2013 ANNUAL REPORT

Energy Efficiency Sets the Stage for Sustainable, Long-Term Savings

MA ENERGY EFFICIENCY ADVISORY COUNCIL

Prepared for the Massachusetts General Court,
the Joint Committee on Telecommunications,
Utilities and Energy, and the Department of Public Utilities

Letter from the Chairs

Five years after Massachusetts set among the most ambitious energy efficiency goals in the nation, I am delighted to share the 2013 Report of the Massachusetts Energy Efficiency Advisory Council (EEAC) with the Massachusetts General Court, the Joint Committee on Telecommunications, Utilities and Energy, and the Massachusetts Department of Public Utilities (DPU).

Massachusetts delivered another year of strong results in year one of the Massachusetts Joint Statewide Three-Year Energy Efficiency Plans for 2013–2015, thanks in large part to the ongoing stakeholder collaboration and leadership of the EEAC and the partnership of the Mass Save® Program Administrators (PAs).

In 2013, the integrated statewide electric and natural gas energy efficiency programs delivered electric savings of over 1.1 million MWh, natural gas savings of 25 million therms, and greenhouse gas emissions reductions of nearly 660,000 metric tons. In other words, Mass Save helped customers save the same amount of electricity as all households in Lowell, Springfield, Taunton and Waltham collectively use in a year. The natural gas savings are equal to heating nearly every single household in Framingham for a year.

In 2013, the PAs' efforts generated $2.8 billion in benefits, slightly greater total benefits than projected, while spending 12 percent less than budgeted.

In this report, you will find discussion of some accomplishments we believe deserve special attention. From the PAs' efforts to better understand and engage their customers, to the use of data and technology to inform energy efficiency program design and delivery, the Commonwealth's programs continue to evolve and expand, becoming more adept and efficient while delivering all cost-effective energy efficiency.

Governor Deval Patrick's administration and the EEAC are proud of these results and want to thank the Legislature for its ongoing support and advocacy. Members' interest in continuing to improve how Massachusetts is reducing energy demand in homes, businesses, government buildings and institutions is critical to achieving the goals of the Green Communities Act of 2008. We thank them for their essential support. We also thank former Energy and Environmental Affairs Secretary Rick Sullivan and Undersecretary for Energy Mark Sylvia for their leadership and advocacy of energy efficiency as our first fuel.

The Commonwealth has led the nation in energy efficiency for three years. We are continuing to evaluate what has worked well and what needs to be revised, while pushing forward with successful programs and strategies and testing new approaches.

We will not rest on our laurels. We are setting the stage for sustainable, long term savings through energy efficiency.

Meg Lusardi

Chair, Massachusetts Energy Efficiency Advisory Council
Commissioner, Massachusetts Department of Energy Resources

Christina Halfpenny

Designated Chair, Massachusetts Energy Efficiency Advisory Council
Director, DOER Division of Energy Efficiency

2013 Summary

This annual report to the Massachusetts Legislature presents a summary of Massachusetts' accomplishments and results of the first year of the second Joint Statewide Three-Year Energy Efficiency Plans ("Three-Year Plans"), covering 2013 through 2015. In 2013, the PAs began implementing the second Three-Year Plan with a goal to deliver even greater benefits and continued improvement in all areas of program delivery. The previous Three-Year Plan, driven by the requirements of the Green Communities Act of 2008, including a mandate to capture all cost-effective energy efficiency opportunities, generated $5.5 billion in economic benefits to the Commonwealth. Yet again, the collective and collaborative efforts of the PAs, the energy efficiency industry in Massachusetts, and valuable partners and stakeholders contributed greatly to Massachusetts achieving its third straight #1 ranking in the 2013 ACEEE State Energy Efficiency Scorecard. The table below summarizes some of the key quantitative outcomes from 2013.

146,900 HOMES POWERED FOR A YEAR THROUGH **ELECTRIC SAVINGS**

NEARLY EQUAL TO THE HOMES IN LOWELL, SPRINGFIELD, TAUNTON AND WALTHAM COMBINED

26,200 HOMES HEATED FOR A YEAR THROUGH **GAS SAVINGS**

APPROXIMATELY EQUAL TO THE HOMES IN FRAMINGHAM

137,400 CARS' EMISSIONS REMOVED FOR A YEAR THROUGH **ELECTRIC & GAS SAVINGS**

NEARLY THE ENTIRE AVERAGE WEEKDAY TRAFFIC ON THE PORTION OF THE MASSPIKE NEAR THE PRUDENTIAL CENTER

2013 YEAR-END RESULTS

	Achievements of 2013	% of Goal	2013 % towards 2013–2015 Goal
Total Benefits (Million $)	2,811	101%	33%
Annual Electricity Savings (GWh)	1,116	93%	30%
Annual Gas Savings (million therms)	25	109%	34%
Annual Oil Savings (million gallons)	3.4	141%	n/a
Participants*	3,294,578	120%	n/a
Program Spending (millions $)	574	88%	27%
Annual GHG Reductions (metric tons)	659,739	101%	35%
Annual NO_x Reductions (metric tons)	269	94%	30%
Annual SO_2 Reductions (metric tons)	708	94%	30%

* A customer who installs any measure through regular program channels and receives any benefit (e.g., incentive) that is available through participation in the program.

