programs represent less than eight percent of the more than $4 billion in total Low-Income energy costs per year. **The New York Energy $mart℠** Low-Income Energy Affordability Program represents less than five percent of this share per year. Although the program represents a small percentage of low-income customer energy needs:

  – Consistent with policy recommendations made in the 2002 State Energy Plan,[9] NYSERDA is working to coordinate the activities of its **New York Energy $mart℠** Low-Income Energy Affordability initiatives with WAP, HEAP, State and other public entities, utilities, and community-based organizations (CBOs). As a result, it is believed that the synergistic benefits realized through coordination will be greater than the benefits accrued by each individual program operating alone.

  – The **New York Energy $mart℠** Low-Income Energy Affordability Program has influenced low-income customer energy end-use consumption, producing energy savings for these customers.

[8] The heating fuel savings was calculated based upon the 20,455 customers served through the PAHP and Direct Installation programs. The average price for heating fuel used for this calculation was $11.50 per MMBtu. An average savings of 29.4 MMBtu per unit was used for this calculation, which reflects the average heating fuel savings for WAP multifamily units cited in a 1998 study prepared by the Association for Energy Affordability, Inc. (AEA) and also cited in the State Plan 2001-2002 for the WAP, page, 7.

[9] New York State Energy Plan and Final Impact Statement. June 2002.

- Lessons learned and results to date for the **New York Energy $mart℠** Low-Income Energy Affordability Program show that low-income customer energy services continue to be necessary and public benefits programs are essential as New York continues to transition toward a more competitive electricity market.

Table S-3 reports the progress the **New York Energy $mart℠** Low-Income Energy Affordability Program has made toward achieving its programmatic goals.[10]

**Table S-3. Low-Income Energy Affordability Program Progress Toward Goals**

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| **GOAL: Reduce the energy burden of low-income consumers through improved energy efficiency, energy management strategies, and specific aggregation strategies** |
| • The Low-Income Energy Affordability Program has helped to reduce the annual energy bills of over 20,000 customers served, by an estimated $299 per unit, for total annual savings of over $6 million.<br><br>• Three early aggregation pilot projects found electric commodity market conditions that ranged from no interest from energy service companies (ESCOs) to supply electricity to limited offers that did not balance the risk with potential rewards to customers. These market conditions exist for residential electricity customers regardless of income and only 5% of the residential market is being served by ESCOs. Two of the pilots proceeded with efforts to aggregate electric customers while the third changed strategy and developed an oil buying pilot. The oil buying pilot has reached fewer customers than expected, but was able to save customers 18.6 cents per gallon of oil purchased. |
| **GOAL: Leverage private and public funds and build on the successes of existing initiatives with weatherization and other community-based organizations.** |
| • The program has leveraged over $49 million in funding to support its program goals and initiatives. In administering its portfolio of low-income programs, NYSERDA has leveraged over $3 dollars for every $1 dollar of investment.<br><br>– Of this leveraged investment, the Assisted Multifamily Buildings Program (AMP), formerly the Publicly Assisted Housing Program (PAHP), has leveraged over $28.8 million from external sources.<br><br>– The Direct Installation program leveraged approximately $20.5 million from building owners and from WAP.<br><br>• The Low-Income Public Awareness program paid just under $600,000 for targeted television commercials in key markets statewide. Approximately $269,000 in "bonus" television spots were aired (leveraged) by the program, representing 45% of the total television budget. |
| **GOAL: Implement specific aggregation strategies to increase the market power and self-sufficiency of low-income customers who may not be served in the competitive energy marketplace.** |
| • The Low-Income Aggregation and Low-Income Oil Buying Strategies initiatives operated during the initial three-year program; however, several pilot projects were unable to fully develop due to unforseen market barriers. These programs will continue to be operational during the expanded program, and results will be reported in future evaluation reports.<br><br>• Approximately $5 million in public benefits funding will be used to help the State's low-income households compete effectively in the marketplace. Funds will support a variety of aggregation strategies designed to: use the untapped market power of aggregated low-income buyers to secure lower prices for electricity, natural gas, fuel oil, and propane, while supplying energy efficiency services that reduce electric demand; and incorporate locally available budget counseling and management education as integral services provided to low-income customers. |

[10] Further detail of the progress reported in Table S-3 is presented in Sections 4 and 5 of this report.

