

*Comprehensive Low-Income Energy Efficiency Programs
Exemplary Program*

Appliance Management Program (AMP)

*National Grid, New England
The Massachusetts Low-Income Energy Affordability Network (LEAN)
State of Rhode Island State Energy Office
Numerous community action agencies¹*

PROGRAM OVERVIEW

In 1995, National Grid formed a partnership with the local low-income weatherization and fuel assistance network of Community Action Program (CAP) agencies to develop a low-income electric conservation program. The Appliance Management Program (AMP) is very successful in delivering electric savings to low income customers by a combination of home appliance surveys, education about energy used by household appliances, and the installation of energy-savings measures. The program is delivered to National Grid customers by local CAP agencies in its service territories in Massachusetts (Massachusetts and Nantucket Electric), in cooperation with the Rhode Island State Energy Office in Rhode Island (Narragansett Electric), and New Hampshire (Granite State Electric).

The program uses a cooperative co-learning approach of adult-to-adult education, innovatively designed especially for limited income households. The purpose of the in-home visit is to identify mutually beneficial outcomes rather than merely instructing or doing things for customers. One method for identifying the sources of high use is to question customers and listen actively about how they use appliances. This knowledge is used to prioritize savings opportunities and create a workable action plan allowing the customer to use their appliances more efficiently. This program has been able to actually quantify energy savings due to education and consumer action, which has rarely been documented. The local CAP personnel have strong expertise in working with low income customers and are able to tie customers into other energy efficiency and

¹ Local participating community action agencies in Massachusetts: Action Inc., Berkshire Community Action Inc., Citizens for Citizens, Community Teamwork, Inc., Franklin Community Action Corp., Greater Lawrence Community Action Council, Lynn Economic Opportunity, Montachusett Opportunity Council, Inc., North Shore Community Action Program, Quincy Community Action, Self Help, Inc., South Shore Community Action Council, Southern Middlesex Opportunity Council, Springfield Partners for Community Action, Tri-City Action Program Inc., and Worcester Community Action Council.

Local participating community action agencies in Rhode Island: Blackstone Valley Community Action, Comprehensive Community Action Programs, East Bay Heating Assistance (Self Help), Providence Community Action Program, South County Community Action, Tri Town Community Action, and West Bay Community Action.

In 2002 the AMP program in NH was replaced by a similar joint utility program called Home Energy Assistance. That program was selected for ACEEE recognition and is profiled elsewhere in this report. The Local participating community action agencies in NH agencies that currently deliver Home Energy Assistance for National Grid are: Rockingham Community Action, Southern New Hampshire Services, Southwestern Community Services, Inc., and Tri-County Community Action.

community action programs such as job training, telephone discount rates, and educational programs.

The program is funded by the state-required System Benefits Charges in all three states. In Massachusetts, the Low-income Energy Affordability Network (LEAN) oversees program development. Budgets vary somewhat by year, but average about \$5.6 million per year, with \$4.5 million in Massachusetts, \$1 million in Rhode Island, less than \$100,000 in New Hampshire.

PROGRAM PERFORMANCE

Since 1996, the program has delivered more than 30,000 MWh in cumulative annual savings and 425,000 MWh in lifetime savings, and has served more than 30,000 customers.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Annual MWh	234	1,526	2,698	3,563	4,378	4,927	4,852	4,960	5,627	32,766
Lifetime MWh	2,344	16,786	38,211	55,983	71,029	22,892	69,182	72,614	76,598	425,638
Households	241	1,101	2,798	3,751	5,167	4,332	4,726	4,185	4,622	30,923

Average savings by measures are given below, based on an impact evaluation of the 2001 Appliance Management Program completed by Quantec, LLC and the Massachusetts state weatherization study. The program has achieved high and consistent electricity savings (average 1,200 kWh/household)—which reduces low-income household electricity bills by about \$100/year. Customers report implementing an average of 3.5 lifestyle changing “actions” as a result of education received through their participation in AMP.