Featured Accomplishments

MASS SAVE® GOES SOCIAL

2013 marked the fifth year of the Massachusetts energy efficiency PAs' statewide marketing effort under the Mass Save umbrella. The PAs hired a leading creative agency to develop a refined marketing plan and implement the 2013 statewide Mass Save Awareness Campaign. The goal was to increase customer awareness of Mass Save and educate customers. The campaign also informed customers about ways to save energy and money through the energy efficiency programs. It ran from March through November 2013, three months longer than the 2012 campaign, and utilized a range of tactics to reach customers, including social media. Mass Save is now active on Facebook and Twitter, with over 90,000 combined "likes" and followers. Mass Save has tweeted over 900 times to date.

WMECO IMPROVEMENTS HIGHLIGHT GROWTH IN WESTERN MASSACHUSETTS

Following the merger between Northeast Utilities (NU) and NSTAR, NU's Western Massachusetts Electric Company (WMECo) began to analyze and engage with customers in a new, strategic way. Part of this effort included a more targeted approach to understanding its customer base — categorizing customers by business type and analyzing their electric usage. WMECo refined the list of its largest users and developed strategies to target customers with key messages tailored to their needs. Account staff was assigned to provide one-on-one support to targeted customers. This was a new way of engaging with customers, which resulted in more meaningful discussions. It allowed account staff to work with customers to develop strategic energy management plans that encourage long term rather than project-by-project engagement. This type of relationship building allows customers to see WMECo as a partner that can help them determine how efficiency fits with their business goals and activities.

WMECo also reallocated resources to more effectively utilize staff time and expertise. Instead of program managers reviewing applications, WMECo used engineering staff to support the application review process. Program managers were then freed up to focus more on ensuring effective program oversight and delivery, while including technical expertise in the process.

Looking for additional expertise and resources to serve its customers, WMECo refocused vendors, encouraging them to focus on serving WMECo customers. With new program opportunities, 4 vendors opened new offices in western Massachusetts and created 33 new positions dedicated to WMECo commercial and industrial (C&I) energy efficiency customers. This infusion of expertise will continue to create positive economic impacts in the area.

ENERGY EFFICIENCY DATABASE

As described in its Council Priorities, the EEAC promoted better data access, transparency, and analytics as a focus for 2013. In approving the 2013–2015 Plans, the Massachusetts Department of Public Utilities acknowledged that the Department of Energy Resources (DOER), the chair of the EEAC, would take the lead on developing a statewide energy efficiency database system through a stakeholder process. The EEAC worked collaboratively and proactively with the PAs and DOER to discuss the purpose, challenges, and strategies for developing an enhanced statewide database to provide a definitive source for consistent, detailed statewide data. Once a statewide database

is implemented, data users will be able to go to one source and be assured they are getting the latest version of both official documents and data.

The EEAC formed a Statewide Database Subcommittee to guide the database development process. The Subcommittee then formed a Statewide Database Working Group of stakeholders and subject matter experts to guide development of a solution to support the pursuit of all cost-effective energy efficiency savings. The EEAC and PAs identified core issues, concerns and questions and suggested next steps to be addressed before a new database development initiative was launched.

The Subcommittee's database consultant and facilitator worked to develop the requirements specification, which was completed in early 2014. The EEAC, DPU, and the PAs are working to resolve issues related to data content, security, and privacy prior to proceeding with development of the statewide database.

DOE CENTURY CLUB AWARDS

In 2013, 51 contractors who support the Massachusetts service territory received Century Club Awards from the U.S. Department of Energy (DOE). Contractors qualify by fulfilling the requirements of Home Performance with ENERGY STAR® programs and by using a whole-house approach to improve the energy performance of at least 100 homes in the previous year. Last year, DOE issued just 180 Century Club Awards in total; contractors serving Massachusetts accounted for nearly 30% of the award winners.

