

**Joint Testimony of the
Alliance to Save Energy
and
American Council for an Energy Efficient Economy**

**Regarding House Bill No. 3965
The Green Communities Act of 2007**

**Massachusetts Telecommunications
Utilities and Energy Committee
April 2, 2007**

Summary

The Alliance to Save Energy and the American Council for an Energy-Efficient Economy urge the Committee not to advance Bill 3965, because it would dismantle one of the nation's most effective infrastructure systems for administering energy efficiency programs. While we support the objectives of increasing funding for green community initiatives, this should not be accomplished by destroying the core infrastructure that is delivering energy efficiency to Massachusetts consumers and businesses today. This efficiency program infrastructure is needed now more than ever to meet the Commonwealth's energy and environmental challenges.

Massachusetts utilities are delivering energy efficiency programs today in a very effective and cost-effective fashion. Because they serve the entire state, they are best positioned to provide the essential "infrastructure" for efficiency programs, just as they are franchised to provide the infrastructure that delivers electricity and natural gas service to all customers. The state's utilities have received national recognition from ACEEE, the federal Energy Star® program, and other national organizations. Massachusetts' utility programs are recognized as among the most effective in the United States.

Community-based efficiency programs have an important place in a state energy policy framework. However, they cannot and should not seek to replace the essential infrastructure for delivering energy efficiency across all key markets. This can only be accomplished by utilities or other statewide entities. Over more than twenty years of implementation experience, it has been shown that to be effective, efficiency programs must be designed to reach all major markets, at the right level of aggregation. Utilities in Massachusetts have become expert at this. It would be a terrible setback to Massachusetts' electricity and gas customers, and to the state's larger goals for reducing air pollution and greenhouse gases, to dismantle this infrastructure.

We suggest that the larger goals in Bill 3965 could be better accomplished through other means. These could include the New England Independent System Operator's Locational Installed Capacity Program (LICAP), and application of revenues from allowance auctions under the Regional Greenhouse Gas Initiative.

Introduction

The Alliance to Save Energy (Alliance) is a bipartisan, nonprofit coalition of more than 100 business, government, environmental and consumer leaders. The Alliance's mission is to promote energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security. The Alliance, founded in 1977 by Senators Charles Percy and Hubert Humphrey, currently enjoys the leadership of Senator Mark Pryor as Chairman; Duke Energy CEO Jim Rogers as Co-Chairman; and Senators Jeff Bingaman, Byron Dorgan, Susan Collins and Larry Craig along with Representatives Ralph Hall, Zach Wamp and Ed Markey, as its Vice-Chairs.

The American Council for an Energy Efficient Economy (ACEEE) is a national nonprofit organization that advances energy efficiency for energy security, economic prosperity, and environmental protection. ACEEE specializes in technology and policy research and advocacy, working with stakeholders including government, business, utility, environmental and consumer organization,. We publish research reports, advocate public policies, hold conferences, and educate consumers as well as policymakers.

The Alliance and ACEEE are pleased to testify at today's hearing on proposed changes to long-standing policies and programs on energy efficiency and hope that our national perspective on utility-sector energy efficiency programs will help guide the Committee in its deliberations on the proposed legislation.

Why Massachusetts Needs a Reliable Efficiency Infrastructure

The proposed legislation would have the effect of stripping funding away from the very successful energy efficiency programs that Massachusetts utilities have been running with a very high degree of success for two decades. While the proposed legislation would provide funding for what on the surface appear to be policies and programs for "public goods" (e.g. green communities and technology development), it would take those funds directly from the one "public goods" channel, the utilities' energy efficiency programs, that best delivers lower bills for all customers, while serving the state's needs for clean air, a stable climate, reliable energy capacity, and new jobs in clean energy businesses.

The proposed transfer of funds from this proven approach does not make good public policy or economic sense. Decades of experience with utility energy efficiency programs has shown that to be successful, they need a comprehensive, reliable, and sustained delivery infrastructure, just as the delivery of natural gas and electricity needs a universal utility system. Community programs can be effective, but only when backed up with a delivery infrastructure that enables them to succeed, and for their success to be sustained. If Massachusetts abandons its utility efficiency program infrastructure, it runs the risk of creating a disorganized patchwork of programs that will be more expensive to operate,

experience lower total benefits, and serve fewer customers. The proposed bill could lead to Massachusetts utility customers paying higher energy bills, suffering deteriorated reliability, and worsened air quality.

Massachusetts' Utility Efficiency Programs Are Working Very Well

Massachusetts has long demonstrated a commitment to energy efficiency as a vital resource for all utility customers. The Commonwealth has also reaped many other benefits from greater levels of energy efficiency, including economic development, environmental improvement and increased electric system reliability. ACEEE regularly reports state energy efficiency activity; Massachusetts has consistently ranked among the top ten states in its funding for and energy savings from energy efficiency programs. Through 2004 ACEEE estimates that Massachusetts is saving over 6% of its total electricity sales (kilowatt-hours) as a result of its energy efficiency programs. Without these utility programs, energy bills would be that much higher, and electric reliability and air quality would be that much worse.

ACEEE also conducts national studies to recognize and profile the nation's "exemplary" energy efficiency programs. Massachusetts' utility-run programs appear more frequently in these exemplary programs than do those of most other states. What is especially important for the Committee's consideration is that these leading programs span the full range of customer classes---from low-income residential customers to large industrial and institutional customers, served by both electric and natural gas utilities. Not only are Massachusetts energy efficiency programs among the nation's finest, but the utilities and related stakeholders have been pioneers in leading up multi-state and broader regional efforts. This not only improves the performance and cost-effectiveness of programs in Massachusetts, but also helps reap broader regional benefits from improved energy efficiency.

To highlight leading examples, ACEEE has honored the following programs offered by utilities and other organizations in Massachusetts:

- **Northeast Residential ENERGY STAR® Appliances Initiative:** Northeast Program Sponsors, Northeast Energy Efficiency Partnerships, Inc., and participants—which in Massachusetts include Cape Light Compact, National Grid, USA—Massachusetts Electric and Nantucket Electric, NSTAR Electric, Northeast Utilities—Western Massachusetts Electric Company, and Unitil/Fitchburg Electric & Gas.
- **GasNetworks® High-Efficiency Heating Program:** GasNetworks®: a collaborative of Bay State Gas Company, Berkshire Gas Company, KeySpan Energy Delivery, New Gas Company, NSTAR Gas, and Unitil Fitchburg Gas and Electric Company.
- **Small Business Services Program:** National Grid

- **Design 2000 plus:** National Grid
- **Energy Initiative Custom Program:** National Grid
- **Schools Initiative:** National Grid
- **Massachusetts Low Income Affordability Network:** Massachusetts Department of Housing and Community Development in collaboration with KeySpan Energy Delivery—New England
- **Appliance Management Program:** National Grid--New England, The Massachusetts Low-Income Energy Affordability Network , Rhode Island State Energy Office, and Numerous community action agencies¹
- **Low Income Gas Program:** NSTAR Gas Company

Key Evaluation Findings. Based on an analysis comparing total available system benefits funds to expenditures (including fund carryover) in 2001, the DOER concluded that the 2001 funds were equitably allocated amongst the customer sectors.

Comparison of 2001 Total Available Funds to Expenditures Plus Fund Balance

Customer Sector	2001 Total Available Funds		2001 Expenditures + Fund Balance	
	Million \$	Percent	Million \$	Percent
Low-Income	12.0	8	13.3	9
Residential	50.6	34	49.3	33
C&I	85.4	58	85.5	58
Total	148.0	100	148.1	100

Source: Massachusetts DOER: 2001 Energy Efficiency Activities, A Report by the Division of Energy Resources, An Annual Report to the Great and General Court on the Status Of Energy Efficiency Activities in Massachusetts, Summer 2003. Table 10.

Two other tables from the 2001 DOER report focus on participation and bill impacts of the different customer sectors. In the table below, the DOER demonstrated the percentage of each customer sector that participated in the system benefits energy efficiency programs. Low-income and small and medium C&I customers were the least represented of the

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.

sectors. Since 1989, ninety-five percent of the large C&I customers have taken advantage of the system benefits programs.

**Percentage of Customers Participating in Massachusetts System Benefits Programs
by Sector**

Customer Sector	Total Customers In 2001	Number of Participants in 2001	Percent Served in 2001	Cumulative Participation Since 1989
Low-Income	565,085	27,114	5	N/A
Residential	1,654,681	219,769	13	55
Small C&I	230,612	3,275	1	14
Medium C&I	45,425	1,704	4	24
Large C&I	5,416	829	15	95
Total/Average	2,501,219	252,691	10	38

Source: Massachusetts DOER: 2001 Energy Efficiency Activities, A Report by the Division of Energy Resources, An Annual Report to the Great and General Court on the Status Of Energy Efficiency Activities in Massachusetts, Summer 2003. Table 4.

As seen in the table below, although small and medium C&I customers were least represented amongst participants, they tended to save the highest percentage of their annual bills, 19% and 11% respectively.

2001 Average Bill Impacts From Energy Savings by Customer Sector

Customer Sector	Total Annual Bill Reductions for Participants	Avg. Annual Bill Savings per Participant	Avg. Annual Bill per Participant	Avg. Savings As a Percent of Avg. Annual Bill
Low-Income	\$ 1,052,297	\$39	\$748	5
Residential	\$ 8,145,750	\$37	\$901	4
Small C&I	\$ 2,535,195	\$774	\$4,049	19
Medium C&I	\$ 3,158,496	\$1,854	\$16,289	11
Large C&I	\$ 13,875,175	\$16,737	\$332,517	5
Total/Average	\$28,766,914	\$114	\$2,117	5

Source: Massachusetts DOER: 2001 Energy Efficiency Activities, A Report by the Division of Energy Resources, An Annual Report to the Great and General Court on the Status Of Energy Efficiency Activities in Massachusetts, Summer 2003. Table 5.