Lighting	63 kWh /year per bulb installed
New refrigerator	1,106 kWh/year per replacement
New Freezer	726 kWh /year per replacement
Waterbed Measures	1,070 kWh/year per bed
Refrigerator Removal	135 kWh/ year per removal
Electric weatherization	595 kWh/year per home
Oil Heat weatherization	143 kWh/year per home
	150 gallons of oil/year per home
Oil Heating System	91 kWh/year per home
	290 gallons of oil/year per home
Education and Other	206 kWh/year per home

In 2000 the program began offering weatherization measures for oil heated homes. Since then the program has weatherized 2,515 homes. The average savings for weatherization is 150 gallons of oil for a total of more than 377,000 annual gallons of oil saved. Also since 2001 the program has offered oil heating system replacements. Since then a total of 758 customers received this measure and saved an average of 290 gallons of oil each for a total of almost 220,000 annual gallons of oil.

AMP has been extensively evaluated, which has both documented impacts and provided critical feedback for program improvement. Complete impact evaluations were done for the program in 1998, 1999, and 2001. Another impact evaluation is currently under way by National Grid's vendor Quantec LLC and results will be available later in 2005. The evaluations reveal that AMP is highly cost effective. For example, the benefit to cost ratio (based on the total resource cost test) of AMP is 2.56 as reported in the Massachusetts Electric 2003 Energy Efficiency Annual Report, based on most recent evaluation results.

AMP applies the "best practice" of training, testing and measuring and reporting results to create feedback loops that foster quality and continual learning. The appliance audit software and the recent shift to the use of blower door guided infrared scanners by each local agency are two examples of this.

Because of its long history and aggressive program targets, AMP program has served at least ten percent of the eligible population to date and continues to set and meet aggressive program targets each year. AMP also has expanded its services into new territories. National Grid used AMP's success in Massachusetts to help convince the Rhode Island Public Utilities Commission to offer the program in Rhode Island. Because of a well-documented training program, replicating the program in Rhode Island was relatively easy. AMP's strong emphasis on training creates local electric energy efficiency experts, who then become an on-going community resource at the CAP agencies that partner with the program. AMP was offered—and a successor program now is offered—in New Hampshire.

AMP's successes go beyond the very real and significant benefits provided directly to participating customers. AMP has affected broader utility and weatherization program practices in the region. The program has encouraged increased utility investment in low income energy efficiency in the region. AMP also has led to the creation of a "Best Practices" Working Group for LEAN and all the electric and gas utilities in Massachusetts to meet regularly to share best practices and cooperate on program design and technical issues. Through this numerous working relationships with other organizations that share common interests, AMP has improved the partnership between National Grid, LEAN, and local CAP agencies. AMP benefits CAP programs by providing additional funding to the CAPs for electric and oil weatherization, using the existing network of services and supplementing federal funds so more clients can receive services.

LESSONS LEARNED

- The success of this program in reaching the target audience and creating real energy savings is largely attributable to the close relationships the CAP agencies have with low-income customers. The agencies provide a variety of services to these customers that have helped them gain the respect and trust of customers. This facilitates program marketing and helps in gaining customer cooperation on implementing the energy savings actions recommended in the program.