ACCELERATE ENERGY, LLC
Worcester, MA

AIR-TIGHT WEATHERIZATION
Beverly, MA

AMERICAN INSULATION INDUSTRIES
Roslindale, MA

BEATON KANE CONSTRUCTION, LLC
Shrewsbury, MA

BRUIN CORPORATION OF FRAMINGHAM, INC.
Ashland, MA

BUILDING SCIENCE & CONSTRUCTION
Braintree, MA

CAPE COD INSULATION, INC.
Yarmouth, MA

DOLPHIN INSULATION, INC.
Littleton, MA

EFFICIENT BUILDINGS, LLC
Bridgewater, MA

ENERGY ALL STARS
Holden, MA

FONTAINE ENTERPRISES, INC.
Southbridge, MA

GREENSTAMP CORP
Waltham, MA

HOMEWORKS ENERGY
Woburn, MA

HUGH'S ENERGY CORP
Dedham, MA

ADVANCED ENERGY SERVICES, LLC
Bellingham, MA

AMERICAN BUILDING TECHNOLOGIES, LLC
Boston, MA

ATLANTIC WEATHERIZATION, LLC
Salem, MA

BOSTON INSULATION, INC.
Woburn, MA

BUILDING EFFICIENCIES, LLC
Nashua, NH

CADDIS INSULATION
Newton, MA

CARBONNEAU INSULATION, LLC
Sandwich, MA

E3 EFFICIENCY NEW ENGLAND, LLC
Holden, MA

ENERGIA, LLC
Holyoke, MA

ENERGY TECH SOLUTIONS, INC.
Waltham, MA

FREHILL INSULATION CO., INC.
Norwell, MA

HOME ENERGY SOLUTIONS
South Hadley, MA

HRH CONSTRUCTION, INC.
North Andover, MA

INSTALLED MEASURES, INC.
Coventry, RI

Continued on the next page

INSULATION RETROFIT SYSTEMS
Worcester, MA

INSUL-PRO, INC.
Abington, MA

JM OF NEW BEDFORD CO., INC.
New Bedford, MA

McEACHERN INSULATION, INC.
Braintree, MA

MERRIMACK VALLEY INSULATION
North Billerica, MA

MICHAEL T. McMAHON & SON, INC.
Plymouth, MA

NEXT STEP LIVING
Boston, MA

PELLETIER INSULATION
Holyoke, MA

REBELLO CONSTRUCTION, INC.
Swansea, MA

ROGERS INSULATION SPECIALISTS CO., INC.
Framingham, MA

THE ENERGY MONSTER, INC.
Worcester, MA

TYCASBRA ENERGY, LLC
Jaffrey, NH

INSUL-KINGS
Lowell, MA

J.P. GEORGE & SON, INC.
Greenfield, MA

LANTERN ENERGY
Worcester, MA

McLAUGHLIN WEATHERIZATION
Reading, MA

METRO INSULATION, INC.
Roslindale, MA

NEW ENGLAND INSULATION CO., INC.
Woonsocket, RI

NIALL HOPKINS BUILDERS, INC.
South Yarmouth, MA

POLAR BEAR INSULATION CO., INC.
Methuen, MA

RETROFIT INSULATION, INC.
Seekonk, MA

T.C. BUILDING INCORPORATED
Medfield, MA

THE WORTHMORE GROUP
Danvers, MA

Residential Programs

26% & 36%

greater annual savings than goal for electric and gas programs, respectively.

3 MILLION

participants in residential programs, exceeding the goal for 2013 by nearly 20%.

9,000 HEAT LOANS

were provided to customers. Under this program, customers can apply for a 0% loan from participating lenders to assist with the installation of qualified energy-efficient improvements in their home.

OVER 80,000 FACEBOOK "LIKES"

for Mass Save, more than three times as many as for ENERGY STAR®.

NEW FEATURES

The Mass Save Home Energy Services program launched several successful sub-initiatives including Efficient Neighborhoods+® and Early Boiler Replacement in 2013. The Efficient Neighborhoods+ initiative provides significant energy savings benefits to customers in neighborhoods with older homes who may be financially unable to make energy efficiency investments. The Early Boiler Replacement initiative offers incentives to encourage customers to upgrade their aging boiler proactively.

The residential programs expanded to include new cost-effective efficiency improvements. For example, the PAs successfully promoted heat pump water heaters by leveraging manufacturer and retailer partners for marketing and training. Participation and savings results exceeded planning assumptions for the new technology, thanks to a strong new customer incentive.

LOOKING FORWARD

A new online audit platform will allow customers to complete a preliminary energy assessment via the Mass Save website. Information collected through the platform will be used by the PAs to generate leads, segment customers, facilitate targeting marketing and gas/electric integration, and support behavioral initiatives.

The Efficient Neighborhoods+ initiative is moving into a second year of implementation, using 2013 evaluation findings to refine their 2014 offerings.

Building on success of the Early Boiler Replacement initiative, the PAs will introduce an early furnace replacement incentive.

2013	Program Spending (million $)	Participants (thousands)	Annual Electric Savings (GWh)	Lifetime Electric Savings (GWh)	Annual Gas Savings (million therms)	Lifetime Gas Savings (million therms)	Annual GHG Reductions (metric tons)
Actual	264	3,212	414	2,804	14	162	303,883
Goal	239	2,698	330	1,892	10	117	235,240
			54,521 *homes*		14,800 *homes*		63,309 *cars*

Case Study:

FALL RIVER HOUSING AUTHORITY PROJECT, FALL RIVER, MA

Program: Residential
Partners: Liberty Utilities & National Grid

◂ CHP at Medeiros Towers

Heritage Heights Boilers ▸

The Need

The Fall River Housing Authority (FRHA) provides subsidized housing to low and moderate income individuals and families as well as conventional public housing. The FRHA also administers Section 8 rental assistance programs. Although providing energy efficiency and infrastructure updates would improve the safety and comfort of its housing, the up-front costs were prohibitive for FRHA's budget.

The Solution

The FRHA executed an energy performance contract to include water and lighting efficiency upgrades, upgraded apartment temperature controls, cogeneration, and mechanical system upgrades for space heat and domestic hot water.