Funding and Energy Savings

Year	Budget/Spending ¹ (in millions)	Annual Savings	
		GWh	MW
1998		263	
1999	\$125	272	115
2000	\$130	273	88
2001	\$135	309	55
2002	\$138	241	48
2003			

Source: Massachusetts DOER: Energy Efficiency Activities, A Report by the Division of Energy Resources, An Annual Report to the Great and General Court on the Status Of Energy Efficiency Activities in Massachusetts. 1998,1999, 2000 and 2001 Annual Reports. 2002 data was not yet published and was provided separately by the DOER.

¹Figures in this column represent annual *expenditures*.

The 2001 DOER report estimated that the 2001 Massachusetts' programs resulted in an investment of \$183 billion in higher efficiency equipment that would produce a lifetime energy savings of 4,571 million kWh. The authors translated the cost and savings of the Massachusetts' programs into an average cost of conserved energy of \$.04/kWh. This was compared to the estimated average retail price of electricity of \$.0968/kWh over the same time period.

Beyond these well-documented results, Massachusetts' leadership and commitment to energy efficiency has been a model for other states---many of whom have struggled to make or maintain such a commitment. Our research and tracking of utility-sector energy efficiency programs has shown that the most successful programs are those that have had consistent funding and support over many years. We have witnessed and documented the detrimental---even devastating---impacts of “yo-yo” funding cycles. Good programs cannot be turned off and on like water from a tap. Customer and trade ally trust and relationships are fragile commodities. Sudden withdrawals of programs can make it difficult to later regain customer confidence and participation should the programs be re-instituted or fully funded at a later time.

If Massachusetts is to maintain its leadership and success in bringing all utility customers the benefits of energy efficiency programs, it must maintain the utility infrastructure to keep them operating effectively. Just as the legislature would not consider shutting off electricity or natural gas service to customers without good cause and full consideration of the effects, so it should not consider cutting off Massachusetts ratepayers from the programs that have helped them manage rising energy costs. With the energy and

environmental challenges facing the Commonwealth, now is not the time to dismantle a vital and successful public goods infrastructure.

Environment Northeast (a nonprofit research organization focusing on the Northeast and Eastern Canada) has developed a detailed body of data highlighting the extraordinary benefits that energy efficiency programs in Massachusetts have delivered. A few of those benefits (based on 2005) are listed below:

- The Massachusetts utilities' programs invest approximately \$125 million and result in nearly \$500 million in customer savings.
- The energy efficiency programs deliver the savings at approximately 2.5 cents/kWh – far less than the cost for new supply of approximately 10 cents/kWh.
- The energy efficiency delivered through DSM programs results in a decrease in consumption of nearly 5 million MWh – the equivalent of reducing CO₂ emissions by 2.8 million tons.
- The current DSM energy efficiency programs will save Massachusetts consumers more than \$5 billion over the next 10 years as well as creating many energy service jobs in the state.

These results demonstrate that the value of the utility energy efficiency programs are a key part of the Massachusetts economy. Detailed descriptions and results from these programs are found in Appendix 1.

Massachusetts Utility Programs From a National Perspective

The Committee would benefit by reviewing the proposed legislation from a national perspective. Natural gas prices have more than doubled during this decade, driving up electricity prices as well. Combined with recent oil price increases, American families and businesses are paying over \$300 billion more each year. The president recognized energy security as a major issue in the State of the Union message. And with the Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC), the world's scientists have just reaffirmed the urgent need to reduce global warming. These problems are not going to go away— electricity use in the United States is projected to grow by half by 2030. Without effective utility-sector efficiency commitments, such growth will lead to higher prices, weakened reliability, and a dangerously unstable climate.

Electricity and natural gas use in buildings is a major factor in these linked problems, and must be a major part of their solution. More than one-third of all energy used in the United States, and more than two-thirds of electricity, goes to heat and power buildings. Buildings account for some 40% of carbon emissions in the United States. Clearly, improving efficiency in buildings is one of the great challenges we face in coping with this century's energy and environmental challenges.

Great strides have been made in improving the efficiency of appliances, heating and cooling systems, equipment, and the building envelope (walls, windows, doors, and roofs).

Yet substantial energy savings potential remains—a 2000 study by several national laboratories estimated that energy-efficiency policies and programs could cost-effectively reduce U.S. energy use in residential buildings by 20 percent and in commercial buildings by 18 percent over a 20-year span, essentially reversing the growth they projected in building energy use. Research by ACEEE and other organizations has confirmed this overall efficiency potential, at the state and national levels. Efficiency potential studies in New York, Vermont, and Connecticut as well as Massachusetts have shown that the potential for efficiency gains in buildings remains larger.

Decades of experience in energy policy has shown that a combination of policies and programs are needed to realize the energy efficiency potential in buildings: these include appliance standards, building energy codes, labeling programs, tax incentives, and research and development. But at the state level, the single most effective efficiency policy has been shown to be utility energy-efficiency programs.

California has the longest “track record” in running utility energy efficiency programs. It has found that despite having the most stringent building code in the country, and having been the first state to set appliance efficiency standards, more than half of the state’s energy efficiency gains since the 1970s have come from utility programs. California has also learned the value of having a strong utility efficiency program infrastructure in place. In 2001, the state was faced with blackouts, massive price spikes, and economic turmoil as its electricity markets malfunctioned. But in large part because the utilities were equipped to respond, emergency programs, put in place in a matter of weeks and months, reduced electricity usage by 7%. As California Power Authority Chairman S. David Freeman said later that year: “Energy efficiency saved the California electricity system.”

From this perspective, it would be foolish for Massachusetts to dismantle its utility efficiency programs. When the needs become great, utilities are best-equipped to respond rapidly and massively. If Massachusetts faces severe capacity shortages, which could happen in the next several years if the NE-ISO LICAP market does not succeed, utilities will be called on to take emergency measures. The RGGI program’s research suggests strongly that RGGI states must ramp up their efficiency programs to make RGGI’s goals attainable and affordable. For these and other reasons, Massachusetts should keep its utility efficiency programs intact.

Other Leading State Utility Sector Energy-Efficiency Programs

The Alliance to Save Energy has collected data² on the success of DSM programs across various regions of the US, and we cite two examples below:

a. The New York State Energy Research and Development Authority

NYSERDA has designed and implemented over forty energy efficiency programs. This effort is called the New York Energy \$mart Program. These programs have been operating for five years, and are now savings New Yorkers over \$116 million annually, with electric energy savings of 980 gWh annually, and

² From Alliance testimony in front of the Georgia Public Service Commission, May 14, 2004

a system peak load reduction of 994 MW. The program has also created over 3,700 new jobs, and has reduced carbon dioxide emissions equivalent to taking 135,000 cars off the road. The New York Energy Smart Program has the full support of the NY Public Service Commission and the Governor.

NYSERDA's strategy for driving the market for energy-efficient products is exemplified by its Keep Cool program for room air conditioners. The program offers a \$75 bounty on the turn-in of a working older unit when combined with the purchase of an Energy Star® unit. In 2001, Energy Star® units represented 6% to 20% of the market in New York and commanded a premium price. Now, due to NYSERDA's Keep Cool Program, Energy Star® units represent 40% to 60% of the market and the price has dropped by an average of over \$80 because of the volumes which are being manufactured, stocked and purchased, eliminating the price premium. This year, over 160,000 units have been retired early in New York, resulting in an estimated peak demand savings of nearly 50 megawatts. This program was initiated in 2000 and operates annually from May through September.

b. The California Energy Commission

(CEC) is fully supporting an energy policy emphasis that includes DSM programs as a major portion of the resource mix for investor-owned electric utilities in California. The Chairman of the CEC made increased reliance on DSM programs a key portion of his January 15, 2004 address to the State's legislature. DSM programs are designed and implemented by the State's investor-owned utilities, with oversight from the CEC and the California Public Utilities Commission.

Californians have maintained a strong commitment to energy conservation and energy efficiency following the state's recent energy crisis in the summer of 2001. New data from the California Energy Commission show that instead of slipping back into old habits in 2002, Californians sustained much of the conservation seen during the 2001 power crisis, even accounting for the dampening effect of a slower economy. Thanks to these efforts, California residents and businesses have demonstrated some of the best possible ways to protect the economy and the environment.

The first six months of demand reductions in 2001, for example, saved Californians an estimated \$660 million in spot market electricity purchases and helped avoid up to \$20 billion in projected costs of summertime rolling blackouts. The conservation in California in 2001 and 2002 reduced pollution emissions by nearly 8 million tons of carbon dioxide and 2,700 tons of smog-forming nitrogen oxides relative to 2000. The carbon pollution savings are equivalent to taking 1.5 million passenger vehicles (one-third of Bay Area vehicles) off the road for an entire year.

Even more promising for California's continued economic and environmental health, Californians locked in about one-quarter of the demand reductions

achieved during 2001, or about 1,000 MW (equivalent to two large power plants), through investments in energy efficiency.

Emerging National Utility Sector Energy-Efficiency Policies

Several major new reports have focused in part on the need for new policies to promote utility energy-efficiency programs, including:

- The *National Action Plan for Energy Efficiency* brought together more than 50 organizations, co-led by Jim Rogers, the CEO of Duke Energy, and Dianne Munns, the Chair of the Iowa Public Service Commission. These organizations seek “to create a sustainable, aggressive national commitment to energy efficiency through gas and electric utilities, utility regulators, and partner organizations.”
- The Western Governors’ Association Clean and Diversified Energy Initiative set an ambitious goal of a 20 percent increase in energy efficiency by 2020 in the West; the *Energy Efficiency Task Force Report* examines how to achieve it.
- The U.S. Environmental Protection Agency’s *Clean Energy-Environment Guide to Action* details many policies and practices states are adopting to manage their energy needs and air quality.
- The Department of Energy, under section 139 of the Energy Policy Act of 2005, just issued a report³ on state and regional policies that promote utility energy-efficiency programs, in consultation with the National Association of Regulatory Utility Commissioners and the National Association of State Energy Officials.