- Regulatory support has allowed AMP to meet unique customer needs. New England has a high percentage of customers who heat with oil. For a number of years, the Department of Energy's (DOE) weatherization funds have been supplemented by gas utility energy efficiency programs. Beginning in 2000 National Grid started funding weatherization for income eligible households heating with other fuels not including natural gas. These homes may be heated by oil, propane, wood or other non-utility fuels. This only works if the regulating entity allows the Program Administrator to get credit for non-electric savings, which National Grid is able to do in Rhode Island and Massachusetts.
- Through its funding and partnership with CAP agencies, National Grid's aim is to extend the benefits of AMP to more customers and enable the weatherization network to efficiently deliver a total package of energy efficiency services including weatherization to address heating usage and appliance services. Through AMP's support and partnership, CAP agencies are able to deliver services more cost effectively and have fewer visits to customers' homes per unit of energy saved. More importantly, the CAP agencies have integrated appliance usage into their "house as a system" approach, allowing for a better understanding of all energy uses in the home, and better services to their clients. CAP field staff now understand the electric use of heating system pumps and blowers, the interaction of refrigeration, lighting, and heating, and are able to solve customer problems as opposed to just dealing with a part of the consumer's overall energy use.
- The success of the program depends largely on the skill of the CAP energy auditors and active customer participation. For that reason broad based skills are required for the auditors who work on AMP, who are called "Energy Managers." The skills include an ability to audit electric base load conservation and diagnose causes and solutions for high electric use. Training is provided on the program requirements, electric base load auditing, and computer use. Energy Manager candidates should already have significant weatherization auditing and communication skills as well as an aptitude for computers. National Grid found it very helpful to start the program with just a few highly skilled agencies as a pilot, and then gradually add more agencies as the overall knowledge of the network improved.

Each year National Grid continues to explore new measures and refinements in how measures can be implemented in cooperation with the state-wide Best Practices group in Massachusetts and the State Energy Office in Rhode Island. In AMP added infrared scanners and training for each agency on how to ensure that their sub-contractors effectively seal key building leakage junctures and then inspect the results.

AMP collaborates with other program for outreach efforts to low income customers through a Massachusetts state-wide joint marketing effort called "Energy Bucks." In the Energy Bucks campaign gas and electric utility companies, in collaboration with the Massachusetts Community Action Program Directors' Association (MASSCAP) and the

Low-Income Energy Affordability Network (LEAN), work together to promote energy efficiency programs (like AMP), fuel assistance, and utility discount rates to qualifying households. This educational campaign is funded by System Benefit Charge (SBC) funds.

Program at a Glance

Program name: Appliance Management Program

Program eligibility (guidelines) The Appliance Management Program (AMP) income eligibility level for customers is 60% of median in Massachusetts and is indexed to the same income criteria as for fuel assistance in Rhode Island. AMP is available to customers living in 1 to 4 family facilities.

The appliance audit service component of AMP is targeted to income eligible customers who use at least 10 kWh, base load, per day and have a minimum of nine months billing history at that residence. Base load use is determined by kWh usage per day in the most recent May or September billing period.

Income eligible customers who heat with oil or other deliverable fuels and who meet the typical DOE established requirements for weatherization are eligible for weatherization and or heating system replacement measures.

A third component is called mini-AMP which is piggy backed onto other agency field services and includes refrigerator metering and replacement. It is for customers using less than 10 kWh per day.

Program start date: 1996

Program participants: From 1996 – 2004 a total of 30,923 households have participated. AMP served 4,622 households in 2004—and has served 4000 or more households per year since 2000.

Approximate eligible population: NA

Participation rate: NA

Annual energy savings achieved: In 2004 AMP yielded 5,227 MWH as a result of new measures installed; the cumulative annual energy savings achieved by the program from 1996-2004 is 32,766 MWH. Lifetime savings are estimated to be 425,000 MWH.

Cost Effectiveness: Benefit to cost ratio of 2.56 (total resource cost test).

Budget and Cost Information: About \$5.6 million per year, broken out as about \$4.5 million in Massachusetts, \$1 million in Rhode Island and less than \$100,000 in New Hampshire.

Funding sources and share of program budget: State system benefits charges in all three states.

Best person(s) to contact for information about the program

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- Web page: (URL) National Grid's AMP program doesn't have it's own website; however these three sites refer to AMP:
http://www.nationalgridus.com/narragansett/home/energyeff/4_energy_svcs.asp
http://www.nationalgridus.com/masselectric/home/energyeff/4_energy_svcs.asp
<http://www.energybucks.com/>