◂ Sunset Hill Boilers and Indirect

In addition, energy management systems were installed to control and monitor the efficiency upgrades. Although energy performance contracting is not part of the Mass Save residential or low income programs, the flexibility offered by the PAs allowed the program to meet the needs of the customer to achieve cost-effective energy savings. The performance contract, combined with Mass Save incentives and rebates, provides water and energy efficiency upgrades to more than 1,500 FRHA housing units.

"This project is a win-win situation for the FRHA, their tenants and the Fall River community," stated Matthew Zenni, Commercial and Industrial Program Manager for Liberty Utilities. The PAs are continuing to work with the FRHA to explore additional opportunities to reduce energy costs.

The contract allows FRHA to make efficiency upgrades without upfront capital. FRHA expects to reduce its natural gas use annually by more than 120,000 therms from measures that qualified for incentives under the Liberty Gas energy efficiency program. Gas savings from these measures represent an estimated savings of more than $150,000 a year. The natural gas component of the performance contract qualified for $220,607 in incentive and rebates. The project also realized additional therm savings from technologies that did not qualify for an energy efficiency incentive. FRHA expects to realize 595,171 kWh in net annual kWh savings, which represents approximately $71,420 in annual cost savings. The electric component of the performance contract qualified for $130,392 in incentives and rebates.

Savings Summary

Total Performance Contract:	$7.4 million
Cost of Eligible Upgrades:	$3,041,262
Incentive Payment:	$350,999
Liberty	$220,607
National Grid	$130,392

Savings from Incentivized Upgrades

Annual Energy Savings:	120,000 therms and 595,171 kWh
Annual Cost Savings:	$221,420
natural gas	>$150,000
electric	$71,420

Case Study:

MOFFIT FAMILY HOME, LEXINGTON, MA

Program: Home Energy Services Program
Partners: NSTAR

The Need

The Moffit family, first-time home buyers in Lexington, needed to prioritize home improvement projects. Results of a Mass Save Home Energy Assessment identified the need for targeted air sealing and wall insulation.

The Solution

The Moffit family decided to pursue the recommended upgrades. Efficiency upgrades installed by the Mass Save energy specialist included wall insulation and air sealing, energy efficient lighting, low-flow faucet aerators and showerheads, and a programmable thermostat. These energy efficiency improvements reduce energy costs and increase comfort for the family.

Savings Summary

Project Cost:	$4,953
Incentive Payment:	$3,102
Annual Energy Savings:	1,227 kWh and 234 gallons of oil
Annual Cost Savings:	$1,064

"As first time home buyers, we had to make decisions about which home improvement projects to tackle first. Making our home more energy efficient came to the top of the list because of its long term benefits. We had the exterior walls of our home insulated, and we already notice our home staying cooler in the warmer months. We look forward to enjoying the benefits of the insulation work this winter and for years to come, no matter what time of year."

— The Moffit Family

Income-Eligible Programs

MORE THAN 14,000 HOMES

received weatherization and/or heating systems installations.

MORE THAN 20,000 HOMES

received electricity improvements (including efficient lights).

NEW FEATURES

In 2013, the Income-Eligible program exceeded savings goals for both natural gas and electricity. The program also increased the number of income-eligible customers in apartment buildings and other multifamily properties receiving services. These properties have traditionally been underserved, but renewed emphasis on the particular barriers to reaching these customers and properties has resulted in growing participation

LOOKING FORWARD

In future years, the low-income program will extend its comprehensive efficiency services to:

- Oil-heated multi-family buildings (oil-heated single-family homes are already treated)
- Buildings devoted to non-profit services for low-income people, such as day care centers, shelters, Head Start schools, and food pantries

2013	Program Spending (million $)	Participants (thousands)	Annual Electric Savings (GWh)	Lifetime Electric Savings (GWh)	Annual Gas Savings (million therms)	Lifetime Gas Savings (million therms)	Annual GHG Reductions (metric tons)
Actual	85	46	35	316	2.0	40	34,378
Goal	89	35	29	265	1.4	28	27,064
			4,542 *homes*		2,165 *homes*		7,162 *cars*

Case Study:

DIAMOND SPRING GARDENS, LAWRENCE, MA

Program: Low Income Multi-Family (LIMF)
Partners: ABCD, Columbia Gas

"We were extremely happy to have the opportunity to work with the LIMF Energy Retrofits Program and ABCD. The weatherization program was very successful and had minimal impact on the residents during its implementation. The weatherization crew was the most accommodating and did an excellent job installing the insulation. The heating and hot water equipment conversion went extremely well. Every contractor working at the property was professional in every way. We look forward to experiencing lower operating costs this winter."

— Joe McPhee
Director of Operations,
The Boston Land Company

The Need

Diamond Spring Gardens is a 97-unit elderly, handicapped and disabled residence financed under the HUD Section 8 Project-Based Subsidy Program. Almost all of the residents meet the Section 8 low-income qualification. The building was originally a soft drink bottling plant and was renovated in 1979.