Together these reports set forth policies needed to help utilities create effective energy-efficiency programs. These policies include:

Adopt energy efficiency goals, requirements, or commitments, with reporting on progress and oversight. For example, California conducted a study of the potential savings from cost-effective energy-efficiency programs in the state, set targets for each of its regulated electric and natural gas utilities, required each utility to submit plans to meet those targets, and approved \$2 billion in funding for the planned programs over three years.

Use energy efficiency as a priority resource when planning to meet customer needs. As utilities in some regions plan to build the first new generating plants and transmission lines in years, they are showing more interest in alternatives. For example, Georgia Power in its most recent Integrated Resource Planning (IRP) process agreed to initiate the first energy-efficiency programs in a decade.

Provide robust and stable program funding. Funds can be provided as part of utility rates or through a small surcharge on utility bills (a public benefits fund or system benefits charge). For example, Wisconsin recently increased its public benefit fund and protected it from raids to pay for state deficits.

³ The "State and Regional Policies That Promote Energy Efficiency Programs Carried Out by Electric and Gas Utilities" report was released March 30, 2007; www.oe.energy.gov

Set rates to incentivize utilities and customers. Typically utilities earn more by selling more energy. It is important to “decouple” utility revenues from sales, or to provide utilities with performance incentives for effective energy-efficiency programs, in order to align utility benefits with customer benefits. For example, Northwest Natural, a natural gas utility in Oregon, has a “conservation tariff” that helps it promote energy savings rather than sales.

Carefully evaluate energy-efficiency programs, with measurement and verification of energy savings and appropriate cost-effectiveness tests, so all stakeholders can rely on the energy savings. For example, in Texas savings estimates used to meet the state peak load reduction requirements are verified by a contractor to the Public Utility Commission of Texas.

These policies are typically set at a state level, by public utility commissions or sometimes by state legislatures. However, as there are compelling national interests that cannot easily be addressed by individual states, federal action is needed. While most individual states are not large enough to affect the shortage of natural gas that has driven up prices, concerted federal action could have an impact. In addition, the grid failures that blackened much of the Midwest and Northeast in 2003 showed that reliability issues are not confined within state lines.

As a focus for federal policy, the energy efficiency resource has several advantages:

- It is readily available in all parts of the nation,
- It is available for direct natural gas use as well as for electricity,
- It is cost-effective today, and
- The potential savings are enormous.

Several states are already developing innovative policies to set performance standards for utility energy-efficiency programs alongside standards for generation from renewable sources. These policies are known generically as **Energy Efficiency Resource Standards (EERS)**.

Like a renewable portfolio standard (RPS), an EERS is a flexible, performance-based regulatory mechanism to promote use of cost-effective energy efficiency as an energy resource. An EERS requires utilities to implement energy-efficiency programs sufficient to save a specified amount of electricity or natural gas, often expressed as a percentage of total sales. Note that an EERS is not a requirement that the utility's sales decrease in absolute terms or a limit on its sales at all; it is simply a performance requirement for the utility's energy-efficiency programs.

An EERS gives utilities broad flexibility about how and where to achieve the energy savings. Utilities can meet an EERS through the kinds of effective demand reduction programs that have been conducted in many states for years. They can implement their own programs, hire energy service companies or other contractors, or pay other utilities to

achieve the savings by buying credits. The program savings are independently verified. Usually, the costs of the energy-efficiency programs must be recovered from energy customers through utility rates, but the savings from avoided energy supply are greater than the efficiency cost.

According to ACEEE analysis , a national 1% EERS would in 2020:

- Save 414 billion kWh of electricity and 836 trillion cubic feet of natural gas each year
- Reduce peak electric demand by 133,000 MW (avoiding over 400 power plants),
- Save consumers \$29 billion (net after investments), and
- Prevent 343 million metric tons of carbon dioxide greenhouse gas emissions each year.

An EERS and an RPS may be used in combination. Renewable and efficiency requirements reinforce each other in several ways in the states:

Texas has separate renewable and efficiency requirements. The efficiency targets focus on peak demand—utilities are required to avoid 10% of the expected increase in electric peak demand through efficiency programs. They have easily exceeded these targets. In fact, the Texas utility efficiency programs are so successful that Texas energy efficiency programs under the Public Utility Regulatory Act 39.905 are heavily oversubscribed.

Connecticut added to its RPS a separate tier under which utilities are to save 1 percent of electricity use each year through residential and commercial programs and combined heat and power. *Pennsylvania* includes energy efficiency with certain other resources in one tier of its alternative energy portfolio standards.

Hawaii and *Nevada* added efficiency resources as options in their portfolio standards—with higher overall targets—after utilities claimed to have difficulty meeting renewable targets (Nevada caps the amount efficiency can contribute).

California has a “loading order” that sets efficiency as the preferred resource; once cost-effective efficiency measures have been exhausted, utilities are to use renewable sources, and only then traditional sources. The PUC sets targets for utility energy-efficiency programs based on a study of their potential savings.

An EERS is emerging as one of the most powerful policies tools to reduce future electricity demand. Accordingly, a petition to establish an EERS for Massachusetts has been submitted to the Department of Telecommunications and Energy. What is important to note, however, is that the EERS requirement would be placed on distribution utilities. So to implement an EERS in Massachusetts, the utilities would have to be involved. This is another reason not to dissolve the program structure that has been carefully developed over the last 20 years. Such a program infrastructure would be essential for an EERS to succeed.

Conclusion

The Alliance and ACEEE urge the Committee not to advance Bill 3965. This bill would dismantle critical infrastructure, which in our judgment will be more essential than ever in coming years as Massachusetts grapples with the largest energy and environmental challenges it has ever faced. Just as one would not disband a police force in the face of a rising crime wave, the legislature should not destroy the very successful system that Massachusetts utilities have put in place over the last 20 years.

Evaluations within the state and awards from national organizations have shown Massachusetts utility efficiency programs to be among the best in the nation. While community-based programs can be a helpful complement, they should not seek to replace utility-system-wide programs. System-wide program infrastructure is needed to reach all key markets and serve all customers. The utilities' programs make energy efficiency delivery very cost-effective as well as successful in total impact.

Across Massachusetts and across the nation, concern about the linked issues of energy prices, energy security, and global warming has grown to epic proportions. These problems call on public officials to increase public commitments to energy efficiency as the "first fuel" in the race for clean and secure energy. Some of these commitments are best met at the national level. At the state level, however, experience has shown that utility-system-wide efficiency programs are the most effective way to tap the enormous energy efficiency resources in our commercial and residential buildings.

Given all these considerations, now is not the time to abandon the highly effective energy efficiency programs that Massachusetts utilities have built. Keeping the utility program infrastructure strong is a prerequisite to meeting the Commonwealth's energy and environmental challenges. The Alliance and ACEEE urge you to build on, not destroy, these programs as the best way to build a sustainable energy future for Massachusetts.

Appendix 1

Massachusetts Programs Recognized as Exemplary

Northeast Residential ENERGY STAR[®] Appliances Initiative

Northeast Program Sponsors, Northeast Energy Efficiency Partnerships, Inc., and participants

PROGRAM OVERVIEW

The Northeast Residential Appliances Initiative was established to promote the market acceptance of high-efficiency residential appliances; the initial emphasis has been on clothes washers. The objective is to transform the market by creating a sustained demand for clothes washers that use substantially less energy and water than standard models. During 1997, several U.S. manufacturers introduced high-efficiency clothes washers, joining European companies in delivering such clothes washing technology to domestic markets. Using technical specifications developed by the Consortium for Energy Efficiency (CEE), utilities in the Northeast along with the Northeast Energy Efficiency Partnerships, Inc. (NEEP) organized the regional initiative “TumbleWash” to take advantage of a unique opportunity to accelerate the adoption of high-efficiency clothes washers. In 2000, the initiative grew to incorporate other major appliance products (refrigerators, room air conditioners, and dishwashers) and to promote the ENERGY STAR label to consumers in the Northeast.

The expanded program sought to raise customer awareness of the importance and benefits of purchasing energy-efficient appliances, while the rebate levels were being reduced or eliminated. In 2002, the sponsors worked to engage industry in joint ENERGY STAR appliance promotions. To date, the utilities have participated in a cooperative spiff program with a major manufacturer, a 10 percent coupon promotion with a major retailer, and a joint consumer rebate for ENERGY STAR clothes washers for 29 qualifying models made by six manufacturers.

Program sponsors include a consortium of electric utilities and energy efficiency municipal aggregation groups within the Northeast region. NEEP works with the program sponsors to facilitate the regional effort to increase consumer awareness about ENERGY STAR and to encourage consumers to choose ENERGY STAR-labeled products.

A defining and exemplary feature of this initiative is the large number of organizations involved. The following organizations are sponsoring and participating in the Northeast Residential ENERGY STAR Appliances Initiative.

Connecticut

- Northeast Utilities—Connecticut Light & Power
- The United Illuminating Company

Massachusetts

- Cape Light Compact
- National Grid, USA—Massachusetts Electric and Nantucket Electric
- NSTAR Electric
- Northeast Utilities—Western Massachusetts Electric Company
- Unital/Fitchburg Electric & Gas

New Hampshire

- National Grid, USA—Granite State Electric

New York

- Long Island Power Authority

Rhode Island

- National Grid, USA—Narragansett Electric Company

Vermont

- Efficiency Vermont

The sponsors of the Northeast Residential ENERGY STAR Appliance Initiative meet regularly as the Appliance and Lighting Working Group (ALWG) to coordinate their program planning, implementation, and marketing efforts. With the appliance and lighting groups working together, it allows for further economies of scale in promoting the ENERGY STAR label across broader product categories.

The long-term goal of the ENERGY STAR Appliances Initiative is to establish the market for high-efficiency consumer appliances (clothes washers, refrigerators, room air conditioners, and dishwashers) as standard, competitive product offerings in the Northeast. The sponsors continue to work with CEE, ENERGY STAR, and others to encourage higher energy efficiency standards for qualifying ENERGY STAR-labeled appliances. NEEP continues to provide support and facilitation services in the development and implementation of this program.