## Table S-3. Low-Income Energy Affordability Program Progress Toward Goals

**GOAL: Coordinate with community-based organizations and existing public assistance programs to implement market-based energy procurement and efficiency strategies.**

- Through the Low-Income Awareness Program, over 16,500 referrals were made to low-income energy assistance programs. Over 25% of the referrals were made to electric and gas utility-run programs across the State. In addition, referrals were also made to community-based organizations and other statewide entities that sponsor energy assistance programs.
- NYSERDA is working with Rochester Gas and Electric (RG&E) to develop a coordinated low-income program that complies with PSC Order in Case 98-G-1589.
- NYSERDA is on Con Edison's Aggregation Program Team, the WAP Policy Advisory Council, and the OTDA/HEAP Interagency Working Group.
- NYSERDA will work with other State administrative agencies to implement the policy recommendations of the 2002 State Energy Plan[11] relating to coordination of low-income program efforts, including:
  - A recommendation that the State encourage all agencies to consider the effectiveness, efficiency, and coordination of their low-income energy assistance programs, including the **New York Energy $mart**SM Program, WAP, HEAP, and other State programs that offer incentives, assistance, and information services to improve the efficiency of energy use and reduce the energy burden of low-income households.
  - A recommendation that the State consider consolidating low-income energy assistance programs where opportunities exist to improve administrative efficiencies and customer service.
- Approximately $4.6 million in public benefits funding has been allocated between 2002 and 2006 to improve the effectiveness of the design, delivery, and management of public monies and resources that serve low-income household energy needs. Funds will be used to help foster and implement strategies that allow greater coordination between government agencies and community-based organizations. Coordination with utility-run, low-income energy assistance programs will also be enhanced.
- NYSERDA is coordinating its oil buying strategies programs with local HEAP offices.

**GOAL: Provide a comprehensive all-fuels approach to reduce the energy burden of low-income customers and support the viability of low-income multifamily buildings by supplementing federal weatherization program funds and expanding the scope of services to include the installation of electric-reduction measures and electric-to-gas conversions.**

- The Direct Installation program added electric reduction measures in 10,235 units being weatherized. At the time these measures were ineligible under the federal WAP program.
- Approximately $89.8 million in public benefits funding will be used between 2002 and 2006 to address energy efficiency needs for over 17,000 low-income households per year. Funds will be used to implement cost-effective electric-reduction measures and other energy-related building improvement efforts in 1-4 family homes. Funding will also be used for additional energy assistance to multifamily buildings that will allow such buildings to address efficiency concerns in electric-using systems, heating plants, building envelope designs, and health and safety measures.

[11] *New York State Energy Plan and Final Impact Statement*, June 2002.

**Table S-3. Low-Income Energy Affordability Program Progress Toward Goals**

| **GOAL: Inform low-income energy customers and State and community-based service providers of the services and options available to them.** |
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| • The Low-Income Public Awareness program created a hotline (1-866-HELP-4-NY) that served as a way in which low-income customers could learn more about energy assistance services that they may be eligible to receive. Follow-up survey results of the hotline show that approximately 60% of the callers to the hotline felt that the service met their expectations. Over half of the callers were very satisfied. Overall, 79% of the survey respondents indicated that they would recommend the service to friends and/or family.<br><br>• Over 16,000 referrals were made through the 1-866-HELP-4-NY hotline. Callers were also referred to other applicable low-income energy assistance programs.<br><br>• Over 300 million impressions of energy efficiency and low-income services (instances of hearing a direct awareness message) have been made across the State through targeted television, radio, and print media.<br><br>• It is estimated that the Low-Income Energy Affordability program has provided over 500 building owners and more than 20,000 low-income residents with information on how to reduce their electric energy use.<br><br>• Between 1999 and 2002, the Low-Income Forum on Energy (LIFE) held two statewide conferences and 11 regional meetings that illustrated the diversity of the stakeholders involved with low-income customers and their energy needs. In total, over 600 representatives from nearly 250 organizations have participated in LIFE conferences.<br><br>– Over the 2001-2002 time period, there were over 300 participants in the LIFE dialog. Of these,<br>• 23.7% were representatives from community-based organizations,<br>• 18.6% were community action and weatherization services representatives,<br>• 17.4% were electric and gas utilities representatives,<br>• 16.8% were local government officials and representatives,<br>• 13.8% were State government officials and representatives,<br>• 1.2% were Energy Service Company (ESCO) representatives, and<br>• 1.5% were State Legislature representatives.<br><br>• Approximately $2 million in public benefits funding has been made available between 2002 and 2006. Funding will be used to inform low-income residents about the energy and money saving services and options available to them. A heavier reliance on outreach to community-based organizations providing services to low-income households will be used, instead of paid media. |