At the time the building was constructed, natural gas and electricity prices were lower, and energy efficiency was not a priority. Later attempts to complete efficiency upgrades were limited by operating funds and available refinancing programs.

The Solution

In 2012, the U.S. Department of Housing and Urban Development contacted the Low-Income Multi-Family Retrofit Program to request an energy assessment for the property. LIMF, through ABCD, Inc., conducted a comprehensive assessment that identified several cost-effective energy improvements. ABCD oversaw installation of:

- Replacement boilers with 96% efficient condensing boilers and controls,
- Replacement water heaters with 94% efficient heaters and tanks,
- Wall insulation: R-13 dense pack cellulose and R-19 fiberglass batts, and
- Air sealing and pipe insulation.

Savings Summary

Project Cost:	$223,206
Incentive Payment:	$223,206
Annual Energy Savings:	16,280 therms
Annual Cost Savings:	$20,350

Small C&I Programs

31,000
PARTICIPANTS
more than double the number in 2012 and far in excess of the 2013 goal of 15,000.

24% INCREASE IN NATURAL GAS SAVINGS over previous year, and

8% INCREASE IN ELECTRIC SAVINGS

NEW FEATURES

The PAs launched a new community based delivery model that targeted "main street" areas of cities and towns. The Main Streets initiative targets micro-business clusters within a limited geographical area and provides incentives of 100 percent of the cost for a limited set of improvements. This approach achieves higher penetration with the small, local businesses typically found in these areas. The initiative is currently underway in Allston/Brighton, Brookline, Easthampton, New Bedford, Provincetown, Walpole, and West Springfield. Additional cities will be participating in 2014.

The PAs also streamlined small C&I program delivery by coordinating vendors within each region to ensure customers are contacted by a single program representative. This effort sought both to increase program efficiency and improve the customer experience.

LOOKING FORWARD

The PAs re-launched a small business subcommittee in order to focus on continual improvement of services to these customers. Informed by a forthcoming small business process evaluation, the subcommittee will identify recommendations to improve the depth and comprehensiveness of small business projects.

The PAs will be holding a mandatory training for vendor staff. This training is intended to increase vendors' ability to help customers save energy and access program resources for both gas and electric opportunities. This fall, over 60 staff from the 14 direct install vendors will receive training at the Gas Networks® Conference. The training will enable vendor staff to efficiently navigate between PAs to provide a seamless experience with their customers to reduce costs and increase participation.

The PAs will continue to utilize upstream sales data to identify small business customers to target with additional energy efficiency solutions. This may inform efforts to apply the successful "upstream" C&I lighting approach to more markets and technologies, including high efficiency space heating, water heating, and commercial kitchen equipment.

2013	Program Spending (million $)	Participants (thousands)	Annual Electric Savings (GWh)	Lifetime Electric Savings (GWh)	Annual Gas Savings (million therms)	Lifetime Gas Savings (million therms)	Annual GHG Reductions (metric tons)
Actual	130	31	318	3,974	3.0	59	153,824
Goal	151	15	327	4,009	4.0	74	164,471
			41,882 *homes*		3,217 *homes*		32,047 *cars*

Large C&I Programs

20,000 GWH

in total savings from upstream lighting, a roughly 22% increase over 2012.

40% SAVING INCREASE FROM LED LAMPS

over 2012. In 2013, over 650,000 LED lamps were incentivized compared to 420,000 in 2012.

NEW FEATURES

The PAs introduced new upstream HVAC incentives to make high efficiency air conditioning cost-neutral relative to standard efficiency options at the point of sale. Providing incentives directly to distributors is expected to increase stocking of energy efficient equipment which will result in increased market share for higher efficiency equipment over time.

The Combined Heat and Power (CHP) program has introduced new requirements for system development that will help protect customers from the impacts of poorly designed systems. Correctly sizing CHP systems to meet customer electric and thermal loads helps to ensure that expected savings and the customer's expected return on investment are realized.

The upstream lighting program resulted in the stocking and availability of a greater variety of LED lighting products, providing customers and suppliers with more options for improving light quality and reducing energy use.

LOOKING FORWARD

Comprehensive market segment strategies will continue to be developed and implemented to target specific subsets of customers and meet their needs more effectively. This effort will include developing strategies for key market segments such as healthcare, commercial real estate, manufacturing, and hospitality.

The successful model of customized, comprehensive multi-year agreements with large businesses and institutions will continue to expand. The multiyear aspect gives customers long-term planning and budgeting certainty and provides the PAs with a continuing stream of more predictable savings over a longer time horizon. The PAs will enroll additional large customers, strive for more comprehensive projects, and improve customer experience and engagement.

The EEAC and the PAs will continue to investigate new strategies to increase natural gas savings, such as upstream incentives.

The PAs will continue to evaluate and adjust C&I programs to achieve higher savings and improve towards meeting the three-year goals.