LESSONS LEARNED

One of the keys to the sponsors' success in transforming the residential appliance market has been the willingness of the appliance industry (manufacturers, retailers, buyers' groups, and others) to assist in program marketing and implementation activities. One of the important goals is to strengthen working relationship with the appliance industry by

inviting them to participate in industry-initiated program elements that can be implemented jointly with the regional sponsors.

The widespread participation by utilities, manufacturers, retailers, and other parties in the Northeast has allowed the overall initiative to have a large impact on the targeted markets. The collective voice and coordinated activities of the initiative's participants and sponsors have been instrumental in its success in affecting the markets.

The work on the initiative is ongoing. Program sponsors and NEEP will support and participate in DOE's and EPA's scheduled reviews to consider new federal minimum-efficiency standards and revised ENERGY STAR specifications for residential appliances, and continue to coordinate the regional appliances initiative with other regional and national efforts.

Case Study Program: Tumble Wash/ ENERGY STAR Appliances

NSTAR Electric, National Grid USA, Western Massachusetts Electric Company, Unitil/Fitchburg Gas and Electric, and Cape Light Compact

The Northeast Residential ENERGY STAR Appliances Initiative encompasses numerous individual programs run by sponsoring utilities. It is not possible to profile each of these many programs for this report. Rather, we offer the following profile of one of these programs that has a long record of achievement and provides a good case study to illustrate typical features and implementation of services. We intend no slight to any of the other ENERGY STAR Appliance programs operating under the umbrella of this initiative. It is the overall initiative, comprised of individual programs such as this, that the ACEEE expert review panel judged as exemplary.

There have been many successes in the TumbleWash/ENERGY STAR Appliance program in Massachusetts. Since 1998, utilities in Massachusetts have provided rebates for more than 52,681 ENERGY STAR clothes washers, which yield an estimated annual savings of 9,061,132 kWh and 368,767,000 (gallons of water, and customer savings of \$1,087,336 (based on \$.12 per kWh). These estimates are based on taking the number of rebates and multiplying it by savings assumptions for energy and water.

Additionally, major market transformation effects have occurred as a result of this program. Some of those effects include:

- A reduction of more than \$150 in the average incremental cost of ENERGY STAR-labeled clothes washers;
- The number of manufacturers producing ENERGY STAR-labeled clothes washers tripled from 6 to 18;
- A substantial increase in the number of qualifying products from 15 to 99;
- A significant increase in consumer awareness of the ENERGY STAR label from 6 to over 41 percent;
- An increase in the coordination of regional market transformation efforts with 11 utilities in the Northeast offering similar programs, which has resulted in over 85,000 clothes washer rebates and 14 million kWh saved since 1998;

- Over 95 percent of all appliance dealers in Massachusetts participate in the programs offered by utilities in Massachusetts;
- Both federal minimum standards and ENERGY STAR specifications for residential appliances continue to become more stringent;
- The market share for ENERGY STAR-labeled clothes washers in Massachusetts is generally 7–12 percent higher than the national average;
- The market share for ENERGY STAR-labeled clothes washers in Massachusetts has grown from 5 percent in the first quarter of 1998 to over 28 percent in the third quarter of 2002;
- CEE is supporting the May 29, 2002 request by Massachusetts utilities for a simple breakdown of state-by-state and national appliance shipments above and below current ENERGY STAR efficiency levels;
- The program been successfully expanded to other states and areas such as Rhode Island and Long Island, New York;
- Over 95 percent of customers that purchased an ENERGY STAR-labeled clothes washer would recommend it to a friend or family member; and
- In 2002, Massachusetts changed its focus from ongoing mail-in rebates to targeted joint initiatives, one of which was a \$100 joint rebate promotion with select manufacturers.

PROGRAM AT A GLANCE

Program Name: Massachusetts ENERGY STAR Appliances Initiative

Targeted Customer Segment: Residential

Program Start Date: Fall 1998

Program Participants

2002 (through 10/31/02): 4,841 rebates

1998–2002 (through 10/31/02): 52,681 rebates

Approximate Eligible Population: 2,171,000

Participation Rate

2002 (through 10/31/02): 22%

1998–2002 (through 10/31/02): 2.4%

Annual Energy Savings Achieved

2002 (through 10/31/02): 832,652 kWh

1998–2002 (through 10/31/02): 9,061,132 kWh

Peak Demand (Summer) Savings Achieved (kW)

2002 (through 10/31/02): 324 kW

1998–2002 (through 10/31/02): 3,526 kW

Other Measures of Program Results to Date: 2002 third-quarter ENERGY STAR-labeled clothes washer market share for Massachusetts = 28.3%

Budget

Year	Utility Costs
2001	\$632,212 (rebates only)
2002	\$224,762 (rebates only)
2003 (projected)	NA

Funding Source: Systems Benefit Charge through utility bills

Best Person to Contact for Information about the program

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Best Person to Contact for Information About the Northeast ENERGY STAR Residential Appliances Initiative

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GasNetworks[®] High-Efficiency Heating Program

GasNetworks[®]: a collaborative of Bay State Gas Company, Berkshire Gas Company, KeySpan Energy Delivery, New Gas Company, NSTAR Gas, and Unitil Fitchburg Gas and Electric Company.

PROGRAM OVERVIEW

The GasNetworks[®] High-Efficiency Heating Program is designed to promote the installation of ENERGY STAR[®]-rated high efficiency gas furnaces and hot water boilers, and energy-efficient steam boilers to residential and small commercial and industrial customers. The program offers rebates for new construction and replacement equipment (i.e., lost opportunity and retrofit). The objective of the program is to overcome current market barriers to this equipment through rebates, education, and awareness of customers, builder/developers, and plumbing/heating contractors.

Qualifying customers are eligible to receive a mail-in rebate per unit installed for ENERGY STAR-rated high-efficiency gas furnaces and boilers, and energy-efficient steam boilers with input ratings of 300,000 Btu/hour or less. The rebates have increased and decreased since the inception of the program depending on market response to the various rebate levels. In 2002, qualifying customers were eligible to receive a \$400 mail-in rebate per unit installed for ENERGY STAR high-efficiency boilers and a \$300 rebate for ENERGY STAR furnaces.

GasNetworks[®] is one of the first such collaboratives formed among gas utilities in the United States. GasNetworks[®] is an independent collaborative of six natural gas utilities in Massachusetts whose mission is to work with governmental agencies and affiliates to promote energy-efficient technologies, create common energy efficiency programs, educate consumers, and promote contractor training and awareness of ever-changing natural gas technologies. GasNetworks[®] provides market transformation and rebate programs that are consistent across the Commonwealth of Massachusetts. Program consistency is an important objective of GasNetworks[®] programs, which reduces customer and contractor confusion, and takes advantage of shared program costs such as marketing and administration. In addition, GasNetworks[®] works with the Consortium for Energy Efficiency (CEE) in researching and developing programs. As a result, GasNetworks[®] maintains a regional/national focus in program development and implementation of its market transformation programs.

PROGRAM PERFORMANCE

From the year 1998 through March 2002, GasNetworks[®] provided 36,395 high-efficiency heating rebates, a total value of about \$13 million. In 2001, the amount of rebates paid to customers alone was about \$4 million.

The success of the program is evidenced by the 24% increase in rebates in the first two years of program implementation. In budget year 1998–1999, 836 rebates were processed and 1,089 rebates were processed in 1999–2000.

A 2001 evaluation report found that there was a steady increase in the penetration rate for high-efficiency furnaces—from 47% in 1998 to 57% in 1999 and over 60% in 2000.

The Department of Energy Resources (DOER) in Massachusetts views the program very favorably, commenting: “The DOER applauds the efforts of the GasNetworks[®] collaborative and continues to be impressed with the progress and achievements of Gas Networks.”

The program positively influenced manufacturers and suppliers in Massachusetts. Weil-McLain, the largest manufacturer of boilers in the United States, said: “There has been an overwhelming demand expressed by our customers for Weil-McLain to offer a steam boiler that meets the requirements of the GasNetworks[®] rebate program....The impact of the G GasNetworks[®] rebate program has forced us to take the necessary steps to bring our model EG boiler up to the 82% efficiency requirement.”

LESSONS LEARNED

An integral part of the High-Efficiency Heating Program has been the development and implementation of training programs and marketing plans to address all the components of the equipment supply chain, including manufacturers, supply houses, distributors, contractors, and consumers. Targeting all links in the chain has contributed significantly to the program’s success.

The design of this program follows national ENERGY STAR standards, where applicable, and uses national AFUE ratings, which allows for simple replication of the program design. Further, the prescriptive rebate structure allows for simple replication of implementation.

PROGRAM AT A GLANCE

Program Name: GasNetworks[®] Residential High-Efficiency Heating Program

Program Start Date: 1997

Program Participants: Year 2001 = 12,060*

*Due to the complexity of the various GasNetworks[®] programs, ONLY the 2001 High-Efficiency Heating Program data are used to calculate participants and participant rate. Total High-Efficiency Heating Program participants (program-to-date) are actually 43,772. Combined program participants (i.e., all GasNetworks[®] programs) exceed 50,000.

Eligible Population or Customer Segment: 42,835**

** Approximate shipment of natural gas heating equipment to Massachusetts.

Participation Rate: 2001 = 28%

Annual Energy Savings Achieved (MMBTU)

2001: 233,791 MMBTU

2002 (as of 11/30/02): 205,914 MMBTU

Peak Demand (Summer) Savings Achieved (kW): NA

Other Measures of Program Results to Date

- Due to GasNetworks[®] efforts, shipments of high-efficiency furnaces in Massachusetts in 1997 were 46% of furnaces shipped. In 2001, shipments were 65%.
 - GasNetworks[®] has convinced retailers such as Home Depot, Sears, and most recently Lowes to stock qualifying products for its rebate programs.
 - GasNetworks[®] has facilitated and processed over 40,000 high-efficiency heating rebates and over 4,300 high-efficiency water heating rebates.
-
- GasNetworks[®] and its member utilities have contributed to certifying over 1,200 ENERGY STAR Homes in 2001 alone.

Budget (GasNetworks[®] member utility budgets 2001, 2002 and 2003)

2001: \$5.3 million

2002: \$5.5 million

2003: \$5.6 million

Funding Source: Ratepayer Energy Efficiency Charge

Best Person to Contact for Information about the Program

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Small Business Services Program

National Grid

PROGRAM OVERVIEW

Since 1990, National Grid has provided direct retrofit installation of energy-efficient lighting and other electric energy saving measures to small commercial and industrial customers. Customers with an average monthly demand of less than 100 kW, or annual energy usage of less than 300,000 kWh, are eligible for the Small Business Services Program. National Grid pays for 75–80 percent of the total project costs, and customers may finance the remainder for up to 24 months interest-free.

The small business customers targeted by this program tend to have a significant lighting load (as a percentage of total load) and a historical reluctance or inability to fund efficiency improvements. In addition, the customers' small size tends to exclude them as potential beneficiaries of services from other energy service providers.

The program targets lighting, water heating, and refrigeration. Some of the available technologies generally offered through the program include: energy-efficient fluorescent ballasts, lamps, and fixtures; hard-wired and screw-in compact fluorescent systems; high-intensity discharge systems; occupancy sensors; light-emitting-diode (LED) retrofit kits; programmable thermostats; hot water tank insulation wraps; and fan and door heater control devices for walk-in coolers as well as night setbacks for novelty coolers. Over its life, the Small Business Services Program has kept pace with changes in efficient lighting technologies and introduced new energy-efficient non-lighting measures. As an example of the latter, National Grid is piloting a service in 2003 aimed at enhancing air conditioning operations and performance. The service includes training of contractors to perform adjustments to HVAC equipment and combines in-field technician training, computer diagnostics, and immediate test verification and feedback to promote better practices with small commercial customers' air conditioning systems.

The program is delivered through a number of delivery contractors hired through a competitive bidding process (historically no more than three contractors are engaged in the program). The contractors market the program primarily through telemarketing and direct mail as well as leads that are referred by National Grid.

The vendors market the program, perform audits at customers' facilities, make recommendations to customers, complete audit forms and questionnaires, purchase materials from a supplier selected through a competitive bid process by the company, install measures, input data into a database, and prepare progress reports for the company on a regular basis. The company program manager manages the vendors' activities and provides technical expertise. A separate vendor handles services for recycling ballasts and lamps for proper disposal. National Grid expects that this program will provide a valuable service to small businesses for the foreseeable future.

PROGRAM PERFORMANCE

The Small Business Services program has been very successful.

- Since 1989, almost 35,000 small businesses have received this program.
- Approximately 33 percent of the eligible customers have had measures installed.
- The program has saved over 2.5 million MWh and 65,700 kW since 1989.

LESSONS LEARNED

- National Grid's Small Business Services program has been innovative in its ability to progress with changes in technology as mentioned previously. The program has also had to address changes in the target market as the market of easier-to-reach large customers has become saturated over time. In recent years, National Grid and its contractors aggressively pursued the hardest-to-reach constituents through innovative marketing and technology offerings such as emphasis on refrigeration measures. The combination of successful marketing techniques to include a direct response campaign and delivery of quality turnkey installation services supports the results achieved to date.
- Another feature that small business customers find attractive under the Small Business Services Program is the ability to finance their portion of the costs on their monthly utility bill. This provides them an easy mechanism over 24 months to pay off their share of the costs.

PROGRAM AT A GLANCE

Program Name: Small Business Services Program

Program Start Date: 1990

Program Participants

2002: 1,676

Cumulative total (1990–2002): 34,633

Eligible Population or Customer Segment: Approximately 77,000

Participation Rate: About 33% of the eligible customers have had measures installed.

Annual Energy Savings Achieved

2002: 13,648 MWh

1990–2002 cumulative: 2,593,347 MWh

Peak Demand (Summer) Savings Achieved

2000: approximately 4,500 kW gross
Life: approximately 65,700 kW (through 2000)

Budget

Year	Utility Costs	Customer Costs	Total Costs
2001	\$1,483,004.41	\$5,481,399.32	\$6,964,403.73
2002	\$993,950.58	\$3,728,371.34	\$4,722,321.92
2003	NA	NA	NA

Funding Source: Systems benefit charge

Best Person to Contact for Information about the Program

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- URL (program overview with links to individual operating companies and their programs):
http://www.nationalgrid.com/usa/environment/energy_efficiency/index.shtml

Design 2000 plus

National Grid

PROGRAM OVERVIEW

Design 2000 *plus* targets time-dependent opportunities for the installation of energy-efficient equipment in new construction, renovation, remodeling, and failed equipment replacement. Financial incentives are designed to cover 60–90% of the incremental cost difference between standard and energy-efficient equipment, or decrease the incremental cost to the customer to a 1.5-year payback, whichever is less. By providing these incentives, the cost barrier to investing in energy-efficient design and equipment is substantially reduced.

The program's goal is to make consideration of energy-efficient options an integral part of the design process. In doing so, the program creates long-term market transforming effects by influencing architects, engineers, and the building design community to incorporate energy-efficient design strategies and equipment in the early design phase, thereby raising the energy efficiency standards of normal building practices.

The company markets the program through extensive personal communication by its account managers with customers, vendors, and contractors and via seminars, training sessions, and other direct marketing approaches. Through Design 2000 *plus*, the company also actively supports regional and national market transformation initiatives such as Motor-Up, Cool Choice, DesignLights™ Consortium,⁴ and the New Buildings Institute.

The program provides prescriptive rebates for lighting, HVAC systems, motors, variable frequency drives, and compressed air systems. For more complicated systems, the custom approach is used, which allows more site specific and comprehensive energy savings analyses. Whole building designs are treated through the comprehensive design approach (CDA). As the program has matured, an increasingly larger portion of the savings has been achieved year by year through custom and CDA projects, accounting for 73% of all Design 2000 *plus* net annual savings for 2000.⁵

CDA has been shown to be a very innovative approach. The new construction/renovation side of the National Grid's Schools Initiative is also served through Design 2000 *plus*. These programs have provided Design 2000 *plus* with the opportunity to move into whole building sustainable design. Already, the Schools Initiative is participating in the Massachusetts Green Schools Initiative administered by the Massachusetts Renewable Energy Trust.⁶ The goal of the Green Schools Initiative is to encourage school districts to

⁴ These regional initiatives are provided through the Northeast Energy Efficiency Partnerships.

⁵ From the *2000 Energy Efficiency Annual Report* submitted to the Massachusetts Department of Telecommunications and Energy and the Division of Energy Resources, December 2001.

⁶ The Massachusetts Technology Collaborative (MTC) and the [Massachusetts Department of Education's School Building Assistance Program](#) (SBA) have teamed up for this pilot program to provide school districts in Massachusetts with the information and resources necessary to help the districts design and build high

construct or renovate school buildings that will cost less to operate and will provide healthier learning environments for students. This pilot program is an extraordinary opportunity for school districts planning new schools or major renovations to create more efficient facilities. The program will also help influence how future schools will be designed and built in Massachusetts.

PROGRAM PERFORMANCE

Design 2000 *plus* has helped Massachusetts save electricity and peak demand.

- Since 1989, the program has served 5,000 participants (this number includes prescriptive participants) representing approximately 50% of the eligible market in Massachusetts.
- Since 1994, cumulative energy savings of 2.56 GWh have been achieved.
- Since 1994, cumulative peak demand savings of 130 MW have been achieved.
- The benefit/cost ratio has been approximately 2.1 over the last 10 years.
- The program has been evaluated by outside consultants, with five to ten studies conducted each year for the last 14 years. Impact evaluations approved by the Department of Telecommunications and Energy showed that tracking estimates of savings are unbiased.

PROGRAM AT A GLANCE

Program Name: Design 2000 *plus*

Targeted Customer Segments: Commercial, industrial, and government facilities

Program Start Date: 1989

Program Participants to Date (Annual Totals): Over 5,000 Energy Initiative overall (custom and prescriptive projects) (4,183 for Massachusetts from 1992 to 1999; assume this constitutes 77% of total, Narragansett Electric accounts for 20%, and Granite State Electric Company accounts for 3%).

Eligible Population or Customer Segment: Over 10,000

Participation Rate: Approximately 50% of National Grid's customers have participated (based on information in the 2000–2002 5-year plan for Massachusetts; assume this is the same for Rhode Island and New Hampshire).

Annual Energy Savings Achieved: Cumulative since 1994 = 2,560 GWh overall for Energy Initiative

performance, and resource- and energy-efficient green schools. For more information, log on to <http://www.mtpc.org>.

Peak Demand (Summer) Savings Achieved: Cumulative since 1994 = 130 MW

Budget (2001, 2002, and 2003)

Year	Total Rebates (NGRID)
2000	\$15.0 million
2001	\$14.0 million
2002	\$10.7 million (as of 11-02)

Year	Approximate Customer Costs	Total Costs
2000	\$5.0 million	\$20.0 million
2001	\$4.7 million	\$18.7 million
2002	\$3.6 million (as of 11-02)	\$16.7 million (projected)

Funding Source: System benefits charge

Best Person to Contact for Information about the Program

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- URL (programs overview with links to individual operating companies and their programs):
http://www.nationalgrid.com/usa/environment/energy_efficiency/index.shtml

Energy Initiative Custom Program

National Grid

PROGRAM OVERVIEW

National Grid's Energy Initiative Custom Program is designed to target energy efficiency opportunities in existing commercial, industrial, and government facilities. The program targets equipment that continues to function but is outdated and energy inefficient.