2013	Program Spending (million $)	Participants (thousands)	Annual GWh	Lifetime GWh	Annual Therms (million)	Lifetime Therms (million)	Annual GHG (metric Tons)
Actual	96	5	349	4,908	5.6	62	167,655
Goal	173	6	510	6,980	6.9	86	226,628
			45,955 *homes*		5,977 *homes*		34,928 *cars*

Case Study:

OLD CASTLE STONE PRODUCTS, LEE, MA

Program: Large C&I
Partners: The Berkshire Gas Company and the Western Massachusetts Electric Company

"The Berkshire Gas Company and WMECo worked as a team to identify energy appropriate efficiency upgrades and provided a joint Mass Save incentive offer. The process was seamless and our new Raymond Mill now produces our products at a fraction of the gas and electric energy per ton as compared to our previous equipment."

— Jeff Jager, Plant Manager
Old Castle Stone Products
Lee, MA

The Need

Old Castle Stone Products is a producer of agricultural lime located in Lee, MA. Their products include many variations of lime with package sizes ranging from homeowner-sized bags to large bulk containers. To meet consumer demand, Old Castle determined it needed to substantially increase production under a tight time frame. While the existing production equipment could have met production goals utilizing 24 hour per day operation, the increased energy costs required for this would have been substantial.

The Solution

An integrated gas / electric project team from The Berkshire Gas Company and WMECo identified efficient equipment to reduce the kWh and therm use per ton significantly compared to the pre-project existing production equipment. Examples included a new gas powered thermal dryer and a 500 horsepower variable frequency drive (VFD) motor control. Berkshire Gas and WMECo provided a single analysis and review of both gas and electric opportunities and a single incentive offer, which specified that implementation of both gas and electric upgrades were required for incentive eligibility. The energy efficiency incentives provided jointly by the two PAs were a key to implementing this success story.

Savings Summary

Project Cost:	$1,850,000
Incentives Paid:	$400,000
Berkshire Gas	$75,000
WMECO	$325,000
Annual Energy Savings:	2,166,572 kWh and 59,570 therms
Annual Cost Savings:	$390,000
natural gas	$40,000
electric	$350,000

Case Study:

LINDA MANOR, NORTHAMPTON, MA

Program: Large Commercial and Industrial
Partners: Columbia Gas and National Grid

The Need

Linda Manor Extended Care is a member of Berkshire Healthcare Systems, a not-for-profit, consumer-centered organization committed to fulfilling the health and residential needs of the population in the communities it serves.

Starting in 2012, Linda Manor staff began taking a closer look at how its facility was using energy. The Mass Save energy assessment identified opportunities for improving the efficiency of laundry operations, upgrading water heating and space heating equipment, and upgrading AC units and controls.

The Solution

The PAs shared the cost of the assessment and contributed 50% toward energy efficient equipment upgrades for the project totaling over $29,500. These energy efficient upgrades are expected to save close to 9,800 therms per year, which equates to approximately $14,600 annually.

The installation of ozone laundry allowed Linda Manor to save natural gas by lowering hot water use and reducing linen drying time. The ozone system has also provided substantial water savings and extended linen use.

The installation of new high-efficiency heating equipment was the last piece to upgrading all of the major energy use appliances. With the installation of the new boilers, the operational costs have been reduced and reliability has been increased.

Linda Manor also took on electric improvements. They installed two new unitary AC units with 7.5 and 5.0 ton capacities, plus controls. The total project cost for the two units was $15,500 and National Grid contributed $1,725 in incentives. As a result of the new units, Linda Manor is projected to reduce its energy consumption by approximately 5,100 kWh/year which equates to a $602/year savings in energy costs.

Savings Summary

Project Cost:	$110,568
Incentives Paid:	$31,325
Annual Energy Savings:	5,100 kWh and 9,800 therms
Annual Cost Savings:	$15,200

Municipal Initiative

81% **of eligible municipalities have completed an efficiency project and received incentives since 2010. In 2013 alone, 50% of the municipalities served by PAs completed an efficiency project and received an incentive.**

123 **Green Communities committed to pursuing a 20% energy reduction for their facilities and vehicles, as part of their DOER designation. In 2013, 61% of the statewide municipal electric savings and 69% of the municipal gas savings were attributed to projects completed by Green Communities.**

NEW FEATURES

Municipal interest in LED streetlight retrofits continues to grow and savings from these projects contributed a significant and growing portion of municipal electric savings. In 2013, 29 municipalities received incentives from PAs for LED streetlight retrofits. In addition, six DOER-designated Green Communities completed LED streetlight retrofits using grant funds from DOER. Additional retrofits are in progress.

Through the upstream initiative, the electric PAs and Phillips Lighting provided efficient lighting at no-cost to public agencies able to perform their own installation work. DOER's Green Communities Division managed the application process. In total, over 150,000 no-cost interior LEDs or "super-T8" lamps were installed at 80 municipalities, 5 housing agencies, 8 state colleges/universities and 11 state agencies for a collective estimated savings of nearly $1 million and over 6.6 million kWh.

The Green Communities Division and the PAs also collaborated to offer free hot water saving devices, including low-flow showerheads, faucet aerators, and spray valves. A total of four municipalities, one regional school district, one housing authority and four state colleges/universities installed 2,850 hot water-saving devices for a collective estimated savings of 77,868 therms of natural gas and more than 17 million gallons of water.