Measures installed as part of the program include efficient lighting, high-efficiency HVAC controls, variable frequency drives, and premium-efficient motors. Generally these measures are treated under the prescriptive track of the Energy Initiative program. However, when a project doesn't fit into the prescriptive track, it is put into the custom track. Examples of custom track projects include manufacturing process equipment upgrades, specialized HVAC upgrades, and unique motor systems. Over time, more Energy Initiative projects are following the custom track such that custom projects now reflect over 55% of the annual savings achieved in the Energy Initiative program.

In addition, many new technologies are first introduced to Energy Initiative through the custom track. As data and experience are gained, some of these new technologies end up as prescriptive measures (new lighting technologies are an example).

This program targets customers and trade allies (such as equipment vendors) to educate and encourage their adoption of new design features and equipment selection in order to promote efficient energy usage in commercial, government, institutional, and industrial buildings. The Energy Initiative Program is available to all non-residential customers. Rebates cover 50% of the total cost of installation. Installation is the customer's responsibility.

National Grid markets the Energy Initiative Custom Program through extensive personal communication by the company's account managers with customers, vendors, and contractors; seminars; training sessions; and other direct marketing approaches. Through Energy Initiative, the company actively supports regional and national market transformation initiatives in the areas of operations and maintenance, compressed air and retro-commissioning.

The company offers customers financial incentives, technical assistance, training, and commissioning. Financial incentives reduce the cost barrier to investing in energy efficiency. Technical assistance provides information and education to participants in the use of energy-efficient engineering practices to advance better design in buildings. Additional education opportunities for customers and trade allies are offered through the company's participation in the regional and national market transformation initiatives. Commissioning ensures that the designs and systems specified for efficient buildings operate as intended by the design professionals.

PROGRAM PERFORMANCE

The Energy Initiative Custom Program has achieved significant success in both energy and demand savings and penetration rates.

- Since 1989, the program has served 5,000 participants (this number includes prescriptive participants) representing approximately 55% of the eligible market in Massachusetts.
- Since 1994, cumulative energy savings of 1.6 GWh have been achieved.
- Since 1994, cumulative peak demand savings of 55 MW have been achieved.
- The Energy Initiative Custom Program is probably the leading program in the country promoting chiller retrofits. The Comprehensive Chiller Initiative targets interactive measures such as lighting that are good retrofit opportunities at the time of a planned chiller replacement.
- Another unique aspect of the Energy Initiative Customer Program is the Industrial Systems Optimization Service (ISOS), an extension of technical assistance that, in addition to electric savings, quantifies non-electric energy benefits when an industrial process is being retrofitted. In addition to electric energy savings, ISOS might quantify savings in raw material, scrap, labor, and water when a system improvement is proposed.

PROGRAM AT A GLANCE

Program Name: Energy Initiative Custom Program

Targeted Customer Segments: Commercial, industrial, and government facilities.

Program Start Date: 1989

Program Participants to Date: Over 5,000 Energy Initiative overall (custom and prescriptive projects) (4,183 for Massachusetts from 1992 to 1999; assume this constitutes 77% of total, Narragansett Electric accounts for 20%, and Granite State Electric Company accounts for 3%)

Eligible Population or Customer Segment: Over 10,000

Participation Rate: Approximately 55% of National Grid’s customers have participated (based on information in the 2000–2002 5 year plan for Massachusetts; assume this is the same for Rhode Island and New Hampshire).

Annual Energy Savings Achieved: Cumulative since 1994, 1.6 GWh overall for Energy Initiative Custom Program

Peak Demand (Summer) Savings Achieved: Cumulative since 1994, 55 MW

Budget

Year	Total Rebates (NGRID)
2000	\$6.5 million
2001	\$11.3 million
2002	\$5.0 million (as of 11-02)

Year	Approximate Customer Costs
2000	\$6.5 million

2001	\$11.3 million
2002	\$ 5.0 million (as of 11-02)

Year	Total Costs
2000	\$13.0 million
2001	\$22.6 million
2002	\$10.0 million

Funding Source: System benefits charge

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- URL: http://www.nationalgrid.com/usa/environment/energy_efficiency/index.shtml

Schools Initiative

National Grid

PROGRAM OVERVIEW

In 2000, National Grid began offering a targeted energy efficiency initiative for public schools. This initiative is offered through both National Grid's commercial new construction/renovation program, "Design 2000 Plus," and its commercial retrofit program, "Energy Initiative." The program is aimed at overcoming market barriers such as high first costs; the lack of information on the costs, savings, and reliability of energy-efficient equipment; and the dearth of expertise in energy-efficient design among architects and builders. These barriers prevent cities and towns from incorporating high-quality, energy-efficient lighting and other energy-efficient technology in renovated and new schools. The Initiative's intent is to help schools minimize the hurdles posed by these market barriers during a time when Massachusetts is seeing an unprecedented level of investment in new and renovated schools. This Initiative helps schools identify and install cost-effective electric efficiency opportunities in retrofitted, renovated, and new school buildings. Incentives pay for the full cost of equipment in retrofit cases and the full incremental cost in major renovations or new construction. With these incentives, schools do not incur additional costs for the installation of high-efficiency equipment. Through these installations, the program broadens the awareness of the benefits of high-quality lighting in schools within communities and school districts, and among building practitioners. By building this awareness through actual installations, the company hopes to promote high-quality lighting as the norm in school design as opposed to the exception. Clearly, in the long term, paying the full incremental costs for high-efficiency lighting is not sustainable; however, the company views these incentives as the catalyst for changing building practices. Starting in 2002, the company reduced the incentives resulting in a co-pay from the school district.

A primary component of the Schools Initiative is the requirement that all participating schools use lighting guidelines developed in 1999 by the DesignLights™ Consortium.⁷ This Consortium is a regional collaborative of utilities and other organizations whose purpose is to influence lighting design toward quality and energy efficiency during remodeling, renovation, and new construction. The Classroom Lighting knowhow™ guideline establishes specific fixture and fixture-layout (design) criteria focused on achieving high-quality lighting as well as energy efficiency. When followed, the guidelines result in designs with improved lighting uniformity, control of glare, increased comfort and quality, and lower-than-standard lighting power densities in school classrooms, multi-purpose rooms, and corridors. In addition, where appropriate, effective daylighting and lighting control strategies are incorporated into the schools' lighting designs. The overarching goal of the guidelines is to provide a visual environment that is supportive of the learning process. This can be achieved only if the occupants can see their visual tasks accurately, quickly, and comfortably. Effective lighting designs can make a school pleasant and attractive and can stimulate learning. Efficiency opportunities are found in better lighting design. Lower net lighting power densities may result from more efficient

⁷ See description at Northeast Energy Efficiency Partnership's website: www.NEEP.org.

overall system designs that do not degrade lighting quality. Essential design variables include variations in fixture layout patterns, high-power ballasts, and the use of optically efficient fixtures.

PROGRAM PERFORMANCE

The National Grid Schools Initiative Program has experienced some positive results.

- Through 2002, 28 new schools have participated in the program and over 40 existing schools have been retrofitted. Budget constraints have limited the number of participating schools. These have all been public/regional schools with a mixture of elementary, middle, and high schools as well as special needs and vocational schools.
- New schools save roughly 15 percent of their projected electricity consumption while retrofitted schools save over 20% of existing consumption, mostly through lighting.⁸
- Incentives for new and retrofitted schools have ranged from \$7,000 to over \$140,000 and \$60,000 to over \$750,000 respectively.
- As noted above, the program overcomes first cost barriers incurred by cities and towns in building new or retrofitting existing public schools and influences the design practices of architects and engineers who specialize in new school construction. First cost barriers lead to school designs that essentially meet but don't exceed the state energy code. Many architects and engineers are hesitant to change their "standard" design because of the additional cost and lack of confidence in newer designs and technologies. In the two years the Initiative has been implemented, National Grid has been able to work with the same architects/engineers on a number of projects. Although an evaluation of this initiative has not been conducted, ongoing work with these practitioners suggests that they are gradually shifting their designs to incorporate high-quality energy-efficient lighting in schools with less intervention by National Grid.

LESSONS LEARNED

Incorporating energy efficiency in new schools is considerably more cost-effective than doing so in existing schools. National Grid has found that roughly half the existing schools approached about participation in the program have not been cost-effective to retrofit. Cost-effectiveness is more difficult to achieve in existing schools due to the fact that most schools have already installed an earlier version of an energy-efficient lamp and ballast retrofit and are therefore maintaining moderate watts/sq. ft. thresholds. Introduction of better fixtures with appropriate fixture spacing does not gain significant energy savings. While the general quality of the lighting environment is improved, the energy savings to drive the cost-effectiveness are difficult to achieve.

PROGRAM AT A GLANCE

Program Name: National Grid's Schools Initiative

⁸ Energy savings estimates from National Grid technical studies performed by professional engineering firms.

Targeted Customer Segment: All public municipal and regional school districts, grades K through 12

Program Start Date: May 2000

Program Participants:

Most recent annual total: 10 schools

Cumulative total since program inception: over 50 schools

Eligible Population or Customer Segment: NA

Participation Rate: NA

Annual Energy Savings Achieved

About 507,000 annual kWh for projects completed in 2002.

The cumulative total is 2.5M annual kWh.

Peak Demand (Summer) Savings Achieved: The cumulative total is about 720 kW.

Other Measures of Program Results to Date: Unknown

Budget

Year	Utility (Program) Costs
2001	Approx \$160,000
2002	Approx. \$1.08M
2003	Unknown

Funding Source: System benefits charge

Best Person to Contact for Information about the Program

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- URL: http://www.nationalgrid.com/usa/environment/energy_efficiency/index.shtml

Massachusetts Low Income Affordability Network

Massachusetts Department of Housing and Community Development in collaboration with KeySpan Energy Delivery—New England

PROGRAM OVERVIEW

The Massachusetts Low Income Affordability Network (LEAN) coordinates the delivery of all publicly funded energy efficiency programs across the state. Its purpose is to ensure that the 21 program operators deliver the highest quality, most cost-effective, and most convenient energy efficiency services possible for low income clients through the Commonwealth. LEAN also represents low income interests in utility regulatory negotiations on funding levels, program designs, and evaluations. The program works to provide seamless delivery of energy services to low income clients, which currently total about \$30 million per year.

LEAN was established as a result of legislation that, for the first time, established secure funding for low income utility efficiency programs. The statute (G.L. c. 25, sec. 19; St. 1997, c. 164, sec 37) states:

The low income residential demand-side management and education programs shall be implemented through the low income weatherization and fuel assistance program network and shall be coordinated with all gas distribution companies in the Commonwealth with the objective of standardizing implementation.

Prior to this time, electric and gas utility low income programs were negotiated, one at a time, between individual utilities and the low income agencies in each service territory. Statewide support was provided by the Association of Community Action Program Directors (MASSCAP) and the Massachusetts Energy Directors Association (MEDA), and by statewide multi-party collaboratives of interested parties from all customer sectors with respect to each utility, all of which continue. The statute established a floor for funding of electric programs and the mandate for gas programs. A negotiated agreement with KeySpan Energy Delivery—New England established the model for other gas utility programs.

The services provided by LEAN include:

- Coordination among electric and gas utilities and their collaboratives with the objective of standardizing implementation (as directed by the above statute).
- Coordination within the low income weatherization and fuel assistance program network, including among lead vendors and between lead vendors and sub-vendors.
- Coordination with potential vendors outside the low income weatherization and fuel assistance program network for certain segments of the low income residential market—for example, large multi-family buildings.

- Assistance in the development of the comprehensive low income residential demand-side management and education programs required by statute.
- Assistance in monitoring and evaluating existing programs to improve cost-effectiveness and develop new program features. This includes development of evaluation strategies, coordination with evaluators, and synthesizing statewide lessons from program evaluations.
- Support for the training of the low income weatherization and fuel assistance program network with the objectives of quality, cost-effectiveness, and consistency.
- Regulatory support in negotiations with and proceedings before the Department of Telecommunications and Energy (DTE) and the Division of Energy Resources (DOER).

LEAN is composed of representatives of each lead agency among the low income agencies; the Department of Housing and Community Development (DHCD); experts and attorneys from Action for Boston Community Development (ABCD), National Consume Law Center (NCLC), and South Middlesex Opportunity Council (SMOC); and appointed experts and attorneys. LEAN negotiates program agreements among the low income agencies in each utility service territory, each of the ten gas and electric utilities,⁹ and the two regulators. LEAN also meets periodically as a group and with utility representatives to coordinate standardization and establish best practices, to work out issues that may arise, and to oversee quality control. Ultimate responsibility for each program remains the subject of contracts between each utility and lead agency and between DHCD and each lead agency. Based on those contracts, lead agencies sub-contract implementation to other agencies in the relevant territory. Operating agencies generally hire sub-sub-contractors for measure installation.

A comprehensive set of services is provided to households served by LEAN's coordinated programs to address residential heating systems, building shell improvements, appliances, and health and safety checks. Funding is coordinated among sources, as appropriate. Funding sources include gas utilities, electric utilities, U.S. Department of Energy (DOE), U.S. Department of Health and Human Services (HHS), and a Ford Foundation pilot grant to combine energy efficiency and home renovation programs. The two federal sources (DOE and HHS) are administered by DHCD. All measures are directly installed at no charge to the low income consumer and include:

- a comprehensive energy audit, which includes customer education,
- weatherization (wall, attic, floor, and pipe and duct insulation¹⁰) and air sealing (caulking, weatherstripping, door and window hardware, window parting beads, and stops),
- turn-down thermostats,

⁹ As a result of mergers, the ten utilities operate in 14 separately identified territories. In addition, a gas utility that serves one town and part of another has no low income efficiency program. To date, the full set of programs has not been adopted by municipal utilities.

¹⁰ About a third of Massachusetts' low income homes are heated by oil. Weatherization of these homes, as well as those heated by other non-utility fuels (chiefly propane and wood), is funded by DOE and electric utility funds. Thus the integrated program operates in a fuel-neutral manner.

- water heater blankets,
- blower door analysis,
- tune-up, repair, and replacement of faulty heating systems,
- low-flow showerheads and faucet aerators,
- minor building repairs, including glass replacement and adjustment of window meeting rails,
- replacement of inefficient appliances, including refrigerators and clothes washers,
- water bed covers,
- installation of compact fluorescent lamps (CFLs),
- CFL torchieres and desk lamps,
- health and safety measures such as wire inspection, ventilation, and the DOE lead-free protocol, and
- additional multifamily-building-specific measures such as common area lighting fixtures and HVAC motors and controls, particularly in publicly funded housing.

Special efforts are made with respect to new construction and comprehensive rehabilitation projects. In addition, other services that are coordinated with efficiency measures include:

- Budget counseling where appropriate and available,
- Referral to other social services, where appropriate and available, and
- Arrearage management, including some arrearage forgiveness, where there is a utility program in place.

Starting January 1, 2004, the efficiency program will be coordinated with KeySpan's innovative OnTrack program, which provides budget counseling, arrearage management, and other social services to a small number of low income customers with the objective of increasing their ability to pay their bills. In addition, a pilot project supported by an HHS grant provides case management services (including budget counseling and, where available, utility arrearage management) in certain parts of the Commonwealth. In a small part of the KeySpan territory, a Ford Foundation grant supports pilot efforts to combine energy efficiency and home renovation programs.

In almost all cases, customers become eligible for low income efficiency services through the fuel assistance program (LIHEAP), which is administered by community action programs (CAPs) and other community-based organizations. Although eligibility levels differ slightly among the programs, in general the fuel assistance application process automatically enrolls clients for all utility-related programs for which they are eligible. These can include, in addition to LIHEAP:

- Efficiency programs,
- Gas, electric, and telephone rate discounts,
- Case management services, and
- Utility arrearage management programs.

Customers not eligible for other low income energy programs are nevertheless screened by fuel assistance agencies for eligibility for low income energy efficiency services.

PROGRAM PERFORMANCE

LEAN’s first large-scale gas utility program was with KeySpan Energy Delivery—New England, begun in 1997. It has been evaluated “to be operating in a high quality and cost-effective manner,” with more than 95 percent of participants extremely or very satisfied, and the consistent “opinion of program staff, managers, and planners that the program is very successful.” Evaluation further found that, in addition to the therm savings the program produces for the system, the low income efficiency program provides significant benefits to customers in the form of comfort, improved condition of homes, bill savings, and (for 60 percent of those in arrears) an easier time paying their bills. Indeed, 30% of those in arrears found themselves able to pay their bills in full after participating in the efficiency program. These non-energy benefits translate further into such benefits as health benefits to participants and reduced utility costs of carrying and collecting debt and terminating and reconnecting service. There are also water resource savings. The value of such additional benefits has not been formally computed for this program, but they are estimated to be at least 50% of the energy benefits. Concluded one contractor quoted in the evaluation: “This Program is the best one I’ve seen out there, and I’ve seen a lot!”

Results at KeySpan include these for the six completed years of the ongoing program:

	Lifetime, May 1997–April 2003	Last full year, 2002–03
Participants	7,180	1,103
Fuel savings (therms)	20,168,800	3,098,400
Program cost	\$16,100,000	\$3,400,000
Cost/therm saved	\$0.798	\$1.09

KeySpan attributes the success of its low income program to flexibility in program design and on-going implementation, creative management, effective administration, and high implementation standards. Ongoing training by the utility and the agency, based on DHCD and utility practices, also plays a key role in the program’s success. This includes the requirement that all auditors have DHCD training and certification. The particular success of KeySpan’s low income efficiency program illustrates how LEAN supports and enhances individual utility efforts. LEAN has improved program services in many ways, including serving as a sounding board for program managers. Such input has guided program development and evolution, leading to more effective program administration, implementation, and delivery of services to customers.

LESSONS LEARNED

LEAN’s performance of its functions in a consistent, statewide manner eliminates duplication of effort and makes the administration and coordination of utilities’ low income programs both more efficient and more effective. Among the benefits achieved from the approach taken by LEAN are:

- The statutory goal of standardizing implementation is achieved, while retaining individual electric and gas distribution utility flexibility.
- Repetitive functions are more efficiently performed through elimination of duplicative services.
- Problem-solving is administratively simplified and benefits from experience elsewhere in the state.
- Lessons are synthesized for statewide application, where appropriate.
- Statewide issues need only be addressed once.
- Electric and gas utility service territories partially overlap in many places. Electric and gas territories partially overlap with low income agency territories. Thus one agency can be working in the territories of several utilities. Coordination among overlapping service territories is simplified.
- Representation in proceedings before the Department of Telecommunications and Energy and the Division of Energy Resources are simplified.

Utility efficiency programs in Massachusetts, including low income programs, grew out of the Integrated Resource Planning (IRP) process of the mid-1980s, which was itself a response to a federal law (PURPA) and to price shocks due to nuclear power cost overruns. Utility low income programs were significantly expanded as a result of an electricity restructuring statute enacted in 1997. The statute set a permanent floor under electric utility funding of low income efficiency programs and required coordination with gas utility programs. In the same year, the current KeySpan program was established on the basis of the settlement of a DTE rate case. From their beginning in the federal weatherization programs of the 1970s, low income efficiency programs had been coordinated by the Commonwealth's administering agency (DHCD), by an association of the community action programs that implemented most of them, and by an association of community-based programs delivering low income energy services. LEAN was created in 1998 to focus and expand the scope of coordination of the vastly expanded programs.

The success of LEAN in expanding and coordinating utility low income programs is a result of countless factors that mix idealism, politics, and good management. The base for development of the programs has been, as it is in many states, a federally funded weatherization program administered by the state and implemented by a network of community-based agencies, together with a core of support in the state for utility efficiency services. While all situations are unique, the organizers of LEAN believe their successful leverage of that base into comprehensive and well-funded low income energy efficiency programs can be replicated over time by developing these principal conditions:

- Adequate funding to implement and administer the programs, including support services necessary to provide operational assistance, factual information, negotiation of agreements, and advocacy for those agreements with regulators;
- Development and maintenance of a broad base of political support for all efficiency programs and especially for low income programs;

- Identification of key personnel working for success of the programs at utilities, regulators, and agencies, as well as at coalition partners, and development of constant communication and strong working relationships among those people;
- Strong support from the state agency that administers the federal weatherization programs; and
- Close attention to volume and quality control and immediate response to any problems.