LOOKING FORWARD

DOER's Green Communities Division and the PAs will continue to collaborate on education and outreach efforts to inform municipalities about the energy efficiency services available to municipalities across the Commonwealth.

DOER will again work with the PAs to bring no-cost, high efficiency lighting opportunities to municipal and state agencies willing to perform their own installation work.

Savings from municipal LED street lighting retrofits will continue to be significant.

Case Study:

THE MONTACHUSETT REGIONAL VOCATIONAL TECHNICAL SCHOOL, FITCHBURG, MA

Program: Municipal
Partners: Unitil

*"Superintendent of Schools Steve Sharek said the $10.7 million project is paying for itself. Using a state energy-efficiency program through **Unitil**, the project is being funded by its own energy savings instead of asking the school's 18 member communities for money."*

— Sentinel & Enterprise

The Need

The Fitchburg-based Montachusett Regional Vocational Technical School (Monty Tech) serves 18 communities in Massachusetts. Like many schools throughout the state, the heating and cooling systems at Monty Tech were well beyond their serviceable life—over 40 years old.

The Solution

Unitil worked closely with Monty Tech to secure energy efficiency incentives through its suite of Mass Save programs. In addition to providing these rebates/incentives, Unitil offered expert advice on the type of equipment that would qualify. Once it had been designed, workers installed a new energy-efficient HVAC system. There is a central natural-gas fired boiler that produces heat for the building and 200 sensors that monitor temperatures and carbon-dioxide levels in each classroom. The sophisticated system saves energy by detecting the right amount of heating, cooling and venting. A computer system senses changed conditions automatically and can be controlled remotely by Monty Tech's director of facilities.

As part of the overall project, the school also replaced its roof and made other improvements, which pushed the overall investment to $10.7 million. The energy savings were so significant that the school was able to use the savings to pay for the entire project, instead of asking the school's 18 member communities for money. In the first two months the system was operational, the school cut its electric bill by about 50 percent, when compared to the same period from the previous year. Its natural gas bill in September was slashed 72 percent over the same period from the previous year.

Savings Summary

Project Cost:	$3.5 million
Incentive Payment:	$507,000
Annual energy savings:	1.9 million kWh and 23,400 therms
Annual energy savings:	$312,000
natural gas	$35,000
electric	$277,000

Legislative Background

HISTORY

The current framework for energy efficiency delivery was developed in response to the mandates of the Green Communities Act of 2008. The 2013-2015 Three-Year Plan stands on the foundation of the nation leading results achieved between 2010 and 2012, the first plans delivered under the requirement of all cost effective energy efficiency. Like its predecessor, the current Three-Year Plan is the result of collaboration between the Commonwealth's gas and electric distribution companies and municipal aggregators (the PAs), the EEAC, DOER, and many interested stakeholders in the public, private, and nonprofit sectors.

Three acts signed into law in 2008 guide the continued evolution of efficiency programs in Massachusetts.

- **The Green Communities Act (GCA)** requires the PAs to develop energy efficiency plans that will "provide for the acquisition of all available energy efficiency and demand reduction resources that are cost-effective or less expensive than supply." In connection with these energy efficiency plans, the Act established the EEAC to oversee and advise the PAs on all aspects of efficiency planning and program execution.

- **The Global Warming Solutions Act (GWSA)** mandates the reduction of greenhouse gas emissions in the Commonwealth, establishing a schedule of emissions reduction goals designed to spur innovation and promote research and development in the area of clean energy.

- **The Green Jobs Act** provides a funding source for the green technology industry, facilitating economic development and job growth in the clean energy sector. This law established the Massachusetts Clean Energy Center.

Massachusetts' energy efficiency leadership continues to be driven by a number of factors, including concerns over high energy costs, vulnerability to volatility in these markets, significant cost-saving options created by energy efficiency investments, and opportunities to develop a robust clean energy economy.

GOVERNANCE: THE ENERGY EFFICIENCY ADVISORY COUNCIL

The Massachusetts EEAC was created by the GCA to guide the development of comprehensive, integrated, statewide energy efficiency plans and monitor their implementation. Its primary role is to achieve and fulfill the efficiency requirements, goals, and obligations of the Act. Fifteen voting members represent a variety of energy efficiency stakeholders. Twelve non-voting members include the PAs from the investor-owned electric and gas utilities and energy efficiency service providers and other stakeholder groups. The EEAC is chaired by the commissioner of the Massachusetts Department of Energy Resources (DOER).

Whereas the EEAC is responsible for guiding the PAs in carrying out the requirements of the GCA, the PAs are responsible for delivering the programs and taking the actions that result in measurable, verifiable energy savings that meet the DPU approved three-year goals. As regulated entities, the PAs must receive approval from the DPU for their efficiency program spending and related issues of cost recovery. The Three-Year Plans, covering the period from January 1, 2013, to December 31, 2015, were approved by the DPU on January 31, 2013.

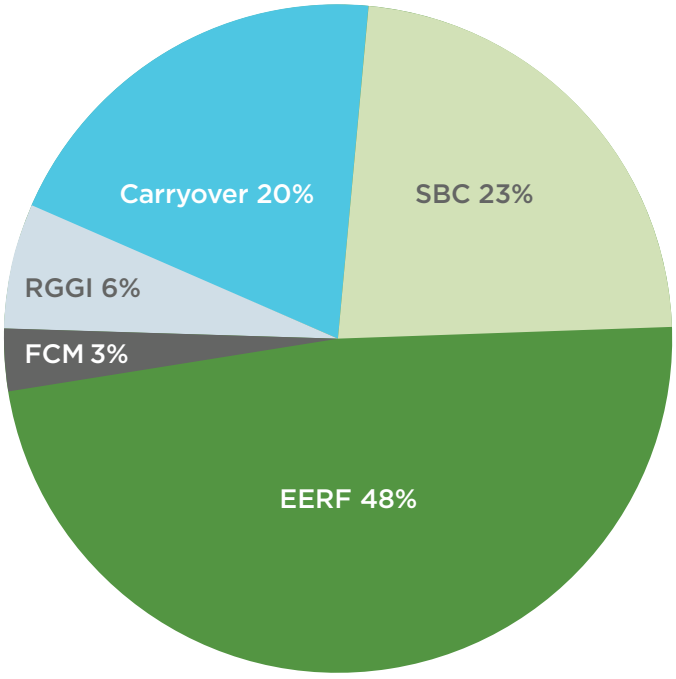
FUNDING SOURCES

The electric energy efficiency programs are funded by a variety of sources, the largest of which are a historical System Benefit Charge (SBC) and the Energy Efficiency Reconciliation Factor (EERF) created by the Green Communities Act (percentage of total funding for 2013–2015 in parentheses):

- The legislatively mandated SBC of 2.5 mills (0.25 cents) per kilowatt-hour for all electric consumers, except those served by a municipal lighting plant (23%).
- The EERF, which recovers additional program costs from electric customers in proportion to the costs of programs directed at their sector (i.e., residential, commercial & industrial), with low-income programs receiving subsidies from other sectors (48%).
- Regional Greenhouse Gas Initiative (RGGI) auction proceeds (6%).
- Forward Capacity Market (FCM) payments from ISO-NE (3%).
- Carryover from sources in previous years (20%).

The natural gas efficiency programs are funded by an Energy Efficiency Surcharge (EES) on gas customers' bills.

2013 FUNDING MIX: ELECTRIC ENERGYEFFICIENCY PROGRAM



MASSACHUSETTS ENERGY EFFICIENCY ADVISORY COUNCIL

As of December 2013

VOTING MEMBERS

LARRY CHRETIEN
Energy Consumers Alliance of New England
Representing Massachusetts Non-Profits

MARTHA COAKLEY, DESIGNEE: MATT SAUNDERS
Massachusetts Office of the Attorney General
Representing Attorney General

CHRISTINA DIETRICH
Environment Northeast
Representing Environmental Community

DEBRA HALL
Massachusetts Department of Housing and Community Development
Representing Housing and Community Development

CHARLIE HARAK
Local 369 of the Utility Worker Union of American
Representing Organized Labor

ELLIOTT JACOBSON
Low-Income Energy Affordability Network
Representing Weatherization & Fuel Low Income Assistance Network

PAUL JOHNSON
Greentek
Representing Energy Efficiency Small Businesses

PENN LOH
Tufts University
Representing Residential Consumers

DEIRDRE MANNING
Smith College
Representing Energy Efficiency Experts

RICK MATTILA
Genzyme
Representing Businesses (including. Large Commercial & Industrial End Users)

MICHAEL MCDONAGH
The Massachusetts Association of Realtors®
Representing Massachusetts Realtors

ROBERT RIO
Associated Industries of Massachusetts
Representing Manufacturing Industry

NANCY SEIDMAN
Massachusetts Department of Environmental Protection
Representing Environmental Protection

BRIAN SWETT, DESIGNEE: BRAD SWING
City of Boston
Representing Commonwealth Cities and Towns

MARK SYLVIA, DESIGNEE: CHRISTINA HALFPENNY
Massachusetts Department of Energy Resources
Representing EEAC Chairperson

NON-VOTING MEMBERS

JAMES CAREY
New England Gas Company
Representing PA

CINDY CARROLL
Unitil
Representing PA

ELIZABETH CELLUCCI
Bay State Gas
Representing PA

MAGGIE DOWNEY
Cape Light Compact
Representing Utility Energy Efficiency Program Administrator (PA)

MIKE FERRANTE
Massachusetts Oilheat Council
Representing Heating Oil Industry

JOHN GHILONI
Town of Marlborough
Representing Municipal Aggregators

PAUL GROMER
Peregrine Energy
Representing Energy Efficiency Businesses

ANDREW NEWMAN
Blackstone Gas
Representing PA

MICHAEL SOMMER
Berkshire Gas
Representing PA

TILAK SUBRAHMANIAN
NSTAR & Western Mass Electric
Representing PA

CAROL WHITE
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Representing PA

ERIC WINKLER
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