PROGRAM AT A GLANCE

Program name: Massachusetts Low Income Energy Affordability Network (LEAN)

Targeted customer segment: Low income households (60% of state median income, some non-efficiency program elements have lower income limits)

Program start date: 1997

Program participants: Program information for KeySpan Energy only: 1,103 for 2002–03 (program year); 7,180 cumulative program total from beginning of program (May 1997)

Approximate eligible population: 360,254 households (estimated from 2000 U.S. Census)

Participation rate: 0.3% annual (program year 2002–03); 2.0% cumulative since program inception

Annual energy savings achieved: 3,098,400 therms (program year 2002–03); 20,168,800 therms cumulative from program inception

Cost-effectiveness: Average cost per therm saved in the utility-funded portion of the program is 79.8 cents. The benefit-to-cost ratio exceeds 1.0 on the basis of energy savings alone; with non-energy benefits factored in, this ratio is at least 50% higher (a definitive calculation has not been performed).

Budget

Year	Program Costs
2001	\$3.3 million
2002	\$3.4
2003 (preliminary)	\$2.7
2004 (projected)	\$3.2

Notes: Program costs are utility costs only and do not include other sources. There are no customer costs in this program. Years are program years (May of stated year through April of following year.)

Funding sources: Customer rates pursuant to order of DTE, utility shareholder funds, DOE, and HHS via DHCD; and also a Ford Foundation grant

Best persons to contact for information about the program

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- Web page: [http://www.state.ma.us/dhcd/components/dns/default.htm#Energy Programs](http://www.state.ma.us/dhcd/components/dns/default.htm#EnergyPrograms)

- Elliott Jacobson, Chair, LEAN and Energy Director/Rita Carvalho, Assistant Energy Director/Craig Brown, Director, Conservation Services
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- Susan Fitzgerald, Program Manager, Residential Energy Efficiency Programs
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Appliance Management Program

*National Grid, New England
The Massachusetts Low-Income Energy Affordability Network
Rhode Island State Energy Office
Numerous community action agencies¹¹*

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 Rhode Island (Narragansett Electric), and New Hampshire (Granite State Electric). In Rhode Island AMP is offered in cooperation with the Rhode Island State Energy Office.

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

¹¹ 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.

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 installed	63 kWh /year per bulb
New refrigerator replacement	1,106 kWh/year per
New freezer replacement	726 kWh /year per
Waterbed measures	1,070 kWh/year per bed
Refrigerator removal	135 kWh/ year per removal
Electric weatherization home	595 kWh/year per
Oil heat weatherization home	143 kWh/year per
per home	150 gallons of oil/year
Oil heating system	91 kWh/year per home
per home	290 gallons of oil/year
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: Not available.

Participation rate: Not available.

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 to contact for information about the program

- Dave Legg, Program Manager
- Telephone: 508-421-4265
- Fax: 508-421-7265
- E-mail: dave.legg@us.ngrid.com
- Postal address: 55 Bearfoot Road, Northborough, MA 01532
- Web page: National Grid's AMP program doesn't have its own web site; 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/>

Low Income Gas Program

NSTAR Gas Company

PROGRAM OVERVIEW

The Residential Low-Income Program offers weatherization measures to NSTAR's neediest customers. The objective of the program is to increase energy efficiency and reduce the energy cost burden for low-income customers through energy efficiency education and the installation of gas energy efficiency measures. The weatherization services available include an energy audit, attic insulation, wall insulation, air sealing, heating system repair/replacement (on a qualifying basis), and safety inspections. The program allows each eligible customer to receive up to \$4,500 for these measures. When possible, the program is leveraged with Department of Energy (DOE) weatherization funds.

The program is administered by NSTAR in conjunction with the South Middlesex Opportunity Council (SMOC), which is the lead vendor. NSTAR works closely with SMOC on all aspects of program design and implementation. Community Action Program (CAP) agencies are responsible for providing the actual weatherization services to the customer. The CAP agencies work with installation contractors to ensure that proper program guidelines are enforced. They are also responsible for ensuring that the customer meets the eligibility requirements for program participation. The CAP agencies provide SMOC with the required documentation of all work performed.

This program directly targets residential low-income customers with annual incomes at 60% of the Massachusetts median income level. NSTAR Gas works with the CAP agencies to market the program to qualifying customers in its service area. Priority is given to high use (high-energy burden) customers.

Various methods of marketing are used to promote this program. NSTAR markets the program via bill inserts and messages, marketing brochures, and literature, company newsletters, and the Company web site. Marketing efforts are also conducted by the CAP agencies. While telemarketing proves the most effective, direct mail and community events are also used.

Currently, NSTAR and other Massachusetts utilities and low-income advocates are working collaboratively to sponsor a marketing campaign intended to increase participation levels in the discount rate, energy efficiency, and fuel assistance programs for customers who are income eligible.

NSTAR Gas has offered this program for low-income single-family households since November 1996. The company added a multi-family component to the program in May 2001.

NSTAR works collaboratively with the Massachusetts Division of Energy Resources (DOER), the Low Income Energy Affordability Network (LEAN), and the Massachusetts Department of Telecommunications and Energy's (DTE) Settlement Intervention Staff in the design of its energy efficiency programs. A Joint Motion for Approval of a Settlement Agreement is then submitted to DTE for final approval. The NSTAR Gas energy efficiency programs are currently in the third year of NSTAR Gas' three-year pre-approval period.

NSTAR Gas recovers its energy efficiency costs, along with any applicable incentives and lost margins, through the conservation charge (CC) cost recovery mechanism reviewed and approved by DTE.

PROGRAM PERFORMANCE

The company has realized great savings through the low-income programs. Since May 2001, this program has saved over 96,500 therms, which is equivalent to heating over 98 homes in Massachusetts for one year. Further, the program produces other non-energy benefits for customers who participate. Struggling low-income customers who pay their own bills not only save energy through NSTAR's program, but also save money that can be put toward other essential household expenses. In addition, their weatherized homes provide greater levels of comfort, health, and safety as a result of the measures implemented through the program.

The program's success was publicly recognized recently when it received a 2003 award by the Worcester Community Action Council for low-income services provided to residents of Worcester County, Massachusetts.

For the period May 2001 through April 2003, the program served 770 customers, saving an estimated 96,500 therms annually. While there is no formal survey process in place, SMOC and their sub-contracting agencies providing services to the customers have received very positive feedback from customers who have realized significant savings and assistance through these programs.

LESSONS LEARNED

One element that contributed greatly to the success of the low-income gas program was the addition of the multi-family component. Prior to 2001, the low-income program only served single-family units; multi-family units at that time were handled by the Energy Conservation Services (ECS) program regardless of income level. Recognizing low-income multi-family dwellings as an underserved market, NSTAR worked closely with the low-income network to develop a unique extension of the single-family program. As a result of adding the multi-family element, NSTAR has reaped the rewards of great publicity. On November 20, 2002, SMOC held a grand opening for a shelter it opened in Framingham, Massachusetts. The completely renovated building provides housing for twenty-four clients as part of an 18-month transitional program. NSTAR was noted for its

significant contribution to this project by providing funding for heating equipment through the Low-Income Multi-Family Gas Program.

Ramp-up for this type of program may be time consuming in the planning stages, but overall is not very complicated. Whether it is working with low-income agencies at the federal or state level, or even down to the community level, an interested utility/organization simply needs to meet with the appropriate stakeholders to develop a program that meets the needs of their customers. Many of the agencies already provide services for the low-income sector; therefore, the utility/organization may be able to subsidize or enhance efforts already being conducted.

Having a good working relationship with the vendor providing services is key to having a successful program. In particular, working with the local weatherization network helps to overcome possible skepticism of a utility-funded program and encourages customers to take advantage of community-based resources. SMOC and NSTAR continually strive to improve their low-income programs and the services provided to their customers.

PROGRAM AT A GLANCE

Program name: Low-Income Gas Program

Targeted customer segments: Low-income gas customers in single- and multi-family housing

Program start dates: Low-income single-family = November 1, 1996; low-income multi-family = May 1, 2001

Program participants: 770 customers between May 1, 2001 and April 30, 2003; total since program inception (1996): 1,876

Approximate eligible population: 18,000 customers

Participation rate: About 10% of eligible customers have been served by the program since its inception.

Annual energy savings achieved

Year	1997	1998	1999	2000	2001	2002
Annual Savings (therms)	34,150	81,660	37,740	90,710	58,527	37,977

Program cumulative total = 340,764 therms

Other notable measures of program results to date

The benefit/cost ratios have been calculated using the Total Resource Cost (TRC) test, as specified by the guidelines established by DTE. The TRC test, which includes the value of avoided gas supply, transmission, and distribution costs, also takes into account the direct economic benefits and costs of a program to participating customers.

Lifetime impacts of measures installed from 2003 through 2013 as filed in its Annual Report are:

- Low-Income Single Family
 - Benefits (2003\$) = \$3,430,797
 - Costs (2003\$) = \$1,668,747
 - B/C Ratio = 2.06

- Low-Income Multi-Family
 - Benefits (2003\$) = \$1,469,947
 - Costs (2003\$) = \$922,450
 - B/C Ratio = 1.59

Budget and cost information

Year	Budget/Actual Program Costs
2001	\$739,000/\$800,072
2002	\$813,000/\$740,166
2003 (preliminary)	\$1,000,000/NA
2004 (projected)	\$1,000,000/NA

Funding source: NSTAR Gas recovers its energy efficiency costs, along with any applicable incentives and lost margins, through the conservation charge (CC) cost recovery mechanism reviewed and approved by DTE.

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